EARTHJUSTICE

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NORTHWEST ROCKY MOUNTAIN WASHINGTON, D.C. INTERNATIONAL

Oct. 2, 2020

VIA ELECTRONIC FILING

Adam J. Teitzman
Office of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0850

Re: Docket No. 20200176-EI - Petition for a limited proceeding to approve clean energy connection program and tariff and stipulation, by Duke Energy Florida, LLC.

Dear Mr. Teitzman,

On behalf of Intervenor League of United Latin American Citizens of Florida, I have enclosed the testimony and exhibits of Karl R. Rábago. Please file these documents in Docket No. 20200176-EI. Please contact me if there are any questions regarding this filing.

s/ Bradley Marshall
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served on this 2nd day of October, 2020, via electronic mail on:

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DATED this 2nd day of October, 2020.

/s/ Bradley Marshall
Attorney

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Duke Energy Florida, LLC's Petition for a limited proceeding to approve Clean Energy Connection Program and Tariff and Stipulation	Docket No. 20200176-EI

TESTIMONY OF KARL R. RÁBAGO
ON BEHALF OF
LEAGUE OF UNITED LATIN AMERICAN CITIZENS OF FLORIDA

October 2, 2020

I. INTRODUCTION AND OVERVIEW

Q. Please state your name, business name, and address.

A. My name is Karl R. Rábago. I am the principal of Rábago Energy LLC, a New York limited liability company, located at 2025 E. 24th Avenue, Denver, Colorado.

Q. On whose behalf are you appearing in this proceeding?

A. I appear here in my capacity as an expert witness on behalf of the League of United Latin American Citizens of Florida ("LULAC").

Q. What is LULAC's interest in this proceeding?

A. LULAC wants to ensure that the transition to clean, renewable energy is conducted in an equitable fashion that does not disproportionately burden low- and moderate-income communities.

Q. Please summarize your experience and expertise in the field of electric utility regulation.

A. I have worked for more than 30 years in the electricity industry and related fields. I am actively involved in a wide range of electric utility issues across the United States. My previous employment experience includes Commissioner with the Public Utility Commission of Texas, Deputy Assistant Secretary with the U.S. Department of Energy, Vice President with Austin Energy, Executive Director of the Pace Energy and Climate Center, Managing Director with the Rocky Mountain Institute, and Director with AES Corporation, among others. A detailed resume is attached as Exhibit KRR-1.

Q. Do you have a specific experience relating to solar energy development, policy, and regulation?

A. Yes. I have extensive experience working in the field of solar energy. That experience includes regulation of electric utilities in Texas as a public utility commissioner from

1992-1995, which included review and approval of rates, tariffs, plans, and programs proposed by electric utilities. During that time, I co-chaired the Sustainable Energy Development Council of Texas, which created a blueprint and plan for powering Texas with sustainable energy resources. After that, I served as a deputy assistant secretary for the U.S. Department of Energy, with responsibility for overseeing research, development, and deployment programs for all renewable energy technologies at laboratories, universities, and through cooperative agreements with businesses and foreign countries. For twenty-five years, I have served on the board of the Center for Resource Solutions, which created and administers the Green-e Certification program for green power products and renewable energy certificates ("RECs"). I co-authored the seminal treatise on distributed energy resource value, titled "Small Is Profitable,"[1] when I was a managing director at the Rocky Mountain Institute. I have also published several articles and essays relating to the topic, as detailed in my resume. As a vice president for Distributed Energy Services for Austin Energy, I had responsibility for all of the utility's customer-facing programs relating to distributed solar generation, energy efficiency, demand management, low-income weatherization, energy storage, electric transportation, building energy ratings and codes, and the utility's electric vehicle initiatives. While with Austin Energy, one of the largest municipal electric utilities in the nation, I developed and implemented the nation's first distributed solar tariff based on objective and comprehensive valuation of solar generation and avoided system energy costs, often referred to as the "Value of Solar Tariff." In my position with the Pace Energy and Climate Center, based at the Pace University Elisabeth Haub School of Law in White Plains, New York, I led a team actively engaged as a public interest intervenor in the groundbreaking "Reforming the Energy Vision" process administered by the New York Public

Service Commission. During that time, I participated in an industry and stakeholder group as a party, on issues of community solar development in New York before the PSC, and also provided expert witness support to Boston Community Capital in the Massachusetts SMART solar program, specifically on the issue of low-income customer focused community solar tariff and program design. I currently have a retainer relationship with the Coalition for Community Solar Access, a group that includes competitive community solar developers from across the country and have assisted the organization on several projects impacting community solar. I have engaged as an advisor and expert witness in more than 100 regulatory proceedings across the country, including many relating to distributed energy resources of all kinds, rates and tariffs, low-income energy issues, grid modernization, return on equity, and other issues. I am a frequent speaker, author, and commentator on issues relating to electric utility regulation, distributed energy resource markets and technologies, and electricity sector market reform.

Q. Have you ever testified before the Florida Public Service Commission ("Commission") or other regulatory agencies?

A. I have submitted testimony before the Commission in the past in several proceedings, including the FEECA proceedings in 2014 (Docket Nos. 130199-EI, 130200-EI, 130201-EI, and 130202-EI), the Florida Power & Light CCPN case for the Okeechobee Plant (Docket No. 150166-EI), and the Gulf Power general rate case in 2017 (Docket No. 160186-EI). In the past six years, I have submitted testimony, comments, or presentations in proceedings in Alabama, Arkansas, Arizona, California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Guam, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New York, North

Carolina, Ohio, Pennsylvania, Puerto Rico, Rhode Island, Vermont, Virginia, Washington, and Wisconsin. I have also testified before the U.S. Congress and have been a participant in comments and briefs filed at several federal agencies and courts. A listing of my previous testimony is attached as Exhibit KRR-2.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to share my evaluation of the Duke Energy Florida, LLC ("Company") petition for a limited proceeding to approve its "Clean Energy Connection" program and tariff ("CEC" or "program"), as well as the proposed stipulation entered into with the Company by several parties. In this testimony, I describe the numerous fatal flaws in the program that can be identified from the very limited record provided in the Company's petition. I further explain why the program would not be in the public interest and would, if approved, result in rates that are unfair, unjust, unreasonable, and that grant undue preference to customers that would become program participants. At the conclusion of this testimony, I offer specific and concrete recommendations for redesign of the program.

Q. How would you characterize the Company's proposed program at a high level?

A. The CEC program proposed by the Company has several major flaws. First, and foremost, the program is not really a *community* solar program at all. Rather than creating a customer aggregation platform with representative community participation, the program actually appears to be nothing more than a vehicle for the exercise of market power and the allocation of monopoly rents to deliver cash benefits to mostly large customers that might otherwise leave the Company's system or invest in self-generation in pursuit of truly cost-effective, unsubsidized renewable energy supply. Further, the program does not align with best practices identified by the Interstate Renewable Energy Council ("IREC") for shared solar program design.

Second, the program is designed to require the general body of non-participating Company customers to subsidize voluntary program participants so that those participants can be guaranteed solar credits worth more than the fees required for program participation. Third, the proposed program allocates these subsidies to a relatively small number of customers with an unreasonably large share of the program allocation going to very large customers that can well-afford to develop solar energy resource options or obtain solar energy supply without cross subsidies. The proposed allocation would leave less than 5% of program scope for low-income customers. The allocation formula for shares of its cross-subsidized program do not align with the Company's customer sales. Fourth, the program assigns all the RECs associated with the program to participating customers, leaving the general body of customers with nothing but "null energy" and risk of further costs to make up for emissions credits transferred to participant customers and out of the system mix. Fifth, the program rests its claims of cost-effectiveness on major assumptions about value derived from avoided costs over the next thirty years, and significantly, places all the risk of forecast error on non-participating customers while guaranteeing profitable credit distribution to program participants. Finally, the Company's program places an extremely significant rate burden—in the several hundreds of millions of dollars—on captive, non-participating customers, while actually eliminating costs in the short-run for program participants. Thus, the program converts what could be cost-effective solar resources benefitting the broader body of customers into a subsidy program for the very few, and a travesty of the concept of community shared solar aggregation.

Q. What law and regulatory precedent guides the Commission decision in this matter?

A. Florida's renewable energy policy reflects the Florida Legislature's intent that the Commission promote the development of renewable energy[2] that results in fair, just, and reasonable rates,[3] and as the Commission has noted, "without undue preference."[4]

Q. Wouldn't the Company's proposal result in more renewable energy in Florida?

A. Yes, it would. But the specific program proposed is not a necessary or desirable way to achieve that result. If the Company's cost-effectiveness evaluation is believed, the solar resources proposed in this plan should be added on behalf of all customers. Using inter- and intra-class cross subsidies to secure program subscriptions appears to be an abuse of market power that will displace growth of non-utility voluntary solar market growth. The development of renewable energy resources through unfair, unjust, and unreasonable cross-subsidy schemes is not sustainable and, in the end, would frustrate rather than advance Legislative intent.

Q. The Commission has recently approved a proposal very similar to the one in this case. Should that case decide the issues in this proceeding?

A. No. Florida Power & Light Company's program was roughly half the size of the Company's proposed program given the relative size of the utilities. The rate burden for non-participating customers in the Company's program is thus correspondingly about double the impact Florida Power & Light Company's non-participating customers are expecting.[5]

Q. What specific elements of the Company's proposal are manifestly unfair?

A. The clearest way to see the unfairness in the proposal is to compare and contrast how the Company would treat program participants versus non-participants:

- The fees that participants must pay to participate in the program are guaranteed; the total costs for non-participants are not.

- The renewable energy claims are guaranteed to participants through REC assignments and transfers on request; non-participants are left with "null energy."[6]
- Subscribers only pay for program blocks they choose and receive; non-participants must cover the costs of unsubscribed program blocks and do not even receive the RECs from those blocks.
- All participants will benefit from the program; all non-participants are guaranteed a high level of early program year costs and are promised benefits that are uncertain.
- All participants are guaranteed a credits escalator of 1.5% per year for 27 years; non-participants will be responsible for making up any actual differences and payment of a subsidy to participants.
- Participants get a seven-year payback on their fee payments; non-participants remain on the hook for administrative costs and benefits shortfalls for all 30 years of the program.
- The participants get program participation; non-participants have to pay $16.8 million to the Company to administer the program for participants.
- The Company originally planned to give even more of the program benefits, 75%, to large customers that could well-afford to invest in their own solar projects; only a measure of advocacy by settling parties seems to have reduced that share by a little, to 65%.
- Participants may cancel or reduce participation at their pleasure; non-participants have no choice but to pick up any costs that result.

On a cumulative present value of revenue requirements basis, in return for $465 million in estimated benefits, non-participating customers must surrender 100% of REC value, accept 100% of risk of unsubscribed costs, pay 100% of program costs, and pay profits to the Company for the $1.14 billion in increased capital investment by the utility, plus direct expense treatment of all bill credits paid. Participants put less than the cost of the projects into the program, get $68 million in guaranteed profits (present value), and receive 100% green REC credits as a result. This is literally greenwashing—laundering and comingling payments by participants and non-participants to create a “green” product for the benefit of participants alone.

II. BEST PRACTICES GUIDANCE FOR COMMUNITY/SHARED SOLAR PROGRAMS

Q. Is there general guidance available regarding design of community or shared solar programs?

A. Yes. In 2013, IREC first published a paper setting out model rules for shared renewables programs.[7] That paper provides guidance built around four general principles:

> **First, shared renewable energy programs should expand renewable energy access to a broader group of energy consumers, including those who cannot install renewable energy on their own properties.** [M]ost Americans are currently unable to benefit directly from renewable energy generation because they cannot install renewable energy on-site. As a matter of equity between energy consumers this barrier should be removed as it unnecessarily limits participation in generally available renewable energy programs. Moreover, shared renewables programs allow greater energy consumers to participate in renewable energy generation, unlocking a substantial new market for renewable energy developers and thereby

strengthening the renewable energy industry.

Second, participants in a shared renewable energy program should receive tangible economic benefits on their utility bills. By providing credits on participating customers' utility bills, shared renewable energy programs offer a clear, intuitive way for customers to save money by choosing renewable energy…Keeping the benefits of participation in a shared renewables program on customers' bills maintains the linkage between a customer's participation in the program, their reduced energy use, and their lower bill. Even in cases where participants may pay more initially for participation in a shared renewable energy program, programs should be designed such that participants receive a valuable hedge benefit by locking in a rate through their participation in the program, which will save them money as standard electricity rates rise over time.

Third, shared renewable energy programs should be flexible enough to account for energy consumers' preferences. Consumers are more likely to purchase a product that is specifically tailored to suit their personal values and priorities. Therefore, we recommend that shared renewable energy programs be flexible with regard to business models so that developers and utilities can innovate to meet consumer desires. This can include preferences for specific technologies, project locations, or ownership models. For example, in IREC's experience, consumers are highly motivated to participate in shared renewable energy when the generation facilities are located in or nearby their communities. Structuring a program to allow for the realization of these preferences can broaden interest and participation in the program.

Fourth, and finally, shared renewable energy programs should be additive to and supportive of existing renewable energy programs, and not undermine them. Over the previous decades, renewable energy companies have invested considerable resources in building their businesses. This private investment in time and resources has helped expand markets for renewable energy in partnership with utility-run renewable energy programs. The success of both wholesale and retail oriented distributed generation programs has resulted in dramatic reductions in the cost of renewable energy.

Q. How does the Company's proposal stack up against these principles?

A. The Company program fails to meet the language and objectives of these principles. First, the program is designed primarily to benefit large customers that are perfectly capable of investing and participating in renewable energy projects themselves. What the Company calls a community solar program doesn't empower customers that lack access to solar. Rather, it taxes those customers so that the Company can induce large customers not to pursue free market options. The second principle is about program design that provides participants with the benefit of the bargain they strike by becoming solar investors. Again, the Company does not honor that principle. Instead of tying solar credit compensation rates to the value of the solar generation in the system and the market, it locks in a specific escalation rate of 1.5% per year after the first three years of program subscription[8] in order to guarantee the subsidy-delivering nature of the program. Third, rather than structuring the program design around community preferences, the Company designed a program to satisfy the desires of a few large business and institutional customers. The Company appears to have made a few minor concessions in order to secure signatories to its stipulation, but the fundamental nature of the program remains a corporate hand-out program, not a community solar program. Finally, the fourth principle is about structuring community solar programs to add to, rather than subtract from broader clean energy development. The Company's program doesn't bring new renewable energy to the system, it charges captive non-participating customers so they can subsidize renewable energy benefits for a select few.

Q. Is the program designed with any opportunity for non-utility solar generation development and operation in mind?

A. No. This is a monopoly project that will not grow the market for competitive solar developers unless they are willing to work for the monopoly. By building solar facilities that are subsidized by non-participant captive customers, the Company has an unfair competitive advantage against non-utility competitive developers. The only real opportunity for competitive solar developers is to build facilities and immediately sell them to the utility or seek work as an engineering performance contractor. Either way, this reduces or eliminates the opportunity for competitive developers to participate profitably (and without cross subsidies) in the more lucrative "build, own, operate" market.

Q. Does the program include a component for true community-based solar that does not require Company plant construction and rate-based treatment at a smaller scale than 75 MW per plant?

A. No. There is no true community solar component to the program.

III. DEFICIENCIES IN PROGRAM DESIGN

Q. Company witness Huber presents the overall program structure on behalf of the Company in his direct testimony. What deficiencies in program design do you identify in that testimony?

A. Mr. Huber asserts that the CEC program is structured to "maximize the benefits to the entire DEF system and to minimize the costs to non-participating customers."[9] I find no evidence of such design intent. Rather, the program requires subsidization of participants by non-participating customers on an involuntary basis. In my experience, this is out of step with generally accepted practices among regulatory agencies that are obligated to ensure just, reasonable, and fair rates that are in the public interest. It is also out of step, as I understand it, with long-standing regulatory policy at the Florida Commission.[10]

Q. Mr. Huber also asserts that the reason for this proposal is to "meet substantial demand from DEF customers who are seeking expanded access to solar energy, but do not have the ability or the desire to construct it on their property."[11] What evidence did the Company provide that large corporate and institutional customers, in particular, lack the ability or desire to self-build or contract for renewable generation?

A. I assume everyone would have a desire for subsidized solar energy, but there is no evidence that any large corporate or institutional potential participants do not have the ability to construct it on their own property. Mr. Huber reports having conversations with and building a list of willing program participants.[12] They and their financial unwillingness or inability to develop self-build solutions should be detailed by the Company.

Q. For customers seeking renewable supply, is self-build construction on their own property or through utility rate-based assets the only choice?

A. No. The vast majority of community solar projects in the U.S. are private business investments. In addition, a great many corporate customers are getting their renewable energy through purchased power agreements ("PPAs"), which do not require non-participant subsidization at all. In fact, in 2019, nearly 20 Gigawatts of renewable energy was procured by corporate customers, with the vast majority of that in the U.S., and through such PPA arrangements.

Q. Who is this program designed to primarily serve?

A. The overwhelming conclusion from the current record is that the Company has designed a program to serve very large private and institutional customers. These large customers are described as anchor customers that provide the financial foundation for the program, add stability to the program, and reduce overall program administrative costs.

Q. What do you think of anchor tenant justification for the program's heavy focus on large commercial and industrial customers?

A. I find it dubious at best, and very misleading. In large-scale retail development, in gas pipeline development, and in many other kinds of consortium development activities, anchor customers are used. These customers make early large commitments to project participation that make it possible to attract additional participants and round out the project. A Macy's or Neiman Marcus in a big suburban mall is the classic example of an anchor tenant, and when they commit to a lease, that commitment can help secure project financing for the entire mall and attract dozens of small businesses that open stores and kiosks in the same mall. The Company proposal is like forcing the community to subsidize a Wal-Mart based on the argument that it will also allow a small hotdog stand to set up business in the parking lot. With this program, the "anchor" customers were recruited with subsidies and the Company now seeks the Commission's approval to require other community citizens who will never be able to participate in the program to pay those subsidies. Although there is no evidence that these subsidies are required, the Company portrays this mandatory subsidization by non-participants as a feature of the program, not a bug.[13] The anchor tenant analogy fails.

Q. If there is no evidence that the subsidy structure in the program is required in order to engage large customers or that the program is based on an anchor tenant model that secures large customer participation in order to attract smaller customers into the mix, what rationale explains the Company's program design?

A. Having found no real evidence that the program design was necessary to support cost-effectiveness or subscription, I am left with the rationale offered by FPL in the model that the Company seeks to emulate. That is, that subsidized inducements to these large customers are intended to dissuade those customers from becoming self-generators and growing the competitive market for solar development in Florida.[14]

Q. Is that an acceptable rationale for structuring a program to require non-participants to subsidize wealthy and profitable businesses' participation in a voluntary program?

A. No. And worse, it is anti-competitive. It will frustrate and inhibit, rather than support, the development of renewable energy markets in Florida.

Q. Does any rate making principle support the Company's approach in the proposed program?

A. No. The closest example that I can conceive of is inverse elasticity pricing, or Ramsey-Boiteux pricing, which argues for assignment of costs greater than marginal costs onto customers with low elasticity coefficients in order to keep customers from leaving the system. But even in that generally disfavored theory of pricing, large customers with high elasticity are at least priced at the marginal cost of electricity service. In this case, the Company wants to price solar program subscriptions at below cost for those customers. This violates traditional cost of service rate making in a most fundamental way.

Q. Doesn't the program include carve-outs for customers that are not the largest commercial and industrial customers?

A. Yes. The distribution of participation opportunities, however, is hardly equitable or reasonable. As proposed,[15] of the 749 MW of solar generation planned, 65% (486.85 MW) of the program is reserved for large corporate customers and institutions, but less than 39% of the Company's sales go to *all* commercial and industrial customers—including the small businesses Duke has excluded from the 65% program allotment.[16] In fact, 53% of the Company's sales serve residential customers,[17] but only 25% (187.25 MW) of the program is reserved for them and the small business customers they must share that opportunity with. Local governments are allocated 10% (74.9 MW) of the program. The Company assumes that residential customers will subscribe to half of the 25% allocated to residential and small commercial customers and has allocated 27.7% (26 MW) of that half to low-income customers.

The Company uses the 27.7% number because this is the share of residential customers that it asserts are eligible for low-income energy efficiency programs.[18] This means that less than 3.5% of the total program is allocated to the low-income customers who actually represent roughly 15% of Duke's total electric sales.[19]

Q. Isn't the program good for the small customers that do get to participate?

A. Yes. The fact that residential, small business, government, and low-income customers will get a small chance to access the benefits of renewable energy is a good thing. But given that the Company believes the solar energy projects will generate benefits net of costs anyway, it is not at all clear why this program is required.

Q. What do you mean?

A. Large customers can access renewable energy without subsidies and with savings through mechanisms like PPA contracts with non-utility providers. Customers can aggregate their demand through true community solar projects that don't require subsidies from non-participant customers. The utility can pursue the most cost-effective resources—solar and efficiency—with better site plans and resource planning in general. There is no evidence that the general body of ratepayers must subsidize any customer's desire to get the benefits of solar energy today.

Q. The Company states that the low-income carve out is not a subsidy to low-income customers.[20] Do you agree?

A. No. While the Company witness chose his words quite cleverly, it appears that while low-income customers that get a chance to participate in the program will not be subsidized by other customers within the program, subsidies will still flow from all non-participant customers to the program, including the 99% of low-income customers who will not be able to participate.[21] All this means is that in creating the low-income carve out, the credit and fee structure was modified to create early year benefits at the cost of later year benefits. The result is that the subsidies flowing to large private commercial, industrial, and institutional customers from the general body of rate payers will not be reduced in order to support low-income participation in the program. This is the very antithesis of "community." I find this approach cynical at best. In the competitive markets I am familiar with, community solar developers find innovative and just ways to engage all program participants in the economics of low-income customer participation.

Q. Is the program open to all low-income customers?

A. No. The set-aside is limited, and low-income customers must be participants in some kind of government subsidy program in order to participate in the Company's program.

Q. Is the universe of low-income customers the same as the universe of low-income customers participating in a government subsidy program?

A. No. The program design rations participation only to low-income customers who receive other government benefits. This is a relatively good thing because presumably, these are the low-income customers most in need of a break on their high electric bills. But it is hardly an evidence-based justification for such rationing.

Q. The Company witness testimony includes the question "Will low income customers ever see their bill increase as a result of program participation?"[22] and the answer, an unqualified "No." Do you agree with this characterization of the proposal?

A. Again, the response is clever but not complete. The relatively few low-income customers that get a chance to become participants will get a fixed subscription rate for the life of the program.[23] They will also receive a fixed bill credit rate which is set higher than the subscription rate, also for the life of the program. There are two additional points that are necessary to provide a complete answer, and which reveal the unfairness in the program proposal. First, while a fixed subscription rate is reasonable for renewable resources with little or no marginal energy costs, the program provides no opportunity for low-income customers to participate in the upside benefits that could accrue over time. At least for non-low-income customers the Company includes its 1.5% automatic upward adjustment feature. Second, the overwhelming majority of low-income customers that do not get a chance to participate in the program will have to help pay for the subsidies built into the program. In the early years of the program, these costs will be quite high, as I explain later in this testimony.

Q. How are benefits for participants secured?

A. The program is designed with flat rate escalators of 1.5% per year in credits regardless of costs or benefits.[24] Non-participants are the guarantors for this commitment.

Q. What does that mean for participants?

A. The program was designed to provide participants with a seven-year payback,[25] which even outperforms traditional net metering in the vast majority of states. As such, it also constitutes an abuse of market power—through cross-subsidies—to secure an economic advantage over net metered self-generation as well. Non-participants remain the guarantors of this payback rate for customers and for participant credits for 30 years.

Q. Are the new solar plants expected to create benefits for non-participant customers, as asserted by Company witness Huber?[26]

A. The answer, of course, depends on "compared to what?" The Company estimates that non-participant customers will benefit—have reduced costs for electric service—

compared to the Company's business-as-usual plans. The Company estimates that those benefits will occur even with the requirement that non-participants subsidize participant customer benefits. The Company estimates that the benefits to the participant customers will be greater, per unit of energy, than the benefits to non-participant customers. The savings to non-participants would be greater if they were not required to subsidize participant customers.

Q. How much are program administrative costs estimated to be, and who does the Company propose should pay them?

A. There is some confusion in the petition regarding administrative costs. Company witness Huber states that the costs will be $16.5 million over the life of the program.[27] However, Company witness Foster's exhibit TGF-1 says they will be $16.8 million. Either way, the Company proposes that non-participating customers also be required to subsidize the administrative costs of the program on behalf of participants and pay for these costs as a base rate recoverable cost.[28] This is unfair and unreasonable.

Q. Many of the benefits of the program in the future are dependent on reduced operation of fossil fuel plants that generate fuel costs and pollution control costs. Does the Company commit to backing out and retiring such generation?

A. No. The Company won't even evaluate solar plus storage in lieu of any projected gas combustion turbine until 2023[29]—and there is no commitment to defer, avoid, or retire plants as a result of the program. For the environment and for captive non-participant customers, the CEC Program is a "pig in a poke"—a mere promise of unspecified value.

Q. The stipulation includes a commitment to competitive solicitations for work to be performed in constructing the planned solar units. Isn't this meaningful?

A. No. A competitive solicitation is the least good thing the Company could do. It makes no commitments on local hiring, local services procurement, tax payments or payments in lieu of taxes, local siting considerations, environmental justice considerations, or local community engagement of any kind. The stipulation provides only that the Company "plans" to work with third parties on a wide range of issues.[30]

Q. Are the costs that non-participant customer may be required to pay set?

A. No, program costs are not even finalized. Within two years, the Company could announce plans to add more cost to the project for storage technology to be deployed for and on behalf of large customers.[31]

IV. PROGRAM TREATMENT OF RENEWABLE ENERGY CERTIFICATES

Q. What is the default method of handling the RECs created as a result of solar energy generation?

A. The Company proposes as a default to retire all RECs on behalf of participants and not on behalf of non-participating customers.[32] The Company also plans to register all RECs with the North American Renewables Registry.[33] Both of these steps are reasonable and appropriate to ensure that participants maintain integrity in the claims they will make about their subscriptions.

Q. What if a participant wants to take the RECs themselves?

A. If the customer participant is a large customer or a local government, the Company will allow that the customer to have their RECs transferred to an account in their name.[34] RECs associated with subscriptions will be retired on behalf of all participants. Large customers and local governments may request informal attestation of their subscription from DEF at no cost.

Q. Is this significant?

A. Yes. The registration of RECs by the Company is important to ensure against double-counting. When a REC is assigned to a particular customer, no other customer can make any of the claims associated with the creation of that REC. That also means that the electricity mix for non-participating customers is not, by definition, getting any cleaner or more renewable. The environmental benefits of renewable energy generation can be assigned to participants, to the Company, or the compliance with a regulatory program—but only to one of these at a time. All that non-participating customers receive under the Company proposal is "null energy" because all the environmental attributes and claims belong exclusively to the participant customers. Furthermore, if the participant customer elects to take the RECs into their own account, they can do with them what they want—including using them to offset emissions in another state or even another country. As a result, non-participant solar customers could very well be subsidizing the continued operation of coal plants operated by another utility but serving an affiliate of a multi-state or multi-national corporate customer. For this outcome, the Company would require non-participating customers to pay a supporting subsidy to such customers.

Q. What happens if the program is undersubscribed and RECs are not all assigned to participating customers?

A. In that event, the Company plans to hold the unsubscribed RECs.[35] So even if the RECs are not subscribed and non-participant customers must pay the costs for the RECs and the unsubscribed capacity, they will not get the environmental benefits of those RECs.

V. COST EFFECTIVENESS

Q. Does the Company need to build solar plants with subsidies from non-participating customers in order to design and offer a cost-effective community solar program?

A. No. As Company witness Stout testifies, the Company has considerable experience with solar development. All that is necessary to offer a cost-effective community solar program without subsidies is to reduce the subsidies to zero and let program participants participate in the upside savings of solar without a golden safety net held by non-participant customers. I address the Company's cost-effectiveness analysis to a greater extent later in this testimony.

Q. The Company states that non-participants will also receive many indirect benefits such as unspecified numbers of jobs, economic benefits where the plants are located, and unspecified tax benefits in some locations. The plants might even attract other clean energy business, asserts the Company. Is this, as the Company states, "an important byproduct" of the program?[36]

A. Yes. But those benefits can be obtained by changing the resource mix for all customers and without requiring non-participating customers to subsidize a very few, very large private industries, businesses, and institutions.

Q. Do you have any other concerns about the Company's cost-effectiveness evaluation?

A. Yes. As of the filing of my testimony, the record in this proceeding is completely undeveloped. There has been no discovery or opportunity to probe the assumptions and methods used by the Company in its proposal.

Q. From the filed petition and stipulation materials, what do you understand about the cost-effectiveness evaluation put forth by the Company?

A. The Company's cost-effectiveness evaluation is driven by a number of assumptions about solar generation costs and the system costs or planned system costs that the solar energy could avoid. Fuel price savings benefits comprise $827 million of the assumed savings, the largest single component of savings assumed by the Company. Other major savings are based on assumptions about avoided carbon emissions compliance costs ($434 million) and avoided capital costs for an avoided methane gas combustion turbine plant ($353 million). The Company evaluates fuel savings benefits and cost effectiveness under low, mid, and high fuel price scenarios.[37] I lack the data and resources to evaluate whether these scenarios are reasonable. However, the use of such sensitivities is generally a reasonable approach. In this case, the Company assumed that the low fuel price would be 15% lower than the base case assumption, and that the high fuel price would be 35% higher. Since cost-effectiveness improves with higher price assumptions, this lack of symmetry raises questions about the integrity of these estimates that should be evaluated through a better-developed record. Notwithstanding this issue, even with the Company's assumptions total savings can disappear under a low-price scenario before adding in estimated carbon benefits.[38]

Q. How does the Company estimate carbon benefits?

A. The Company appears to rely on an assumed price of carbon regulation compliance, most likely denominated in dollars per ton of CO2-equivalent. The Company's assumptions do not appear to include carbon price sensitivities. The carbon emissions values in the Company's analysis appear to be based on a single carbon price, with changes in savings levels varying only as fuel prices vary. The difference in the carbon cost savings for the low fuel price sensitivity is a statistically tiny 1.1% while the savings for the high fuel sensitivity is projected at 2.7%. The ratio of these two numbers is very close the same as the ratio for the fuel cost sensitivities.

Q. Company witness Borsch testifies that the program will be cost-effective.[39] Does that establish the program as fair, just, reasonable, and without due preference?

A. No. Cost effectiveness, as used by the Company in this case, means that the sum of benefits as projected by the Company exceeds the projected costs. Solar is cost effective today in virtually every place on the globe. The key criteria in determining compliance with Florida law is how the costs and benefits are allocated under the program. As explained in this testimony, in that regard, the program fails. The program requires non-participant customers to subsidize privatized benefits for participant customer despite the resource being cost effective.

Q. Are the purported costs and benefits for non-participating customers known or estimated?

A. For the reasons stated below, the benefits that are supposed to make this program a good deal for captive non-participating customers are assumptions. These assumptions are subject to fundamental uncertainty, unlike the Company's commitment to escalate participant credits by 1.5% each year after the first three years of the program.

Q. What are the key assumptions and how are they uncertain?

A. The first assumption is that load will match Company forecasts developed for the Company's more recent Ten-Year Site Plan. If load is substantially lower than anticipated, the impact of costs allocated to captive non-participant customers will be greater. In addition, the relative value of the new solar facilities would also be lower, all other things being equal, under conditions of very low load growth because of the high amount of fossil generation that would be still in the Company's generating mix.

The Company's cost effectiveness evaluation is also dependent on the quality of its fuel price forecasts, because a great deal of the value of the program is said to derive from avoided fuel costs. So, if fuel costs are substantially lower—say because more progressive and climate-responsible utilities close their fossil generating plants and weaken fuel demand—then the avoided fuel benefits of the program for non-participants will also be lower.

The Company also depends on its CO2 allowance price forecast in deriving a substantial portion of the purported benefits to non-participating customers. As with fuel prices, rapid decarbonization across broad sectors of the economy, such as a major shift away from fossil fuel generation by utility companies, could substantially reduce prevailing carbon emissions prices due to weakened demand. There is at least a reasonable chance that the Company's carbon emissions price forecast is too high, and that the benefits to non-participating customers will not materialize as expected.

Q. Are there any other issues associated with the carbon emissions forecast?

A. Yes. As previously discussed, the Company proposes to assign all RECs to program participants. Large corporate and government customers are free to do what they will with those RECs, including selling them in the marketplace. Since both the customer and the Company cannot both claim the carbon emissions reduction credits, the Company's program design sets up, at best, a moral hazard, but more significantly, a potential violation of federal law.[40]

Q. Please explain.

A. What is left after RECs have been transferred to a participant customer is "null energy" that cannot support a claim that the energy or the facility is still a renewable energy generator. If the Company, as a for-profit entity, makes a marketing claim that it is operating a renewable energy facility after it has conveyed the RECs to another party, but lacks the associated renewable energy attributes embodied in the REC, then the claim is deceptive under federal law.[41]

Q. Are there other major contributing assumptions in the Company's cost-effectiveness estimation?

A. Yes. The Company projects that the 750 MW of new solar generation will allow the Company to reduce its planned new gas plant construction amount by 3.7%, or 225.8 MW out of the planned 6,167 MW it plans to add through the year 2046. This assumption generates additional savings of $353 million. It is not clear from the Company's filing how much of the avoided fuel and other variable cost savings are directly associated with the assumption about this combustion turbine plant. However, this savings assumption is also sensitive to the accuracy of the Company's sales forecast. If electricity sales increase dramatically, say through electrification of transportation or thermal loads, the plant may not be in fact avoidable. Of course, under such a scenario the increased sales would help spread the added costs of the additional plant, but a rate impact analysis would be required to assess those impacts.

Q. What is the quantitative significance of these assumptions within the Company's cost-effectiveness evaluation?

A. I reconstituted and extended the table in Exhibit BMHB-3 provided by Company witness Borsch in order to gauge the extent to which these key assumptions drive the cost-effectiveness conclusions reached by the Company. As shown in the table below, about half of the anticipated savings is in the form of fuel savings (49%), and about a fourth of the savings is associated with avoided carbon emissions compliance costs (26%) and avoided gas plant capital costs (21%), each. Other unspecified avoided variable costs make up the balance of the estimated savings.

Table KRR-1: Cost Effectiveness (CPVRR) Analysis Results[42]

CPVRR Through Year 2053 2020$M	Clean Energy Connection Solar minus No CEC Solar		
	Low Fuel	Mid Fuel	High Fuel
Proposed Solar Plants	$ 1,140	$ 1,140	$ 1,140
Conventional Generation	$ (353)	$ (353)	$ (353)
Fuel Cost	$ (702)	$ (827)	$ (1,113)
Variable Costs	$ (67)	$ (65)	$ (64)
Environmental Costs without Carbon	$ -	$ (1)	$ (3)
Program Administrative Costs	$ 7	$ 7	$ 7
Total Solar Savings before CO2 Costs	**$ 25**	**$ (99)**	**$ (386)**
CO2 Cost	$ (429)	$ (434)	$ (446)
Solar Project CPVRR (Savings)	**$ (404)**	**$ (533)**	**$ (832)**
Benefits	$ (1,551)	$ (1,679)	$ (1,976)
Costs	$ 1,147	$ 1,147	$ 1,147
Fuel as % of Benefits	45%	49%	56%
Carbon as % of Benefits	28%	26%	23%
Avoided Combustion Turbine as % of Benefits	23%	21%	18%
Total	**96%**	**96%**	**97%**

Q. What does this mean as a value proposition for participating customers?

A. Nothing, really. The base program credit rate will be set based on the first three years of realized savings,[43] when the precision of the savings estimates should be better than for later years. But after the rate is set, credit value is guaranteed to increase by 1.5% a year,[44] meaning that participating customers bear no risk relating to the key assumptions underlying the cost-effectiveness evaluation.

Q. What does the cost-effectiveness analysis mean as a value proposition for non-participating customers?

A. Under the Company's proposal, non-participating customer bear effectively 100% of the risk of the program performing as expected.

Q. In your experience, is it common to have uncertainty allocated in such a fashion?

A. No. In my thirty years in electricity regulation and rate making practice, the overwhelming majority of voluntary programs are designed to protect non-participating customers from risks associated with key uncertainties.

Q. What is the likelihood that the savings assumptions will not be borne out as expected?

A. While I cannot assign an exact probability, as I stated, there are reasonable scenarios under which the assumptions will turn out to be wrong, and even if they are not completely wrong, reality may differ sufficiently to eliminate all or a substantial portion of the savings. If the program ends up costing more than it saves, the Company has designed it so that participants are protected while non-participants bear that risk as well. In my view, this approach is not fair, just, or reasonable, and it certainly reflects an undue preference.

Q. Company witness Foster sets out the financial modeling and results that shows the stream of benefits and costs over the proposed program life. What does the Mr. Foster's testimony indicate about the stream of costs and benefits and the relative impacts on participating and non-participating customers?

A. The results of the Company's program design show that the timing and shares of benefits and costs is not fair to non-participants and grants undue preference to program participants. As shown in Table KRR-2,[45] over the life of the program, non-participants realize about $2.9 billion in benefits, though without the avoided carbon compliance benefits, the net benefits are only about $977 million. If system benefits are excluded, the program results in a net cost to non-participating customers of about $211 million. Over the program life, participating customers are expected to come out ahead with benefits exceeding costs by $291 million. However, during the years 2021 through 2028, the story is quite different. In those years, non-participating customers must pay an added $336 million in rates, and if emissions benefits or system benefits do not materialize, the cost is $416 million. During those same initial years, participants will actually be ahead, with participant credits ($438 million) exceeding fees ($435 million) by $3 million dollars.

Q. Is there a relatively easy fix to this unfair, unjust, and unreasonable program design that grants undue preference to participant customers?

A. Yes. As shown in Table KRR-2, the simple fix—which addresses the rate impacts problems only—would be to limit the guarantee for participant credits to an amount no greater than the total amount of credits paid. If actual market conditions result in greater credit value than anticipated, participants should be able to participate in that "upside" benefit along with non-participant customers.

Q. What other corrections must be made to ensure the program is fair, just, reasonable, and does not provide undue preference?

A. The Company should redesign the program so that allocation shares of total capacity match the relative shares of sales revenues from the various customer classes. The Company should retain all RECs for the benefit of non-participating customers but allow participant customers to purchase those RECs for an additional participant fee based on fair market value. Finally, the Company should be required to serve as a platform and provide billing services at reasonable costs to non-utility competitive community solar program developers, including those sponsored by government bodies such as municipalities.

Table KRR-2: Early Years and Life of Program Impacts on Non-Participants and Participants, with Revenue Neutral Scenario that Caps Guaranteed Credits

	2021-2028 Nominal Cost (Benefits)	Life of Program - as Proposed	"Revenue-Neutral" - Credits Capped at Fees-Paid Level
Non-Participants	$ 336	$ (2,862)	$ (3,153)
Without emissions	$ 375	$ (977)	$ (1,269)
Without system benefits or emissions	$ 416	$ 211	$ (81)
Participant Fees	$ 435	$ (2,251)	$ (2,251)
Participant Credits	$ (438)	$ 2,542	$ 2,251
Net Participant Impacts	$ (3)	$ 291	$ -

VI. RECOMMENDATIONS

Q. Based on your review of the Company's proposal, what do you recommend?

A. The Commission should disapprove the Company's application and proposed stipulation on the grounds that there is insufficient evidence to support a finding that the CEC program will be in the public interest. Further, the Commission should disapprove the application and proposed stipulation because as proposed it would result in rates and charges that are unfair, unjust, unreasonable, and would grant undue preference to participating customers. Finally, the Commission should grant the Company leave to correct the deficiencies and injustice in its program design and submit a revised program that addresses the issues raised in this testimony.

Q. What are some of those redesign options?

A. The first and most obvious solution would be to abandon the program entirely. As described, the program is not a "community solar program" in any true sense of the term. Given the confidence that the Company has in the cost-effectiveness of the solar resource option, it should build the proposed solar plants as assets to serve and save money for all customers. For customers that seek higher levels of renewable energy supply, the Company should consider a revenue-neutral green pricing program and/or the creation of an option for all customers to participate in PPA arrangements with competitive renewable energy resource providers. The Company should also work with local municipalities and counties to develop a Community Choice Aggregation program that would allow those bodies to procure renewable energy supply through PPA arrangements with competitive solar developers on a non-discriminatory basis. The Company should also leverage its market position to develop and offer true small-scale community solar projects that focus on maximizing service to low-income customers and customers living in environmentally and economically disadvantaged communities. By actively engaging with community representatives, the Company can identify innovative and cost-effective ways to serve these customers.

Q. Does that conclude your testimony?

A. Yes.

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[1] Amory B. Lovins, et al., Small is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size (2002). Witness Rábago was a co-author of this book.
[2] Fla. Stat. § 366.92 (2019).
[3] Fla. Stat. § 366.06 (2019).
[4] Commission Order No. PSC-2020-0084-S-EI, Docket No. 20190061-EI, *In re: Petition for Approval of FPL SolarTogether Program and Tariff, by Florida Power & Light Company* (hereinafter "SolarTogether Docket") (Fla. P.S.C. Mar. 20, 2020) at 5, *available at* http://www.psc.state.fl.us/library/filings/2020/01555-2020/01555-2020.pdf.
[5] FPL's highest projected impact on the general body of customers is $125.1 million in 2021. Ex.36, SolarTogether Docket, (Fla. P.S.C. Jan. 15, 2020), attached as Ex. KRR-3. In 2021, FPL expects ultimate sales of 111,934 GWh. Schedule 2.2, FPL Ten Year Site Plan (2020), http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/TenYearSitePlans/2020/Florida%20Power%20and%20Light%20and%20Gulf%20Power%20Company.pdf, excerpt attached as Ex. KRR-4. This works out to (in perfect ratemaking) a cost of an additional $0.0011 per kWh. For the average residential customer with 13,094 kWh of use in 2021, *id.*, this works out to an average impact of an extra $14.63 in 2021. Duke's highest projected impact on the general body of customers is $84.2 million in 2024. Ex. TGF-1. Duke expects ultimate sales of 40,704 GWh that year. Schedule 2.2.1, Duke Ten Year Site Plan, *available at* http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/TenYearSitePlans/2020/Duke%20Energy%20Florida.pdf, attached as Ex. KRR-5. This works out to (in perfect ratemaking) a cost of an additional $0.0021 per kWh. For the average residential customer with 12,194 of use in 2024, *id.* at Schedule 2.1.1, this works out to an average impact of an extra $25.22 in 2024.
[6] As explained in this testimony, null energy is the term used to characterize renewable energy that has been stripped of its characteristic RECs, and as a result, is no longer renewable energy or anything else as regards such attributes.
[7] Interstate Renewable Energy Council, Model Rules for Shared Renewable Energy Programs (Jun. 2013) at 3-4, https://irecusa.org/publications/model-rules-for-shared-renewable-energy-programs/.
[8] Company witness Huber at 16, lines 9-10.
[9] *Id.* at 4, lines 15-16.
[10] Staff Recommendation, Docket No. 20190061-EI, SolarTogether Docket (Fla P.S.C. Feb. 21, 2020), *available at* http://www.psc.state.fl.us/library/filings/2020/01010-2020/01010-2020.pdf.
[11] Huber at 5, lines 6-9.
[12] *Id.* at 8, Table A, and accompanying testimony.
[13] *See id.* at 9, lines 9-12.
[14] Hearing Transcript Volume 3, p. 688-89 (Witness Valle), Docket No. 20190061-EI, SolarTogether docket (Fla. P.S.C. Jan. 15, 2020), *available at* http://www.psc.state.fl.us/library/filings/2020/00430-2020/00430-2020.pdf.
[15] PSC Docket No. 20200176-EI, *In re: Duke Energy Florida, LLC's Petition for a Limited Proceeding to Approve Clean Energy Connection Program and Tariff and Stipulation*, Ex. A, Stipulation at 2.
[16] Company Ten Year Site Plan, Schedule 2.2,1, *available at* http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/TenYearSitePlans/2020/Duke%20Energy%20Florida.pdf. (15,161 GWh in 2019 sold to commercial and industrial customers out of 39,187 GWh of sales).
[17] *Id.* (20,775 GWh in 2019 sold to residential customers out of 39,187 GWh of sales).
[18] Huber at 13, lines 10-13.
[19] 27.7% of 53% is about 15%.
[20] Huber at 13, lines 21-23.
[21] The solar from this proposal is expected to generate 1,837,147 MWh per year. Stout at 12. This would equate to 63,773 MWh generated as part of the low-income program (3.47% of panels dedicated to the low-income program, multiplied by 1,837,147). Using the year 2024 again as an example, when 21,315 GWh of sales are expected to go to residential customers, Schedule 2.1.1, Duke Ten Year Site Plan, and 27.7% of that to low-income customers, equates to total sales of 5,904,255 MWh to low-income customers. 63,773 is 1.1% of sales to low-income customers (63,773 divided by 5,904,255).

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[22] Huber at 15, lines 12-14.
[23] Company's proposed tariff sheet 6.407, page 3 of 3.
[24] Huber at 16, lines 9-11.
[25] *Id.* at 17, lines 1-8.
[26] *Id.* at 18-19, section VI.
[27] *Id.* at 24, lines 1-2.
[28] Company's Petition at 5, ¶11.
[29] Stipulation at 8, ¶. 9.
[30] *Id.*, ¶8.
[31] *Id.*, ¶9.
[32] *See* Huber at 19, line 20.
[33] *Id.* at 20, line 5.
[34] *Id.*, lines 18-19.
[35] *Id.* at 21, lines 9-10.
[36] *Id.* at 19, lines 7-14.
[37] Borsch Ex. BMHB-3 at 1.
[38] *Id.*
[39] Borsch at 5, lines 6-9.
[40] *See* 16 CFR §260.15 (providing Federal Trade Commission guidance relating to environmental claims under the Deceptive Trade Practices Act).
[41] *See id.*
[42] Borsch Ex.. BMHB-3 at 1.
[43] Huber at 16, lines 8-9.
[44] *Id.*, lines 9-10
[45] Company Ex.. TGF-1.

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Employment

RÁBAGO ENERGY LLC

Principal: July 2012—Present.

- Chairman of the Board, Center for Resource Solutions (1997-present).
- Director, Solar United Neighbors (2018-present).

PACE ENERGY AND CLIMATE CENTER, PACE UNIVERSITY ELISABETH HAUB SCHOOL OF LAW

Senior Policy Advisor: September 2019—Present. Part-time advisor and staff member.

Executive Director: May 2014—August 2019.

- Former Director, Alliance for Clean Energy – New York (2018-2019).
- Former Director, Interstate Renewable Energy Council (IREC) (2012-2018).
- Former Co-Director and Principal Investigator, Northeast Solar Energy Market Coalition (2015-2017).

AUSTIN ENERGY – THE CITY OF AUSTIN, TEXAS

Vice President, Distributed Energy Services: April 2009—June 2012.

- Director, Renewable Energy Markets Association.
- Membership on Pedernales Electric Cooperative Member Advisory Board.

THE AES CORPORATION

Director, Government & Regulatory Affairs: June 2006—December 2008.

- Managing Director, Standards and Practices, for Greenhouse Gas Services, LLC.
- Government and regulatory affairs manager for AES Wind Generation.

JICARILLA APACHE NATION UTILITY AUTHORITY

Director: 1998—2008.

HOUSTON ADVANCED RESEARCH CENTER

Group Director, Energy and Buildings Solutions: December 2003—May 2006.

- President, Texas Renewable Energy Industries Association.
- Director, Southwest Biofuels Initiative.
- Member, Committee to Study the Environmental Impacts of Windpower.
- Advisory Board Member, Environmental & Energy Law & Policy Journal, University of Houston Law Center.

Karl R. Rábago

CARGILL DOW LLC (NOW NATUREWORKS, LLC)

Sustainability Alliances Leader: April 2002—December 2003.

ROCKY MOUNTAIN INSTITUTE

Managing Director/Principal: October 1999–April 2002.

- President of the Board, Texas Ratepayers Organization to Save Energy.
- Co-Founder and Chair of the Advisory Board, Renewable Energy Policy Project-Center for Renewable Energy and Sustainable Technology.

CH2M HILL

Vice President, Energy, Environment and Systems Group: July 1998–August 1999.

PLANERGY

Vice President, New Energy Markets: January 1998–July 1998.

ENVIRONMENTAL DEFENSE FUND

Energy Program Manager: March 1996–January 1998.

UNITED STATES DEPARTMENT OF ENERGY

Deputy Assistant Secretary, Utility Technologies: January 1995–March 1996.

STATE OF TEXAS

Commissioner, Public Utility Commission of Texas. May 1992–December 1994.

- Co-chair and organizer of the Texas Sustainable Energy Development Council.
- Vice-Chair of the National Association of Regulatory Utility Commissioners (NARUC) Committee on Energy Conservation.
- Member and co-creator of the Photovoltaic Collaborative Market Project to Accelerate Commercial Technology (PV-COMPACT).

LAW TEACHING

Professor for a Designated Service: Pace University Elisabeth Haub School of Law, 2014-2019.

Associate Professor of Law: University of Houston Law Center, 1990–1992.

Assistant Professor: United States Military Academy, West Point, New York, 1988–1990.

LITIGATION

Trial Defense Attorney and Prosecutor, U.S. Army Judge Advocate General's Corps, Fort Polk, Louisiana, January 1985–July 1987.

NON-LEGAL MILITARY SERVICE

Armored Cavalry Officer, 2d Squadron 9th Armored Cavalry, Fort Stewart, Georgia, May 1978–August 1981.

- Logistics Staff Officer (S-4).
- Support Platoon Leader.
- Platoon Leader, A Troop.

Graduate of Airborne and Ranger Schools.

Formal Education

LL.M., Environmental Law, Pace University School of Law, 1990.

LL.M., Military Law, U.S. Army Judge Advocate General's School, 1988.

J.D. with Honors, University of Texas School of Law, 1984.

B.B.A., Business Management, Texas A&M University, 1977.

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Selected Publications

Distributed Generation Law, contributing author, American Bar Association Environment, Energy, and Resources Section (August 2020)

National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources, contributing author, National Energy Screening Project (August 2020)

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The Regulatory Environment for Utility Energy Efficiency Programs, Proceedings of the Meeting on the Efficient Use of Electric Energy, Inter-American Development Bank (May 1993)

An Alternative Framework for Low-Income Electric Ratepayer Services, with Danielle Jaussaud and Stephen Benenson, Proceedings of the Fourth National Conference on Integrated Resource Planning, National Association of Regulatory Utility Commissioners (September 1992)

What Comes Out Must Go In: The Federal Non-Regulation of Cooling Water Intakes Under Section 316 of the Clean Water Act, Harvard Environmental Law Review, Vol. 16, p. 429 (1992)

Least Cost Electricity for Texas, State Bar of Texas Environmental Law Journal, Vol. 22, p. 93 (1992)

Environmental Costs of Electricity, Pace University School of Law, Contributor–Impingement and Entrainment Impacts, Oceana Publications, Inc. (1990)

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Date	Proceeding	Case/Docket #	On Behalf Of:
Dec. 21, 2012	VA Electric & Power Special Solar Power Tariff	Virginia SCC Case # PUE-2012-00064	Southern Environmental Law Center
May 10, 2013	Georgia Power Company 2013 IRP	Georgia PSC Docket # 36498	Georgia Solar Energy Industries Association
Jun. 23, 2013	Louisiana Public Service Commission Re-examination of Net Metering Rules	Louisiana PSC Docket # R-31417	Gulf States Solar Energy Industries Association
Aug. 29, 2013	DTE (Detroit Edison) 2013 Renewable Energy Plan Review (Michigan)	Michigan PUC Case # U-17302	Environmental Law and Policy Center
Sep. 5, 2013	CE (Consumers Energy) 2013 Renewable Energy Plan Review (Michigan)	Michigan PUC Case # U-17301	Environmental Law and Policy Center
Sep. 27, 2013	North Carolina Utilities Commission 2012 Avoided Cost Case	North Carolina Utilities Commission Docket # E-100, Sub. 136	North Carolina Sustainable Energy Association
Oct. 18, 2013	Georgia Power Company 2013 Rate Case	Georgia PSC Docket # 36989	Georgia Solar Energy Industries Association
Nov. 4, 2013	PEPCO Rate Case (District of Columbia)	District of Columbia PSC Formal Case # 1103	Grid 2.0 Working Group & Sierra Club of Washington, D.C.
Apr. 24, 2014	Dominion Virginia Electric Power 2013 IRP	Virginia SCC Case # PUE-2013-00088	Environmental Respondents
May 7, 2014	Arizona Corporation Commission Investigation on the Value and Cost of Distributed Generation	Arizona Corporation Commission Docket # E-00000J-14-0023	Rábago Energy LLC (invited presentation and workshop participation)
Jul. 10, 2014	North Carolina Utilities Commission 2014 Avoided Cost Case	North Carolina Utilities Commission Docket # E-100, Sub. 140	Southern Alliance for Clean Energy
Jul. 23, 2014	Florida Energy Efficiency and Conservation Act, Goal Setting – FPL, Duke, TECO, Gulf	Florida PSC Docket # 130199-EI, 130200-EI, 130201-EI, 130202-EI	Southern Alliance for Clean Energy
Sep. 19, 2014	Ameren Missouri's Application for Authorization to Suspend Payment of Solar Rebates	Missouri PSC File No. ET-2014-0350, Tariff # YE-2014-0494	Missouri Solar Energy Industries Association
Aug. 6, 2014	Appalachian Power Company 2014 Biennial Rate Review	Virginia SCC Case # PUE-2014-00026	Southern Environmental Law Center (Environmental Respondents)

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Aug. 13, 2014	Wisconsin Public Service Corp. 2014 Rate Application	Wisconsin PSC Docket # 6690-UR-123	RENEW Wisconsin and Environmental Law & Policy Center
Aug. 28, 2014	WE Energies 2014 Rate Application	Wisconsin PSC Docket # 05-UR-107	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 18, 2014	Madison Gas & Electric Company 2014 Rate Application	Wisconsin PSC Docket # 3720-UR-120	RENEW Wisconsin and Environmental Law & Policy Center
Sep. 29, 2014	SOLAR, LLC v. Missouri Public Service Commission	Missouri District Court Case # 14AC-CC00316	SOLAR, LLC
Jan. 28, 2016 (date of CPUC order)	Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs, etc.	California PUC Rulemaking 14-07-002	The Utility Reform Network (TURN)
Mar. 20, 2015	Orange and Rockland Utilities 2015 Rate Application	New York PSC Case # 14-E-0493	Pace Energy and Climate Center
May 22, 2015	DTE Electric Company Rate Application	Michigan PSC Case # U-17767	Michigan Environmental Council, NRDC, Sierra Club, and ELPC
Jul. 20, 2015	Hawaiian Electric Company and NextEra Application for Change of Control	Hawai'i PUC Docket # 2015-0022	Hawai'i Department of Business, Economic Development, and Tourism
Sep. 2, 2015	Wisc. PSCo Rate Application	Wisconsin PSC Case # 6690-UR-124	ELPC
Sep. 15, 2015	Dominion Virginia Electric Power 2015 IRP	Virginia SCC Case # PUE-2015-00035	Environmental Respondents
Sep. 16, 2015	NYSEG & RGE Rate Cases	New York PSC Cases 15-E-0283, -0285	Pace Energy and Climate Center
Oct. 14, 2015	Florida Power & Light Application for CCPN for Lake Okeechobee Plant	Florida PSC Case 150196-EI	Environmental Confederation of Southwest Florida
Oct. 27, 2015	Appalachian Power Company 2015 IRP	Virginia SCC Case # PUE-2015-00036	Environmental Respondents
Nov. 23, 2015	Narragansett Electric Power/National Grid Rate Design Application	Rhode Island PUC Docket No. 4568	Wind Energy Development, LLC
Dec. 8, 2015	State of West Virginia, et al., v. U.S. EPA, et al.	U.S. Court of Appeals for the District of Columbia Circuit Case No. 15-1363 and Consolidated Cases	Declaration in Support of Environmental and Public Health Intervenors in Support of Movant Respondent-Intervenors' Responses in Opposition to Motions for Stay

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Dec. 28, 2015	Ohio Power/AEP Affiliate PPA Application	PUC of Ohio Case No. 14-1693-EL-RDR	Environmental Law and Policy Center
Jan. 19, 2016	Ohio Edison Company, Cleveland Electric Illuminating Company, and Toledo Edison Company Application for Electric Security Plan (FirstEnergy Affiliate PPA)	PUC of Ohio Case No. 14-1297-EL-SSO	Environmental Law and Policy Center
Jan. 22, 2016	Northern Indiana Public Service Company (NIPSCO) Rate Case	Indiana Utility Regulatory Commission Cause No. 44688	Citizens Action Coalition and Environmental Law and Policy Center
Mar. 18, 2016	Northern Indiana Public Service Company (NIPSCO) Rate Case – Settlement Testimony	Indiana Utility Regulatory Commission Cause No. 44688	Joint Intervenors – Citizens Action Coalition and Environmental Law and Policy Center
Mar. 18, 2016	Comments on Pilot Rate Proposals by MidAmerican and Alliant	Iowa Utility Board NOI-2014-0001	Environmental Law and Policy Center
May 27, 2016	Consolidated Edison of New York Rate Case	New York PSC Case No. 16-E-0060	Pace Energy and Climate Center
June 21, 2016	Federal Trade Commission: Workshop on Competition and Consumer Protection Issues in Solar Energy	Invited workshop presentation	Pace Energy and Climate Center
Aug. 17, 2016	Dominion Virginia Electric Power 2016 IRP	Virginia SCC Case # PUE-2016-00049	Environmental Respondents
Sep. 13, 2016	Appalachian Power Company 2016 IRP	Virginia SCC Case # PUE-2016-00050	Environmental Respondents
Oct. 27, 2016	Consumers Energy PURPA Compliance Filing	Michigan PSC Case No. U-18090	Environmental Law & Policy Center, "Joint Intervenors"
Oct. 28, 2016	Delmarva, PEPCO (PHI) Utility Transformation Filing – Review of Filing & Utilities of the Future Whitepaper	Maryland PSC Case PC 44	Public Interest Advocates
Dec. 1, 2016	DTE Electric Company PURPA Compliance Filing	Michigan PSC Case No. U-18091	Environmental Law & Policy Center, "Joint Intervenors"
Dec. 16, 2016	Rebuttal of Unitil Testimony in Net Energy Metering Docket	New Hampshire Docket No. DE 16-576	New Hampshire Sustainable Energy Association ("NHSEA")
Jan. 13, 2017	Gulf Power Company Rate Case	Florida Docket No. 160186-EI	Earthjustice, Southern Alliance for Clean Energy, League of Women Voters-Florida

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Jan. 13, 2017	Alpena Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18089	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Indiana Michigan Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18092	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Northern States Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18093	Environmental Law & Policy Center, "Joint Intervenors"
Jan. 13, 2017	Upper Peninsula Power Company PURPA Compliance Filing	Michigan PSC Case No. U-18094	Environmental Law & Policy Center, "Joint Intervenors"
Mar. 10, 2017	Eversource Energy Grid Modernization Plan	Massachusetts DPU Case No. 15-122/15-123	Cape Light Compact
Apr. 27, 2017	Eversource Rate Case & Grid Modernization Investments	Massachusetts DPU Case No. 17-05	Cape Light Compact
May 2, 2017	AEP Ohio Power Electric Security Plan	PUC of Ohio Case No. 16-1852-EL-SSO	Environmental Law & Policy Center
Jun. 2, 2017	Vectren Energy TDSIC Plan	Indiana URC Cause No. 44910	Citizens Action Coalition & Valley Watch
Jul. 28, 2017	Vectren Energy 2016-2017 Energy Efficiency Plan	Indiana URC Cause No. 44645	Citizens Action Coalition
Jul. 28, 2017	Vectren Energy 2018-2020 Energy Efficiency Plan	Indiana URC Cause No. 44927	Citizens Action Coalition
Aug. 1, 2017	Interstate Power & Light (Alliant) 2017 Rate Application	Iowa Utilities Board Docket No. RPU-2017-0001	Environmental Law & Policy Center, Iowa Environmental Council, Natural Resources Defense Council, and Solar Energy Industries Assoc.
Aug. 11, 2017	Dominion Virginia Electric Power 2017 IRP	Virginia SCC Case # PUR-2017-00051	Environmental Respondents
Aug. 18, 2017	Appalachian Power Company 2017 IRP	Virginia SCC Case # PUR-2017-00045	Environmental Respondents
Aug. 23, 2017	Pennsylvania Solar Future Project	PA Dept. of Environmental Protection - Alternative Ratemaking Webinar	Pace Energy and Climate Center
Aug. 25, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York PSC Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Sep. 15, 2017	Niagara Mohawk Power Co. d/b/a National Grid Rate Case	New York PSC Case # 17-E-0238, 17-G-0239	Pace Energy and Climate Center
Oct. 20, 2017	Missouri PSC Working Case to Explore Emerging Issues in Utility Regulation	Missouri PSC File No. EW-2017-0245	Renew Missouri
Nov. 21, 2017	Central Hudson Gas & Electric Co. Electric and Gas Rates Cases	New York PSC Case # 17-E-0459, -0460	Pace Energy and Climate Center
Jan. 16, 2018	Great Plains Energy, Inc. Merger with Westar Energy, Inc.	Missouri PSC Case # EM-2018-0012	Renew Missouri Advocates
Jan. 19, 2018	U.S. House of Representatives, Energy and Commerce Committee	Hearing on “The PURPA Modernization Act of 2017,” H.R. 4476	Rábago Energy LLC
Jan. 29, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts D.P.U. Case No. 17-140	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Feb. 21, 2018	Joint Petition of Electric Distribution Companies for Approval of a Model SMART Tariff	Massachusetts D.P.U. Case No. 17-140 - Surrebuttal	Boston Community Capital Solar Energy Advantage Inc. (Jointly authored with Sheryl Musgrove)
Apr. 6, 2018	Narragansett Electric Co., d/b/a National Grid Rate Case Filing	RI PUC Docket No. 4770	New Energy Rhode Island (“NERI”)
Apr. 25, 2018	Narragansett Electric Co., d/b/a National Grid Power Sector Transformation Plan	Rhode Island PUC Docket No. 4780	New Energy Rhode Island (“NERI”)
Apr. 26, 2018	U.S. EPA Proposed Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Stories: Electric Utility Generating Units, 82 Fed. Reg. 48,035 (Oct. 16, 2017) – “Clean Power Plan”	U.S. EPA Docket No. EPA-HQ-OAR-2016-0592	Karl R. Rábago
May 25, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York PSC Case Nos. 18-E-0067, 18-G-0068	Pace Energy and Climate Center
Jun. 15, 2018	Orange & Rockland Utilities, Inc. Rate Case Filing	New York PSC Case Nos. 18-E-0067, 18-G-0068 – Rebuttal Testimony	Pace Energy and Climate Center
Aug. 10, 2018	Dominion Virginia Electric Power 2018 IRP	Virginia SCC Case # PUR-2018-00065	Environmental Respondents

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Sep. 20, 2018	Consumers Energy Company Rate Case	Michigan PSC Case No. U-20134	Environmental Law & Policy Center
Sep. 27, 2018	Potomac Electric Power Co. Notice to Construct Two 230 kV Underground Circuits	District of Columbia Public Service Commission Formal Case No. 1144	Solar United Neighbors of D.C.
Sep. 28, 2019	Arkansas Public Service Commission Investigation of Policies Related to Distributed Energy Resources	Arkansas PSC Docket No. 16-028-U	Arkansas Audubon Society & Arkansas Advanced Energy Association
Nov. 7, 2018	DTE Detroit Edison Rate Case	Michigan PSC Case No. U-20162	Natural Resources Defense Council, Michigan Environmental Council, Sierra Club
Mar. 26, 2019	Guam Power Authority Petition to Modify Net Metering	Guam PUC Docket GPA 19-04	Micronesia Renewable Energy, Inc.
Apr. 4, 2019	Community Power Network & League of Women Voters of Florida v. JEA	Circuit Court Duval County of Florida Case No. 2018-CA-002497 Div: CV-D	Earthjustice
Apr. 25, 2019	Georgia Power 2019 IRP	Georgia PSC Docket No. 42310	GSEA & GSEIA
May 10, 2019	NV Energy NV GreenEnergy 2.0 Rider	Nevada PUC Docket Nos. 18-11015, 18-11016	Vote Solar
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Misc. Issues	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 24, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Low- and Moderate-Income Panel	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
May 30, 2019	Connecticut DEEP Shared Clean Energy Facility Program Proposal	Connecticut Department of Energy and Environmental Protection Docket No. 19-07-01	Connecticut Fund for the Environment
Jun. 3, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Jun. 14, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Rebuttal Testimony	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center

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(as of 31 July 2020)

Jun. 24, 2019	Program to Encourage Clean Energy in Westchester County Pursuant to Public Service law Section 74-a; Staff Investigation into a Moratorium on New Natural Gas Services in the Consolidated Edison Company of New York, Inc. Service Territory	New York PSC Case Nos. 19-M-0265, 19-G-0080	Earthjustice and Pace Energy and Climate Center
Jul. 12, 2019	Application of Virginia Electric and Power Company for the Determination of the Fair Rate of Return on Common Equity	Virginia SCC Case # PUR-2019-00050	Virginia Poverty Law Center
Jul. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Reply Comments	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana
Aug. 1, 2019	Interstate Power and Light Company – General Rate Case	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Aug. 19, 2019	Consolidated Edison of New York Electric and Gas Rate Cases – Surrebuttal	New York PSC Case Nos. 19-E-0065, 19-G-0066	Pace Energy and Climate Center
Aug. 21, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources - Comments	Connecticut DEEP/PURA Docket No. 19-06-29	Connecticut Fund for the Environment and Save Our Sound
Sep. 10, 2019	Interstate Power and Light Company – General Rate Case - Rebuttal	Iowa Utilities Board Docket No. RPU-2019-0001	Environmental Law & Policy Center and Iowa Environmental Council
Sep. 18, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Comments and Response to Draft Study Outline	Connecticut DEEP/PURA Docket No. 19-06-29	Connecticut Fund for the Environment, Save Our Sound, E4theFuture, NE Clean Energy Council, NE Energy Efficiency Partnership, and Acadia Center
Sep. 20, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 1	Connecticut DEEP/PURA Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16715	Connecticut Fund for the Environment and Save Our Sound

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Oct. 4, 2019	Connecticut Department of Energy and Environmental Protection and Public Utility Regulatory Authority Joint Proceeding on the Value of Distributed Energy Resources – Participation in Technical Workshop 2	Connecticut DEEP/PURA Docket No. 19-06-29 http://www.ctn.state.ct.us/ctnplayer.asp?odID=16766	Connecticut Fund for the Environment and Save Our Sound
Oct. 15, 2019	Electronic Consideration of the Implementation of the Net Metering Act (KY SB 100)	Kentucky Public Service Commission Case No. 2019-00256	Kentuckians for the Commonwealth & Mountain Association for Community Economic Development
Oct. 15, 2019	New Orleans City Council Rulemaking to Establish Renewable Portfolio Standards – Comments on City Council Utility Advisors' Report	New Orleans City Council Docket No. UD-19-01	National Audubon Society and Audubon Louisiana, Vote Solar, 350 New Orleans, Alliance for Clean Energy, PosiGen, and Sierra Club
Oct. 17, 2019	Indiana Michigan Power Co. General Rate Case	Michigan Public Service Company Case No. U-20359	Environmental Law & Policy Center, The Ecology Center, the Solar Energy Industries Association, and Vote Solar
Dec. 4, 2019	Alabama Power Company Petition for Certificate of Convenience and Necessity	Alabama Public Service Commission Docket No. 32953	Energy Alabama and Gasp, Inc.
Dec. 5, 2019	In the Matter of Net Metering and the Implementation of Act 827 of 2015	Arkansas Public Service Commission Docket No. 16-027-R	National Audubon Society and Arkansas Advanced Energy Association
Dec. 6, 2019	Proposed Revisions to Vermont Public Utility Commission Rule 5.100	Vermont Public Utility Commission Case No. 19-0855-RULE	Renewable Energy Vermont ("REV")
Jan. 15, 2020	General Rate Case	Washington Utilities and Transportation Commission Docket Nos. UE-190529 & UG-190530	Puget Sound Energy
Feb. 11, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Direct Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association
Mar. 17, 2020	Application of Entergy Arkansas, LLC for a Proposed Tariff Amendment: Solar Energy Purchase Option – Surrebuttal Testimony	Arkansas Public Service Commission Docket No. 19-042-TF	Arkansas Advanced Energy Association

Testimony Submitted by Karl R. Rábago, on behalf of Pace Energy and Climate Center, or through Rábago Energy LLC

(as of 31 July 2020)

Jun. 16, 2020	PECO Energy Default Supply Plan V – Direct Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Respondents / Earthjustice
Jun. 24, 2020	Consumers Energy Company General Rate Case – Direct Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
Jul. 14, 2020	Consumers Energy Company General Rate Case – Rebuttal Testimony	Michigan Public Service Commission Case No. U-20697	Joint Clean Energy Organizations / Environmental Law & Policy Center
July 23, 2020	PECO Energy Default Supply Plan V – Surrebuttal Testimony	Pennsylvania Public Utility Commission Docket No. P-2020-3019290	Environmental Respondents / Earthjustice

Docket No. 20200176-EI
Solar Together CPVRR summary
Exhibit KRR-3, Page 1 of 1

Docket No. 20190061
Updated CPVRR Analysis for FPL SolarTogether Phase 1
Exhibit SRB-2, Page 1 of 1

FLORIDA PUBLIC SERVICE COMMISSION
DOCKET: 20190061-EI EXHIBIT: 36
PARTY: FLORIDA POWER & LIGHT COMPANY – REBUTTAL
DESCRIPTION: Scott R. Bores SRB-2

($ millions)		CPVRR	Nominal Total	2019	1 2020	2 2021	3 2022	4 2023	5 2024	6 2025	7 2026	8 2027	9 2028	10 2029	11 2030	2031-2051
Discount Factor				1.01	0.93	0.87	0.80	0.75	0.69	0.64	0.60	0.55	0.51	0.48	0.44	
Base Revenue Requirements																
FPL SolarTogether Capital, O&M		$1,792.4	$4,144.6	$3.5	$71.7	$202.2	$210.8	$199.6	$190.8	$183.0	$176.9	$171.9	$167.3	$162.2	$157.3	$2,247.4
Program Administrative Costs		11.5	20.3	2.3	2.1	1.8	1.7	1.1	0.7	0.4	0.3	0.3	0.3	0.3	0.3	8.5
Total FPL SolarTogether Costs		1,803.9	4,164.9	5.8	73.8	204.0	212.4	200.7	191.5	183.4	177.2	172.2	167.6	162.5	157.6	2,256.0
System Impacts (Avoided Generation Capital, O&M)		(544.6)	(1,470.2)	-	(2.0)	(14.8)	(38.2)	(60.4)	(48.3)	(47.0)	(44.5)	(37.4)	(176.3)	(111.1)	(28.0)	(862.1)
Total Base RevReq's (fav) unfav		**$1,259.2**	**$2,694.6**	**$5.8**	**$71.7**	**$189.3**	**$174.3**	**$140.3**	**$143.2**	**$136.5**	**$132.6**	**$134.7**	**($8.7)**	**$51.4**	**$129.6**	**$1,393.8**
Clause Revenue Requirements																
System Net Fuel		($1,049.4)	($3,313.8)	$0.0	($19.6)	($60.6)	($65.6)	($69.8)	($78.8)	($84.2)	($88.3)	($96.4)	($97.6)	($87.9)	($86.6)	($2,478.4)
Incremental Gas Transport		(367.9)	(1,352.4)	-	-	-	-	-	-	-	-	(59.6)	(59.2)	(58.9)	(58.6)	(1,116.0)
Emissions		(90.6)	(514.4)	-	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.7)	(1.2)	(2.4)	(2.6)	(3.6)	(503.7)
Total Clause RevReq's (fav) unfav		**($1,507.9)**	**($5,180.6)**	**$0.0**	**($19.6)**	**($60.7)**	**($65.6)**	**($69.9)**	**($78.9)**	**($84.2)**	**($89.0)**	**($157.1)**	**($159.3)**	**($149.5)**	**($148.8)**	**($4,098.1)**
Net Revenue Requirements (fav) unfav		**($248.6)**	**($2,486.0)**	**$5.8**	**$52.2**	**$128.6**	**$108.6**	**$70.4**	**$64.4**	**$52.3**	**$43.6**	**($22.4)**	**($168.0)**	**($98.1)**	**($19.1)**	**($2,704.3)**
Participant Subscription Charge and Credit	% of Total															
Subscription Charge (Revenue)		($1,315.5)	($3,610.0)	$0.0	($33.1)	($108.3)	($120.3)	($120.3)	($120.3)	($120.3)	($120.3)	($120.3)	($120.3)	($120.3)	($120.3)	($2,385.6)
Subscription Credits		1,452.2	4,288.0	-	31.6	104.8	117.9	119.6	121.5	122.9	124.6	126.4	128.5	129.9	131.7	3,028.6
Participant Net Distribution (Payment)	55.0%	**$136.8**	**$678.0**	**$0.0**	**($1.5)**	**($3.5)**	**($2.4)**	**($0.8)**	**$1.2**	**$2.6**	**$4.3**	**$6.0**	**$8.1**	**$9.6**	**$11.4**	**$643.0**
Revenue Requirements																
Base	% of Total															
Total Base RevReq's		$1,259.2	$2,694.6	$5.8	$71.7	$189.3	$174.3	$140.3	$143.2	$136.5	$132.6	$134.7	($8.7)	$51.4	$129.6	$1,393.8
Participant Subscription (Revenue)	104.47%	(1,315.5)	(3,610.0)	-	(33.1)	(108.3)	(120.3)	(120.3)	(120.3)	(120.3)	(120.3)	(120.3)	(120.3)	(120.3)	(120.3)	(2,385.6)
Net Base RevReq's (fav) unfav	-4.47%	**($56.2)**	**($915.3)**	**$5.8**	**$38.7**	**$81.0**	**$53.9**	**$20.0**	**$22.9**	**$16.1**	**$12.3**	**$14.4**	**($129.0)**	**($68.9)**	**$9.3**	**($991.7)**
Clause	% of Total															
Total Clause RevReq's (fav) unfav		($1,507.9)	($5,180.6)	$0.0	($19.6)	($60.7)	($65.6)	($69.9)	($78.9)	($84.2)	($89.0)	($157.1)	($159.3)	($149.5)	($148.8)	($4,098.1)
Participant Credits	96.31%	1,452.2	4,288.0	-	31.6	104.8	117.9	119.6	121.5	122.9	124.6	126.4	128.5	129.9	131.7	3,028.6
Net Clause RevReq's (fav) unfav	3.69%	**($55.6)**	**($892.6)**	**$0.0**	**$12.0**	**$44.1**	**$52.3**	**$49.7**	**$42.7**	**$38.7**	**$35.6**	**($30.8)**	**($30.8)**	**($19.6)**	**($17.0)**	**($1,069.6)**
Total Net RevReq's (fav) unfav	45.0%	**($111.9)**	**($1,807.9)**	**$5.8**	**$50.7**	**$125.1**	**$106.2**	**$69.7**	**$65.6**	**$54.8**	**$47.9**	**($16.4)**	**($159.8)**	**($88.5)**	**($7.7)**	**($2,061.3)**

Ten Year Power Plant Site Plan
2020 – 2029

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FPL

Gulf Power®

Ten Year Power Plant Site Plan

2020-2029

Submitted To:

Florida Public
Service Commission

April 2020

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Table of Contents

List of Figures, Tables, and Maps

List of Schedules

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Overview of the Document

Chapter 186, Florida Statutes, requires that each electric utility in the State of Florida with a minimum existing generating capacity of 250 megawatts (MW) must annually submit a Ten Year Power Plant Site Plan (Site Plan). This Site Plan should include an estimate of the utility's future electric power generating needs, a projection of how these estimated generating needs could be met, and disclosure of information pertaining to the utility's Preferred and Potential power plant sites. The information contained in this Site Plan is compiled and presented in accordance with Rules 25-22.070, 25-22.071, and 25-22.072, Florida Administrative Code (F.A.C.).

Site Plans are long-term planning documents and should be viewed in this context. A Site Plan contains uncertain forecasts and tentative planning information. Forecasts evolve, and all planning information is subject to change, at the discretion of the utility. Much of the data submitted is preliminary in nature and is presented in a general manner. Specific and detailed data will be submitted as part of the Florida site certification process, or through other proceedings and filings, at the appropriate time.

This Site Plan document addresses both Florida Power & Light Company (FPL) and Gulf Power Company (Gulf). NextEra Energy, the parent company of FPL, acquired Gulf in January 2019. As a result, resource planning for both FPL and Gulf are now performed by FPL's resource planning group. The information presented in this Site Plan is based on integrated resource planning (IRP) analyses that were carried out in 2019 and that were on-going in the first Quarter of 2020. The forecasted information presented in this plan addresses the years 2020 through 2029.

This document is organized in the following manner:

Chapter I – Description of Existing Resources

This chapter provides an overview of FPL's and Gulf's current generating facilities. Also included is information on other FPL and Gulf resources including purchased power, demand side management (DSM), and FPL's and Gulf's transmission system.

Chapter II – Forecast of Electric Power Demand

The load forecasting methodology utilized for both FPL and Gulf, and the resulting forecast of seasonal peaks and annual energy usage, are presented in Chapter II. Included in this discussion is the projected significant impact of federal and state energy-efficiency codes and standards.

Chapter III – Projection of Incremental Resource Additions

This chapter discusses the integrated resource planning (IRP) process and presents currently projected resource additions in both the FPL and Gulf areas. This chapter also discusses a number of factors or issues that either have changed, or may change, the resource plan presented in this Site Plan. Furthermore, this chapter also discusses previous and planned DSM efforts, the projected significant impact of state/federal energy-efficiency codes and standards, previous and planned renewable energy efforts, projected transmission additions, and the fuel cost forecasting processes.

Chapter IV – Environmental and Land Use Information

This chapter discusses environmental information as well as Preferred and Potential Site locations for additional electric generation facilities in both FPL and Gulf areas.

Chapter V – Other Planning Assumptions and Information

This chapter addresses twelve (12) “discussion items” which pertain to additional information that is included in a Site Plan filing.

List of Abbreviations
Used in Forms

Reference	***Abbreviation***	***Definition***
Unit Type	BS	Battery Storage
	CC	Combined Cycle
	CT	Combustion Turbine
	GT	Gas Turbine
	PV	Photovoltaic
	ST	Steam Unit (Fossil or Nuclear)
Fuel Type	BIT	Bituminous Coal
	FO2	#1, #2 or Kerosene Oil (Distillate)
	FO6	#4,#5,#6 Oil (Heavy)
	NG	Natural Gas
	No	None
	NUC	Uranium
	Pet	Petroleum Coke
	Solar	Solar Energy
	SUB	Sub Bituminous Coal
	ULSD	Ultra - Low Sulfur Distillate
Fuel Transportation	No	None
	PL	Pipeline
	RR	Railroad
	TK	Truck
	WA	Water
Unit/Site Status	L	Regulatory approval pending. Not under construction
	OP	Operating Unit
	OT	Other
	P	Planned Unit
	RT	Retired
	T	Regulatory approval received but not under construction
	U	Under construction, less than or equal to 50% Complete
	V	Under construction, more than 50% Complete
Other	ESP	Electrostatic Precipitators
	K Factor	The K factor for the capital costs of a given unit is the cumulative present value of revenue requirements (CPVRR) divided by the total installed cost
	ST	Solar Together
	SoBRA	Solar Rate Base Adjustment

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Executive Summary

This Ten-Year Site Plan (Site Plan) document addresses the projected electric power generating resource additions and retirements for the years 2020 through 2029 for both Florida Power & Light Company (FPL) and Gulf Power Company (Gulf).

On January 1, 2019, Gulf became a subsidiary of NextEra Energy, Inc. which also owns FPL. Prior to this transaction, resource planning analyses for Gulf were performed by Southern Company Services. Among other things, such planning was based on Gulf remaining a part of the Southern Company system. Starting in January 2019, these planning services have been, and will continue to be, performed for both companies by FPL's resource planning group.

NextEra Energy's plan is to integrate FPL and Gulf into a single electric operating system effective on January 1, 2022 after the completion of a new 161 kV transmission line (the North Florida Resiliency Connection line) that will enhance the electrical connection between the two systems. This enhanced connection will benefit customers in both systems by better enabling the siting of clean, reliable, low cost generation, and the transmission of energy from those facilities, to all customers. Consequently, the resource planning work during 2019 and early 2020 that is discussed in this Site Plan has largely focused on developing a resource plan for the single integrated system. However, because this Site Plan addresses two years (2020 and 2021) prior to the scheduled electrical integration of the two systems, a number of schedules and tables will show information for the separate systems for those two years. All information presented for the years 2022 through 2029 is for the single integrated system.[1]

This 2020 Site Plan presents the current plans to augment and enhance the electric generation capability of FPL and Gulf as part of efforts to cleanly, reliably, and cost-effectively meet projected incremental resource needs for 2020 through 2029. FPL already has one of the cleanest emission profiles of any electric utility in the U.S. In 2019, FPL delivered approximately 98% of its energy from a combination of low-emission natural gas, zero-emission nuclear, and zero-emission solar. With the resource additions presented in this Site Plan (which include solar additions consistent with FPL's announced plan to add more than 30 million solar panels by 2030), plus the planned retirement of FPL's ownership portion of a large coal-fueled generating unit, the emission profile of FPL's fleet of generating units is projected to become even cleaner.

[1] In this document, the separate companies will be referred to as FPL and Gulf for the years 2020 and 2021, and the single operating system will be referred to as FPL for the years 2022 through 2029. Likewise, the term "system" is generally used to discuss the separate FPL and Gulf systems for the years 2020 and 2021, and the term "area" is generally used to discuss the FPL and Gulf geographic areas for the years 2022 through 2029.

Although Gulf receives energy from several power purchase agreements that are either solar- or wind-based, the emission profile for Gulf's generation fleet is currently not as good as FPL's. However, this Site Plan describes a number of planned changes regarding generating units in the Gulf area that will significantly improve its emission profile. These planned changes include, but are not limited to, the addition of new solar facilities, enhancing the generation capability of an existing large gas-fueled combined cycle (CC) unit, the conversion of two generating units from coal-fueled to natural gas-fueled, and the retirement of Gulf's ownership portion of two other coal-fueled generating units.

As a result, after accounting for these planned changes to generating units in both FPL's and Gulf's areas, the clean energy percentage for the larger integrated FPL and Gulf utility system is projected to climb to approximately 99% by the end of the 10-year reporting period of this Site Plan.

Furthermore, there is a projected significant increase in the percentage of energy that will be delivered from zero-emission energy sources (solar, wind, and nuclear) over this 10-year reporting period. This is due to a projected significant increased contribution from zero-emission solar over these 10 years while the projected contributions from zero-emission wind and nuclear are projected to remain essentially unchanged.

In 2019, the percentage of the total energy delivered to all customers from both FPL and Gulf that was from zero-emission sources was approximately 22%. By 2029, the last year of the 10-year reporting period addressed in this document, the percentage of the total energy delivered to all customers for the single integrated system from zero-emission sources, including new solar facilities that are associated with FPL's Solar Together program[2], is projected to increase to approximately 37% which represents a 68% increase from 2019. This increase in the percentage of energy that is projected to be delivered by zero-emission sources is significant for a utility system of this size, especially when considering that the total amount of energy projected to be delivered to customers in 2029 will have also increased. The projections of energy by fuel/generation type are presented in Schedules 6.1 and 6.2 in Chapter III.

By design, the primary focus of this document is on projected supply side additions; *i.e.*, electric generation capability and the sites for these additions. The supply side additions discussed herein are resources projected to be needed after accounting for FPL's and Gulf's demand side management (DSM) resource capabilities and additions. In 2019, the Florida Public Service Commission (FPSC) established DSM Goals for the years 2020 through 2024 for a number of Florida utilities, including FPL and Gulf. Throughout this document, the analysis results discussed are based on an assumption that both companies will meet their respective DSM Goals in regard to Summer MW reduction, Winter MW

[2] In the Solar Together community solar program, participating customers share in the costs and benefits of a dedicated FPL Solar Together PV facility and are entitled, upon their request, to have the environmental attributes associated with their participation retired by FPL on their behalf.

reduction, and annual energy (MWh) reduction through the end of 2024. In addition, further DSM reductions for the years 2025 through 2029 are assumed. DSM is discussed in more detail in Chapters I, II, and III.

Additionally, load forecasts for both FPL and Gulf account for a very large amount of energy efficiency that results from federal and state energy-efficiency codes and standards. The projected impacts of these energy-efficiency codes and standards are discussed later in this summary and in Chapters II and III.

The projected resources, including resource additions and retirements, are summarized in Section I below. In addition, there are a number of factors that either have influenced, or may influence, ongoing resource planning efforts. These factors could result in different resources being added in the future than those presented in this docket. These factors are discussed below in Section II. Additional information regarding the topics is presented in Chapter III.

I. Summary of Projected Resources:

A summary of the projected resources, including resource additions and retirements, in both the FPL and Gulf areas is presented below. This discussion is presented in terms of the various types of resource options (solar, etc.) in the resource plan.

Solar:

At the end of 2019, FPL had a total of approximately 1,228 MW[3] of total solar generation on its system. All of this solar is from FPL-owned solar facilities. Of this total, approximately 1,153 MW is from photovoltaic (PV) facilities and 75 MW are from a solar thermal facility. Also, at the end of 2019, Gulf had a total of 120 MW of solar that is delivered from three PV sites under three power purchase agreements (PPAs).

On November 18, 2019, the FPSC approved (Order No. PSC-2019-0484-FOF-EI) four additional PV facilities for FPL under the SoBRA (Solar Base Rate Adjustment) provision from the 2016 FPL Settlement Agreement (Order No. PSC-2016-0560-AS-EI). Each of these four PV facilities will be 74.5 MW and are scheduled to be in commercial operation in 2020.

This resource plan projects a significant increase in solar (PV) resources during the 10-year reporting period. Approximately 8,860 MW of additional PV generation is projected to be added in the 2020

[3] Each reference to PV capacity in this Site Plan reflects the nameplate rating, AC, unless noted otherwise.

through 2029 time period with approximately 7,300 MW sited in FPL's area and approximately 1,560 MW sited in Gulf's area. These additional PV facilities are projected to be 74.5 MW each. Approximately 1,500 MW of the 7,300 MW of PV projected to be sited in FPL's area is projected to come from FPL's new Solar Together program which was approved by the FPSC on March 3, 2020.

When combining these projected solar additions with the approximately 1,150 MW of solar PV already installed on FPL's system at the end of 2019, the projected total of solar PV for the single integrated utility by the end of 2029 is slightly more than 10,000 MW. This planned solar implementation schedule is consistent with FPL's January 2019 announcement of its "30-by-30" plan in which FPL stated an objective to install more than 30 million solar panels on FPL's system by the year 2030.

This amount of cumulative solar is based on current projections that these solar additions will be cost-effective for FPL's customers. FPL's resource planning work in 2020 and beyond will continue to analyze the projected system economics of solar.[4]

Battery Storage:

In FPL's 2019 Site Plan, the projection was for approximately 469 MW of battery storage to be added in late 2021 with the majority of this battery storage capability projected to be installed in Manatee County as part of the plan to retire the two Manatee steam generating units. These 469 MW of battery storage are also included in this 2020 Site Plan. It is now projected that 409 MW of battery storage will be sited at Manatee as part of this plant retirement effort by late 2021. This battery storage facility will be charged by solar energy from an existing nearby PV facility. The remaining 60 MW of battery storage will be divided into two 30 MW battery storage facilities that will be installed at two different locations in FPL's service area in late 2021. Both of these battery storage facilities will also be charged by existing solar facilities. In addition, the resource plan presented in this Site Plan projects an additional approximately 700 MW of battery storage facilities by 2029 with all of these storage facilities currently projected to be sited in Gulf's area.

FPL continues to analyze other opportunities to utilize battery storage systems, including combining battery storage with new or existing PV facilities. FPL is also evaluating a number of other battery storage applications to gauge the potential for such applications to be beneficial for FPL's customers

[4] System economics of future solar and natural gas-fueled generation will depend upon a number of factors other than future PV costs, including, but not necessarily limited to: natural gas costs, environmental compliance costs, potential technology improvements regarding cost and/or efficiency of both solar and natural gas-fueled generation, and potential system impacts of increasing amounts of solar.

if/when projected cost declines occur. Some of these potential applications are being examined through FPL's 50 MW Battery Storage Pilot Project that is discussed in Chapter III.

Modernization of Non-Renewable Generation:

For a number of years, FPL has undertaken a program to modernize its non-renewable generating units based on cost-effectiveness. These efforts have substantially improved system fuel efficiency and increased capacity while also reducing system air emission rates (including greenhouse gas emission rates) and reducing fuel and other costs for FPL's customers. The plan is to continue this program in both FPL and Gulf areas to further improve the efficiency and capabilities of the fossil-fueled generation fleet in 2020 and beyond through three principal initiatives: (i) retirement of existing generating units that are no longer economic to operate, (ii) enhancements to existing generating units, and (iii) addition of cost-effective new gas-fired generation as appropriate. These three modernization efforts are separately described below.

(i) Retirement of Existing Generating Units That Are No Longer Economic to Operate:

In its 2019 Site Plan, FPL discussed plans to retire two additional steam generating units (Manatee Units 1 & 2) and two older CC units (Lauderdale Units 4 & 5). Similar to two recently retired units at the Martin plant site, each of the Manatee units is approximately 800 MW and the units have become relatively inefficient compared to current generation technology. As a result, FPL's 2019 Site Plan projected that these units would be retired in late 2021. As previously mentioned, a 409 MW battery storage facility will be installed in Manatee County by late 2021 to partially offset the loss of generation in the Manatee area from the retirement of Manatee Units 1 & 2.

The retirement of the Lauderdale Units 4 & 5 has occurred, and these retirements are part of the modernization of FPL's existing Lauderdale power plant site. These two older CC units were each 442 MW units (for a total capacity of approximately 884 MW) that resulted from a repowering project approximately 25 years ago – but which contained certain now-outdated plant components, including the steam turbine, that dated back to the 1950s. These two units will be replaced with a new, modern CC unit that is discussed below. The FPSC voted unanimously to approve this modernization on March 1, 2018. (FPSC Order No. PSC-2018-0150-FOF-EI issued March 19, 2018). The FPSC based its approval on projections of significant economic savings for FPL's customers; enhanced reliability for both the FPL system and the Southeastern Florida region (Miami-Dade and Broward counties) of FPL's service territory; reduced use of natural gas system-wide; and reduced system emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon dioxide (CO_2). The Governor and Cabinet, serving as the Power Plant Siting Board, issued a Final Order approving certification of the project on December

13, 2018. Subsequently, the former Fort Lauderdale Units 4 & 5 were retired, and the dismantlement of those facilities has been completed. Construction of the new CC unit, named the Dania Beach Clean Energy Center Unit 7 (Dania Beach), is underway.

The current resource plan presented in this Site Plan continues to account for the retirements of the Manatee units and the new CC unit at the Lauderdale site. In addition, the current resource plan projects the planned early retirements of four coal-fueled generating units. First, the 330 MW power purchase agreement with Indiantown Cogen L.P. is projected to end, along with the retirement of the associated coal-fueled generating unit, in the 4th Quarter of 2020. Second, the retirement of FPL's ownership portion (approximately 76%) of the coal-fueled Scherer Unit 4 unit in Georgia is planned by January 2022. FPL's ownership portion of this unit is approximately 630 MW. Additionally, an early retirement of Gulf's ownership portion (50%) of two coal-fueled steam units by January 2024 is also planned. These units, Daniels Units 1 & 2, are located in the Mississippi Power service territory and Gulf's ownership portion of the two units totals approximately 510 MW.

(ii) Enhancements to Existing Generating Units:

In its 2019 Site Plan, FPL discussed plans to upgrade the combustion turbine (CT) components in a number of FPL's existing CC units. That upgrade effort is still included in the resource plan presented in this Site Plan. An additional multi-year upgrade effort is also now planned. These additional upgrades are projected to be completed in 2026 and will address CC units in both FPL's and Gulf's areas. The upgrades are projected to result in a total increased Summer capacity of approximately 600 MW as well as improved heat rates for each upgraded CC unit. Information regarding the specific units, timing, and magnitude of these upgrades is presented in Schedule 8 in Chapter III.

Two significant enhancements to existing generating units in the Gulf area are also included in the resource plan presented in this Site Plan. The first of those is the conversion of Crist Units 6 & 7 from coal-fueled to natural gas-fueled. This conversion effort is already underway and is scheduled to be completed before the end of 2020**.** This enhancement will result in both lower cost energy generated by the units and in significant fixed cost savings for Gulf area customers. The second enhancement is a pair of capacity upgrades to the Lansing Smith Unit 3. The installation phase of the first upgrade of this existing CC unit was completed in 2019 which will be followed by testing and tuning in the Spring of 2020. This upgrade is projected to increase the firm capacity of the unit by more than 80 MW. A second upgrade of the unit is planned for 2024 which is projected to increase unit capacity by another approximately 59 MW. Both upgrades in this second enhancement will also result in cost savings for Gulf area customers through both the deferral of future capacity needs and by increased output of lower cost natural gas-fueled energy production.

(iii) <u>Addition of Cost-Effective Natural Gas-Fueled Generation:</u>

In its 2019 Site Plan, FPL's resource plan projected the addition of three new CC units with one each being added in 2019, 2022, and 2026. Gulf's 2019 Site Plan projected the addition of a single new CC unit in 2024.

The first of the three FPL projected CC units was the Okeechobee Clean Energy Center unit which became operational on FPL's system in 2019. This new CC unit supplies approximately 1,778 MW of firm capacity that can be delivered around the clock. The second of these is the previously mentioned Dania Beach CC unit that will come in-service in 2022. This unit is a key component of the modernization of FPL's existing Lauderdale power plant site as discussed above. The third CC projected in FPL's 2019 Site Plan was a new CC unit being added in 2026 at an as-yet-to-be-determined site. Gulf's 2019 Site Plan projected a single new CC unit to be added at its Escambia site in 2024.

The resource plan presented in this 2020 Site Plan continues to show the new Dania Beach CC unit coming in-service in 2022. However, neither the other CC unit previously projected in FPL's area for 2026, nor the Escambia CC unit in Gulf's area previously projected for 2024, remain in the current resource plan. However, four new CT units at the existing Crist plant site in Gulf's area are now part of the resource plan. These new CT units are being added based on system economics and for purposes of ensuring adequate fast-start operating reserves in Gulf's area.

<u>Nuclear energy:</u>

Nuclear energy remains an important factor in FPL's resource planning. Since June 2009, FPL has worked to secure from the federal Nuclear Regulatory Commission (NRC) Combined Operating Licenses (COL) for two future nuclear units, Turkey Point Units 6 & 7, that would be sited at FPL's Turkey Point site (the location of two existing nuclear generating units). In April 2018, FPL received NRC approval for these two COLs. These licenses remain valid for approximately 20 years. At this time, FPL has paused regarding a decision whether to seek FPSC approval to move forward with construction of the new nuclear units. FPL intends to incorporate into that decision the construction experience of the nuclear units currently under construction by Georgia Power at its Vogtle site and similar units being developed in China. As a result, and similar to the case with FPL's 2019 Site Plan, the earliest possible in-service dates for Turkey Point 6 & 7 are beyond the 10-year time period addressed in this 2020 Site Plan.

In addition, on January 30, 2018, FPL applied to the NRC for Subsequent License Renewal (SLR) for FPL's existing Turkey Point Units 3 & 4. The previous license terms for these two existing nuclear units extended into the years 2032 and 2033, respectively. The SLR requested approval to extend the operating licenses by 20 years to 2052 and 2053, respectively. The NRC granted approval for the SLR in December 2019. Consequently, FPL's resource plans include the continued operation of Turkey Point Units 3 & 4 out in time to those new license termination dates.

For these reasons, this Site Plan continues to present the Turkey Point location as a Preferred Site for nuclear generation as indicated in Chapter III.

II. Other Factors That Have Influenced, or Could Further Influence, the Current Resource Plan:

There are a number of factors that have influenced, or which may influence, the resource plan presented in this 2020 Site Plan. Six such factors are summarized below and are presented in no particular order. These factors and/or their potential influences on the resource plan presented in this Site Plan are further discussed in Chapters II and III.

Factor # 1: The critical need to maintain a balance between load and generating capacity in Southeastern Florida (Miami-Dade and Broward counties). This balance has both reliability and economic implications for FPL's system and customers and it is a key reason that FPL sought and obtained an affirmative need determination decision from the FPSC for the Lauderdale modernization described above.

Factor # 2: The desire to maintain/enhance fuel diversity in the FPL system while considering system economics. Diversity is sought in terms of the types of fuel that FPL utilizes and how these fuels are transported to the locations of FPL's generation units. These fuel diversity objectives are considered in light of economic impacts to FPL's customers. For example, FPL is cost-effectively adding significant amounts of PV generation throughout the 10-year reporting period of this document. These PV additions enhance fuel diversity. At the same time, FPL is retiring coal generation and older, fuel-inefficient oil- or gas-fueled generation because these generating units are no longer cost-effective for FPL's customers. In addition, FPL also seeks to further enhance the efficiency with which it uses natural gas to generate electricity.

Factor # 3: The need to maintain an appropriate balance of DSM and supply resources from the perspectives of both system reliability and operations. FPL addresses this through the use of a 10% generation-only reserve margin (GRM) reliability criterion to complement its other two reliability criteria:

a 20% total reserve margin criterion for Summer and Winter, and an annual 0.1 day/year loss-of-load-probability (LOLP) criterion. Together, these three criteria allow FPL to address this specific concern regarding system reliability and operations in a comprehensive manner.

Factor # 4: The significant impact of federal and state energy-efficiency codes and standards. The incremental impacts of these energy-efficiency codes and standards, from a beginning year 2020 starting point through the year 2029, are projected to have significant impacts by reducing forecasted Summer and Winter peak loads, and by reducing annual net energy for load (NEL), in both the FPL and Gulf areas. In addition, energy-efficiency codes and standards significantly reduce the potential for cost-effective energy efficiency that might otherwise have been obtained through utility DSM programs. The projected impacts of these energy efficiency codes and standards are discussed in more detail in Chapter II.

Factor # 5: The trends of decreasing costs for fuel, decreasing costs for new generating units, and increasing fuel efficiency of new generating units. There are a number of factors that drive utility system costs. Three of the most important of these are: (i) forecasted natural gas costs, (ii) projected costs for new generating units, and (iii) the efficiency with which generating units convert fuel into electricity. When comparing FPL's forecasts of these factors over at least the last 5 years, the trends for each of these factors is in a direction that results in lower system costs for FPL's customers. For example, when comparing FPL's 2015 forecasted cost for natural gas for the year 2020 with the current (2020) forecasted cost for 2020, there has been more than a 55% decrease in natural gas costs. An even greater reduction in CO_2 compliance costs for 2020 occurred between the 2015 and current forecast. In addition, in regard to the fuel efficiency of FPL's generating units, the amount of natural gas (measured in mmBTU of natural gas needed to produce a kWh of electricity) declined from 7,376 in 2015 to approximately 6,752 today. This improvement in fuel efficiency is truly significant, especially when considering the approximately 20,000 MW of gas-fueled generation on FPL's system.

These trends of steadily lowering of key components of utility system costs are very beneficial to a utility's customers because they help to lower electric rates.[5]

Factor # 6: Projected changes in CO_2 regulation and associated compliance costs. Since 2007, FPL has evaluated potential carbon dioxide (CO_2) regulation and/or legislation and has included projected compliance costs for CO_2 emissions in its resource planning work. However, there always has been an unavoidable level of uncertainty regarding the timing and magnitude of the cost impacts of the potential regulation/legislation. The forecast of potential CO_2 compliance costs that FPL used in its 2019 resource

[5] However, because the potential benefits of utility DSM programs are based on DSM's ability to avoid certain system costs, the trend of steadily decreasing utility system costs automatically results in a significant lowering of the cost-effectiveness of utility DSM programs.

planning work was lower than forecasts that had been used in prior years. In 2020, the forecasted compliance costs are somewhat higher than projected in 2019, but remain lower than projections from a decade before. Projected lower compliance costs are due to a number of factors projected for the Southeastern region of the U.S., including Florida. These factors include at least the following: lower forecasted growth rates in electricity usage; lower forecasted costs of natural gas; retirements of existing coal units; and increasing implementation of renewable energy sources including solar.

Each of these factors will continue to be examined by FPL's resource planning group in its ongoing resource planning work in 2020 and future years.

III. A Summary of Projected Resource Changes for FPL and Gulf:

The resource plan presented in this 2020 Site Plan was developed based on considerations of projected system reliability, projected system economics, and other factors such as those discussed immediately above. Major changes in resources currently projected as part of this resource plan for the years 2020 through 2029 for both FPL and Gulf are summarized in Table ES-1. The changes are presented in terms of Summer firm capacity values.

Although this particular table does not specifically identify the impacts of projected DSM on resource needs and the resource plan, the projected DSM additions reflected in the resource plan presented in Table ES-1, and throughout this Site Plan, are consistent with the 2020 through 2024 DSM Goals set for FPL and Gulf (Order No. PSC-2019-0509-FOF-EG) in 2019 by the FPSC. The specific impacts of those DSM Goals through 2024, and of projected additional DSM impacts for 2025 through 2029, are shown in Schedules 3.1, 3.2, and 3.3.

A summary of some of the larger resource additions/retirements for both systems/areas include, but are not necessarily limited to, those listed below (in approximate chronological order):

<u>For FPL's system/area:</u>

- New solar (PV) additions from 2020 through 2029 of approximately 7,300 MW;
- Capacity upgrades at a number of FPL's existing CC units through 2026;
- Retirement of FPL's ownership portion (approximately 630 MW) of the Scherer 4 coal unit by January 2022;
- A 409 MW battery storage facility at the Manatee plant site, plus two 30 MW battery storage facilities at different sites, by the beginning of 2022; and,
- The modernization of the existing Lauderdale power plant site in mid-2022 with the new DBEC CC Unit 7.

For Gulf's system/area:

- New solar (PV) additions from 2020 through 2024 of approximately 1,560 MW;
- Capacity upgrades (two) of the existing Lansing Smith Unit 3 CC, with installation for the first upgrade completed in 2019 with testing and tuning in the Spring of 2020, then a planned second upgrade in 2024;
- Conversion from coal-fueled to natural gas-fueled of Crist Units 6 & 7 in 2020;
- A new FPL-to-Gulf transmission line by the beginning of 2022 enabling a bidirectional transfer capability between the two areas of 850 MW;
- Four new CTs at the Crist plant site by the beginning of 2022
- Expiration (as per the contract) of 885 MW from the Shell PPA in May, 2023;
- The retirement of Gulf's ownership portion of the coal-fueled Daniels Units 1 & 2 by the beginning of 2024; and,
- A total of approximately 700 MW of battery storage in 2028 and 2029.

It is noted that no final decisions are needed at this time, nor have such decisions yet been made, regarding some of the resource additions shown in this 2020 Site Plan. This is particularly relevant to resource additions shown for years increasingly further out in time in the 2020 through 2029 time period. Consequently, those resource additions are more prone to future change.

Table ES-1: Projected Capacity & Firm Purchase Power Additions and Changes:

Year [1/]	Projected Capacity & Firm Purchase Power Changes	FPL Summer MW (Approx.)	Gulf Summer MW (Approx.)	Date	Summer Reserve Margin [2/]
	FPL				
2020	Solar PV [3/] (All solar facilities in-service January of 2020)	248		First Quarter 2020	
	SoBRA PV [3/]	165		Second Quarter 2020	
	Sanford 4	147		Second Quarter 2020	
	Total of MW changes to Summer firm capacity:	**560**			**21.2%**
2021	West County 3	21		Third Quarter 2020	
	Turkey Point 4	20		Fourth Quarter 2020	
	Solar PV [3/]	539		First Quarter 2021	
	Solar Degradation [4/]	(3)			
	Total of MW changes to Summer firm capacity:	**577**			**21.6%**

Year [1/]	Projected Capacity & Firm Purchase Power Changes	FPL Summer MW (Approx.)	Gulf Summer MW (Approx.)	Date	Summer Reserve Margin [2/]
	Gulf				
2020	Solar PV [3/] (Solar facility in-service April 1st of 2020)		41	Fourth Quarter 2020	
	Total of MW changes to Summer firm capacity:		**41**		**39.5%**
2021					
	Total of MW changes to Summer firm capacity:		**0**		**38.1%**

Year [1/]	Projected Capacity & Firm Purchase Power Changes	FPL Summer MW (Approx.)	Gulf Summer MW (Approx.)	Date	Summer Reserve Margin [2/]
	Integrated FPL and Gulf				
2022	Manatee 1 and 2 Retirement	(1,618)		Fourth Quarter 2021	
	Scherer 4 Retirement	(634)		Fourth Quarter 2021	
	Manatee Energy Storage	409		Fourth Quarter 2021	
	Sunshine Gateway Energy Storage	30		Fourth Quarter 2021	
	Echo River Energy Storage	30		Fourth Quarter 2021	
	4X0 Crist CT's		938	Fourth Quarter 2021	
	Blue Springs PV [3/]		37	Fourth Quarter 2021	
	Chautauqua PV [3/]		37	Fourth Quarter 2021	
	Solar PV [3/]		224	First Quarter 2022	
	Fort Myers 2 Upgrade	40		Second Quarter 2022	
	Dania Beach Clean Energy Center Unit 7	1,163		Second Quarter 2022	
	Solar Degradation [4/]	(5)			
	Total of MW changes to Summer firm capacity:	**(585)**	**1,237**		**26.1%**
2023	Martin 8 Upgrade	40		Second Quarter 2022	
	Manatee 3 Upgrade	79		Fourth Quarter 2022	
	Solar PV [3/]		209	First Quarter 2023	
	Fort Myers 2 Upgrade	79		Second Quarter 2023	
	Solar Degradation [4/]	(6)			
	Total of MW changes to Summer firm capacity:	**192**	**209**		**22.8%**
2024	Lansing Smith 3 Upgrade		59	Fourth Quarter 2023	
	Daniel 1 and 2 Retirement		(502)	First Quarter 2024	
	Turkey Point 5 Upgrade	79		First Quarter 2024	
	Okeechobee Energy Center	58		First Quarter 2024	
	Solar PV [3/]		209	First Quarter 2024	
	Solar Degradation [4/]	(6)			
	Total of MW changes to Summer firm capacity:	**131**	**(234)**		**20.8%**
2025	Pea Ridge 1, 2 and 3 Retirement		(12)	Second Quarter 2024	
	Crist 4 Retirement		(75)	Fourth Quarter 2024	
	Solar PV [3/]	264		First Quarter 2025	
	Sanford 4 Upgrade	78		Second Quarter 2025	
	Sanford 5 Upgrade	78		Second Quarter 2025	
	Solar Degradation [4/]	(7)			
	Total of MW changes to Summer firm capacity:	**413**	**(87)**		**20.5%**
2026	Martin 8 Upgrade	40		Second Quarter 2025	
	Sanford 4 Upgrade	26		Second Quarter 2025	
	Sanford 5 Upgrade	26		Second Quarter 2025	
	Solar PV [3/]	422		First Quarter 2026	
	Solar Degradation [4/]	(8)			
	Total of MW changes to Summer firm capacity:	**506**			**20.6%**
2027	Crist 5 Retirement		(75)	Fourth Quarter 2026	
	Solar PV [3/]	422		First Quarter 2027	
	Solar Degradation [4/]	(9)			
	Total of MW changes to Summer firm capacity:	**413**	**(75)**		**20.3%**
2028	Lansing Smith A Retirement		(32)	Fourth Quarter 2027	
	Energy Storage		200	First Quarter 2028	
	Solar PV [3/]	252		First Quarter 2028	
	Solar Degradation [4/]	(11)			
	Total of MW changes to Summer firm capacity:	**241**	**168**		**20.0%**
2029	Energy Storage		500	First Quarter 2029	
	Solar PV [3/]	194		First Quarter 2029	
	Solar Degradation [4/]	(11)			
	Total of MW changes to Summer firm capacity:	**183**	**500**		**20.0%**

1/ Year shown reflects when the MW change begins to be accounted for in Summer reserve margin calculations.
2/ Winter Reserve Margins are typically higher than Summer Reserve Margins. Winter Reserve Margins are shown on Schedule 7.2 in Chapter III.
3/ MW values shown for the PV facilities represent the summer firm capacity assumptions for the PV facilities.
4/ An annual 0.3% degradation for PV output is assumed for both FPL and Gulf Solar. Total degradation is shown solely in the FPL column.

CHAPTER I

Description of Existing Resources

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I. Description of Existing Resources

I.A. FPL System:

I.A.1 Description of Existing Resources

FPL's service area contains approximately 27,650 square miles and has a population of approximately ten million people. FPL served an average of 5,061,525 customer accounts in 35 counties during 2019. These customers were served by a variety of resources including: FPL-owned fossil-fuel, renewable (solar), and nuclear generating units; non-utility owned generation; demand side management (DSM); and interchange/purchased power.

I.A.2 FPL - Owned Resources

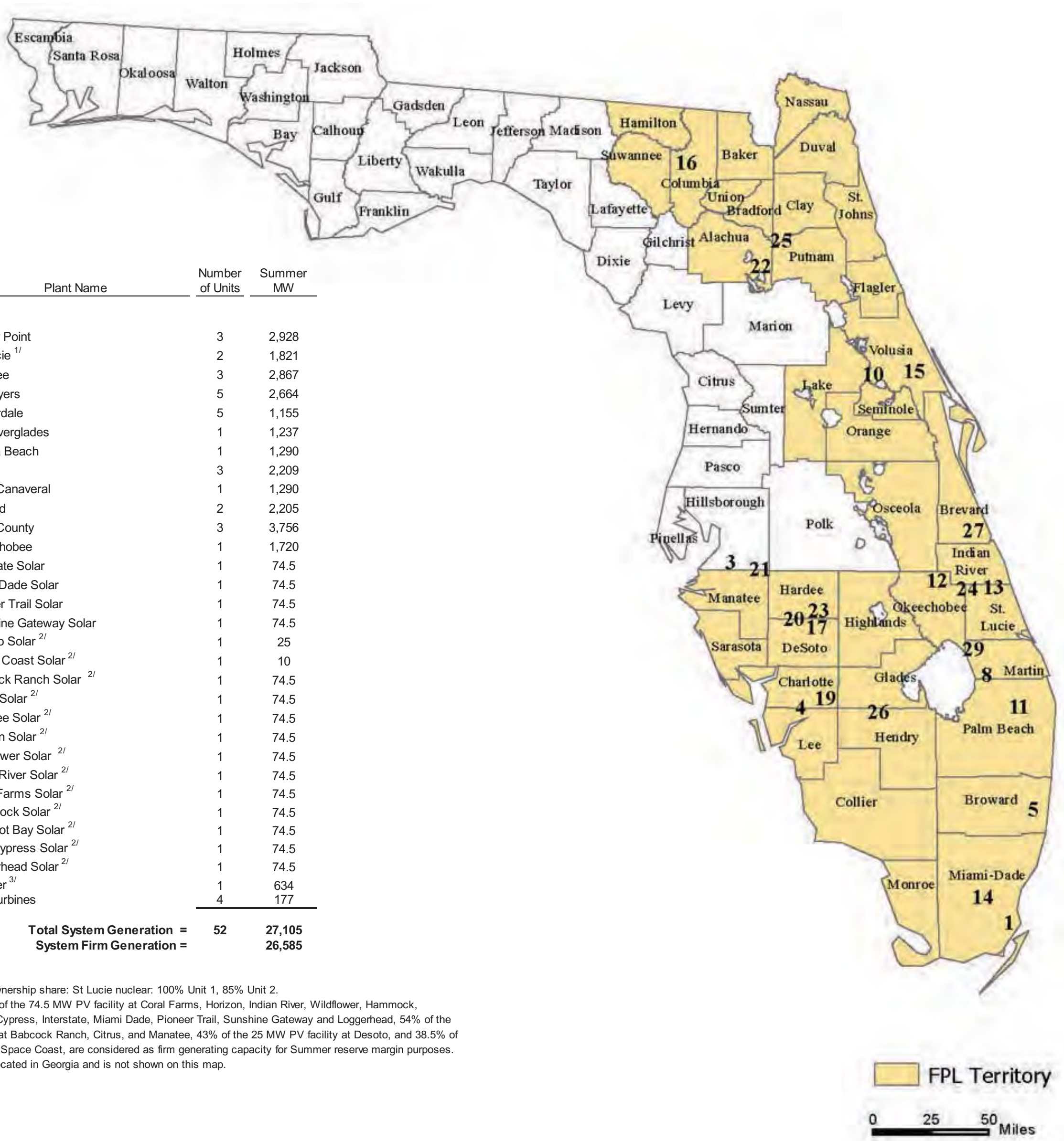
As of December 31, 2019, FPL owned electric generating resources located at 29 sites distributed geographically throughout its service territory, plus one site in Georgia (partial FPL ownership of one unit). These generating facilities consisted of: four nuclear units, one coal unit (the aforementioned partially owned unit), 15 combined-cycle (CC) units, two fossil steam units, four gas turbines (GTs), nine simple-cycle combustion turbines (CTs), and 17 solar photovoltaic (PV) facilities.[6] The locations of the 52 generating units that were in commercial operation on December 31, 2019 are shown on Figure I.A.2.1 and in Table I.A.2.1.

FPL's bulk transmission system, including both overhead and underground lines, is comprised of 7,278 circuit miles of transmission lines. Integration of the generation, transmission, and distribution systems is achieved through FPL's 661 substations in Florida.

The existing FPL system, including generating plants, major transmission stations, and transmission lines, is shown on Figure I.A.2.2.

[6] FPL also has one 75 MW solar thermal facility at its Martin plant site. This facility does not generate electricity as the other units mentioned above do. Instead, it produces steam that reduces the use of fossil fuel to produce steam for electricity generation.

FPL Generating Resources by Location



Location/ Map Key	Plant Name	Number of Units	Summer MW
1	Turkey Point	3	2,928
2	St. Lucie [1/]	2	1,821
3	Manatee	3	2,867
4	Fort Myers	5	2,664
5	Lauderdale	5	1,155
6	Port Everglades	1	1,237
7	Riviera Beach	1	1,290
8	Martin	3	2,209
9	Cape Canaveral	1	1,290
10	Sanford	2	2,205
11	West County	3	3,756
12	Okeechobee	1	1,720
13	Interstate Solar	1	74.5
14	Miami Dade Solar	1	74.5
15	Pioneer Trail Solar	1	74.5
16	Sunshine Gateway Solar	1	74.5
17	DeSoto Solar [2/]	1	25
18	Space Coast Solar [2/]	1	10
19	Babcock Ranch Solar [2/]	1	74.5
20	Citrus Solar [2/]	1	74.5
21	Manatee Solar [2/]	1	74.5
22	Horizon Solar [2/]	1	74.5
23	Wildflower Solar [2/]	1	74.5
24	Indian River Solar [2/]	1	74.5
25	Coral Farms Solar [2/]	1	74.5
26	Hammock Solar [2/]	1	74.5
27	Barefoot Bay Solar [2/]	1	74.5
28	Blue Cypress Solar [2/]	1	74.5
29	Loggerhead Solar [2/]	1	74.5
	Scherer [3/]	1	634
	Gas Turbines	4	177
	Total System Generation =	**52**	**27,105**
	System Firm Generation =		**26,585**

1/ Represents FPL's ownership share: St Lucie nuclear: 100% Unit 1, 85% Unit 2.
2/ Approximately 56% of the 74.5 MW PV facility at Coral Farms, Horizon, Indian River, Wildflower, Hammock, Barefoot Bay, Blue Cypress, Interstate, Miami Dade, Pioneer Trail, Sunshine Gateway and Loggerhead, 54% of the 74.5 MW PV facility at Babcock Ranch, Citrus, and Manatee, 43% of the 25 MW PV facility at Desoto, and 38.5% of the 10 MW of PV at Space Coast, are considered as firm generating capacity for Summer reserve margin purposes.
3/ The Scherer unit is located in Georgia and is not shown on this map.

Figure I.A.2.1: FPL's Generating Resources by Location (as of December 31, 2019)

Table I.A.2.1: FPL's Capacity Resources by Unit Type (as of December 31, 2019)

Unit Type/ Plant Name	Location	Number of Units	Fuel	Summer MW
Nuclear				
St. Lucie [1/]	Hutchinson Island, FL	2	Nuclear	1,821
Turkey Point	Florida City, FL	2	Nuclear	1,658
Total Nuclear:		**4**		**3,479**
Coal Steam				
Scherer	Monroe County, Ga	1	Coal	634
Total Coal Steam:		**1**		**634**
Combined-Cycle				
Fort Myers	Fort Myers, FL	1	Gas	1,812
Manatee	Manatee County, FL	1	Gas	1,249
Martin	Indiantown, FL	2	Gas	974
Sanford	Lake Monroe, FL	2	Gas	2,205
Cape Canaveral	Cocoa, FL	1	Gas/Oil	1,290
Martin	Indiantown, FL	1	Gas/Oil	1,235
Okeechobee	Okeechobee, FL	1	Gas/Oil	1,720
Port Everglades	City of Hollywood, FL	1	Gas/Oil	1,237
Riviera Beach	City of Riviera Beach, FL	1	Gas/Oil	1,290
Turkey Point	Florida City, FL	1	Gas/Oil	1,270
West County	Palm Beach County, FL	3	Gas/Oil	3,756
Total Combined Cycle:		**15**		**18,038**
Gas/Oil Steam				
Manatee	Manatee County, FL	2	Gas/Oil	1,618
Total Oil/Gas Steam:		**2**		**1,618**
Gas Turbines(GT)				
Fort Myers (GT)	Fort Myers, FL	2	Oil	108
Lauderdale (GT)	Dania, FL	2	Gas/Oil	69
Total Gas Turbines/Diesels:		**4**		**177**
Combustion Turbines				
Lauderdale	Dania, FL	5	Gas/Oil	1,155
Fort Myers	Fort Myers, FL	4	Gas/Oil	852
Total Combustion Turbines:		**9**		**2,007**
PV [2/]				
DeSoto Solar	DeSoto County, FL	1	Solar Energy	25
Babcock Ranch Solar	Charlotte County, FL	1	Solar Energy	74.5
Citrus Solar	DeSoto County, FL	1	Solar Energy	74.5
Manatee Solar	Manatee County, FL	1	Solar Energy	74.5
Space Coast Solar	Brevard County, FL	1	Solar Energy	10
Interstate Solar	St. Lucie County, FL	1	Solar Energy	74.5
Miami Dade Solar	Dade County, FL	1	Solar Energy	74.5
Pioneer Trail Solar	Volusia County, FL	1	Solar Energy	74.5
Sunshine Gateway Solar	Columbia County, FL	1	Solar Energy	74.5
Horizon Solar	Putnam and Alachua Counties, FL	1	Solar Energy	74.5
Wildflower Solar	Desoto County, FL	1	Solar Energy	74.5
Indian River Solar	Indian River County, FL	1	Solar Energy	74.5
Coral Farms Solar	Putnam County, FL	1	Solar Energy	74.5
Hammock Solar	Hendry County, FL	1	Solar Energy	74.5
Barefoot Bay Solar	Brevard County, FL	1	Solar Energy	74.5
Blue Cypress Solar	Indian River County, FL	1	Solar Energy	74.5
Loggerhead Solar	St. Lucie County, FL	1	Solar Energy	74.5
Total PV:		**17**		**1,153**
Total System Generation as of December 31, 2019 =		**52**		**27,105**
System Firm Generation as of December 31, 2019 =				**26,585**

1/ Total capability of St. Lucie 1 is 981/1,003 MW. FPL's share of St. Lucie 2 is 840/860. FPL's ownership share of St. Lucie Units 1 and 2 is 100% and 85%, respectively.
2/ Approximately 56% of the 74.5 MW PV facility at Coral Farms, Horizon, Indian River, Wildflower, Hammock, Barefoot Bay, Blue Cypress, Interstate, Miami Dade, Pioneer Trail, Sunshine Gateway and Loggerhead, 54% of the 74.5 MW PV facility at Babcock Ranch, Citrus, and Manatee, 43% of the 25 MW PV facility at Desoto, and 38.5% of the 10 MW of PV at Space Coast, are considered as firm generating capacity for Summer reserve margin purposes.

FPL Bulk Transmission System

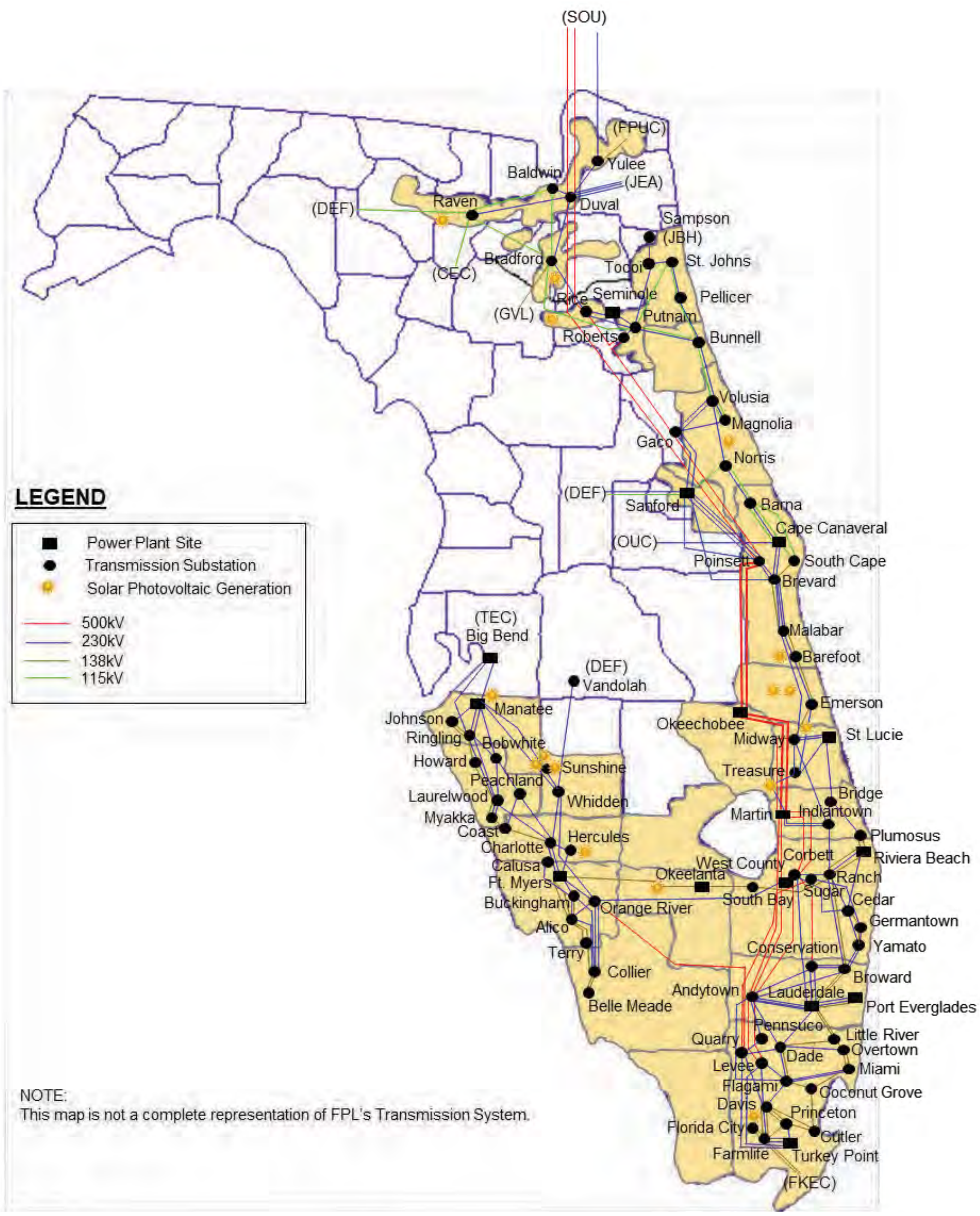


Figure I.A.2.2: FPL Bulk Transmission System

I.A.3 FPL - Capacity and Energy Power Purchases

Firm Capacity: Purchases from Qualifying Facilities (QF)

Firm capacity power purchases remain part of FPL's resource mix. A cogeneration facility is one that simultaneously produces electrical and thermal energy, with the thermal energy (*e.g.*, steam) used for industrial, commercial, or cooling and heating purposes. A small power production facility is one that does not exceed 80 MW (unless it is exempted from this size limitation by the Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990) and uses solar, wind, waste, geothermal, or other renewable resources as its primary energy source.

FPL currently has four contracts with qualifying facilities (*e.g.*, cogeneration/small power production facilities) to purchase firm capacity and energy during the 10-year reporting period of this Site Plan. The 2019 actual and 2020-2029 projected contributions from these facilities are shown in Table I.A.3.1, Table I.A.3.2, and Table I.A.3.3. As discussed in prior FPL Site Plans, the FPSC approved (Order No. PSC-16-0506-FOF-EI) FPL's acquisition of the rights to the 330 MW Indiantown Cogen LP (ICL) unit and the associated power purchase agreement (PPA). FPL currently projects that it will cancel this PPA by the end of the 4th Quarter of 2020 because the agreement is no longer cost-effective for FPL's customers.

Firm Capacity: Purchases from Utilities

FPL currently has a PPA with Orlando Utilities Commission. Information regarding this PPA is shown in Table I.A.3.2 and Table I.A.3.3.

Firm Capacity: Other Purchases

FPL has two other firm capacity purchase contracts with the Palm Beach Solid Waste Authority. Table I.A.3.2 and I.A.3.3 present the Summer and Winter MW, respectively, resulting from these contracts under the category heading of Other Purchases.

Non-Firm (As Available) Energy Purchases

FPL purchases non-firm (as-available) energy from a number of cogeneration and small power production facilities. The lower half of Table I.A.3.1 shows the amount of energy purchased in 2019 from these facilities.

Table I.A.3.1: FPL's Purchased Power Resources by Contract (as of December 31, 2019)

Firm Capacity Purchases (MW)	Location (City or County)	Fuel	Summer MW
I. Purchase from QF's: Cogeneration/Small Power Production Facilities			
Indiantown Cogen LP	Martin	Coal (Cogen)	330
Broward South	Broward	Solid Waste	4
		Total:	334
II. Purchases from Utilities & IPP			
Palm Beach SWA - extension	Palm Beach	Solid Waste	40
Palm Beach SWA - New Unit	Palm Beach	Solid Waste	70
OUC/FMPA	Orange	Gas	100
		Total:	210
	Total Net Firm Generating Capability:		544

Non-Firm Energy Purchases (MWH)

Project	County	Fuel	Energy (MWH) Delivered to FPL in 2019
Miami Dade Resource Recovery 1/	Dade	Solid Waste	55,702
Broward South 1/	Broward	Solid Waste	48,779
Lee County Solid Waste1/	Lee	Solid Waste	45,916
Brevard County 1/	Brevard	Solid Waste	38,226
Okeelanta (known as Florida Crystals and New Hope Power Partners) 1/	Palm Beach	Bagasse/Wood	36,052
Waste Management - Collier County Landfill 1/	Collier	Landfill Gas	25,527
Landfill Energy Systems (Aria Energy) 1/	Seminole	Landfill Gas	15,058
Tropicana	Manatee	Natural Gas	6,056
Georgia Pacific	Putnam	Paper by-product	4,437
Landfill Energy Systems (Aria Energy) 1/	Sarasota	Landfill Gas	2,062
Waste Management Renewable Energy 1/	Broward	Landfill Gas	1,520
Fortistar - Port Charlotte 1/	Charlotte	Landfill Gas	361
Customer Owned PV & Wind	Various	PV/Wind	72,084

1/ These Non-Firm Energy Purchases are renewable and are reflected on Schedule 11.1, row 9, column 6.

Table I.A.3.2: FPL's Firm Purchased Power Summer MW

Summary of FPL's Firm Capacity Purchases: Summer MW (for August of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities 1/	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Broward South	01/01/93	12/31/26	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0	0
Broward South	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0
Broward South	01/01/97	12/31/26	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0	0
Indiantown Cogen L.P.	12/22/95	4th Qtr/2020	330	0	0	0	0	0	0	0	0	0
		QF Purchases Subtotal:	**334**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**0**	**0**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
OUC	10/01/18	12/31/20	100	0	0	0	0	0	0	0	0	0
		Utility Purchases Subtotal:	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total of QF and Utility Purchases =	**434**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**0**	**0**

III. Other Purchases

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Palm Beach SWA - Extension 2/	01/01/12	04/01/34	40	40	40	40	40	40	40	40	40	40
Palm Beach SWA - Additional	01/01/15	04/01/34	70	70	70	70	70	70	70	70	70	70
		Other Purchases Subtotal:	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

Total "Non-QF" Purchases =	**210**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Summer Firm Capacity Purchases Total MW:	**544**	**114**	**114**	**114**	**114**	**114**	**114**	**114**	**110**	**110**

1/ The Indiantown Cogen L.P. PPA is projected to end, and the generating unit to be retired, in 4th Quarter 2020.
2/ When the second unit came into commercial service at the Palm Beach SWA, neither unit met the standards to be a small power producer, and it then became accounted for under "Other Purchases"

Table I.A.3.3: FPL's Firm Purchased Power Winter MW

Summary of FPL's Firm Capacity Purchases: Winter MW (for January of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities [1/]	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Broward South	01/01/93	12/31/26	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0	0	0
Broward South	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0
Broward South	01/01/97	12/31/26	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0	0	0
Indiantown Cogen L.P.	12/22/95	4th Qtr/2020	330	0	0	0	0	0	0	0	0	0
		QF Purchases Subtotal:	**334**	**4**	**4**	**4**	**4**	**4**	**4**	**0**	**0**	**0**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
OUC	10/01/18	12/31/20	70	0	0	0	0	0	0	0	0	0
		Utility Purchases Subtotal:	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total of QF and Utility Purchases =	**404**	**4**	**4**	**4**	**4**	**4**	**4**	**0**	**0**	**0**

III. Other Purchases

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Palm Beach SWA - Extension [2/]	01/01/12	04/01/34	40	40	40	40	40	40	40	40	40	40
Palm Beach SWA - Additional	01/01/15	04/01/34	70	70	70	70	70	70	70	70	70	70
		Other Purchases Subtotal:	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

Total "Non-QF" Purchases =	**180**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Winter Firm Capacity Purchases Total MW:	**514**	**114**	**114**	**114**	**114**	**114**	**114**	**110**	**110**	**110**

1/ The Indiantown Cogen L.P. PPA is projected to end, and the generating unit to be retired, in 4th Quarter 2020.
2/ When the second unit came into commercial service at the Palm Beach SWA, neither unit met the standards to be a small power producer, and it then became accounted for under "Other Purchases"

I.A.4 FPL - Demand Side Management (DSM)

FPL has continually explored and implemented cost-effective DSM programs since 1978, and it has consistently been among the leading utilities nationally in achieving substantial DSM efficiencies. These programs include a number of innovative conservation/energy efficiency and load management initiatives. Importantly, FPL's DSM efforts through 2019 have resulted in a cumulative Summer peak reduction of 4,870 MW at the generator and an estimated cumulative energy savings of 89,166 Gigawatt-Hour (GWh) at the generator. After accounting for the 20% total reserve margin requirements, FPL's highly effective DSM efforts through 2019 have eliminated the need to construct the equivalent of approximately fifteen (15) new 400 MW generating units. Also, it is important to note that FPL has achieved these significant DSM accomplishments while minimizing the DSM-based impact on electric rates for all of its customers.

In 2019, the Florida Public Service Commission (FPSC) set DSM Goals for the years 2020 through 2024 for FPL and the other Florida utilities subject to the Florida Energy Efficiency and Conservation Act (FEECA). For these 5 years, these Goals are identical to the Goals set by the FPSC in 2014 for the years 2020 through 2024. In February 2020, FPL filed for FPSC approval its DSM Plan with which it intends to meet the DSM Goals. In this Site Plan, FPL assumes that the annual reduction values for Summer MW, Winter MW, and energy (MWh) set forth in the DSM Goals order (Order No. PSC-2019-0509-FOF-EG) will be met as shown in various schedules presented in this Site Plan. For the years 2025 through 2029, for which the FPSC did not establish Goals, FPL has assumed that DSM will be implemented to achieve the DSM levels that FPL proposed in its 2019 DSM Goals filing because this level of annual DSM was projected to be cost-effective.

Schedule 1

FPL Existing Generating Facilities
As of December 31, 2019

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
								Alt.		Actual/			
						Fuel		Fuel	Commercial	Expected	Gen.Max.	Net Capability 1/	
	Unit		Unit	Fuel		Transport.		Days	In-Service	Retirement	Nameplate	Winter	Summer
Plant Name	No.	Location	Type	Pri.	Alt.	Pri.	Alt.	Use	Month/Year	Month/Year	KW	MW	MW
Babcock Ranch Solar 2/		Charlotte County											
		29,31,32/41S/26E : 5,6/42S/26E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Dec-16	Unknown	74,500	74.5	74.5
Barefoot Solar 2/		Brevard County											
		15,16/30S/38E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Blue Cypress Solar 2/		Indian River County											
		16,21/33S/38E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Cape Canaveral		Brevard County											
		19/23S/36E									1,295,400	1,393	1,290
	3		CC	NG	FO2	PL	TK	Unknown	Apr-13	Unknown	1,295,400	1,393	1,290
Citrus Solar 2/		DeSoto County											
		26,27,34,35,36/36S/25E : 1,2/37S/25E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Dec-16	Unknown	74,500	74.5	74.5
Coral Farms Solar 2/		Putnam County											
		27,28,33,34/8S/24E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Jan-18	Unknown	74,500	74.5	74.5
DeSoto Solar 2/		DeSoto County											
		27,28/36S/25E									22,500	25	25
	1		PV	Solar	Solar	N/A	N/A	Unknown	Oct-09	Unknown	22,500	25	25
Fort Myers		Lee County											
		35/43S/25E									2,796,198	2,750	2,772
	2		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,836,798	1,787	1,812
	3		CT	NG	FO2	TK	TK	Unknown	Jun-03	Unknown	835,380	840	852
	1, 9		GT	FO2	No	WA	No	Unknown	May-74	Unknown	124,020	123	108
Hammock Solar 2/		Hendry County											
		33,34/43S/30E : 3,4,9,10/44S/30E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Horizon Solar 2/		Alachua County											
		25,35,36/9S/22E : 30, 31/9S/23E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Jan-18	Unknown	74,500	74.5	74.5
Indian River Solar 2/		Indian River County											
		30,31/33S/38E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Jan-18	Unknown	74,500	74.5	74.5
Interstate Solar 2/		St. Lucie County											
		28,29,33/34S/39E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Jan-19	Unknown	74,500	74.5	74.5
Lauderdale		Broward County											
		30/50S/42E									1,215,956	1,184	1,224
	6		CT	NG	FO2	PL	TK	Unknown	Dec-16	Unknown	1,147,500	1,110	1,155
	3, 5		GT	NG	FO2	PL	TK	Unknown	Aug-70	Unknown	68,456	74	69
Loggerhead Solar 2/		St. Lucie County											
		21,28,33/37S/38E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Manatee Solar 2/		Manatee County											
		1,12,13,24/33S/19E : 6,7,18,19/33S/20E									6,130,464	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Dec-16	Unknown	74,500	74.5	74.5
Manatee		Manatee County											
		18/33S/20E									3,027,982	2,903	2,867
	1		ST	NG	FO6	PL	WA	Unknown	Oct-76	4th Qtr/2021	863,300	819	809
	2		ST	NG	FO6	PL	WA	Unknown	Dec-77	4th Qtr/2021	863,300	819	809
	3		CC	NG	No	PL	No	Unknown	Jun-05	Unknown	1,301,382	1,265	1,249

1/ These ratings are peak capability ratings for non-Solar units and Nameplate ratings for Solar units.

2/ Approximately 56% of the 74.5 MW PV facility at Coral Farms, Horizon, Indian River, Interstate, Hammock, Barefoot Bay, Blue Cypress, and Loggerhead, 54% of the 74.5 MW PV Facility at Babcock Ranch, Citrus, and Manatee and 43% of the 25 MW PV facility at Desoto is considered as firm generating capacity for Summer reserve margin purposes and 0% is considered as firm capacity for Winter reserve margin purposes.

Schedule 1

FPL Existing Generating Facilities
As of December 31, 2019

(1) Plant Name	(2) Unit No.	(3) Location	(4) Unit Type	(5) Fuel Pri.	(6) Fuel Alt.	(7) Fuel Transport Pri.	(8) Fuel Transport Alt.	(9) Alt. Fuel Days Use	(10) Commercial In-Service Month/Year	(11) Actual/ Expected Retirement Month/Year	(12) Gen.Max. Nameplate KW	(13) Net Capability [1/] Winter MW	(14) Net Capability [1/] Summer MW
Martin		Martin County											
		30/39S/38E									2,525,382	2,337	2,209
	3		CC	NG	No	PL	No	Unknown	Feb-94	Unknown	612,000	533	487
	4		CC	NG	No	PL	No	Unknown	Apr-94	Unknown	612,000	533	487
	8 [4/]		CC	NG	FO2	PL	TK	Unknown	Jun-05	Unknown	1,301,382	1,271	1,235
Miami Dade Solar [3/]		Dade County											
		13,24/55S/38E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Okeechobee		Okeechobee											
		2/33S/35E									1,886,150	1,672	1,720
	1		CC	NG	FO2	PL	TK	Unknown	Mar-19	Unknown	1,886,150	1,672	1,720
Pioneer Trail Solar [3/]		Volusia County											
		16,20,21,28,29,32/17S/32E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Port Everglades		City of Hollywood											
		23/50S/42E									1,412,700	1,338	1,237
	5		CC	NG	FO2	PL	TK	Unknown	Apr-16	Unknown	1,412,700	1,338	1,237
Riviera Beach		City of Riviera Beach											
		33/42S/432E									1,295,400	1,393	1,290
	5		CC	NG	FO2	PL	TK	Unknown	Apr-14	Unknown	1,295,400	1,393	1,290
Sanford		Volusia County											
		16/19S/30E									2,531,464	2,335	2,205
	4		CC	NG	No	PL	No	Unknown	Oct-03	Unknown	1,265,732	1,147	1,029
	5		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,265,732	1,188	1,176
Scherer [2/]		Monroe, GA									680,368	635	634
	4		ST	SUB	No	RR	No	Unknown	Jul-89	4th Q 2021	680,368	635	634
Space Coast Solar [3/]		Brevard County											
		13/23S/36E									10,000	10	10
	1		PV	Solar	Solar	N/A	N/A	Unknown	Apr-10	Unknown	10,000	10	10
St. Lucie [5/]		St. Lucie County											
		16/36S/41E									1,999,128	1,863	1,821
	1		ST	Nuc	No	TK	No	Unknown	May-76	Unknown	1,080,000	1,003	981
	2		ST	Nuc	No	TK	No	Unknown	Jun-83	Unknown	919,128	860	840
Sunshine Gateway Solar [3/]		Columbia County											
		25.26,35,36/2S/15E : 31/2S/16E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Mar-18	Unknown	74,500	74.5	74.5
Turkey Point		Miami Dade County											
		27/57S/40E									3,055,782	3,018	2,928
	3		ST	Nuc	No	TK	No	Unknown	Nov-72	Unknown	877,200	859	837
	4		ST	Nuc	No	TK	No	Unknown	Jun-73	Unknown	877,200	848	821
	5		CC	NG	FO2	PL	TK	Unknown	May-07	Unknown	1,301,382	1,311	1,270
West County		Palm Beach County											
		29/43S/40E									4,100,400	4,087	3,756
	1		CC	NG	FO2	PL	TK	Unknown	Aug-09	Unknown	1,366,800	1,369	1,259
	2		CC	NG	FO2	PL	TK	Unknown	Nov-09	Unknown	1,366,800	1,369	1,259
	3		CC	NG	FO2	PL	TK	Unknown	May-11	Unknown	1,366,800	1,349	1,238
Wildflower Solar [3/]		Desoto County											
		25,26,35,36/36S/25E									74,500	74.5	74.5
	1		PV	Solar	Solar	N/A	N/A	Unknown	Jan-18	Unknown	74,500	74.5	74.5
Total System Generating Capacity as of December 31, 2019 [6/] =												**28,061**	**27,105**
System Firm Generating Capacity as of December 31, 2019 [7/] =												**26,908**	**26,585**

1/ These ratings are peak capability ratings for non-Solar units and Nameplate ratings for Solar units.

2/ These ratings relate to FPL's 76.36% share of Plant Scherer Unit 4 operated by Georgia Power, and represent FPL's 73.923% ownership share available at point of interchange.

3/ Approximately 56% of the 74.5 MW PV facility at Miami Dade, Pioneer Trail, Sunshine Gateway and Wildflower, 38.5% of the 10 MW PV facility at Space Coast is considered as firm generating capacity for Summer reserve margin purposes and 0% is considered as firm capacity for Winter reserve margin purposes.

4/ Martin Unit 8 is also partially fueled by a 75 MW solar thermal facility that supplies steam when adequate sunlight is available, thus reducing fossil fuel use.

5/ Total capability of St. Lucie 1 is 981/1,003 MW. FPL's share of St. Lucie 2 is 840/860.FPL's ownership share of St. Lucie Units 1 and 2 is 100% and 85%, respectively, as shown above. FPL's share of the deliverable capacity from each unit is approx. 92.5% and exclude the Orlando Utilities Commission (OUC) and Florida Municipal Power Agency (FMPA) combined portion of approximately 7.448% per unit.

6/ The Total System Generating Capacity value shown includes FPL-owned firm and non-firm generating capacity.

7/ The System Firm Generating Capacity value shown includes <u>only firm</u> generating capacity.

I.B. Gulf System:

I.B.1 Description of Existing Resources

Gulf's service area contains approximately 7,550 square miles and has a population of approximately one million people. Gulf Power served an average of 468,282 customer accounts in 8 counties during 2019. These customers were served by a variety of resources including: Gulf Power-owned fossil-fuel, renewable (solar and wind), other non-utility owned generation; demand side management (DSM); and interchange/purchased power.

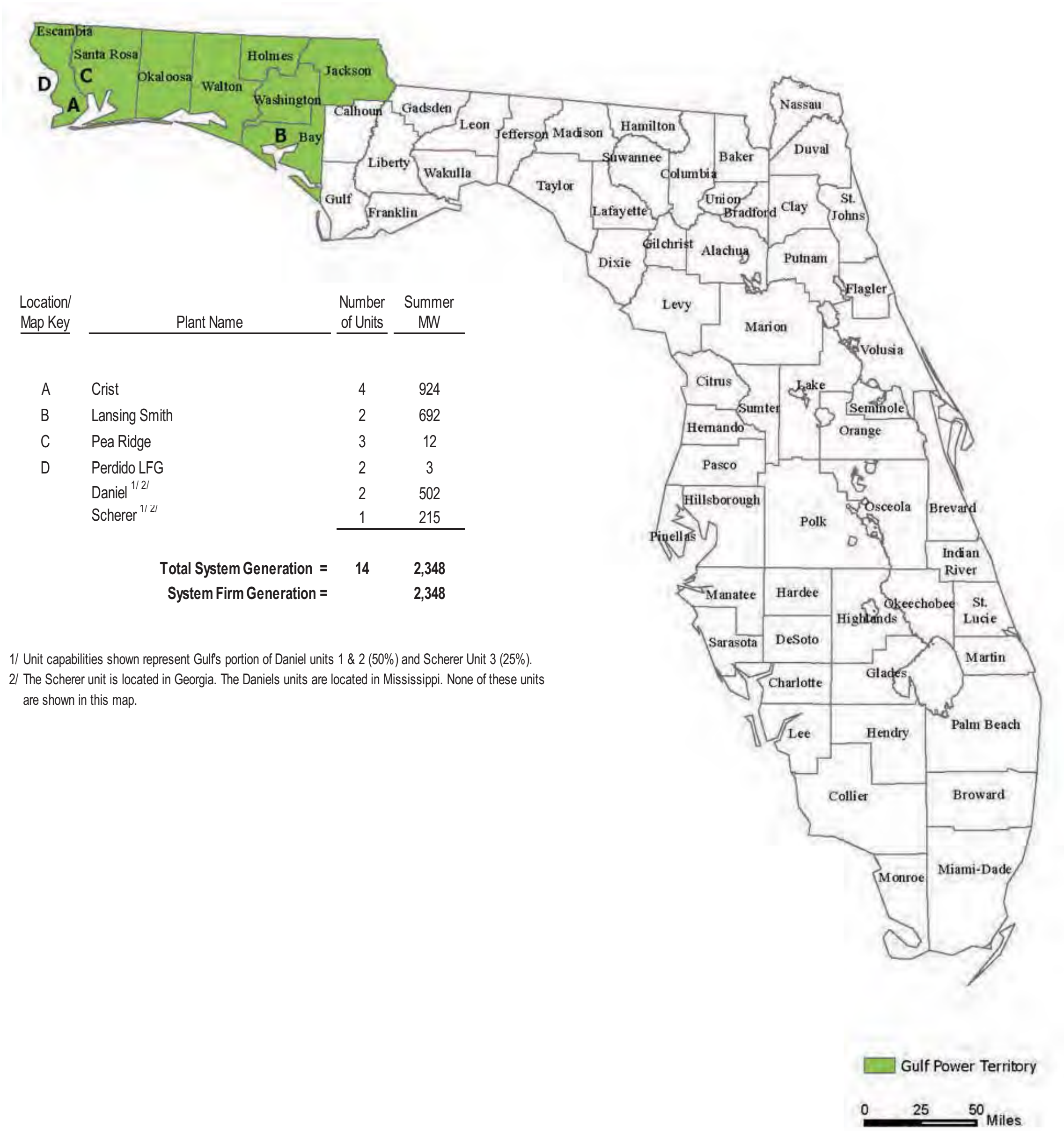
I.B.2 Gulf - Owned Resources

As of December 31, 2019, Gulf owned electric generating resources located at five sites distributed geographically throughout its service territory, plus one site in Georgia (partial Gulf ownership of one unit). These generating facilities consisted of: seven coal units, one combined-cycle (CC) unit, four simple-cycle combustion turbines (CTs), and two landfill gas (LFG) facilities. The locations of the 14 generating units that were in commercial operation on December 31, 2019 are shown on Figure I.B.2.1 and in Table I.B.2.1.

Gulf's bulk transmission system, including both overhead and underground lines, is comprised of 1,672 circuit miles of transmission lines. Integration of the generation, transmission, and distribution systems is achieved through Gulf's 132 substations in Florida.

The existing Gulf system, including generating plants, major transmission stations, and transmission lines, is shown on Figure I.B.2.2.

Gulf Power Generating Resources by Location



Location/ Map Key	Plant Name	Number of Units	Summer MW
A	Crist	4	924
B	Lansing Smith	2	692
C	Pea Ridge	3	12
D	Perdido LFG	2	3
	Daniel [1/ 2/]	2	502
	Scherer [1/ 2/]	1	215
	Total System Generation =	**14**	**2,348**
	System Firm Generation =		**2,348**

1/ Unit capabilities shown represent Gulf's portion of Daniel units 1 & 2 (50%) and Scherer Unit 3 (25%).
2/ The Scherer unit is located in Georgia. The Daniels units are located in Mississippi. None of these units are shown in this map.

Figure I.B.2.1: Gulf Power Generating Resources by Location (as of December 31, 2019)

Table I.B.2.1: Gulf Power Capacity Resources by Unit Type (as of December 31, 2019)

Unit Type/ Plant Name	Location	Number of Units	Fuel	Summer MW
Coal Steam				
Crist	Escambia County	4	Coal	924
Daniel	Jackson County, MS	2	Coal	502
Scherer	Monroe County, Ga	1	Coal	215
Total Coal Steam:		**7**		**1,641**
Combined-Cycle				
Lansing Smith	Bay County	1	Gas	660
Total Combined Cycle:		**1**		**660**
Combustion Turbines				
Pea Ridge	Santa Rosa County	3	Gas	12
Lansing Smith	Bay County	1	Oil	32
Total Combustion Turbines:		**4**		**44**
Land Fill Gas				
Perdido LFG	Escambia County	2	LFG	3
Total LFG:		**2**		**3**
	Total System Generation as of December 31, 2019 =	**14**		**2,348**
	System Firm Generation as of December 31, 2019 =			**2,348**

Gulf Power Bulk Transmission System

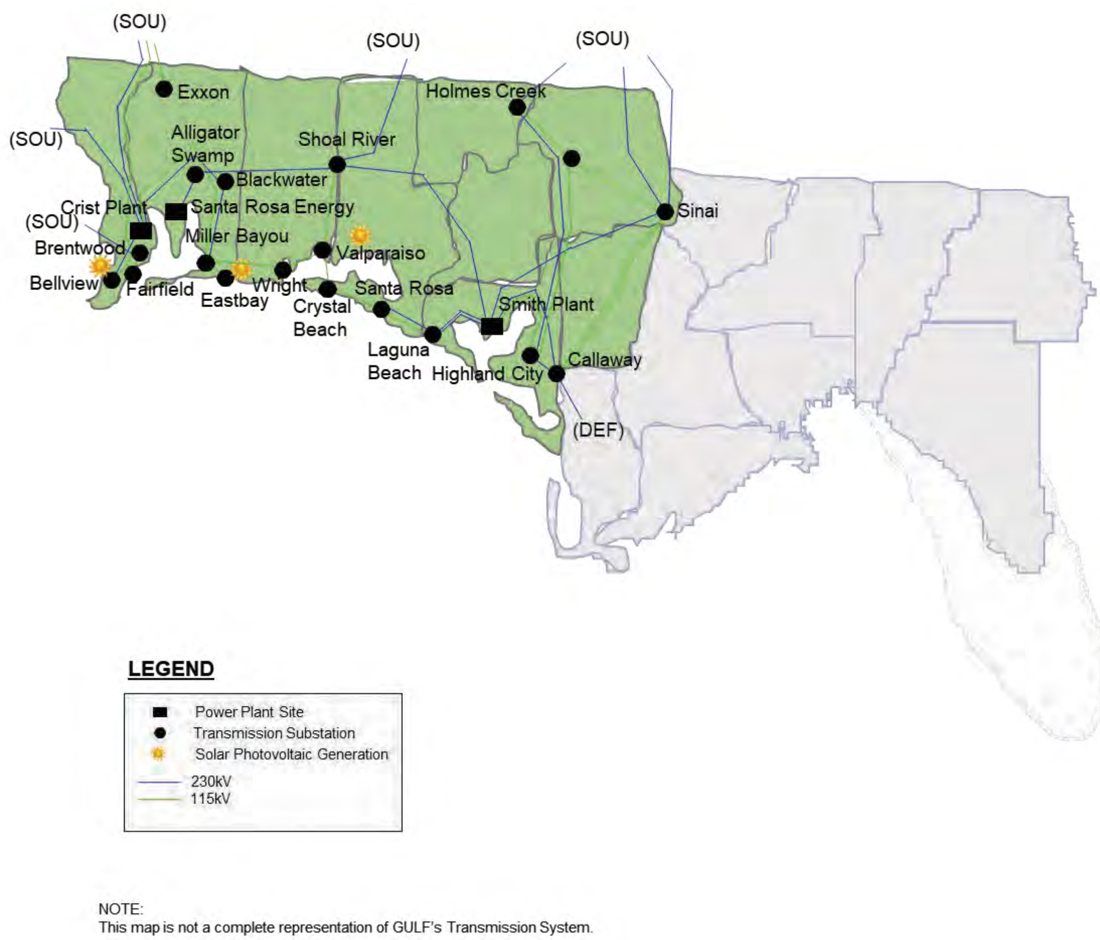


Figure I.B.2.2: Gulf Power Bulk Transmission System

I.B.3 Gulf - Capacity and Energy Power Purchases

Firm Capacity: Purchases from Qualifying Facilities (QF)

Gulf currently has no contracts with qualifying facilities (*e.g.*, cogeneration/small power production facilities) to purchase firm capacity and energy during the 10-year reporting period of this Site Plan.

Firm Capacity: Purchases from Utilities

Gulf currently has no PPAs with other utilities.

Firm Capacity: Other Purchases

Gulf has three firm capacity purchase contracts; two with Morgan Stanley Capital Group's Kingfisher I and Kingfisher II wind projects, and one with Shell Energy North America's Tenaska project. The 2019 actual and 2020-2029 projected contributions from these facilities are shown in Table I.B.3.1, I.B.3.2 and I.B.3.3.

Non-Firm (As Available) Energy Purchases

Gulf purchases non-firm (as-available) energy from a number of cogeneration and small power production facilities. The lower half of Table I.B.3.1 shows the amount of energy purchased in 2019 from these facilities.

Table I.B.3.1: Gulf Power Purchased Power Resources by Contract (as of December 31, 2019)

Firm Capacity Purchases (MW)	Location (City or County)	Fuel	Summer MW
I. Purchase from QF's: Cogeneration/Small Power Production Facilities			
		Total:	-
II. Purchases from Utilities & IPP			
MSCG - Kingfisher I 1/	Oklahoma	Wind	53
MSCG - Kingfisher II 1/	Oklahoma	Wind	28
SENA - (Shell)	Alabama	Gas	885
		Total:	966
	Total Net Firm Generating Capability:		966

Non-Firm Energy Purchases (MWH)

Project	County	Fuel	Energy (MWH) Delivered to FPL in 2019
International Paper Company Units 1&2 1/	Escambia	Biomass	1,084
Ascend - Solutia Units 1-4	Escambia	Gas	198,163
Gulf Coast Solar Center I	Okaloosa	Sun	59,090
Gulf Coast Solar Center II	Santa Rosa	Sun	78,571
Gulf Coast Solar Center III	Escambia	Sun	94,741
Customer Owned PV & Wind	Various	PV/Wind	6,821

1/ These Non-Firm Energy Purchases are renewable and are reflected on Schedule 11.1, row 9, column 6.

Table I.B.3.2: Gulf Power Firm Purchased Power Summer MW

Summary of Gulf Power Firm Capacity Purchases: Summer MW (for August of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
None	-	-	-	-	-	-	-	-	-	-	-	-
QF Purchases Subtotal:			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
None	-	-	-	-	-	-	-	-	-	-	-	-
Utility Purchases Subtotal:			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total of QF and Utility Purchases =	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

III. Other Purchases

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
MSCG - Kingfisher I	01/01/17	12/31/35	53	53	53	53	53	53	53	53	53	53
MSCG - Kingfisher II	01/01/17	12/31/35	28	28	28	28	28	28	28	28	28	28
SENA - (Shell)	06/01/14	05/24/23	885	885	885	0	0	0	0	0	0	0
Gulf Solar PPAs [/1]	11/17/14	11/17/40	34	34	34	34	34	34	34	34	34	34
Other Purchases Subtotal:			**1,000**	**1,000**	**1,000**	**115**	**115**	**115**	**115**	**115**	**115**	**115**

Total "Non-QF" Purchases =	**1,000**	**1,000**	**1,000**	**115**	**115**	**115**	**115**	**115**	**115**	**115**

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Summer Firm Capacity Purchases Total MW:	**1,000**	**1,000**	**1,000**	**115**	**115**	**115**	**115**	**115**	**115**	**115**

1/ These PPAs are non-firm, energy-only contracts due to the unscheduled, intermitent nature of solar resources. For resource planning purposes, a portion of the nameplate rating of the solar facilities has been, and continues to, provide, on average, a non-zero value at the system Summer peak hour.

Table I.B.3.3: Gulf Power Firm Purchased Power Winter MW

Summary of Gulf Power Firm Capacity Purchases: Winter MW (for January of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
None	-	-	-	-	-	-	-	-	-	-	-	-
QF Purchases Subtotal:			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
None	-	-	-	-	-	-	-	-	-	-	-	-
Utility Purchases Subtotal:			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total of QF and Utility Purchases =			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

III. Other Purchases

	Contract Start Date	Contract End Date	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
MSCG - Kingfisher I	01/01/17	12/31/35	71	71	71	71	71	71	71	71	71	71
MSCG - Kingfisher II	01/01/17	12/31/35	38	38	38	38	38	38	38	38	38	38
SENA - (Shell)	06/01/14	05/24/23	885	885	885	0	0	0	0	0	0	0
Gulf Solar PPAs [/1]	11/17/14	11/17/40	0	0	0	0	0	0	0	0	0	0
Other Purchases Subtotal:			**994**	**994**	**994**	**109**	**109**	**109**	**109**	**109**	**109**	**109**
Total "Non-QF" Purchases =			**994**	**994**	**994**	**109**	**109**	**109**	**109**	**109**	**109**	**109**

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Winter Firm Capacity Purchases Total MW:	**994**	**994**	**994**	**109**	**109**	**109**	**109**	**109**	**109**	**109**

1/ These PPAs are non-firm, energy-only contracts due to the unscheduled, intermitent nature of solar resources. For resource planning purposes, a portion of the nameplate rating of the solar facilities has been, and continues to, provide, on average, a zero value at the system Winter peak hour.

I.B.4 Gulf - Demand Side Management (DSM)

Gulf has continually explored and implemented cost-effective DSM programs since 1981. These programs include a number of innovative conservation/energy efficiency initiatives. Importantly, Gulf's DSM efforts through 2019 have resulted in a cumulative Summer peak reduction of more than 500 MW at the generator and an estimated cumulative energy savings of approximately 1,079 Gigawatt-Hour (GWh) at the generator. After accounting for Gulf's current 16.25% total reserve margin requirements, Gulf's highly effective DSM efforts through 2019 have eliminated the need to construct the equivalent of approximately six (6) new 100 MW generating units. Also, it is important to note that Gulf has achieved these significant DSM accomplishments while minimizing the DSM-based impact on electric rates for all of its customers.

In 2019, the Florida Public Service Commission (FPSC) set DSM Goals for the years 2020 through 2024 for Gulf and the other Florida utilities subject to the Florida Energy Efficiency and Conservation Act (FEECA). These Goals are identical to the Goals set by the FPSC in 2014 for the years 2020 through 2024. In February 2020, Gulf filed for FPSC approval its DSM Plan with which it intends to meet the DSM Goals. In this Site Plan, Gulf assumes that the annual reduction values for Summer MW, Winter MW, and energy (MWh) set forth in the DSM Goals order (Order No. PSC-2019-0509-FOF-EG) will be met as shown in various schedules presented in this Site Plan. For the years 2025 through 2029, for which the FPSC did not establish Goals, it is assumed that DSM will be implemented to achieve the Goals Gulf proposed in its 2019 DSM Goals filing because this level of annual DSM was projected to be cost-effective.

Florida Power & Light Company
Gulf Power Company
Docket No. 20200000-OT
Staff's First Data Request
Request No. 1
Attachment No. 1
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Schedule 1

Gulf Power Existing Generating Facilities
As of December 31, 2019

(1) Plant Name	(2) Unit No.	(3) Location	(4) Unit Type	(5) Fuel Pri.	(6) Fuel Alt.	(7) Fuel Transport. Pri.	(8) Fuel Transport. Alt.	(9) Alt. Fuel Days Use	(10) Commercial In-Service Month/Year	(11) Actual/ Expected Retirement Month/Year	(12) Gen.Max. Nameplate KW	(13) Net Capability [1/] Winter MW	(14) Net Capability [1/] Summer MW
Crist		Escambia County											
		25/1N/30W									1,135,250	924	924
	4		FS	C	NG	WA	PL	1	Jul-59	4th Q 2024	93,750	75	75
	5		FS	C	NG	WA	PL	1	Jun-61	4th Q 2026	93,750	75	75
	6		FS	C	NG	WA	PL	1	May-70	Unknown	369,750	299	299
	7		FS	C	NG	WA	PL	--	Aug-73	Unknown	578,000	475	475
Daniel (1)		Jackson County, MS											
		42/5S/6W									548,250	502	502
	1		FS	C	--	RR	--	--	Sep-77	1st Q 2024	274,125	251	251
	2		FS	C	--	RR	--	--	Jun-81	1st Q 2024	274,125	251	251
Lansing Smith		Bay County											
		36/2S/15W									697,950	686	692
	3		CC	NG	--	PL	--	--	Apr-02	Unknown	656,100	646	660
	A		CT	LO	--	TK	--	--	May-71	4th Q 2027	41,850	40	32
Pea Ridge		Santa Rosa County											
		15/1N/29W									14,250	15	12
	1		CT	NG	--	PL	--	--	May-98	2nd Q 2025	4,750	5	4
	2		CT	NG	--	PL	--	--	May-98	2nd Q 2025	4,750	5	4
	3		CT	NG	--	PL	--	--	May-98	2nd Q 2025	4,750	5	4
Perdido LFG		Escambia County											
											3,200	3	3
	1		IC	LFG	--	PL	--	--	Oct-10	4th Q 2029	1,600	1.5	1.5
	2		IC	LFG	--	PL	--	--	Oct-10	4th Q 2029	1,600	1.5	1.5
Scherer (1)		Monroe County, GA											
											222,750	215	215
	3		FS	C	--	RR	--	--	Jan-87	Unknown	222,750	215	215
Total System Generating Capacity as of December 31, 2019 [6/] =												**2,345**	**2,348**
System Firm Generating Capacity as of December 31, 2019 [7/] =												**2,345**	**2,348**

1/ Unit capabilities shown represent Gulf's portion of Daniel units 1 & 2 (50%) and Scherer Unit 3 (25%).

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CHAPTER II

Forecast of Electric Power Demand

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II. Forecast of Electric Power Demand

II.A. Overview of the Load Forecasting Process

On January 1, 2019, Gulf Power became a subsidiary of NextEra Energy, the parent company of FPL. The load forecasting teams from FPL and Gulf were consolidated into one load forecasting team, which developed the forecasts of customers, sales, net energy for load (NEL), and peak demands presented in this Site Plan. Modifications were made to the standalone methodologies that were formerly applied to FPL and/or Gulf. The result is that consistent forecasting methodologies are now being applied to both the FPL and Gulf areas. These modifications are detailed later in this chapter. However, at the time this 2020 Site Plan is filed, the forecasting methodologies used to provide the load forecast information presented in this document are evolving as work to integrate the two companies is ongoing. The load forecasting team will evaluate and implement appropriate enhancements to the forecasting methodologies for upcoming forecasts.

As previously discussed, FPL and Gulf plan to integrate the two systems into a single electric system, effective 1/1/2022. In this document, the load forecasts for FPL and Gulf will be presented separately for the years 2020 and 2021. For 2022 through 2029, the load forecast for the single integrated utility will be presented. That electrically integrated system will be referred to in this document as FPL. This forecast will reflect the growth of the new integrated system, including reduced peak demand from load diversity.

FPL and Gulf typically develop long-term forecasts of customers, energy sales, and peak loads on an annual basis for each of their systems. This was done again in order to develop load forecasts for the single integrated system. Gulf's new long-term forecasts were developed in the 3rd Quarter of 2019 and FPL's new long-term forecasts were developed in the 4th Quarter of 2019[7]. The forecasts for FPL and Gulf then were combined to arrive at the forecasts for the single integrated system for the years 2022 and beyond. These new load forecasts are utilized throughout this 2020 Site Plan and are key inputs to the models used to develop the integrated resource plan presented in this document.

The following pages describe how the forecasts of customers, energy sales, and peak loads were developed first separately for FPL and Gulf, and then combined into a single set of forecasts for the integrated system. Consistent with past forecasts, the drivers for both the FPL

[7] At the time the forecasts presented in this TYSP were developed, Gulf was obligated as member of the Southern Company pool to provide updated NEL and peak demand forecasts to Southern Company Services for their planning process. The difference in the timing of the planning processes resulted in Gulf's forecast being completed prior to FPL's forecast.

and Gulf forecasts include population and household growth, economic conditions, electricity prices, weather, and energy-efficiency codes and standards. Additionally, these forecasts are 50% probability (P50) forecasts. This means there is a 50% probability that actual load will be on either side of forecasted load.

The projections for population growth, household growth, and other economic variables are obtained from IHS Markit, a leading economic forecasting firm. Using statistical models, these inputs are quantified in terms of their impact on the future demand for electricity.

Weather is a key factor that affects energy sales and peak demand. The weather variables for use in FPL's and Gulf's forecasting models are as follows:

1. The residential and commercial energy models incorporate heating degree hours and/or cooling degree hours. The threshold temperatures differ based on how each customer group responds to temperatures.
2. The Summer peak demand models incorporate maximum temperatures on the peak Summer day while the Winter peak demand models incorporate minimum temperatures on the peak Winter day. Additional details are provided later in this chapter.

FPL's weather variables are based on a composite hourly temperature using temperatures from weather stations across FPL's service area: Miami, Ft. Myers, Daytona Beach, and West Palm Beach. The temperatures for each weather station are weighted based on the energy sales associated with that region. The resulting composite temperatures are then used to derive FPL's cooling degree hours and heating degree hours used in the energy models and the peak day temperatures used in the Summer and Winter peak demand models.

Gulf's weather variables are based on the hourly temperatures from the Pensacola weather station. The Pensacola hourly temperatures are then used to derive Gulf's cooling degree hours and heating degree hours used in the energy models and the peak day temperatures used in the Summer and Winter peak demand models. The eight counties in Gulf's service area typically experience similar weather patterns and previous experience has shown that the use of multiple weather stations does not result in significant differences in the reported weather. The Pensacola weather station is used due to the availability of consistent historical data.

II.B. Customer Forecasts

FPL's customer forecasts are developed by class as the factors driving customer growth vary by class. Residential customer growth is driven by population, commercial customer growth is driven by employment and recent trends, and industrial customer growth is driven by housing starts and recent trends. Projections of population, employment, and housing starts are from IHS Markit. Total customer growth is projected to grow at an average annual rate of 1.0% during the years 2020 and 2021. The primary driver of customer growth is population.

Gulf's customer forecasts are also developed by class. Residential customer growth for 2020 and 2021 are based on projections prepared by Gulf's field marketing managers and growth for years 2022 and beyond are based on household growth projection from IHS Markit. Commercial customer growth for 2020 is based on projections prepared by Gulf's field marketing manager and commercial customer growth for years 2021 and beyond is based on residential customer growth. Industrial customer growth is driven by recent trends. Total customer growth is projected to grow at an average annual rate of 1.63% during the years 2020 and 2021. The primary driver of customer growth is population growth.

The customer forecasts for the integrated system for 2022-on is the sum of the class-level customer forecasts for FPL and Gulf, which represent 91.5% and 8.5% of the combined 2022 customers, respectively. Total customer growth is projected to grow at an average annual rate of 0.9% during the forecast period. The primary driver of customer growth is projected increase in population.

II.C. Energy Sales Forecasts

Energy sales forecasts for both FPL and Gulf were developed for the major revenue classes, wholesale energy sales, and losses. Energy adjustments, such as electric vehicles and private solar, were calculated and applied to the class-level energy sales forecasts. These forecasts were then aggregated up to arrive at the NEL forecast for each company (a bottom-up approach). Econometric models were developed using the statistical software package MetrixND.

The FPL energy sales forecast presented in this TYSP for the years 2020 and 2021 was developed using a bottom-up approach whereas prior FPL forecasts were developed using a top-down approach in which the forecast began with the NEL forecast and class-level forecasts were then adjusted to match the NEL forecast. FPL's adoption of the same bottom-up approach that has been used by Gulf has several potential benefits. This approach ensures a consistent energy sales forecasting methodology is being used for both utility systems. In addition, the bottom-up approach has the potential for enhancing both the ability to perform forecast variance analyses as actual load data becomes available and for enhancing the ability to capture different growth rates between revenue classes.

1. Residential Sales

FPL's residential energy sales forecast was developed using an econometric model. Residential energy sales, expressed as monthly use per customer by billing day, are a function of cooling degree hours, heating degree hours, real per capita income, the four month moving average of real electricity price increases over time, energy savings from changes to energy efficiency codes and standards, monthly binary terms, and an autoregressive term. The forecasted energy use per customer per billing day was then multiplied by the projected number of residential customers and projected billing days by month to arrive at the residential billed energy sales. The billed energy sales were then adjusted for unbilled energy to arrive at the calendar month delivered energy sales forecast.

Gulf's residential energy sales forecast was also developed using an econometric model. Monthly use per customer per billing day was estimated based on historical data, normal weather, price of electricity, energy savings from changes to energy efficiency codes and standards, monthly binary terms, and an autoregressive term. The model output was then multiplied by the projected number of residential customers and projected billing days by month to expand to the total residential class.

The methodology described above for Gulf was used for the entire forecast horizon whereas prior forecasts applied this methodology only for the short-term. Growth rates from the LoadMAP-R electric utility end-use model were then used to extend the short-term residential sales forecast into the long-term forecast horizon. Gulf's adoption of the long-term model results for the entire forecast horizon ensures both FPL and Gulf are employing enhanced energy sales forecasting methodologies.

Both FPL's and Gulf's residential energy sales forecasts were adjusted to reflect the anticipated impact of continued adoption of electric vehicles. FPL's residential energy sales forecast was also adjusted to reflect the impact of private solar.

The residential energy sales forecast for the integrated system for the year 2022-on is the sum of the residential sales forecasts for FPL and Gulf, which represent, respectively, 91.5% and 8.5% of the combined 2022 residential sales. Residential energy sales are projected to grow at an average annual rate of 0.9% during the forecast period.

2. Commercial Sales

Econometric models were also used to develop a commercial sales forecast for FPL. The commercial class is forecast using one model for lighting accounts and three separate models based on customer size: small accounts (less than 20 kW of demand), medium accounts (21 kW to 499 kW of demand), and large accounts (demand of 500 kW or higher). Except for the commercial lighting accounts model, the commercial sales models utilize the following variables: cooling degree hours, employment, and the four month moving average of real electricity price increases. Monthly binary terms were utilized in the large and medium models; and an autoregressive term was utilized in the medium and small models. The model outputs were then multiplied by the projected number of commercial customers associated with each respective model and the projected billing days by month to arrive at the billed energy sales. The billed energy sales were then adjusted for unbilled energy to arrive at the calendar month delivered energy sales forecast. The commercial lighting accounts model is based on historical sale trends and input from FPL's lighting group regarding the impact of LEDs. These forecasts are then added together to arrive at the total commercial sales forecast.

Econometric models were also used to develop a commercial non-lighting sales forecast for Gulf. The commercial non-lighting sales is forecast using two separate models which are based on customer size: small accounts (less than 25 kW of demand) and large accounts (all other commercial rate schedules excluding lighting rates). The models utilize the following variables: cooling degree hours, heating degree hours, twelve month moving average of real electricity prices, energy savings from changes to energy efficiency codes and standards, monthly binary terms, and an autoregressive term. The model outputs were then multiplied by the projected number of commercial customers associated with each respective model and the projected billing days by month to arrive at the billed energy sales. The billed energy sales were then adjusted for unbilled energy to arrive at the calendar month delivered energy sales forecast. The commercial lighting sales were developed using historical growth rates and input from Gulf's lighting team to gain insight into future trends.

The methodology described above for Gulf's forecast was used for the entire forecast horizon while prior forecasts employed this methodology only for the short-term forecast. Growth rates from the LoadMAP-C electric utility end-use model are then used to extend the short-term commercial sales forecast into the long-term forecast horizon. Gulf's adoption of the long-term results for the entire forecast horizon ensures both FPL and Gulf are employing enhanced energy sales forecasting methodologies.

FPL's commercial energy sales forecast was adjusted to reflect the impact of private solar and the incremental load projected to be added for the forecast period from FPL's economic development riders.

The commercial energy sales forecast for the integrated system for the years 2022-on is the sum of the commercial sales forecasts for FPL and Gulf, which represent, respectively, 93.0% and 7.0% of the combined 2022 commercial sales. Commercial energy sales are projected to grow at an average annual rate of 0.4% during the forecast period.

3. Industrial Sales

Forecasts developed for FPL's industrial class sales consists of one model for lighting accounts and three separate models based on customer size: small accounts (less than 20 kW of demand), medium accounts (21 kW to 499 kW of demand), and large accounts (demands of 500 kW or higher). The small industrial sales model utilizes cooling degree hours, an autoregressive term, and a lagged variable. The medium, large, and lighting accounts forecasts utilize exponential smoothing models. The small, medium, large, and lighting accounts forecasts were then added together to arrive at the total industrial sales forecast.

Forecasts for Gulf's industrial class sales used a combination of surveys of major industrial customers and historical average use per customer. Gulf's largest industrial customers were interviewed by Gulf's industrial account representatives to identify expected future load changes. The forecast of sales to the remaining smaller industrial customers was developed by rate code using historical average use per customer, which was multiplied by the projected number of customers to arrive at energy sales. The forecasts for the largest industrial customers and the remaining smaller industrial customers were added together to arrive at the total industrial sales forecast.

FPL's Industrial energy sales were adjusted for forecasted Commercial/Industrial Service Rider (CISR) sales for new or retained customer loads of 2 MW or greater and meet the criteria outlined in FPL's Rate Schedule: CISR-1.

The industrial energy sales forecast for the integrated system for the years 2022-on is the sum of the industrial sales forecasts for FPL and Gulf, which represent, respectively, 65.9% and 34.1% of the combined 2022 industrial sales. Industrial energy sales are projected to remain mostly flat during the forecast period, only growing at an average annual rate of 0.2%.

4. Railroad and Railways Sales and Street and Highway Sales

FPL's Railroad and Railway class consists solely of Miami-Dade County's Metrorail system. The projections for railroad and railways sales are based on a historical moving average.

FPL develops the forecast for Street and Highway sales by first developing a trended use-per-customer value, then multiplying this value by the number of forecasted customers.

Gulf's street and highway class consists of outdoor lighting accounts for governmental entities and municipal services benefit units (MSBU). An MSBU is a non-ad valorem assessment district established for funding improvements, such as street lighting, in a specific geographic area. The projections for street and highway sales are based on historical growth rates and inputs from Gulf's lighting team to gain insight into future trends.

5. Other Public Authority Sales

This class is applicable only to FPL and consists of a sports field rate schedule (which is closed to new customers) and one government account. The forecast for this class is based on its historical usage characteristics.

6. Total Sales to Ultimate Customer

The sales forecasts by revenue class for FPL and Gulf are each summed to produce their respective total sales forecasts.

7. Sales for Resale

Sales for resale (wholesale) customers are comprised of sales to municipalities and/or electric co-operatives. These customers differ from jurisdictional customers in that they are not the ultimate users of the electricity. Instead, they resell this electricity to their own customers.

The load forecast for FPL includes wholesale loads served under full and partial-requirements contracts that provide other utilities all, or a portion of, their load requirements at a level of service equivalent to FPL's own native load customers. There are currently nine customers in this class: Florida Keys Electric Cooperative, Lee County Electric Cooperative, New Smyrna Beach, Wauchula, Homestead, Quincy, Moore Haven, Florida Public Utilities Company, and Seminole Electric Cooperative.[8]

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[8] FPL continues to evaluate the possibility of serving the electrical loads of other entities at the time this Site Plan was being prepared. Because these possibilities are still being evaluated, the load forecast presented in this Site Plan does not include these potential loads.

The load forecast for Gulf also includes a full-requirements wholesale contract that provide another utility all of their load requirement at a level of service equivalent to Gulf's own native load customers. There is currently one customer in this class: Florida Public Utilities Company.

Since May 2011, FPL has provided service to the Florida Keys Electric Cooperative under a long-term, full-requirements contract. The sales to Florida Keys Electric Cooperative are based on customer-supplied information and historical coincidence factors.

FPL sales to Lee County began in 2010. Lee County has a contract with FPL for the full-requirements of their load that is projected to continue through 2033, with an option to extend the contract through 2053. Forecasted NEL for Lee County is based on customer-supplied information and historical usage trends.

FPL sales to New Smyrna Beach began in February 2014. The contract is projected to continue through December 2021. Under a second contract, additional sales to New Smyrna Beach began in July 2017 and are also projected to continue through December 2021. Under a third contract, sales to New Smyrna again increased beginning in January 2019 and these are also projected to continue through December 2021

FPL's sales to Wauchula began in October 2011. The contract is projected to continue through December 2023.

FPL sales to Homestead began in August 2015. The contract is projected to continue through December 2026. Under a separate contract, additional sales to Homestead began in January 2020 and are also projected to continue through December 2026.

FPL sales to Quincy began in January 2016. The contract is projected to continue through December 2023.

FPL sales to Moore Haven began in July 2016. The contract is projected to continue through December 2025.

FPL sales to Florida Public Utilities Company began in January 2018. The contract is projected to continue through December 2026.

FPL sales to Seminole Electric Cooperative are based on delivery of 200 MW that began in June 2014 and is projected to continue through May 2021.

Gulf Power sales to Florida Public Utilities Company is projected to continue through December 2026.

II.D. Net Energy for Load (NEL)

The NEL forecast for both FPL and Gulf are the sums of the retail energy, wholesale energy, and losses. Through the use of the energy efficiency variable, the retail energy sales forecast includes the impacts from major energy efficiency codes and standards, including those associated with the 2005 National Energy Policy Act, the 2007 Energy Independence and Security Act, and savings resulting from the use of compact fluorescent bulbs (CFLs) and LEDs. The estimated impact from these codes and standards includes engineering estimates and any resulting behavioral changes. The impact of these savings began in 2005 and, from that year, their cumulative impact on NEL for the integrated system is projected to be a reduction of 6,028 GWh by 2029. This represents an approximately 4.2% reduction in what the forecasted NEL for 2029 would have been absent these codes and standards. From the end of 2019, the incremental reduction through 2029 is expected to be 2,482 GWh. The estimated impacts from codes and standards are based on the energy efficiency variables in the respective energy models. Previously, FPL's NEL forecast was based on a top-down approach using a single model for NEL which included an energy efficiency variable. The result of this approach assigned energy efficiency savings to all FPL customer classes.

FPL's current NEL forecast, however, is based on a bottoms-up approach using separate models for each class. The result of this approach found that the energy efficiency variables were not statistically significant[9] for the commercial customer model, and as such, the impact associated with energy efficiency on FPL's commercial sales cannot be quantified separately using the current models. While this energy efficiency impact cannot be separately quantified using the current models, this should not be interpreted as though energy efficiency is not impacting commercial customers nor that the NEL forecast is not accounting for this impact. What it means is that this impact for the commercial class is being captured in another variable within the model. However, as a result, it appears that there is a decline in the explicitly quantified energy efficiency impact on total NEL through 2029 compared to the results presented in the 2019 Site Plan. As previously mentioned, FPL routinely evaluates its

[9] The efficiency variable was highly correlated with the price term, and the resulting multicollinearity issue resulted in the variable exhibiting a high p-value. Variables with a high p-value are not statistically significant to the model.

methodologies and models for potential refinements and one area for possible refinement is in regard to separately quantifying the impact of energy efficiency codes and standards for commercial class customers.

FPL makes an adjustment for the impact of incremental private solar projected to be added during the forecast period. The impact of private solar on the NEL forecast for the integrated system is projected to be a reduction of approximately 1,311 GWh by 2029. FPL and Gulf also adjust for the additional load projected to be added due to the incremental adoption of new plug-in electric vehicles. This results in an increase on the integrated system of approximately 1,686 GWh by 2029. The forecast is also adjusted for the incremental load projected to be added to FPL's system from FPL's economic development riders forecast. This incremental load is projected to be approximately 252 GWh by 2029.

II.E. System Peak Forecasts

The rate of absolute growth in peak load for both FPL and Gulf has been a function of the size of the customer base, weather, projected economic conditions, and energy-efficiency codes and standards. The peak forecast models capture these behavioral relationships. In addition, the peak forecast for FPL also reflects changes in load expected from private solar, the expected number of plug-in electric vehicles, FPL's economic development riders, and wholesale requirements contracts. With respect to the peak forecast for Gulf, the projected impacts of private solar and electric vehicles are believed to be relatively small. However, the ability to better incorporate projected impacts of private solar and EVs in Gulf's area is another aspect of the current forecasting methodologies for which the load forecasting team will evaluate for additional refinements in upcoming forecasts.

The monthly peak load for the integrated system from 2022-on is the highest hourly demand from the forecasted system hourly load forecast, which was developed by summing the forecasted system hourly loads for FPL and Gulf. The integrated system peak load forecast reflects the growth in peak load for FPL and Gulf along with the peak demand savings associated with load diversity.

As separate systems, FPL and Gulf peak at different hours and this difference is due to load diversity. The load diversity is primarily due to their respective loads being located in different time zones and the benefit of load diversity is that the combined system peak demand is lower than the sum of the standalone FPL and Gulf peaks demands. By 2029, the load diversity results in a projected reduction to the integrated system peaks of 103 MW in the Summer and 190 MW in the Winter. This represents savings for customers.

The savings from energy-efficiency codes and standards incorporated into the peak forecast include the impacts from the 2005 National Energy Policy Act, the 2007 Energy Independence and Security Act, and the use of CFLs and LEDs. The impact from these energy-efficiency standards began in 2005, and their cumulative reduction, from that year, on the integrated Summer peak is projected to reach approximately 5,732 MW by 2029. This reduction includes engineering estimates and any resulting behavioral changes.

The cumulative 2029 impact from these energy-efficiency codes and standards is projected to effectively reduce the integrated system's Summer peak for that year by approximately 19%. From the end of 2019, the projected incremental impact on the Summer peak from these energy-efficiency codes and standards is a reduction of approximately 1,848 MW through 2029.

The peak forecast for FPL was also adjusted for the additional load estimated from private solar, plug-in electric vehicles, and FPL's economic development riders. The impact from plug-in electric vehicles is projected to be an increase on the integrated system of approximately 582 MW in the Summer and 291 MW in the Winter by the end of 2029. The impact on the integrated system from FPL's economic development riders is projected to be an increase of approximately 29 MW in the Summer peak and 61 MW in the Winter peak. The incremental impact of private solar on the integrated system is an expected decrease of approximately 327 MW in the Summer and a negligible reduction in the Winter by the end of 2029.

The forecasting methodology for Summer, Winter, and monthly system peaks is discussed below.

The forecasted values for FPL's and Gulf's Summer and Winter peak loads for the years 2020 through 2021 are presented separately at the end of this chapter in Schedules 3.1 and 3.2, and in Chapter III in Schedules 7.1 and 7.2. For the years 2022 through 2029, only forecasted values for the integrated system are presented on these schedules.

1. System Summer Peak

The Summer peak forecast for FPL is developed using an econometric model based on the Summer peak contribution per customer. The variables included in the model are Florida real per capita income, cooling degree hours two days prior to the peak day, the maximum temperature on the day of the peak, a variable for energy efficiency codes and standards, binary variables years 2005 and 2019, and autoregressive terms. The model output is multiplied by the total number of customers to arrive at the projected Summer peak demand. This product is then adjusted to account for the expected changes in loads resulting from private solar, plug-in electric vehicles, FPL's economic development riders, and wholesale requirements contracts to derive FPL's system Summer peak.

The Summer peak forecast for Gulf is developed using an econometric model based on the Summer peak contribution per customer. The variables included in the model are the maximum temperature on the day of the peak, a variable for energy efficiency codes and standards, employment-weighted real per capita income, and an autoregressive term. The model output is multiplied by the total number of customers to arrive at the projected Summer peak demand.

Summer peak forecasts presented in Gulf's prior Site Plans were developed using the Peak Demand Model (PDM) which spread the energy projections using historical load shapes to develop forecasted hourly load shapes and the monthly forecast peak demand was the single highest hour in each month. Adoption of the econometric modeling approach for Summer peak forecast ensures FPL and Gulf are employing enhanced peak demand forecasting methodologies.

The Summer peak demand forecast for the integrated system for 2022-on is the highest hourly demand during the Summer months from the integrated system hourly forecast, which was developed by summing the forecasted system hourly loads for FPL and Gulf. This approach ensures the Summer peak demand forecast for the integrated system reflects the growth in Summer peak load for FPL and Gulf along with the Summer peak demand savings associated with load diversity. The Summer peak demand for the integrated system is projected to occur in August.

2. System Winter Peak

The Winter peak forecast for FPL is developed using an econometric model based on the Winter peak contribution per customer. The variables included in the model are employment-weighted real per capita income, the minimum temperature on the peak day, a weather-related variable capturing cold buildup, a binary variable for year 2008, and a trend variable. The model output is multiplied by the total number of customers to arrive at the projected Winter peak demand. The projection is then adjusted for the expected changes in loads resulting from private solar, plug-in electric vehicles, FPL's economic development riders, and wholesale requirement contracts.

The Winter peak forecast for Gulf was developed using an econometric model based on the Winter peak contribution per customer. The variables included in the model are the minimum temperature on the peak day, a variable for energy efficiency codes and standards, and autoregressive terms. The model output is then multiplied by the total number of customers to arrive at the projected Winter peak demand.

The Winter peak forecasts presented in prior Gulf Site Plans were developed using the PDM model. Adoption of the econometric modeling approach for Winter peak forecast ensures FPL and Gulf are employing enhanced peak demand forecasting methodologies.

The Winter peak demand forecast for the integrated system is the highest hourly demand during the Winter months from the integrated system hourly forecast. This approach ensures the integrated Winter peak demand forecast reflects the growth in the Winter peak load for FPL and Gulf along with the Winter peak demand savings associated with load diversity. The Winter peak demand for the integrated system is projected to occur in January.

3. Monthly Peak Forecasts

The forecasting process for FPL's monthly peaks begins with two assumptions. First, the forecasted annual Summer peak is assumed to occur in the month of August, which historically has accounted for more annual Summer peaks than any other month. Second, the forecasted annual Winter peak is assumed to occur in the month of January, which historically has accounted for more annual Winter peaks than any other month. Then the remaining monthly peaks are forecasted based on the historical relationship between the monthly peaks and the annual Summer peak.

The forecasting process for Gulf's monthly peaks begins with two assumptions. First, the forecasted annual Summer peak is assumed to occur in the month of July, which historically has accounted for more annual Summer peaks than any other month. Second, the forecasted annual Winter peak is assumed to occur in the month of January, which historically has accounted for more annual Winter peaks than any other month. Then the remaining monthly peaks are forecasted based on the historical relationship between the monthly peaks and the annual Summer peak.

Monthly peak forecasts presented in prior Gulf Site Plans were developed using the PDM model. Gulf's adoption of FPL's monthly peak demand forecast process ensures FPL and Gulf are employing enhanced monthly peak demand forecasting methodologies.

The monthly peak demand forecast for the integrated system for 2022-on is the highest hourly demand by month from the integrated system hourly forecast. This approach ensures the integrated monthly peak demand forecast reflects the growth in monthly peaks for FPL and Gulf along with the monthly peak demand savings associated with load diversity.

II.F. Hourly Load Forecast

Forecasted values for system hourly load on the FPL system for the period 2020 through 2029 were developed using a system load forecasting program named MetrixLT. This model uses years of historical FPL hourly system load data to develop load shapes. The model generates a projection of hourly load values based on these load shapes and the forecast of FPL's monthly peaks and energy.

Forecasted values for system hourly load on the Gulf system for the period 2020 to 2029 were also developed using MetrixLT, which uses historical Gulf hourly system load data to develop load shapes. The model generates a projection of hourly load values based on these load shapes and the forecast of Gulf's monthly peaks and energies.

The forecasted values for system hourly load on the integrated system for 2022-on were the summation of the FPL and Gulf hourly load for the period. The Gulf system hourly load was adjusted from Central to Eastern time zone to be consistent with FPL's system hourly load.

II.G. Uncertainty

Uncertainty is inherent in the load forecasting process. This uncertainty can result from a number of factors, including unexpected changes in consumer behavior, structural shifts in the economy, and fluctuating weather conditions. Large weather fluctuations, in particular, can result in significant deviations between actual and forecasted peak demands. The load forecast is based on average expected or normal weather conditions. An extreme 90% probability (P90) cold weather event can add an additional 3,000 MW or more to the Winter peak, and an extreme P90 hot weather event can add an additional 750 MW to the Summer peak.

In order to address uncertainty in the forecast of aggregate peak demand and NEL, the assumptions underlying the forecasts are first evaluated. Then a series of steps are taken to evaluate the input variables, including comparing projections from different sources, identifying outliers in the series, and assessing the series' consistency with past forecasts. Additional factors that may affect the input variables are reviewed as needed.

Uncertainty is also addressed in the modeling process. Econometric models generally are used to forecast peak demands and energies. During the modeling process, relevant statistics such as (goodness of fit, F-statistic, P-values, mean absolute deviation (MAD), mean absolute percentage error (MAPE), etc.) are scrutinized to ensure the models adequately explain historical variation. Once a forecast is developed, it is compared with past forecasts. Deviations from past forecasts are examined in light of changes in input assumptions to ensure that the drivers underlying the forecast are thoroughly understood. Finally, forecasts of aggregate peak demand and NEL are compared with the actual values as they become available. An ongoing process of variance analyses is performed. To the extent the variance analyses identify large unexplained deviations between the forecast and actual values, revisions to the econometric model may be considered. Finally, the forecasting group regularly engages with forecasting professionals from other electric utilities to share best practices and changes to existing processes may be considered.

The inherent uncertainty in load forecasting is addressed in different ways in regard to the overall resource planning and operational planning work. With respect to resource planning work, the utilization of a 20% total reserve margin (TRM) criterion, a Loss-of-Load-Probability (LOLP) criterion of 0.1, and a 10% generation-only reserve margin (GRM) criterion are designed to maintain reliable electric service for customers in light of forecasting and other uncertainties. In addition, banded forecasts of the projected Summer peak and NEL may be produced based on an analyses of past forecasting variances. A banded forecast for the projected Summer and Winter peak days may also be developed based on historical weather variations. These bands are then used to develop similar bands for the monthly peaks. A P80 monthly peak forecast is typically provided to FPL's System Operations group for operational planning purposes.

II.H. DSM

FPL and Gulf assume that the effects of its DSM energy-efficiency programs through August 2019 are embedded in the actual usage data for forecasting purposes. In addition, the utilities account for the following projected DSM MW and MWh impacts as "line item reductions" to the forecasts as part of the IRP process: 1) the impacts of incremental energy efficiency that the utilities have implemented in the September 2019 through December 2019 time period (*i.e.*, after the 2019 Summer peak has occurred), 2) projected impacts from incremental energy efficiency that FPL plans to implement in 2020 through 2024 in response to the DSM Goals that were set for each utility by the FPSC in the 4th Quarter of 2019 for the 2020 – 2024 time period, 3) the inclusion of additional currently projected cost-effective DSM for the years 2025 through 2029, and 4) the cumulative and projected incremental impacts of FPL's load management programs through 2029. After making these adjustments to the load forecasted load values, the resulting "firm" load forecast as shown in Chapter III in Schedules 7.1 and 7.2., is then used in the IRP work.

Schedule 2.1: FPL
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			**Commercial**		
Year	Population	Members per Household	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	Average No. of Customers	Average kWh Consumption Per Customer
2010	8,851,966	2.21	56,343	4,004,366	14,070	44,544	503,529	88,464
2011	8,979,403	2.23	54,642	4,026,760	13,570	45,052	508,005	88,685
2012	9,096,135	2.24	53,434	4,052,174	13,187	45,220	511,887	88,340
2013	9,219,688	2.25	53,930	4,097,172	13,163	45,341	516,500	87,786
2014	9,357,139	2.24	55,202	4,169,028	13,241	45,684	525,591	86,919
2015	9,517,833	2.25	58,846	4,227,425	13,920	47,369	532,731	88,916
2016	9,687,433	2.26	58,687	4,284,159	13,699	47,355	540,356	87,637
2017	9,824,821	2.26	58,188	4,338,224	13,413	47,151	547,908	86,056
2018	10,004,467	2.28	59,096	4,391,832	13,456	47,394	553,562	85,616
2019	10,119,121	2.26	60,325	4,479,356	13,467	48,078	565,622	85,000

Historical Values (2010 - 2019):

Col. (2) represents population only in the area served by FPL.

Col. (4) and Col. (7) represent actual energy sales including the impacts of existing conservation.
These values are at the meter.

Col. (5) and Col. (8) represent the annual average of the twelve monthly values.

Schedule 2.1: Gulf
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			**Commercial**		
Year	Population	Members per Household	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	Average No. of Customers	Average kWh Consumption Per Customer
2010	873,320	2.32	5,651	375,847	15,036	3,997	53,349	74,912
2011	882,950	2.33	5,305	378,157	14,028	3,911	53,409	73,235
2012	898,710	2.37	5,054	379,897	13,303	3,859	53,706	71,846
2013	911,720	2.38	5,089	382,599	13,301	3,810	54,261	70,215
2014	923,520	2.39	5,362	386,765	13,865	3,838	54,749	70,104
2015	936,420	2.39	5,365	391,465	13,705	3,898	55,234	70,566
2016	949,240	2.39	5,358	396,408	13,515	3,869	55,876	69,236
2017	962,790	2.40	5,229	401,793	13,015	3,814	56,428	67,583
2018	977,810	2.40	5,519	406,949	13,563	3,829	56,892	67,298
2019	990,370	2.43	5,520	407,436	13,548	3,775	56,590	66,710

Historical Values (2010 - 2019):

Col. (2) includes the Pensacola, Crestview, and Panama City MSAs, which are generally representative of the area served by Gulf.

Col. (4) and Col. (7) represent actual energy sales including the impacts of existing conservation.
These values are at the meter.

Col. (5) and Col. (8) represent the annual average of the twelve monthly values.

Schedule 2.1
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			Commercial		
Year	Population	Members per Household	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	Average No. of Customers	Average kWh Consumption Per Customer
				FPL				
2020	10,227,063	2.26	59,382	4,527,529	13,116	48,037	572,459	83,914
2021	10,335,192	2.26	59,814	4,568,149	13,094	48,469	579,245	83,677
				Gulf				
2020	1,000,760	2.42	5,405	414,018	13,029	3,646	57,318	63,564
2021	1,010,360	2.40	5,433	421,341	12,852	3,629	57,932	62,563
				Integrated FPL and Gulf				
2022	11,465,461	2.28	65,314	5,036,516	12,963	52,262	644,416	81,100
2023	11,586,120	2.28	65,784	5,084,160	12,932	52,440	650,778	80,581
2024	11,708,833	2.28	66,480	5,129,346	12,952	52,735	656,117	80,374
2025	11,832,535	2.29	66,969	5,173,248	12,937	52,937	660,837	80,107
2026	11,956,071	2.29	67,586	5,217,662	12,945	53,177	665,392	79,918
2027	12,080,045	2.30	68,285	5,261,200	12,971	53,433	669,923	79,760
2028	12,204,016	2.30	69,176	5,303,021	13,037	53,783	674,471	79,741
2029	12,328,021	2.31	69,845	5,344,810	13,060	53,871	679,110	79,326

Projected Values (2020 - 2029):

Col. (2) represents population in the areas served by FPL and Gulf separately for 2020 and 2021, and by the single integrated system for 2022 - 2029

Col. (4) and Col. (7) represent forecasted energy sales that do not include the impact of incremental conservation. These values are at the meter.

Col. (5) and Col. (8) represent the annual average of the twelve monthly values.

Schedule 2.2: FPL
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads	Street &	Sales to	Sales to
		Average	Average kWh	&	Highway	Public	Ultimate
		No. of	Consumption	Railways	Lighting	Authorities	Consumers
Year	GWh	Customers	Per Customer	GWh	GWh	GWh	GWh
2010	3,130	8,910	351,318	81	431	28	104,557
2011	3,086	8,691	355,104	82	437	27	103,327
2012	3,024	8,743	345,871	81	441	25	102,226
2013	2,956	9,541	309,772	88	442	28	102,784
2014	2,941	10,415	282,398	91	446	24	104,389
2015	3,042	11,318	268,799	92	448	23	109,820
2016	3,059	11,770	259,853	92	447	23	109,663
2017	2,961	11,654	254,103	83	446	41	108,871
2018	3,013	11,601	259,728	80	447	23	110,053
2019	2,994	11,799	253,759	82	428	23	111,929

Historical Values (2010 - 2019):

Col. (16) represents actual energy sales including the impacts of existing conservation. These values are at the meter.

Col. (11) represents the annual average of the twelve monthly values.

Col. (16) = Schedule 2.1 Col. (4) + Schedule 2.1 Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.2: Gulf
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads	Street &	Sales to	Sales to
		Average	Average kWh	&	Highway	Public	Ultimate
		No. of	Consumption	Railways	Lighting	Authorities	Consumers
Year	GWh	Customers	Per Customer	GWh	GWh	GWh	GWh
2010	1,686	275	6,133,961	0	26	0	11,359
2011	1,799	273	6,586,591	0	25	0	11,040
2012	1,725	267	6,453,071	0	25	0	10,663
2013	1,700	258	6,581,320	0	21	0	10,620
2014	1,849	258	7,165,343	0	25	0	11,075
2015	1,798	249	7,235,499	0	25	0	11,086
2016	1,830	247	7,402,625	0	25	0	11,082
2017	1,740	255	6,815,486	0	26	0	10,809
2018	1,757	253	6,931,497	0	28	0	11,132
2019	1,756	250	7,026,958	0	28	0	11,079

Historical Values (2010 - 2019):

Col. (16) represents actual energy sales including the impacts of existing conservation. These values are at the meter.

Col. (11) represents the annual average of the twelve monthly values.

Col. (16) = Schedule 2.1 Col. (4) + Schedule 2.1 Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.2
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads	Street &	Sales to	Sales to
		Average	Average kWh	&	Highway	Public	Ultimate
		No. of	Consumption	Railways	Lighting	Authorities	Consumers
Year	GWh	Customers	Per Customer	GWh	GWh	GWh	GWh
			FPL				
2020	3,071	12,244	250,838	80	401	20	110,993
2021	3,152	12,722	247,739	80	399	20	111,934
			Gulf				
2020	1,738	251	6,923,042	0	28	0	10,816
2021	1,663	251	6,624,257	0	28	0	10,752
			Integrated FPL and Gulf				
2022	4,874	13,270	367,281	80	417	20	122,968
2023	4,875	13,414	363,429	80	420	20	123,619
2024	4,875	13,469	361,955	80	429	20	124,619
2025	4,876	13,559	359,611	80	450	20	125,333
2026	4,877	13,648	357,302	80	456	20	126,195
2027	4,876	13,640	357,499	80	462	20	127,156
2028	4,876	13,589	358,814	80	462	20	128,398
2029	4,876	13,570	359,309	80	462	20	129,154

Projected Values (2020 - 2029):

Col. (10) and Col.(15) represent forecasted energy sales that do not include the impact of incremental conservation. These values are at the meter.

Col. (11) represents the annual average of the twelve monthly values.

Col. (16) = Schedule 2.1 Col. (4) + Schedule 2.1 Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.3: FPL
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(17)	(18)	(19)	(20)	(21)
Year	Sales for Resale GWh	Utility Use & Losses GWh	Net Energy For Load GWh	Average No. of Other Customers	Total Average Number of Customers
2010	2,049	7,870	114,475	3,523	4,520,328
2011	2,176	6,950	112,454	3,596	4,547,051
2012	2,237	6,403	110,866	3,645	4,576,449
2013	2,158	6,713	111,655	3,722	4,626,934
2014	5,375	6,204	115,968	3,795	4,708,829
2015	6,610	6,326	122,756	3,907	4,775,382
2016	6,623	5,334	121,619	3,994	4,840,279
2017	6,406	5,468	120,745	4,100	4,901,886
2018	6,790	5,604	122,447	4,334	4,961,330
2019	7,315	5,924	125,168	4,749	5,061,525

Historical Values (2010 - 2019):

Col. (19) represents actual energy sales including the impacts of existing conservation.

Col. (19) = Schedule 2.2 Col. (16) + Col. (17) + Col. (18). Historical NEL includes the impacts of existing conservation and agrees to Col. (5) on schedule 3.3. Historical GWH, prior to 2011, are based on a fiscal year beginning 12/29 and ending 12/28. The 2011 value is based on 12/29/10 to 12/31/11. The 2012-2019 values are based on calendar year.

Col. (20) represents the annual average of the twelve monthly values.

Col. (21) = Schedule 2.1 Col. (5) + Schedule 2.1 Col. (8) + Schedule 2.2 Col. (11) + Col. (20).

Schedule 2.3: Gulf
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(17)	(18)	(19)	(20)	(21)
Year	Sales for Resale GWh	Utility Use & Losses GWh	Net Energy For Load GWh	Average No. of Other Customers	Total Average Number of Customers
2010	409	750	12,518	559	430,030
2011	382	663	12,086	564	432,403
2012	339	597	11,598	572	434,441
2013	330	602	11,552	579	437,698
2014	332	629	12,037	598	442,370
2015	330	580	11,996	610	447,557
2016	331	618	12,030	609	453,140
2017	318	588	11,715	574	459,050
2018	302	623	12,057	589	464,682
2019	257	407	11,742	608	464,884

Historical Values (2010 - 2019):

Col. (19) represents actual energy sales including the impacts of existing conservation.

Col. (19) = Schedule 2.2 Col. (16) + Col. (17) + Col. (18). Historical NEL includes the impacts of existing conservation and agrees to Col. (5) on schedule 3.3.

Col. (20) represents the annual average of the twelve monthly values.

Col. (21) = Schedule 2.1 Col. (5) + Schedule 2.1 Col. (8) + Schedule 2.2 Col. (11) + Col. (20).

Schedule 2.3
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1)	(17)	(18)	(19)	(20)	(21)
Year	Sales for Resale GWh	Utility Use & Losses GWh	Net Energy For Load GWh	Average No. of Other Customers	Total Average Number of Customers
			FPL		
2020	6,283	5,797	123,073	5,100	5,117,332
2021	5,788	5,412	123,134	5,458	5,165,574
			Gulf		
2020	298	601	11,715	603	472,190
2021	293	597	11,643	606	480,130
			Integrated FPL and Gulf		
2022	5,717	6,115	134,800	6,419	5,700,622
2023	5,793	6,189	135,600	6,783	5,755,134
2024	5,871	6,271	136,761	7,141	5,806,073
2025	5,948	6,260	137,540	7,499	5,855,142
2026	6,028	6,318	138,541	7,858	5,904,561
2027	5,955	6,363	139,474	8,215	5,952,978
2028	6,040	6,437	140,874	8,572	5,999,654
2029	6,125	6,472	141,751	8,931	6,046,421

Projected Values (2020 - 2029):

Col. (19) represents forecasted energy sales that do <u>not</u> include the impact of incremental conservation and agrees to Col. (2) on Schedule 3.3.

Col. (19) = Schedule 2.2 Col. (16) + Col. (17) + Col. (18).

Col. (20) represents the annual average of the twelve monthly values.

Col. (21) = Schedule 2.1 Col. (5) + Schedule 2.1 Col. (8) + Schedule 2.2 Col. (11) + Col. (20).

Schedule 3.1: FPL
History of Summer Peak Demand (MW)

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2010	22,256	419	21,837	0	990	1,181	815	758	20,451
2011	21,619	427	21,192	0	1,000	1,281	821	781	19,798
2012	21,440	431	21,009	0	1,013	1,351	833	810	19,594
2013	21,576	396	21,180	0	1,025	1,417	833	839	19,718
2014	22,935	1,155	21,780	0	1,010	1,494	843	866	21,082
2015	22,959	1,303	21,656	0	878	1,523	826	873	21,255
2016	23,858	1,367	22,491	0	882	1,548	836	888	22,140
2017	23,373	1,393	21,980	0	910	1,560	825	903	21,639
2018	23,217	1,338	21,879	0	866	1,571	866	916	21,485
2019	24,241	1,292	22,949	0	852	1,579	879	926	22,510

Historical Values (2010 - 2019):

Col. (2) and Col. (3) are actual values for historical Summer peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9) and may incorporate the effects of load control if load control was operated on these peak days. Col. (2) represents the actual Net Firm Demand.

Col. (5) through Col. (9) represent actual DSM capabilities and represent annual (12-month) values.

Col.(6) values for 2015-on reflect a hardware communications issue identified in 2015 that was subsequently resolved. A number of participating customers did not respond to FPL's efforts to reach them or refused access to correct the equipment problem at their home. As a result, these customers were removed from the program.

Col. (10) represents a hypothetical "Net Firm Demand" as if the load control values had definitely been exercised on the peak.
Col. (10) is derived by the formula: Col. (10) = Col. (2) - Col.(6) + Col. (8).

Schedule 3.1: Gulf
History of Summer Peak Demand (MW)

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2010	2,525	88	2,437	0	0	178	0	192	2,525
2011	2,535	89	2,446	0	0	186	0	198	2,535
2012	2,351	76	2,275	0	0	206	0	212	2,351
2013	2,362	74	2,288	0	0	229	0	220	2,362
2014	2,437	75	2,362	0	0	243	0	224	2,437
2015	2,495	78	2,417	0	0	256	0	231	2,495
2016	2,508	76	2,432	0	0	261	0	231	2,508
2017	2,434	74	2,360	0	0	266	0	232	2,434
2018	2,491	80	2,411	0	0	268	0	233	2,491
2019	2,472	75	2,397	0	0	269	0	233	2,472

Historical Values (2010 - 2019):

Col. (2) and Col. (3) are actual values for historical Summer peaks and include the effects of conservation (Col. 7 & Col. 9).

Col. (4) represents "Retail Demand" and is derived by the formula: Col. (2) - Col. (3).

Col. (10) is derived by the formula Col. (10) = Col. (2) - Col. (6) - Col. (8).

Schedule 3.1
Forecast of Summer Peak Demand (MW)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
August of Year	Total	Wholesale	Retail	Interruptible	Res. Load Management*	Residential Conservation	C/I Load Management*	C/I Conservation	Net Firm Demand
					FPL				
2020	24,624	1,540	23,084	0	856	11	907	11	22,838
2021	24,720	1,367	23,353	0	865	23	918	27	22,887
					Gulf				
2020	2,464	64	2,399	0	0	5	0	1	2,458
2021	2,496	64	2,432	0	0	12	0	2	2,481
					Integrated FPL and Gulf				
2022	27,220	1,384	25,836	0	873	55	928	47	25,317
2023	27,564	1,406	26,158	0	882	76	939	65	25,602
2024	27,953	1,399	26,554	0	894	98	949	84	25,927
2025	28,349	1,405	26,944	0	915	105	960	92	26,278
2026	28,775	1,425	27,350	0	939	105	971	92	26,668
2027	29,143	1,357	27,786	0	963	105	982	92	27,001
2028	29,592	1,376	28,216	0	987	105	993	92	27,415
2029	30,195	1,396	28,799	0	1,012	105	1,004	92	27,983

Projected Values (2020 - 2029):

Col. (2) - Col. (4) represent forecasted peak and do not include incremental conservation, cumulative load management, or incremental load management.

Col. (5) through Col. (9) represent incremental and cumulative load management, and incremental conservation.
All values are projected August values.

Col. (8) represents FPL's Business On Call, CDR, CILC, and curtailable programs/rates.

Col. (10) represents a "Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

* Res. Load Management and C/I Load Management include Lee County and FKEC whose loads are served by FPL.

Schedule 3.2: FPL
History of Winter Peak Demand (MW)

(1) Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2010	24,346	500	23,846	0	895	687	721	291	22,730
2011	21,126	383	20,743	0	903	717	723	303	19,501
2012	17,934	382	17,552	0	856	755	722	314	16,356
2013	15,931	348	15,583	0	843	781	567	326	14,521
2014	17,500	890	16,610	0	828	805	590	337	16,083
2015	19,718	1,329	18,389	0	822	835	551	346	18,345
2016	17,031	1,087	15,944	0	742	858	570	352	15,719
2017	17,172	1,098	16,074	0	759	861	577	364	15,836
2018	19,109	1,262	17,847	0	750	864	588	369	17,771
2019	16,795	1,432	15,363	0	706	867	613	379	15,476

Historical Values (2010 - 2019):

Col. (2) and Col. (3) are actual values for historical Winter peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9) and may incorporate the effects of load control if load control was operated on these peak days. Col. (2) represents the actual Net Firm Demand. For year 2011, the actual winter peak occurred in December of 2010.

Col. (5) through Col. (9) represent actual DSM capabilities and represent annual (12-month) values.

Col.(6) values for 2015-on reflect a hardware communications issue identified in 2015 that was subsequently resolved. A number of participating customers did not respond to FPL's efforts to reach them or refused access to correct the equipment problem at their home. As a result, these customers were removed from the program.

Col. (10) represents a hypothetical "Net Firm Demand" as if the load control values had definitely been exercised on the peak.
Col. (10) is derived by the formula: Col. (10) = Col. (2) - Col.(6) + Col. (8).

Schedule 3.2: Gulf
History of Winter Peak Demand (MW)

(1) Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2010	2,553	99	2,454	0	0	289	0	154	2,553
2011	2,495	89	2,406	0	0	297	0	157	2,495
2012	2,139	70	2,069	0	0	317	0	165	2,139
2013	1,766	90	1,676	0	0	341	0	169	1,766
2014	2,694	85	2,609	0	0	356	0	172	2,694
2015	2,492	74	2,418	0	0	369	0	176	2,492
2016	2,043	80	1,963	0	0	374	0	176	2,043
2017	2,211	89	2,122	0	0	377	0	177	2,211
2018	2,809	70	2,739	0	0	379	0	178	2,809
2019	2,066	66	2,000	0	0	381	0	178	2,066

Historical Values (2010 - 2019):

Col. (2) and Col. (3) are actual values for historical Winter peaks and include the effects of conservation (Col. 7 & Col. 9).

Col. (4) represents "Retail Demand" and is derived by the formula: Col. (2) - Col. (3).

Col. (10) is derived by the formula Col. (10) = Col. (2) - Col. (6) - Col. (8).

Schedule 3.2
Forecast of Winter Peak Demand (MW)

(1) January of Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management*	(7) Residential Conservation	(8) C/I Load Management*	(9) C/I Conservation	(10) Net Firm Demand
					FPL				
2020	19,959	1,230	18,729	0	712	3	634	10	18,599
2021	20,250	1,248	19,002	0	721	5	640	20	18,863
					Gulf				
2020	2,256	69	2,187	0	0	0	0	0	2,256
2021	2,293	68	2,225	0	0	4	0	1	2,287
					Integrated FPL and Gulf				
2022	22,369	1,068	21,301	0	733	16	647	33	20,939
2023	22,617	1,108	21,509	0	746	24	653	46	21,149
2024	22,861	1,139	21,722	0	758	32	659	58	21,353
2025	23,103	1,140	21,963	0	778	40	666	70	21,548
2026	23,388	1,172	22,216	0	804	40	671	70	21,803
2027	23,608	1,118	22,490	0	829	40	676	70	21,992
2028	23,941	1,155	22,786	0	855	40	681	70	22,294
2029	24,293	1,181	23,112	0	880	40	686	70	22,616

Projected Values (2020 - 2029):

Col. (2) - Col. (4) represent forecasted peak and do not include incremental conservation, cumulative load management, or incremental load management.

Col. (5) through Col. (9) represent incremental and cumulative load management, and incremental conservation.
All values are projected January values.

Col. (8) represents FPL's Business On Call, CDR, CILC, and curtailable programs/rates.

Col. (10) represents a "Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

* Res. Load Management and C/I Load Management include Lee County and FKEC whose loads are served by FPL.

Schedule 3.3: FPL
History of Annual Net Energy for Load (GWh)
(All values are "at the generator" values except for Col (8))

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Net Energy For Load without DSM GWh	Residential Conservation GWh	C/I Conservation GWh	Actual Net Energy For Load GWh	Sales for Resale GWh	Utility Use & Losses GWh	Actual Total Retail Sales (GWh)	Load Factor(%)
2010	119,220	2,487	2,259	114,475	2,049	7,870	104,557	53.7%
2011	117,460	2,683	2,324	112,454	2,176	6,950	103,327	59.4%
2012	116,083	2,823	2,394	110,866	2,237	6,403	102,226	58.9%
2013	117,087	2,962	2,469	111,655	2,158	6,713	102,784	59.1%
2014	121,621	3,125	2,529	115,968	5,375	6,204	104,389	57.7%
2015	128,555	3,232	2,568	122,756	6,610	6,326	109,820	61.0%
2016	127,481	3,254	2,608	121,619	6,623	5,334	109,663	58.0%
2017	126,680	3,278	2,655	120,747	6,406	5,470	108,871	59.0%
2018	128,465	3,300	2,718	122,447	6,790	5,604	110,053	60.2%
2019	131,241	3,322	2,751	125,168	7,315	5,924	111,929	58.9%

Historical Values (2010 - 2019):

Col. (2) represents derived NEL not including conservation using the formula: Col. (2) = Col. (3) + Col. (4) + Col. (5)

Col. (3) & Col. (4) are annual (12-month) DSM values and represent total GWh reductions experienced each year.

Col. (8) is the Total Retail Sales calculated using the formula: Col. (8) = Col. (5) - Col. (6) - Col. (7). These values are at the meter.

Col. (9) is calculated using Col. (5) from this page and the greater of Col. (2) from Schedules 3.1 and 3.2 using the formula:
Col. (9) = ((Col. (5)*1000) / ((Col. (2) * 8760). Adjustments are made for leap years.

Schedule 3.3: Gulf
History of Annual Net Energy for Load (GWh)
(All values are "at the generator" values except for Col (8))

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Net Energy For Load without DSM GWh	Residential Conservation GWh	C/I Conservation GWh	Actual Net Energy For Load GWh	Sales for Resale GWh	Utility Use & Losses GWh	Total Retail Energy Sales (GWh)	Load Factor(%)
2010	13,256	388	350	12,518	409	750	11,359	56.0%
2011	12,864	417	361	12,086	382	663	11,040	54.4%
2012	12,453	482	374	11,598	339	597	10,663	56.2%
2013	12,502	551	399	11,552	330	602	10,620	55.8%
2014	13,048	595	416	12,037	332	629	11,075	51.0%
2015	13,056	630	430	11,996	330	580	11,086	54.9%
2016	13,097	637	430	12,030	331	618	11,082	54.6%
2017	12,789	642	432	11,715	318	588	10,809	54.9%
2018	13,138	647	435	12,057	302	623	11,132	49.0%
2019	12,828	650	436	11,742	257	407	11,079	54.2%

Historical Values (2010 - 2019):

Col. (2) represents derived NEL not including conservation using the formula: Col. (2) = Col. (3) + Col. (4) + Col. (5)

Col. (3) & Col. (4) are annual (12-month) DSM values and represent total GWh reductions experienced each year.

Col. (8) is the Total Retail Sales calculated using the formula: Col. (8) = Col. (5) - Col. (6) - Col. (7). These values are at the meter.

Col. (9) is calculated using Col. (5) from this page and the greater of Col. (2) from Schedules 3.1 and 3.2 using the formula:
Col. (9) = ((Col. (5)*1000) / ((Col. (2) * 8760). Adjustments are made for leap years.

Schedule 3.3
Forecast of Annual Net Energy for Load (GWh)
(All values are "at the generator"values except for Col (8))

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Forecasted Net Energy For Load without DSM GWh	Residential Conservation GWh	C/I Conservation GWh	Net Energy For Load Adjusted for DSM GWh	Sales for Resale GWh	Utility Use & Losses GWh	Forecasted Total Billed Retail Energy Sales w/o DSM GWh	Load Factor(%)
				FPL				
2020	123,073	30	35	123,007	6,283	5,538	111,252	56.9%
2021	123,134	56	65	123,013	5,788	5,538	111,808	56.8%
				Gulf				
2020	11,715	10	3	11,702	298	601	10,816	54.1%
2021	11,643	18	5	11,620	293	597	10,752	53.2%
				Integrated FPL and Gulf				
2022	134,800	108	103	134,588	5,717	6,133	122,949	56.4%
2023	135,600	144	138	135,318	5,793	6,167	123,640	56.0%
2024	136,761	181	175	136,405	5,871	6,217	124,673	55.6%
2025	137,540	181	175	137,184	5,948	6,252	125,340	55.2%
2026	138,541	181	175	138,185	6,028	6,297	126,216	54.8%
2027	139,474	181	175	139,118	5,955	6,339	127,180	54.5%
2028	140,874	181	175	140,518	6,040	6,402	128,432	54.1%
2029	141,751	181	175	141,395	6,125	6,442	129,184	53.5%

Projected Values (2020 - 2029):

Col. (2) represents Forecasted NEL and does not include incremental conservation.

Col. (3) & Col. (4) are forecasted values representing reduction on sales from incremental conservation

Col. (5) is forecasted NEL adjusted for incremental conservation.

Col. (8) is Total Retail Sales. The values are calculated using the formula: Col. (8) = Col. (2) - Col. (6) - Col. (7).
These values are at the meter.

Col. (9) is calculated using Col. (5) from this page and Col. (10) from Schedule 3.1 using the formula:
Col. (9) = ((Col. (5)*1000) / ((Col. (2) * 8760). Adjustments are made for leap years.

Schedule 4: FPL
Previous Year Actual and Two-Year Forecast of
Total Peak Demand and Net Energy for Load (NEL) by Month

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2019 ACTUAL		2020 FORECAST		2021 FORECAST	
Month	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh
JAN	16,795	8,672	19,959	8,890	20,250	8,861
FEB	18,660	8,353	19,005	8,311	19,233	8,124
MAR	18,963	9,159	18,900	9,155	19,127	9,254
APR	20,106	9,899	20,255	9,522	20,499	9,598
MAY	22,580	11,417	22,150	10,879	22,416	10,987
JUN	24,241	11,775	23,700	11,437	23,792	11,428
JUL	23,583	12,481	24,190	12,312	24,284	12,274
AUG	22,861	12,145	24,624	12,402	24,720	12,425
SEP	23,653	11,803	23,652	11,439	23,745	11,430
OCT	21,776	11,633	22,210	10,732	22,296	10,711
NOV	19,855	9,001	19,601	8,962	19,678	8,978
DEC	17,249	8,830	18,737	9,030	18,810	9,064
Annual Values:		**125,168**		**123,073**		**123,134**

Col. (3) annual value shown is consistent with the value shown in Col.(5) of Schedule 3.3.

Cols. (4) through (7) do not include the impacts of cumulative load management, incremental utility conservation, or incremental load management.

Schedule 4: Gulf
Previous Year Actual and Two-Year Forecast of Total Peak Demand and Net Energy for Load (NEL) by Month

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2019 ACTUAL		2020 FORECAST		2021 FORECAST	
Month	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh
JAN	2,066	941	2,256	967	2,293	950
FEB	1,564	725	1,955	837	1,980	809
MAR	1,885	817	1,726	800	1,749	796
APR	1,734	808	1,733	809	1,756	801
MAY	2,260	1,087	2,137	991	2,165	986
JUN	2,444	1,210	2,359	1,146	2,389	1,146
JUL	2,426	1,291	2,464	1,254	2,496	1,254
AUG	2,374	1,187	2,411	1,240	2,442	1,239
SEP	2,472	1,163	2,265	1,078	2,294	1,076
OCT	2,284	959	1,997	909	2,023	906
NOV	1,951	730	1,710	794	1,732	792
DEC	1,862	825	1,894	889	1,919	888
Annual Values:		**11,742**		**11,715**		**11,643**

Col. (3) annual value shown is consistent with the value shown in Col.(5) of Schedule 3.3.

Cols. (4) through (7) do not include the impacts of incremental conservation.

CHAPTER III

Projection of Incremental Resource Additions

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III. Projection of Incremental Resource Additions

III.A. FPL's Resource Planning:

FPL utilizes its well-established, integrated resource planning (IRP) process, in whole or in part as dictated by analysis needs, to determine: (i) the magnitude and timing of needed resources, and (ii) the type of resources that should be added. This section describes FPL's basic IRP process which was used during 2019 and early 2020 to develop the resource plan for FPL's and Gulf's areas that is presented in this 2020 Site Plan. It also discusses some of the key assumptions, in addition to a new load forecast discussed in the previous chapter, which were used in developing this resource plan.

Four Fundamental Steps of FPL's Resource Planning:

The four fundamental steps of FPL's resource planning process are:

Step 1: Determine the magnitude and timing of FPL's new resource needs;

Step 2: Identify which resource options and resource plans can meet the determined magnitude and timing of projected resource needs (*e.g.*, identify competing options and resource plans);

Step 3: Evaluate the competing options and resource plans in regard to system economics and non-economic factors; and,

Step 4: Select a resource plan and commit, as needed, to near-term options.

Figure III.A.1 graphically outlines the 4 steps.

Overview of IRP Process: Fundamental Steps

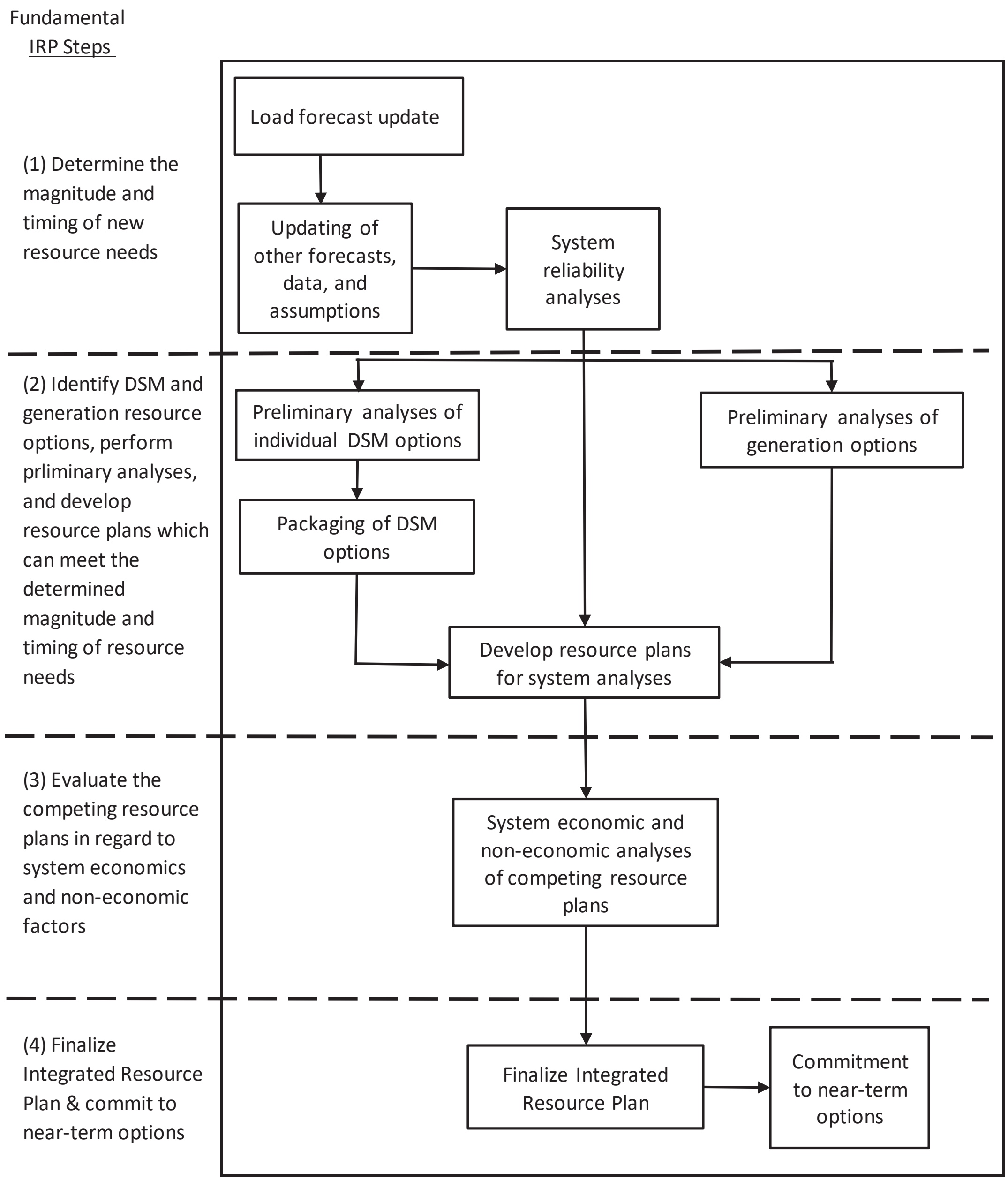

Figure III.A.1: Overview of IRP Process

Step 1: Determine the Magnitude and Timing of New Resource Needs:

The first of the four resource planning steps is essentially a determination of the amount and timing of megawatts (MW) of load reduction, new capacity additions, or a combination of both, which are needed to maintain and/or enhance system reliability. This step is often referred to as a reliability assessment for the utility system.

This analysis typically starts with an updated load forecast. Several databases are also updated in this first fundamental step, not only with the new information regarding forecasted loads, but also with other information that is used throughout other aspects of FPL's resource planning process. Examples of this new information include but are not limited to: delivered fuel price projections, current financial and economic assumptions, current power plant capability and operating assumptions, and current demand side management (DSM) demand and energy reduction assumptions.

FPL's process also includes key sets of projections regarding three specific types of resources: (1) generating unit capacity changes, (2) firm capacity power purchase agreements (PPAs), and (3) DSM implementation.

Key Assumptions Regarding the Three Types of Resources:

The first set of assumptions, generating unit capacity changes, is based on current projections of new generating capacity additions and planned retirements of existing generating units. In this 2020 Site Plan, there are five (5) types of projected generation capacity changes through the 10-year reporting time frame of this document. These changes are listed below in general chronological order:

1) Additional Solar Energy Facilities:
   In this 2020 Site Plan, the resource plan projects the addition of approximately 8,860 MW of new solar PV generation during the 2020 through 2029 time period. Of that total addition, approximately 7,300 MW are projected to be in FPL's area and approximately 1,560 MW are projected to be in Gulf's area. These PV additions are consistent with FPL's "30-by-30" announcement in January 2019 which detailed FPL's plans to add 30 million solar PV panels cost-effectively by the year 2030. These projected solar additions for 2020 through 2029, when combined with solar additions made prior to 2020, will result in a total of approximately 10,000 MW of total installed solar by the end of 2029.

2) Additional Battery Storage:

FPL's 2019 Site Plan showed the planned addition of approximately 469 MW of battery storage in late 2021 with the majority of that storage capacity being sited in Manatee County as partial replacement for the generating capacity that will be decreased by the retirement of Manatee Units 1 & 2 (as discussed below). The current resource plan presented in this 2020 Site Plan continues to show these 469 MW of battery storage by the end of 2021. The current plan is to site 409 MW of battery storage in Manatee County and two 30 MW battery storage facilities at different sites. In addition, this resource plan projects another 700 MW of battery storage facilities by the end of 2029 with these facilities being sited in Gulf's area.

3) Retirement of Existing Generating Units:

As discussed in FPL's 2019 Site Plan, FPL plans to retire its Manatee Units 1 and 2 in late 2021. These units are older steam generating units of approximately 800 MW each that have been in operation for more than 40 years. The units are relatively inefficient units in regard to their ability to convert fuel into electricity. As a result, they are projected to no longer be cost-effective to operate for FPL's customers.

In this 2020 Site Plan, these two Manatee units are still projected to be retired in late 2021. In addition, FPL's ownership portion (approximately 630 MW) of the Scherer 4 coal-fueled unit in Georgia is planned to be retired by year-end 2021/beginning of 2022. Furthermore, Gulf's ownership portion of Daniels Units 1 & 2 is now projected to be retired by January of 2024. The Daniels units are coal-fueled units located in Mississippi Power's service territory. Gulf's ownership portion of those two units is approximately 510 MW.

4) Enhancements of Existing Generating Units:

FPL's 2019 Site Plan discussed a plan to upgrade CT components in a number of its CC units, and these upgrades are again reflected in the 2020 Site Plan. In addition, the 2020 Site Plan projects another capacity upgrade effort for existing CC units in both FPL's and Gulf's areas. These additional upgrades are projected to be completed in 2026 and to result in increased Summer capacity of approximately 600 MW, plus improved heat rates for each host CC unit. The results of all of the upgrades are included in the information presented in Schedule 8 in this chapter.

Two significant enhancements to existing generating units in the Gulf area are also included in the resource plan presented in this Site Plan. The first of those is the conversion of Crist Units 6 & 7 from coal-fueled to natural gas-fueled. This conversion effort is already underway and is scheduled to be completed in September of 2020**.** This enhancement will result in both lower cost energy generated by the units, and in significant fixed cost savings, particularly for Gulf area customers. The second enhancement is a pair of capacity upgrades of the Lansing Smith Unit 3. The installation phase of the first upgrade of this existing CC unit was completed in 2019 which will be followed by testing and tuning in the Spring of 2020. This upgrade is projected to increase the firm capacity of the unit by more than 80 MW. A second upgrade of the unit is planned for 2024 which is projected to increase unit capacity by approximately another 59 MW. Both upgrades in this second enhancement will also result in cost savings for customers through both the deferral of future capacity needs and by increased output of lower cost natural gas-fueled energy production.

5) <u>Addition of Cost-Effective Natural Gas-Fueled Generation:</u>
In its 2019 Site Plan, FPL's resource plan projected the addition of three new CC units with one each being added in 2019, 2022, and 2026. Gulf's 2019 Site Plan projected the addition of a single new CC unit in 2024.

The first of the FPL projected CC units in last year's Site Plan was the Okeechobee Clean Energy Center unit which became operational on FPL's system in 2019. This new CC unit supplies approximately 1,778 MW of firm capacity that can be delivered around the clock. The second of these is the Dania Beach Clean Energy Center Unit 7 that will come in-service in 2022. This unit is a key component of the modernization of FPL's existing Lauderdale power plant site. The third CC projected in FPL's 2019 Site Plan was a new CC unit being added in 2026 at a yet-to-be-determined site. Gulf's 2019 Site Plan projected a single new CC unit to be added at the Escambia site in 2024.

The resource plan presented in this 2020 Site Plan continues to show the new Dania Beach CC unit coming in-service in 2022. However, neither the other CC unit previously projected in FPL's area for 2026, nor the Escambia CC unit in Gulf's area previously projected for 2024, remain in the current resource plan. However, four new combustion turbine (CT) units at the Crist plant site in Gulf's area are now part of the resource plan. These new CT units are being added based on system economics and for purposes of ensuring adequate fast-start operating reserves in Gulf's area.

The second set of assumptions involves other firm capacity power purchase agreements (PPAs). These assumptions are generally consistent with those presented in FPL's 2019 Site Plan and Gulf's 2019 Site Plan.

In regard to FPL's area, the most significant firm capacity PPA is with Indiantown Cogeneration LP (ICL). On January 5, 2017, with mutual consent of the parties involved and FPSC approval (in Order PSC-16-0506-FOF-EI), FPL acquired the equity interests in this coal-based PPA with ICL. This approval included both the PPA and the underlying asset (*i.e.*, the generating unit) from which FPL received firm capacity and energy. The plan is to terminate this PPA by the end of the 4th Quarter of 2020 upon retirement of the senior debt in the project. In addition, the coal-fueled generating unit upon which the PPA was based will also be retired.

In regard to Gulf's area, the most significant firm capacity PPA is the Shell PPA with which Gulf receives 885 MW of firm capacity and energy from a CC unit in Alabama. That PPA is scheduled to terminate in May of 2023. At the time this document is being prepared, Alabama Power is seeking approval from the Alabama Public Service Commission to acquire this generating unit.

The remaining projected firm capacity purchases for both areas are from a combination of utility and independent power producers. Details for these other purchases, including the annual total capacity values, are presented in Chapter I in Tables I.A.3.2, I.A.3.3, I.B.3.2, and I.B.3.3. These purchased firm capacity amounts were incorporated in the resource planning work that led to the resource plan presented in this document.

The third set of assumptions involves a projection of the amount of incremental DSM that FPL and Gulf anticipate implementing annually over the ten-year reporting period of 2020 through 2029 for this Site Plan. In the 4th Quarter of 2019, the Florida Public Service Commission (FPSC) set DSM Goals for FPL, Gulf, and other Florida utilities that addressed the years 2020 through 2024. The annual amounts of Summer MW reduction, Winter MW reduction, and energy (MWh) reduction for the FPL and Gulf areas detailed in the FPSC's DSM Goal's order (Order No. PSC-2019-0509-FOF-EG) through 2024 are accounted for in the resource plan presented in this Site Plan. For the years 2025 through 2029, the annual DSM levels proposed in the DSM Goals docket separately by FPL and Gulf – because they were projected to be cost-effective - are also accounted for in the resource plan presented in this Site Plan. Those annual amounts are shown in Schedules 3.1, 3.2, and 3.3 in Chapter II.

The Three Reliability Criteria Used to Determine FPL's Projected Resource Needs:

FPL's resource planning process applies these key assumptions, plus the other updated information described above, in the first fundamental step: determining the magnitude and timing of future resource needs. This determination is accomplished through system reliability analyses. Until 2014, FPL's reliability analyses were based on dual planning criteria, including a minimum peak-period total reserve margin (TRM) of 20% (FPL applies this criterion to both Summer and Winter peaks) and a maximum loss-of-load probability (LOLP) of 0.1 day per year. Both criteria are commonly used throughout the utility industry. Beginning in 2014, FPL began utilizing a third reliability criterion: a 10% generation-only reserve margin (GRM).

Until the acquisition of Gulf by NextEra Energy in January 2019, the reliability criteria used for Gulf was determined by analyses of the entire Southern Company system of which Gulf was a part. It is projected that Southern Company will continue to operate Gulf's generating units as part of its system until the new North Florida Resiliency Connection transmission line is in-service by the end of 2021. At that time, FPL will begin to operate Gulf's generating units as well as FPL's units as part of a single, integrated electrical system. In addition, the generation-based reliability of the Gulf area will be evaluated, and the area planned, using FPL's current three reliability criteria described above.

These reliability criteria utilize two basic types of methodologies: deterministic and probabilistic. The calculation of excess firm capacity at the annual system peaks (reserve margin) is a common method, and this relatively simple deterministic calculation can be performed on a spreadsheet. It provides an indication of the adequacy of a generating system's capacity resources compared to its load during peak periods. However, deterministic methods do not take into account probabilistic-related elements, such as the impact of individual unit failures. For example, two 50 MW units that can be counted on to run 90% of the time are more valuable in regard to utility system reliability than is one 100 MW unit that also can be counted on to run 90% of the time. Probabilistic methods can also account for the value of being part of an interconnected system with access to multiple capacity sources.

For this reason, probabilistic methodologies have been used to provide an additional perspective on the reliability of a generating system, and a number of them are used to perform system reliability analyses. Among the most widely used is loss-of-load probability (LOLP), which FPL's resource planning group utilizes. Simply stated, LOLP is an index of how well a generating system may be able to meet its firm demand (*i.e.*, a measure of how often load may exceed available resources). In contrast to reserve margin, the calculation of LOLP looks at the daily peak demands for each year, while taking into consideration such probabilistic events as the unavailability of individual generators due to scheduled maintenance or forced outages.

LOLP is expressed in terms of the projected probability that a utility will be unable to meet its entire firm load at some point during a year. The probability of not being able to meet the firm load is calculated for each day of the year using the daily peak hourly load. These daily probabilities are then summed to develop an annual probability value. This annual probability value is commonly expressed as "the number of days per year" that the system firm load could not be met. The standard for LOLP used by FPL's resource planning group, is a maximum of 0.1 day per year which is commonly accepted throughout the industry. This analysis requires a more complicated calculation methodology than the reserve margin analysis. LOLP analyses are typically carried out using computer software models, such as the Tie Line Assistance and Generation Reliability (TIGER) program used by FPL.

In 2010, FPL's integrated resource planning work examined a then-projected fundamental change in FPL's resource plans. This change was a significant shift in the mix of generation and DSM resources that could result in FPL becoming increasingly reliant on DSM resources, rather than generation resources, to maintain system reliability. As discussed in several subsequent FPL Site Plans, extensive analyses examined this shift from a system reliability perspective.

In these analyses, FPL developed a key new metric: a generation-only reserve margin (GRM). This GRM metric reflects reserves that would be provided only by actual generating resources. The GRM value is calculated by setting to zero all incremental energy efficiency (EE) and load management (LM), plus all existing LM, to derive another useful version of a reserve margin calculation. The resulting GRM value provides an indication of the respective roles that DSM and generation are projected to play each year as FPL maintains its 20% Summer and Winter total reserve margins (which account for both generation and DSM resources).

These analyses examined the two types of resources, DSM and Supply options, from both an operational and a resource planning perspective. Based on these analyses, FPL concluded that resource plans for its system with identical total reserve margins, but different GRM values, are not equal in regard to system reliability. A resource plan with a higher GRM value is projected to result in more MW being available to system operators on adverse peak load days, and in lower LOLP values, than a resource plan with a lower GRM value, even though both resource plans have an identical total reserve margin value. In other words, it matters what resources are used to meet a reserve margin criterion such as 20%. Therefore, in 2014 FPL implemented a minimum GRM criterion of 10% as a third reliability criterion in its resource planning process.

The 10% minimum Summer and Winter GRM criterion augments the other two reliability criteria that FPL's resource planning group uses: the 20% TRM criterion for Summer and Winter and the 0.1 day/year LOLP criterion. All three reliability criteria are useful to identify the timing and magnitude of the resource need because of the different perspectives the three criteria provide. In addition, the GRM criterion is particularly useful in providing direction regarding the mix of generation (combined cycle, solar, etc.) and DSM resources that should be added to maintain and enhance system reliability.

Step 2: Identify Resource Options and Plans That Can Meet the Determined Magnitude and Timing of Projected Resource Needs:

The initial activities associated with this second fundamental step of resource planning generally proceed concurrently with the activities associated with Step 1. During Step 2, preliminary economic screening analyses of new capacity options that are identical, or virtually identical, in certain key characteristics may be conducted to determine what type of new capacity option appears to be the most competitive on FPL's system. Preliminary analyses also can help identify capacity size (MW) values, projected construction/permitting schedules, and operating parameters and costs. Similarly, preliminary economic screening analyses of new DSM options and/or evaluation of existing DSM options are often conducted in this second fundamental IRP step.

FPL's resource planning group typically utilizes a production cost model, a Fixed Cost Spreadsheet, and/or an optimization model to perform the preliminary economic screening of generation resource options. For the preliminary economic screening analyses of DSM resource options, FPL typically uses its DSM CPF model, which is an FPL spreadsheet model utilizing the FPSC's approved methodology for performing preliminary economic screening of individual DSM measures and programs. A years-to-payback screening test based on a two-year payback criterion is also used in the preliminary economic screening of individual DSM measures and programs in order to minimize the probability of paying incentives to customers who would have implemented a DSM measure anyway without a utility incentive (*i.e.*, free riders). Then, as the focus of DSM analyses progresses from analysis of individual DSM measures to the development of DSM portfolios, FPL typically uses two additional models. One is a proprietary non-linear programming (NLP) model that is used to analyze the potential for lowering system peak loads through additional load management/demand response capability. The other model that is utilized is a proprietary linear programming (LP) model with which DSM portfolios are developed.

The next step is typically to “package” the individual new resource options, both Supply options and DSM portfolios, emerging from these preliminary economic screening analyses into different resource plans that are designed to meet the system reliability criteria. In other words, resource plans are created by combining individual resource options so that the timing and magnitude of projected new resource needs are met. The creation of these competing resource plans is typically carried out using spreadsheet and/or dynamic programming techniques.

At the conclusion of the second fundamental resource planning step, a number of different combinations of new resource options (*i.e.*, resource plans) of a magnitude and timing necessary to meet the projected resource needs are identified.

Step 3: Evaluate the Competing Options and Resource Plans in Regard to System Economics and Non-Economic Factors:

At the completion of fundamental Steps 1 and 2, the most viable new resource options have been identified, and these resource options have been combined into a number of resource plans that each meet the magnitude and timing of projected resource needs. The stage is set for evaluating these resource options and resource plans in system economic analyses that aim to account for all of the impacts to the utility system from the competing resource options/resource plans. FPL’s resource planning group typically utilizes the UPLAN production cost model and a Fixed Cost Spreadsheet, and/or the EGEAS or AURORA optimization models, to perform the system economic analyses of resource plans. Other spreadsheet models may also be used to further analyze the resource plans.

The basic economic analyses of the competing resource plans focus on total system economics. The standard basis for comparing the economics of competing resource plans is their relative impact on electricity rate levels, with the general objective of minimizing the projected levelized system average electric rate (*i.e.*, a Rate Impact Measure or RIM methodology). In analyses in which the DSM contribution has already been determined through the same IRP process and/or FPSC approval, and therefore the only competing options are new generating units and/or purchase options, comparisons of the impacts of competing resource plans on both electricity rates and system revenue requirements will yield identical outcomes in regard to the relative rankings of the resource options being evaluated. Consequently, the competing options and resource plans in such cases can be evaluated on a system cumulative present value revenue requirement (CPVRR) basis.

FPL's resource planning group also includes other factors in its evaluation of resource options and resource plans. Although these factors may have an economic component or impact, they are often discussed in quantitative but non-economic terms, such as percentages, tons, etc., rather than in terms of dollars. These factors are often referred to as "system concerns or factors," which include (but are not limited to) maintaining/enhancing fuel diversity and maintaining a regional balance between load and generating capacity, particularly in the Southeastern Florida region of FPL's area that consists of Miami-Dade and Broward counties. In conducting the evaluations needed to determine which resource options and resource plans are best for the utility system, the non-economic evaluations are conducted with an eye to whether the system concern is positively or negatively impacted by a given resource option or resource plan. These and other factors are discussed later in this chapter in section III.C.

Step 4: Finalizing the Current Resource Plan

The results of the previous three fundamental steps are typically used to develop a new or updated resource plan. The current resource plan presented in this 2020 Site Plan is summarized in the following section.

III.B. Projected Incremental Resource Changes in the Resource Plan

The projection of major changes in the current resource plan for the FPL and Gulf areas, including both utility-owned generation and PPAs, for the years 2020 through 2029 is summarized in Table ES-1 in the Executive Summary. The changes are presented in terms of Summer firm capacity values. Although this table does not specifically identify the impacts of projected DSM additions on projected resource needs and the resource plan, the projected DSM additions are consistent with the recent DSM Goals order regarding DSM Goals for both FPL and Gulf through the year 2024. In addition, projected cost-effective amounts of DSM for the years 2025 through 2029 are also assumed. Thus, DSM impacts are fully accounted for in the resource plan in this Site Plan.

A summary of some of the larger resource additions/retirements for both systems/areas include, but are not necessarily limited to, those listed below (in approximate chronological order):

<u>For FPL's system/area:</u>

- New solar (PV) additions from 2020 through 2029 of approximately 7,300 MW;
- Capacity upgrades at a number of FPL's existing CC units through 2026;
- Retirement of FPL's ownership portion (approximately 630 MW) of the Scherer 4 coal unit by January 2022;

- A 409 MW battery facility at the Manatee plant site, plus two 30 MW battery storage facilities at different sites, by the beginning of 2022; and,
- The modernization of the existing Lauderdale power plant site in mid-2022 with the new DBEC CC Unit 7.

For Gulf's system/area:

- New solar (PV) additions from 2020 through 2024 of approximately 1,560 MW;
- Capacity upgrades (two) of the existing Lansing Smith Unit 3 CC, with installation for the first upgrade completed in 2019 with testing and tuning in the Spring of 2020, then a planned second upgrade in 2024;
- Conversion from coal-fueled to natural gas-fueled at Crist Units 6 & 7 in 2020;
- A new transmission line between FPL and Gulf by the beginning of 2022 enabling a bidirectional transfer capability between the two areas of 850 MW;
- Four new CTs at the Crist plant site by the beginning of 2022;
- Expiration (as per the contract) of 855 MW from the Shell PPA in May, 2023;
- The retirement of Gulf's ownership portion of the coal-fueled Daniels Units 1 & 2 by the beginning of 2024; and,
- Approximately 700 MW of battery storage in 2028 and 2029.

FPL notes that, with the exception of certain of the resource additions and retirements listed above in the earlier years of the 2020 through 2029 time period addressed in this 2020 Site Plan, final decisions on other resource options shown in this Site Plan are not needed at this time, nor have yet been made. This is particularly relevant to resource additions shown for years increasingly further out in the 10-year reporting period. Consequently, those resource additions are more prone to future change.

III.C Discussion of the Resource Plan and Issues Impacting Resource Planning Work

In considering the resource plan presented in this Site Plan, it is useful to note that there are at least six (6) significant factors that either influenced the current resource plan or which may result in future changes. These factors are discussed below (in no particular order).

1. **Maintaining a Balance Between Load and Generation in Southeastern Florida:**
   An imbalance exists between regionally installed generation and regional peak load in Southeastern Florida (Miami-Dade and Broward counties). As a result of that imbalance, a significant amount of energy required in the Southeastern Florida region during peak periods is provided by importing energy through the transmission system from generating

units located outside the region, operating less efficient generating units located in Southeastern Florida out of economic dispatch, or a combination of the two. FPL's prior planning work concluded that, as load inside the region grows, additional installed generating capacity and/or load reduction in this region, or additional installed transmission capacity capable of delivering more electricity from outside the region, would be required to address this imbalance.

Partly because of the lower transmission-related costs resulting from their location in or adjacent to Southeastern Florida, at least five relatively recent capacity additions (Turkey Point Unit 5, West County Energy Center Units 1, 2, & 3, and the modernization of the Port Everglades plant) were determined to be the most cost-effective options to meet FPL's then projected capacity needs. In addition, FPL has added increased capacity at its existing two nuclear units at Turkey Point as part of the nuclear capacity uprates project.

The balance between load and generation in the Southeastern Florida region was further enhanced by decisions to proceed with two other projects. First, the Corbett-Sugar-Quarry (CSQ) transmission line was added in mid-2019. This new line significantly increased FPL's ability to import capacity and energy into the region from generators located outside of the region. Second, the modernization of the existing Lauderdale plant site, which will result in an additional 279 MW of generation capacity in Southeastern Florida from the new DBEC Unit 7 in 2022, will significantly assist in maintaining and enhancing a balance between load and generation in this important region.

2. **Maintaining/Enhancing System Fuel Diversity:**

In 2019, FPL used natural gas to generate approximately 75% of the total electricity it delivered to its customers. By 2029, due largely to significant solar additions, the percentage of electricity generated by natural gas for the single integrated system is projected to decrease to approximately 62% based on the resource plan presented in this Site Plan. Due to this still significant reliance on natural gas, as well as evolving environmental regulations, opportunities to economically maintain and enhance fuel diversity are continually sought, both in regard to type of fuel and fuel delivery, with due consideration given to system economics.

In 2007, following express direction by the FPSC, FPL sought approval from the FPSC to add two new advanced technology coal units to its system in 2013 and 2014, respectively. However, these units were not approved. Since that time, coal units have ceased to be a viable generation option for a number of reasons which include: (i) environmental regulations regarding coal units, (ii) increased availability of natural gas, (iii) much lower forecasted costs for natural gas, and (iv) increased economic competitiveness of solar and battery storage. Consequently, FPL does not believe that new advanced technology coal units are currently viable fuel diversity enhancement options in Florida at this time.

Therefore, FPL has focused on: (i) cost-effectively adding solar energy and nuclear energy generation to enhance fuel diversity, (ii) diversifying the sources of natural gas, (iii) diversifying the gas transportation paths used to deliver natural gas to FPL's generating units, and (iv) using natural gas more efficiently.

<u>Solar Energy:</u> Assuming that annual additions of PV will be cost-effective from 2020-on, this 2020 Site Plan projects that FPL will have a total of approximately 10,000 MW of PV generation by the end of 2029. Such a level of PV generation would represent about 33% of FPL's and Gulf's current total installed generation (MW). However, the impact of PV contribution in terms of actual energy produced (MWh) is smaller. Because solar energy can only be generated during daylight hours, and is impacted by clouds, rain, etc., PV has a relatively low capacity factor (approximately 26% to 30%) in the state of Florida. As a result, FPL's solar additions would be projected to supply approximately 16% of the total energy (MWh) delivered in 2029 in the two areas (as shown in Schedule 6.2 later in this chapter).[10]

Based on the resource plan presented in this 2020 Site Plan, it is projected that the cleanest energy sources -- low-emission natural gas, zero-emission nuclear, zero-emission wind, and zero-emission solar – will provide approximately 99% of all energy produced in the single, merged system in 2029 with zero-emission nuclear, wind, and solar alone providing approximately 37% of all energy produced by the system in 2029.

<u>Nuclear Energy:</u> In 2008, the FPSC approved the need to increase capacity at FPL's four existing nuclear units and authorized the company to recover project-related expenditures that were approved as a result of annual nuclear cost recovery filings. FPL successfully completed this nuclear capacity uprate project. Approximately 520 MW of additional nuclear capacity was delivered by the project, which represents an increase of approximately 30% more incremental capacity than was originally forecasted when the project began. FPL's customers are benefitting from lower fuel costs and reduced system emissions provided by this additional nuclear capacity.

[10] As a rule of thumb, each 500 MW of PV added will account for slightly less than 1% of total energy delivered on the single, integrated system.

In June 2009, FPL began work to obtain all of the licenses, permits, and approvals that are necessary to construct and operate two new nuclear units at its Turkey Point site in the future. These licenses, permits, and approvals will provide FPL with the opportunity to construct these nuclear units for as long as 20 years from the time the licenses and permits are granted, and then to operate the units for at least 40 years thereafter. The Combined Operating Licenses (COL) for the prospective new Turkey Point Units 6 & 7 were granted by the Nuclear Regulatory Commission (NRC) in April 2018. FPL has paused in its determination of whether to seek FPSC approval to move forward with construction of the new nuclear units. FPL intends to incorporate into any such assessment the construction experience of two nuclear units currently being constructed by Georgia Power at its Vogtle site, and similar units being developed in China. As a result, the earliest possible in-service dates for Turkey Point 6 & 7 are beyond the 2020 through 2029 time period addressed in this docket.

In addition, on January 30, 2018, FPL filed a request with the NRC for a Subsequent License Renewal (SLR) for FPL's existing Turkey Point nuclear Units 3 & 4. The SLR requested approval to extend the operating licenses for these two nuclear units by 20 years from the license expiration dates in 2032 and 2033, respectively. The NRC approved the SLR in December 2019. As a result, FPL assumes that these two nuclear units will continue operating into the early 2050s, providing firm capacity into the important load center of Miami-Dade and Broward Counties, as well as zero-emission baseload energy.

Nuclear capacity remains an important consideration in resource planning work, and this Site Plan continues to present the Turkey Point site as a Preferred Site for the new and/or continuing nuclear capacity and energy.

<u>Natural gas sourcing and delivery:</u> In 2013, the FPSC approved FPL's contracts to bring more natural gas into FPL's service territory through a third natural gas pipeline system into Florida. The process by the pipeline companies to obtain approval from the Federal Energy Regulatory Commission (FERC) for the new pipeline system, consisting of the Sabal Trail and Florida Southeast Connection pipelines, culminated in receiving a FERC certificate of approval on February 2, 2016. The new pipeline system has been constructed and is now in service. This pipeline is necessary to fuel the FPSC-approved Okeechobee CC unit. The new pipeline system utilizes an independent route that will result in a more reliable, economic, and diverse natural gas supply for FPL customers and the State of Florida.

Using natural gas more efficiently: FPL has sought ways to utilize natural gas more efficiently for a number of years. In 2008, FPL received approval from the FPSC to modernize the existing Cape Canaveral and Riviera Beach plant sites with new, highly efficient CC units, which replaced the former steam generating units on each of those sites. The Cape Canaveral modernization went into service in April 2013, and the Riviera Beach modernization entered service in April 2014. On April 9, 2012, FPL received FPSC approval to proceed with a similar modernization project at the Port Everglades site. That new generating unit went into service on April 1, 2016.

Similarly, the modernization of the Lauderdale site in 2022 will also enhance FPL's ability to utilize natural gas more efficiently. The modernization project has begun with the recent retirement of two older, relatively fuel-inefficient generating units, Lauderdale Units 4 & 5. In 2022, a new fuel-efficient CC unit will be added at the same site: DBEC Unit 7. Part of the decision to proceed with the modernization of the Lauderdale site was the projection that the total amount of natural gas that will be used on FPL's system will be reduced with the new CC unit compared to what the usage would have been if the two older units had continued to operate.

Addition of Gulf Assets**:** Gulf Power (Gulf) currently owns two generating plants in the Florida Panhandle. Plant Crist, located in Pensacola, currently runs on coal with limited access to natural gas. Plant Smith, located near Panama City, is a CC natural gas plant. Gulf has access to gas transportation capacity on the Gulf South Pipeline Company, LP (Gulf South) and the Florida Gas Transmission Company, LLC (FGT) pipelines to serve these plants. Gulf is completing uprates at Plant Smith's Unit 3 to increase the output of the unit. Gulf is currently in the process of converting Plant Crist Units 6 & 7 to allow utilization of natural gas which will be delivered via a new plant lateral connecting Plant Crist to the FGT pipeline. This conversion is projected to be completed in the Summer of 2020. Gulf will also be adding four new CTs at Plant Crist in late 2021 that will have the capability to burn either natural gas or ultra-low sulfur distillate (ULSD) fuel oil.

In the future, FPL's resource planning group will continue to identify and evaluate alternatives that may maintain or enhance system fuel diversity. In this regard, efforts are also being made to maintain the ability to utilize ULSD oil at existing units that have that capability. In addition, the new CTs that FPL installed at its existing Lauderdale and Fort Myers sites in 2016, which replaced older GT units that were retired, have the capability to burn either natural gas or ULSD fuel oil.

3. Maintaining a Balance Between Generation and DSM Resources for System Reliability:

As mentioned earlier in Section III. A, FPL utilizes a 10% Generation-Only Reserve Margin (GRM) to ensure that system reliability is not negatively affected by an overreliance on non-generation resources. This GRM reliability criterion was developed as a result of extensive analyses – which have been described in detail in prior FPL Site Plans – of FPL's system from both resource planning and system operations perspectives. The potential for overreliance upon non-generating resources for system reliability remains an important resource planning issue for the FPL and Gulf areas and is one that will continue to be examined in ongoing resource planning work.

4. The Significant Impacts of Federal and State Energy-Efficiency Codes and Standards:

As discussed in Chapter II, the load forecasts for both the FPL and Gulf areas include projected impacts from federal and state energy-efficiency codes and standards. The magnitude of energy efficiency that is currently projected to be delivered to customers of the single, integrated system through these codes and standards is significant.

Current projections are that a cumulative Summer peak reduction impact of 5,732 MW, from these codes and standards beginning in 2005 (the year the National Energy Policy Act was enacted) and extending through 2029 (*i.e.*, the last year in the 2020 through 2029 reporting time period for this Site Plan), will occur compared to what the projected load would have been without the codes and standards. The projected incremental Summer MW impact from these codes and standards during the 2020 through 2029 reporting period of this Site Plan is the equivalent of an approximate 19% reduction compared to what the projected load would have been without the codes and standards. In regard to energy, the cumulative reduction attributed to the impact of the codes and standards from 2005 to 2029 is projected to reach 6,082 GWh since 2005. Included in this projection is a reduction of approximately 4% during the 2020 through 2029 reporting period. All of these projections show the significant impact of these energy-efficiency codes and standards.

In addition to lowering the load forecast from what it otherwise would have been, and thus serving to lower projected load and resource needs, this projection of efficiency from the codes and standards also affects resource planning in another way: it lowers the potential for utility DSM programs to cost-effectively deliver energy efficiency. This effect was taken into account by the FPSC when it set DSM Goals in 2014. This fact was also prominently discussed in the 2019 DSM Goals docket in which DSM Goals were set for the years 2020 through 2024.

5. **The trends of decreasing costs for fuel, decreasing costs for new generating units, and increasing fuel efficiency of new generating units:**

There are a number of factors that drive FPL's system costs. Three of the most important of these are: (i) forecasted natural gas costs, (ii) projected costs for new generating units, and (iii) the efficiency with which FPL's generating units convert fuel into electricity. When comparing forecasts of these factors over at least the last 5 years, the trends for each of these factors is in a direction that results in lower system costs for FPL's customers. For example, when comparing the 2015 forecasted cost for natural gas for the year 2020 with the current (2020) forecasted cost for 2020, there has been more than a 55% decrease in natural gas costs. An even greater reduction in CO_2 compliance costs for 2020 occurred between the 2015 and current forecast. In addition, in regard to the fuel efficiency of FPL's generating units, the amount of natural gas (measured in mmBTU of natural gas needed to produce a kWh of electricity) declined from 7,376 in 2015 to approximately 6,752 today. This improvement in fuel efficiency is truly significant, especially when considering the approximately 20,000 MW of gas-fueled generation on FPL's system.

These trends of steadily lowering of key components of FPL's system costs are very beneficial to FPL's customers because they help to lower FPL's electric rates[11].

6. **Projected changes in CO_2 regulation and associated compliance costs:**

Since 2007, FPL has evaluated potential carbon dioxide (CO_2) regulation and/or legislation and has included projected compliance costs for CO_2 emissions in its resource planning work. However, there always has been an unavoidable level of uncertainty regarding the timing and magnitude of the cost impacts of the potential regulation/legislation. The forecast of potential CO_2 compliance costs that FPL used in its 2019 resource planning work is lower than forecasts that had been used in prior years. In 2020, the new forecast of compliance costs is higher than the 2019 forecast but remains relatively low by historical standards.

[11] However, because the potential benefits of utility demand-side management (DSM) programs are based on DSM's ability to avoid certain system costs, the trend of steadily decreasing FPL system costs automatically results in a significant lowering of the cost-effectiveness of utility DSM.

III.D Demand Side Management (DSM)

FPL has sought and implemented cost-effective DSM programs since 1978, and cost-effective DSM has been a key focus of FPL's resource planning work for more than 40 years. During that time, FPL's DSM programs have included many energy efficiency and load management programs and initiatives. Similarly, Gulf has also steadily pursued cost-effective DSM for decades.

DSM Goals were set for FPL, Gulf, and other Florida utilities in November 2019. As discussed in FPL's testimony in the 2019 DSM Goals filing that led to these Goals being set, there were several important market forces affecting the feasibility and cost-effectiveness of utility DSM programs. The first of these is the growing impact of federal and state energy-efficiency codes and standards. As discussed first in Chapter II, and earlier in Section III.C above, the projected incremental impacts of these energy-efficiency codes and standards during the 2020 through 2029 time period has significantly lowered FPL's projected load and resource needs. In addition, these energy-efficiency codes and standards significantly reduce the potential for cost-effective utility DSM programs.

The second market force discussed in FPL's DSM Goals Testimony is FPL's lower generating costs with which DSM must compete. There are several reasons for these lower generating costs. One of these is that, as fuel costs are lowered, the benefit that is realized by each kWh of energy reduced by DSM is also lowered. In other words, the benefit from DSM's kWh reductions has been reduced from what it had been when Florida previously established DSM Goals. For example, from 2015 to 2020, projected fuel costs in $ per mmBTU for the year 2020 have decreased from $5.15 to $2.31, a percentage decrease of 55%. These lower forecasted natural gas costs are very beneficial for FPL's customers because they result in lower fuel costs and lower electric rates. At the same time, lower fuel costs also result in lower potential fuel savings benefits from the kWh reductions of DSM measures. These lowered benefit values result in DSM being less cost-effective than it was in the past.

Another reason for the lower generating costs and the resultant decline in the cost-effectiveness of utility DSM on the FPL system is the steadily increasing efficiency with which FPL generates electricity. FPL's generating system has steadily become more efficient in regard to its ability to generate electricity using less fossil fuel. For example, the FPL system is projected to use almost 30**%** less fossil fuel to generate a MWh in 2020 than it did in 2001. Again, this is very good for FPL's customers because it helps to significantly lower fuel costs and electric rates. However, the improvements in generating system efficiency affect DSM cost-effectiveness in much the same way as lower forecasted fuel costs: both lower the fuel costs of energy delivered to FPL's customers. Therefore, the improvements in generating system efficiency further reduce the potential fuel savings benefits from the kWh reduction impacts of DSM, thus further lowering potential DSM benefits and DSM cost-effectiveness.

These market forces that result in lower fuel and new generation costs for utility customers, and lower avoided costs for utility DSM programs, was a topic that was prominently discussed when new DSM Goals for the years 2020 through 2024 were set for FPL, Gulf, and other Florida utilities by the FPSC in the 4th Quarter of 2019. Consideration of these market forces, and of the effects of energy-efficiency codes and standards, were undoubtedly factors helping lead the FPSC to decide to maintain the DSM Goals at the same levels that had been set five years earlier, and to resist efforts to greatly increase DSM Goals for the Florida utilities and their customers.

For resource planning purposes, the DSM Goals set for both FPL and Gulf through 2024 are accounted for in this Site Plan. In addition, the annual DSM levels proposed separately by FPL and Gulf for the years 2025 through 2029 in the DSM Goals docket are accounted for in this Site Plan because these annual levels of DSM were projected to be cost-effective.

In February 2020, FPL and Gulf submitted to the FPSC their respective DSM Plans with which they will strive to meet the DSM Goals for 2020 through 2024. A summary of the programs for both FPL and Gulf is provided below. The FPSC is expected to determine the suitability of the respective DSM Plans later in 2020.

DSM Programs and Research & Development Efforts In FPL's Proposed DSM Plan

1. **Residential Home Energy Survey (HES)**
   This program educates customers on energy efficiency and encourages implementation of recommended practices and measures, even if these are not included in FPL's DSM programs. The HES is also used to identify potential candidates for other FPL DSM programs.

2. **Residential Load Management (On Call)**
   This program allows FPL to turn off certain customer-selected appliances using FPL-installed equipment during periods of extreme demand, capacity shortages, system emergencies, or for system frequency regulation.

3. **Residential Air Conditioning**

   This program encourages customers to install high-efficiency central air-conditioning systems.

4. **Residential Ceiling Insulation**

   This program encourages customers to improve their home's thermal efficiency.

5. **Residential New Construction (BuildSmart®)**

   This program encourages builders and developers to design and construct new homes to achieve BuildSmart® certification and move towards ENERGY STAR® qualifications.

6. **Residential Low Income**

   This program assists low income customers through FPL-conducted Energy Retrofits and state Weatherization Assistance Provider (WAP) agencies.

7. **Business Energy Evaluation (BEE)**

   This program educates customers on energy efficiency and encourages implementation of recommended practices and measures, even if these are not included in FPL's DSM programs. The BEE is also used to identify potential candidates for other FPL DSM programs.

8. **Commercial/Industrial Demand Reduction (CDR)**

   This program allows FPL to control customer loads of 200 kW or greater during periods of extreme demand, capacity shortages, or system emergencies.

9. **Commercial/Industrial Load Control (CILC)**

   This program allows FPL to control customer loads of 200 kW or greater during periods of extreme demand, capacity shortages or system emergencies. It was closed to new participants as of December 31, 2000.

10. **Business On Call**

    This program allows FPL to turn off customers' direct expansion central electric air conditioning units using FPL-installed equipment during periods of extreme demand, capacity shortages, or system emergencies.

11. Business Heating, Ventilating and Air Conditioning (HVAC)

This program encourages customers to install high-efficiency HVAC systems.

12. Business Lighting

This program encourages customers to install high-efficiency lighting systems.

13. Business Custom Incentive (BCI)

This program encourages customers to install unique high-efficiency technologies not covered by other FPL DSM programs.

14. Conservation Research & Development (CRD) Project

This project consists of research studies designed to: identify new energy-efficient technologies; evaluate and quantify their impacts on energy, demand and customers; and, where appropriate and cost-effective, incorporate an emerging technology into a DSM program.

DSM Programs and Research & Development Efforts In Gulf's Proposed DSM Plan

1. Residential Energy Audit

This program educates customers on energy efficiency through energy conservation advice and information that encourages the implementation of efficiency measures and behaviors resulting in energy and utility bill savings. The Residential Energy Audit program is also used to identify potential candidates for other Gulf Power DSM programs.

2. *Energy Select*

This program is designed to provide the customer with a means of conveniently and automatically controlling and monitoring energy purchases in responses to prices that vary during the day and by season in relation to Gulf's cost of producing or purchasing energy. The *Energy Select* system includes field units utilizing a communication gateway, major appliance load control relays, and a programmable thermostat, all operating at the customer's home.

3. Community Energy Saver Program

This program is designed to assist low-income families with energy costs through the direct installation of conservation measures at no cost to them. The program also educates families on energy efficiency techniques and behavioral changes to help control their energy use and reduce their utility operating costs.

4. **Residential Ceiling Insulation**

   This program encourages customers to improve their home's thermal efficiency.

5. **Residential Heat Pump**

   This program encourages customers to install high-efficiency heat pump systems.

6. **Residential Variable Speed Pool Pump**

   This program encourages customers to install high-efficiency variable speed pool pump systems.

7. **Commercial/Industrial Energy Survey**

   This program educates customers on energy efficiency and encourages them to participate in applicable DSM programs and/or implement other recommended actions not included as part of Gulf Business programs.

8. **Business Heating, Ventilating and Air Conditioning (HVAC)**

   This program encourages customers to install high-efficiency HVAC systems.

9. **Commercial Curtailable Load Program**

   This program allows Gulf to request curtailment of customer loads with a minimum commitment of 4,000 kW of Non-Firm Demand. The program will be closed to new participants when the total contracted Non-Firm Demand reaches 50 MW.

10. **Commercial/Industrial Custom Incentive**

    This program is designed to establish the ability to offer advanced energy services and energy efficient end-user equipment (including comprehensive audits, design, and construction of energy conservation projects) not offered through other programs to Commercial or Industrial customers.

11. **Conservation Demonstration & Development**

    The program is designed to serve as an umbrella program for the identification, evaluation, demonstration, data collection and development of new or emerging end-use technologies.

III.E Transmission Plan

The transmission plan will allow for the reliable delivery of the required capacity and energy to FPL's and Gulf's retail and wholesale customers. The following table presents the proposed future additions of 230 kV and above bulk transmission lines that must be certified under the Transmission Line Siting Act (TLSA) for the FPL and Gulf areas. There is one such line in FPL's area, but none in Gulf's area, for this 10-year reporting period.

Table III.E.1: List of Proposed Power Lines

(1) Line Ownership	(2) Terminals (To)	(3) Terminals (From)	(4) Line Length CKT. Miles	(5) Commercial In-Service Date (Mo/Yr)	(6) Nominal Voltage (KV)	(7) Capacity (MVA)
FPL	Levee [1/]	Midway	150	2030	500	2598

1/ Final order certifying the corridor was issued in April 1990. Construction of 138 miles is complete and in-service. Another phase of the project will utilize the remaining 12 mile section of the Levee-Midway corridor and will bring a second 500 kV line to feed Conservation 500/230 kV substation. The second Conservation 500 kV line is currently projected to be built no earlier than 2030 with the month in which the line would go into service unknown at this time.

In addition, there will be transmission facilities needed to connect several projected generation capacity additions to the system transmission grid in both the FPL and Gulf areas. These transmission facilities are described on the following pages. Other generation capacity additions, such as Dania Beach Clean Energy Center Unit 7 in mid-2022, will not require new transmission lines. Sites for longer term additions, such as projected PV additions for 2022-on, have not yet been definitely determined so no transmission analyses for these additions have been performed.

III.E.1 Transmission Facilities for the Hibiscus Solar Energy Center in Palm Beach County

The work required to connect the approximate 74.5 MW (nameplate, AC) Hibiscus Solar Energy Center in Palm Beach County in the 2nd Quarter of 2020 as part of the 2020 SoBRA PV additions is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Minto) on the project site approximately 1 mile west of FPL's Westlake substation on the Ranch-Corbett 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Minto 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Westlake-Corbett section of the Corbett-Ranch 230 kV line into Minto substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.2 Transmission Facilities for the Okeechobee Solar Energy Center in Okeechobee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Okeechobee Solar Energy Center in Okeechobee County in the 2nd Quarter of 2020 as part of the 2020 SoBRA PV additions is projected to be:

I. **Substation:** None. Solar PV project to be connected to low-side of Okeechobee Clean Energy Center Combustion Turbine Generator Step-up transformer inside the existing plant, which is connected to Fort Drum 500 kV Substation.

II. **Transmission:** None. Solar PV project to be connected to low-side of Okeechobee Clean Energy Center Combustion Turbine Generator Step-up transformer inside the existing plant, which is connected to Fort Drum 500 kV Substation.

III.E.3 Transmission Facilities for the Southfork Solar Energy Center in Manatee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Southfork Solar Energy Center in Manatee County in the 2nd Quarter of 2020 as part of the 2020 SoBRA PV additions is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation ("Duette") on the project site on the FPL Manatee-Keentown 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Duette 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Manatee-Keentown 230 kV line into Duette substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.4 Transmission Facilities for the Echo River Solar Energy Center in Suwannee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Echo River Solar Energy Center in Suwannee County in the 2nd Quarter of 2020 as part of the 2020 SoBRA PV additions is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 115 kV substation (Hogan) on the project site approximately 2.6 miles west of the FPL Wellborn substation on the Suwannee (Duke Energy Florida DEF) – Columbia (FPL) 115 kV line.
2. Add one 115/34.5 kV main step-up transformer (85 MVA) with a 115 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Hogan 115 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Wellborn-Live Oak section of the Suwannee (Duke Energy) – Columbia (FPL) 115 kV line into Hogan substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.5 Transmission Facilities for the Lakeside Solar Energy Center in Okeechobee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Lakeside Solar Energy Center in Okeechobee County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Nubbin) on the project site on the FPL Martin-Sherman 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Nubbin 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Martin-Sherman 230 kV line into Nubbin substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.6 Transmission Facilities for the Trailside Solar Energy Center in St. Johns County

The work required to connect the approximate 74.5 MW (nameplate, AC) Trailside Solar Energy Center in St. Johns County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 115 kV substation (Moccasin) on the project site on the FPL Elkton-St. Johns section of the Putnam-St. Johns 115 kV line.
2. Add one 115/34.5 kV main step-up transformer (85 MVA) with a 115 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Moccasin 115 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Elkton-St. Johns section of the Putnam-St. Johns 115 kV line into Moccasin substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.7 Transmission Facilities for the Union Springs Solar Energy Center in Union County

The work required to connect the approximate 74.5 MW (nameplate, AC) Union Springs Solar Energy Center in Union County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 115 kV substation (Plum) on the project site approximately 0.1 mile from the FPL Bradford-Lake Butler section of the Raven-Bradford 115 kV line.
2. Add one 115/34.5 kV main step-up transformer (85 MVA) with a 115 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Plum 115 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the FPL Bradford-Lake Butler section of the Raven-Bradford 115 kV line into Plum substation.
2. No additional upgrades are expected to be necessary at this time

III.E.8 Transmission Facilities for the Magnolia Springs Solar Energy Center in Clay County

The work required to connect the approximate 74.5 MW (nameplate, AC) Magnolia Springs Solar Energy Center in Clay County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Leno) on the project site approximately 0.1 mile from the Titanium-Green Cove Springs section of the Seminole Plant-Springbank 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Leno 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Titanium-Green Cove Springs section of the Seminole Plant-Springbank 230 kV line into Leno substation on the project site.
2. No additional upgrades are expected to be necessary at this time

III.E.9 Transmission Facilities for the Egret Solar Energy Center in Baker County

The work required to connect the approximate 74.5 MW (nameplate, AC) Egret Solar Energy Center in Baker County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Claude) on the project site approximately 2 miles from the FPL Duval-Raven 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Claude 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Duval-Raven 230 kV line into Claude substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.10 Transmission Facilities for the Nassau Solar Energy Center in Nassau County

The work required to connect the approximate 74.5 MW (nameplate, AC) Nassau Solar Energy Center in Nassau County in the 4th Quarter of 2020 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Crawford) on the project site on the FPL Duval-West Nassau (Georgia Transmission Company, "GTC") section of the Duval-Yulee 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Crawford 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Duval-West Nassau (GTC) section of the Duval-Yulee 230 kV line into Crawford substation (approximately 1 mile).
2. No additional upgrades are expected to be necessary at this time.

III.E.11 Transmission Facilities for the Pelican Solar Energy Center in St. Lucie County

The work required to connect the approximate 74.5 MW (nameplate, AC) Pelican Solar Energy Center in St. Lucie County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new 230 kV substation (Morrow) on the project site.
2. Add one 230 kV line switch at Morrow for string bus to Eldora substation
3. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
4. Construct 34.5 kV bus to connect the PV array to Morrow 230 kV Substation.
5. Add relays and other protective equipment.
6. Breaker replacements: None

II. Transmission:

1. Construct approximately 1.25 miles string bus from Eldora 230 kV to Morrow substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.12 Transmission Facilities for the Palm Bay Solar Energy Center in Brevard County

The work required to connect the approximate 74.5 MW (nameplate, AC) Palm Bay Solar Energy Center in Brevard County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Hayward) on the project site on the FPL Glendale-Hield section of the Midway-Malabar 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Hayward 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Glendale-Hield section of the Midway-Malabar 230 kV line into Hayward substation (approximately 2.5 miles).
2. No additional upgrades are expected to be necessary at this time.

III.E.13 Transmission Facilities for the Discovery Solar Energy Center in Brevard County

The work required to connect the approximate 74.5 MW (nameplate, AC) Discovery Solar Energy Center in Brevard County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 115 kV substation (Rocket) on the project site on the FPL C5-Barna 115 kV line.
2. Add one 115/34.5 kV main step-up transformer (85 MVA) with a 115 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to Rocket 115 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the C5-Barna 115 kV line into Rocket substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.14 Transmission Facilities for the Orange Blossom Solar Energy Center in Indian River County

The work required to connect the approximate 74.5 MW (nameplate, AC) Orange Blossom Solar Energy Center in Indian River County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new 230 kV substation (Finca) on the project site.
2. Add one 230 kV line switch at Finca bifurcating Eldora-Heritage 230 kV line approximately 1 mile from Eldora
3. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
4. Construct 34.5 kV bus to connect the PV array to Finca 230 kV Substation.
5. Add relays and other protective equipment.
6. Breaker replacements: None

II. Transmission:

1. Bifurcate Eldora-Heritage 230 kV line approximately 1 mile from Eldora at Finca substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.15 Transmission Facilities for the Sabal Palm Solar Energy Center in Palm Beach County

The work required to connect the approximate 74.5 MW (nameplate, AC) Sabal Palm Solar Energy Center in Palm Beach County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new 230 kV substation (Costa) on the project site.
2. Add one 230 kV line switch at Costa for string bus to Minto substation
3. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
4. Construct 34.5 kV bus to connect the PV array to Costa 230 kV Substation.
5. Add one 230 kV breaker to close ring bus at Minto substation
6. Add relays and other protective equipment.
7. Breaker replacements: None

II. Transmission:

1. Construct approximately 1.5 miles string bus from Minto 230 kV to Costa substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.16 Transmission Facilities for the Fort Drum Solar Energy Center in Okeechobee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Fort Drum Solar Energy Center in Okeechobee County in the 1st Quarter of 2021 is projected to be:

I. Substation:

None. Solar PV project to be connected to low-side of Okeechobee Clean Energy Center Combustion Turbine Generator Step-up transformer inside the existing plant, which is connected to Fort Drum 500 kV Substation.

II. Transmission:

None. Solar PV project to be connected to low-side of Okeechobee Clean Energy Center Combustion Turbine Generator Step-up transformer inside the existing plant, which is connected to Fort Drum 500 kV Substation.

III.E.17 Transmission Facilities for the Rodeo Solar Energy Center in DeSoto County

The work required to connect the approximate 74.5 MW (nameplate, AC) Rodeo Solar Energy Center in DeSoto County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new 230 kV substation (Karson) on the project site.
2. Add one 230 kV line switch at new substation to connect to Gleam substation (Cattle Ranch Solar Energy Center)
3. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
4. Construct 34.5 kV bus to connect the PV array to new 230 kV Substation.
5. Add relays and other protective equipment.
6. Breaker replacements: None

II. Transmission:

1. Connect new substation line switch via string bus to Gleam substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.18 Transmission Facilities for the Willow Solar Energy Center in Manatee County

The work required to connect the approximate 74.5 MW (nameplate, AC) Willow Solar Energy Center in Manatee County in the 1st Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new single bus, two (2) breaker 230 kV substation (Coachwhip) on the project site on the FPL Sunshine-Keentown 230 kV line.
2. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
3. Construct 34.5 kV bus to connect the PV array to new Coachwhip 230 kV Substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None

II. Transmission:

1. Loop the Sunshine-Keentown 230 kV line into new Coachwhip substation.
2. No additional upgrades are expected to be necessary at this time.

III.E.19 Transmission Facilities for Manatee Energy Storage Center in Manatee County

The approximately 409 MW battery storage addition that will be sited in Manatee County with a projected in-service date of late 2021 does not require any new offsite transmission lines.

III.E.20 Transmission Facilities for Sunshine Gateway Energy Storage addition in Columbia County

The 30 MW battery energy storage facility projected to be in-service in late 2021 that will be added to the existing Sunshine Gateway Solar Energy Center in Columbia County does not require any new offsite transmission lines[12].

[12] This battery storage facility is currently projected to be a 30 MW facility. However, on-going analyses may result in an increase to approximately 75 MW.

III.E.21 Transmission Facilities for Echo River Energy Storage addition in Suwannee County

The 30 MW battery energy storage facility projected to be in-service in late 2021 that will be added to the Echo River Solar Energy Center in Suwannee County does not require any new offsite transmission lines[13].

[13] This battery storage facility is currently projected to be a 30 MW facility. However, on-going analyses may result in an increase to approximately 75 MW.

III.E.22 Transmission Facilities for the Lauderdale Plant Modernization (Dania Beach Clean Energy Center Unit 7) in Broward County

The Lauderdale Modernization project (Dania Beach Clean Energy Center Unit 7) that is projected to be completed by mid-2022 does not require any new offsite transmission lines.

III.E.23 Transmission Facilities for the Blue Springs Solar Energy Center in Jackson County

The work required to connect the approximate 74.5 MW (nameplate, AC) Blue Springs Solar Energy Center in Jackson County in the 4th Quarter of 2021 is projected to be:

I. Substation:

a. Construct a new single bus, two (2) breaker 115 kV substation (Americus) on the project site, approximately 2 miles from the Cypress – Chipola section of the Gulf Marianna – West Grand Ridge 115 kV line.
b. Add one 115/34.5 kV main step-up transformer (85 MVA) with a 115 kV breaker to connect PV inverter array.
c. Construct 34.5 kV bus to connect the PV array to Americus 115 kV Substation.
d. Add relays and other protective equipment.
e. Breaker replacements: None

II. Transmission:

a. Loop the Cypress – Chipola section of the Gulf Marianna – West Grand Ridge 115 kV line into Americus substation.
b. No additional upgrades are expected to be necessary at this time.

III.E.24 Transmission Facilities for the Chautauqua Solar Energy Center in Walton County

The work required to connect the approximate 74.5 MW (nameplate, AC) Chautauqua Solar Energy Center in Walton County in the 4th Quarter of 2021 is projected to be:

I. Substation:

1. Construct a new 230 kV substation (“Liddie”) on the project site.
2. Add two 230 kV line switches on the Shoal River – Samson 230kV line at Liddie Substation
3. Add one 230/34.5 kV main step-up transformer (85 MVA) with a 230 kV breaker to connect PV inverter array.
4. Construct 34.5 kV bus to connect the PV array to Liddie 230 kV Substation.
5. Add relays and other protective equipment.
6. Breaker replacements: None

II. Transmission:

1. Interconnection (“Liddie”) Substation is on site. No Gen-Tie Required.
2. No additional upgrades are expected to be necessary at this time.

III.E.25 Transmission Facilities for the Crist Unit 8 Combustion Turbine Project in Escambia County

The work required to connect Crist Unit 8, which consists of four simple cycle combustion turbines (CT) in late 2021, to the Gulf system in Escambia County is projected to be:

I. Substation:

1. Construct a 230 kV switchyard (Conecuh) for the four (4) approximately 235 MW CTs on Crist Plant property. Switchyard will have five (5) bays with breaker-and-a-half configuration.
2. Install four (4) main step-up transformers (4 - 315 MVA), one for each CT.
3. Install thirteen (13) - 230 kV independent-pole breakers in the Conecuh switchyard.
4. Replace all Crist 230 kV breakers with independent-pole breakers.
5. Replace 230/115kV autotransformer transformer with a 500 MVA unit at Bellview substation.
6. Add relays and other protective equipment.

II. Transmission:

1. Loop existing Crist-Alligator Swamp #2-230kV and Crist-Bellview 230kV lines into new Conecuh switchyard.
2. Relocate line terminal for Crist-Barry 230kV line into Conecuh substation.
3. Upgrade Brentwood-Crist 230kV to 1930 Amps (768 MVA, ~7.6 miles).
4. Upgrade Conecuh-Crist #1 and #2-230kV lines to 2000 Amps (797 MVA, ~0.2 miles).
5. Upgrade Crist-Scenic Hills #1-115kV to 1800 Amps (359 MVA, ~2.9 miles).
6. Upgrade Eastgate-Scenic Hills 115kV to 1005 Amps (200 MVA, ~4.8 miles).
7. Upgrade Bellview-Conecuh 230kV to 1930 Amps (768 MVA, 8.9 miles).

III.F. Renewable Resources and Storage Technology

Overview:

Even though solar energy-based resource options were generally not economically competitive on FPL's and Gulf's system until the 2016 time frame, both companies have been actively involved in renewable energy resource research and development since the mid-1970s. These activities have been numerous and varied as described below.

FPL's and Gulf's Renewable Energy Efforts Through 2019:

FPL has been the leading Florida utility in examining ways to effectively utilize renewable energy technologies to serve its customers. Since 1976, FPL has been an industry leader in renewable energy research and development and in facilitating the implementation of various renewable energy technologies. FPL's and Gulf's renewable energy efforts through 2019 are briefly discussed in five categories of solar/renewable activities. Plans for new renewable energy facilities from 2020 through 2029 are then discussed in a separate section.

1) Early Research & Development Efforts:

In the late 1970s, FPL assisted the Florida Solar Energy Center (FSEC) in demonstrating the first residential PV system east of the Mississippi River. This PV installation at FSEC's Brevard County location was in operation for more than 15 years and provided valuable information about PV performance capabilities in Florida on both a daily and annual basis. In 1984, FPL installed a second PV system at its Flagami substation in Miami. This 10-kilowatt (kW) system operated for a number of years before it was removed to make room for substation expansion. In addition, FPL maintained a thin-film PV test facility at the FPL Martin Plant Site for a number of years to test new thin-film PV technologies.

Gulf has evaluated the potential for wind as a renewable energy resource in Northwest Florida through meteorological research along the coastal area. Gulf also participated in joint efforts with Southern Company research on various PV technology evaluations.

2) Demand Side & Customer Efforts:

In terms of utilizing renewable energy sources to meet its customers' needs, FPL initiated the first utility-sponsored conservation program in Florida designed to facilitate the implementation of solar technologies by its customers. FPL's Conservation Water Heating Program, first implemented in 1982, offered incentive payments to customers who chose solar water heaters. Before the program ended (because it was no longer cost-effective), FPL paid incentives to approximately 48,000 customers who installed solar water heaters.

In the mid-1980s, FPL introduced another renewable energy program, FPL's Passive Home Program. This program was created to broadly disseminate information about passive solar building design techniques that are most applicable in Florida's climate. As part of this program, three Florida architectural firms created complete construction blueprints for six passive home designs with the assistance of the FSEC and FPL. These designs and blueprints were available to customers at a low cost. During its existence, the program received a U.S. Department of Energy award for innovation and also led to a revision of the Florida Model Energy Building Code which was the incorporation of one of the most significant passive design techniques highlighted in the program: radiant barrier insulation.

FPL has continued to analyze and promote PV utilization. These efforts have included PV research, such as the 1991 research project to evaluate the feasibility of using small PV systems to directly power residential swimming pool pumps. FPL's PV efforts also included educational efforts, such as FPL's Next Generation Solar Station Program. This initiative delivered teacher training and curriculum that was tied to the Sunshine Teacher Standards in Florida. The program provided teacher grants to promote and fund projects in the classrooms.

Gulf offered customers the opportunity to contribute to the development of solar PV beginning with the Solar for Schools program in the 1995 DSM Plan. This voluntary program ultimately developed multiple PV installations in schools across Northwest Florida and was used primarily for educational purposes. In 1999, Gulf offered customers an additional opportunity through an optional rate rider. The PV Rate Rider program was intended to give customers an opportunity to contribute towards the construction of a solar PV facility along with other customers across the Southern Company territory.

In 2008, Gulf received FPSC approval to offer an experimental solar water heating program. This program was intended to help customers overcome the high initial cost of adopting the solar thermal water heating technology. The program spanned three years and was absorbed into a larger portfolio of renewable program offerings in Gulf's 2010 DSM Plan.

In 2009, as part of its DSM Goals decision, the FPSC imposed a requirement for Florida's investor-owned utilities to spend up to a certain capped amount annually to facilitate demand-side solar water heater and PV applications. The annual spending caps for these applications over the five-year period was approximately $15.5 million per year for FPL and approximately $576,000 per year for Gulf. In response to this direction, FPL received approval from the FPSC in 2011 to initiate a solar pilot portfolio consisting of three PV-based programs and three solar water heating-based programs, plus a Renewable Research and Demonstration project. Gulf received similar approval from the FPSC in 2011 to initiate a solar pilot portfolio consisting of two PV-based programs and two solar water heating-based programs. Analyses of the results by both FPL and Gulf from these pilot programs since their inception consistently showed that none of these pilot programs was cost-effective for customers using any of the three cost-effectiveness screening tests used by the State of Florida. As a result, consistent with the FPSC's December 2014 DSM Goals Order No. PSC-14-0696-FOF-EU, these pilot programs expired on December 31, 2015.

Gulf conducted market research in 2015 indicating customer interest in a renewable energy alternative to rooftop PV. After further research into innovative offerings across the industry, Gulf developed a subscription-based program model commonly known as community solar. Gulf received FPSC approval in 2016 for a Community Solar program intended to facilitate construction of a 1 MW facility in Northwest Florida once adequate subscriptions were secured. However, customer interest to-date has not been adequate to justify construction of the project.

In addition, FPL and Gulf assist customers interested in installing PV equipment at their facilities. Consistent with Florida Administrative Code Rule 25-6.065, Interconnection and Net Metering of Customer-Owned Renewable Generation, FPL works with customers to interconnect these customer-owned PV systems. Through December 2019, approximately 17,000 customer systems (predominantly residential) have been interconnected with FPL and approximately 2,200 customer systems (predominately residential) have been interconnected with Gulf. These values represent approximately 0.3% of FPL's total number of customers, and approximately 0.5% of Gulf's total number of customers, respectively.

3) <u>Supply Side Efforts – Power Purchases:</u>

FPL has facilitated a number of renewable energy projects (facilities which burn bagasse, waste wood, municipal waste, etc.) through power purchase agreements (PPAs). FPL purchases firm capacity and energy, and/or as-available energy, from these types of facilities. For example, FPL has a contract to receive firm capacity from the Solid Waste Authority of Palm Beach (SWA) through April 2034.

Gulf currently has three PPAs with solar facilities totaling approximately 120 MW. In addition, Gulf has two PPAs totaling approximately 81 MW based, at least in part, on receiving wind-produced firm amounts of hourly energy from out-of-state sources. Tables I.A.3.1, I.A.3.2, I.A.3.3, I.B.3.1, I.B.3.2, and I.B.3.3 in Chapter I provide information regarding both firm and non-firm capacity PPAs from renewable energy facilities in the two areas.

4) Supply Side Efforts – Utility Owned Facilities:

At the time this Site Plan is filed, FPL owns 24 universal solar generating facilities that are in commercial operation, and Gulf owns one universal solar generating facility (Blue Indigo) that is scheduled to go into commercial operation at about the time this 2020 Site Plan is to be filed (April 1, 2020). All but one of these facilities are PV facilities and together they represent approximately 1,675 MW of generation for FPL and 74.5 MW of generation for Gulf Power. The other facility is a 75 MW solar thermal facility. Each of these solar facilities is listed below in Table III.F.1.

Table III.F.1: List of FPL- & Gulf-Owned Solar Facilities Through April 2020

	Solar Energy Center	Project	County	Nameplate MW	Type	COD
				FPL Area		
1	Desoto		Desoto	25	Tracking	Oct-09
2	Space Coast		Brevard	10	Fixed	Apr-10
3	Martin		Martin	75	Solar Thermal	Dec-10
4	Manatee		Manatee	74.5	Fixed	Dec-16
5	Citrus		DeSoto	74.5	Fixed	Dec-16
6	Babcock		Charlotte	74.5	Fixed	Dec-16
7	Horizon	SoBRA	Alachua / Putnam	74.5	Fixed	Jan-18
8	Coral Farms	SoBRA	Putnam	74.5	Fixed	Jan-18
9	Wildflower	SoBRA	DeSoto	74.5	Fixed	Jan-18
10	Indian River	SoBRA	Indian River	74.5	Fixed	Jan-18
11	Blue Cypress	SoBRA	Indian River	74.5	Fixed	Mar-18
12	Barefoot Bay	SoBRA	Brevard	74.5	Fixed	Mar-18
13	Hammock	SoBRA	Hammock	74.5	Fixed	Mar-18
14	Loggerhead	SoBRA	St. Lucie	74.5	Fixed	Mar-18
15	Miami-Dade	SoBRA	Miami-Dade	74.5	Fixed	Jan-19
16	Interstate	SoBRA	St. Lucie	74.5	Fixed	Jan-19
17	Sunshine Gateway	SoBRA	Columbia	74.5	Fixed	Jan-19
18	Pioneer Trail	SoBRA	Volusia	74.5	Fixed	Jan-19
19	Sweetbay	ST	Martin	74.5	Fixed	Jan-20
20	Northern Preserve	ST	Baker	74.5	Fixed	Jan-20
21	Cattle Ranch	ST	Desoto	74.5	Tracking	Jan-20
22	Twin Lakes	ST	Putnam	74.5	Tracking	Jan-20
23	Blue Heron	ST	Hendry	74.5	Fixed	Jan-20
24	Babcock Preserve	ST	Charlotte	74.5	Fixed	Jan-20
				Gulf Power Area		
25	Blue Indigo		Jackson	74.5	Fixed	Apr-20
				Totals		
			FPL Area Total Nameplate MW =	1,675		
			Gulf Power Area Total Nameplate MW =	74.5		
			Total Nameplate MW =	1,749		

5) Ongoing Research & Development Efforts:

FPL has a “Living Lab” across several of its office locations and select customer sites to demonstrate FPL’s renewable energy commitment to employees and visitors. FPL currently has approximately 308 kW of PV as part of the Living Lab, including a 150 kW floating solar installation in Miami-Dade County. Through various Living Lab projects, FPL is able to evaluate multiple solar and storage technologies and applications for the purpose of developing a renewable business model resulting in the most cost-effective and reliable uses for FPL’s customers. FPL plans to continue to expand the Living Lab as new technologies come to market, including a plan to add 500 kW of linear generators in 2020.

FPL has also been in discussions with several private companies on multiple emerging technology initiatives, including ocean current, ocean thermal, hydrogen, fuel cell technology, biomass, biofuels, and energy storage.

In regard to PV's impact on the FPL system, FPL began in 2014 to develop a methodology to determine what firm capacity value at FPL's Summer and Winter peak hours would be appropriate to apply to existing, and potential PV facilities. The potential capacity contribution of PV facilities is dependent upon a number of factors including (but not necessarily limited to): site location, technology, design, and the total amount of solar that is operating on FPL's system. (Note that the Martin solar thermal facility is a "fuel-substitute" facility, not a facility that provides additional capacity and energy. The solar thermal facility displaces the use of fossil fuel to produce steam on the FPL system when the solar thermal facility is operating.)

Based on the results of its analyses using that methodology, firm capacity values are assigned to each new solar facility. These firm capacity values are described in terms of the percentage of the facility's nameplate (AC) rating that can be counted on as firm capacity at the Summer and Winter peak load hours. For example, two of FPL's earliest PV facilities, DeSoto and Space Coast, have been assigned firm capacity values of approximately 46% for DeSoto and 32% for Space Coast at FPL's Summer peak hour (that typically occurs in the 4 p.m. to 5 p.m. hour), but contribute no firm capacity during FPL's Winter peak hour (that typically occurs in the 7 a.m. to 8 a.m. hour). Similarly, each new solar facility is assigned a specific firm capacity value based on the factors described above.

Gulf partnered with EPRI in 2016 as a host site for the SHINES (Sustainable and Holistic Integration of Energy Storage and Solar PV) project. This ongoing project evaluates the potential for transformer-level battery storage to work in conjunction with rooftop solar to manage energy flow on the distribution system. Advanced forecasting technology interacts with the solar and battery control systems to optimize customer loads and charging/discharging of the battery storage to minimize grid disruption. Gulf also conducted research on residential Tesla Powerwall battery systems to evaluate both the potential to shift solar contribution to peak hours and to dispatch storage as a demand-response resource.

Renewable Energy, Battery Storage, and Electric Vehicle Projections for 2020 through 2029:

This section addresses efforts regarding renewable energy in both universal (utility-scale) solar and customer-focused (distributed) solar. In addition, efforts regarding battery storage are also addressed. These efforts and plans are summarized below.

1) Universal Solar:

In 2009, FPL constructed 110 MW of solar energy facilities including two PV facilities totaling 35 MW and one 75 MW solar thermal facility. From 2009 through 2017, the costs of solar equipment, especially PV equipment, declined significantly and universal (i.e., utility-scale) PV facilities at a number of sites became increasingly competitive economically with more conventional generation options. As a result, FPL added three new PV facilities of approximately 74.5 MW each near the end of 2016.

In the first quarter of 2018, eight additional PV facilities of 74.5 MW each, or 596 MW in total, also went into commercial operation. These eight PV facilities were added under the Solar Base Rate Adjustment (SoBRA) provision of the Commission's order approving the settlement agreement for FPL's last base rate case in 2016 (Order No. PSC-16-0560-AS-EI) and comprised the first two tranches of four facilities each. In 2019, four more 74.5 MW PV facilities, or approximately 298 MW, were added as SoBRA facilities. An additional four 74.5 MW PV facilities, or approximately 298 MW, are in the final phase of construction and will be placed into commercial operation in the 2nd Quarter of 2020. This will complete the addition of solar under the current Solar Base Rate Adjustment (SoBRA) mechanism that resulted from FPL's 2016 base rate settlement agreement.

In regard to Gulf's area, one new 74.5 MW utility-owned PV facility, Blue Indigo, will be placed into commercial operation in April of 2020. The decision to add this PV facility was made based on resource planning work performed in 2019.

In this 2020 Site Plan, the resource plan shows a significant amount of solar being added throughout the 10-year projection period (2020 through 2029) of this Site Plan. A total of approximately 10,000 MW of solar is projected by the end of the year 2029. This total value consists of approximately 9,925 MW of PV and 75 MW of solar thermal. Ongoing resource planning work will continue to analyze the projected system economics of solar and all other resource options. Information regarding the Preferred and Potential Sites for the projected solar additions, particularly in the near-term, is presented in Chapter IV.

2) Customer-Focused PV Pilot Programs:

FPL began implementation of two customer-focused PV pilot programs in 2015. The first is a voluntary, community-based, solar partnership pilot to install new solar-powered generating facilities. The program is at least partially funded by contributions from customers who volunteer to participate in the pilot and will not rely on subsidies from non-participating customers. The second program will implement approximately 5 MW of DG PV. The objective of this second program is to collect grid integration data for distributed generation (DG) PV and develop operational best practices for addressing potential problems that may be identified. A brief description of these pilot programs follows.

a) Voluntary, Community-Based Solar Partnership Pilot Program:

The Voluntary Solar Pilot Program, named FPL SolarNow, provides FPL customers with an additional and flexible opportunity to support development of solar power in Florida. The FPSC approved FPL's request for this three-year pilot program in Order No. PSC-14-0468-TRF-EI on August 29, 2014. The pilot program's tariff became effective in January 2015. The pilot was recently approved for a third extension of an additional year by the FPSC in Order No. PSC-2019-0544-TRF-EI on December 20, 2019 and the pilot program is now scheduled to end at the close of 2020.

This pilot program provides all customers the opportunity to support bringing solar projects into local communities by funding the construction of solar facilities in local public areas, such as parks, zoos, schools, and museums. Customers can participate in the program through voluntary contributions of $9/month. As of the end of 2019, there were 48,897 participants enrolled in the Voluntary Solar Pilot Program. This program has installed 68 projects located in 64 different locations within the FPL service territory. These projects represent approximately 2,420 kW-DC of PV generation.

b) FPL SolarTogether, Shared Solar Program:

In March of 2019, FPL filed for FPSC approval of a community shared solar program. The program is named FPL SolarTogether. This voluntary program offers FPL customers the option to purchase capacity/energy from cost-effective, large-scale solar generation facilities. The proposed program will not require customers who participate to be bound to a long-term contract or subject to administrative fees or termination penalties. Under this program, participants' monthly electric bills would show both a subscription charge and a direct credit on their electric bills associated with the amount of solar-generated capacity purchased. This shared solar program will leverage the economies of scale of universal solar to deliver long-term savings to both program participants and non-participants.

In March 2020, the FPSC approved the SolarTogether program (Order PSC-2020-0084-S-EI). The first phase of the program is projected to add approximately 1,490 MW of new solar facilities[14].

c) <u>C&I Solar Partnership Pilot Program:</u>

This pilot program is conducted in partnership with interested commercial and industrial (C&I) customers over an approximate 5-year period that is scheduled to conclude in 2020. Limited investments will be made in PV facilities located at customer sites on selected distribution circuits within FPL's service territory.

The primary objective is to examine the effect of high localized PV penetration on FPL's distribution system and to determine how best to address any problems that may be identified. FPL has installed approximately 3.5 MW of PV facilities on circuits that experience specific loading conditions to better study feeder loading impacts. In addition, FPL is now evaluating the integration of solar into urban areas to test its impact on the distribution system on feeders that are heavily loaded as well as investigate the capabilities of "bifacial solar panel" technology, which, unlike traditional panels, is able to produce energy on both sides

<u>Battery Storage Efforts:</u>

Battery storage technology has continued to advance, and the costs of storage are projected to continue to decline. As a result, battery storage, particularly when charged solely by utility-scale solar facilities, has become an economically competitive firm capacity option for FPL's system. The resource plan presented in this 2020 Site Plan shows an increased amount of battery storage compared to what was presented in the 2019 Site Plan. As previously discussed, a 409 MW battery storage facility will be added in late 2021 at the existing Manatee plant site to partially offset the loss of capacity that will occur with the retirement of existing Manatee Units 1 & 2. Additional battery storage capacity is projected to be added by late 2021 with 30 MW of battery storage added at both the existing Sunshine Gateway Solar Energy Center and at the Echo River Solar Energy Center currently in

[14] In the SolarTogether community solar program, participating customers share in the costs and benefits of a dedicated FPL SolarTogether PV facility and are entitled, upon their request, to have the environmental attributes associated with their participation retired by FPL on their behalf.

construction. An additional total of approximately 700 MW of battery storage is also included in the resource plan in the years 2028 and 2029 in Gulf's area.

In addition, FPL is analyzing the potential of battery storage technology to benefit FPL's customers in other ways. These analyses have been, and are currently, being carried out through implementation of two pilot projects designed to evaluate different potential applications for batteries on FPL's system.

The objectives of the two pilot projects are to identify the most promising applications for batteries on FPL's system and to gain experience with battery installation and operation. This information will position FPL to expeditiously take advantage of battery storage for the benefit of FPL's and Gulf's customers as the economics of the technology continue to improve. For the purpose of discussing these two pilot projects, they will be referred to as the "small scale" and "large scale" storage pilot projects.

1) <u>Small Scale Storage Pilot Projects:</u>

In 2016 and early 2017, FPL installed approximately 4 MW of battery storage systems, spread across six sites, with the general objective of demonstrating the operational capabilities of batteries and learning how to integrate them into FPL's system. These small storage projects were designed with a distinct set of high-priority battery storage grid applications in mind. These applications include: peak shaving, frequency response, and backup power. In addition, these initial projects were designed to provide FPL with an opportunity to determine how to best integrate storage into FPL's operational software systems and how best to dispatch and/or control the storage systems.

To this end, FPL installed: (i) a 1.5 MW battery in Miami-Dade County primarily for peak shaving and frequency response, (ii) another 1.5 MW battery in Monroe County for backup power and voltage support, (iii) a relocatable 0.75 MW uninterruptible power supply (UPS) battery at the Tennis Center at Crandon Park in Key Biscayne for mitigation of momentary disruptions, and (iv) several smaller kilowatt-scale systems at other locations to study distributed storage reliability applications. All of these projects have been in service for more than 2 years and have yielded valuable information regarding the applications listed above.

2) <u>Large Scale (50 MW) Storage Pilot Project:</u>

The small scale energy storage pilot projects described above are complemented by up to 50 MW of additional battery projects that will be deployed. These pilot projects were authorized under the Settlement Agreement in FPL's 2016 base rate case. The 50 MW of batteries that will be deployed in this larger pilot project will expand the number of storage applications and configurations that FPL will be able to test, as well as making the scale of deployment more meaningful, given the large size of FPL's system.

The first two storage projects under this pilot involve pairing battery storage with existing universal PV facilities, and these projects went into service in the 1st Quarter of 2018. One of the projects is a 4 MW battery sited at FPL's Citrus Solar Energy Center, which captures clipped (curtailed) solar energy from the solar panels during high solar insolation hours, then releases this energy in other hours. The second of these two projects is a 10 MW battery at FPL's Babcock Ranch Solar Energy Center. This project is designed to shift PV output from non-peak times to peak times and also to provide "smoothing" of solar output and regulation services. These two projects are designed to enhance the operations of existing solar facilities that were installed in 2016 as outlined in FPL's base rate case Settlement Agreement. The data and lessons gathered from these two projects will result in more optimized design configurations for solar-paired battery projects as well as improved operational parameters for economic dispatch.

The third project, placed in-service in the 4th Quarter of 2019, is a 10 MW battery in Wynwood, a dense urban area that is close to downtown Miami. The project is designed to examine the use of batteries to support the distribution system with a focus on addressing grid, system, and customer challenges.

Three additional pilot projects are under development and expected to go in-service in 2020. One project entails deploying a 3 MW battery alongside an existing solar PV system to create a microgrid. The microgrid will be used for local resiliency and to provide additional grid services, including mitigation of disruptions potentially caused by solar in the distribution system. Another project currently under development will deploy up to 1 MW of Electric-Vehicle-to-Grid (EV2G) batteries using electric school buses that will be able to discharge electricity to the grid when needed. This project will explore the potential for utilizing electric vehicles as grid resources on FPL's system for the first time ever. Yet another project will site an 11.5 MW battery at the future Dania Beach Clean Energy Center Unit 7 to provide FPL an opportunity to test using battery storage for black start capability of large generating units.

Together, all of these projects will utilize approximately 39 MW of the 50 MW allowed under the Settlement Agreement. In regard to the remaining 11 MW of allowed storage capacity, FPL is continuing to evaluate which types of battery storage configurations and applications are projected to be the most meaningful to examine at this time. Potential project ideas are evaluated on an ongoing basis, considering current trends in the battery storage market, as well as the needs of FPL's system and the potential for projects of a given type to create future customer savings and value.

In addition to the two storage pilot projects described above (Small Scale and Large Scale 50 MW), FPL is now testing battery storage in the residential setting. This test involves up to 20 residential sites in the Palm Beach County area. The test addresses both potential benefits of having a 5-to-8 kW storage system for home backup power and the ability of FPL to remotely control the storage systems to provide services to the electric grid.

These battery storage pilot projects, plus other planned battery storage efforts projected to be in-service by late 2021/beginning of 2022, are presented in Table III.F.2 below. The table also presents the firm capacity values for Summer and Winter that FPL is currently assigning to these facilities. In total, FPL is currently projecting approximately 480 MW of cumulative firm capacity value from battery storage by 2022 and this firm capacity is accounted for in FPL's resource planning work.

Table III.F.2: List of FPL Battery Storage Facilities

In-Service Date	Location / Projects	Status	Nameplate MW	Firm Summer capacity MW	Firm Winter capacity MW
2016-2017	2016 Pilots	Operation	4	0	0
2018	Citrus Solar Energy Center	Operation	4	4	4
2018	Babcock Solar Energy Center	Operation	10	10	10
2019	Wynwood	Operation*	10	0	0
2020	Dania Beach Energy Center	Development	11.5	0	0
2020	Micro grid	Development	3	0	0
2020	EV2G	Development	0.4	0	0
2021	Manatee	Development	409	409	409
2022	Sunshine Gateway	Development	30	30	30
2022	Echo River	Development	30	23	30
	Total		**512**	**476**	**483**

* The Wynwood battery has 2 interconnection points. The first was energized in Dec. 2019; the second will be energized in Apr. 2020.

Electric Vehicle Efforts:

Florida continues to rank in the top four in the nation for electric vehicle (EV) adoption, and more Floridians are buying electric vehicles every year. FPL began implementation of the new FPL EVolution pilot program in 2019 to support the growth of EVs with the goal to install more than 1,000 charging ports, thus increasing the availability of public charging stations for EVs in Florida by 50%. This pilot program will be conducted in partnership with interested host customers over an approximate 3-year period. Limited investments will be made in EV charging infrastructure. Installations will encompass different EV charging technologies and market segments, including workplace, destination, public fast charging, and residential. These places will include rest stops, public parks, shopping malls, and large businesses that employ thousands of Florida residents. As of December 31, 2019, FPL has installed 50 ports at 7 locations.

In regard to EVs, the primary objective of the integrated utility is to examine EV use, adoption, potential new rate structures, power quality, and customer experience ahead of mass adoption to ensure future electric vehicle investments enhance service for electric customers who select EVs.

III.G Fuel Mix and Fuel Price Forecasts

1. Fuel Mix: FPL and Gulf

Until the mid-1980s, FPL relied primarily on a combination of fuel oil, natural gas, and nuclear energy to generate electricity with significant reliance on oil–fueled generation. In the early 1980s, FPL began to purchase “coal-by-wire.” In 1987, coal was first added to the fuel mix through FPL’s partial ownership (20%) and additional purchases (30%) from the St. Johns River Power Park (SJRPP). This allowed FPL to meet its customers’ energy needs with a more diversified mix of energy sources. Additional coal resources were added with the partial acquisition (76%) of Scherer Unit 4, which began serving FPL’s customers in 1991.

The trend since the early 1990s has been a steady increase in the amount of natural gas, which FPL uses to produce electricity due, in part, to the introduction of highly efficient and cost-effective CC generating units and the ready availability of abundant, U.S.-produced natural gas. FPL placed into commercial operation two new gas-fueled CC units at the West County Energy Center (WCEC) site in 2009. FPL added a third new CC unit to the WCEC site in 2011. In addition, FPL has completed the modernization of its Cape Canaveral, Riviera Beach, and Port Everglades plant sites. These new CC units have dramatically improved the efficiency of FPL's generation system in general and, more specifically, the efficiency with which natural gas is utilized. In March of 2018, the FPSC authorized a modernization of FPL's Lauderdale site in which two existing steam-type generating units were retired in late 2018, and a new, much more fuel-efficient CC unit, DBEC Unit 7, will be added at the site by mid-2022.

The uprates at Plant Smith's Unit 3 in Gulf's area will increase the efficiency of the current unit, and alternatives that allow more output from existing units across the FPL and Gulf systems will continue to be evaluated. The addition of 4 CT's at Plant Crist in 2021, capable of burning natural gas or ULSD oil, will provide additional fuel diversity and reliability.
FPL has also taken measures over the last few years to reduce the use of coal as a fuel. FPL shuttered Cedar Bay in 2016, St. Johns River Power Park in 2018 and plans to retire the Indiantown Co-Gen coal-fueled unit in late 2020. Gulf's conversion of the Crist plant to natural gas in 2020 demonstrates a continued commitment to eliminate coal from the generation portfolio.

In addition, FPL increased its utilization of nuclear energy through capacity uprates of its four existing nuclear units. With these uprates, more than 500 MW of additional nuclear capacity have been added to the FPL system. As mentioned previously, FPL has obtained the Combined Operating Licenses from the NRC for two new nuclear units, Turkey Point Units 6 & 7. FPL has now paused in this process to decide when to pursue approval from the FPSC to proceed to construction. In addition, on January 30, 2018, FPL applied to the Nuclear Regulatory Commission (NRC) for Subsequent License Renewal (SLR) for FPL's Turkey Point Units 3 & 4. The current license terms for these two existing nuclear units extend into the years 2032 and 2033, respectively. The SLR request has now been approved by the NRC which extends the operating licenses for Turkey Point Units 3 & 4 by 20 years to 2052 and 2053, respectively.

In regard to utilizing renewable energy, by April 2020, FPL will have an approximate 75 MW solar thermal steam generating facility at the existing Martin site and a total of approximately 1,675 MW PV generating capability comprised of 74.5 MW solar facilities at 23 other sites. In addition, Gulf has one 74.5 MW PV facility. A significant amount of additional solar is projected in the current resource plan as discussed throughout this Site Plan. However, as previously discussed in this chapter, the contribution to fuel diversity of this additional PV capability will be lower on a MWh basis than the large MW additions of PV might suggest.

Ongoing resource planning work will continue to focus on identifying and evaluating alternatives that would most cost-effectively maintain and/or enhance long-term fuel diversity. These fuel-diverse alternatives may include: the purchase of power from renewable energy facilities, additional solar energy facilities, obtaining additional access to diversified sources of natural gas such as liquefied natural gas (LNG) and natural gas from the Mid-Continent and Marcellus regions, preserving the ability to utilize fuel oil at existing units, and increased utilization of nuclear energy. (As previously discussed, new, advanced technology coal-fueled generating units are not currently considered as viable options in Florida in the 10-year reporting period of this document.) The evaluation of the feasibility and cost-effectiveness of these and other possible fuel diversity alternatives will be part of on-going resource planning efforts.

Current use of various fuels to supply energy to customers, plus a projection of this “fuel mix” through 2029 based on the resource plan presented in this document, is presented in Schedules 5, 6.1, and 6.2 that appear later in this chapter. As noted on Schedules 6.1 and 6.2, the fuel mix projections for the Gulf system for the years 2020 and 2021 were provided by the Southern Company which will continue to operate the Gulf generating units until the FPL and Gulf systems are integrated into a single operating system.

2. Fossil Fuel Cost Forecasts

FPL’s Fuel Cost Forecasts

Fossil fuel price forecasts, and the resulting projected price differentials between fuels, are major drivers used to evaluate alternatives for meeting future resource needs. FPL’s forecasts are generally consistent with other published contemporary forecasts. A January 2020 fuel cost forecast was used in the analyses which developed the resource plan presented in this 2020 Site Plan.

Future oil and natural gas prices, and to a lesser extent, coal prices, are inherently uncertain due to a significant number of unpredictable and uncontrollable drivers that influence the short- and long-term price of oil, natural gas, and coal. These drivers include U.S. and worldwide demand, production capacity, economic growth, environmental requirements, and politics.

The inherent uncertainty and unpredictability of these factors today and in the future clearly underscore the need to develop a set of plausible oil, natural gas, and solid fuel (coal) price scenarios that will bound a reasonable set of long-term price outcomes. In this light, Low, Medium, and High price forecasts for fossil fuels were developed in anticipation of the 2020 resource planning work.

FPL's Medium price forecast methodology is consistent for oil and natural gas. For oil and natural gas commodity prices, FPL's Medium price forecast applies the following methodology:

a. For the current + 2 years (2020-2022), the methodology used the January 2020 forward curve for New York Harbor 0.7% sulfur heavy oil, WTI Crude Oil, Ultra-Low Sulfur Diesel (ULSD) fuel oil, and Henry Hub natural gas commodity prices;

b. For the next two years (2023 and 2024), FPL used a 50/50 blend of the January 2020 forward curve and the most current projections at the time from The PIRA Energy Group;

c. For the 2025 through 2040 period, FPL used the annual projections from The PIRA Energy Group; and,

d. For the period beyond 2040, FPL used the real rate of escalation from the Energy Information Administration (EIA). In addition to the development of oil and natural gas commodity prices, nominal price forecasts also were prepared for oil and natural gas transportation costs. The addition of commodity and transportation forecasts resulted in delivered price forecasts.

FPL's Medium price forecast methodology is also consistent for coal prices. Forecasted coal prices were based upon the following approach:

a. JD Energy provides regular (once every 1-2 months) short-term price forecasts (currently through 2021 issued in December 2019) for Powder River Basin (PRB) minemouth/FOB coal.

b. JD Energy also provides a long-term price forecast through 2065 of the delivered price of coal to Scherer. The most recent forecast was issued in September 2019.

c. The short term delivered coal price forecast for Plant Scherer is updated with PRB minemouth/FOB coal price updates from JD Energy while keeping the long-term prices the same as the September 2019 long-term forecast.

d. Beyond 2065, prices are escalated at JD Energy's annual price escalation from 2064 to 2065.

In cases where multiple fuel cost forecasts are used, a Medium fuel cost forecast is developed first. FPL's approach has been to then adjust the Medium fuel cost forecast upward (for the High fuel cost forecast) or downward (for the Low fuel cost forecast) by multiplying the annual cost values from the Medium fuel cost forecast by a factor of (1 + the historical volatility of the 12-month forward price, one year ahead) for the High fuel cost forecast, or by a factor of (1 – the historical volatility of the 12-month forward price, one year ahead) for the Low fuel cost forecast.

Gulf Power's Fuel Cost Forecasts

Fossil fuel price forecasts, and the resulting projected price differentials between fuels, are major drivers used to evaluate alternatives for meeting future resource needs. Gulf Power's forecasts are generally consistent with other published contemporary forecasts. A January 2020 fuel cost forecast was used in analyses, the results of which led to the resource plan presented in this 2020 Site Plan.

Future oil and natural gas prices, and to a lesser extent, coal prices, are inherently uncertain due to a significant number of unpredictable and uncontrollable drivers that influence the short- and long-term price of oil, natural gas, and coal. These drivers include U.S. and worldwide demand, production capacity, economic growth, environmental requirements, and politics.

The inherent uncertainty and unpredictability of these factors today and in the future clearly underscore the need to develop a set of plausible oil, natural gas, and solid fuel (coal) price scenarios that will bound a reasonable set of long-term price outcomes. In this light, Low, Medium, and High price forecasts for fossil fuels were developed in anticipation of the 2020 resource planning work.

Gulf's Medium price forecast methodology for natural gas is consistent with FPL's methodology for natural gas and light oil. For natural gas and light oil commodity prices, Gulf's Medium price forecast applies the following methodology:

a. For the current + 2 years (2020-2022), the methodology used the January 2020 forward curve for Henry Hub natural gas and Ultra-Low Sulfur Diesel (ULSD) fuel oil commodity prices;
b. For the next two years (2023 and 2024), a 50/50 blend of the January 2020 forward curve, and the most current projections at the time from The PIRA Energy Group, were used;

c. For the 2025 through 2040 period, the annual projections from The PIRA Energy Group were used; and,

d. For the period beyond 2040, the real rate of escalation from the Energy Information Administration (EIA) was used. In addition to the development of oil and natural gas commodity prices, nominal price forecasts also were prepared for oil and natural gas transportation costs. The addition of commodity and transportation forecasts resulted in delivered price forecasts.

Gulf's Medium price forecast methodology for coal is also consistent with FPL's methodology for coal prices at Plant Scherer. Forecasted coal prices were based upon the following approach:

a. JD Energy provides regular (once every 1-2 months) short-term price forecasts (currently through 2021 issued in December 2019) for Powder River Basin (PRB), Uinta Basin, Illinois River Basin (ILB) and Colombian minemouth/FOB coal.

b. JD Energy also provides a long-term price forecast through 2065 of the delivered price of coal to Crist, Smith, and Scherer. The most recent forecast was issued in September 2019.

c. The short-term delivered coal price forecast for Plant Scherer is updated with PRB minemouth/FOB coal price updates from JD Energy while keeping the long-term prices the same as the September 2019 long-term forecast.

d. Currently coal price forecasts for plants Crist and Daniels are kept the same as the September 2019 long-term coal forecast provided by JD Energy.

e. Beyond 2065, all plant prices are escalated at JD Energy's annual price escalation from 2064 to 2065.

In cases where multiple fuel cost forecasts are used, a Medium fuel cost forecast is developed first. Then the Medium fuel cost forecast is adjusted upward (for the High fuel cost forecast) or downward (for the Low fuel cost forecast) by multiplying the annual cost values from the Medium fuel cost forecast by a factor of (1 + the historical volatility of the 12-month forward price, one year ahead) for the High fuel cost forecast, or by a factor of (1 – the historical volatility of the 12-month forward price, one year ahead) for the Low fuel cost forecast.

3. Natural Gas Storage

FPL currently has under contract 4.0 billion cubic feet (Bcf) of firm natural gas storage capacity at the Bay Gas storage facility in Alabama. The contract is set to expire March 31, 2021, but will automatically renew for up to four more successive one-year terms unless otherwise terminated by either party on or before December 31 of 2020. FPL has predominately utilized natural gas storage to help mitigate gas supply problems caused by severe weather and/or infrastructure problems. To diversify FPL's natural gas storage portfolio, FPL entered into a storage contract with SG Resources Mississippi, L.L.C. (Southern Pines Storage) for 1 Bcf of storage capacity. The current contract with Southern Pines Storage is set to expire March 31, 2022. This storage facility is located in Mississippi and is connected to numerous pipelines including FGT, Southeast Supply Header, and Transco. Gulf currently holds total storage capacity of 2.45 Bcf across three facilities: Bay Gas (1.1 Bcf), Leaf River (0.85 Bcf), and Petal (0.50 Bcf). This storage capacity is utilized for Plant Smith, Plant Crist, and Gulf's SENA (Shell) PPA.

Over the past several years, FPL has acquired upstream transportation capacity on several pipelines to help mitigate the risk of off-shore supply problems caused by severe weather in the Gulf of Mexico. While this transportation capacity has reduced FPL's off-shore exposure, a portion of FPL's supply portfolio remains tied to off-shore natural gas sources. Therefore, natural gas storage remains an important tool to help mitigate the risk of supply disruptions.

As FPL's reliance on natural gas has increased, its ability to manage the daily "swings" that can occur on its system due to weather and unit availability changes has become more challenging, particularly from oversupply situations. Natural gas storage is a valuable tool to help manage the daily balancing of supply and demand. From a balancing perspective, injection and withdrawal rights associated with gas storage have become an increasingly important part of the evaluation of overall gas storage requirements.

As the integrated utility system grows to meet customer needs, it must maintain adequate gas storage capacity to continue to help mitigate supply and/or infrastructure problems and to provide the ability to manage its supply and demand on a daily basis. The gas storage portfolio is continually evaluated and subscription for additional gas storage capacity is possible if needed to help increase reliability, provide the necessary flexibility to respond to demand changes, and diversify the overall portfolio.

4. Securing Additional Natural Gas:

Significant reliance upon natural gas to produce electricity for FPL's customers is projected to continue over the long-term due to FPL's growing load. The addition of highly fuel-efficient CC units at Cape Canaveral, Riviera Beach, Port Everglades, and Okeechobee, plus the additional CC capacity at the Dania Beach site that will come in-service in 2022, will reduce the growth in natural gas use from what it otherwise might have been due to the high fuel-efficiency levels of these new CC units. In addition, as discussed above, FPL currently plans to add significantly more solar PV facilities that utilize no fossil fuel.

FPL has historically purchased the gas transportation capacity required for new natural gas supply from two existing natural gas pipeline companies: FGT and Gulfstream. In mid-2017, a third new pipeline system, consisting of the Sabal Trail and Florida Southeast Connection pipelines, went into operation. This new pipeline system is now providing fuel for FPL's Riviera and Martin plants. The new pipeline system also provides the primary fuel for the recently added Okeechobee CC unit. The new pipeline system will also allow needed support for gas-fueled FPL generation facilities in several counties.

Southern Company Services (SCS) is currently managing the fuel supply for the Gulf power plants. Gulf is working to transition some of these fuel management activities by the end of 2021, but nothing has been transitioned to-date. Gulf is currently working with SCS to determine the appropriate fuel plans for the increased gas requirements at Plants Crist and Smith.

5. Nuclear Fuel Cost Forecast

This section discusses the various steps needed to fabricate nuclear fuel for delivery to nuclear power plants, the method used to forecast the price for each step, and other comments regarding FPL's nuclear fuel cost forecast.

a) Steps Required for Nuclear Fuel to be delivered to FPL's Plants

Four separate steps are required before nuclear fuel can be used in a commercial nuclear power reactor. These steps are summarized below.

(1) Mining: Uranium is produced in many countries such as Canada, Australia, Kazakhstan, and the United States. During the first step, uranium is mined from the ground using techniques such as open pit mining, underground mining, in-situ leaching operations, or production as a by-product from other mining operations, such as gold, copper, or phosphate rocks. The product from this first step is the raw uranium delivered as an oxide, U3O8 (sometimes referred to as yellowcake).

(2) Conversion: During the second step, the U3O8 is chemically converted into UF6 which, when heated, changes into a gaseous state. This second step further removes any chemical impurities and serves as preparation for the third step, which requires uranium to be in a gaseous state.

(3) Enrichment: Natural uranium contains 0.711% of uranium at an atomic mass of 235 (U-235) and 99.289% of uranium at an atomic mass of 238 (U-238). FPL's nuclear reactors use uranium with a higher percentage of up to almost five percent (5%) of U-235 atoms. Because natural uranium does not contain a sufficient amount of U-235, the third step increases the percentage amount of U-235 from 0.711% to a level specified when designing the reactor core (typically in a range from approximately 2.0% to as high as 4.95%). The output of this enrichment process is enriched uranium in the form of UF6.

(4) Fabrication: During the last step, fuel fabrication, the enriched UF6 is changed to a UO2 powder, pressed into pellets, and fed into tubes, which are sealed and bundled together into fuel assemblies. These fuel assemblies are then delivered to the plant site for insertion in a reactor.

Like other utilities, FPL has purchased raw uranium and the other components of the nuclear fuel cycle separately from numerous suppliers from different countries.

b) Price Forecasts for Each Step

(1) Mining: The impact of the earthquake and tsunami that struck the Fukushima nuclear complex in Japan in March 2011 is still being felt in the uranium market because the majority of the Japanese nuclear reactors are still not operating. As a result, current demand has remained declined and several of the production facilities have either closed or announced delays. Factors of importance are:

- Some of the uranium inventory from the U.S. Department of Energy (DOE) is finding its way into the market periodically to fund cleanup of certain Department of Energy facilities.
- Although only two new nuclear units are scheduled to start production in the U.S. during the next 2 to 3 years, other countries, more specifically China, have

announced an increase in construction of new units which may cause uranium prices to trend up in the near future.

Over a 10-year horizon, FPL expects the market to be more consistent with market fundamentals. The supply picture is more stable, with laws enacted to resolve the import of Russian-enriched uranium, by allowing some imports of Russian-enriched uranium to meet about 20-25% of needs for currently operating units, but with no restriction on the first core for new units and no restrictions after 2020 (an extension of these restrictions is currently under review). New and current uranium production facilities are decreasing capacity due to continued low prices and demands. Actual demand tends to grow over time because of the long lead time to build nuclear units. However, FPL cannot discount the possibility of future periodic sharp increases in prices, but believes such occurrences will likely be temporary in nature.

(2) Conversion: The conversion market is also in a state of flux due to the Fukushima events. Planned production is currently forecasted to be insufficient to meet a higher demand scenario, but it is projected to be sufficient to meet most reference case scenarios. As with additional raw uranium production, supply will expand beyond the current level if more firm commitments are made. FPL expects long-term price stability for conversion services to support world demand.

(3) Enrichment: Since the Fukushima events in March 2011, the near-term price of enrichment services has declined. However, plans for construction of several new facilities that were expected to come on-line after 2011 have been delayed and/or cancelled. Also, some of the existing high operating cost diffusion plants have shut down. As with supply for the other steps of the nuclear fuel cycle, expansion of future capacity is feasible within the lead time for constructing new nuclear units and any other projected increase in demand. Meanwhile, world supply and demand will continue to be balanced such that FPL expects adequate supply of enrichment services. The current supply/demand profile will likely result in the price of enrichment services remaining stable for the next few years, then starting to increase.

(4) Fabrication: Because the nuclear fuel fabrication process is highly regulated by the Nuclear Regulatory Commission (NRC), not all production facilities can qualify as suppliers to nuclear reactors in the U.S. Although world supply and demand is expected to show significant excess capacity for the foreseeable future, the gap is not as wide for

U.S. supply and demand. The supply for the U.S. market is expected to be sufficient to meet U.S. demand for the foreseeable future.

c) Other Comments Regarding FPL's Nuclear Fuel Cost Forecast

FPL's nuclear fuel price forecasts are the result of FPL's analysis based on inputs from various nuclear fuel market expert reports and studies. There is adequate projected supply, including planned and prospective mine expansions, to meet FPL demands, including operation of the Turkey Point nuclear units through the recently approved second life extension through the early 2050s.

Schedule 5: Actual
Fuel Requirements

	Fuel Requirements	Units	Actual [1/] FPL 2018	FPL 2019	Gulf 2018	Gulf 2019
(1)	Nuclear	Trillion BTU	309	303	0	0
(2)	Coal	1,000 TON	1,691	1,684	2,935	2,687
(3)	Residual (FO6) - Total	1,000 BBL	440	187	0	0
(4)	Steam	1,000 BBL	440	187	0	0
(5)	Distillate (FO2) - Total	1,000 BBL	187	203	30	17
(6)	Steam	1,000 BBL	4	1	27	17
(7)	CC	1,000 BBL	94	191	0	0
(8)	CT	1,000 BBL	89	11	3	0
(9)	Natural Gas - Total	1,000 MCF	660,569	665,984	59,283	28,616
(10)	Steam	1,000 MCF	38,572	29,028	1,255	1,124
(11)	CC	1,000 MCF	616,949	630,185	56,948	27,492
(12)	CT	1,000 MCF	5,048	6,771	1,080	0
(13)	Other [2/]	1,000 MCF	0	0	250	0

1/ Source: A Schedules.
2/ Perdido Units' landfill gas burn included in Other
Note: Solar contributions are provided on Schedules 6.1 and 6.2.

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Schedule 5: Forecasted Fuel Requirements

Fuel Requirements	Units	2020	2021	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
		FPL		Gulf		Forecasted — Integrated FPL and Gulf							
(1) Nuclear	Trillion BTU	298	298	0	0	305	298	301	306	301	300	307	301
(2) Coal	1,000 TON	1,003	1,132	514	189	77	146	87	152	178	187	206	152
(3) Residual (FO6) - Total	1,000 BBL	0	13	0	0	0	0	0	0	0	0	0	0
(4) Steam	1,000 BBL	0	13	0	0	0	0	0	0	0	0	0	0
(5) Distillate (FO2) - Total	1,000 BBL	9	5	3	5	39	10	21	24	9	22	19	16
(6) Steam	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7) CC	1,000 BBL	5	2	0	0	33	3	11	19	2	9	9	5
(8) CT	1,000 BBL	4	3	3	5	7	8	10	6	7	13	11	11
(9) Natural Gas - Total	1,000 MCF	594,809	575,238	28,846	33,608	617,672	631,009	637,355	625,116	615,165	604,104	591,178	583,767
(10) Steam	1,000 MCF	2,126	1,522	5,088	10,121	4,055	8,097	6,768	6,613	5,930	5,183	3,491	1,906
(11) CC	1,000 MCF	588,978	570,110	23,738	23,460	610,518	619,975	628,258	614,965	607,363	596,260	585,060	580,366
(12) CT	1,000 MCF	3,705	3,606	20	27	3,098	2,937	2,329	3,538	1,871	2,660	2,627	1,494
(13) Other [2/]	1,000 MCF	0	0	246	245	245	245	245	240	245	245	245	256

1/ Source: A Schedules.
2/ Perdido Units' landfill gas burn included in Other
Note: Solar contributions are provided on Schedules 6.1 and 6.2.

Schedule 6.1 Actual
Energy Sources

			Actual 1/			
	Energy Sources	**Units**	**2018**	**2019**	**2018**	**2019**
			FPL		Gulf	
(1)	Annual Energy Interchange 2/	GWH	0	0	(3,095)	(3,556)
(2)	Nuclear	GWH	28,176	27,791	0	0
(3)	Coal	GWH	2,586	2,488	5,526	4,125
(4)	Residual(FO6) -Total	GWH	248	223.5	0	0
(5)	Steam	GWH	248	224	0	0
(6)	Distillate(FO2) -Total	GWH	129	223.5	1	0
(7)	Steam	GWH	2	14	0	0
(8)	CC	GWH	78	204	0	0
(9)	CT	GWH	49	5	1	0
(10)	Natural Gas -Total	GWH	91,214	93,373	8,150	8,808
(11)	Steam	GWH	3,133	2,442	29	62
(12)	CC	GWH	87,625	90,302	3,934	3,913
(13)	CC PPAs - Gas	GWH	0	0	4,114	4,833
(14)	CT	GWH	456	630	73	0
(15)	Solar 3/	GWH	1,887	2,396	227	232
(16)	PV	GWH	1,836	2,368	0	0
(17)	Solar Together 4/	GWH	0	0	0	0
(18)	Solar Thermal	GWH	51	28	0	0
(19)	Solar PPAs	GWH	0	0	227	232
(20)	Wind PPAs	GWH	0	0	1,031	1,031
(21)	Other 5/	GWH	(1,793)	(1,328)	218	1,101
	Net Energy For Load 6/	GWH	122,447	125,168	12,057	11,742

1/ Sources: Actuals for FPL and Gulf: A Schedules and Actual Data for Next Generation Solar Centers Report. Forecast for Gulf 2020 and 2021: Projections from Southern Company
2/ Represents interchange between FPL/Gulf and other utilities. For Gulf, this number represents the net energy exchange with Southern Co.
3/ Represents output from FPL's PV and solar thermal facilities.
4/ The values shown represent energy produced from FPL-owned solar facilities that are part of FPL's SolarTogether (ST) program. At the request of any ST participant, environmental attributes in the form of renewable energy certificates for that participant's allocation of the total energy produced will be retired on the participant's behalf.
5/ Represents a forecast of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, etc., net of Economy and other Power Sales.
6/ Net Energy For Load values for the years 2020 - 2029 are also shown in Col. (19) on Schedule 2.3.

Schedule 6.2 Actual
Energy Sources % by Fuel Type

	Energy Source	Units	Actual [1/] 2018 FPL	Actual 2019 FPL	Actual 2018 Gulf	Actual 2019 Gulf
(1)	Annual Energy Interchange [2/]	%	0.0	0.0	(25.7)	(30.3)
(2)	Nuclear	%	23.0	22.2	0.0	0.0
(3)	Coal	%	2.1	2.0	45.8	35.1
(4)	Residual (FO6) -Total	%	0.2	0.2	0.0	0.0
(5)	Steam	%	0.2	0.2	0.0	0.0
(6)	Distillate (FO2) -Total	%	0.1	0.2	0.0	0.0
(7)	Steam	%	0.0	0.0	0.0	0.0
(8)	CC	%	0.1	0.2	0.0	0.0
(9)	CT	%	0.0	0.0	0.0	0.0
(10)	Natural Gas -Total	%	74.5	74.6	67.6	75.0
(11)	Steam	%	2.6	2.0	0.2	0.5
(12)	CC	%	71.6	72.1	32.6	33.3
(13)	CC PPAs - Gas	%	0.0	0.0	34.1	41.2
(14)	CT	%	0.4	0.5	0.6	0.0
(15)	Solar 3/	%	1.5	1.9	1.9	2.0
(16)	PV	%	1.5	1.9	0.0	0.0
(17)	Solar Together [4/]	%	0.0	0.0	0.0	0.0
(18)	Solar Thermal	%	0.0	0.0	0.0	0.0
(19)	Solar PPAs	%	0.0	0.0	1.9	2.0
(20)	Wind PPAs	%	0.0	0.0	8.6	8.8
(21)	Other [5/]	%	(1.5)	(1.1)	1.8	9.4
			100	100	100	100

1/ Sources: Actuals for FPL and Gulf: A Schedules and Actual Data for Next Generation Solar Centers Report. Forecast for Gulf 2020 and 2021: Projections from Southern Company
2/ Represents interchange between FPL/Gulf and other utilities. For Gulf, this number represents the net energy exchange with Southern Co.
3/ Represents output from FPL's PV and solar thermal facilities.
4/ The values shown represent energy produced from FPL-owned solar facilities that are part of FPL’s SolarTogether (ST) program. At the request of any ST participant, environmental attributes in the form of renewable energy certificates for that participant’s allocation of the total energy produced will be retired on the participant’s behalf.
5/ Represents a forecast of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, etc., net of Economy and other Power Sales.

Florida Power & Light Company
Gulf Power Company
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Request No. 1
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Schedule 6.1 Forecasted Energy Sources

	Energy Sources	Units	2020	2021	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
			FPL		Gulf [1]		Forecasted: Integrated FPL and Gulf							
(1)	Annual Energy Interchange [2/]	GWH	0	0	(4,576)	(4,538)	0	0	0	0	0	0	0	0
(2)	Nuclear	GWH	28,162	28,395	0	0	28,978	28,319	28,556	29,037	28,598	28,519	29,110	28,590
(3)	Coal	GWH	1,404	1,582	2,793	1,906	110	207	127	224	265	279	312	232
(4)	Residual(FO6) -Total	GWH	0	9	0	0	0	0	0	0	0	0	0	0
(5)	Steam	GWH	0	9	0	0	0	0	0	0	0	0	0	0
(6)	Distillate(FO2) -Total	GWH	5	3	0	0	29	3	10	19	4	9	9	5
(7)	Steam	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(8)	CC	GWH	4	2	0	0	26	2	8	15	1	7	7	4
(9)	CT	GWH	1	1	0	0	3	1	2	4	2	2	2	1
(10)	Natural Gas -Total	GWH	88,099	85,382	11,876	12,660	94,603	95,049	95,067	93,254	91,945	90,245	88,268	87,157
(11)	Steam	GWH	208	148	1,365	2,317	365	738	608	604	536	475	320	177
(12)	CC	GWH	87,532	84,891	4,789	4,744	91,268	93,096	94,237	92,314	91,233	89,519	87,696	86,837
(13)	CC PPAs - Gas	GWH	0	0	5,655	5,532	2,671	933	0	0	0	0	0	0
(14)	CT	GWH	360	343	67	67	300	281	222	337	176	250	251	144
(15)	Solar [3/]	GWH	4,366	6,679	416	413	8,587	9,483	10,402	12,075	14,805	17,528	20,294	22,947
(16)	PV	GWH	3,200	3,423	191	190	4,831	5,738	6,659	8,352	11,093	13,826	16,594	19,268
(17)	Solar Together [4/]	GWH	1,041	3,130	0	0	3,407	3,397	3,396	3,377	3,367	3,357	3,355	3,336
(18)	Solar Thermal	GWH	126	125	0	0	125	125	126	125	125	125	126	125
(19)	Solar PPAs	GWH	0	0	224	223	223	222	222	221	220	219	219	218
(20)	Wind PPAs	GWH	0	0	1,033	1,031	1,031	1,031	1,033	1,031	1,031	1,031	1,033	1,031
(21)	Other [5/]	GWH	1,036	1,084	172	171	1,460	1,508	1,565	1,901	1,894	1,864	1,848	1,789
	Net Energy For Load [6/]	GWH	123,073	123,134	11,715	11,643	134,800	135,600	136,761	137,540	138,541	139,474	140,874	141,751

1/ Sources: Actuals for FPL and Gulf: A Schedules and Actual Data for Next Generation Solar Centers Report. Forecast for Gulf 2020 and 2021: Projections from Southern Company
2/ Represents interchange between FPL/Gulf and other utilities. For Gulf, this number represents the net energy exchange with Southern Co.
3/ Represents output from FPL's PV and solar thermal facilities.
4/ The values shown represent energy produced from FPL-owned solar facilities that are part of FPL's SolarTogether (ST) program.
At the request of any ST participant, environmental attributes in the form of renewable energy certificates for that participant's allocation of the total energy produced will be retired on the participant's behalf.
5/ Represents a forecast of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, etc., net of Economy and other Power Sales.
6/ Net Energy For Load values for the years 2020 - 2029 are also shown in Col. (19) on Schedule 2.3.

Schedule 6.2 Forecasted
Energy Sources % by Fuel Type

	Energy Source	Units	2020	2021	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
			FPL		Gulf [1/]		Forecasted: Integrated FPL and Gulf							
(1)	Annual Energy Interchange [2/]	%	0.0	0.0	(39.1)	(39.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(2)	Nuclear	%	22.9	23.1	0.0	0.0	21.5	20.9	20.9	21.1	20.6	20.4	20.7	20.2
(3)	Coal	%	1.1	1.3	23.8	16.4	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2
(4)	Residual (FO6) -Total	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(5)	Steam	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(6)	Distillate (FO2) -Total	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(7)	Steam	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(8)	CC	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(9)	CT	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(10)	Natural Gas -Total	%	71.6	69.3	101.7	108.8	70.2	70.1	69.5	67.8	66.4	64.7	62.7	61.5
(11)	Steam	%	0.2	0.1	12.0	20.0	0.3	0.5	0.4	0.4	0.4	0.3	0.2	0.1
(12)	CC	%	71.1	68.9	40.9	40.7	67.7	68.7	68.9	67.1	65.9	64.2	62.3	61.3
(13)	CC PPAs - Gas	%	0.0	0.0	48.3	47.5	2.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
(14)	CT	%	0.3	0.3	0.6	0.6	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1
(15)	Solar 3/	%	3.5	5.4	3.6	3.5	6.4	7.0	7.6	8.8	10.7	12.6	14.4	16.2
(16)	PV	%	2.6	2.8	1.6	1.6	3.6	4.2	4.9	6.1	8.0	9.9	11.8	13.6
(17)	Solar Together [4/]	%	0.8	2.5	0.0	0.0	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4
(18)	Solar Thermal	%	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
(19)	Solar PPAs	%	0.0	0.0	1.9	1.9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
(20)	Wind PPAs	%	0.0	0.0	8.8	8.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7
(21)	Other [5/]	%	0.8	0.9	1.5	1.5	1.1	1.1	1.1	1.4	1.4	1.3	1.3	1.3
			100	100	100	100	100	100	100	100	100	100	100	100

1/ Sources: Actuals for FPL and Gulf: A Schedules and Actual Data for Next Generation Solar Centers Report. Forecast for Gulf 2020 and 2021: Projections from Southern Company
2/ Represents interchange between FPL/Gulf and other utilities. For Gulf, this number represents the net energy exchange with Southern Co.
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5/ Represents a forecast of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, etc., net of Economy and other Power Sales.

Schedule 7.1
Forecast of Capacity, Demand, and Scheduled
Maintenance At Time Of Summer Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
August of Year	Firm Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Firm Capacity Available MW	Total Peak Demand MW	DSM MW	Firm Summer Peak Demand MW	Total Reserve Margin Before Maintenance MW	Total Reserve Margin Before Maintenance % of Peak	Scheduled Maintenance MW	Total Reserve Margin After Maintenance MW	Total Reserve Margin After Maintenance % of Peak	Generation Only Reserve Margin After Maintenance MW	Generation Only Reserve Margin After Maintenance % of Peak
								FPL							
2020	27,145	110	0	434	27,689	24,624	1,786	22,838	4,851	21.2	0	4,851	21.2	3,065	12.4
2021	27,722	110	0	4	27,836	24,720	1,833	22,887	4,948	21.6	0	4,948	21.6	3,116	12.6
								Gulf							
2020	2,389	1,039	0	0	3,429	2,464	6	2,458	970	39.5	0	970	39.5	965	39.1
2021	2,389	1,039	0	0	3,428	2,496	14	2,482	947	38.1	0	947	38.1	932	37.3
								Integrated FPL and Gulf							
2022	30,763	1,149	0	4	31,915	27,220	1,903	25,317	6,599	26.1	0	6,599	26.1	4,695	17.2
2023	31,164	264	0	4	31,431	27,564	1,962	25,602	5,829	22.8	0	5,829	22.8	3,867	14.0
2024	31,061	264	0	4	31,328	27,953	2,026	25,927	5,401	20.8	0	5,401	20.8	3,375	12.1
2025	31,386	263	0	4	31,653	28,349	2,071	26,278	5,375	20.5	0	5,375	20.5	3,304	11.7
2026	31,892	263	0	4	32,159	28,775	2,107	26,668	5,490	20.6	0	5,490	20.6	3,384	11.8
2027	32,230	263	0	0	32,493	29,143	2,142	27,001	5,492	20.3	0	5,492	20.3	3,350	11.5
2028	32,639	263	0	0	32,902	29,592	2,177	27,415	5,486	20.0	0	5,486	20.0	3,310	11.2
2029	33,322	262	0	0	33,585	30,195	2,212	27,983	5,602	20.0	0	5,602	20.0	3,390	11.2

Col. (2) represents peak capacity additions and changes projected to be in-service by June 1st of each year. These MW are generally considered to be available to meet Summer peak loads which are forecasted to occur during August of the year indicated.
Col. (6) = Col.(2) + Col.(3) - Col.(4) + Col.(5).
Col.(7) reflects the 2019 peak load forecasts without incremental energy efficiency after 9/2019 or cumulative load management.
Col.(8) represents cumulative load management capability, plus incremental energy efficiency and load management, from 9/2019-on, intended for use with the 2019 load forecasts.
Col.(10) = Col.(6) - Col.(9)
Col.(11) = Col.(10) / Col.(9)
Col.(12) indicates the capacity of units projected to be out-of-service for planned maintenance during the Summer peak period.
Col.(13) = Col.(10) - Col.(12)
Col.(14) = Col.(13) / Col.(9)
Col.(15) = Col.(6) - Col.(7) - Col.(12)
Col.(16) = Col.(15) / Col.(7)

Schedule 7.2
Forecast of Capacity, Demand, and Scheduled
Maintenance At Time Of Winter Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
January of Year	Firm Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Firm Capacity Available MW	Total Peak Demand MW	DSM MW	Firm Winter Peak Demand MW	Total Reserve Margin Before Maintenance MW	% of Peak	Scheduled Maintenance MW	Total Reserve Margin After Maintenance MW	% of Peak	Generation Only Reserve Margin After Maintenance MW	% of Peak
								FPL							
2020	26,908	110	0	404	27,422	19,959	1,360	18,599	8,822	47.4	0	8,822	47.4	7,463	37.4
2021	26,989	110	0	4	27,103	20,250	1,387	18,863	8,239	43.7	0	8,239	43.7	6,853	33.8
								Gulf							
2020	2,345	994	0	0	3,339	2,256	0	2,256	1,083	48.0	0	1,083	48.0	1,083	48.0
2021	2,345	994	0	0	3,339	2,293	6	2,287	1,052	46.0	0	1,052	46.0	1,046	45.6
								Integrated FPL and Gulf							
2022	28,479	1,104	0	4	29,587	22,369	1,430	20,939	8,647	41.3	0	8,647	41.3	7,218	32.3
2023	29,766	1,104	0	4	30,874	22,617	1,468	21,149	9,725	46.0	0	9,725	46.0	8,257	36.5
2024	29,559	219	0	4	29,782	22,861	1,508	21,353	8,429	39.5	0	8,429	39.5	6,921	30.3
2025	29,741	219	0	4	29,964	23,103	1,555	21,548	8,415	39.1	0	8,415	39.1	6,861	29.7
2026	29,983	219	0	4	30,206	23,388	1,585	21,803	8,403	38.5	0	8,403	38.5	6,818	29.1
2027	29,908	219	0	0	30,127	23,608	1,616	21,992	8,135	37.0	0	8,135	37.0	6,519	27.6
2028	30,068	219	0	0	30,287	23,941	1,647	22,294	7,993	35.9	0	7,993	35.9	6,346	26.5
2029	30,568	219	0	0	30,787	24,293	1,677	22,616	8,171	36.1	0	8,171	36.1	6,494	26.7

Col. (2) represents firm capacity additions and changes projected to be in-service by January 1st of each year. These MW are generally considered to be available to meet Winter peak loads which are forecasted to occur during January of the year indicated.
Col. (6) = Col.(2) + Col.(3) - Col.(4) + Col.(5).
Col.(7) reflects the 2019 peak load forecasts without incremental energy efficiency after 9/2019 or cumulative load management. The January 2020 load is an actual load value.
Col.(8) represents cumulative load management capability, plus incremental energy efficiency and load management, from 9/2019-on, intended for use with the 2019 load forecasts.
Col.(10) = Col.(6) - Col.(9)
Col.(11) = Col.(10) / Col.(9)
Col.(12) indicates the capacity of units projected to be out-of-service for planned maintenance during the Winter peak period.
Col.(13) = Col.(10) - Col.(12)
Col.(14) = Col.(13) / Col.(9)
Col.(15) = Col.(6) - Col.(7) - Col.(12)
Col.(16) = Col.(15) / Col.(7)

Schedule 8

Planned And Prospective Generating Facility Additions And Changes (1) : FPL

Plant Name	(2) Unit No.	(3) Location	(4) Unit Type	(5) Fuel Pri.	(5) Fuel Alt.	(7) Fuel Transport Pri.	(8) Fuel Transport Alt.	(9) Const. Start Mo./Yr.	(10) Comm. In-Service Mo./Yr.	(11) Expected Retirement Mo./Yr.	(12) Gen. Max. Nameplate KW	(13) Firm Net Capability (2) Winter MW	(14) Firm Net Capability (2) Summer MW	(15) Status
ADDITIONS/ CHANGES														
FPL Changes														
2020														
Northern Preserve Solar(3) (Solar facility in-service January of 2020)	1	Baker County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Twin Lakes Solar(3) (Solar facility in-service January of 2020)	1	Putnam County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Cattle Ranch Solar(3) (Solar facility in-service January of 2020)	1	Desoto County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Sweetbay Solar(3) (Solar facility in-service January of 2020)	1	Martin County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Babcock Preserve Solar(3) (Solar facility in-service January of 2020)	1	Charlotte County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Blue Heron Solar(3) (Solar facility in-service January of 2020)	1	Hendry County	PV	Solar	Solar	N/A	N/A	-	1st Q 2020	Unknown	74,500	-	41	P
Hibiscus Solar(3)	1	Palm Beach County	PV	Solar	Solar	N/A	N/A	-	2nd Q 2020	Unknown	74,500	-	41	P
Southfork Solar(3)	1	Manatee County	PV	Solar	Solar	N/A	N/A	-	2nd Q 2020	Unknown	74,500	-	41	P
Echo River Solar(3)	1	Suwannee County	PV	Solar	Solar	N/A	N/A	-	2nd Q 2020	Unknown	74,500	-	41	P
Okeechobee Solar(3)	1	Okeechobee Manatee County	PV	Solar	Solar	N/A	N/A	-	2nd Q 2020	Unknown	74,500	-	41	P
Sanford	4	Volusia County	CC	NG	No	PL	No	-	2nd Q 2020	Unknown	1,265,732	-	147	OP
											2020 Changes/Additions Total:	**0**	**560**	
2021														
Sanford	4	Volusia County	CC	NG	No	PL	No	-	2nd Q 2020	Unknown	1,265,732	41	-	OP
West County	3	Palm Beach County	CC	NG	FO2	PL	TK	-	3rd Q 2020	Unknown	1,366,800	20	21	OP
Turkey Point	4	Miami Dade County	ST	Nuc	No	TK	No	-	4th Q 2020	Unknown	877,200	20	20	OP
Lakeside Solar(3)	1	Okeechobee County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Trailside Solar(3)	1	St. Johns County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Union Springs Solar(3)	1	Union County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Magnolia Springs Solar(3)	1	Clay County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Egret Solar(3)	1	Baker County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Nassau Solar(3)	1	Nassau County	PV	Solar	Solar	N/A	N/A	-	4th Q 2020	Unknown	74,500	-	39	P
Pelican Solar(3)	1	St. Lucie County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Palm Bay Solar(3)	1	Brevard County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Discovery Solar(3)	1	Brevard County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Orange Blossom Solar(3)	1	Indian River County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Sabal Palm Solar(3)	1	Palm Beach County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Fort Drum Solar(3)	1	Okeechobee County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Rodeo Solar(3)	1	DeSoto County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Willow Solar(3)	1	Manatee County	PV	Solar	Solar	N/A	N/A	-	1st Q 2021	Unknown	74,500	-	39	P
Solar Degradation(4)	NA	NA	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(3)	OT
											2021 Changes/Additions Total:	**81**	**577**	
Integrated FPL and Gulf: FPL Changes														
2022														
Manatee Retirement	1	Manatee County	ST	NG	FO6	PL	WA	-	Oct-76	4th Q 2021	863,300	(819)	(809)	P
Manatee Retirement	2	Manatee County	ST	NG	FO6	PL	WA	-	Dec-77	4th Q 2021	863,300	(819)	(809)	P
Scherer Retirement	4	Monroe, GA	ST	SUB	No	RR	No	-	Jul-89	4th Q 2021	680,368	(635)	(634)	P
Manatee Energy Storage	1	Manatee County	BS	N/A	N/A	N/A	N/A	-	4th Q 2021	Unknown		409	409	P
Sunshine Gateway Energy Storage	1	Columbia County	BS	N/A	N/A	N/A	N/A	-	4th Q 2021	Unknown		30	30	P
Echo River Energy Storage	1	Suwannee County	BS	N/A	N/A	N/A	N/A	-	4th Q 2021	Unknown		30	30	P
Fort Myers Upgrade	2	Lee County	CC	NG	No	PL	No	-	2nd Q 2022	Unknown	1,836,798	-	40	OP
Dania Beach Clean Energy Center	7	Broward County	CC	NG	FO2	PL	WA	-	2nd Q 2022	Unknown		-	1,163	P
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(5)	OT
											2022 Changes/Additions Total:	**(1,804)**	**(585)**	

(1) Schedule 8 shows only planned and prospective changes to FPL and Gulf generating facilities and does not reflect changes to purchases. Changes to purchases are reflected on Tables ES-1, I.A.3.1, I.A.3.2, I.B.3.1 and I.B.3.2.
(2) The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by August. All MW additions/changes occurring after August each year will be acounted for in reserve margin calculations in the following year. MW Difference in Changes/Additions Total due to rounding.
(3) Solar MW values reflect firm capacity only values, not nameplate ratings.
(4) An annual 0.3% degradation for PV output is assumed for both FPL and Gulf Solar. Total degradation shown is for both FPL and Gulf.

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Schedule 8
Planned And Prospective Generating Facility Additions And Changes (1) : FPL

	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport		Const.	Comm.	Expected	Gen. Max.	Firm Net Capability (2)		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Start Mo./Yr.	In-Service Mo./Yr.	Retirement Mo./Yr.	Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
Integrated FPL and Gulf Continued: FPL Changes														
2023														
Dania Beach Clean Energy Center	7	Broward County	CC	NG	FO2	PL	WA		2nd Q 2022	Unknown	-	1,176	-	P
Martin Upgrade	8	Martin County	CC	NG	FO2	PL	TK	-	4th Q 2022	Unknown	-	28	40	OP
Manatee Upgrade	3	Manatee County	CC	NG	No	PL	No	-	2nd Q 2023	Unknown	1,301,382	28	79	OP
Fort Myers Upgrade	2	Lee County	CC	NG	No	PL	No	-	3rd Q 2023	Unknown	1,836,798	55	79	OP
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(6)	OT
											2023 Changes/Additions Total:	**1,287**	**192**	
2024														
Martin Upgrade	8	Martin County	CC	NG	FO2	PL	TK	-	4th Q 2022	Unknown	-	28	-	OP
Manatee Upgrade	3	Manatee County	CC	NG	No	PL	No	-	2nd Q 2023	Unknown	1,301,382	83	-	OP
Fort Myers Upgrade	2	Lee County	CC	NG	No	PL	No	-	3rd Q 2023	Unknown	1,836,798	110	-	OP
Turkey Point Upgrade	5	Miami Dade County	CC	NG	FO2	PL	TK	-	1st Q 2024	Unknown	1,301,382	-	79	OP
Okeechobee Energy Center	1	Okeechobee County	CC	NG	FO2	PL	TK	Jun-17	1st Q 2024	Unknown	1,886,150	-	58	OP
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(6)	OT
											2024 Changes/Additions Total:	**221**	**131**	
2025														
Turkey Point Upgrade	5	Miami Dade County	CC	NG	FO2	PL	TK	-	1st Q 2024	Unknown	1,301,382	110	-	OP
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2025	Unknown		-	264	P
Sanford Upgrade	4	Volusia County	CC	NG	No	PL	No	-	2nd Q 2025	Unknown	1,265,732	34	78	OP
Sanford Upgrade	5	Volusia County	CC	NG	No	PL	No	-	2nd Q 2025	Unknown	1,265,732	34	78	OP
Okeechobee Energy Center	1	Okeechobee County	CC	NG	FO2	PL	TK	Jun-17	Apr-19	Unknown	1,886,150	79	-	OP
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(7)	OT
											2025 Changes/Additions Total:	**257**	**413**	
2026														
Martin Upgrade	8	Martin County	CC	NG	FO2	PL	TK	-	4th Q 2025	Unknown	-	55	40	OP
Sanford Upgrade	4	Volusia County	CC	NG	No	PL	No	-	4th Q 2025	Unknown	1,265,732	101	26	OP
Sanford Upgrade	5	Volusia County	CC	NG	No	PL	No	-	4th Q 2025	Unknown	1,265,732	101	26	OP
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2026	Unknown		-	422	P
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(8)	OT
											2026 Changes/Additions Total:	**257**	**506**	
2027														
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2027	Unknown		-	422	P
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(9)	OT
											2027 Changes/Additions Total:	**0**	**413**	
2028														
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2028	Unknown		-	252	P
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(11)	OT
											2028 Changes/Additions Total:	**0**	**241**	
2029														
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2029	Unknown		-	194	P
Solar Degradation(4)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	-	(11)	OT
											2029 Changes/Additions Total:	**0**	**183**	

(1) Schedule 8 shows only planned and prospective changes to generating facilities and does not reflect changes to expisting purchases. Those changes are reflected on Tables ES-1, I.A.3.1, I.A.3.2, I.B.3.1 and I.B.3.2.
(2) The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by June. All MW additions/changes occurring after August each year will be accounted for in reserve margin calculations in the following year. MW Difference in Changes/Additions Total due to rounding.
(3) Solar values reflect firm capacity only values, not nameplate ratings.
(4) An annual 0.3% degradation for PV output is assumed for both FPL and Gulf Solar. Total degradation shown is for both FPL and Gulf.

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Schedule 8
Planned And Prospective Generating Facility Additions And Changes (1) : Gulf

	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport						Firm Net Capability (2)		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Const. Start Mo./Yr.	Comm. In-Service Mo./Yr.	Expected Retirement Mo./Yr.	Gen. Max. Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
Gulf Changes														
2020														
Blue Indigo Solar(3) (Solar facility in-service April 1st of 2020)	1	Jackson County	PV	Solar	Solar	N/A	N/A	-	Apr-20	Unknown	74,500	-	41	P
										2020 Changes/Additions Total:		**0**	**41**	
2021														
										2021 Changes/Additions Total:		**0**	**0**	
Integrated FPL and Gulf: Gulf Changes														
2022														
4X0 Crist CTs	8	Escambia County	CT	NG	FO2	PL	N/A	-	4th Q 2021	Unknown		949	938	P
Blue Springs Solar 3/	1	Jackson County	PV	Solar	Solar	N/A	N/A	-	4th Q 2021	Unknown		-	37	P
Chautauqua Solar 3/	1	Walton County	PV	Solar	Solar	N/A	N/A	-	4th Q 2021	Unknown		-	37	P
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A	-	1st Q 2022	Unknown		-	224	P
										2022 Changes/Additions Total:		**949**	**1,237**	
2023														
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A		1st Q 2023	Unknown	-	-	209	P
										2023 Changes/Additions Total:		**0**	**209**	
2024														
Lansing Smith Upgrade	3	Bay County	CC	NG	No	PL	No	-	Nov-23	Unknown	656,100	74	59	OP
Daniel Retirement	1	Jackson County, MS	FS	C	No	RR	No	-	Sep-77	1st Q 2024	274,125	(251)	(251)	P
Daniel Retirement	2	Jackson County, MS	FS	C	No	RR	No	-	Jun-81	1st Q 2024	274,125	(251)	(251)	P
Solar PV(3)		Unknown	PV	Solar	Solar	N/A	N/A	-	1st Q 2024	Unknown	-	-	209	P
										2024 Changes/Additions Total:		**(428)**	**(234)**	
2025														
Crist Retirement	4	Escambia County	FS	C	NG	WA	PL	-	Jul-59	4th Q 2024	93,750	(75)	(75)	P
Pea Ridge Retirement	1	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	2nd Q 2025	4,750	-	(4)	P
Pea Ridge Retirement	2	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	2nd Q 2025	4,750	-	(4)	P
Pea Ridge Retirement	3	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	2nd Q 2025	4,750	-	(4)	P
										2025 Changes/Additions Total:		**(75)**	**(87)**	
2026														
Pea Ridge Retirement	1	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	Apr-25	4,750	(5)	-	P
Pea Ridge Retirement	2	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	Apr-25	4,750	(5)	-	P
Pea Ridge Retirement	3	Santa Rosa	GT	NG	PL	NA	NA	-	May-98	Apr-25	4,750	(5)	-	P
										2026 Changes/Additions Total:		**(15)**	**0**	
2027														
Crist Retirement	5	Escambia County	FS	C	NG	WA	PL	-	Jul-59	4th Q 2026	93,750	(75)	(75)	P
										2027 Changes/Additions Total:		**(75)**	**(75)**	
2028														
Lansing Smith Retirement	A	Bay County	CT	LO	No	TK	No		May-71	4th Q 2027	41,850	(40)	(32)	OP
Energy Storage		Unknown	BS	N/A	N/A	N/A	N/A		1st Q 2028	Unknown		200	200	P
										2028 Changes/Additions Total:		**160**	**168**	
2029														
Energy Storage		Unknown	BS	N/A	N/A	N/A	N/A		1st Q 2029	Unknown		500	500	P
										2029 Changes/Additions Total:		**500**	**500**	

(1) Schedule 8 shows only planned and prospective changes to FPL and Gulf generating facilities and does not reflect changes to purchases. Changes to purchases are reflected on Tables ES-1, I.A.3.1, I.A.3.2, I.B.3.1 and I.B.3.2.

(2) The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by August. All MW additions/changes occurring after August each year will be acounted for in reserve margin calculations in the following year. MW Difference in Changes/Additions Total are due to rounding.

(3) Solar MW values reflect firm capacity only values, not nameplate ratings and 0.3% degradation is assumed annually for PV output. Degradation for Gulf is captured on FPL's schedule 8.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Hibiscus Solar Energy Center (Palm Beach County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	41	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	402	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.2%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR):	Not applicable	Btu/kWh
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):	Not applicable	Btu/kWh
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data** *		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,373	
	Direct Construction Cost (2020 $/kW):	1,341	
	AFUDC Amount (2020 $/kW):	32	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	6.27	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	0.98	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Okeechobee Solar Energy Center (Okeechobee County)
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	41	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**	471	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	27.1%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	
(13)	**Projected Unit Financial Data** *		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,339	
	Direct Construction Cost (2020 $/kW):	1,298	
	AFUDC Amount (2020 $/kW):	41	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	6.41	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.04	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Southfork Solar Energy Center (Manatee County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	41	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	548	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	31.1%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,407	
	Direct Construction Cost (2020 $/kW):	1,339	
	AFUDC Amount (2020 $/kW):	68	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	6.70	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.03	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Echo River Solar Energy Center (Suwannee County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	41	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	802	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	30.4%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data** *		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,394	
	Direct Construction Cost (2020$/kW):	1,330	
	AFUDC Amount (2020 $/kW):	63	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	7.06	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.03	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Lakeside Solar Energy Center (Okeechobee County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	693	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.8%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,205	
	Direct Construction Cost (2020 $/kW):	1,169	
	AFUDC Amount (2020 $/kW):	36	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	6.57	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.06	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Trailside Solar Energy Center (St. Johns County)
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**	846	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.8%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,245	
	Direct Construction Cost (2020 $/kW):	1,207	
	AFUDC Amount (2020 $/kW):	38	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	7.10	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.09	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Union Springs Solar Energy Center (Union County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	725	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.5%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,242	
	Direct Construction Cost (2020 $/kW):	1,205	
	AFUDC Amount (2020 $/kW):	38	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	7.10	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.09	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

[1/] The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Magnolia Springs Solar Energy Center (Clay County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	850	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		26.5% (First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):		30 years
	Total Installed Cost (2020 $/kW):		1,197
	Direct Construction Cost (2020 $/kW):		1,160
	AFUDC Amount (2020 $/kW):		36
	Escalation ($/kW):		Accounted for in Direct Construction Cost
	Fixed O&M ($/kW-Yr.): (2020 $)		6.92 (First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)		0.00
	K Factor:		1.07

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Egret Solar Energy Center (Baker County)		
(2)	**Capacity**			
	a. Nameplate (AC)	74.5	MW	
	b. Summer Firm (AC)[1/]	39	MW (Approximately)	
	c. Winter Firm (AC)	-		
(3)	**Technology Type:** Photovoltaic (PV)			
(4)	**Anticipated Construction Timing**			
	a. Field construction start-date:	2019		
	b. Commercial In-service date:	2020		
(5)	**Fuel**			
	a. Primary Fuel		Solar	
	b. Alternate Fuel		Not applicable	
(6)	**Air Pollution and Control Strategy:**		Not applicable	
(7)	**Cooling Method:**	Not applicable		
(8)	**Total Site Area:**	676	Acres	
(9)	**Construction Status:**	P	(Planned Unit)	
(10)	**Certification Status:**	---		
(11)	**Status with Federal Agencies:**	---		
(12)	**Projected Unit Performance Data:**			
	Planned Outage Factor (POF):		Not applicable	
	Forced Outage Factor (FOF):		Not applicable	
	Equivalent Availability Factor (EAF):		Not applicable	
	Resulting Capacity Factor (%):		26.4%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR):		Not applicable	Btu/kWh
	Base Operation 75F,100%			
	Average Net Incremental Heat Rate (ANIHR):		Not applicable	Btu/kWh
	Peak Operation 75F,100%			
(13)	**Projected Unit Financial Data ***			
	Book Life (Years):		30	years
	Total Installed Cost (2020 $/kW):		1,151	
	Direct Construction Cost (2020 $/kW):		1,114	
	AFUDC Amount (2020 $/kW):		37	
	Escalation ($/kW):		Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)		6.92	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)		0.00	
	K Factor:		1.08	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Nassau Solar Energy Center (Nassau County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2019	
	b. Commercial In-service date:	2020	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	928	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.2%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2020 $/kW):	1,300	
	Direct Construction Cost (2020 $/kW):	1,261	
	AFUDC Amount (2020 $/kW):	38	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2020 $)	7.10	(First Full Year Operation)
	Variable O&M ($/MWH): (2020 $)	0.00	
	K Factor:	1.07	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Pelican Solar Energy Center (St. Lucie County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	565	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.7%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,265	
	Direct Construction Cost (2021 $/kW):	1,227	
	AFUDC Amount (2021 $/kW):	38	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2021 $)	6.57	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	1.06	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Palm Bay Solar Energy Center (Brevard County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	486	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.8%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,229	
	Direct Construction Cost (2021 $/kW):	1,191	
	AFUDC Amount (2021 $/kW):	38	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2021 $)	6.74	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	1.09	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Discovery Solar Energy Center (Brevard County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	491	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		24.3% (First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR):		Not applicable Btu/kWh
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):		Not applicable Btu/kWh
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):		30 years
	Total Installed Cost (2021 $/kW):		1,087
	Direct Construction Cost (2021 $/kW):		1,052
	AFUDC Amount (2021 $/kW):		35
	Escalation ($/kW):		Accounted for in Direct Construction Cost
	Fixed O&M ($/kW-Yr.): (2021 $)		6.57 (First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)		0.00
	K Factor:		1.07

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Orange Blossom Solar Energy Center (Indian River County)

(2) **Capacity**
a. Nameplate (AC) 74.5 MW
b. Summer Firm (AC)[1/] 39 MW (Approximately)
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2020
b. Commercial In-service date: 2021

(5) **Fuel**
a. Primary Fuel: Solar
b. Alternate Fuel: Not applicable

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** 607 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable	
Forced Outage Factor (FOF):	Not applicable	
Equivalent Availability Factor (EAF):	Not applicable	
Resulting Capacity Factor (%):	26.7%	(First Full Year Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh

(13) **Projected Unit Financial Data ***

Book Life (Years):	30	years
Total Installed Cost (2021 $/kW):	1,217	
Direct Construction Cost (2021 $/kW):	1,179	
AFUDC Amount (2021 $/kW):	38	
Escalation ($/kW):	Accounted for in Direct Construction Cost	
Fixed O&M ($/kW-Yr.): (2021 $)	6.74	(First Full Year Operation)
Variable O&M ($/MWH): (2021 $)	0.00	
K Factor:	1.09	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

[1/] The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Sabal Palm Solar Energy Center (Palm Beach County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	646	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.8%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,345	
	Direct Construction Cost (2021 $/kW):	1,306	
	AFUDC Amount (2021 $/kW):	40	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2021 $)	6.74	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	1.07	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Fort Drum Solar Energy Center (Okeechobee County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	930	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	23.8%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,137	
	Direct Construction Cost (2021 $/kW):	1,102	
	AFUDC Amount (2021 $/kW):	35	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2021 $)	6.74	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	1.09	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Rodeo Solar Energy Center (DeSoto County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	39	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	1,193	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		27.6% (First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR):		Not applicable
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):		Not applicable
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):		30 years
	Total Installed Cost (2021 $/kW):		1,113
	Direct Construction Cost (2021 $/kW):		1,076
	AFUDC Amount (2021 $/kW):		36
	Escalation ($/kW):		Accounted for in Direct Construction Cost
	Fixed O&M ($/kW-Yr.): (2021 $)		6.92 (First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)		0.00
	K Factor:		1.11

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

[1/] The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Willow Solar Energy Center (Manatee County)

(2) **Capacity**
a. Nameplate (AC) 74.5 MW
b. Summer Firm (AC)[1/] 39 MW (Approximately)
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**[2/]
a. Field construction start-date: 2020
b. Commercial In-service date: 2021

(5) **Fuel**
a. Primary Fuel: Solar
b. Alternate Fuel: Not applicable

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** 812 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable	
Forced Outage Factor (FOF):	Not applicable	
Equivalent Availability Factor (EAF):	Not applicable	
Resulting Capacity Factor (%):	26.8%	(First Full Year Operation)
Average Net Operating Heat Rate (ANOHR):	Not applicable	Btu/kWh
Base Operation 75F,100%		
Average Net Incremental Heat Rate (ANIHR):	Not applicable	Btu/kWh
Peak Operation 75F,100%		

(13) **Projected Unit Financial Data ***

Book Life (Years):	30	years
Total Installed Cost (2021 $/kW):	1,186	
Direct Construction Cost (2021 $/kW):	1,149	
AFUDC Amount (2021 $/kW):	37	
Escalation ($/kW):	Accounted for in Direct Construction Cost	
Fixed O&M ($/kW-Yr.): (2021 $)	7.10	(First Full Year Operation)
Variable O&M ($/MWH): (2021 $)	0.00	
K Factor:	1.10	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Blue Springs Solar Energy Center (Jackson County)
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	37	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**	444	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.4%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR):	Not applicable	Btu/kWh
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):	Not applicable	Btu/kWh
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,071	
	Direct Construction Cost (2021 $/kW):	1,039	
	AFUDC Amount (2021 $/kW):	32	
	Escalation ($/kW):		Accounted for in Direct Construction Cost
	Fixed O&M ($/kW-Yr.): (2021 $)	7.65	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	0.91	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

[1/] The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Chautauqua Solar Energy Center (Walton County)	
(2)	**Capacity**		
	a. Nameplate (AC)	74.5	MW
	b. Summer Firm (AC)[1/]	37	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**	Photovoltaic (PV)	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel	Solar	
	b. Alternate Fuel	Not applicable	
(6)	**Air Pollution and Control Strategy:**	Not applicable	
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	688	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):	Not applicable	
	Forced Outage Factor (FOF):	Not applicable	
	Equivalent Availability Factor (EAF):	Not applicable	
	Resulting Capacity Factor (%):	26.4%	(First Full Year Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable	Btu/kWh
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable	Btu/kWh
(13)	**Projected Unit Financial Data ***		
	Book Life (Years):	30	years
	Total Installed Cost (2021 $/kW):	1,071	
	Direct Construction Cost (2021 $/kW):	1,039	
	AFUDC Amount (2021 $/kW):	32	
	Escalation ($/kW):	Accounted for in Direct Construction Cost	
	Fixed O&M ($/kW-Yr.): (2021 $)	7.65	(First Full Year Operation)
	Variable O&M ($/MWH): (2021 $)	0.00	
	K Factor:	0.91	

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

[1/] The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Crist Unit 8 4x0 Combustion Turbine

(2) **Capacity**
a. Summer 938 MW
b. Winter 949 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2020
b. Commercial In-service date: 2021

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Ultra-low sulfur distillate

(6) **Air Pollution and Control Strategy:** Dry Low NOx Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection

(7) **Cooling Method:** Fin Fan / Evap Coolers

(8) **Total Site Area:** Existing Site

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	3.0%	
Forced Outage Factor (FOF):	1%	
Equivalent Availability Factor (EAF):	96.0%	
Resulting Capacity Factor (%):	Approx. 3%	(First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	9,944	
Average Net Incremental Heat Rate (ANIHR): Peak Firing and Wet Compression 75F,100%	8,869	

(13) **Projected Unit Financial Data *,****

Book Life (Years):	40	years
Total Installed Cost (2021 $/kW):	479	
Direct Construction Cost (2021 $/kW):	455	
AFUDC Amount (2021 $/kW):	23	
Escalation ($/kW):	Accounted for in Direct Construction Cost	
Fixed O&M ($/kW-Yr. (2021 $)	8.00	
Variable O&M ($/MW (2021 $)	0.02	
K Factor:	1.13	

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Manatee Energy Storage Center	
(2)	**Capacity**		
	a. Summer	409 MW	
	b. Winter	409 MW	
(3)	**Technology Type:** Battery		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2020	
	b. Commercial In-service date:	2021	
(5)	**Fuel**		
	a. Primary Fuel		Not applicable
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	Existing Site	40 Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		Not applicable
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable
(13)	**Projected Unit Financial Data *,****		
	Book Life (Years):		10 years
	Total Installed Cost (2021 $/kW):		TBD
	Direct Construction Cost (2021 $/kW):		TBD
	AFUDC Amount (2021 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.):	(2021 $)	TBD
	Long Term Capital Replenishment ($/kW)	(2021 $)	TBD
	Variable O&M ($/MWH):	(2021 $)	TBD
	K Factor:		TBD

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement and annual capital replenishment

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Sunshine Gateway Energy Storage Center	
(2)	**Capacity**			
	a. Summer	30	MW	
	b. Winter	30	MW	
(3)	**Technology Type:** Battery			
(4)	**Anticipated Construction Timing**			
	a. Field construction start-date:		2020	
	b. Commercial In-service date:		2021	
(5)	**Fuel**			
	a. Primary Fuel			Not applicable
	b. Alternate Fuel			Not applicable
(6)	**Air Pollution and Control Strategy:**			Not applicable
(7)	**Cooling Method:**		Not applicable	
(8)	**Total Site Area:**		Existing Site	30 Acres
(9)	**Construction Status:**		P	(Planned Unit)
(10)	**Certification Status:**		---	
(11)	**Status with Federal Agencies:**		---	
(12)	**Projected Unit Performance Data:**			
	Planned Outage Factor (POF):			Not applicable
	Forced Outage Factor (FOF):			Not applicable
	Equivalent Availability Factor (EAF):			Not applicable
	Resulting Capacity Factor (%):			Not applicable
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%			Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%			Not applicable
(13)	**Projected Unit Financial Data *,****			
	Book Life (Years):			10 years
	Total Installed Cost (2021 $/kW):			TBD
	Direct Construction Cost (2021 $/kW):			TBD
	AFUDC Amount (2021 $/kW):			TBD
	Escalation ($/kW):			TBD
	Fixed O&M ($/kW-Yr.):		(2021 $)	TBD
	Long Term Capital Replenishment ($/kW)		(2021 $)	TBD
	Variable O&M ($/MWH):		(2021 $)	TBD
	K Factor:			TBD

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement and annual capital replenishment

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Echo River Energy Storage Center	
(2)	**Capacity**			
	a. Summer	30	MW	
	b. Winter	30	MW	
(3)	**Technology Type:** Battery			
(4)	**Anticipated Construction Timing**			
	a. Field construction start-date:		2020	
	b. Commercial In-service date:		2021	
(5)	**Fuel**			
	a. Primary Fuel			Not applicable
	b. Alternate Fuel			Not applicable
(6)	**Air Pollution and Control Strategy:**			Not applicable
(7)	**Cooling Method:**		Not applicable	
(8)	**Total Site Area:**		Existing Site	5 Acres
(9)	**Construction Status:**		P	(Planned Unit)
(10)	**Certification Status:**		---	
(11)	**Status with Federal Agencies:**		---	
(12)	**Projected Unit Performance Data:**			
	Planned Outage Factor (POF):			Not applicable
	Forced Outage Factor (FOF):			Not applicable
	Equivalent Availability Factor (EAF):			Not applicable
	Resulting Capacity Factor (%):			Not applicable
	Average Net Operating Heat Rate (ANOHR):			Not applicable
	Base Operation 75F,100%			
	Average Net Incremental Heat Rate (ANIHR):			Not applicable
	Peak Operation 75F,100%			
(13)	**Projected Unit Financial Data *,****			
	Book Life (Years):			10 years
	Total Installed Cost (2021 $/kW):			TBD
	Direct Construction Cost (2021 $/kW):			TBD
	AFUDC Amount (2021 $/kW):			TBD
	Escalation ($/kW):			TBD
	Fixed O&M ($/kW-Yr.):		(2021 $)	TBD
	Long Term Capital Replenishment ($/kW)		(2021 $)	TBD
	Variable O&M ($/MWH):		(2021 $)	TBD
	K Factor:			TBD

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement and annual capital replenishment

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Dania Beach Clean Energy Center Unit 7		
(2)	**Capacity**			
	a. Summer	1,163 MW		
	b. Winter	1,176 MW		
(3)	**Technology Type:**	Combined Cycle		
(4)	**Anticipated Construction Timing**			
	a. Field construction start-date:		2020	
	b. Commercial In-service date:		2022	
(5)	**Fuel**			
	a. Primary Fuel			Natural Gas
	b. Alternate Fuel			Ultra-low sulfur distillate
(6)	**Air Pollution and Control Strategy:**			Dry Low NOx Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection
(7)	**Cooling Method:**	Once through cooling water		
(8)	**Total Site Area:**	Existing Site		392 Acres
(9)	**Construction Status:**		P	(Planned Unit)
(10)	**Certification Status:**		---	
(11)	**Status with Federal Agencies:**		---	
(12)	**Projected Unit Performance Data:**			
	Planned Outage Factor (POF):			3.5%
	Forced Outage Factor (FOF):			1%
	Equivalent Availability Factor (EAF):			95.5%
	Resulting Capacity Factor (%):			90.0% (First Full Year Base Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%			6,119 Btu/kWh on Gas
	Average Net Incremental Heat Rate (ANIHR): Peak Firing and Wet Compression 75F,100%			7,592 Btu/kWh on Gas
(13)	**Projected Unit Financial Data *,****			
	Book Life (Years):			40 years
	Total Installed Cost (2022 $/kW):			764
	Direct Construction Cost (2022 $/kW):			675
	AFUDC Amount (2022 $/kW):			89
	Escalation ($/kW):			Accounted for in Direct Construction Cost
	Fixed O&M ($/kW-Yr.):	(2022 $)		19.73
	Variable O&M ($/MWH):	(2022 $)		0.23
	K Factor:			1.55

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	447	MW (in six 74.5 MW increments)
	b. Summer Firm (AC)[1/]	224	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:**		Photovoltaic (PV)
(4)	**Anticipated Construction Timing** [2/]		
	a. Field construction start-date:		2021
	b. Commercial In-service date:		2022
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applicable
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2022 $/kW):		TBD
	Direct Construction Cost (2022 $/kW):		TBD
	AFUDC Amount (2022 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2022 $)		TBD
	Variable O&M ($/MWH): (2022 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

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Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	447	MW (in six 74.5 MW increments)
	b. Summer Firm (AC)[1/]	209	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:		2022
	b. Commercial In-service date:		2023
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applicable
(9)	**Construction Status:**		P (Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR):		Not applicable
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):		Not applicable
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2023 $/kW):		TBD
	Direct Construction Cost (2023 $/kW):		TBD
	AFUDC Amount (2023 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2023 $)		TBD
	Variable O&M ($/MWH) (2023 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	447	MW (in six 74.5 MW increments)
	b. Summer Firm (AC)[1/]	209	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:		2023
	b. Commercial In-service date:		2024
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applica Acres
(9)	**Construction Status:**		P (Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2024 $/kW):		TBD
	Direct Construction Cost (2024 $/kW):		TBD
	AFUDC Amount (2024 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2024 $)		TBD
	Variable O&M ($/MWH): (2024 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased.
FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Unsited PV

(2) **Capacity**
a. Nameplate (AC) 745 MW (in ten 74.5 MW increments)
b. Summer Firm (AC)[1/] 264 MW (Approximately)
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2024
b. Commercial In-service date: 2025

(5) **Fuel**
a. Primary Fuel Solar
b. Alternate Fuel Not applicable

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** Not applicable

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**
Planned Outage Factor (POF): Not applicable
Forced Outage Factor (FOF): Not applicable
Equivalent Availability Factor (EAF): Not applicable
Resulting Capacity Factor (%): TBD
Average Net Operating Heat Rate (ANOHR): Not applicable
Base Operation 75F,100%
Average Net Incremental Heat Rate (ANIHR): Not applicable
Peak Operation 75F,100%

(13) **Projected Unit Financial Data**
Book Life (Years): 30 years
Total Installed Cost (2025 $/kW): TBD
Direct Construction Cost (2025 $/kW): TBD
AFUDC Amount (2025 $/kW): TBD
Escalation ($/kW): TBD
Fixed O&M ($/kW-Yr.): (2025 $) TBD
Variable O&M ($/MWH): (2025 $) TBD
K Factor: TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased.
FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	1,192	MW (in sixteen 74.5 MW increments)
	b. Summer Firm (AC)[1/]	422	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:		2025
	b. Commercial In-service date:		2026
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applicable
(9)	**Construction Status:**		P (Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2026 $/kW):		TBD
	Direct Construction Cost (2026 $/kW):		TBD
	AFUDC Amount (2026 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2026 $)		TBD
	Variable O&M ($/MWH): (2026 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	1,192	MW (in sixteen 74.5 MW increments)
	b. Summer Firm (AC)[1/]	422	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:		2026
	b. Commercial In-service date:		2027
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applicable
(9)	**Construction Status:**		P (Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR):		Not applicable
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):		Not applicable
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2027 $/kW):		TBD
	Direct Construction Cost (2027 $/kW):		TBD
	AFUDC Amount (2027 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2027 $)		TBD
	Variable O&M ($/MWH) (2027 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased. FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Unsited PV

(2) **Capacity**
a. Nameplate (AC) 1,192 MW (in sixteen 74.5 MW increments)
b. Summer Firm (AC)[1/] 251 MW (Approximately)
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2027
b. Commercial In-service date: 2028

(5) **Fuel**
a. Primary Fuel Solar
b. Alternate Fuel Not applicable

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** Not applicable

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**
Planned Outage Factor (POF): Not applicable
Forced Outage Factor (FOF): Not applicable
Equivalent Availability Factor (EAF): Not applicable
Resulting Capacity Factor (%): TBD
Average Net Operating Heat Rate (ANOHR): Not applicable
Base Operation 75F,100%
Average Net Incremental Heat Rate (ANIHR): Not applicable
Peak Operation 75F,100%

(13) **Projected Unit Financial Data**
Book Life (Years): 30 years
Total Installed Cost (2028 $/kW): TBD
Direct Construction Cost (2028 $/kW): TBD
AFUDC Amount (2028 $/kW): TBD
Escalation ($/kW): TBD
Fixed O&M ($/kW-Yr.): (2028 $) TBD
Variable O&M ($/MWH): (2028 $) TBD
K Factor: TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased.
FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Unsited Energy Storage

(2) **Capacity**
a. Summer 200 MW
b. Winter 200 MW

(3) **Technology Type:** Battery

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2027
b. Commercial In-service date: 2028

(5) **Fuel**
a. Primary Fuel Not applicable
b. Alternate Fuel Not applicable

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** Not applicable

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable
Forced Outage Factor (FOF):	Not applicable
Equivalent Availability Factor (EAF):	Not applicable
Resulting Capacity Factor (%):	Not applicable
Average Net Operating Heat Rate (ANOHR):	Not applicable
Base Operation 75F,100%	
Average Net Incremental Heat Rate (ANIHR):	Not applicable
Peak Operation 75F,100%	

(13) **Projected Unit Financial Data *,****

Book Life (Years):		10 years
Total Installed Cost (2028 $/kW):		TBD
Direct Construction Cost (2028 $/kW):		TBD
AFUDC Amount (2028 $/kW):		TBD
Escalation ($/kW):		TBD
Fixed O&M ($/kW-Yr.):	(2028 $)	TBD
Long Term Capital Replenishment ($/kW)	(2028 $)	TBD
Variable O&M ($/MWH):	(2028 $)	TBD
K Factor:		TBD

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement and annual capital replenishment

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**		Unsited PV
(2)	**Capacity**		
	a. Nameplate (AC)	1,192	MW (in sixteen 74.5 MW increments)
	b. Summer Firm (AC)[1/]	194	MW (Approximately)
	c. Winter Firm (AC)	-	
(3)	**Technology Type:** Photovoltaic (PV)		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:		2028
	b. Commercial In-service date:		2029
(5)	**Fuel**		
	a. Primary Fuel		Solar
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**		Not applicable
(8)	**Total Site Area:**		Not applicable
(9)	**Construction Status:**		P (Planned Unit)
(10)	**Certification Status:**		---
(11)	**Status with Federal Agencies:**		---
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		TBD
	Average Net Operating Heat Rate (ANOHR):		Not applicable
	Base Operation 75F,100%		
	Average Net Incremental Heat Rate (ANIHR):		Not applicable
	Peak Operation 75F,100%		
(13)	**Projected Unit Financial Data**		
	Book Life (Years):		30 years
	Total Installed Cost (2029 $/kW):		TBD
	Direct Construction Cost (2029 $/kW):		TBD
	AFUDC Amount (2029 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.): (2029 $)		TBD
	Variable O&M ($/MWH): (2029 $)		TBD
	K Factor:		TBD

1/ The value shown represents FPL's current projection of the firm capacity of this amount of incremental PV assuming the planned PV additions in prior years. As the amount of PV on FPL's system increases, the remaining Summer load not served by solar is altered so that the remaining Summer peak load moves to later in the day. Because the amount of solar energy diminishes in these later hours, the firm capacity value of the incremental solar is decreased.
FPL will continue to analyze the projected impacts of increasing amounts of PV in its on-going resource planning work.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Unsited Energy Storage	
(2)	**Capacity**		
	a. Summer	500 MW	
	b. Winter	500 MW	
(3)	**Technology Type:** Battery		
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2028	
	b. Commercial In-service date:	2029	
(5)	**Fuel**		
	a. Primary Fuel		Not applicable
	b. Alternate Fuel		Not applicable
(6)	**Air Pollution and Control Strategy:**		Not applicable
(7)	**Cooling Method:**	Not applicable	
(8)	**Total Site Area:**	Not applicable	
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		Not applicable
	Forced Outage Factor (FOF):		Not applicable
	Equivalent Availability Factor (EAF):		Not applicable
	Resulting Capacity Factor (%):		Not applicable
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		Not applicable
	Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%		Not applicable
(13)	**Projected Unit Financial Data *,****		
	Book Life (Years):		10 years
	Total Installed Cost (2029 $/kW):		TBD
	Direct Construction Cost (2029 $/kW):		TBD
	AFUDC Amount (2029 $/kW):		TBD
	Escalation ($/kW):		TBD
	Fixed O&M ($/kW-Yr.):	(2029 $)	TBD
	Long Term Capital Replenishment ($/kW)	(2029 $)	TBD
	Variable O&M ($/MWH):	(2029 $)	TBD
	K Factor:		TBD

* $/kW values are based on Summer capacity.
** Levelized value for Fixed O&M also includes Capital Replacement and annual capital replenishment

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Hibiscus Solar Energy Center (Palm Beach County)

The Hibiscus Solar Energy Center will require bifurcating the FPL Ranch-Corbett 230 kV line approximately 1-mile west of FPL's Westlake substation to loop into the new Minto Substation.

(1) Point of Origin and Termination:	Westlake-Corbett 230 kV line section to Minto Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0.07 miles
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Minto Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Okeechobee Solar Energy Center (Okeechobee County)

The Okeechobee Solar Energy Center will connect to the new Okeechobee Next Generation Clean Energy Center project and does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Southfork Solar Energy Center (Manatee County)

The Southfork Solar Energy Center will require bifurcating the existing FPL Manatee-Keentown 230 kV transmission line looping the new Duette substation.

(1) Point of Origin and Termination:	Manatee-Keentown 230 kV line to Duette Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0.15 mile
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Duette Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Echo River Solar Energy Center (Suwannee County)

The Echo River Solar Energy Center will require bifurcating the existing Suwannee (Duke Energy Florida, DEF) – Columbia (FPL) 115 kV tie line between FPL's Wellborn-Live Oak section, looping the new Hogan Substation.

(1) Point of Origin and Termination:	Wellborn-Live Oak 115 kV line section to Hogan Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0.05 miles
(5) Voltage:	115 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Hogan Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Lakeside Solar Energy Center (Okeechobee County)

The Lakeside Solar Energy Center will require bifurcating the existing FPL Martin-Sherman 230 kV transmission line and looping the new Nubbin Substation adjacent to the existing line.

(1) Point of Origin and Termination:	Martin-Sherman 230 kV line to Nubbin Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	300 feet
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Nubbin Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Trailside Solar Energy Center (St. Johns County)

The Trailside Solar Energy Center will require bifurcating the existing FPL Putnam-St. Johns 115 kV transmission line between the Elkton-St. Johns section and extending two parallel sections approximately 1 mile to loop the new Moccasin Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	Elkton-St. Johns 115 kV line to Moccasin Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	1 mile (double-circuit)
(5) Voltage:	115 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Moccasin Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Union Springs Solar Energy Center (Union County)

The Union Springs Solar Energy Center will require bifurcating the existing FPL Raven-Bradford 115 kV transmission line between the Bradford-Lake Butler section and extending two parallel sections approximately 0.1 mile to loop the new Plum Substation.

(1) Point of Origin and Termination:	Bradford-Lake Butler 115 kV line section to Plum Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0.1 mile
(5) Voltage:	115 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Plum Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Magnolia Springs Solar Energy Center (Clay County)

The Magnolia Springs Solar Energy Center will require bifurcating the existing Seminole Plant-Springbank 230 kV transmission line between the Titanium-Green Cove Springs section and extending two parallel sections approximately 0.1 mile to loop a new Leno substation.

(1) Point of Origin and Termination:	Titanium-Green Cove Springs 230 kV line section to Leno substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0.1 mile
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Leno Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Egret Solar Energy Center (Baker County)

The Egret Solar Energy Center will require bifurcating the existing FPL Duval-Raven 230 kV transmission line and extending two parallel sections approximately 2 miles to loop the new Claude Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	Duval-Raven 230 kV line to Claude Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	2 miles (double-circuit)
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Claude Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Nassau Solar Energy Center (Nassau County)

The Nassau Solar Energy Center will require bifurcating the existing FPL Duval-Yulee 230 kV transmission line between the Duval-West Nassau (GTC) section and extending two parallel sections approximately 1 mile to loop the new Crawford Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	Duval-West Nassau (GTC) 230 kV line to Crawford Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	1 mile (double-circuit)
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2019 End date: 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Crawford Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Pelican Solar Energy Center (St. Lucie County)

The Pelican Solar Energy Center will require extending a 230 kV transmission line from Eldora Substation to the new Morrow Substation to connect the solar PV inverter array.

(1) Point of Origin and Termination:	Eldora 230 kV Substation to Morrow Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	1.25 miles
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: 2021
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Morrow Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Palm Bay Solar Energy Center (Brevard County)

The Palm Bay Solar Energy Center will require bifurcating the existing FPL Midway-Malabar 230 kV transmission line between the Glendale-Hield section and extending two parallel sections approximately 2.5 miles to loop the new Hayward Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	Glendale-Hield 230 kV line to Hayward Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	2.5 miles (double-circuit)
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: 2021
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Hayward Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Discovery Solar Energy Center (Brevard County)

The Discovery Solar Energy Center will require bifurcating the existing FPL C5-Barna 115 kV transmission line and looping the new Rocket Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	C5-Barna kV line to Rocket Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	300 feet
(5) Voltage:	115 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: 2021
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Rocket Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Orange Blossom Solar Energy Center (Indian River County)

The Orange Blossom Solar Energy Center will connect to the existing FPL Eldora-Heritage 230 kV transmission line via a line switch to connect the new Finca Substation and the solar PV inverter array.

(1) Point of Origin and Termination:	None
(2) Number of Lines:	0
(3) Right-of-way	N/A
(4) Line Length:	0
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: 2021
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Finca Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Sabal Palm Solar Energy Center (Palm Beach County)

The Sabal Palm Solar Energy Center will require extending a transmission line from the Minto Substation approximately 1.5 miles to connect the new Costa Substation and connect the solar PV inverter array.

(1) Point of Origin and Termination:	Minto Substation to Costa Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	1.5 miles
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: 2021
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Costa Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Fort Drum Solar Energy Center (Okeechobee County)

The Fort Drum Solar Energy Center will connect to the new Okeechobee Next Generation Clean Energy Center project and does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Rodeo Solar Energy Center (DeSoto County)

The Rodeo Solar Energy Center will connect to the Gleam substation at the new Cattle Ranch Solar Energy Center and does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Willow Solar Energy Center (Manatee County)

The Willow Solar Energy Center will require bifurcating the existing FPL Keentown-Sunshine 230 kV transmission line to connect a new Coachwhip substation and the solar PV inverter array.

(1) Point of Origin and Termination:	Keentown-Sunshine 230 kV line to new Coachwhip Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	0
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2020 End date: Late 2020
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Coachwhip Substation
(9) Participation with Other Utilities:	None

Schedule 10

Status Report and Specifications of Proposed Transmission Lines

Battery Storage in Manatee County

The 409 MW Battery Storage project in Manatee County does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Sunshine Gateway Battery Energy Storage addition in Columbia County

The Sunshine Gateway Battery Energy Storage addition project in Columbia County does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Echo River Battery Energy Storage addition in Suwannee County

The Echo River Battery Energy Storage addition project in Suwannee County does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Dania Beach Clean Energy Center Unit 7

Dania Beach Clean Energy Center Unit 7 does not require any new transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Blue Springs Solar Energy Center (Jackson County)

The Blue Springs Solar Energy Center will require bifurcating the existing Gulf Cypress-Chipola section of the Gulf Marianna-West Grandridge 115 kV transmission line to connect a new Americus substation and the solar PV inverter array.

(1) Point of Origin and Termination:	Gulf Marianna-West Grandridge 115 kV line to new Americus Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	2 miles
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2021 End date: 2022
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Americus Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Chautauqua Solar Energy Center (Walton County)

The Chautauqua Solar Energy Center will require bifurcating the existing Gulf Shoal River-Samson 230 kV transmission to connect a new Liddie substation and the solar PV inverter array.

(1) Point of Origin and Termination:	Gulf Shoal River-Samson 230 kV line to new Liddie Substation
(2) Number of Lines:	1
(3) Right-of-way	FPL – Owned
(4) Line Length:	TBD
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2021 End date: 2022
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Liddie Substation
(9) Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Crist Unit 8 Combustion Turbine Project (Escambia County)

The Crist Unit 8 Combustion Turbine Project will require bifurcating the existing Crist-Alligator Swamp #2-230kV and Crist-Bellview 230kV lines near Crist to connect into a new Conecuh substation switchyard, and relocating the existing line terminal at Crist for the Crist-Barry 230 kV line to Conecuh substation.

(1) Point of Origin and Termination:	Crist substation to new Conecuh substation
(2) Number of Lines:	3
(3) Right-of-way	FPL – Owned
(4) Line Length:	Approximately 0.25 miles
(5) Voltage:	230 kV
(6) Anticipated Construction Timing:	Start date: 2021 End date: 2022
(7) Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on Schedule 9
(8) Substations:	Conecuh Substation
(9) Participation with Other Utilities:	None

Schedule 11.1: FPL

Existing Firm and Non-Firm Capacity and Energy by Primary Fuel Type
Actuals for the Year 2019

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Net (MW) Capability				**NEL**	**Fuel Mix**
	Generation by Primary Fuel	**Summer (MW)**	**Summer (%)**	**Winter (MW)**	**Winter (%)**	**GWh [2]**	**%**
(1)	Coal	634	2.3%	635	2.2%	2,488	2.0%
(2)	Nuclear	3,479	12.6%	3,570	12.5%	27,791	22.2%
(3)	Residual	0	0.0%	0	0.0%	224	0.2%
(4)	Distillate	108	0.4%	123	0.4%	224	0.2%
(5)	Natural Gas	21,731	78.9%	22,580	79.2%	93,373	74.6%
(6)	Solar (Firm & Non-Firm)	1,153	4.2%	1,153	4.0%	2,396	1.9%
(7)	***FPL Existing Units Total [1] :***	***27,105***	***98.4%***	***28,061***	***98.4%***	***126,496***	***101.1%***
(8)	Renewables (Purchases)- Firm	114.0	0.4%	114.0	0.4%	892	0.7%
(9)	Renewables (Purchases)- Non-Firm	Not Applicable	---	Not Applicable	---	209	0.2%
(10)	***Renewable Total:***	114.0	0.4%	114.0	0.4%	1,101	0.88%
(11)	***Purchases Other / (Sales) :***	330.0	1.2%	330.0	1.2%	(2,429)	-1.9%
(12)	***Total :***	*27,548.8*	*100.0%*	*28,504.6*	*100.0%*	*125,168*	*100.0%*

Note:

(1) FPL Existing Units Total values on row (7), columns (2) and (4), match the Total System Generating Capacity values found on Schedule 1 for Summer and Winter.

(2) Net Energy for Load GWh values on row (12), column (6), matches Schedule 6.1 value for 2019.

Schedule 11.1: Gulf

Existing Firm and Non-Firm Capacity and Energy by Primary Fuel Type
Actuals for the Year 2019

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Net (MW) Capability				**NEL**	**Fuel Mix**
	Generation by Primary Fuel	**Summer (MW)**	**Summer (%)**	**Winter (MW)**	**Winter (%)**	**GWh [(2)]**	**%**
(1)	Coal	1,641	67.6%	1,641	66.9%	4,125	35.1%
(2)	Nuclear	0	0.0%	0	0.0%	0	0.0%
(3)	Residual	0	0.0%	0	0.0%	0	0.0%
(4)	Distillate	32	1.3%	40	1.6%	0	0.0%
(5)	Natural Gas	672	27.7%	661	26.9%	3,975	33.9%
(6)	Landfill Gas	3	0.1%	3	0.1%	0	0.0%
(7)	Solar (Firm & Non-Firm)	0	0.0%	0	0.0%	0	0.0%
(8)	***Gulf Existing Units Total [(1)] :***	***2,348***	***96.7%***	***2,345***	***95.6%***	***8,101***	***69.0%***
(9)	Renewables (Purchases)- Firm	81.0	3.3%	109.0	4.5%	1,031	8.8%
(10)	Renewables (Purchases)- Non-Firm	Not Applicable	---	Not Applicable	---	373	3.2%
(11)	***Renewable Total:***	81.0	3.3%	109.0	4.5%	1,404	11.95%
(12)	***Purchases Other / (Sales) :***	0.0	0.0%	0.0	0.0%	2,237	19.1%
(13)	***Total :***	*2,429.0*	*100.0%*	*2,454.0*	*100.0%*	*11,742*	*100.0%*

Note:
(1) Gulf Existing Units Total values on row (7), columns (2) and (4), match the Total System Generating Capacity values found on Schedule 1 for Summer and Winter.
(2) Net Energy for Load GWh values on row (12), column (6), matches Schedule 6.1 value for 2019.

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Schedule 11.2: FPL

Existing Non-Firm Self-Service Renewable Generation Facilities
Actuals for the Year 2019 1/

(1)	(2)	(3)	(4)	(5)	(6) = (3)+(4)-(5)
Type of Facility	Installed Capacity DC (MW)	Renewable Projected Annual Output (MWh) 2/	Annual Energy Purchased from FPL (MWh) 3/	Annual Energy Sold to FPL - Total (MWh) 4/	Projected Annual Energy Used by Customers 6/
Customer-Owned Renewable Generation (0 kW to 10 kW)	111.06	158,164	416,346	49,639	524,871
Customer-Owned Renewable Generation (> 10 kW to 100 kW)	42.70	60,374	293,892	14,885	339,381
Customer-Owned Renewable Generation (> 100 kW - 2 MW)	28.59	82,547	294,557	7,560	369,544
Totals	182.35	301,085	1,004,795	72,084	1,233,797

1/ There were approximately 16,971 customers with renewable generation facilities interconnected with FPL on December 31, 2019.
2/ The Projected Annual Output value is based on NREL's PV Watts 1 program and uses the Installed Capacity value in column (2), adjusted for the date when each facility was installed and assuming each facility operated as planned.
3/ The Annual Energy Purchased from FPL is an actual value from FPL's metered data for 2019.
4/ The Annual Energy Sold to FPL - Total is an actual value from FPL's metered data for 2019. These are the total MWh that were "overproduced" by the customer each month throughout 2019.
5/ The Projected Annual Energy Used by Customers is a projected value that equals:
(Renewable Projected Annual output + Annual Energy Purchased) minus the Annual Energy Sold to FPL - Total).

Schedule 11.2: Gulf

Existing Non-Firm Self-Service Renewable Generation Facilities
Actuals for the Year 2019 [1/]

(1)	(2)	(3)	(4)	(5)	(6) = (3)+(4)-(5)
Type of Facility	Installed Capacity DC (MW)	Renewable Projected Annual Output (MWh) [2/]	Annual Energy Purchased from FPL (MWh) [3/]	Annual Energy Sold to FPL - Total (MWh) [4/]	Projected Annual Energy Used by Customers [5/]
(All) Totals	18.85	27,676	19,339	6,821	40,195

1) Total count of renewable generation facilities as of 12/31/2019 = 2,229
2) Projected Annual Output value is based on NREL's PV Watts calculation assuming average annual kWh's per year at 1,468 for a (1) kW system
3) The Annual Energy Purchased from Gulf is an actual value from Gulf Power's metered data for 2019
4) The annual energy sold to Gulf Power - Total is an actual value from Gulf Power's metered data for 2019. These are the total MWh that were "overproduced" by the customer each month throughout 2019
5) The Projected Annual Energy Used by Customers is a projected value that equals:
(Renewable Projected Annual output + Annual Energy Purchased) minus the Annual Energy Sold to Gulf Power - Total)

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CHAPTER IV

Environmental and Land Use Information

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IV. Environmental and Land Use Information

IV.A. Protection of the Environment

Clean, affordable energy is the lifeblood of Florida's growing population, expanding economy, and environmental resource restoration and management. Through its commitment to environmental excellence, FPL and Gulf are helping to solve Florida's energy challenges sustainably and responsibly. With one of the cleanest, most efficient power-generation fleets in the nation, FPL has reduced its use of oil, including foreign oil, by approximately 98 percent – from approximately 40 million barrels annually in 2001 to 0.4 million barrels in 2019. FPL also has one of the lowest emissions profiles among U.S. utilities, and its carbon dioxide (CO_2) emission rate in 2019 was approximately 30% lower (cleaner) than the industry national average. Gulf has reduced its sulfur dioxide emissions by 99%, its nitrogen oxide (NOx) emissions by 81%, and its carbon dioxide emissions by 40%, from 2001 to 2018. FPL and Gulf together are also the largest producers of solar energy-generated electricity in Florida. At the end of 2019, FPL had approximately 1,228 MW of solar generation capability on its system which consists of approximately 1,153 MW of universal solar PV and 75 MW of solar thermal. Also at the end of 2019, Gulf has renewable energy purchase agreements for approximately 120 MW of universal solar PV generation and 81 MW of wind which is provided through multiple power purchase agreements (PPAs).

This 2020 Site Plan for FPL and Gulf presents a resource plan which shows a significant amount of additional solar. The merged system is projected to have approximately 10,000 MW of solar by the end of the 10-year reporting period (2029) for this Site Plan.

FPL and Gulf maintain their commitment to environmental stewardship through proactive collaboration with communities and organizations working to preserve Florida's unique habitat and natural resources. The many projects and programs in which FPL and Gulf actively participate include the creation and management of the Manatee Lagoon – An FPL Eco-Discovery Center, Everglades Mitigation Bank, Crocodile Management Program, and Longleaf pine restoration.

FPL, Gulf, and their parent company, NextEra Energy, Inc., have continuously been recognized as leaders among electric utilities for their commitment to the environment – a commitment that is ingrained in the corporate culture.

In 2020, Fortune ranked NextEra Energy, Inc. as No. 1 in the electric and gas utilities industry in their "2020 World's Most Admired Companies". The annual list recognizes companies that have had a positive social impact through activities that are part of their core business strategy. NextEra Energy was also named one of the “2020 World’s Most Ethical Companies” by Ethisphere Institute which recognizes companies’ critical roles in influencing and driving positive change in both the business community and societies around the world. NextEra Energy is one of only six companies worldwide in the energy and utilities sector to receive Ethisphere Institute’s prestigious recognition in 2020.

NextEra Energy’s Juno Beach, Florida, campus, which includes FPL’s headquarters, has achieved the prestigious Leadership in Energy and Environmental Design (LEED) Gold certification for existing buildings and two Gulf facilities are also LEED certified. LEED is the U.S. Green Building Council’s leading rating system for designating the world’s greenest, most energy-efficient, and high-performing buildings. Key achievements that led to the certification include heating, ventilation and air conditioning improvements, lighting upgrades, water management and recycling programs, and changes to specifications for paper, carpet, and other materials.

FPL and Gulf are committed to environmentally sustainable water use. Nearly 98% of the water FPL uses is returned to its original source. Similarly, nearly 90% of the water Gulf uses is returned to its original source. Pursuing alternate water sources, such as the use of 13.9 million gallons per day of treated wastewater for cooling the FPL West County Energy Center and 1.8 million gallons per day at Gulf’s Plant Crist, reduces the need to access ground or surface water resources.

IV.B Environmental Organization Contributions

In 2019, FPL supported a broad base of environmental organizations with donations, event sponsorships, and memberships. Those organizations include, but were not limited to: Everglades Foundation, The Nature Conservancy, Loggerhead Marinelife Center, Inc., Florida Wildflower Foundation, Florida State Parks Foundation, Florida Native Plant Society, Florida Wildlife Federation, Inwater Research Group, Defenders of Wildlife and Audubon state & local chapters. FPL employees serve in board and leadership positions for many organizations that focus on environmental restoration, preservation, and stewardship. A partial list of these organizations includes: Florida Fish and Wildlife Conservation Commission, The Nature Conservancy in Florida, Grassy Waters Conservancy, Loggerhead Marinelife Center, Everglades Foundation and Audubon Florida.

Gulf supports environmental organizations through financial contributions and volunteer hours. Every year Gulf employees invest an average of 1,200 volunteer hours supporting conservation partners in maintaining, restoring and protecting waters, wetlands, forests, beaches, parks, historic sites, and wildlife. In 2019, the Gulf Power Foundation Amplify! awarded a $40,000 grant to the Florida Wildlife Federation to assist large landowners near Panama City, Florida clean up and remove trees destroyed and damaged by Hurricane Michael in 2018 and restore their lands with longleaf pine trees. Other environmental organizations receiving financial contributions or volunteer hours in 2019 include, but are not limited to: The Nature Conservancy, E.O. Wilson Biophilia Center, FWC Scallop Restoration, Gulf Islands National Seashore, Eglin Air Force Base – Gopher Tortoise, Choctawhatchee Basin Alliance, Audubon Florida, and Walton County Dune Lake Restoration.

IV.C Environmental Communication and Facilitation

FPL is involved in many efforts to enhance environmental protection through the facilitation of energy efficiency, environmental awareness, and through public education. Some of FPL's 2019 environmental outreach activities are summarized in Table IV.E.1.

Table IV.C.1: 2019 FPL Environmental Outreach Activities

Activity	Count (#)
Visitors to Manatee Lagoon - An FPL Eco-Discovery Center	162,422
Number of website visits to Manatee Lagoon website, visitmanateelagoon.com	565,642
Visitors to Manatee Park, Ft. Myers	271,386
Number of website visits to FPL's Environmental & Corporate Sustainability Websites	>57,000
Visitors to FPL Living Lab, Martin Energy Center Solar & DeSoto Solar Tours	861
Environmental Brochures Distributed	~40,839
Home Energy Surveys	Field Visits: 19,587 Phone: 20,168 Online: 77,958 **Total: 117,713**

IV.D Environmental Policy

FPL, Gulf, and their parent company, NextEra Energy, Inc., are committed to remaining an industry leader in environmental protection and stewardship, not only because it makes business sense, but because it is the right thing to do. This commitment to compliance, conservation, communication, and continuous improvement fosters a culture of environmental excellence and drives the sustainable management of its business planning, operations, and daily work.

In accordance with commitments to environmental protection and stewardship, FPL, Gulf, and NextEra Energy, Inc. endeavor to:

Comply:

- Comply with all applicable environmental laws, regulations, and permits
- Proactively identify environmental risks and take action to mitigate those risks
- Pursue opportunities to exceed environmental standards
- Participate in the legislative and regulatory process to develop environmental laws, regulations, and policies that are technically sound and economically feasible
- Design, construct, operate, and maintain facilities in an environmentally sound and responsible manner

Conserve:

- Prevent pollution, minimize waste, and conserve natural resources
- Avoid, minimize, and/or mitigate impacts to habitat and wildlife
- Promote the efficient use of energy, both within our company and in our communities
- Seek innovative solutions

Communicate:

- Invest in environmental training and awareness to achieve a corporate culture of environmental excellence
- Maintain an open dialogue with stakeholders on environmental matters and performance
- Communicate this policy to all employees and publish it on the corporate website

Continuously Improve:

- Establish, monitor, and report progress toward environmental targets
- Review and update this policy on a regular basis
- Drive continuous improvement through ongoing evaluations of our environmental management system to incorporate lessons learned and best practices

FPL and Gulf's parent company, NextEra Energy, Inc., updated this policy in 2020 to reflect changing expectations and ensure that employees are doing the utmost to protect the environment. FPL and Gulf comply with all environmental laws, regulations, and permit requirements, and they design, construct, and operate their facilities in an environmentally sound and responsible manner. FPL and Gulf also respond immediately and effectively to any known environmental hazards or non-compliance situations. The commitment to the environment does not end there. FPL and Gulf proactively pursue opportunities to perform better than current environmental standards require, including reducing waste and emission of pollutants, recycling materials, and conserving natural resources throughout their operations and day-to-day work activities. FPL and Gulf encourage cost-effective, efficient uses of energy, both within the Company and by their customers. These actions are just a few examples of how FPL and Gulf are committed to the environment.

To ensure FPL and Gulf are adhering to their environmental commitment, they have developed rigorous environmental governance procedures and programs. These include its Environmental Assurance Program. Through this program, FPL and Gulf conduct periodic environmental self-evaluations to verify that its operations comply with environmental laws, regulations, and permit requirements. Regular evaluations also help identify best practices and opportunities for improvement.

IV.E Environmental Management

In order to successfully implement the Environmental Policy, FPL and Gulf have developed a robust Environmental Management System to direct and control the fulfillment of the organization’s environmental responsibilities. A key component of the system is an Environmental Assurance Program, which is described in section IV.F below. Other system components include: executive management support and commitment, dedicated environmental corporate governance program, written environmental policies and procedures, delineation of organizational responsibilities and individual accountabilities, allocation of appropriate resources for environmental compliance management (which includes reporting and corrective action when non-compliance occurs), environmental incident and/or emergency response, environmental risk assessment/management, environmental regulatory development and tracking, and environmental management information systems.

IV.F Environmental Assurance Program

FPL and Gulf’s Environmental Assurance Program consists of activities that are designed to evaluate environmental performance, verify compliance with corporate policy as well as legal and regulatory requirements, and communicate results to corporate management. The principal mechanism for pursuing environmental assurance is an environmental audit. An environmental audit is defined as a management tool comprised of a systematic, documented, periodic, and objective evaluation of the performance of the organization and its specific management systems and equipment designed to protect the environment. An environmental audit’s primary objective is to facilitate management control of environmental practices and assess compliance with existing environmental regulatory requirements and corporate policies. In addition to FPL and Gulf facility audits, through the Environmental Assurance Program, audits of third-party vendors used for recycling and/or disposal of waste generated by FPL and Gulf operations are performed. Vendor audits provide information used for selecting candidate or incumbent vendors for disposal and recycling needs.

In addition to periodic environmental audits, NextEra Energy Inc.'s Environmental Construction Compliance Assurance Program provides routine onsite inspections during construction and site-specific environmental training to everyone anticipated to be onsite during construction. Similar to an environmental audit, these inspections are performed to ensure compliance with the requirements of environmental permits, licenses, and corporate policies during the construction phase.

FPL and Gulf have also implemented a Corporate Environmental Governance System in which quarterly reviews are performed of each business unit deemed to have potential for significant environmental exposure. Quarterly reviews evaluate operations for potential environmental risks and consistency with the Environmental Policy. Items tracked during the quarterly reviews include processes for the identification and management of environmental risks, metrics, and indicators and progress / changes since the most recent review.

IV.G Preferred and Potential Sites

Based upon projection of future resource needs and analyses of viable resource options, 26 Preferred Sites and 13 Potential Sites have been identified for adding future generation. Some of these sites currently have existing generation. Preferred Sites are those locations where significant reviews have taken place and action has either been taken, action is committed, or it is likely that action will be taken to site new generation. Potential Sites are those with attributes that would support the siting of generation and are under consideration as a location for future generation. The identification of a Potential Site does not necessarily indicate that a definitive decision to pursue new generation (or generation expansion or modernization in the case of an existing generation site) at that location has been made, nor does this designation necessarily indicate the that size or technology of a generating resource has been determined. The Preferred Sites and Potential Sites are discussed in separate sections below.

IV.G.1 Preferred Sites

For the 2020 Ten Year Site Plan, 26 Preferred Sites have been identified. These include a combination of existing and new sites in both the FPL and Gulf areas for the development of solar generation facilities, natural gas-fueled combined cycle and combustion turbine units, battery storage, and/or nuclear generation. Sites for a number of solar additions in 2020 and 2021 have been selected, and these sites are described in this section. Potential sites for possible 2022-on solar additions, plus other types of generation, are discussed in the Potential Site section later in this chapter.

These 26 Preferred Sites are listed in Table IV.G.1 below, and information regarding each site is then presented on the following pages. The sites are presented in general chronological order of when resources are projected to be added to the FPL and Gulf areas. The topographical features of each site, land use, and facility layout figures are provided at the end of this chapter.

Table IV.G.1: List of FPL & Gulf Preferred Sites

Site Name	County	Technology
FPL Area		
Hibiscus Solar Energy Center	Palm Beach	Solar
Okeechobee Solar Energy Center	Okeechobee	Solar
Southfork Solar Energy Center	Manatee	Solar
Echo River Solar Energy Center	Suwannee	Solar
Lakeside Solar Energy Center	Okeechobee	Solar
Trailside Solar Energy Center	St. Johns	Solar
Union Springs Solar Energy Center	Union	Solar
Magnolia Springs Solar Energy Center	Clay	Solar
Egret Solar Energy Center	Baker	Solar
Nassau Solar Energy Center	Nassau	Solar
Pelican Solar Energy Center	St. Lucie	Solar
Palm Bay Solar Energy Center	Brevard	Solar
Discovery Solar Energy Center	Brevard	Solar
Orange Blossom Solar Energy Center	Indian River	Solar
Sabal Palm Solar Energy Center	Palm Beach	Solar
Fort Drum Solar Energy Center	Okeechobee	Solar
Rodeo Solar Energy Center	DeSoto	Solar
Willow Solar Energy Center	Manatee	Solar
Manatee Energy Storage Center	Manatee	Battery
Sunshine Gateway Energy Storage Center	Columbia	Battery
Echo River Energy Storage Center	Suwanee	Battery
Dania Beach Clean Energy Center Unit 7	Broward	CC
Turkey Point Units 6&7	Miami-Dade	Nuclear
Gulf Area		
Blue Springs Solar Energy Center	Jackson	Solar
Chautauqua Solar Energy Center	Walton	Solar
Crist Unit 8	Escambia	CT

Preferred Site #1 Hibiscus Solar Energy Center, Palm Beach County

	Facility Acerage	**402**
	COD	**Q2 2020**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Abandoned citrus and pastureland
	Adjacent Areas	Residential, abandoned citrus, and pastureland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site has minimal trees and is mostly comprised of herbaceous grasses. An existing network of irrigation canals is present.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Solar power generation is allowed within existing Agricultural land use designation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: August 22, 2018 Florida Environmental Resources Permit (ERP) received: February 13, 2018

Preferred Site #2 Okeechobee Solar Energy Center, Okeechobee County

	Facility Acerage	**471**
	COD	**Q2 2020**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pastureland and fallow crop land
	Adjacent Areas	Pastureland, conservation, and existing electrical transmission
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is comprised of pastureland, fallow citrus, pine Flatwoods, mixed forested wetlands, saw palmetto prairie, and freshwater marsh.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	The Okeechobee Solar site is adjacent to the Ft. Drum Marsh Conservation Area.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation includes agricultural production and power generation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: October 18, 2018 Florida Environmental Resources Permit (ERP) received: September 21, 2018 Okeechobee County Development Approval: July 24, 2018

Preferred Site #3 Southfork Solar Energy Center, Manatee County

	Facility Acerage	**548**
	COD	**Q2 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Agricultural production and fallow crop land
	Adjacent Areas	Agricultural production, forested and non-forested uplands
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately agricultural with some forested wetland areas.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Solar power generation is allowed within existing Agricultural land use designation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: November 13, 2018 Florida Environmental Resources Permit (ERP) received: September 21, 2018 Manatee County Site Plan Approval: February 6, 2019

Preferred Site #4 Echo River Solar Energy Center, Suwannee County

	Facility Acerage	**802**
	COD	**Q2 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine plantation and pastureland
	Adjacent Areas	Pine plantation and pastureland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation and pasture with forested and herbaceous wetland areas.
2.	Listed Species	Listed species known to occur include gopher tortoise. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	Rocky Creek runs through the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation includes agricultural production and power generation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the North Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: N/A Florida Environmental Resources Permit (ERP) received: September 14, 2018 Suwannee County Development Approval: May 15, 2018

Preferred Site #5 Lakeside Solar Energy Center, Okeechobee County

	Facility Acerage	**693**
	COD	**Q4 2020**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pastureland
	Adjacent Areas	Pastureland, low density residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly comprised of pastureland with freshwater herbaceous wetlands, drainage ditches, and a retention pond.
2.	Listed Species	Listed species known to occur onsite include Audubon's crested caracara, gopher tortoise and Florida burrowing owl. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	The Lakeside Solar site is adjacent to the Nubbin Slough and the Nubbin Slough Stormwater Treatment Area, which ultimately discharge to Lake Okeechobee, an Outstanding Florida Water.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. The project has been designed to maximize use of existing uplands to avoid wetland and surface water impacts. Therefore, no compensatory mitigation is required for this site.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Rural Estate.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants. Vegetated Natural Buffers will be incorporated adjacent to access paths to treat stormwater runoff.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: N/A Florida Environmental Resources Permit (ERP) received: February 15, 2019 Okeechobee County Development Approval: November 9, 2018

Preferred Site #6 Trailside Solar Energy Center, St. Johns County

	Facility Acerage	**846**
	COD	**Q4 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine Plantation
	Adjacent Areas	Open Rural
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly comprised of pine plantation with freshwater forested wetlands.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat no impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	Florida Forever Board of Trustees project as the Matanzas to Ocala Conservation Corridor is located at the southeast corner.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Compensatory mitigation for unavoidable wetland impacts will be accomplished through purchase of credits from Sundew Mitigation Bank.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agriculture.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: January 31, 2019 Florida Environmental Resources Permit (ERP) received: February 7, 2019 St. John's County Development Approval: November 15, 2018 (SUP) and December 12, 2018 (NZV)

Preferred Site #7 Union Springs Solar Energy Center, Union County

	Facility Acerage	**725**
	COD	**Q2 2021**
	For PV facilities: tracking or fixed	**Tracking**
		Reference Maps
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.		**Existing Land Uses**
	Site	Pine plantation
	Adjacent Areas	Pine plantation and pine processing facility
f.		**General Environment Features On and In the Site Vicinity**
1.	Natural Environment	Site is predominately pine plantation with forested and herbaceous wetland areas.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agricultural.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	Florida Environmental Resources Permit (ERP) received: December 19, 2018 USACE Section 404 received: N/A Union County Site Plan Approval: Pending Union County Special Use Exception received: July 16, 2018

Preferred Site #8 Magnolia Springs Solar Energy Center, Clay County

	Facility Acerage	**850**
	COD	**Q4 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine plantation
	Adjacent Areas	Pine plantation and low density residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation with forested wetland areas.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agricultural and Conservation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	Florida Environmental Resources Permit (ERP) received: February 18, 2019 USACE Section 404 received: N/A Clay County Comprehensive Plan Amendment Approval: October 23, 2018 Clay County Site Plan Approval: Pending

Preferred Site #9 Egret Solar Energy Center, Baker County

	Facility Acerage	**676**
	COD	**Q3 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine plantation
	Adjacent Areas	Pine plantation and low density residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation with forested and herbaceous wetland areas.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agricultural.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	Florida Environmental Resources Permit (ERP) received: pending USACE Section 404 received: pending Baker County Special Use Approval: pending

Preferred Site #10 Nassau Solar Energy Center, Nassau County

	Facility Acerage	**927**
	COD	**Q1 2021**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine plantation
	Adjacent Areas	Pine plantation and low density residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation with forested wetland areas.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Industrial.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	Florida Environmental Resources Permit (ERP) received: August 1, 2019 USACE NW51 Verification received: June 12, 2019 Nassau County Site Plan Approval: September 24, 2019

Preferred Site #11 Pelican Solar Energy Center, St. Lucie County

	Facility Acerage	**564**
	COD	**Q1 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Citrus groves
	Adjacent Areas	Citrus groves, fallow cropland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly citrus groves with agricultural drainage ditches and a spoil area.
2.	Listed Species	Listed species known to forage within surrounding area include Audubon's crested caracara. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, stormwater system and off-site transmission substation. The project has been designed to maximize use of existing uplands to avoid wetland and surface water impacts. Therefore, no compensatory mitigation is required for this site.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agricultural.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants. Vegetated Natural Buffers will be incorporated adjacent to access paths to treat stormwater runoff.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: N/A Florida Environmental Resources Permit (ERP) received: April 29, 2019 St. Lucie County Development Approval: August 13, 2019

Preferred Site #12 Palm Bay Solar Energy Center, Brevard County

	Facility Acerage	**486**
	COD	**Q2 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Cleared citrus grove that is currently in use as cattle pasture
	Adjacent Areas	Agricultural, forested uplands and wetlands, and single-family residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly comprised of agricultural land with freshwater herbaceous wetlands and drainage ditches.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Rural Residential.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: 7/12/2019 Florida Environmental Resources Permit (ERP) received: 5/21/2019 City of Palm Bay Development Approval: Pending

Preferred Site #13 Discovery Solar Energy Center, Brevard County

	Facility Acerage	**491**
	COD	**Q1 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Undeveloped former citrus grove
	Adjacent Areas	Undeveloped and industrial
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately abandoned citrus groves, ditches and scattered freshwater forested and herbaceous wetlands which are now dominated by invasive, exotic vegetation.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, no impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	The site is adjacent to the Merritt Island National Refuge and adjacent to the Indian River Lagoon.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Compensatory mitigation for unavoidable wetland impacts will be accomplished through purchase of credits from NeoVerde Mitigation Bank.
h.	**Local Government Future Land Use Designations**	Site is federal land and therefore exempt from local zoning.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for PV Process: Not applicable for PV Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: Pending Florida Environmental Resources Permit (ERP) received: October 24, 2019 Brevard County Site Plan Approval: N/A

Preferred Site #14 Orange Blossom Solar Energy Center, Indian River County

	Facility Acerage	**607**
	COD	**Q2 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Citrus grove
	Adjacent Areas	Citrus groves, fallow cropland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly a citrus grove with canals/ditches. The site likely contains no jurisdictional wetlands.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is citrus, plant crops, and grazing.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: N/A Florida Environmental Resources Permit (ERP) received: 4/26/2019 Indian River County Approval: 8/13/2019

Preferred Site #15 Sabal Palm Solar Energy Center, Palm Beach County

	Facility Acerage	**646**
	COD	**Q1 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Fallow Agricultural Production
	Adjacent Areas	Agriculture, single-family residential, vacant land
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominantly comprised of fallow agricultural land with freshwater herbaceous wetlands and drainage ditches.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, no impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Compensatory mitigation for unavoidable wetland impacts will be accomplished through purchase of credits from Bluefield Ranch Mitigation Bank.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Rural Residential.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: Pending Florida Environmental Resources Permit (ERP) received: Pending Palm Beach County Development Approval: October 25, 2019

Preferred Site #16 Fort Drum Solar Energy Center, Okeechobee County

	Facility Acerage	**930**
	COD	**Q2 2021**
	For PV facilities: tracking or fixed	**Fixed**
		Reference Maps
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.		**Existing Land Uses**
	Site	Pastureland and fallow crop land
	Adjacent Areas	Pastureland, conservation, and existing electrical transmission
f.		**General Environment Features On and In the Site Vicinity**
1.	Natural Environment	The site is comprised of pastureland, fallow citrus, pine Flatwoods, mixed forested wetlands, saw palmetto prairie, and freshwater marsh.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	The Fort Drum Solar site is near the Ft. Drum Marsh Conservation Area.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation includes agricultural production and power generation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE NW51 Verification: Pending Florida Environmental Resources Permit (ERP) received: Pending Okeechobee County Development Approval: Pending

Preferred Site #17 Rodeo Solar Energy Center, Desoto County

	Facility Acerage	**1193**
	COD	**Q1 2021**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pastureland
	Adjacent Areas	Utilities (solar), cropland and pastureland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is comprised of pastureland, freshwater herbaceous and forested wetlands, pine Flatwoods, shrub and brushland, and other open land.
2.	Listed Species	Listed species known to occur onsite include Audubon's crested caracara and gopher tortoise. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	The site discharges to Sand Gully and Fish Branch, tributary to the Peace River, a Class III Florida water.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. The project has been designed to maximize use of existing uplands to avoid wetland impacts and minimize surface water impacts. Therefore, no compensatory mitigation is required for this site.
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Rural/Agricultural.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: N/A Florida Environmental Resources Permit (ERP) received: December 23, 2019 DeSoto County Development Approval: Pending

Preferred Site #18 Willow Solar Energy Center, Manatee County

	Facility Acerage	**812**
	COD	**Q2 2021**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Abandoned agricultural
	Adjacent Areas	Cropland and pastureland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately fallow cropland with drainage ditches/canals. Forested, herbaceous, and shrub marsh wetland areas are also present.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation
h.	**Local Government Future Land Use Designations**	Local government future land use for this site is Agriculture.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: Pending Florida Environmental Resources Permit (ERP) received: Pending Manatee County Approval: Pending

Preferred Site #19 Manatee Energy Storage Center, Manatee County

	Facility Acerage	**40**
	COD	**Q4 2021**
	For PV facilities: tracking or fixed	**N/A**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Utility power generation
	Adjacent Areas	Utility power generation and agricultural production
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation with few forested and herbaceous wetland areas.
2.	Listed Species	No adverse impacts are expected due to previous development and lack of suitable onsite habitat for listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 400MW, 2.5 hour Battery Storage facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation is Utilities, requiring modification to include Battery Storage.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Groundwater will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Central Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Battery Storage Process: Not Applicable for Battery Storage Potable: Minimal, existing permitted supply Panel Cleaning: Not applicable for Battery Storage
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Battery Storage Process: Not Applicable for Battery Storage Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Battery Storage does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Battery Storage does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - Battery Storage energy does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	Battery Storage energy does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: Not yet filed. Florida Environmental Resources Permit (ERP) received: Not yet filed. Manatee County PUD Zoning amendment: Pending

Preferred Site #20 Sunshine Gateway Energy Storage Center, Columbia County

	Facility Acerage	**30**
	COD	**Q4 2021**
	For PV facilities: tracking or fixed	**Fixed**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Agricultural production
	Adjacent Areas	Agricultural production and residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately agricultural with minimal forested wetlands and freshwater marshes.
2.	Listed Species	Listed species known to occur include gopher tortoise. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW of battery storage and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation includes agricultural production and power generation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for Battery Storage Process: Not applicable for Battery Storage Potable: Minimal, existing permitted supply Panel Cleaning: Not applicable for Battery Storage
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Battery Storage Process: Not Applicable for Battery Storage Potable and Panel Cleaning: Not applicable for Battery Storage
n.	**Water Conservation Strategies Under Consideration**	Battery Storage does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Battery Storage does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - Battery Storage energy does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	Battery Storage does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit expected: Q3 2020 Florida Environmental Resources Permit (ERP) Modification: expected Q3 2020 Suwannee County Development Approval: Expected April 2020

Preferred Site #21 Echo River Energy Storage Center, Suwannee County

	Facility Acerage	**5**
	COD	**Q4 2021**
	For PV facilities: tracking or fixed	**Tracker**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Pine plantation and pastureland
	Adjacent Areas	Pine plantation and pastureland
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is predominately pine plantation and pasture with forested and herbaceous wetland areas.
2.	Listed Species	Listed species known to occur include gopher tortoise. No adverse impacts are anticipated to listed species.
3.	Natural Resources of Regional Significance Status	Rocky Creek runs through the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW of battery storage and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Local government future land use designation includes agricultural production and power generation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not applicable for Battery Storage Process: Not applicable for Battery Storage Potable: Minimal, existing permitted supply Panel Cleaning: Not applicable for Battery Storage
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Battery Storage Process: Not Applicable for Battery Storage Potable and Panel Cleaning: Not applicable for Battery Storage
n.	**Water Conservation Strategies Under Consideration**	Battery Storage does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Battery Storage does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - Battery Storage energy does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	Battery Storage does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	Florida Environmental Resources Permit (ERP) modification expected April 2020 Suwannee County Development Approval: Expected April 2020

Preferred Site #22 Dania Beach Clean Energy Center Unit 7, Broward County

	Facility Acerage	**134**
	COD	**Q2 2022**
	For PV facilities: tracking or fixed	**N/A**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Electrical generating facilities
	Adjacent Areas	Low to high density urban, transportation, communication, utilities, commercial, water, and conservation
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	Site is comprised of facilities related to power generation.
2.	Listed Species	Listed species known to occur within the cooling pond at the site include the West Indian manatee. No adverse impacts are anticipated to listed species due to previous development.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The project includes dismantlement of existing Units 4 & 5 and replacement with one new approximately 1,163 MW combined cycle unit consisting of two combustion turbines (CTs), two heat recovery steam generators (HRSGs), and a steam turbine. The CTs will operate using natural gas and Ultra-Low Sulfur Distillate.
h.	**Local Government Future Land Use Designations**	The site is zoned General Industrial.
i.	**Site Selection Criteria Factors**	The Lauderdale Plant has been selected as a preferred site for a site modernization due to consideration of various factors including system load and economics. Environmental issues were not a deciding factor since this site does not exhibit significant environmental sensitivity or other environmental issues. However, there are environmental benefits of replacing the existing, outdated combined cycle units with a new highly efficient combined cycle unit, including a significant reduction in system air emissions. In addition, the modernization project at this existing site will not require a new gas pipeline and will make use of the existing transmission facilities and water supply.
j.	**Water Resources**	Condenser cooling for the steam cycle portion of the new combined cycle unit and auxiliary cooling will come from the existing cooling water intake system. Process and potable water for the new unit will come from the existing water supply sources (Broward County and City of Hollywood).
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: No additional water required. Process: No additional water required. Potable: No additional water required. Panel Cleaning: Not Applicable
m.	**Water Supply Sources by Type**	Cooling: As existing, Dania Cut-Off Canal Process: As existing, Broward County Utilities Potable: As existing, City of Hollywood
n.	**Water Conservation Strategies Under Consideration**	No additional water resources are required beyond current usage.
o.	**Water Discharges and Pollution Control**	Continued discharge to the existing cooling pond is anticipated. No increase in water discharge is expected. Best Management Practices will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Natural gas will be transported via an existing pipeline. ULSD will be trucked to the facility and stored in existing ULSD tanks.
q.	**Air Emissions and Control Systems**	Fuel - Use of cleaner natural gas and Ultra-Low Sulfur Distillate • Natural Gas - Dry-low NOx combustion technology and Selective Catalytic Reduction will control NOx emissions, Greenhouse gas emissions will be substantially lower than the Environmental Protection Agency's proposed new source performance standard. • ULSD - Water injection and selective catalytic reduction will be used to reduce NOx emissions Combustion Control - will minimize formation of sulfur dioxide, particulate matter, nitrogen oxides (NOx), and other fuel-bound contaminate Combustor Design - will limit formation of carbon monoxide and volatile organic compounds
r.	**Noise Emissions and Control Systems**	Noise from the operation of the new unit will be within allowable levels.
s	**Status of Applications**	Need Determination Issued: March 19, 2018 FL Site Certification Received: December 13, 2018 PSD Permit Received: December 4, 2017 USACE Section 404 Permit Received: January 7, 2019 IWW Received: December 3, 2018

Preferred Site #23 Turkey Point Unit 6&7, Miami-Dade County

	Facility Acerage	**N/A**
	COD	**TBD**
	For PV facilities: tracking or fixed	**N/A**
		Reference Maps
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.		**Existing Land Uses**
	Site	Electrical generating facilities
	Adjacent Areas	Undeveloped, the Everglades Mitigation Bank, South Florida Water Management District Canal L-31E, Biscayne Bay, and state-owned land on Card Sound
f.		**General Environment Features On and In the Site Vicinity**
1.	Natural Environment	The site includes hypersaline mud flats, man-made active cooling canals and remnant canals, previously filled areas / roadways, mangrove heads associated with historical tidal channels, dwarf mangroves, open water / discharge canal associated with the cooling canals on the western portion of the site, wet spoil berms associated with remnant canals, and upland spoil areas.
2.	Listed Species	Listed species known to occur at the site or associated linear features include the peregrine falcon, wood stork, American crocodile, roseate spoonbill, little blue heron, snowy egret, American oystercatcher, least tern, white ibis, Florida manatee, eastern indigo snake, snail kite, and white-crowned pigeon. Some listed flora species likely to occur include pine pink, Florida brickell-bush, Florida lantana, mullein nightshade, and Lamarck's trema. The construction and operation of Turkey Point Units 6 & 7 are not expected to adversely affect any listed species.
3.	Natural Resources of Regional Significance Status	Significant features in the vicinity of the site include Biscayne Bay, Biscayne National Park, Biscayne Bay Aquatic Preserve, Miami-Dade County Homestead Bayfront Park, and Everglades National Park.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The technology proposed is the Westinghouse AP1000 pressurized water reactor. This design is certified by the Nuclear Regulatory Commission under 10 CFR 52. The Westinghouse AP1000 consists of the reactor, steam generators, pressurizer, and steam turbine / electric generator. The projected generating capacity from each unit is 1,100 MW. Condenser cooling will use six circulating water cooling towers. The structures to be constructed include the containment building, shield building, auxiliary building, turbine building, annex building, diesel generator building, and radwaste building. The plant area will also contain the Clear Sky substation (switchyard) that will connect to FPL's transmission system.
h.	**Local Government Future Land Use Designations**	Current future land use designations include Industrial, Utilities, Communications, and Unlimited Manufacturing with a dual designation of Mangrove Protection Area. There are also areas of the site designated Interim District.
i.	**Site Selection Criteria Factors**	Site selection included the following criteria: existing transmission and transportation infrastructure to support new generation, the size and seclusion of the site while being relatively close to the load center, economics, and the long-standing record of safe and secure operation of nuclear generation at the site since the early 1970s.
j.	**Water Resources**	Water requirements will be met by reclaimed water from Miami-Dade County and a back-up supply of saline groundwater from below the marine environment of Biscayne Bay.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: 55.3 million gallons per day (mgd) Process: 1.3 mgd Potable: .05 mgd Panel Cleaning: Not Applicable
m.	**Water Supply Sources by Type**	Cooling: Miami-Dade reclaimed water and saline groundwater from Biscayne Bay via radial collector wells Process: Miami-Dade Water and Sewer Department Potable: Miami-Dade Water and Sewer Department
n.	**Water Conservation Strategies Under Consideration**	Turkey Point Units 6 & 7 will use reclaimed water 24 hours per day, 365 days per year when operating and when the reclaimed water is available in sufficient quantity and quality.
o.	**Water Discharges and Pollution Control**	Blowdown water or discharge from the cooling towers, along with other waste streams, will be injected into the boulder zone of the Floridan Aquifer. Non-point source discharges are not an issue since there will be none at this facility. Storm water runoff will be released to the closed-loop cooling canal system.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	The Turkey Point Units 6 & 7 reactors will contain enriched uranium fuel assemblies. New fuel assemblies will be transported to Turkey Point for use in Units 6 & 7 by truck from a fuel fabrication facility in accordance with U.S. Department of Transportation (DOT) and NRC regulations. Spent fuel assemblies being discharged will remain in the permitted spent fuel pool while short half-life isotopes decay. After a sufficient decay period, the fuel would be transferred to a permitted on-site independent spent fuel storage installation facility or a permitted off-site disposal facility. Packaging of the fuel for off-site shipment will comply with the applicable DOT and NRC regulations for transportation of radioactive material. The U.S. Department of Energy (DOE) is responsible for spent fuel transportation from reactor sites to a repository under the Nuclear Waste Policy Act of 1982, as amended. FPL has executed a standard spent nuclear fuel disposal contract with DOE for fuel used in Units 6 & 7.
q.	**Air Emissions and Control Systems**	Fuel - The units will minimize FPL system air pollutant emissions by using nuclear fuel to generate electric power. Combustion Control / Combustor Design - Not Applicable Note: The diesel engines necessary to support Turkey Point Units 6 & 7 and fire pump engines will be purchased from manufacturers whose engines meet the EPA's New Source Performance Standards Subpart IIII emission limits.
r.	**Noise Emissions and Control Systems**	Predicted noise levels associated with these projects are not expected to result in adverse noise impacts in the vicinity of the site.
s	**Status of Applications**	Need Determination Issued: April 2008 FL Site Certification Received: May 14, 2014 USACE Section 404 Permit: December 18, 2019 COL received: April 5, 2018 Miami-Dade County Unusual Use approvals: issued in 2007 and 2013 Land Use Consistency Determination: issued in 2013 Prevention of Significant Deterioration: issued in 2009

Preferred Site #24 Blue Springs Solar Energy Center, Jackson County

	Facility Acerage	**444**
	COD	**Q4 2020**
	For PV facilities: tracking or fixed	**Tracking**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Agricultural crops
	Adjacent Areas	Agricultural and low density residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is predominately cropland with few forested uplands and wetlands
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	0
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Solar power generation is allowed within existing Agricultural land use designation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter. The site is located in the South Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s	**Status of Applications**	USACE Section 404 Permit received: NA Florida Environmental Resources Permit (ERP) received: February 26, 2019

Preferred Site #25 Chautauqua Solar Energy Center, Walton County

	Facility Acerage	**868**
	COD	**Q4 2021**
	For PV facilities: tracking or fixed	**Tracking**
		Reference Maps
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.		**Existing Land Uses**
	Site	Agricultural crops and pastureland
	Adjacent Areas	Agricultural and low density residential
f.		**General Environment Features On and In the Site Vicinity**
1.	Natural Environment	Site is predominately agricultural with some forested uplands and wetlands.
2.	Listed Species	Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance status at or adjacent to the site.
4.	Other Significant Features	Gulf and FPL are not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes an approximately 74.5 solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	**Local Government Future Land Use Designations**	Solar power generation is allowed within existing Agricultural land use designation.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Existing onsite water resources will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	**Water Supply Sources by Type**	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	**Water Conservation Strategies Under Consideration**	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	**Water Discharges and Pollution Control**	Best Management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Solar does not require fuel and no waste products will be generated at the site.
q.	**Air Emissions and Control Systems**	Fuel - PV Solar energy generation does not use any type of combustion fuel, therefore there will be no air emissions or need for Control Systems. Combustion Control - Not Applicable Combustor Design - Not Applicable
r.	**Noise Emissions and Control Systems**	0
s	**Status of Applications**	USACE Permit received: NA Florida Environmental Resources Permit (ERP): pending, application filed

Preferred Site #26 Crist Unit 8, Escambia County

	Facility Acerage	**58**
	COD	**Q4 2021**
	For PV facilities: tracking or fixed	**N/A**
	Reference Maps	
a.	**USGS Map**	See Figures at the end of this chapter
b.	**Proposed Facilities Layout**	
c.	**Map of Site and Adjacent Areas**	
d.	**Land Use Map of site and Adjacent Areas**	
e.	**Existing Land Uses**	
	Site	Industrial (Electrical Generating Facility)
	Adjacent Areas	Public, Low & Medium Density Residential
f.	**General Environment Features On and In the Site Vicinity**	
1.	Natural Environment	The site is located in uplands within existing fenced plant property and consists of primarily of a pine and hardwood mix. The site has historically had silviculture operations.
2.	Listed Species	No adverse impacts to listed species are anticipated. However, Gopher Tortoise do occur in local area.
3.	Natural Resources of Regional Significance Status	Drainage from the site ultimately discharges into the Escambia river.
4.	Other Significant Features	Gulf is not aware of any other significant features of the site.
g.	**Design Features and Mitigation Options**	The design includes construction of four 235 MW combustion turbines, a switchyard, and associated wastewater and stormwater management systems. The site location has been selected in uplands with a significant buffer to any sensitive habitats. Final grading has been designed to match natural grades.
h.	**Local Government Future Land Use Designations**	The site is zoned General Industrial.
i.	**Site Selection Criteria Factors**	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	**Water Resources**	Groundwater will be used to meet water requirements.
k.	**Geological Features of Site and Adjacent Areas**	See Figure at the end of this Chapter site is located in the Panhandle Florida region.
l.	**Project Water Quantities for Various Uses**	NOx control: 1.95 MGD during fuel oil operations Process: 1.9 MGD Potable:0.01 MGD
m.	**Water Supply Sources by Type**	Process: Exiting permitted groundwater usage; Potable: Emerald Coast Utilities Authority
n.	**Water Conservation Strategies Under Consideration**	No additional water resources are required beyond currently permitted usage.
o.	**Water Discharges and Pollution Control**	The existing Plant Crist industrial wastewater treatment system will be utilized for the project. A new stormwater management system will be constructed to ensure the post development discharge rate is not greater than the predevelopment conditions. Best management Practices (BMPs) will be employed to prevent and control inadvertent release of pollutants.
p.	**Fuel Delivery, Storage, Waste Disposal, and Pollution Control**	Natural gas will be transported via a new pipeline. Ultra Low Sulfur Distillate (ULSD) will be trucked to the facility and stored in a new ULSD tank.
q.	**Air Emissions and Control Systems**	Fuel - Use of cleaner natural gas and Ultra-Low Sulfur Distillate • Natural Gas - Dry-low NOx combustion technology will control NOx emissions, Greenhouse gas emissions will be substantially lower than the Environmental Protection Agency's proposed new source performance standard. • ULSD - Water injection will be used to reduce NOx emissions Combustion Control - will minimize formation of sulfur dioxide, particulate matter, nitrogen oxides (NOx), and other fuel-bound contaminate Combustor Design - will limit formation of carbon monoxide and volatile organic compounds
r.	**Noise Emissions and Control Systems**	Noise from the operation of the new unit will be within allowable levels.
s	**Status of Applications**	USACE Jurisdictional Determination Received: September 20, 2019 ERP Permit Received: October 14, 2019 UIC Permit Received: October 25, 2019 PSD Permit Received: February 5, 2020 IWW Permit Revision: In Progress

IV.G.2 Potential Sites

There are 13 Potential Sites that have currently been identified for future generation and storage additions to meet projected capacity and energy needs.[15] Each of these Potential Sites offers a range of considerations relative to engineering and/or costs associated with the construction and operation of feasible technologies. In addition, each Potential Site has different characteristics that would require further definition and attention. Unless otherwise noted, the water quantities discussed below are in reference to universal solar PV generation rather than for gas-fueled generation.

Permits are presently considered to be obtainable for each of these sites. No significant environmental constraints are currently known for any of these sites. At this time, FPL and Gulf consider each site to be equally viable. The Potential Sites briefly discussed below are presented in alphabetical order of Site name for those in FPL's area and by name of County for those in Gulf's area.

Table IV.G.2: List of FPL & Gulf Potential Sites

Site Name	County	Technology
FPL Area		
Elder Branch	Manatee	Solar
Everglades	Miami-Dade	Solar
Ghost Orchid	Hendry	Solar
Sawgrass	Hendry	Solar
Sundew	St Lucie	Solar
White Tail	Martin	Solar
Gulf Area		
TBD	Calhoun	Solar
TBD	Calhoun	Solar
TBD	Escambia	Solar
TBD	Gadsden	Solar
TBD	Jackson	Solar
TBD	Okaloosa	Solar
TBD	Santa Rosa	Solar

[11] As has been described in previous FPL Site Plans, a number of other locations are also possible sites for future generation additions. These include the remainder of FPL's and Gulf's existing generation sites and other greenfield sites. Specific greenfield sites may not be specifically identified as Potential Sites in order to protect the economic interests of the utility and its customers.

FPL Area Potential Site # 1: Elder Branch

This potential site in Manatee County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily fallow crop land surrounded by agricultural land, low density residential, and conservation lands.

c. Environmental Features

Site is predominately fallow cropland with some forested wetland. Site is located adjacent to publicly owned conservation lands. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

FPL Area Potential Site # 2: Everglades

This potential site in Miami-Dade County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily agricultural land surrounded by other agricultural lands.

c. Environmental Features

Site is agricultural land with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

FPL Area Potential Site # 3: Ghost Orchid

This potential site in Hendry County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Existing land use is primarily agricultural and surrounded by predominately agricultural and low density residential.

c. Environmental Features

Site is predominately agricultural with some forested wetlands with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

FPL Area Potential Site # 4: Sawgrass

This potential site in Hendry County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pastureland and surrounded by agricultural lands and forested wetlands.

c. Environmental Features

Site is predominately pastureland with a mosaic of forested wetlands throughout the site. Subject property is located almost entirely within the primary panther zone. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

FPL Area Potential Site # 5: Sundew

This potential site in St. Lucie County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily Improved pasture and fallow citrus groves surrounded by agricultural lands.

c. Environmental Features

Site is improved pasture and fallow citrus with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

FPL Area Potential Site # 6: White Tail

This potential site in Martin County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is predominately fallow cropland surrounded by agricultural lands.

c. Environmental Features

Site is mostly fallow cropland with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 1: Calhoun County

A potential site in Calhoun County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation surrounded by pine plantation and low density residential.

c. Environmental Features

Site is predominately pine plantation with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 2: Calhoun County

Another potential site in Calhoun County is also under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation and pastureland surrounded by agricultural land and low density residential.

c. Environmental Features

Site is predominately agricultural with some forested uplands and wetlands and no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 3: Escambia County

A potential site in Escambia County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation surrounded by other pine plantations and pastureland.

c. Environmental Features

Site is predominately pine plantation with forested wetlands and no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 4: Gadsden County

A potential site in Gadsden County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation surrounded by pine plantation and forested wetlands.

c. Environmental Features

Site is predominately pine plantation with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 5: Jackson County

A potential site in Jackson County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site primarily pine plantation surrounded by pastureland and low density residential.

c. Environmental Features

Site is predominately pine plantation with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 6: Okaloosa County

A potential site in Okaloosa County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation with some pastureland and is surrounded by agricultural lands and low density residential.

c. Environmental Features

Site is predominately pine plantation with forested uplands and some pastureland with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.
Process: Not Applicable for PV.
Potable: Minimal for PV.
Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.
Process: Not Applicable for PV.
Potable: Not Applicable for PV.
Panel Cleaning: Trucked in if and when needed for PV.

Gulf Area Potential Site # 7: Santa Rosa County

A potential site in Santa Rosa County is under evaluation for future PV.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Existing Land Uses of Site and Adjacent Areas

Site is primarily pine plantation surrounded by pine plantations and low density residential.

c. Environmental Features

Site is predominately pine plantation with no significant environmental features on or nearby this site. No adverse impacts to listed species are anticipated.

d. Water Quantities Required

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Minimal for PV.

Panel Cleaning: Minimal for PV and only needed in the absence of sufficient rainfall.

e. Supply Sources

Cooling: Not Applicable for PV.

Process: Not Applicable for PV.

Potable: Not Applicable for PV.

Panel Cleaning: Trucked in if and when needed for PV.

Duke Energy Florida, LLC
Ten-Year Site Plan

April 2020

2020-2029

Submitted to:
Florida Public Service Commission

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LIST OF REQUIRED SCHEDULES

LIST OF
TABLES AND FIGURES

CODE IDENTIFICATION SHEET

Generating Unit Type

ST - Steam Turbine - Non-Nuclear
NP - Steam Power - Nuclear
GT - Gas Turbine
CT - Combustion Turbine
CC - Combined Cycle
SPP - Small Power Producer
COG - Cogeneration Facility
PV - Photovoltaic

Fuel Type

NUC - Nuclear (Uranium)
NG - Natural Gas
RFO - No. 6 Residual Fuel Oil
DFO - No. 2 Distillate Fuel Oil
BIT - Bituminous Coal
MSW - Municipal Solid Waste
WH - Waste Heat
BIO – Biomass
SO – Solar PV

Fuel Transportation

WA - Water
TK - Truck
RR - Railroad
PL - Pipeline
UN - Unknown

Future Generating Unit Status

A - Generating unit capability increased
D – Generating unit capability decreased
FC - Existing generator planned for conversion to another fuel or energy source
P - Planned for installation but not authorized; not under construction
RP - Proposed for repowering or life extension
RT - Existing generator scheduled for retirement
T - Regulatory approval received but not under construction
U - Under construction, less than or equal to 50% complete
V - Under construction, more than 50% complete

INTRODUCTION

Section 186.801 of the Florida Statutes requires electric generating utilities to submit a Ten-Year Site Plan (TYSP) to the Florida Public Service Commission (FPSC). The TYSP includes historical and projected data pertaining to the utility's load and resource needs as well as a review of those needs. Duke Energy Florida, LLC's (DEF)'s TYSP is compiled in accordance with FPSC Rules 25-22.070 through 22.072, Florida Administrative Code.

DEF's TYSP is based on the projections of long-term planning requirements that are dynamic in nature and subject to change. These planning documents should be used for general guidance concerning DEF's planning assumptions and projections, and should not be taken as an assurance that particular events discussed in the TYSP will materialize or that particular plans will be implemented. Information and projections pertinent to periods further out in time are inherently subject to greater uncertainty.

This TYSP document contains four chapters as indicated below:

- **CHAPTER 1 - DESCRIPTION OF EXISTING FACILITIES**

  This chapter provides an overview of DEF's generating resources as well as the transmission and distribution system.
- **CHAPTER 2 - FORECAST OF ELECTRICAL POWER DEMAND AND ENERGY CONSUMPTION**

  Chapter 2 presents the history and forecast for load and peak demand as well as the forecast methodology used. Demand-Side Management (DSM) savings and fuel requirement projections are also included.
- **CHAPTER 3 - FORECAST OF FACILITIES REQUIREMENTS**

  The resource planning forecast, transmission planning forecast as well as the proposed generating facilities and bulk transmission line additions status are discussed in Chapter 3.
- **CHAPTER 4 - ENVIRONMENTAL AND LAND USE INFORMATION**

  Preferred and potential site locations along with any environmental and land use information are presented in this chapter.

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CHAPTER 1

DESCRIPTION OF EXISTING FACILITIES

CHAPTER 1

DESCRIPTION OF EXISTING FACILITIES

EXISTING FACILITIES OVERVIEW

OWNERSHIP

Duke Energy Florida, LLC (DEF or the Company) is a wholly owned subsidiary of Duke Energy Corporation (Duke Energy).

AREA OF SERVICE

DEF has an obligation to serve approximately 1.83 million customers in Florida. Its service area covers approximately 20,000 square miles in west central Florida and includes the densely populated areas around Orlando, as well as the cities of Saint Petersburg and Clearwater. DEF is interconnected with 21 municipal and nine rural electric cooperative systems who serve additional customers in Florida. DEF is subject to the rules and regulations of the Federal Energy Regulatory Commission (FERC), the Nuclear Regulatory Commission (NRC), and the FPSC. DEF's Service Area is shown in Figure 1.1.

TRANSMISSION/DISTRIBUTION

The Company is part of a nationwide interconnected power network that enables power to be exchanged between utilities. The DEF transmission system includes approximately 5,200 circuit miles of transmission lines. The distribution system includes approximately 18,000 circuit miles of overhead distribution conductors and approximately 14,000 circuit miles of underground distribution cable.

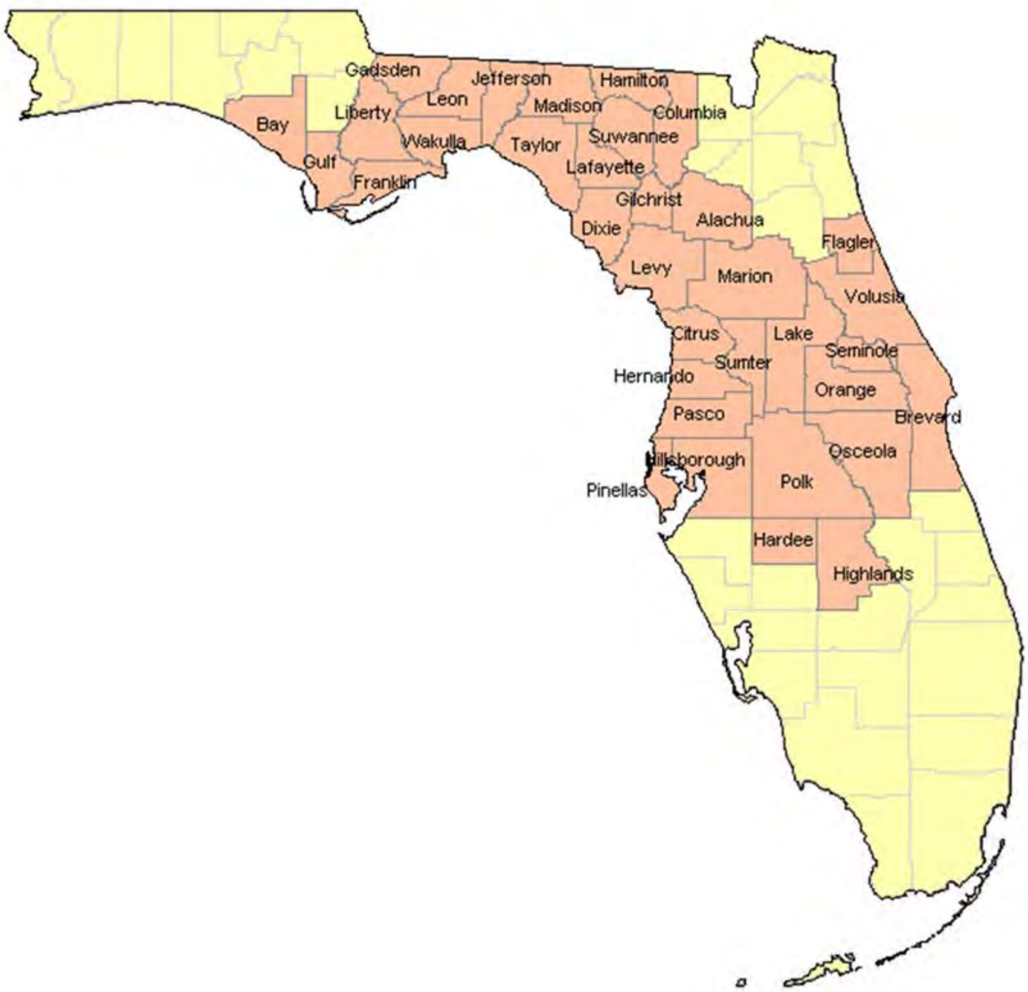
ENERGY MANAGEMENT and ENERGY EFFICIENCY

The Company's residential Energy Management program represents a demand response type of program where participating customers help manage future growth and costs. Approximately 439,000 customers participated in the residential Energy Management program during 2019, contributing about 711 MW of winter peak-shaving capacity for use during high load periods. DEF's currently approved DSM programs consist of five residential programs, six commercial and industrial programs and one research and development program.

TOTAL CAPACITY RESOURCE

As of December 31, 2019, DEF had total summer capacity resources of 11,858 MW consisting of installed capacity of 9,902 MW and 1,956 MW of firm purchased power. Additional information on DEF's existing generating resources can be found in Schedule 1 and Table 3.1 (Chapter 3).

FIGURE 1.1
DUKE ENERGY FLORIDA
County Service Area Map



DUKE ENERGY FLORIDA

SCHEDULE 1
EXISTING GENERATING FACILITIES

AS OF DECEMBER 31, 2019

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
									COM'L IN-	EXPECTED	GEN. MAX.	NET CAPABILITY	
	UNIT	LOCATION	UNIT	FUEL		FUEL TRANSPORT		ALT. FUEL	SERVICE	RETIREMENT	NAMEPLATE	SUMMER	WINTER
PLANT NAME	NO.	(COUNTY)	TYPE	PRI.	ALT.	PRI.	ALT.	DAYS USE	MO./YEAR	MO./YEAR	KW	MW	MW
STEAM													
ANCLOTE	1	PASCO	ST	NG		PL			10/74		556,200	498	511
ANCLOTE	2	PASCO	ST	NG		PL			10/78		556,200	505	514
CRYSTAL RIVER	4	CITRUS	ST	BIT		WA	RR		12/82		739,260	712	721
CRYSTAL RIVER	5	CITRUS	ST	BIT		WA	RR		10/84		739,260	710	721
											Steam Total	**2,425**	**2,467**
COMBINED-CYCLE													
P L BARTOW	4	PINELLAS	CC	NG	DFO	PL	TK	*	6/09		1,254,200	1,144	1,227
CITRUS COUNTY COMBINED CYCLE	PB1	CITRUS	CC	NG		PL			10/18		985,150	816	931
CITRUS COUNTY COMBINED CYCLE	PB2	CITRUS	CC	NG		PL			11/18		985,150	816	931
HINES ENERGY COMPLEX	1	POLK	CC	NG		PL			4/99		546,500	490	528
HINES ENERGY COMPLEX	2	POLK	CC	NG	DFO	PL	TK	*	12/03		548,250	524	563
HINES ENERGY COMPLEX	3	POLK	CC	NG	DFO	PL	TK	*	11/05		561,000	515	553
HINES ENERGY COMPLEX	4	POLK	CC	NG	DFO	PL	TK	*	12/07		610,500	516	544
OSPREY ENERGY CENTER POWER PLANT	1	POLK	CC	NG		PL			5/04		644,300	245	245
TIGER BAY	1	POLK	CC	NG		PL			8/97		278,100	200	231
											CC Total	**5,266**	**5,753**
COMBUSTION TURBINE													
AVON PARK	P1	HIGHLANDS	GT	NG	DFO	PL	TK	*	12/68	10/2020 **	33,750	24	25
AVON PARK	P2	HIGHLANDS	GT	DFO		TK		*	12/68	10/2020 **	33,750	24	25
BARTOW	P1	PINELLAS	GT	DFO		WA		*	5/72	6/2027 **	55,400	41	52
BARTOW	P2	PINELLAS	GT	NG	DFO	PL	WA	*	6/72		55,400	41	57
BARTOW	P3	PINELLAS	GT	DFO		WA		*	6/72	6/2027 **	55,400	41	53
BARTOW	P4	PINELLAS	GT	NG	DFO	PL	WA	*	6/72		55,400	45	61
BAYBORO	P1	PINELLAS	GT	DFO		WA		*	4/73	12/2025 **	56,700	44	61
BAYBORO	P2	PINELLAS	GT	DFO		WA		*	4/73	12/2025 **	56,700	41	58
BAYBORO	P3	PINELLAS	GT	DFO		WA		*	4/73	12/2025 **	56,700	43	60
BAYBORO	P4	PINELLAS	GT	DFO		WA		*	4/73	12/2025 **	56,700	43	59
DEBARY	P2	VOLUSIA	GT	DFO		TK		*	12/75-4/76	6/2027 **	73,440	48	64
DEBARY	P3	VOLUSIA	GT	DFO		TK		*	12/75-4/76	6/2027 **	73,440	50	65
DEBARY	P4	VOLUSIA	GT	DFO		TK		*	12/75-4/76	6/2027 **	73,440	50	65
DEBARY	P5	VOLUSIA	GT	DFO		TK		*	12/75-4/76	6/2027 **	73,440	50	65
DEBARY	P6	VOLUSIA	GT	DFO		TK		*	12/75-4/76	6/2027 **	73,440	51	65
DEBARY	P7	VOLUSIA	GT	NG	DFO	PL	TK	*	10/92		103,500	79	99
DEBARY	P8	VOLUSIA	GT	NG	DFO	PL	TK	*	10/92		103,500	78	96
DEBARY	P9	VOLUSIA	GT	NG	DFO	PL	TK	*	10/92		103,500	80	98
DEBARY	P10	VOLUSIA	GT	DFO		TK		*	10/92		103,500	75	95
INTERCESSION CITY	P1	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	47	64
INTERCESSION CITY	P2	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	46	63
INTERCESSION CITY	P3	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	46	63
INTERCESSION CITY	P4	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	46	63
INTERCESSION CITY	P5	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	45	62
INTERCESSION CITY	P6	OSCEOLA	GT	DFO		PL,TK		*	5/74		56,700	47	64
INTERCESSION CITY	P7	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	10/93		103,500	78	95
INTERCESSION CITY	P8	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	10/93		103,500	79	96
INTERCESSION CITY	P9	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	10/93		103,500	79	96
INTERCESSION CITY	P10	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	10/93		103,500	78	96
INTERCESSION CITY	P11	OSCEOLA	GT	DFO		PL,TK		*	1/97		148,500	140	161
INTERCESSION CITY	P12	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	12/00		98,260	73	94
INTERCESSION CITY	P13	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	12/00		98,260	75	93
INTERCESSION CITY	P14	OSCEOLA	GT	NG	DFO	PL	PL,TK	*	12/00		98,260	72	92
SUWANNEE RIVER	P1	SUWANNEE	GT	NG	DFO	PL	TK	*	10/80		65,999	49	68
SUWANNEE RIVER	P2	SUWANNEE	GT	DFO		TK		*	10/80		65,999	50	67
SUWANNEE RIVER	P3	SUWANNEE	GT	NG	DFO	PL	TK	*	11/80		65,999	50	68
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	NG		PL			1/94	11/2027 **	43,000	44	46
											CT Total	**2,092**	**2,674**
SOLAR													
OSCEOLA SOLAR FACILITY	PV1	OSCEOLA	PV	SO					5/16		3,800	2	0
PERRY SOLAR FACILITY	PV1	TAYLOR	PV	SO					8/16		5,100	2	0
SUWANNEE RIVER SOLAR FACILITY	PV1	SUWANNEE	PV	SO					11/17		8,800	4	0
HAMILTON SOLAR FACILITY	PV1	HAMILTON	PV	SO					12/18		74,900	42	0
TRENTON SOLAR FACILITY	PV1	GILCHRIST	PV	SO					12/19		74,900	43	0
LAKE PLACID	PV1	HIGHLANDS	PV	SO					12/19		45,000	26	0
ST PETERSBURG	PV1	PINELLAS	PV	SO					12/19		350	0.2	0
											SOLAR Total	**119**	**0**
											TOTAL RESOURCES (MW)	**9,902**	**10,894**

* APPROXIMATELY 2 TO 3 DAYS OF OIL USE TYPICALLY TARGETED FOR ENTIRE PLANT.
** DATES FOR RETIREMENT ARE APPROXIMATE AND SUBJECT TO CHANGE

CHAPTER 2

FORECAST OF ELECTRIC POWER DEMAND AND ENERGY CONSUMPTION

CHAPTER 2

FORECAST OF ELECTRIC POWER DEMAND AND ENERGY CONSUMPTION

OVERVIEW

The information presented in Schedules 2, 3, and 4 represents DEF's history and forecast of customers, energy sales (GWh), and peak demand (MW). In general, this discussion refers to DEF's base forecast. Economic data from 2019 reflected a national economy continuing and surpassing the record for longest expansion in U.S. history albeit with modest to slow overall growth. Growth in 2019 slowed compared to 2018 due to fading effects from the tax cuts, a weakening global economy, and disruptions from international trade policy. The 2019 performance was somewhat buoyed by the Federal Reserve decision to defer proposed increases to interest rates during the year.

The 2020 outlook calls for slower U.S. economic growth as the trends of 2019 continue. Looking ahead, the projections incorporated in this site plan forecast a moderation of growth rates in population and economic activity within the U.S. and DEF service territory as assumed in the Moody's Analytics July 2019 projection. DEF continues to provide alternate "high" and "low" forecasts for energy and demand growth, recognizing that the current economic expansion may continue to accelerate or could unwind due to an unexpected economic imbalance or Global political event.

Over the course of the ten years of history in this Site Plan (2010-2019), the nation and the State of Florida have endured the worst economic downturn in eighty years and have emerged to set the record for longest economic recovery. Economic measures appear to have returned to normal pre-crisis levels for both the U.S. and Florida economies. A strong recovery has taken place in the past few years and the Florida economy can be expected to experience more normal rates of growth as the current economic expansion nears full employment. More business investment and increased productivity will be required to hold off rising inflation and higher interest rates. The Federal Reserve will have its work cut out maintaining this balance. County population growth rate projections from the University of Florida's Bureau of Economic and Business Research (BEBR) were incorporated into this projection. The DEF service area population has been estimated to have grown at an average ten-year growth of 1.22% from 2010 – 2019 (Schedule 2.1.1 Column 2). Demographic conditions going forward look amenable to sustaining a level of growth closer to 1.25% over the 2020-2029 period. The rate of residential customer growth, which averaged 1.27% per year over the historical ten-year period, is expected to improve to an average of 1.43% for the projected ten years. A projected decline in average household size will result in a higher rate of household growth. By looking at Schedule 2.3.1 Column 6, we find that total DEF customers grew from 1.641 million in 2010 to 1.833 million in 2019, an increase of 192,052 or 1.24% annual growth rate. The projected number of total customers between 2020 and 2029 is 246,321 or 1.39% annual growth rate. The DEF service area projected ten-year average population growth is expected to remain elevated from the previous 10 years mainly due to the large baby-boom age cohort retiring to sunny Florida.

From 2010 to 2019 net energy for load (NEL) declined by -0.33% (Schedule 2.3.1 Column 4), primarily due to terminated contracts in the Sales for Resale or Wholesale jurisdiction (Schedule 2.3.1 Column 2). Historically, the 2019 Sales for Resale value has fallen 583 GWh from its 2010 level. The level of Wholesale NEL over the ten-year forecast is projected to decline an additional 2,012 GWh from the 2019 level. This decline is offset by a projected increase in the much larger retail energy sector which is projected to grow 7.8% over the next decade.

During the 2010 to 2019 historical period the DEF summer net firm demand (Schedule 3.1 Column 10) increased from 8,929 MW to 9,260 MW, an average annual ten-year increase of 0.4% per year. Warm summer temperatures drove both Retail and Wholesale demand levels significantly higher than prior year (Columns 3 and 4). The -2.4% average ten-year decline in DEF wholesale load sector reflects the long-term reduction in Sales for Resale contracts. The projected total DEF summer net firm demand declines by an average annual -9.5 MW or -0.1% per year over the ten-year horizon due to continued projected declines in wholesale peak demand.

ENERGY CONSUMPTION AND DEMAND FORECAST SCHEDULES

The below schedules have been provided to represent DEF's expectations for a Base Case as well as reasonable High and Low forecast scenarios for resource planning purposes. (Base-B, High-H and Low-L):

SCHEDULE	DESCRIPTION
2.1, 2.2 and 2.3	History and Forecast of Energy Consumption and Number of Customers by Customer Class (B, H and L)
3.1	History and Forecast of Base Summer Peak Demand (MW) (B, H and L)
3.2	History and Forecast of Base Winter Peak Demand (MW) (B, H and L)
3.3	History and Forecast of Base Annual Net Energy for Load (GWh) (B, H and L)
4	Previous Year Actual and Two-Year Forecast of Peak Demand and Net Energy for Load by Month (B, H and L)

DUKE ENERGY FLORIDA

SCHEDULE 2.1.1
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
BASE CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RURAL AND RESIDENTIAL					COMMERCIAL		
YEAR	DEF POPULATION	MEMBERS PER HOUSEHOLD	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER
HISTORY:								
2010	3,621,407	2.495	20,524	1,451,466	14,140	11,896	161,674	73,579
2011	3,625,558	2.496	19,238	1,452,454	13,245	11,892	162,071	73,374
2012	3,641,179	2.496	18,251	1,458,690	12,512	11,723	163,297	71,792
2013	3,713,013	2.495	18,508	1,488,159	12,437	11,718	165,936	70,617
2014	3,747,160	2.492	19,003	1,503,758	12,637	11,789	167,253	70,485
2015	3,794,138	2.489	19,932	1,524,605	13,074	12,070	169,147	71,359
2016	3,837,436	2.485	20,265	1,543,967	13,126	12,094	170,999	70,724
2017	3,906,975	2.483	19,791	1,573,260	12,579	11,918	173,695	68,612
2018	3,968,241	2.485	20,636	1,597,132	12,920	12,172	175,848	69,216
2019	4,040,257	2.485	20,775	1,626,117	12,776	12,198	178,036	68,514
FORECAST:								
2020	4,084,807	2.479	20,771	1,647,764	12,605	12,157	180,059	67,517
2021	4,143,110	2.478	20,954	1,671,957	12,533	12,247	182,170	67,228
2022	4,199,107	2.475	21,062	1,696,746	12,413	12,311	184,489	66,730
2023	4,253,915	2.470	21,223	1,722,233	12,323	12,381	186,886	66,246
2024	4,310,646	2.466	21,315	1,748,031	12,194	12,436	189,181	65,736
2025	4,365,966	2.461	21,624	1,774,062	12,189	12,610	191,393	65,885
2026	4,416,028	2.454	21,637	1,799,522	12,024	12,588	193,571	65,029
2027	4,467,149	2.448	21,894	1,824,816	11,998	12,646	195,729	64,608
2028	4,517,624	2.443	22,334	1,849,212	12,077	12,819	197,818	64,801
2029	4,567,233	2.439	22,604	1,872,584	12,071	12,872	199,843	64,410

DUKE ENERGY FLORIDA

SCHEDULE 2.1.2
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
HIGH CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RURAL AND RESIDENTIAL					COMMERCIAL		
YEAR	DEF POPULATION	MEMBERS PER HOUSEHOLD	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER
HISTORY:								
2010	3,621,407	2.495	20,524	1,451,466	14,140	11,896	161,674	73,579
2011	3,625,558	2.496	19,238	1,452,454	13,245	11,892	162,071	73,374
2012	3,641,179	2.496	18,251	1,458,690	12,512	11,723	163,297	71,792
2013	3,713,013	2.495	18,508	1,488,159	12,437	11,718	165,936	70,617
2014	3,747,160	2.492	19,003	1,503,758	12,637	11,789	167,253	70,485
2015	3,794,138	2.489	19,932	1,524,605	13,074	12,070	169,147	71,359
2016	3,837,436	2.485	20,265	1,543,967	13,126	12,094	170,999	70,724
2017	3,906,975	2.483	19,791	1,573,260	12,579	11,918	173,695	68,612
2018	3,968,241	2.485	20,636	1,597,132	12,920	12,172	175,848	69,216
2019	4,040,257	2.485	20,775	1,626,117	12,776	12,198	178,036	68,514
FORECAST:								
2020	4,101,544	2.479	23,969	1,654,516	14,487	12,586	180,469	69,739
2021	4,177,878	2.478	24,340	1,685,988	14,437	12,749	183,021	69,660
2022	4,252,527	2.475	24,661	1,718,331	14,352	12,887	185,799	69,362
2023	4,326,593	2.470	25,026	1,751,657	14,287	13,032	188,671	69,074
2024	4,403,208	2.466	25,357	1,785,567	14,201	13,164	191,459	68,754
2025	4,478,985	2.461	25,837	1,819,986	14,196	13,411	194,180	69,066
2026	4,550,009	2.454	26,111	1,854,119	14,083	13,469	196,884	68,410
2027	4,622,629	2.448	26,599	1,888,329	14,086	13,606	199,582	68,172
2028	4,695,106	2.443	27,260	1,921,861	14,184	13,856	202,226	68,518
2029	4,767,214	2.439	27,767	1,954,577	14,206	13,995	204,818	68,329

DUKE ENERGY FLORIDA

SCHEDULE 2.1.3
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	RURAL AND RESIDENTIAL					COMMERCIAL		
YEAR	DEF POPULATION	MEMBERS PER HOUSEHOLD	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER
HISTORY:								
2010	3,621,407	2.495	20,524	1,451,466	14,140	11,896	161,674	73,579
2011	3,625,558	2.496	19,238	1,452,454	13,245	11,892	162,071	73,374
2012	3,641,179	2.496	18,251	1,458,690	12,512	11,723	163,297	71,792
2013	3,713,013	2.495	18,508	1,488,159	12,437	11,718	165,936	70,617
2014	3,747,160	2.492	19,003	1,503,758	12,637	11,789	167,253	70,485
2015	3,794,138	2.489	19,932	1,524,605	13,074	12,070	169,147	71,359
2016	3,837,436	2.485	20,265	1,543,967	13,126	12,094	170,999	70,724
2017	3,906,975	2.483	19,791	1,573,260	12,579	11,918	173,695	68,612
2018	3,968,241	2.485	20,636	1,597,132	12,920	12,172	175,848	69,216
2019	4,040,257	2.485	20,775	1,626,117	12,776	12,198	178,036	68,514
FORECAST:								
2020	4,068,085	2.479	18,740	1,641,018	11,420	11,624	179,650	64,704
2021	4,108,503	2.478	18,752	1,657,991	11,310	11,645	181,323	64,223
2022	4,146,147	2.475	18,712	1,675,346	11,169	11,641	183,191	63,545
2023	4,182,158	2.470	18,715	1,693,182	11,053	11,641	185,123	62,880
2024	4,219,638	2.466	18,674	1,711,126	10,913	11,631	186,942	62,220
2025	4,255,310	2.461	18,762	1,729,098	10,850	11,729	188,665	62,167
2026	4,285,397	2.454	18,652	1,746,291	10,681	11,647	190,341	61,191
2027	4,316,194	2.448	18,738	1,763,151	10,628	11,635	191,987	60,601
2028	4,346,033	2.443	18,981	1,778,974	10,670	11,726	193,556	60,581
2029	4,374,704	2.439	19,075	1,793,647	10,635	11,709	195,053	60,030

DUKE ENERGY FLORIDA

SCHEDULE 2.2.1
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
BASE CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	INDUSTRIAL						
YEAR	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	RAILROADS AND RAILWAYS GWh	STREET & HIGHWAY LIGHTING GWh	OTHER SALES TO PUBLIC AUTHORITIES GWh	TOTAL SALES TO ULTIMATE CONSUMERS GWh
HISTORY:							
2010	3,219	2,481	1,297,461	0	26	3,260	38,925
2011	3,243	2,408	1,346,761	0	25	3,200	37,598
2012	3,160	2,372	1,332,209	0	25	3,221	36,381
2013	3,206	2,343	1,368,331	0	25	3,159	36,616
2014	3,267	2,280	1,432,895	0	25	3,157	37,240
2015	3,293	2,243	1,468,123	0	24	3,234	38,553
2016	3,197	2,178	1,467,860	0	24	3,194	38,774
2017	3,120	2,137	1,459,991	0	24	3,171	38,023
2018	3,107	2,080	1,493,750	0	24	3,206	39,144
2019	2,963	2,025	1,463,210	0	24	3,227	39,187
FORECAST:							
2020	3,224	2,002	1,610,381	0	24	3,222	39,397
2021	3,410	2,000	1,704,798	0	24	3,223	39,857
2022	3,599	2,000	1,799,406	0	23	3,233	40,228
2023	3,642	2,000	1,821,147	0	23	3,245	40,513
2024	3,672	2,000	1,835,899	0	23	3,257	40,704
2025	3,677	2,000	1,838,469	0	23	3,272	41,206
2026	3,656	2,000	1,828,095	0	23	3,284	41,188
2027	3,652	2,000	1,825,783	0	23	3,299	41,513
2028	3,661	2,000	1,830,546	0	22	3,316	42,152
2029	3,650	2,000	1,824,774	0	22	3,334	42,481

DUKE ENERGY FLORIDA

SCHEDULE 2.2.2
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
HIGH CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	INDUSTRIAL						
YEAR	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	RAILROADS AND RAILWAYS GWh	STREET & HIGHWAY LIGHTING GWh	OTHER SALES TO PUBLIC AUTHORITIES GWh	TOTAL SALES TO ULTIMATE CONSUMERS GWh
HISTORY:							
2010	3,219	2,481	1,297,461	0	26	3,260	38,925
2011	3,243	2,408	1,346,761	0	25	3,200	37,598
2012	3,160	2,372	1,332,209	0	25	3,221	36,381
2013	3,206	2,343	1,368,331	0	25	3,159	36,616
2014	3,267	2,280	1,432,895	0	25	3,157	37,240
2015	3,293	2,243	1,468,123	0	24	3,234	38,553
2016	3,197	2,178	1,467,860	0	24	3,194	38,774
2017	3,120	2,137	1,459,991	0	24	3,171	38,023
2018	3,107	2,080	1,493,750	0	24	3,206	39,144
2019	2,963	2,025	1,463,210	0	24	3,227	39,187
FORECAST:							
2020	3,250	2,002	1,623,678	0	24	3,323	43,151
2021	3,444	2,000	1,722,135	0	24	3,334	43,891
2022	3,641	2,000	1,820,690	0	23	3,354	44,567
2023	3,693	2,000	1,846,332	0	23	3,376	45,151
2024	3,730	2,000	1,864,938	0	23	3,400	45,673
2025	3,742	2,000	1,871,222	0	23	3,424	46,437
2026	3,730	2,000	1,864,758	0	23	3,449	46,781
2027	3,732	2,000	1,866,195	0	23	3,475	47,436
2028	3,748	2,000	1,874,112	0	22	3,503	48,389
2029	3,744	2,000	1,872,139	0	22	3,533	49,061

DUKE ENERGY FLORIDA

SCHEDULE 2.2.3
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	INDUSTRIAL						
YEAR	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	RAILROADS AND RAILWAYS GWh	STREET & HIGHWAY LIGHTING GWh	OTHER SALES TO PUBLIC AUTHORITIES GWh	TOTAL SALES TO ULTIMATE CONSUMERS GWh
HISTORY:							
2010	3,219	2,481	1,297,461	0	26	3,260	38,925
2011	3,243	2,408	1,346,761	0	25	3,200	37,598
2012	3,160	2,372	1,332,209	0	25	3,221	36,381
2013	3,206	2,343	1,368,331	0	25	3,159	36,616
2014	3,267	2,280	1,432,895	0	25	3,157	37,240
2015	3,293	2,243	1,468,123	0	24	3,234	38,553
2016	3,197	2,178	1,467,860	0	24	3,194	38,774
2017	3,120	2,137	1,459,991	0	24	3,171	38,023
2018	3,107	2,080	1,493,750	0	24	3,206	39,144
2019	2,963	2,025	1,463,210	0	24	3,227	39,187
FORECAST:							
2020	3,188	2,002	1,592,766	0	24	3,103	36,679
2021	3,366	2,000	1,683,241	0	24	3,094	36,881
2022	3,548	2,000	1,774,201	0	23	3,094	37,019
2023	3,585	2,000	1,792,416	0	23	3,095	37,060
2024	3,608	2,000	1,803,884	0	23	3,098	37,034
2025	3,606	2,000	1,803,115	0	23	3,101	37,221
2026	3,580	2,000	1,789,822	0	23	3,105	37,007
2027	3,569	2,000	1,784,554	0	23	3,109	37,074
2028	3,573	2,000	1,786,306	0	22	3,114	37,416
2029	3,556	2,000	1,777,902	0	22	3,121	37,483

DUKE ENERGY FLORIDA

SCHEDULE 2.3.1
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
BASE CASE FORECAST

(1) YEAR	(2) SALES FOR RESALE GWh	(3) UTILITY USE & LOSSES GWh	(4) NET ENERGY FOR LOAD GWh	(5) OTHER CUSTOMERS (AVERAGE NO.)	(6) TOTAL NO. OF CUSTOMERS
HISTORY:					
2010	3,493	3,742	46,160	25,212	1,640,833
2011	2,712	2,180	42,490	25,228	1,642,161
2012	1,768	3,065	41,214	25,480	1,649,839
2013	1,488	2,668	40,772	25,759	1,682,197
2014	1,333	2,402	40,975	25,800	1,699,091
2015	1,243	2,484	42,280	25,866	1,721,861
2016	1,803	2,277	42,854	26,005	1,743,149
2017	2,196	2,700	42,919	26,248	1,775,340
2018	2,324	2,756	44,224	26,504	1,801,564
2019	2,910	2,704	44,801	26,707	1,832,885
FORECAST:					
2020	1,460	2,788	43,645	26,903	1,856,728
2021	1,379	2,703	43,939	27,100	1,883,227
2022	1,611	2,752	44,591	27,296	1,910,532
2023	1,265	2,757	44,536	27,488	1,938,607
2024	1,266	2,911	44,880	27,680	1,966,893
2025	898	2,617	44,721	27,867	1,995,322
2026	898	2,868	44,955	28,056	2,023,149
2027	898	2,857	45,268	28,245	2,050,789
2028	898	2,728	45,778	28,434	2,077,463
2029	898	2,745	46,124	28,622	2,103,049

DUKE ENERGY FLORIDA

SCHEDULE 2.3.2
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
HIGH CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)
YEAR	SALES FOR RESALE GWh	UTILITY USE & LOSSES GWh	NET ENERGY FOR LOAD GWh	OTHER CUSTOMERS (AVERAGE NO.)	TOTAL NO. OF CUSTOMERS
HISTORY:					
2010	3,493	3,742	46,160	25,212	1,640,833
2011	2,712	2,180	42,490	25,228	1,642,161
2012	1,768	3,065	41,214	25,480	1,649,839
2013	1,488	2,668	40,772	25,759	1,682,197
2014	1,333	2,402	40,975	25,800	1,699,091
2015	1,243	2,484	42,280	25,866	1,721,861
2016	1,803	2,277	42,854	26,005	1,743,149
2017	2,196	2,700	42,919	26,248	1,775,340
2018	2,324	2,756	44,224	26,504	1,801,564
2019	2,910	2,704	44,801	26,707	1,832,885
FORECAST:					
2020	1,460	3,445	48,056	26,903	1,863,890
2021	1,379	3,418	48,688	27,103	1,898,112
2022	1,611	3,484	49,662	27,300	1,933,430
2023	1,265	3,518	49,934	27,492	1,969,820
2024	1,266	3,663	50,602	27,684	2,006,709
2025	898	3,461	50,796	27,872	2,044,037
2026	898	3,701	51,380	28,060	2,081,063
2027	898	3,719	52,052	28,249	2,118,160
2028	898	3,622	52,909	28,439	2,154,525
2029	898	3,682	53,640	28,627	2,190,023

DUKE ENERGY FLORIDA

SCHEDULE 2.3.3
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)
YEAR	SALES FOR RESALE GWh	UTILITY USE & LOSSES GWh	NET ENERGY FOR LOAD GWh	OTHER CUSTOMERS (AVERAGE NO.)	TOTAL NO. OF CUSTOMERS
HISTORY:					
2010	3,493	3,742	46,160	25,212	1,640,833
2011	2,712	2,180	42,490	25,228	1,642,161
2012	1,768	3,065	41,214	25,480	1,649,839
2013	1,488	2,668	40,772	25,759	1,682,197
2014	1,333	2,402	40,975	25,800	1,699,091
2015	1,243	2,484	42,280	25,866	1,721,861
2016	1,803	2,277	42,854	26,005	1,743,149
2017	2,196	2,700	42,919	26,248	1,775,340
2018	2,324	2,756	44,224	26,504	1,801,564
2019	2,910	2,704	44,801	26,707	1,832,885
FORECAST:					
2020	1,460	2,711	40,850	26,903	1,849,574
2021	1,379	2,642	40,902	27,100	1,868,414
2022	1,611	2,666	41,296	27,296	1,887,834
2023	1,265	2,659	40,983	27,488	1,907,793
2024	1,266	2,755	41,055	27,680	1,927,748
2025	898	2,523	40,642	27,867	1,947,629
2026	898	2,703	40,608	28,056	1,966,687
2027	898	2,676	40,647	28,245	1,985,383
2028	898	2,545	40,859	28,434	2,002,963
2029	898	2,556	40,937	28,622	2,019,322

DUKE ENERGY FLORIDA

SCHEDULE 3.1.1
HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)
BASE CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
YEAR	TOTAL	WHOLESALE	RETAIL	INTERRUPTIBLE	RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
HISTORY:										
2010	10,242	1272	8,970	271	304	298	96	234	110	8,929
2011	9,972	934	9,038	227	317	329	97	256	110	8,636
2012	9,788	1080	8,708	262	328	358	98	280	124	8,337
2013	9,581	581	9,000	317	341	382	101	298	124	8,017
2014	10,067	814	9,253	232	355	404	108	313	132	8,523
2015	10,058	772	9,286	303	360	435	124	324	80	8,431
2016	10,530	893	9,637	235	366	466	100	339	80	8,946
2017	10,220	808	9,412	203	342	498	95	349	80	8,653
2018	10,271	812	9,459	257	386	532	83	387	80	8,545
2019	11,029	1021	10,008	230	394	566	86	414	80	9,260
FORECAST:										
2020	10,798	950	9,849	325	400	584	91	403	80	8,915
2021	10,872	963	9,909	335	407	603	95	406	80	8,946
2022	10,962	963	10,000	335	414	619	99	408	80	9,007
2023	10,718	662	10,056	335	421	633	104	409	80	8,735
2024	10,777	662	10,116	335	428	647	108	410	80	8,769
2025	10,623	461	10,162	335	435	662	112	410	80	8,588
2026	10,673	461	10,212	335	442	676	116	411	80	8,612
2027	10,751	461	10,290	335	449	689	121	411	80	8,666
2028	10,869	461	10,408	335	456	702	125	412	80	8,759
2029	10,963	461	10,502	335	463	715	129	412	80	8,829

Historical Values (2010 - 2019):

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) =Customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

Projected Values (2019 - 2028):

Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.

Cols. (5) - (9) = cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.1.2
HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)
HIGH CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
YEAR	TOTAL	WHOLESALE	RETAIL	INTERRUPTIBLE	RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
HISTORY:										
2010	10,242	1,272	8,970	271	304	298	96	234	110	8,929
2011	9,972	934	9,038	227	317	329	97	256	110	8,636
2012	9,788	1,080	8,708	262	328	358	98	280	124	8,337
2013	9,581	581	9,000	317	341	382	101	298	124	8,017
2014	10,067	814	9,253	232	355	404	108	313	132	8,523
2015	10,058	772	9,286	303	360	435	124	324	80	8,431
2016	10,530	893	9,637	235	366	466	100	339	80	8,946
2017	10,220	808	9,412	203	342	498	95	349	80	8,653
2018	10,271	812	9,459	257	386	532	83	387	80	8,545
2019	11,029	1,021	10,008	230	394	566	86	414	80	9,260
FORECAST:										
2020	11,957	950	11,008	325	400	584	91	403	80	10,074
2021	12,111	963	11,148	335	407	603	95	406	80	10,185
2022	12,275	963	11,312	335	414	619	99	408	80	10,319
2023	12,106	662	11,444	335	421	633	104	409	80	10,123
2024	12,239	662	11,578	335	428	647	108	410	80	10,231
2025	12,167	461	11,706	335	435	662	112	410	80	10,132
2026	12,298	461	11,837	335	442	676	116	411	80	10,237
2027	12,459	461	11,998	335	449	689	121	411	80	10,374
2028	12,656	461	12,195	335	456	702	125	412	80	10,546
2029	12,840	461	12,379	335	463	715	129	412	80	10,706

Historical Values (2010 - 2019):
Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.
Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.
Col. (OTH) =Customer-owned self-service cogeneration.
Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).
Projected Values (2019 - 2028):
Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.
Cols. (5) - (9) = cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.
Col. (OTH) = customer-owned self-service cogeneration.
Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.1.3
HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
YEAR	TOTAL	WHOLESALE	RETAIL	INTERRUPTIBLE	RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
HISTORY:										
2010	10,242	1,272	8,970	271	304	298	96	234	110	8,929
2011	9,972	934	9,038	227	317	329	97	256	110	8,636
2012	9,788	1,080	8,708	262	328	358	98	280	124	8,337
2013	9,581	581	9,000	317	341	382	101	298	124	8,017
2014	10,067	814	9,253	232	355	404	108	313	132	8,523
2015	10,058	772	9,286	303	360	435	124	324	80	8,431
2016	10,530	893	9,637	235	366	466	100	339	80	8,946
2017	10,220	808	9,412	203	342	498	95	349	80	8,653
2018	10,271	812	9,459	257	386	532	83	387	80	8,545
2019	11,029	1,021	10,008	230	394	566	86	414	80	9,260
FORECAST:										
2020	10,136	950	9,186	325	400	584	91	403	80	8,252
2021	10,156	963	9,194	335	407	603	95	406	80	8,230
2022	10,190	963	9,227	335	414	619	99	408	80	8,235
2023	9,890	662	9,228	335	421	633	104	409	80	7,907
2024	9,893	662	9,231	335	428	647	108	410	80	7,885
2025	9,681	461	9,220	335	435	662	112	410	80	7,647
2026	9,673	461	9,212	335	442	676	116	411	80	7,613
2027	9,692	461	9,231	335	449	689	121	411	80	7,607
2028	9,747	461	9,285	335	456	702	125	412	80	7,637
2029	9,780	461	9,319	335	463	715	129	412	80	7,646

Historical Values (2010 - 2019):

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) =Customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

Projected Values (2019 - 2028):

Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.

Cols. (5) - (9) = cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.2.1
HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)
BASE CASE FORECAST

(1) YEAR	(2) TOTAL	(3) WHOLESALE	(4) RETAIL	(5) INTERRUPTIBLE	(6) RESIDENTIAL LOAD MANAGEMENT	(7) RESIDENTIAL CONSERVATION	(8) COMM. / IND. LOAD MANAGEMENT	(9) COMM. / IND. CONSERVATION	(OTH) OTHER DEMAND REDUCTIONS	(10) NET FIRM DEMAND
HISTORY:										
2009/10	13,694	2,189	11,505	246	651	563	80	163	322	11,670
2010/11	11,343	1,625	9,718	271	661	628	94	180	221	9,288
2011/12	9,721	905	8,816	186	643	686	96	203	206	7,701
2012/13	9,109	831	8,278	287	652	747	97	220	213	6,893
2013/14	9,467	658	8,809	257	654	785	101	229	219	7,222
2014/15	10,648	1,035	9,613	273	658	815	109	236	237	8,319
2015/16	9,678	1,275	8,403	207	681	845	113	240	170	7,421
2016/17	8,739	701	8,038	191	687	878	78	243	165	6,497
2017/18	11,559	1,071	10,488	244	699	913	79	246	196	9,182
2018/19	8,527	572	7,955	239	711	948	84	251	164	6,130
FORECAST:										
2019/20	11,873	1,385	10,487	243	727	965	87	251	195	9,406
2020/21	11,350	713	10,637	299	741	983	91	252	196	8,789
2021/22	11,764	1,014	10,750	299	755	999	95	252	197	9,167
2022/23	11,554	713	10,841	299	769	1,014	99	253	198	8,922
2023/24	11,677	713	10,964	299	783	1,027	103	253	200	9,012
2024/25	11,475	512	10,962	299	797	1,043	108	253	199	8,777
2025/26	11,612	512	11,100	299	811	1,057	112	253	201	8,880
2026/27	11,705	512	11,193	299	825	1,070	116	253	202	8,941
2027/28	11,800	462	11,338	299	839	1,083	120	253	204	9,003
2028/29	11,867	462	11,404	299	853	1,095	125	253	204	9,038

Historical Values (2010 - 2019):

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

Projected Values (2020 - 2029):

Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.2.2
HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)
HIGH CASE FORECAST

(1) YEAR	(2) TOTAL	(3) WHOLESALE	(4) RETAIL	(5) INTERRUPTIBLE	(6) RESIDENTIAL LOAD MANAGEMENT	(7) RESIDENTIAL CONSERVATION	(8) COMM. / IND. LOAD MANAGEMENT	(9) COMM. / IND. CONSERVATION	(OTH) OTHER DEMAND REDUCTIONS	(10) NET FIRM DEMAND
HISTORY:										
2009/10	13,694	2,189	11,505	246	651	563	80	163	322	11,670
2010/11	11,343	1,625	9,718	271	661	628	94	180	221	9,288
2011/12	9,721	905	8,816	186	643	686	96	203	206	7,701
2012/13	9,109	831	8,278	287	652	747	97	220	213	6,893
2013/14	9,467	658	8,809	257	654	785	101	229	219	7,222
2014/15	10,648	1,035	9,613	273	658	815	109	236	237	8,319
2015/16	9,678	1,275	8,403	207	681	845	113	240	170	7,421
2016/17	8,739	701	8,038	191	687	878	78	243	165	6,497
2017/18	11,559	1,071	10,488	244	699	913	79	246	196	9,182
2018/19	8,527	572	7,955	239	711	948	84	251	164	6,130
FORECAST:										
2019/20	12,675	1,385	11,289	243	727	965	87	251	195	10,208
2020/21	12,227	713	11,514	299	741	983	91	252	196	9,666
2021/22	12,707	1,014	11,693	299	755	999	95	252	197	10,110
2022/23	12,569	713	11,856	299	769	1,014	99	253	198	9,937
2023/24	12,764	713	12,051	299	783	1,027	103	253	200	10,099
2024/25	12,661	512	12,149	299	797	1,043	108	253	199	9,963
2025/26	12,853	512	12,341	299	811	1,057	112	253	201	10,121
2026/27	13,026	512	12,514	299	825	1,070	116	253	202	10,262
2027/28	13,200	462	12,738	299	839	1,083	120	253	204	10,403
2028/29	13,349	462	12,886	299	853	1,095	125	253	204	10,520

Historical Values (2010 - 2019):

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

Projected Values (2020 - 2029):

Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.2.3
HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)
LOW CASE FORECAST

(1) YEAR	(2) TOTAL	(3) WHOLESALE	(4) RETAIL	(5) INTERRUPTIBLE	(6) RESIDENTIAL LOAD MANAGEMENT	(7) RESIDENTIAL CONSERVATION	(8) COMM. / IND. LOAD MANAGEMENT	(9) COMM. / IND. CONSERVATION	(OTH) OTHER DEMAND REDUCTIONS	(10) NET FIRM DEMAND
HISTORY:										
2009/10	13,694	2,189	11,505	246	651	563	80	163	322	11,670
2010/11	11,343	1,625	9,718	271	661	628	94	180	221	9,288
2011/12	9,721	905	8,816	186	643	686	96	203	206	7,701
2012/13	9,109	831	8,278	287	652	747	97	220	213	6,893
2013/14	9,467	658	8,809	257	654	785	101	229	219	7,222
2014/15	10,648	1,035	9,613	273	658	815	109	236	237	8,319
2015/16	9,678	1,275	8,403	207	681	845	113	240	170	7,421
2016/17	8,739	701	8,038	191	687	878	78	243	165	6,497
2017/18	11,559	1,071	10,488	244	699	913	79	246	196	9,182
2018/19	8,527	572	7,955	239	711	948	84	251	164	6,130
FORECAST:										
2019/20	10,072	1,385	8,687	243	727	965	87	251	195	7,605
2020/21	9,486	713	8,773	299	741	983	91	252	196	6,925
2021/22	9,839	1,014	8,825	299	755	999	95	252	197	7,242
2022/23	9,567	713	8,854	299	769	1,014	99	253	198	6,935
2023/24	9,618	713	8,905	299	783	1,027	103	253	200	6,953
2024/25	9,362	512	8,850	299	797	1,043	108	253	199	6,664
2025/26	9,437	512	8,924	299	811	1,057	112	253	201	6,705
2026/27	9,466	512	8,954	299	825	1,070	116	253	202	6,702
2027/28	9,485	462	9,023	299	839	1,083	120	253	204	6,688
2028/29	9,497	462	9,035	299	853	1,095	125	253	204	6,669

Historical Values (2010 - 2019):

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

Projected Values (2020 - 2029):

Cols. (2) - (4) = forecasted peak without load control, cumulative conservation, and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

DUKE ENERGY FLORIDA

SCHEDULE 3.3.1
HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)
BASE CASE FORECAST

(1) YEAR	(2) TOTAL	(3) RESIDENTIAL CONSERVATION	(4) COMM. / IND. CONSERVATION	(OTH) OTHER ENERGY REDUCTIONS	(5) RETAIL	(6) WHOLESALE	(7) UTILITY USE & LOSSES	(8) NET ENERGY FOR LOAD	(9) LOAD FACTOR (%) *
HISTORY:									
2010	48,135	638	558	779	38,925	3,493	3,742	46,160	45.3
2011	44,580	687	624	779	37,597	2,712	2,181	42,490	46.7
2012	43,396	733	669	780	36,381	1,768	3,065	41,214	52.1
2013	43,142	772	734	864	36,616	1,488	2,668	40,772	53.0
2014	43,443	812	791	864	37,240	1,333	2,402	40,975	50.7
2015	44,552	848	829	595	38,553	1,243	2,484	42,280	50.9
2016	45,200	892	857	596	38,774	1,803	2,277	42,854	50.6
2017	45,318	933	871	595	38,024	2,196	2,699	42,919	52.7
2018	46,729	977	933	595	39,145	2,324	2,755	44,224	48.9
2019	47,385	1,017	972	595	39,187	2,910	2,704	44,801	51.3
FORECAST:									
2020	46,219	1,027	951	596	39,397	1,460	2,788	43,645	52.8
2021	46,539	1,048	957	595	39,857	1,379	2,703	43,939	56.1
2022	47,217	1,069	961	595	40,228	1,611	2,752	44,591	55.5
2023	47,185	1,090	965	595	40,513	1,265	2,757	44,536	57.0
2024	47,554	1,110	968	596	40,704	1,266	2,911	44,880	56.7
2025	47,417	1,129	972	595	41,206	898	2,617	44,721	58.2
2026	47,673	1,147	976	595	41,188	898	2,868	44,955	57.8
2027	48,007	1,165	979	595	41,513	898	2,857	45,268	57.8
2028	48,539	1,182	983	596	42,152	898	2,728	45,778	57.9
2029	48,903	1,199	986	595	42,481	898	2,745	46,124	58.3

* Load Factors for historical years are calculated using the actual and projected annual peak.

DUKE ENERGY FLORIDA

SCHEDULE 3.3.2
HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)
HIGH CASE FORECAST

(1) YEAR	(2) TOTAL	(3) RESIDENTIAL CONSERVATION	(4) COMM. / IND. CONSERVATION	(OTH) OTHER ENERGY REDUCTIONS	(5) RETAIL	(6) WHOLESALE	(7) UTILITY USE & LOSSES	(8) NET ENERGY FOR LOAD	(9) LOAD FACTOR (%) *
HISTORY:									
2010	48,135	638	558	779	38,925	3,493	3,742	46,160	45.3
2011	44,580	687	624	779	37,597	2,712	2,181	42,490	46.7
2012	43,396	733	669	780	36,381	1,768	3,065	41,214	52.1
2013	43,142	772	734	864	36,616	1,488	2,668	40,772	53.0
2014	43,443	812	791	864	37,240	1,333	2,402	40,975	50.7
2015	44,552	848	829	595	38,553	1,243	2,484	42,280	50.9
2016	45,200	892	857	596	38,774	1,803	2,277	42,854	50.6
2017	45,318	933	871	595	38,024	2,196	2,699	42,919	52.7
2018	46,729	977	933	595	39,145	2,324	2,755	44,224	48.9
2019	47,385	1,017	972	595	39,187	2,910	2,704	44,801	51.3
FORECAST:									
2020	50,630	1,027	951	596	43,151	1,460	3,445	48,056	53.6
2021	51,289	1,048	957	595	43,891	1,379	3,418	48,688	57.5
2022	52,288	1,069	961	595	44,567	1,611	3,484	49,662	56.1
2023	52,560	1,069	961	595	45,151	1,611	3,172	49,934	57.4
2024	53,252	1,090	965	595	45,673	1,265	3,664	50,602	57.2
2025	53,492	1,129	972	595	46,437	898	3,461	50,796	58.2
2026	54,098	1,147	976	595	46,781	898	3,701	51,380	57.9
2027	54,792	1,165	979	595	47,436	898	3,719	52,052	57.9
2028	55,670	1,182	983	596	48,389	898	3,622	52,909	57.9
2029	56,420	1,199	986	595	49,061	898	3,682	53,640	58.2

* Load Factors for historical years are calculated using the actual and projected annual peak.

DUKE ENERGY FLORIDA

SCHEDULE 3.3.3
HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(OTH)	(5)	(6)	(7)	(8)	(9)
YEAR	TOTAL	RESIDENTIAL CONSERVATION	COMM. / IND. CONSERVATION	OTHER ENERGY REDUCTIONS	RETAIL	WHOLESALE	UTILITY USE & LOSSES	NET ENERGY FOR LOAD	LOAD FACTOR (%) *
HISTORY:									
2010	48,135	638	558	779	38,925	3,493	3,742	46,160	45.3
2011	44,580	687	624	779	37,597	2,712	2,181	42,490	46.7
2012	43,396	733	669	780	36,381	1,768	3,065	41,214	52.1
2013	43,142	772	734	864	36,616	1,488	2,668	40,772	53.0
2014	43,443	812	791	864	37,240	1,333	2,402	40,975	50.7
2015	44,552	848	829	595	38,553	1,243	2,484	42,280	50.9
2016	45,200	892	857	596	38,774	1,803	2,277	42,854	50.6
2017	45,318	933	871	595	38,024	2,196	2,699	42,919	52.7
2018	46,729	977	933	595	39,145	2,324	2,755	44,224	48.9
2019	47,385	1,017	972	595	39,187	2,910	2,704	44,801	51.3
FORECAST:									
2020	43,424	1,027	951	596	36,679	1,460	2,711	40,850	61.1
2021	43,503	1,048	957	595	36,881	1,379	2,642	40,902	67.4
2022	43,921	1,069	961	595	37,019	1,611	2,666	41,296	65.1
2023	43,633	1,090	965	595	37,060	1,265	2,659	40,983	67.5
2024	43,729	1,110	968	596	37,034	1,266	2,755	41,055	67.2
2025	43,338	1,129	972	595	37,221	898	2,523	40,642	69.6
2026	43,326	1,147	976	595	37,007	898	2,703	40,608	69.1
2027	43,386	1,165	979	595	37,074	898	2,676	40,647	69.2
2028	43,620	1,182	983	596	37,416	898	2,545	40,859	69.6
2029	43,716	1,199	986	595	37,483	898	2,556	40,937	70.1

* Load Factors for historical years are calculated using the actual and projected annual peak.

DUKE ENERGY FLORIDA

SCHEDULE 4.1
PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND
AND NET ENERGY FOR LOAD BY MONTH
BASE CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ACTUAL		FORECAST		FORECAST	
	2019		2020		2021	
MONTH	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh
JANUARY	7,248	3,239	10,577	3,110	10,035	3,154
FEBRUARY	6,784	2,775	8,416	2,843	7,830	2,805
MARCH	6,632	3,037	7,971	3,048	7,375	3,086
APRIL	7,521	3,342	7,832	3,227	7,773	3,251
MAY	9,175	4,147	8,829	3,945	8,757	3,952
JUNE	9,970	4,526	9,498	4,270	9,630	4,315
JULY	9,585	4,594	9,624	4,603	9,690	4,608
AUGUST	9,190	4,658	9,731	4,520	9,783	4,527
SEPTEMBER	9,273	4,400	9,325	4,245	9,392	4,270
OCTOBER	8,393	4,131	8,565	3,682	8,735	3,718
NOVEMBER	6,918	2,994	7,020	2,989	7,174	3,043
DECEMBER	5,895	2,958	9,471	3,165	9,108	3,210
TOTAL		44,801		43,645		43,939

NOTE: Recorded Net Peak demands and NEL include off-system wholesale contracts.

DUKE ENERGY FLORIDA

SCHEDULE 4.2
PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND
AND NET ENERGY FOR LOAD BY MONTH
HIGH CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ACTUAL		FORECAST		FORECAST	
	2019		2020		2021	
MONTH	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh
JANUARY	7,248	3,239	11,404	3,793	10,926	3,862
FEBRUARY	6,784	2,775	9,189	3,385	8,656	3,379
MARCH	6,632	3,037	8,642	3,574	8,097	3,636
APRIL	7,521	3,342	8,466	3,530	8,461	3,578
MAY	9,175	4,147	9,495	4,149	9,486	4,184
JUNE	9,970	4,526	10,168	4,467	10,369	4,543
JULY	9,585	4,594	10,272	4,768	10,397	4,804
AUGUST	9,190	4,658	10,382	4,671	10,503	4,708
SEPTEMBER	9,273	4,400	9,980	4,409	10,111	4,463
OCTOBER	8,393	4,131	9,241	3,959	9,463	4,022
NOVEMBER	6,918	2,994	7,801	3,439	8,020	3,519
DECEMBER	5,895	2,958	10,320	3,913	10,018	3,990
TOTAL		44,801		48,056		48,688

NOTE: Recorded Net Peak demands and NEL include off-system wholesale contracts.

DUKE ENERGY FLORIDA

SCHEDULE 4.3
PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND
AND NET ENERGY FOR LOAD BY MONTH
LOW CASE FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	A C T U A L		F O R E C A S T		F O R E C A S T	
	2019		2020		2021	
MONTH	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh
JANUARY	7,248	3,239	8,776	2,931	8,172	2,951
FEBRUARY	6,784	2,775	6,910	2,665	6,278	2,617
MARCH	6,632	3,037	6,618	2,791	5,979	2,807
APRIL	7,521	3,342	7,236	2,973	7,137	2,978
MAY	9,175	4,147	8,208	3,704	8,091	3,689
JUNE	9,970	4,526	8,843	3,993	8,917	4,015
JULY	9,585	4,594	8,977	4,397	8,984	4,379
AUGUST	9,190	4,658	9,068	4,262	9,067	4,245
SEPTEMBER	9,273	4,400	8,690	3,995	8,718	3,999
OCTOBER	8,393	4,131	7,949	3,435	8,084	3,452
NOVEMBER	6,918	2,994	6,298	2,788	6,417	2,826
DECEMBER	5,895	2,958	7,845	2,917	7,443	2,945
TOTAL		44,801		40,850		40,902

NOTE: Recorded Net Peak demands and NEL include off-system wholesale contracts.

FUEL REQUIREMENTS AND ENERGY SOURCES

DEF's two-year actual and ten-year projected nuclear, coal, oil, and gas requirements (by fuel unit) are shown in Schedule 5. DEF's two-year actual and ten-year projected energy sources by fuel type are presented in Schedules 6.1 and 6.2, in GWh and percent (%) respectively. Although DEF's fuel mix continues to rely on an increasing amount of natural gas to meet its generation needs, DEF continues to maintain alternate fuel supplies including long term operation of some coal fired facilities, adequate supplies of oil for dual fuel back up and increasing amounts of renewable generation particularly from solar generation. Projections shown in Schedules 5 and 6 reflect the Base Load and Energy Forecasts.

DUKE ENERGY FLORIDA

SCHEDULE 5
FUEL REQUIREMENTS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				-ACTUAL-											
	FUEL REQUIREMENTS		UNITS	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
(1)	NUCLEAR		TRILLION BTU	0	0	0	0	0	0	0	0	0	0	0	0
(2)	COAL		1,000 TON	3,746	1,976	1,735	1,782	1,701	1,455	1,329	1,523	1,525	1,583	1,796	1,803
(3)	RESIDUAL	TOTAL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(4)		STEAM	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(5)		CC	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CT	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7)		DIESEL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(8)	DISTILLATE	TOTAL	1,000 BBL	198	121	66	73	53	41	133	110	133	169	242	193
(9)		STEAM	1,000 BBL	55	42	19	19	19	24	24	26	28	26	20	24
(10)		CC	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CT	1,000 BBL	143	79	46	54	34	17	109	84	105	143	222	169
(12)		DIESEL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(13)	NATURAL GAS	TOTAL	1,000 MCF	222,083	246,124	233,860	235,307	235,624	232,804	244,581	241,656	243,558	250,990	251,574	251,051
(14)		STEAM	1,000 MCF	29,207	25,020	8,141	9,551	10,207	10,041	10,365	11,757	12,232	12,539	13,610	12,703
(15)		CC	1,000 MCF	184,419	210,736	220,983	221,465	220,928	218,842	227,711	224,566	224,929	227,109	226,859	227,467
(16)		CT	1,000 MCF	8,456	10,369	4,736	4,291	4,489	3,921	6,506	5,334	6,398	11,342	11,105	10,881
	OTHER (SPECIFY)														
(17)	OTHER, DISTILLATE	ANNUAL FIRM INTERCHANGE	1,000 BBL	N/A	N/A	0	0	0	0	0	0	0	0	0	0
(18)	OTHER, NATURAL GAS	ANNUAL FIRM INTERCHANGE, CC	1,000 MCF	N/A	N/A	6,766	1,044	0	0	0	0	0	0	0	0
(18.1)	OTHER, NATURAL GAS	ANNUAL FIRM INTERCHANGE, CT	1,000 MCF	N/A	N/A	12,025	14,614	14,055	16,965	12,096	12,717	11,799	2,470	0	0
(19)	OTHER, COAL	ANNUAL FIRM INTERCHANGE, STEAM	1,000 TON	N/A	N/A	0	0	0	0	0	0	0	0	0	0

DUKE ENERGY FLORIDA

SCHEDULE 6.1
ENERGY SOURCES (GWh)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				-ACTUAL-											
	ENERGY SOURCES		UNITS	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
(1)	ANNUAL FIRM INTERCHANGE 1/		GWh	2,244	1,062	1,170	1,425	1,367	1,648	1,176	1,234	1,146	249	39	34
(2)	NUCLEAR		GWh	0	0	0	0	0	0	0	0	0	0	0	0
(3)	COAL		GWh	8,422	4,322	3,661	3,763	3,522	2,985	2,735	2,963	2,952	3,099	3,551	3,540
(4)	RESIDUAL	TOTAL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(5)		STEAM	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CC	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(7)		CT	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(8)		DIESEL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(9)	DISTILLATE	TOTAL	GWh	90	30	17	20	13	6	41	32	39	55	86	65
(10)		STEAM	GWh	30	0	0	0	0	0	0	0	0	0	0	0
(11)		CC	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(12)		CT	GWh	61	30	17	20	13	6	41	32	39	55	86	65
(13)		DIESEL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(14)	NATURAL GAS	TOTAL	GWh	28,687	35,092	34,078	34,189	34,109	33,770	35,311	34,780	34,955	35,684	35,587	35,671
(15)		STEAM	GWh	2,714	2,278	627	735	782	767	801	912	957	984	1,073	995
(16)		CC	GWh	25,360	31,911	32,997	33,028	32,875	32,603	33,910	33,363	33,403	33,686	33,588	33,733
(17)		CT	GWh	612	903	454	425	452	400	600	505	595	1,014	926	942
(18)	OTHER 2/														
	QF PURCHASES		GWh	1,826	1,803	1,994	1,999	2,003	2,003	822	497	2	2	2	2
	RENEWABLES OTHER		GWh	0	0	0	0	0	0	0	0	0	0	0	0
	RENEWABLES MSW		GWh	845	670	946	941	956	956	956	949	949	949	952	949
	RENEWABLES BIOMASS		GWh	399	15	0	0	0	0	0	0	0	0	0	0
	RENEWABLES SOLAR		GWh	26	222	835	1,460	2,620	3,167	3,840	4,266	4,912	5,231	5,562	5,862
	IMPORT FROM OUT OF STATE		GWh	1,685	1,290	943	142	0	0	0	0	0	0	0	0
	EXPORT TO OUT OF STATE		GWh	0	0	0	0	0	0	0	0	0	0	0	0
(19)	NET ENERGY FOR LOAD		GWh	44,224	44,505	43,645	43,939	44,591	44,536	44,880	44,721	44,955	45,268	45,778	46,124

1/ NET ENERGY PURCHASED (+) OR SOLD (-) WITHIN THE FRCC REGION.
2/ NET ENERGY PURCHASED (+) OR SOLD (-).

DUKE ENERGY FLORIDA

SCHEDULE 6.2

ENERGY SOURCES (PERCENT)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				-ACTUAL-											
	ENERGY SOURCES		UNITS	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
(1)	ANNUAL FIRM INTERCHANGE 1/		%	5.1%	2.4%	2.7%	3.2%	3.1%	3.7%	2.6%	2.8%	2.5%	0.5%	0.1%	0.1%
(2)	NUCLEAR		%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(3)	COAL		%	19.0%	9.7%	8.4%	8.6%	7.9%	6.7%	6.1%	6.6%	6.6%	6.8%	7.8%	7.7%
(4)	RESIDUAL	TOTAL	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(5)		STEAM	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(6)		CC	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(7)		CT	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(8)		DIESEL	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(9)	DISTILLATE	TOTAL	%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
(10)		STEAM	%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(11)		CC	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(12)		CT	%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
(13)		DIESEL	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(14)	NATURAL GAS	TOTAL	%	64.9%	78.8%	78.1%	77.8%	76.5%	75.8%	78.7%	77.8%	77.8%	78.8%	77.7%	77.3%
(15)		STEAM	%	6.1%	5.1%	1.4%	1.7%	1.8%	1.7%	1.8%	2.0%	2.1%	2.2%	2.3%	2.2%
(16)		CC	%	57.3%	71.7%	75.6%	75.2%	73.7%	73.2%	75.6%	74.6%	74.3%	74.4%	73.4%	73.1%
(17)		CT	%	1.4%	2.0%	1.0%	1.0%	1.0%	0.9%	1.3%	1.1%	1.3%	2.2%	2.0%	2.0%
(18)	OTHER 2/														
	QF PURCHASES		%	4.1%	4.1%	4.6%	4.5%	4.5%	4.5%	1.8%	1.1%	0.0%	0.0%	0.0%	0.0%
	RENEWABLES OTHER		%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	RENEWABLES MSW		%	1.9%	1.5%	2.2%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
	RENEWABLES BIOMASS		%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	RENEWABLES SOLAR		%	0.1%	0.5%	1.9%	3.3%	5.9%	7.1%	8.6%	9.5%	10.9%	11.6%	12.1%	12.7%
	IMPORT FROM OUT OF STATE		%	3.8%	2.9%	2.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	EXPORT TO OUT OF STATE		%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(19)	NET ENERGY FOR LOAD		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

1/ NET ENERGY PURCHASED (+) OR SOLD (-) WITHIN THE FRCC REGION.

2/ NET ENERGY PURCHASED (+) OR SOLD (-).

FORECASTING METHODS AND PROCEDURES

INTRODUCTION

Accurate forecasts of long-range electric energy consumption, customer growth, and peak demand are essential elements in electric utility planning. Accurate projections of a utility's future load growth require a forecasting methodology with the ability to account for a variety of factors influencing electric consumption over the planning horizon. DEF's forecasting framework utilizes a set of econometric models as well as the Itron statistically adjusted end-use (SAE) approach to achieve this end. This section will describe the underlying methodology of the customer, energy, and peak demand forecasts including the principal assumptions incorporated within each. Also included is a description of how DSM impacts the forecast and a review of DEF's DSM programs.

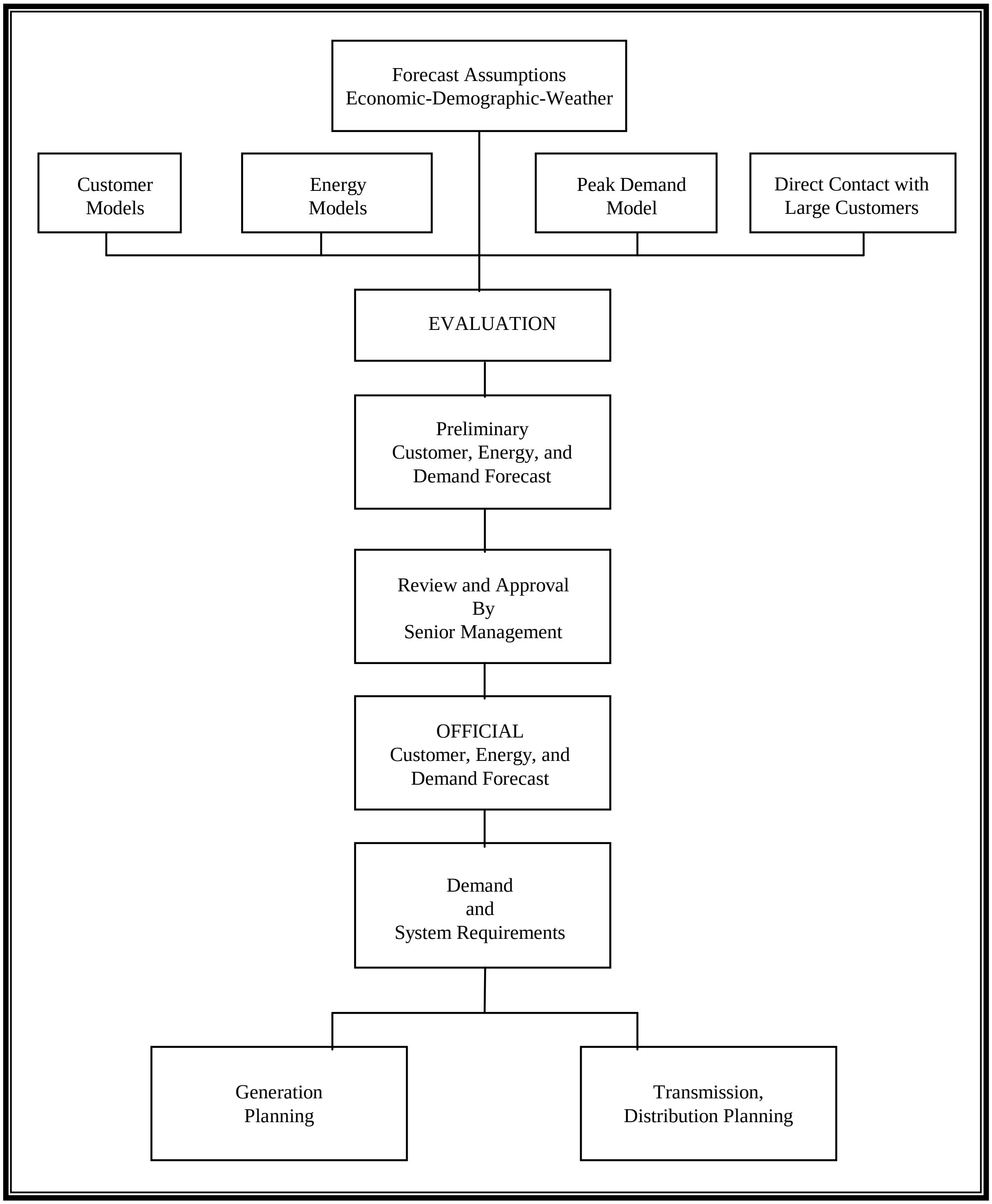
Figure 2.1, entitled "Customer, Energy and Demand Forecast," gives a general description of DEF's forecasting process. Highlighted in the diagram is a disaggregated modeling approach that blends the impacts of average class usage, as well as customer growth, based on a specific set of assumptions for each class. Also accounted for is some direct contact with large customers. These inputs provide the tools needed to frame the most likely scenario of the Company's future demand.

FORECAST ASSUMPTIONS

The first step in any forecasting effort is the development of assumptions upon which the forecast is based. A collaborative internal Company effort develops these assumptions including the research efforts of several external sources. These assumptions specify major factors that influence the level of customers, energy sales, or peak demand over the forecast horizon. The following set of assumptions forms the basis for the forecast presented in this document.

FIGURE 2.1

Customer, Energy, and Demand Forecast



GENERAL ASSUMPTIONS

1. Normal weather conditions for energy sales are assumed over the forecast horizon using a sales-weighted 30-year average of conditions at the St Petersburg, Orlando, and Tallahassee weather stations. For billed kilowatt-hour (kWh) sales projections, the normal weather calculation begins with a historical 30-year average of calendar and billing cycle weighted monthly heating and cooling degree-days (HDD and CDD). The expected consumption period read dates for each projected billing cycle determines the exact historical dates for developing the 30-year average weather condition each month. Each class displays different weather-sensitive base temperatures from which degree day (DD) values begin to accumulate. Seasonal and monthly peak demand projections are based on a 30-year historical average of system-weighted degree days using the "Itron Rank-Sort Normal" approach which takes annual weather extremes into account as well as the date and hour of occurrence.

2. DEF customer forecast is based upon historical population estimates and produced by the BEBR at the University of Florida (as published in "Florida Population Studies", Bulletin No. 183 April 2019) and provides the basis for the population forecast used in the development of the DEF customer forecast. National and Florida economic projections produced by Moody's Analytics in their July 2019 forecast, along with EIA 2019 surveys of residential appliance saturation and average appliance efficiency levels provided the basis for development of the DEF energy forecast.

3. Within the DEF service area, the phosphate mining industry is the dominant sector in the industrial sales class. Three major customers accounted for 24% of the industrial class MWh sales in 2019, significantly less than 2018. These energy intensive "crop nutrient" producers mine and process phosphate-based fertilizer products for the global marketplace. The supply and demand (price) for their products are dictated by global conditions that include, but are not limited to, foreign competition, national/international agricultural industry conditions, exchange-rate fluctuations, international trade pacts and U.S. environmental regulations. The market price of the raw mined commodity often dictates production levels. Load and energy consumption at the DEF-served mining or chemical processing sites depend heavily on plant operations, which are heavily influenced by these global as well as the local conditions, including environmental regulations.

Going forward, global currency fluctuations and global stockpiles of farm commodities will determine the demand for fertilizers. The DEF forecast calls for a rebound in electric consumption from this sector as a major producer restructures its supply chain. The U.S. farm sector was hit hard by retaliatory sanctions from China which imports U.S. farm products. The forecast does account for one customer's intention to open a new mine in phases between the years 2020 and 2022. Any increase in self-service generation will act to reduce energy requirements from DEF. An upside risk to this projection lies in the price of energy, especially low natural gas price, which is a major cost in mining and producing phosphoric fertilizers. Trade issues are expected to stabilize in 2020 and demand for farm products should improve, as will the demand for crop nutrients.

4. DEF supplies load and energy service to wholesale customers on a "full" and "partial" requirement basis. Full requirements (FR) customers demand and energy are assumed to grow at a rate that approximates their historical trend. Contracts for this service include the cities of Chattahoochee, Mt. Dora and Williston. Partial requirements (PR) customers load is assumed to reflect the current contractual obligations reflected by the nature of the stratified load they have contracted for, plus their ability to receive dispatched energy from power marketers any time it is more economical for them to do so. Contracts for PR service included in this forecast are with the Reedy Creek Improvement District (RCID) and Seminole Electric Cooperative, Inc. (SECI). Many contracts are projected to "term out" in various years in this projection.

5. This forecast assumes that DEF will successfully renew all future franchise agreements.

6. This forecast incorporates demand and energy reductions expected to be realized through currently FPSC approved DSM goals as stated in Docket No. 20190018-EG.

7. This forecast reflects impacts from both Plug-in Hybrid Electric Vehicle (PHEV) and behind the meter (customer owned) Photo Voltaic (PV) units on energy and peak demand. PHEV customer penetration levels, which are expected to be a small share of the total DEF service area vehicle stock over the planning horizon, incorporates an EPRI Model view that includes gasoline price expectations. DEF customer PV penetration levels are expected to continue to grow over the

planning horizon and the forecast incorporates a view on equipment and electric price impacts on customer use.

8. Expected energy and demand reductions from customer-owned self-service cogeneration facilities are also included in this forecast. DEF will supply the supplemental load of self-service cogeneration customers. While DEF offers "standby" service to all cogeneration customers, the forecast does not assume an unplanned need for power at time of peak.

9. This forecast assumes that the regulatory environment and the obligation to serve our retail customers will continue throughout the forecast horizon. Regarding wholesale customers, the forecast does not plan for generation resources unless a long-term contract is in place. FR customers are typically assumed to renew their contracts with DEF except those who have termination provisions and have given their notice to terminate.

ECONOMIC ASSUMPTIONS

The economic outlook for this forecast was developed in the summer of 2019 as the nation's economy set a new record for length of business cycle expansion continuing a pace of steady if modest growth. Most economic indicators pointed to significant year-over-year improvements in the near term. These included strong employment growth and declining unemployment, minimal home foreclosures, much improved home construction levels and consumer confidence. Nationally, energy prices and interest rates are extremely low and relatively stable. Consumers were spending (and borrowing) again. More recently there are signs of marginal improvement in median household incomes (after inflation) and improvement in the rate of homeownership. As the reported rate of national unemployment is now at or below 4%, the tightening of the labor supply typically leads to wage increases. Increased consumer confidence, along with reasonable mortgage rates has revived the desire to own homes but home price affordability measures now limit many from entering the single-family market. The nation's manufacturing sector has slowed considerably in 2019 as it had to navigate through an uncertain trade war which increased prices on imported products and exported products due to retaliatory tariffs. The U.S. service sector is also riding a wave of favorable conditions. Stable interest rates and energy prices have invigorated the American consumer and are now being reflected in higher consumer sentiment surveys. This forecast does consider the waning effects from the 2017 Tax Cuts and Jobs Act passed in 2018. Stimulus supplied by this policy helped support growth in national and state economies in 2018 but only marginally in 2019.

The Florida economy continues to expand at a good clip, the level of consumer sentiment, as measured by the University of Florida-BEBR, has remained close to its April 2019 peak. Newly released 2019 estimates of Florida population show an increase in resident population of 368,021 from 2018's level, breaking the >1,000 new residents per day threshold. This creates a healthy demand for housing and services throughout the State. Duke Energy load forecasts have been expecting Florida to benefit from an on-rush of retirees for several years. After some delay created by the financial crisis, one can safely say this trend has begun. This impact is expected to peak in 2025 but continue through most of the 2020s.

The Florida unemployment rate dropped to 3.0% in December 2019, down from 3.3% a year earlier. The State's employment picture has continued to be strong, adding 212,000 jobs over the year, topped only by California and Texas.

Throughout the ten-year forecast horizon, risks and uncertainties are always recognized and handled on a "highest probability of outcome" basis. General rules of economic theory, namely, supply and demand equilibrium are maintained in the long run. This notion is applied to energy/commodity prices, currency levels, the housing market, wage rates, birth rates, inflation and interest rates. Uncertainty surrounding specific weather anomalies (hurricanes or earthquakes), international crises, such as wars or terrorist acts, are not explicitly designed into this projection. Thus, any situations of this variety will result in a deviation from this forecast.

FORECAST METHODOLOGY

The DEF forecast of customers, energy sales, and peak demand applies both an econometric and end-use methodology. The residential and commercial energy projections incorporate Itron's SAE approach while other classes use customer-class specific econometric models. These models are expressly designed to capture class-specific variation over time. Peak demand models are projected on a disaggregated basis as well. This allows for appropriate handling of individual assumptions in the areas of wholesale contracts, demand response, interruptible service and changes in self-service generation capacity.

ENERGY AND CUSTOMER FORECAST

In the retail jurisdiction, customer class models have been specified showing a historical relationship to weather and economic/demographic indicators using monthly data for sales models and customer models. Sales are regressed against "driver" variables that best explain monthly fluctuations over the historical sample period. Forecasts of these input variables are either derived internally or come from a review of the latest projections made by several independent forecasting concerns. The external sources of data include Moody’s Analytics and the University of Florida's BEBR. Internal company forecasts are used for projections of electricity price, weather conditions, the length of the billing month and rates of customer owned renewable and electric vehicle adoption. The incorporation of residential and commercial “end-use” energy has been modeled as well. Surveys of residential appliance saturation and average efficiency performed by the company’s Market Research department and the Energy Information Agency (EIA), along with trended projections of both by Itron capture a significant piece of the changing future environment for electric energy consumption. Specific sectors are modeled as follows:

Residential Sector

Residential kWh usage per customer is modeled using the SAE framework. This approach explicitly introduces trends in appliance saturation and efficiency, dwelling size and thermal efficiency. It allows for an easier explanation of usage levels and changes in weather-sensitivity over time. The “bundling” of 19 residential appliances into “heating”, “cooling” and “other” end uses form the basis of equipment-oriented drivers that interact with typical exogenous factors such as real median household income, average household size, cooling degree-days, heating degree-days, the real price of electricity to the residential class and the average number of billing days in each sales month. This structure captures significant variation in residential usage caused by changing appliance efficiency and saturation levels, economic cycles, weather fluctuations, electric price, and sales month duration. Projections of kWh usage per customer combined with the customer forecast provide the forecast of total residential energy sales. The residential customer forecast is developed by correlating monthly residential customers with county level population projections for counties in which DEF serves residential customers are provided by the BEBR.

Commercial Sector

Commercial MWh energy sales are forecast based on commercial sector (non-agricultural, non-manufacturing and non-governmental) employment, the real price of electricity to the commercial class, the average number of billing days in each sales month and heating and cooling degree-days. As in the residential sector, these variables are interacted with the commercial end-use equipment (listed below) after trends in equipment efficiency and saturation rates have been projected.

- Heating
- Cooling
- Ventilation
- Water heating
- Cooking
- Refrigeration
- Outdoor Lighting
- Indoor Lighting
- Office Equipment (PCs)
- Miscellaneous

The SAE model contains indices that are based on end-use energy intensity projections developed from EIA's commercial end-use forecast database. Commercial energy intensity is measured in terms of end-use energy use per square foot. End-use energy intensity projections are based on end-use efficiency and saturation estimates that are in turn driven by assumptions in available technology and costs, energy prices, and economic conditions. Energy intensities are calculated from the EIA's Annual Energy Outlook (AEO) commercial database. End-use intensity projections are derived for eleven building types. The energy intensity (EI) is derived by dividing end-use electricity consumption projections by square footage:

$$EI_{bet} = Energy_{bet} / sqft_{bt}$$

Where:

$Energy_{bet}$ = energy consumption for building type b, end-use e, year t

$Sqft_{bt}$ = square footage for building type b in year t

Commercial customers are modeled using the projected level of residential customers.

Industrial Sector

Energy sales to this sector are separated into two sub-sectors. A significant portion of industrial energy use is consumed by the phosphate mining industry. Because this one industry is such a large share of the total industrial class, it is separated and modeled apart from the rest of the class. The term "non-phosphate industrial" is used to refer to those customers who comprise the remaining portion of total industrial class sales. Both groups are impacted significantly by changes in economic activity. However, adequately explaining sales levels requires separate explanatory variables. Non-phosphate industrial energy sales are modeled using Florida manufacturing employment interacted with the Florida industrial production index, and the average number of sales month billing days.

The industrial phosphate mining industry is modeled using customer-specific information with respect to expected market conditions. Since this sub-sector is comprised of only three customers, the forecast is dependent upon information received from direct customer contact. DEF Large Account Management employees provide specific phosphate customer information regarding customer production schedules, inventory levels, area mine-out and start-up predictions, and changes in self-service generation or energy supply situations over the forecast horizon. These Florida mining companies compete globally into a global market where farming conditions dictate the need for “crop nutrients”. The projection of industrial accounts is not expected to decline as rapidly as it has for years. The pace of “off-shoring” manufacturing jobs is expected to decline from past levels. Secondly, the rapid increase in Florida population should recalibrate Florida’s competitiveness in “location analysis” studies performed by industry when determining site selection for new operations.

Street Lighting

Electricity sales to the street and highway lighting class have now declined for several years. A continued decline is expected as improvements in lighting efficiency are projected. The number of accounts, which has dropped by more than one-third since 1995 due to most transferring to public authority ownership, is expected to decline further before leveling off in the intermediate term. A simple time-trend was used to project energy consumption and customer growth in this class.

Public Authorities

Energy sales to public authorities (SPA), comprised of federal, state and local government operated services, is also projected to grow within the DEF's service area. The level of government services, and thus energy, can be tied to the population base, as well as the amount of tax revenue collected to pay for these services. Factors affecting population growth will affect the need for additional governmental services (i.e. public schools, city services, etc.) thereby increasing SPA energy consumption. Government employment has been determined to be the best indicator of the level of government services provided. This variable, along with cooling degree-days and the sales month billing days, results in a significant level of explained variation over the historical sample period. Adjustments are also included in this model to account for the large change in school-related energy use throughout the year. The SPA customer forecast is projected linearly as a function of a time-trend. Recent budget issues have also had an impact on the near-term pace of growth.

Sales for Resale Sector

The Sales for Resale sector encompasses all firm sales to other electric power entities. This includes sales to other utilities (municipal or investor-owned) as well as power agencies (rural electric authority or municipal).

SECI is a wholesale, or sales for resale, customer of DEF that contracts for both seasonal and stratified loads over the forecast horizon. The municipal sales for resale class includes a number of customers, divergent not only in scope of service (i.e., full or partial requirement), but also in composition of ultimate consumers. Each customer is modeled separately in order to accurately reflect its individual profile. Three customers in this class, Chattahoochee, Mt. Dora, and Williston, are municipalities whose full energy requirements are supplied by DEF. Energy projections for full requirement customers grow at a rate that approximates their historical trend with additional information coming from the respective city officials. DEF serves partial requirement service (PR) to municipalities such as RCID. In each case, these customers contract with DEF for a specific level and type of stratified capacity needed to provide their particular electrical system with an appropriate level of reliability. The energy forecast for each contract is derived using its historical load factors where enough history exists, or typical load factors for a given type of contracted stratified load and expected fuel prices. Electric energy growth and competitive market prices will dictate the amount of wholesale demand and energy throughout the forecast horizon.

PEAK DEMAND FORECAST

The forecast of peak demand also employs a disaggregated econometric methodology. For seasonal (winter and summer) peak demands, as well as each month of the year, DEF's coincident system peak is separated into five major components. These components consist of total retail load, interruptible and curtailable tariff non-firm load, conservation and demand response program capability, wholesale demand, and company use demand.

Total retail load refers to projections of DEF retail monthly net peak demand before any activation of DEF's General Load Reduction Plan. The historical values of this series are constructed to show the size of DEF's retail net peak demand assuming no utility activated load control had ever taken place. The value of constructing such a "clean" series enables the forecaster to observe and correlate the underlying trend in retail peak demand to retail customer levels and coincident weather conditions at the time of the peak and the amounts of Base-Heating-Cooling load estimated by the monthly Itron models without the impacts of year-to-year variation in utility-sponsored DR programs. Monthly peaks are projected using the Itron SAE generated use patterns for both weather sensitive (cooling & heating) appliances and base load appliances calculated by class in the energy models. Daily and hourly models of applying DEF class-of-business load research survey data lead to class and total retail hourly load profiles when a 30-year normal weather template replaces actual weather. The projections of retail peak are the result of a monthly model driven by the summation of class base, heating and cooling energy interpolated 30-year normal weather pattern-driven load profile. The projection for the months of January (winter) and August (summer) are typically when the seasonal peaks occur. Energy conservation and direct load control estimates consistent with DEF's DSM goals that have been established by the FPSC are applied to the MW forecast. Projections of dispatchable and cumulative non-dispatchable DSM impacts are subtracted from the projection of potential firm retail demand resulting in a projected series of firm retail monthly peak demand figures. The Interruptible and Curtailable service (IS and CS) tariff load projection is developed from historic monthly trends, as well as the incorporation of specific projected information obtained from DEF's large industrial accounts on these tariffs by account executives. Developing this piece of the demand forecast allows for appropriate firm retail demand results in the total retail coincident peak demand projection.

Sales for Resale demand projections represent load supplied by DEF to other electric suppliers such as SECI, RCID, and other electric transmission and distribution entities. For Partial Requirement demand projections, contracted MW levels dictate the level of seasonal demands. The Full Requirement municipal demand forecast is estimated for individual cities using historically trended growth rates adjusted for current economic conditions.

DEF "company use" at the time of system peak is estimated using load research metering studies similar to potential firm retail. It is assumed to remain stable over the forecast horizon as it has historically.

Each of the peak demand components described above is a positive value except for the DSM program MW impacts and IS and CS load. These impacts represent a reduction in peak demand and are assigned a negative value. Total system firm peak demand is then calculated as the arithmetic sum of the five components.

HIGH & LOW SCENARIOS

DEF has developed high and low scenarios around the base case energy sales and peak demand projections. The overall results reflect a one standard deviation probability of outcome, or 67% of all possible outcomes between the high case and low case. Of course, the base case represents the 50/50 probability of all expected outcomes.

Both scenarios incorporate historical variation in weather and economic conditions as well as service area population and household growth. First, a calculation of thirty years of historical variation for economic driver variables selected in the base case energy sales models. High & low case series were developed by determining the one standard deviation level of outcome - both high and low - around each respective base case economic variable for each class. Similarly, high and low weather variables were determined for the energy and peak weather variables (HDDs, CDDs, and monthly peak DDs) using actual 30-year weather conditions. Each weather variable used in the modeling process is ranked monthly from "high-to-low" degree days. The high (hottest) one-third of each variable is averaged and becomes a normal "High Case" weather condition. Similarly, the mildest one-third of each weather variable's 30 observations are averaged and become the normal "Low Case" weather condition.

This procedure captures the most influential variables around energy sales and peak demand by estimating high and low cases for economics and weather conditions.

CONSERVATION

On November 26, 2019, the FPSC issued Order No. PSC-2019-00509-FOF which established demand side management goals for the FEECA utilities for 2020-2024 based on the goals approved in the 2014 Goals setting proceeding (Order PSC-14-0696-FOF-EU). The residential and commercial goals from the 2014 Goals setting proceeding are depicted in Tables 2.1 and 2.2. DEF assumes the trends in these goals will be extended though the forecast period. As required by Florida Administrative Code, Rule 25-17.0021, DEF filed a Program Plan designed to meet these Commission established goals on February 24, 2020. These programs will be subject to periodic monitoring and evaluation to ensure that all demand-side resources are acquired in a cost-effective manner and that the program savings are durable.

RESIDENTIAL CONSERVATION PROGRAMS

TABLE 2.1

Residential DSM MW and GWH Savings

Year	Annual Summer	Cumulative Summer	Annual Winter	Cumulative Winter	Annual GWH's	Cumulative GWH's
2020	15.5	15.5	32.2	32.2	9.3	9.3
2021	13.7	29.2	27.8	60.0	6.2	15.5
2022	12.2	41.4	24.5	84.5	3.8	19.3
2023	11.3	52.7	22.3	106.8	2.2	21.5

The following provides an overview of the DEF's Residential DSM Programs effective as of December 31, 2019:

Home Energy Check – This is DEF's home energy audit program as required by Rule 25-17.003(3) (b). DEF offers a variety of options to customers for home energy audits including walk-through audits, phone assisted audits, and web enabled on-line audits. At the completion of the audit, DEF also provides kits that contain energy saving measures that may be easily installed by the customer.

Residential Incentive Program – This program provides incentives on a variety of cost-effective measures designed to provide energy savings. DEF expects to provide incentives to customers for the installation of approximately 90,000 energy saving measures over the ten-year FEECA goal period. These measures primarily include heating and cooling, duct repair, insulation, and energy efficient windows. The measures and incentive levels included in this program have been updated to reflect the impacts of new codes and standards.

Neighborhood Energy Saver – This program is designed to provide energy saving education and assistance to low income customers. This program targets neighborhoods that meet certain income eligibility requirements. DEF installs energy saving measures in approximately 4,500 homes and provides home energy reports to approximately 15,000 customers annually through this program. These home energy reports provide information about energy efficiency and remind customers about low cost energy saving measures.

Low Income Weatherization Assistance Program – DEF partners with local agencies to provide funding for energy efficiency and weatherization measures to low income customers through this program. DEF expects to provide assistance to approximately 500 customers annually through this program.

EnergyWise – EnergyWise is a voluntary residential demand response program that provides monthly bill credits to customers who allow DEF to reduce peak demand by controlling service to selected electric equipment through various devices and communication options installed on the customer's premises. These interruptions are at DEF's option, during specified time periods, and coincident with hours of peak demand. Customers must have a minimum average monthly usage of 600 kwh's to be eligible to participate in this program.

COMMERCIAL/INDUSTRIAL CONSERVATION PROGRAMS

TABLE 2.2

Commercial/Industrial DSM MW and GWH Savings

Year	Annual Summer	Cumulative Summer	Annual Winter	Cumulative Winter	Annual GWH's	Cumulative GWH's
2020	8.2	8.2	5.2	5.2	5.9	5.9
2021	6.9	15.1	4.8	10.0	3.9	9.8
2022	6.0	21.1	4.7	14.7	2.4	12.2
2023	5.6	26.7	5.0	19.7	1.4	13.6
2024	5.0	31.7	4.6	24.3	0.8	14.4

The following provides a list of the Commercial programs that we have as of December 31, 2019 along with a brief overview of each program:

Business Energy Check – This is a commercial energy audit program that provides commercial customers with an analysis of their energy usage and information about energy-saving practices and cost-effective measures that they can implement at their facilities.

Better Business – This program provides incentives to commercial customers on a variety of cost-effective energy efficiency measures. These measures include chillers, cool roof, insulation, and DX systems.

Florida Custom Incentive – The objective of this program is to encourage customers to make capital investments for the installation of energy efficiency measures which reduce energy and peak demand. This program provides incentives for customized energy efficiency projects and measures that are cost effective and are not otherwise included in DEF's prescriptive commercial programs.

Interruptible Service – This program is available to non-residential customers with a minimum billing demand of 500 KW or more who are willing to have their power interrupted. DEF has remote control access to the switch providing power to the customer's equipment. Customers participating in the Interruptible Service program receive a monthly interruptible demand credit based on their billing demand and billing load factor.

Curtailable Service - This program is an indirect load control program that reduces DEF's energy demand at times of capacity shortage during peak or emergency conditions.

Standby Generation - This program is a demand control program that reduces DEF's demand based upon the control of the customer equipment. The program is a voluntary program available to all commercial and industrial customers who have on-site stand-by generation capacity of at least 50 kW and are willing to reduce their DEF demand when deemed necessary.

OTHER DSM PROGRAMS

The following provides an overview of other DSM programs:

Technology Development – This program is used to fund research and development of new energy efficiency and demand response opportunities. DEF will use this program to investigate new technologies and support the development of new energy efficiency and demand response programs.

Qualifying Facilities – This program analyzes, forecasts, facilitates, and administers the potential and actual power purchases from Qualifying Facilities (QFs) and the state jurisdictional QF or distributed generator interconnections. The program supports meetings with interested parties or potential QFs, including cogeneration and small power production facilities including renewables interested in providing renewable capacity or energy deliveries within our service territory. Project, interconnection, and avoided cost discussions with renewable and combined heat and power developers who are also exploring distributed generation options continue to remain steady. Most of the interest is coming from companies utilizing solar photovoltaic technology as the price of photovoltaic panels has decreased over time. The cost of this technology continues to decrease, and subsidies remain in place. This increase in solar activity is evident in the number of interconnection requests which now represent over 5,500 MW of solar PV projects representing 80 active projects. As the technologies advance and the market evolves, the Company's policies will continue to be refined and compliant.

CHAPTER 3

FORECAST OF FACILITIES REQUIREMENTS

CHAPTER 3

FORECAST OF FACILITIES REQUIREMENTS

RESOURCE PLANNING FORECAST

OVERVIEW OF CURRENT FORECAST

Supply-Side Resources

As of December 31, 2019, DEF had a summer total capacity resource of 11,858 MW (see Table 3.1). This capacity resource includes fossil steam generators (2,425 MW), combined cycle plants (5,266 MW), combustion turbines (2,092 MW), solar power plants (119 MW), utility purchased power (424 MW), independent power purchases (1,120 MW), and non-utility purchased power (412 MW). Table 3.2 presents DEF's firm capacity contracts with Renewable and Cogeneration Facilities.

Demand-Side Programs

DEF will file Programs designed to meet the demand side management goals established by the Commission in Order PSC-2019-00509-FOF on February 24, 2020. Total DSM resources are presented in Schedules 3.1 and 3.2 of Chapter 2. These programs include Non-Dispatchable DSM, Interruptible Load, and Dispatchable Load Control resources.

Capacity and Demand Forecast

DEF's forecasts of capacity and demand for the projected summer and winter peaks can been found in Schedules 7.1 and 7.2, respectively. Demand forecasts shown in these schedules are based on Schedules 3.1.1 and 3.2.1, the base summer and winter forecasts. DEF's forecasts of capacity and demand are based on serving expected growth in retail requirements in its regulated service area and meeting commitments to wholesale power customers who have entered into supply contracts with DEF. In its planning process, DEF balances its supply plan for the needs of retail and wholesale customers and endeavors to ensure that cost-effective resources are available to meet the needs across the customer base.

Base Expansion Plan

DEF's planned supply resource additions and changes are shown in Schedule 8 and are referred to as DEF's Base Expansion Plan. This plan includes a net addition of 1,403 MW of Solar PV generation with an expected equivalent summer firm capacity contribution of approximately 800 MW and 452 MW of new natural gas fired generation consisting of two planned combustion turbine units, one added in year 2027 and another in year 2029, at undesignated sites as well as the incorporation of the full firm capacity of the Osprey Energy Center. DEF continues to seek market supply-side resource alternatives to enhance DEF's resource plan. In this plan, DEF has assigned this DEF owned solar PV generation an equivalent summer capacity value equal to 57% of the nameplate capacity of the planned installations. This assignment assumes that the projects developed over the period of this plan will be single-axis tracking technology. We foresee that as more solar is added, the net-load peak hour will start to shift to later hours, and the solar contribution to firm capacity might decline. DEF plans to evaluate this assignment over time and may revise this value in future Site Plans based on changes in project designs and the data received from actual operation of these facilities once they are installed.

On June 19, 2019, EPA issued the Affordable Clean Energy (ACE) Rule to replace the 2015 Clean Power Plan. States now have three years to develop plans and two additional years to achieve compliance. It is anticipated that there may be delays to the schedule due to litigation. DEF is currently evaluating potential requirements for ACE Rule compliance but does not expect that these will result in material impacts to unit operations or capacity. Additional details regarding DEF's compliance strategies in response to the ACE rule are provided in DEF's annual update to the Integrated Clean Air Compliance Plan filed in Docket No. 190007-EI.

Although there continues to be significant uncertainty about the specific form of regulation, DEF continues to expect that more stringent CO_2 emissions limitations in one form or another will be part of the regulatory future and has incorporated a CO_2 emission price forecast as a placeholder for the impacts of such regulation.

DEF continues to modernize its generation resources with the retirement and projected retirements of several of the older units in the fleet, particularly combustion turbines at Avon Park, Bayboro, Debary

P2 - P6, Bartow P1 & P3, and University of Florida. Peakers at Higgins were retired at the end of 2019. Continued operations of the peaking units at Avon Park are planned until later in the year 2020 while Bayboro is planned through the year 2025. The Debary P2 - P6, Bartow P1 & P3, and University of Florida are planned to retire in 2027. There are many factors which may impact these retirements including environmental regulations and permitting, the unit's age and maintenance requirements, local operational needs, their relatively small capacity size and system requirement needs.

DEF's Base Expansion Plan projects the need for additional capacity with proposed in-service dates during the ten-year period from 2020 through 2029. The planned capacity additions, together with purchases from Qualifying Facilities (QF), Investor Owned Utilities, and Independent Power Producers help the DEF system meet the energy requirements of its customer base. The capacity needs identified in this plan may be impacted by DEF's ability to extend or replace existing purchase power, cogeneration and QF contracts and to secure new renewable purchased power resources in their respective projected timeframes. The additions in the Base Expansion Plan depend, in part, on projected load growth, and obtaining all necessary state and federal permits under current schedules. Changes in these or other factors could impact DEF's Base Expansion Plan. DEF has examined the high and low load scenarios presented in Schedules 3.1 and 3.2. As discussed in Chapter 2, these scenarios were developed to present and test a range of likely outcomes in peak load and energy demand. DEF found that the Base Expansion Plan was robust under the range of conditions examined. Current planned capacity is sufficient to meet the demand including reserve margin in these cases through 2023 allowing DEF sufficient time to plan additional generation capacity either through power purchase or new generation construction as needed if higher than baseline conditions emerge. If lower than baseline conditions emerge, DEF can defer future generation alternatives.

Status reports and specifications for the planned new generation facilities are included in Schedule 9. The planned transmission lines associated with DEF Bulk Electric System (BES) are shown in Schedule 10.

TABLE 3.1

DUKE ENERGY FLORIDA

**TOTAL CAPACITY RESOURCES OF
POWER PLANTS AND PURCHASED POWER CONTRACTS**

AS OF DECEMBER 31, 2019

PLANTS	SUMMER NET DEPENDABLE CAPABILITY (MW)
Fossil Steam	2,425
Combined Cycle	5,266
Combustion Turbine	2092
Solar	119
Total Net Dependable Generating Capability	**9,902**
Dependable Purchased Power	1,956
Firm Qualifying Facility Contracts (412 MW)	
Investor Owned Utilities (424 MW)	
Independent Power Producers (1,120 MW)	
TOTAL DEPENDABLE CAPACITY RESOURCES	**11,858**

TABLE 3.2

DUKE ENERGY FLORIDA
FIRM RENEWABLES
AND COGENERATION CONTRACTS

AS OF DECEMBER 31, 2019

Facility Name	Firm Capacity (MW)
Mulberry	115
Orange Cogen (CFR-Biogen)	104
Orlando Cogen	115
Pasco County Resource Recovery	23
Pinellas County Resource Recovery 1	40
Pinellas County Resource Recovery 2	14.8
TOTAL	**411.8**

DUKE ENERGY FLORIDA

SCHEDULE 7.1
FORECAST OF CAPACITY, DEMAND AND SCHEDULED MAINTENANCE
AT TIME OF SUMMER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TOTAL INSTALLED CAPACITY	FIRM[a] CAPACITY IMPORT	FIRM CAPACITY EXPORT	QF[b]	TOTAL CAPACITY AVAILABLE	SYSTEM FIRM SUMMER PEAK DEMAND	RESERVE MARGIN BEFORE MAINTENANCE		SCHEDULED MAINTENANCE	RESERVE MARGIN AFTER MAINTENANCE	
YEAR	MW	MW	MW	MW	MW	MW	MW	% OF PEAK	MW	MW	% OF PEAK
2020	9,978	1,878	0	78	11,934	8,915	3,019	34%	0	3,019	34%
2021	10,021	1,454	0	78	11,553	8,946	2,607	29%	0	2,607	29%
2022	10,222	1,454	0	78	11,754	9,007	2,747	31%	0	2,747	31%
2023	10,305	1,454	0	78	11,837	8,735	3,102	36%	0	3,102	36%
2024	10,724	859	0	78	11,661	8,769	2,892	33%	0	2,892	33%
2025	10,721	744	0	78	11,543	8,588	2,955	34%	0	2,955	34%
2026	10,632	640	0	78	11,350	8,612	2,738	32%	0	2,738	32%
2027	10,566	0	0	78	10,644	8,666	1,978	23%	0	1,978	23%
2028	10,561	0	0	78	10,639	8,759	1,880	21%	0	1,880	21%
2029	10,826	0	0	78	10,903	8,829	2,074	23%	0	2,074	23%

Notes:

a. FIRM Capacity Import includes Cogeneration, Utility and Independent Power Producers, and Short Term Purchase Contracts.

b. QF includes Firm Renewables

DUKE ENERGY FLORIDA

SCHEDULE 7.2
FORECAST OF CAPACITY, DEMAND AND SCHEDULED MAINTENANCE
AT TIME OF WINTER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TOTAL INSTALLED CAPACITY	FIRM[a] CAPACITY IMPORT	FIRM CAPACITY EXPORT	QF[b]	TOTAL CAPACITY AVAILABLE	SYSTEM FIRM WINTER PEAK DEMAND	RESERVE MARGIN BEFORE MAINTENANCE		SCHEDULED MAINTENANCE	RESERVE MARGIN AFTER MAINTENANCE	
YEAR	MW	MW	MW	MW	MW	MW	MW	% OF PEAK	MW	MW	% OF PEAK
2019/20	10,894	1,961	0	78	12,933	9,406	3,528	38%	0	3,528	38%
2020/21	10,850	1,961	0	78	12,889	8,789	4,101	47%	0	4,101	47%
2021/22	10,850	1,537	0	78	12,465	9,167	3,298	36%	0	3,298	36%
2022/23	10,850	1,537	0	78	12,465	8,922	3,543	40%	0	3,543	40%
2023/24	10,850	1,422	0	78	12,350	9,012	3,339	37%	0	3,339	37%
2024/25	11,205	785	0	78	12,068	8,777	3,291	38%	0	3,291	38%
2025/26	10,967	681	0	78	11,726	8,880	2,846	32%	0	2,846	32%
2026/27	10,967	681	0	78	11,726	8,941	2,785	31%	0	2,785	31%
2027/28	10,732	0	0	78	10,809	9,003	1,806	20%	0	1,806	20%
2028/29	10,732	0	0	78	10,809	9,038	1,771	20%	0	1,771	20%

Notes:

a. FIRM Capacity Import includes Cogeneration, Utility and Independent Power Producers, and Short Term Purchase Contracts.

b. QF includes Firm Renewables

DUKE ENERGY FLORIDA

SCHEDULE 8
PLANNED AND PROSPECTIVE GENERATING FACILITY ADDITIONS AND CHANGES

AS OF JANUARY 1, 2020 THROUGH DECEMBER 31, 2029

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
												FIRM NET CAPABILITY			
								CONST.	COM'L IN-	EXPECTED	GEN. MAX.				
	UNIT	LOCATION	UNIT	FUEL		FUEL TRANSPORT		START	SERVICE	RETIREMENT	NAMEPLATE	SUMMER	WINTER		
PLANT NAME	NO.	(COUNTY)	TYPE	PRI.	ALT.	PRI.	ALT.	MO. / YR	MO. / YR	MO. / YR	KW	MW	MW	STATUS[a]	NOTES[b]
COLUMBIA	1	COLUMBIA	PV	SO				08/2019	03/2020		74,900	43	0	P	(1)
DEBARY	1	VOLUSIA	PV	SO				07/2019	05/2020		74,500	34	0	P	(1)
TWIN RIVERS	1	HAMILTON	PV	SO				04/2020	12/2020		74,900	43	0	P	(1)
SANTA FE	1	COLUMBIA	PV	SO				04/2020	12/2020		74,900	43	0	P	(1)
AVON PARK	P1	HIGHLANDS	GT	NG	DFO	PL	TK			10/2020		(24)	(25)	RT	(1)
AVON PARK	P2	HIGHLANDS	GT	DFO		TK				10/2020		(24)	(25)	RT	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2021	12/2021		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2021	12/2021		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2021	12/2021		56,000	32	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(1)			(2)
UNKNOWN	1	UNKNOWN	PV	SO				05/2021	01/2022		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				05/2021	01/2022		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(1)			(2)
UNKNOWN	1	UNKNOWN	PV	SO				04/2023	05/2023		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2023	05/2023		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(2)			(2)
OSPREY CC	1	POLK	CC	NG	DFO	PL	TK		05/2024			337	355	P	(3)
UNKNOWN	1	UNKNOWN	PV	SO				04/2024	05/2024		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2024	05/2024		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(3)			(2)
UNKNOWN	1	UNKNOWN	PV	SO				04/2025	12/2025		74,900	43	0	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2025	12/2025		74,900	43	0	P	(1)
BAYBORO	P1 - P4	PINELLAS	GT	DFO		WA				12/2025		(171)	(238)		
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(3)			(2)
UNKNOWN	1	UNKNOWN	PV	SO				04/2026	12/2026		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(3)			(2)
DEBARY	P2 - P6	VOLUSIA	GT	DFO		TK				06/2027		(249)	(324)		
BARTOW	P1, P3	PINELLAS	GT	DFO		WA				06/2027		(82)	(105)		
UNKNOWN	P1	UNKNOWN	GT	NG	DFO	PL	TK	01/2025	06/2027		229,400	226	240	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2027	12/2027		74,900	43	0	P	(1)
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	DFO		WA				11/2027		(44)	(46)		
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(4)			(2)
UNKNOWN	1	UNKNOWN	PV	SO				04/2028	12/2028		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(4)			(2)
UNKNOWN	P2	UNKNOWN	GT	NG	DFO	PL	TK	01/2025	06/2029		229,400	226	240	P	(1)
UNKNOWN	1	UNKNOWN	PV	SO				04/2027	12/2029		74,900	43	0	P	(1)
SOLAR DEGRADATION	N/A	N/A	N/A	N/A		N/A		N/A	N/A	N/A	N/A	(4)			(2)

a. See page v. for Code Legend of Future Generating Unit Status.
b. NOTES
(1) Planned, Prospective, or Committed project.
(2) Solar capacity degrades by 0.5% every year
(3) Osprey CC Acquisition total capacity is available once Transmission Upgrades are in service, total Summer capacity goes up to 582MW and total Winter capacity goes up to 600MW

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**Columbia**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		8/2019	
	b. Commercial in-service date:		3/2020	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A	%
	b. Forced Outage Factor (FOF):		N/A	%
	c. Equivalent Availability Factor (EAF):		N/A	%
	d. Resulting Capacity Factor (%):		~31	%
	e. Average Net Operating Heat Rate (ANOHR):		N/A	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**DeBary**	
(2)	Capacity			
	a. Nameplate (MWac):		74.5	
	b. Summer Firm (MWac):		33.5	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		9/2019	
	b. Commercial in-service date:		5/2020	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~300-400 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A %	
	b. Forced Outage Factor (FOF):		N/A %	
	c. Equivalent Availability Factor (EAF):		N/A %	
	d. Resulting Capacity Factor (%):		~24 %	
	e. Average Net Operating Heat Rate (ANOHR):		N/A BTU/kWh	
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**Twin Rivers**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2020	
	b. Commercial in-service date:		12/2020	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~450-550 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~27 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**Santa Fe**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2020	
	b. Commercial in-service date:		12/2020	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-650 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**	
(2)	Capacity		
	a. Nameplate (MWac):	74.9	
	b. Summer Firm (MWac):	42.7	
	c. Winter Firm (MWac):	-	
(3)	Technology Type:	PHOTOVOLTAIC	
(4)	Anticipated Construction Timing		
	a. Field construction start date:	4/2021	
	b. Commercial in-service date:	12/2021	(EXPECTED)
(5)	Fuel		
	a. Primary fuel:	SOLAR	
	b. Alternate fuel:	N/A	
(6)	Air Pollution Control Strategy:	N/A	
(7)	Cooling Method:	N/A	
(8)	Total Site Area:	~500-600 ACRES	
(9)	Construction Status:	PLANNED	
(10)	Certification Status:		
(11)	Status with Federal Agencies:		
(12)	Projected Unit Performance Data		
	a. Planned Outage Factor (POF):	N/A %	
	b. Forced Outage Factor (FOF):	N/A %	
	c. Equivalent Availability Factor (EAF):	N/A %	
	d. Resulting Capacity Factor (%):	~29 %	
	e. Average Net Operating Heat Rate (ANOHR):	N/A BTU/kWh	
(13)	Projected Unit Financial Data		
	a. Book Life (Years):	30	
	b. Total Installed Cost (In-service year $/kW):	Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac): ($2020)		
	d. AFUDC Amount ($/kW):		
	e. Escalation ($/kW):		
	f. Fixed O&M ($/kWdc-yr): ($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh): ($2020)	0.00	
	h. K Factor:	NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2021	
	b. Commercial in-service date:		12/2021	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A	%
	b. Forced Outage Factor (FOF):		N/A	%
	c. Equivalent Availability Factor (EAF):		N/A	%
	d. Resulting Capacity Factor (%):		~29	%
	e. Average Net Operating Heat Rate (ANOHR):		N/A	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		56.0	
	b. Summer Firm (MWac):		31.9	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2021	
	b. Commercial in-service date:		12/2021	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~450-550 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A %	
	b. Forced Outage Factor (FOF):		N/A %	
	c. Equivalent Availability Factor (EAF):		N/A %	
	d. Resulting Capacity Factor (%):		~29 %	
	e. Average Net Operating Heat Rate (ANOHR):		N/A BTU/kWh	
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):		Less than $1,650/Kw	
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)	Less than $8/Kw	
	g. Variable O&M ($/MWh):	($2020)	0.00	
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		5/2021	
	b. Commercial in-service date:		01/2022	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		5/2021	
	b. Commercial in-service date:		01/2022	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**		
(2)	Capacity			
	a. Nameplate (MWac):	74.9		
	b. Summer Firm (MWac):	42.7		
	c. Winter Firm (MWac):	-		
(3)	Technology Type:	PHOTOVOLTAIC		
(4)	Anticipated Construction Timing			
	a. Field construction start date:	9/2022		
	b. Commercial in-service date:	5/2023		(EXPECTED)
(5)	Fuel			
	a. Primary fuel:	SOLAR		
	b. Alternate fuel:	N/A		
(6)	Air Pollution Control Strategy:	N/A		
(7)	Cooling Method:	N/A		
(8)	Total Site Area:	~500-600 ACRES		
(9)	Construction Status:	PLANNED		
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A %	
	b. Forced Outage Factor (FOF):		N/A %	
	c. Equivalent Availability Factor (EAF):		N/A %	
	d. Resulting Capacity Factor (%):		~29 %	
	e. Average Net Operating Heat Rate (ANOHR):		N/A BTU/kWh	
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac): ($2020)			
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr): ($2020)			
	g. Variable O&M ($/MWh): ($2020)		0.00	
	h. K Factor:	NO CALCULATION		

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**		
(2)	Capacity			
	a. Nameplate (MWac):	74.9		
	b. Summer Firm (MWac):	42.7		
	c. Winter Firm (MWac):	-		
(3)	Technology Type:	PHOTOVOLTAIC		
(4)	Anticipated Construction Timing			
	a. Field construction start date:	9/2022		
	b. Commercial in-service date:	5/2023		(EXPECTED)
(5)	Fuel			
	a. Primary fuel:	SOLAR		
	b. Alternate fuel:	N/A		
(6)	Air Pollution Control Strategy:	N/A		
(7)	Cooling Method:	N/A		
(8)	Total Site Area:	~500-600 ACRES		
(9)	Construction Status:	PLANNED		
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A %	
	b. Forced Outage Factor (FOF):		N/A %	
	c. Equivalent Availability Factor (EAF):		N/A %	
	d. Resulting Capacity Factor (%):		~29 %	
	e. Average Net Operating Heat Rate (ANOHR):		N/A BTU/kWh	
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac): ($2020)			
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr): ($2020)			
	g. Variable O&M ($/MWh): ($2020)		0.00	
	h. K Factor:	NO CALCULATION		

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		9/2023	
	b. Commercial in-service date:		5/2024	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		9/2023	
	b. Commercial in-service date:		5/2024	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**		
(2)	Capacity			
	a. Nameplate (MWac):	74.9		
	b. Summer Firm (MWac):	42.7		
	c. Winter Firm (MWac):	-		
(3)	Technology Type:	PHOTOVOLTAIC		
(4)	Anticipated Construction Timing			
	a. Field construction start date:	4/2025		
	b. Commercial in-service date:	12/2025	(EXPECTED)	
(5)	Fuel			
	a. Primary fuel:	SOLAR		
	b. Alternate fuel:	N/A		
(6)	Air Pollution Control Strategy:	N/A		
(7)	Cooling Method:	N/A		
(8)	Total Site Area:	~500-600 ACRES		
(9)	Construction Status:	PLANNED		
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A	%
	b. Forced Outage Factor (FOF):		N/A	%
	c. Equivalent Availability Factor (EAF):		N/A	%
	d. Resulting Capacity Factor (%):		~29	%
	e. Average Net Operating Heat Rate (ANOHR):		N/A	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac): ($2020)			
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr): ($2020)			
	g. Variable O&M ($/MWh): ($2020)		0.00	
	h. K Factor:	NO CALCULATION		

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2025	
	b. Commercial in-service date:		12/2025	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**	
(2)	Capacity		
	a. Nameplate (MWac):	74.9	
	b. Summer Firm (MWac):	42.7	
	c. Winter Firm (MWac):	-	
(3)	Technology Type:	PHOTOVOLTAIC	
(4)	Anticipated Construction Timing		
	a. Field construction start date:	4/2026	
	b. Commercial in-service date:	12/2026	(EXPECTED)
(5)	Fuel		
	a. Primary fuel:	SOLAR	
	b. Alternate fuel:	N/A	
(6)	Air Pollution Control Strategy:	N/A	
(7)	Cooling Method:	N/A	
(8)	Total Site Area:	~500-600 ACRES	
(9)	Construction Status:	PLANNED	
(10)	Certification Status:		
(11)	Status with Federal Agencies:		
(12)	Projected Unit Performance Data		
	a. Planned Outage Factor (POF):		N/A %
	b. Forced Outage Factor (FOF):		N/A %
	c. Equivalent Availability Factor (EAF):		N/A %
	d. Resulting Capacity Factor (%):		~29 %
	e. Average Net Operating Heat Rate (ANOHR):		N/A BTU/kWh
(13)	Projected Unit Financial Data		
	a. Book Life (Years):		30
	b. Total Installed Cost (In-service year $/kW):		
	c. Direct Construction Cost ($/kWac): ($2020)		
	d. AFUDC Amount ($/kW):		
	e. Escalation ($/kW):		
	f. Fixed O&M ($/kWdc-yr): ($2020)		
	g. Variable O&M ($/MWh): ($2020)		0.00
	h. K Factor:	NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**Undesignated CT P1**	
(2)	Capacity			
	a. Summer (MWs):		226	
	b. Winter (MWs):		240	
(3)	Technology Type:		COMBUSTION TURBINE	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		1/2025	
	b. Commercial in-service date:		6/2027	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		NATURAL GAS	
	b. Alternate fuel:		DISTILLATE FUEL OIL	
(6)	Air Pollution Control Strategy:		Dry Low Nox Combustion	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		UNKNOWN	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:		PLANNED	
(11)	Status with Federal Agencies:		PLANNED	
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		3.00	%
	b. Forced Outage Factor (FOF):		2.00	%
	c. Equivalent Availability Factor (EAF):		95.06	%
	d. Resulting Capacity Factor (%):		18.6	%
	e. Average Net Operating Heat Rate (ANOHR):		10,621	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		35	
	b. Total Installed Cost (In-service year $/kW):		647.4	
	c. Direct Construction Cost ($/kW):	($2020)	562.2	
	d. AFUDC Amount ($/kW):		35.3	
	e. Escalation ($/kW):		49.9	
	f. Fixed O&M ($/kW-yr):	($2020)	1.64	
	g. Variable O&M ($/MWh):	($2020)	7.26	
	h. K Factor:		NO CALCULATION	

NOTES
Total Installed Cost includes gas expansion, transmission interconnection and integration
$/kW values are based on Summer capacity
Fixed O&M cost does not include firm gas transportation costs

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**		
(2)	Capacity			
	a. Nameplate (MWac):	74.9		
	b. Summer Firm (MWac):	42.7		
	c. Winter Firm (MWac):	-		
(3)	Technology Type:	PHOTOVOLTAIC		
(4)	Anticipated Construction Timing			
	a. Field construction start date:	4/2027		
	b. Commercial in-service date:	12/2027	(EXPECTED)	
(5)	Fuel			
	a. Primary fuel:	SOLAR		
	b. Alternate fuel:	N/A		
(6)	Air Pollution Control Strategy:	N/A		
(7)	Cooling Method:	N/A		
(8)	Total Site Area:	~500-600 ACRES		
(9)	Construction Status:	PLANNED		
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A	%
	b. Forced Outage Factor (FOF):		N/A	%
	c. Equivalent Availability Factor (EAF):		N/A	%
	d. Resulting Capacity Factor (%):		~29	%
	e. Average Net Operating Heat Rate (ANOHR):		N/A	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac): ($2020)			
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr): ($2020)			
	g. Variable O&M ($/MWh): ($2020)		0.00	
	h. K Factor:	NO CALCULATION		

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**TBD**	
(2)	Capacity			
	a. Nameplate (MWac):		74.9	
	b. Summer Firm (MWac):		42.7	
	c. Winter Firm (MWac):		-	
(3)	Technology Type:		PHOTOVOLTAIC	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		4/2028	
	b. Commercial in-service date:		12/2028	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		SOLAR	
	b. Alternate fuel:		N/A	
(6)	Air Pollution Control Strategy:		N/A	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		~500-600 ACRES	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):			N/A %
	b. Forced Outage Factor (FOF):			N/A %
	c. Equivalent Availability Factor (EAF):			N/A %
	d. Resulting Capacity Factor (%):			~29 %
	e. Average Net Operating Heat Rate (ANOHR):			N/A BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):			30
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac):	($2020)		
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr):	($2020)		
	g. Variable O&M ($/MWh):	($2020)		0.00
	h. K Factor:		NO CALCULATION	

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:		**Undesignated CT P2**	
(2)	Capacity			
	a. Summer (MWs):		226	
	b. Winter (MWs):		240	
(3)	Technology Type:		COMBUSTION TURBINE	
(4)	Anticipated Construction Timing			
	a. Field construction start date:		1/2027	
	b. Commercial in-service date:		6/2029	(EXPECTED)
(5)	Fuel			
	a. Primary fuel:		NATURAL GAS	
	b. Alternate fuel:		DISTILLATE FUEL OIL	
(6)	Air Pollution Control Strategy:		Dry Low Nox Combustion	
(7)	Cooling Method:		N/A	
(8)	Total Site Area:		UNKNOWN	
(9)	Construction Status:		PLANNED	
(10)	Certification Status:		PLANNED	
(11)	Status with Federal Agencies:		PLANNED	
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		3.00	%
	b. Forced Outage Factor (FOF):		2.00	%
	c. Equivalent Availability Factor (EAF):		95.06	%
	d. Resulting Capacity Factor (%):		18.6	%
	e. Average Net Operating Heat Rate (ANOHR):		10,621	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		35	
	b. Total Installed Cost (In-service year $/kW):		665.3	
	c. Direct Construction Cost ($/kW):	($2020)	562.2	
	d. AFUDC Amount ($/kW):		36.3	
	e. Escalation ($/kW):		66.8	
	f. Fixed O&M ($/kW-yr):	($2020)	1.64	
	g. Variable O&M ($/MWh):	($2020)	7.26	
	h. K Factor:		NO CALCULATION	

NOTES
Total Installed Cost includes gas expansion, transmission interconnection and integration
$/kW values are based on Summer capacity
Fixed O&M cost does not include firm gas transportation costs

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2020

(1)	Plant Name and Unit Number:	**TBD**		
(2)	Capacity			
	a. Nameplate (MWac):	74.9		
	b. Summer Firm (MWac):	42.7		
	c. Winter Firm (MWac):	-		
(3)	Technology Type:	PHOTOVOLTAIC		
(4)	Anticipated Construction Timing			
	a. Field construction start date:	4/2029		
	b. Commercial in-service date:	12/2029	(EXPECTED)	
(5)	Fuel			
	a. Primary fuel:	SOLAR		
	b. Alternate fuel:	N/A		
(6)	Air Pollution Control Strategy:	N/A		
(7)	Cooling Method:	N/A		
(8)	Total Site Area:	~500-600 ACRES		
(9)	Construction Status:	PLANNED		
(10)	Certification Status:			
(11)	Status with Federal Agencies:			
(12)	Projected Unit Performance Data			
	a. Planned Outage Factor (POF):		N/A	%
	b. Forced Outage Factor (FOF):		N/A	%
	c. Equivalent Availability Factor (EAF):		N/A	%
	d. Resulting Capacity Factor (%):		~29	%
	e. Average Net Operating Heat Rate (ANOHR):		N/A	BTU/kWh
(13)	Projected Unit Financial Data			
	a. Book Life (Years):		30	
	b. Total Installed Cost (In-service year $/kW):			
	c. Direct Construction Cost ($/kWac): ($2020)			
	d. AFUDC Amount ($/kW):			
	e. Escalation ($/kW):			
	f. Fixed O&M ($/kWdc-yr): ($2020)			
	g. Variable O&M ($/MWh): ($2020)		0.00	
	h. K Factor:	NO CALCULATION		

DUKE ENERGY FLORIDA

SCHEDULE 10
STATUS REPORT AND SPECIFICATIONS OF PROPOSED DIRECTLY ASSOCIATED TRANSMISSION LINES

OSPREY

(1) POINT OF ORIGIN AND TERMINATION:	Kathleen - Osprey - Haines City East
(2) NUMBER OF LINES:	1
(3) RIGHT-OF-WAY:	New transmission line right-of-way
(4) LINE LENGTH:	50 miles
(5) VOLTAGE:	230 kV
(6) ANTICIPATED CONSTRUCTION TIMING:	6/1/2024
(7) ANTICIPATED CAPITAL INVESTMENT:	$150,000,000
(8) SUBSTATIONS:	Kathleen, Osprey, Haines City East
(9) PARTICIPATION WITH OTHER UTILITIES:	N/A

INTEGRATED RESOURCE PLANNING OVERVIEW

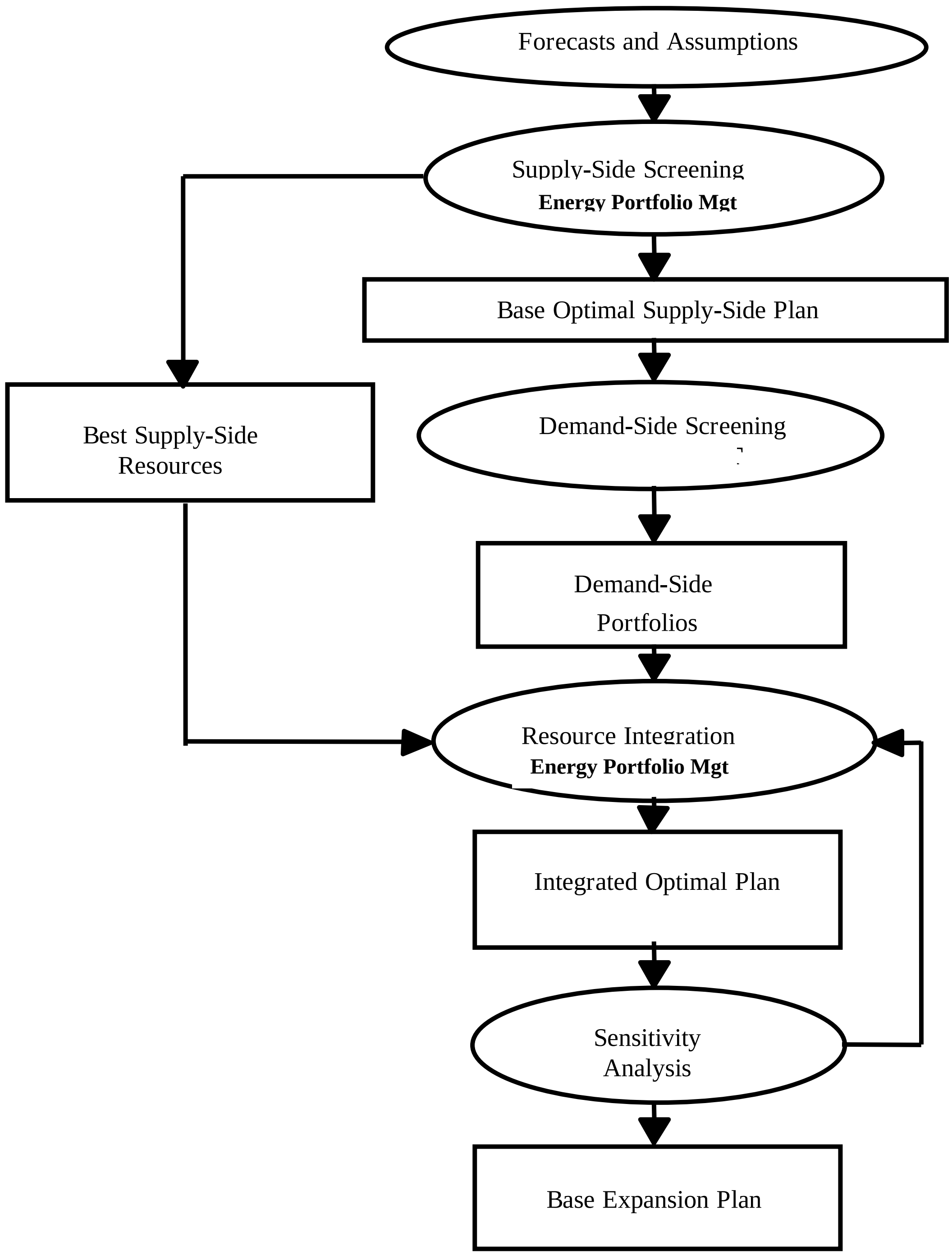
DEF employs an Integrated Resource Planning (IRP) process to determine the most cost-effective mix of supply- and demand-side alternatives that will reliably satisfy our customers' future demand and energy needs. DEF's IRP process incorporates state-of-the-art computer models used to evaluate a wide range of future generation alternatives and cost-effective conservation and dispatchable demand-side management programs on a consistent and integrated basis.

An overview of DEF's IRP Process is shown in Figure 3.1. The process begins with the development of various forecasts, including demand and energy, fuel prices, and economic assumptions. Future supply- and demand-side resource alternatives are identified and extensive cost and operating data are collected to enable these to be modeled in detail. These alternatives are optimized together to determine the most cost-effective plan for DEF to pursue over the next ten years to meet the Company's reliability criteria. The resulting ten-year plan, the Integrated Optimal Plan, is then tested under different relevant sensitivity scenarios to identify variances, if any, which would warrant reconsideration of any of the base plan assumptions. If the plan is judged robust and works within the corporate framework, it evolves as the Base Expansion Plan. This process is discussed in more detail in the following section titled "The Integrated Resource Planning (IRP) Process".

The IRP provides DEF with substantial guidance in assessing and optimizing the Company's overall resource mix on both the supply side and the demand side. When a decision supporting a significant resource commitment is being developed (e.g. plant construction, power purchase, DSM program implementation), the Company will move forward with directional guidance from the IRP and delve much further into the specific levels of examination required. This more detailed assessment will typically address very specific technical requirements and cost estimates, detailed corporate financial considerations, and the most current dynamics of the business and regulatory environments.

FIGURE 3.1

Integrated Resource Planning (IRP) Process Overview



THE INTEGRATED RESOURCE PLANNING (IRP) PROCESS

Forecasts and Assumptions

The evaluation of possible supply- and demand-side alternatives, and development of the optimal plan, is an integral part of the IRP process. These steps together comprise the integration process that begins with the development of forecasts and collection of input data. Base forecasts that reflect DEF's view of the most likely future scenario are developed. Additional future scenarios along with high and low forecasts may also be developed. Computer models used in the process are brought up-to-date to reflect this data, along with the latest operating parameters and maintenance schedules for DEF's existing generating units. This establishes a consistent starting point for all further analysis.

Reliability Criteria

Utilities require a margin of generating capacity above the firm demands of their customers in order to provide reliable service. Periodic scheduled outages are required to perform maintenance and inspections of generating plant equipment. At any given time during the year, some capacity may be out of service due to unanticipated equipment failures resulting in forced outages of generation units. Adequate reserve capacity must be available to accommodate these outages and to compensate for higher than projected peak demand due to forecast uncertainty and abnormal weather. In addition, some capacity must be available for operating reserves to maintain the balance between supply and demand on a moment-to-moment basis.

DEF plans its resources in a manner consistent with utility industry planning practices, and employs both deterministic and probabilistic reliability criteria in the resource planning process. A Reserve Margin criterion is used as a deterministic measure of DEF's ability to meet its forecasted seasonal peak load with firm capacity. DEF plans its resources to satisfy a minimum 20% Reserve Margin criterion.

Loss of Load Probability (LOLP) is a probabilistic criterion that measures the probability that a company will be unable to meet its load throughout the year. While Reserve Margin considers the peak load and amount of installed resources, LOLP considers generating unit sizes, capacity mix, maintenance scheduling, unit availabilities, and capacity assistance available from other utilities. A standard probabilistic reliability threshold commonly used in the electric utility industry, and the criterion employed by DEF, is a maximum of one day in ten years loss of load probability.

DEF has based its resource planning on the use of dual reliability criteria since the early 1990s, a practice that has been accepted by the FPSC. DEF's resource portfolio is designed to satisfy the 20% Reserve Margin requirement and probabilistic analyses are periodically conducted to ensure that the one day in ten years LOLP criterion is also satisfied. By using both the Reserve Margin and LOLP planning criteria, DEF's resource portfolio is designed to have sufficient capacity available to meet customer peak demand, and to provide reliable generation service under expected load conditions. DEF has found that resource additions are typically triggered to meet the 20% Reserve Margin thresholds before LOLP becomes a factor.

Supply-Side Screening

Potential supply-side resources are screened to determine those that are the most cost-effective. Data used for the screening analysis is compiled from various industry sources and DEF's experiences. The wide range of resource options is pre-screened to set aside those that do not warrant a detailed cost-effectiveness analysis. Typical screening criteria are costs, fuel source, technology maturity, environmental parameters (e.g. possible climate legislation), and overall resource feasibility.

Economic evaluation of generation alternatives is performed using the System Optimizer optimization program, a module of the Energy Portfolio Management software. This optimization tool evaluates revenue requirements for specific resource plans generated from multiple combinations of future resource additions that meet system reliability criteria and other system constraints. All resource plans are then ranked by system revenue requirements.

Demand-Side Screening

Like supply-side resources, the impacts of potential demand-side resources are also factored into the integrated resource plan. The projected MW and MWH impacts for demand-side management resources are based on the energy efficiency measures and load management programs included in DEF's 2015 DSM Plan and meet the goals established by the Florida Public Service Commission (FPSC) in December 2019 (Docket 20190018-EG).

Resource Integration and the Integrated Optimal Plan

The cost-effective generation alternatives can then be optimized together with the demand-side portfolios developed in the screening process to formulate integrated optimal plans. The optimization program considers all possible future combinations of supply- and demand-side alternatives that meet the Company's reliability criteria in each year of the ten-year study period and reports those that provide both flexibility and reasonable revenue requirements (rates) for DEF's customers.

Developing the Base Expansion Plan

The integrated optimized plan that provides the lowest revenue requirements may then be further tested using sensitivity analysis, including High and Low Demand and Energy Forecasts (see Schedules 2 and 3). The economics of the plan may be evaluated under high and low forecast scenarios for fuel, load and financial assumptions, or any other sensitivities which the planner deems relevant. From the sensitivity assessment, the plan that is identified as achieving the best balance of flexibility and cost is then reviewed within the corporate framework to determine how the plan potentially impacts or is impacted by many other factors. If the plan is judged robust under this review, it would then be considered the Base Expansion Plan.

KEY CORPORATE FORECASTS

Load Forecast

The assumptions and methodology used to develop the base case load and energy forecast are described in Chapter 2 of this TYSP. The High and Low forecasts of load and energy were provided to Resource Planning to test the robustness of the base plan.

Fuel Forecast

The base case fuel price forecast was developed using short-term and long-term spot market price projections from industry-recognized sources. The base cost for coal is based on the existing contracts and spot market coal prices and transportation arrangements between DEF and its various suppliers. For the longer term, the prices are based on spot market forecasts reflective of expected market conditions. Oil and natural gas prices are estimated based on current and expected contracts and spot purchase arrangements as well as near-term and long-term market forecasts. Oil and natural gas commodity prices are driven primarily by open market forces of supply and demand. Natural gas firm transportation cost is determined primarily by pipeline tariff rates.

Financial Forecast

The key financial assumptions used in DEF's most recent planning studies were 47% debt and 53% equity capital structure, projected cost of debt of 4.35%, and an equity return of 10.5%. The assumptions resulted on a weighted average cost of capital of 7.61% and an after-tax discount rate of 7.10%.

TEN-YEAR SITE PLAN (TYSP) RESOURCE ADDITIONS

DEF's planned supply resource additions and changes are shown in Schedule 8 and are referred to as DEF's Base Expansion Plan. This plan includes a net addition of 1,403 MW of Solar PV generation with an expected equivalent summer firm capacity contribution of approximately 800 MW and 452 MW of new natural gas fired generation consisting of two planned combustion turbine units, one added in year 2027 and another in year 2029, at undesignated sites as well as the incorporation of the full firm capacity of the Osprey Energy Center. DEF continues to seek market supply-side resource alternatives to enhance DEF's resource plan. In this plan, DEF has assigned this DEF owned solar PV generation an equivalent summer capacity value equal to 57% of the nameplate capacity of the planned installations. This assignment assumes that the projects developed over the period of this plan will be single-axis tracking technology. We foresee that as more solar is added, the net-load peak hour will start to shift to later hours, and the solar contribution to firm capacity might decline. DEF plans to evaluate this assignment over time and may revise this value in future Site Plans based on changes in project designs and the data received from actual operation of these facilities once they are installed.

DEF's Base Expansion Plan projects the need for additional capacity with proposed in-service dates during the ten-year period from 2020 through 2029. The planned capacity additions, together with purchases from Qualifying Facilities (QF), Investor Owned Utilities, and Independent Power Producers help the DEF system meet the energy requirements of its customer base. The capacity needs identified in this plan may be impacted by DEF's ability to extend or replace existing purchase power and QF contracts and to secure new renewable purchased power resources in their respective projected timeframes. The additions in the Base Expansion Plan depend, in part, on projected load growth, and obtaining all necessary state and federal permits under current schedules. Changes in these or other factors could impact DEF's Base Expansion Plan.

Through its ongoing planning process, DEF will continue to evaluate the timetables for all projected resource additions and assess alternatives for the future considering, among other things, projected load growth, fuel prices, lead times in the construction marketplace, project development timelines for new fuels and technologies, and environmental compliance considerations. The Company will continue to examine the merits of new generation alternatives and adjust its resource plans accordingly to ensure optimal selection of resource additions based on the best information available.

RENEWABLE ENERGY

DEF continues to secure renewable energy from the following facilities listed by fuel type:

Purchases from Municipal Solid Waste Facilities:

Pasco County Resource Recovery (23 MW)
Pinellas County Resource Recovery (54.8 MW)
Dade County Resource Recovery (As Available)
Lake County Resource Recovery (As Available)
Lee County Resource Recovery (As Available)

Purchases from Waste Heat from Exothermic Processes:

PCS Phosphate (As Available)
Citrus World (As Available)

Photovoltaics

DEF-owned Solar Facilities (212.85 MW)

Osceola 3.8 MW
Perry 5.1 MW
Suwannee 8.8 MW

Hamilton 74.9 MW

Trenton 74.9 MW

Lake Placid 45.0 MW

St Petersburg Pier 0.35 MW

Customer-owned renewable generation under DEF's Net Metering Tariff (about 175 MW as of 12/31/19)

DEF also has several as-available contracts utilizing solar PV technologies. As-available energy purchases are made on an hour by hour basis for which contractual commitments to the quantity, time or reliability of delivery are not required. At this time, the solar companies are projecting in-service dates beyond 2020. As of December 31, 2019, DEF had over 5,500 MW of solar projects in the various grid interconnection queues in Florida, representing over 80 active projects. While some of those projects anticipate selling to entities other than DEF, the Company continues to have the obligation to purchase uncommitted energy from those certified QFs at as-available energy rates. As a result, DEF is currently forecasting approximately 675 MW of QF as-available solar projects over a five-year period. In total, DEF is reasonably projecting over 2,500 MW of solar PV projects to be installed in the DEF territory over the next ten-year period. However, DEF continues to study and refine this projection. Project ownership proportions may change over time based on specific project economics, development details, renewable energy incentives and other factors.

DEF continues to field inquiries from potential renewable suppliers and explore whether these potential QFs can provide project commitments and reliable capacity or energy consistent with FERC Rules and the FPSC Rules, 25-17.080 through 25-17.310. DEF will continue to submit renewable contracts in compliance with all policies as appropriate.

Depending upon the mix of generators operating at any given time, the purchase of renewable energy may reduce DEF's use of fossil fuels. Renewable energy sources making firm commitments to the company can also defer or eliminate the need to construct more conventional generators. As part of DEF's integrated resource planning process, we are continually evaluating cost-effective alternatives to meet our customer's needs. DEF knows that renewable and distributed energy resources are an important part of Florida's energy future and we are committed to advancing these resources in an affordable and sustainable way. We are encouraged to see solar PV technology continue to reduce in price. As a result of the forecasts around solar PV technology, DEF has incorporated this clean energy source as an increasing supply-side resource in both DEF's near-term and long-term generation plans.

The development, construction, commissioning and initial operation of the solar projects at Perry, Osceola, Suwannee, Hamilton, the now commercial Lake Placid and Trenton, and under construction DeBary and Columbia plants have provided DEF with valuable experience in siting, contracting, constructing, operating, and integrating solar photovoltaic technology facilities on the power grid. DEF has worked with the contractors to establish necessary standards for the construction and upkeep of utility grade facilities and to develop standards necessary to ensure the reliability of local distribution systems. DEF is integrating voltage control in the transmission connected solar projects to enhance operational reliability and local transmission resiliency. In addition, DEF is incorporating the ability to place the solar facilities on Automatic Generation Control (AGC). This capability is preparing DEF for future scenarios where there is an excess of generation on the system and a need to utilize the solar resources to balance generation with demand. DEF is utilizing its operational experience and historic data from these solar resources to optimize the daily economic system dispatch, to quantify additional system flexibility needs to counteract the variability of solar generation and investigate potential fuel diversity contributions. Adding these near-term solar facilities is a natural evolution of integrating new generation technology and supplements the solar PV research and demonstration pilots operated under DEF's conservation programs. The Osceola, Perry, Suwannee, Hamilton, Lake Placid, Trenton, DeBary and Columbia arrays are shown in Figures 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, and 3.9 below.

FIGURE 3.2
Osceola Solar Site

FIGURE 3.3
Perry Solar Site

FIGURE 3.4
Suwannee Solar Site

FIGURE 3.5
Hamilton Solar Site

FIGURE 3.6
Lake Placid Solar Site

FIGURE 3.7
Trenton Solar Site

FIGURE 3.8
DeBary Solar Site

FIGURE 3.9
Columbia Solar Site

DEF's current forecast, supporting the Base Expansion Plan includes over 700 MW of DEF-owned solar PV to be under development over the next four years and over 1,500 MW over the ten-year planning horizon. As with all forecasts included here, the forecast relies heavily on the forward-looking price for this technology, the value rendered by this technology, and considerations to other emerging and conventional cost-effective alternatives, including the use of emerging battery storage technology.

PLAN CONSIDERATIONS

Load Forecast

In general, higher-than-projected load growth would shift the need for new capacity to an earlier year and lower-than-projected load growth would delay the need for new resources. The Company's resource plan provides the flexibility to shift certain resources to earlier or later in-service dates should a significant change in projected customer demand begin to materialize. A specific discussion of DEF's review of load growth forecasts higher and lower than the base forecast can be found in the previous sections.

TRANSMISSION PLANNING

DEF's transmission planning assessment practices are developed to test the ability of the planned system to meet the reliability criteria as outlined in the FERC Form No. 715 filing, and to assure the system meets DEF, Florida Reliability Coordinating Council, Inc. (FRCC), and North American Electric Reliability Corporation (NERC) criteria. This involves the use of load flow and transient stability programs to model various contingency situations that may occur, and in determining if the system response meets the reliability criteria. In general, this involves running simulations for the loss of any single line, generator, or transformer. DEF runs this analysis for contingencies that may occur at system peak and off-peak load levels, under both summer and winter conditions. Additional studies are performed to determine the system response to credible, but less probable criteria. These studies include the loss of multiple generators, transmission lines, or combinations of each (some load loss is permissible under the more severe disturbances). These credible, but less probable scenarios are also evaluated at various load levels, since some of the more severe situations occur at average or minimum load conditions. In particular, critical fault clearing times are typically the shortest (most severe) at minimum load conditions, with just a few large base load units supplying the system needs. As noted in the DEF reliability criteria, some remedial actions are allowed to reduce system loadings; in particular, sectionalizing is allowed to reduce loading on lower voltage lines for bulk system contingencies, but the risk to load on the sectionalized system must be reasonable (it would not be considered prudent to operate for long periods with a sectionalized system). In addition, the number of remedial action steps and the overall complexity of the scheme are evaluated to determine overall acceptability.

DEF presently uses the following reference documents to calculate and manage Available Transfer Capability (ATC), Total Transfer Capability (TTC) and Transmission Reliability Margin (TRM) for required transmission path postings on the Florida Open Access Same Time Information System (OASIS):

- http://www.oatioasis.com/FPC/FPCdocs/ATCID_Posted_Rev4.docx
- http://www.oatioasis.com/FPC/FPCdocs/TRMID_4.docx

DEF uses the following reference document to calculate and manage Capacity Benefit Margin (CBM):

- http://www.oatioasis.com/FPC/FPCdocs/CBMID_rev3.docx

CHAPTER 4

ENVIRONMENTAL AND LAND USE INFORMATION

DUKE ENERGY.
FLORIDA

CHAPTER 4

ENVIRONMENTAL AND LAND USE INFORMATION

PREFERRED SITES

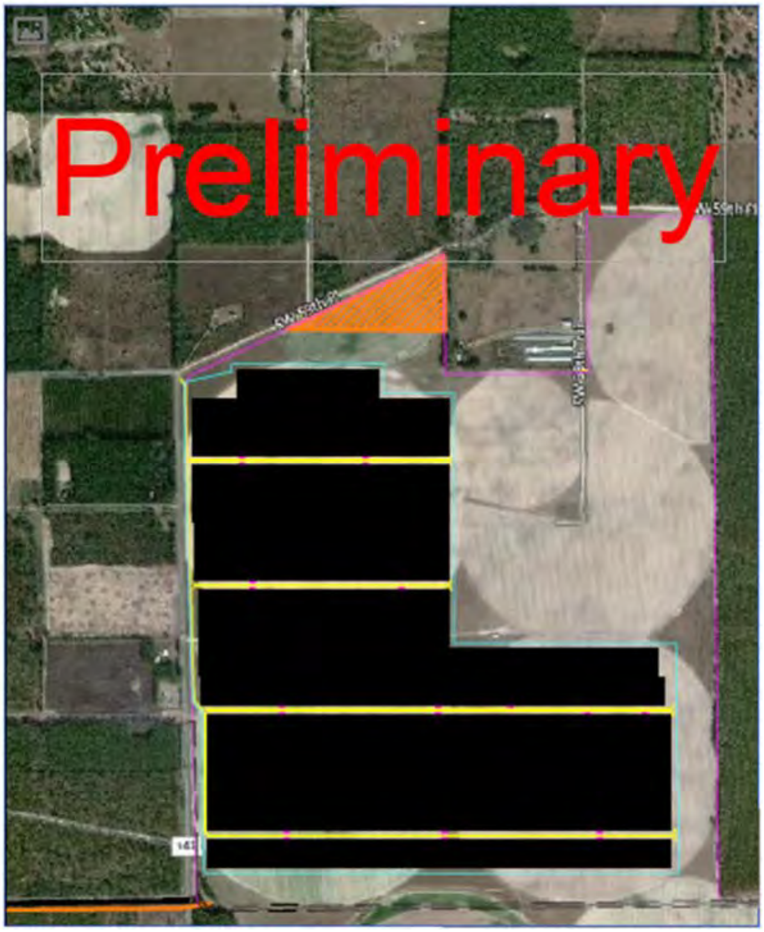
DEF’s 2020 TYSP Preferred Sites include two solar generations sites; the Twin Rivers Solar Site and the Santa Fe Solar Site. These Preferred Sites are discussed below.

TWIN RIVERS SOLAR SITE

DEF has identified the Twin Rivers Solar Project, a 74.9 MWac solar single-axis tracking PV project located in Hamilton County, Florida. The site is located on former agricultural and timber lands and is relatively flat with minimal sloping that will allow for the use of a tracking system. The point of interconnection will be a new 230 kV three terminal, three breaker switching station and will be connected via a generation tie-line. All environmental surveys are complete, and DEF has received the necessary special permits from Hamilton County. A Site and Development Plan approval is required from Hamilton County along with an Environmental Resource Permit from FDEP. The project expects to find a limited number of Gopher Tortoises with no other impacts to wetlands or additional species. The project is expected to start construction in early 2020 with an expected in-service date at the end of 2020 or beginning of 2021.

FIGURE 4.1

Twin Rivers Solar Project



SANTA FE SOLAR POWER PLANT

DEF has identified the Santa Fe Solar Project, a 74.9 MWac solar single-axis tracking PV project located in Columbia County, Florida. The site is a former agricultural and cattle grazing lands and is relatively flat with minimal sloping that will allow for the use of a tracking system. The point of interconnection will be a new 230 kV three terminal, three breaker switching station and will be connected via a generation tie-line. All environmental surveys are complete, and DEF has received the necessary special use permit from Columbia County. An Environmental Resource Permit is required from FDEP, but it the responsibility of the EPC. A Gopher Tortoises relocation permit from FDEP has been received assuming 89 tortoises will need to be relocated to an already identified recipient site. There are no wetlands on site and no additional species of concern. The project is expected to start construction in early 2020 with an expected in-service date at the end of 2020.

FIGURE 4.2
Santa Fe Solar Project