Dianne M. Triplett
ASSOCIATE GENERAL COUNSEL
Duke Energy Florida, LLC

April 1, 2016

VIA ELECTRONIC DELIVERY

Ms. Carlotta Stauffer, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Ten-Year Site Plan as of December 31, 2015

Dear Ms. Stauffer:

Pursuant to Rule 25-22.071, F.A.C., please find enclosed for filing Duke Energy Florida, LLC's 2016 Ten-Year Site Plan.

Thank you for your assistance in this matter. Please feel free to call me at (727) 820-4692 should you have any questions.

Sincerely,

/s/ Dianne M. Triplett

Dianne M. Triplett

DMT:at
Attachment

Duke Energy Florida, LLC
Ten-Year Site Plan

April 2016

2016-2025

Submitted to:
Florida Public Service Commission

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LIST OF
REQUIRED SCHEDULES

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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 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 1.7 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 5,000 circuit miles of transmission lines. The distribution system includes approximately 18,000 circuit miles of overhead distribution conductors and approximately 13,000 circuit miles of underground distribution cable.

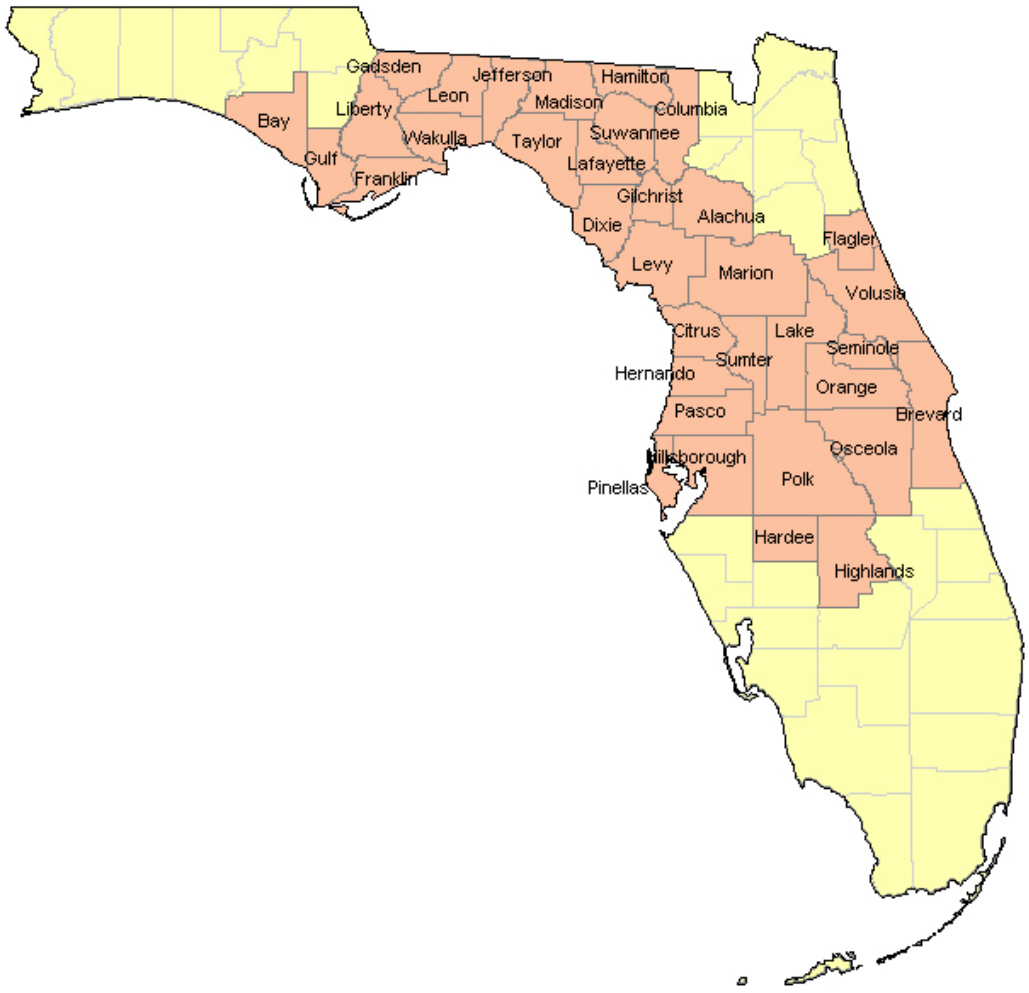
ENERGY MANAGEMENT and ENERGY EFFICIENCY

The Company's residential Energy Management program represents a demand response type of program where participating customers help manage future growth and costs. Approximately 418,000 customers participated in the residential Energy Management program during 2015, contributing about 658 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, 2015, DEF had total summer capacity resources of 11,360 MW consisting of installed capacity of 9,101 MW and 2,259 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, 2015

(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	521	524
ANCLOTE	2	PASCO	ST	NG		PL			10/78		556,200	520	524
CRYSTAL RIVER	1	CITRUS	ST	BIT		RR	WA		10/66	4/2018 ***	440,550	370	372
CRYSTAL RIVER	2	CITRUS	ST	BIT		RR	WA		11/69	4/2018 ***	523,800	499	503
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
SUWANNEE RIVER	1	SUWANNEE	ST	NG		PL		**	11/53	11/2016 ***	34,500	28	28
SUWANNEE RIVER	2	SUWANNEE	ST	NG		PL		**	11/54	11/2016 ***	37,500	29	28
SUWANNEE RIVER	3	SUWANNEE	ST	NG		PL		**	10/56	11/2016 ***	75,000	71	73
											Steam Total	**3,460**	**3,494**
COMBINED-CYCLE													
BARTOW	4	PINELLAS	CC	NG	DFO	PL	TK	**	6/09		1,253,000	1,105	1,185
HINES ENERGY COMPLEX	1	POLK	CC	NG	DFO	PL	TK	**	4/99		546,500	462	528
HINES ENERGY COMPLEX	2	POLK	CC	NG	DFO	PL	TK	**	12/03		548,250	490	563
HINES ENERGY COMPLEX	3	POLK	CC	NG	DFO	PL	TK	**	11/05		561,000	488	564
HINES ENERGY COMPLEX	4	POLK	CC	NG	DFO	PL	TK	**	12/07		610,000	472	544
TIGER BAY	1	POLK	CC	NG		PL			8/97		278,100	205	231
											CC Total	**3,222**	**3,615**
COMBUSTION TURBINE													
AVON PARK	P1	HIGHLANDS	GT	NG	DFO	PL	TK	**	12/68	5/2020 ***	33,790	24	35
AVON PARK	P2	HIGHLANDS	GT	DFO		TK		**	12/68	5/2020 ***	33,790	24	35
BARTOW	P1	PINELLAS	GT	DFO		WA		**	5/72		55,700	43	52
BARTOW	P2	PINELLAS	GT	NG	DFO	PL	WA	**	6/72		55,700	42	57
BARTOW	P3	PINELLAS	GT	DFO		WA		**	6/72		55,700	43	53
BARTOW	P4	PINELLAS	GT	NG	DFO	PL	WA	**	6/72		55,700	47	61
BAYBORO	P1	PINELLAS	GT	DFO		WA		**	4/73		56,700	44	59
BAYBORO	P2	PINELLAS	GT	DFO		WA		**	4/73		56,700	42	57
BAYBORO	P3	PINELLAS	GT	DFO		WA		**	4/73		56,700	44	58
BAYBORO	P4	PINELLAS	GT	DFO		WA		**	4/73		56,700	44	58
DEBARY	P1	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	54	65
DEBARY	P2	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	51	64
DEBARY	P3	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	52	63
DEBARY	P4	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	51	63
DEBARY	P5	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	50	63
DEBARY	P6	VOLUSIA	GT	DFO		TK		**	12/75-4/76		66,870	52	63
DEBARY	P7	VOLUSIA	GT	NG	DFO	PL	TK	**	10/92		115,000	83	97
DEBARY	P8	VOLUSIA	GT	NG	DFO	PL	TK	**	10/92		115,000	83	96
DEBARY	P9	VOLUSIA	GT	NG	DFO	PL	TK	**	10/92		115,000	81	97
DEBARY	P10	VOLUSIA	GT	DFO		TK		**	10/92		115,000	80	95
HIGGINS	P1	PINELLAS	GT	NG	DFO	PL	TK	**	3/69	5/2020 ***	33,790	20	20
HIGGINS	P2	PINELLAS	GT	NG	DFO	PL	TK	**	4/69	5/2020 ***	33,790	25	25
HIGGINS	P3	PINELLAS	GT	NG	DFO	PL	TK	**	12/70	5/2020 ***	42,925	32	36
HIGGINS	P4	PINELLAS	GT	NG	DFO	PL	TK	**	1/71	5/2020 ***	42,925	32	35
INTERCESSION CITY	P1	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	48	63
INTERCESSION CITY	P2	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	48	61
INTERCESSION CITY	P3	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	47	63
INTERCESSION CITY	P4	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	47	62
INTERCESSION CITY	P5	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	47	61
INTERCESSION CITY	P6	OSCEOLA	GT	DFO		PL,TK		**	5/74		56,700	49	62
INTERCESSION CITY	P7	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	10/93		115,000	83	94
INTERCESSION CITY	P8	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	10/93		115,000	83	95
INTERCESSION CITY	P9	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	10/93		115,000	82	95
INTERCESSION CITY	P10	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	10/93		115,000	82	95
INTERCESSION CITY	P11 *	OSCEOLA	GT	DFO		PL,TK		**	1/97		165,000	143	161
INTERCESSION CITY	P12	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	12/00		115,000	76	92
INTERCESSION CITY	P13	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	12/00		115,000	76	92
INTERCESSION CITY	P14	OSCEOLA	GT	NG	DFO	PL	PL,TK	**	12/00		115,000	73	92
RIO PINAR	P1	ORANGE	GT	DFO		TK		**	11/70	5/2016 ***	19,290	12	15
SUWANNEE RIVER	P1	SUWANNEE	GT	NG	DFO	PL	TK	**	10/80		61,200	52	67
SUWANNEE RIVER	P2	SUWANNEE	GT	DFO		TK		**	10/80		61,200	51	66
SUWANNEE RIVER	P3	SUWANNEE	GT	NG	DFO	PL	TK	**	11/80		61,200	52	67
TURNER	P1	VOLUSIA	GT	DFO		TK		**	10/70	5/2016 ***	19,290	10	13
TURNER	P2	VOLUSIA	GT	DFO		TK		**	10/70	5/2016 ***	19,290	10	13
TURNER	P3	VOLUSIA	GT	DFO		TK		**	8/74	7/31/2015	71,200	0	0
TURNER	P4	VOLUSIA	GT	DFO		TK		**	8/74	5/2016 ***	71,200	59	78
UNIV. OF FLA.	P1	ALACHUA	GT	NG		PL			1/94		43,000	46	47
											CT Total	**2,419**	**2,961**
											TOTAL RESOURCES (MW)	**9,101**	**10,070**

* THE 143 MW SUMMER CAPABILITY (JUNE THROUGH SEPTEMBER) IS OWNED BY GEORGIA POWER COMPANY

** APPROXIMATELY 2 TO 8 DAYS OF OIL USE TYPICALLY TARTGETED 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). Over the last ten years the nation and the State of Florida have gone through the worst economic downturn in eighty years. The devastation left the nation's banking industry and the Florida housing market and employment levels in a state of recession. A significant economic turnaround is in progress and is reflected in this ten year projection. Referring to Schedule 2.3, column 6, DEF's current total customer growth over the 2006 to 2015 period went from 1,620,396 to 1,721,861, an average annual growth of 0.7 percent. However, growth between the most recent historical years (2014 to 2015), reflect an increase from 1,699,091 to 1,721,861 customers, or 1.3 percent, reflecting that the economic turnaround is in progress. Customer growth is expected to increase slightly from current 2014/15 levels to an annual average of approximately 1.5 percent between 2016 and 2025, bringing the total customer forecast levels to 1,994,675 customers. County population growth rate projections from the University of Florida's Bureau of Economic and Business Research (BEBR) were incorporated into this projection. The severe financial crisis, which significantly dampened the DEF historical ten-year average population growth rate 0.9 percent (Schedule 2.1 Col 2), now appears to reflect a more rapid rate of growth (+1.2 percent). Economic conditions going forward look more amenable to improved customer growth due to low mortgage rates, higher household formation rates and a large retiring baby-boomer population. Secondly, a return to the shrinking trend in average household size - briefly disrupted by the Great Recession - is expected to add to customer growth.

From 2006 to 2015 Net energy for load (NEL) dropped from 46,041 to 42,280 GWH per year (see Schedules 3.3 Column 8), an average of 418 GWH per year or 0.9 percent per year, primarily due to the economic recession and the weak economic recovery that followed. Sales for Resale in 2015, or Wholesale Load (Column 6 of Schedule 3.3), represented 330 GWH per

year of this energy decline, or 79% of the 418 total GWh per year decline. It is noted that Wholesale load currently represents less than 3 percent of total NEL. An improved economic environment, including improved in-migration population rates, construction activity, wage growth and consumer spending, is expected to drive the DEF service area NEL forecast. The 2016 to 2025 period is projected to improve NEL by an average growth rate of 438 GWh per year, or 1.0 percent. Going forward, projected NEL growth continues to reflect the FPSC approved DSM Goals energy savings targets.

During the 2006 to 2015 historical period the DEF Summer net firm demand (Schedule 3.1 column 10) declined from 9,016 MW to 8,438 MW, an average -0.7 percent per year. Most of the decline came from the DEF wholesale load sector (Column 3), which dropped from a level of 1,254 MW in 2006 to 772 MW in 2015. The projected ten year period summer net firm demand growth rate of 1.7 percent is primarily driven by higher population and improved economic activity improving net firm retail demand and a slight improvement from the wholesale sector.

ENERGY CONSUMPTION AND DEMAND FORECAST SCHEDULES

The below schedules have been provided:

SCHEDULE	DESCRIPTION
2.1, 2.2 and 2.3	History and Forecast of Energy Consumption and Number of Customers by Customer Class
3.1	History and Forecast of Base Summer Peak Demand (MW)
3.2	History and Forecast of Base Winter Peak Demand (MW)
3.3	History and Forecast of Base Annual Net Energy for Load (GWh)
4	Previous Year Actual and Two-Year Forecast of Peak Demand and Net Energy for Load by Month

DUKE ENERGY FLORIDA

SCHEDULE 2.1
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(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:								
2006	3,505,058	2.448	20,021	1,431,743	13,983	11,975	162,774	73,568
2007	3,531,483	2.448	19,912	1,442,853	13,800	12,184	162,837	74,821
2008	3,561,727	2.458	19,328	1,449,041	13,339	12,139	162,569	74,669
2009	3,564,937	2.473	19,399	1,441,325	13,459	11,883	161,390	73,632
2010	3,621,407	2.495	20,524	1,451,466	14,140	11,896	161,674	73,579
2011	3,623,813	2.495	19,238	1,452,454	13,245	11,892	162,071	73,374
2012	3,633,620	2.491	18,251	1,458,690	12,512	11,723	163,297	71,792
2013	3,709,240	2.493	18,508	1,488,159	12,437	11,718	165,936	70,617
2014	3,771,164	2.508	19,003	1,503,758	12,637	11,789	167,253	70,485
2015	3,808,119	2.498	19,932	1,524,605	13,074	12,070	169,147	71,359
FORECAST:								
2016	3,829,282	2.473	19,626	1,548,212	12,677	12,025	171,681	70,041
2017	3,849,389	2.446	20,137	1,573,905	12,794	12,354	174,402	70,839
2018	3,896,882	2.437	20,371	1,599,256	12,738	12,523	177,221	70,664
2019	3,952,021	2.433	20,515	1,624,674	12,627	12,663	180,041	70,336
2020	4,009,162	2.430	20,818	1,649,982	12,617	12,896	182,872	70,522
2021	4,064,814	2.427	21,141	1,674,840	12,623	13,086	185,681	70,474
2022	4,119,019	2.424	21,374	1,699,046	12,580	13,287	188,469	70,501
2023	4,171,847	2.422	21,619	1,722,711	12,550	13,500	191,197	70,608
2024	4,224,706	2.420	21,830	1,745,959	12,503	13,699	193,879	70,660
2025	4,276,765	2.418	22,182	1,768,912	12,540	13,953	196,479	71,014

DUKE ENERGY FLORIDA

SCHEDULE 2.2
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(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:							
2006	4,160	2,697	1,542,455	0	27	3,249	39,432
2007	3,819	2,668	1,431,409	0	26	3,341	39,282
2008	3,786	2,587	1,463,471	0	26	3,276	38,555
2009	3,285	2,487	1,320,869	0	26	3,230	37,824
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
FORECAST:							
2016	3,162	2,233	1,416,142	0	24	3,178	38,014
2017	3,215	2,216	1,450,951	0	24	3,191	38,921
2018	3,188	2,202	1,447,878	0	24	3,205	39,311
2019	3,216	2,190	1,467,981	0	24	3,203	39,621
2020	3,282	2,181	1,505,095	0	23	3,237	40,257
2021	3,238	2,173	1,490,163	0	23	3,274	40,762
2022	3,195	2,166	1,475,163	0	23	3,312	41,192
2023	3,155	2,160	1,460,443	0	23	3,344	41,641
2024	2,912	2,155	1,350,817	0	23	3,372	41,835
2025	2,867	2,151	1,332,823	0	23	3,399	42,424

DUKE ENERGY FLORIDA

SCHEDULE 2.3
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(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:					
2006	4,220	2,389	46,041	23,182	1,620,396
2007	5,598	2,753	47,633	24,010	1,632,368
2008	6,619	2,484	47,658	24,738	1,638,935
2009	3,696	2,604	44,124	24,993	1,630,195
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
FORECAST:					
2016	1,064	2,198	41,277	26,022	1,748,147
2017	1,167	1,844	41,932	26,182	1,776,705
2018	1,170	1,935	42,417	26,329	1,805,008
2019	1,367	2,056	43,044	26,464	1,833,370
2020	1,350	1,950	43,558	26,590	1,861,625
2021	1,349	1,785	43,895	26,710	1,889,404
2022	1,349	1,748	44,289	26,823	1,916,504
2023	1,350	1,688	44,679	26,932	1,943,000
2024	1,352	1,794	44,982	27,035	1,969,029
2025	1,351	1,451	45,227	27,133	1,994,675

DUKE ENERGY FLORIDA

SCHEDULE 3.1
HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)
BASE CASE

(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:										
2006	10,147	1,257	8,890	329	307	222	37	170	66	9,016
2007	10,931	1,544	9,387	334	291	239	45	177	110	9,735
2008	10,592	1,512	9,080	500	284	255	66	192	110	9,186
2009	10,853	1,618	9,235	262	291	271	84	211	110	9,624
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	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	10,107	772	9,335	303	363	435	113	322	132	8,438
FORECAST:										
2016	10,440	647	9,793	248	352	460	117	316	132	8,815
2017	10,731	752	9,979	252	358	494	122	336	132	9,038
2018	10,889	753	10,136	258	364	523	126	341	132	9,145
2019	11,345	1,004	10,341	273	370	547	130	346	132	9,546
2020	11,498	965	10,533	289	375	565	135	350	132	9,652
2021	11,643	965	10,678	289	381	578	139	353	132	9,772
2022	11,785	965	10,820	289	387	587	143	355	132	9,893
2023	11,919	965	10,954	289	393	592	147	356	132	10,011
2024	12,048	965	11,083	257	398	595	151	357	132	10,158
2025	12,178	965	11,213	258	404	604	156	357	132	10,268

Historical Values (2006 - 2015):

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 (2016 - 2025):

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
HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)
BASE CASE

(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:										
2005/06	10,653	1,467	9,186	298	779	368	26	124	283	8,775
2006/07	9,894	1,576	8,318	304	671	450	26	127	262	8,055
2007/08	10,962	1,828	9,134	234	763	483	34	133	278	9,036
2008/09	12,089	2,229	9,860	268	759	518	71	148	291	10,034
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	669	815	109	236	237	8,309
FORECAST:										
2015/16	11,791	1,344	10,447	225	681	851	113	237	247	9,437
2016/17	11,805	1,197	10,608	229	693	885	117	238	249	9,395
2017/18	11,943	1,198	10,745	233	705	914	122	238	250	9,480
2018/19	12,115	1,198	10,917	247	717	938	126	239	252	9,596
2019/20	12,500	1,408	11,092	261	729	956	130	239	254	9,930
2020/21	12,235	1,008	11,227	261	741	969	134	240	256	9,634
2021/22	12,363	1,008	11,355	261	753	978	138	240	257	9,735
2022/23	12,486	1,008	11,478	261	765	983	143	240	259	9,836
2023/24	12,606	1,008	11,598	232	777	986	147	240	260	9,964
2024/25	12,731	1,008	11,723	233	789	995	151	240	261	10,062

Historical Values (2006 - 2015):

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 (2016 - 2025):

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
HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)
BASE CASE

(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:									
2006	47,399	484	365	509	39,432	4,220	2,389	46,041	52.1
2007	49,310	511	387	779	39,282	5,598	2,753	47,633	52.3
2008	49,208	543	442	565	38,556	6,619	2,483	47,658	53.1
2009	45,978	583	492	779	37,824	3,696	2,604	44,124	44.5
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	52.0
2013	43,142	772	734	864	36,616	1,488	2,668	40,772	53.0
2014	43,442	812	791	864	37,240	1,333	2,402	40,975	50.7
2015	44,837	836	808	913	38,553	1,243	2,484	42,280	50.9
FORECAST:									
2016	43,876	859	823	916	38,014	1,064	2,199	41,277	49.8
2017	44,561	879	837	913	38,921	1,167	1,844	41,932	51.0
2018	45,074	895	849	913	39,311	1,170	1,936	42,417	51.1
2019	45,724	907	860	913	39,621	1,367	2,056	43,044	51.2
2020	46,258	916	868	916	40,257	1,350	1,951	43,559	49.9
2021	46,604	922	873	913	40,762	1,349	1,785	43,895	52.0
2022	47,005	926	878	913	41,192	1,349	1,748	44,289	51.9
2023	47,443	928	881	913	41,641	1,350	1,688	44,679	51.9
2024	47,711	929	884	916	41,835	1,352	1,794	44,982	51.4
2025	47,961	933	889	913	42,424	1,351	1,452	45,227	51.3

* Column (OTH) includes Conservation Energy For Lighting and Public Authority Customers, Customer-Owned Self-service Cogeneration.

** Load Factors for historical years are calculated using the actual winter peak demand except the 2004, 2007, 2012 - 2014 historical load factors which are based on the actual summer peak demand which became the annual peaks for the year.
Load Factors for future years are calculated using the net firm winter peak demand (Schedule 3.2)

DUKE ENERGY FLORIDA

SCHEDULE 4
PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND
AND NET ENERGY FOR LOAD BY MONTH

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ACTUAL		FORECAST		FORECAST	
	2015		2016		2017	
	PEAK DEMAND	NEL	PEAK DEMAND	NEL	PEAK DEMAND	NEL
MONTH	MW	GWh	MW	GWh	MW	GWh
JANUARY	6,848	3,022	10,572	3,154	10,551	3,253
FEBRUARY	9,473	2,863	8,541	2,801	8,462	2,781
MARCH	6,443	3,108	7,472	2,973	7,407	3,007
APRIL	7,403	3,406	7,322	3,105	7,202	3,031
MAY	8,506	3,845	8,455	3,575	8,408	3,707
JUNE	9,134	4,118	9,234	3,964	9,445	4,008
JULY	8,717	4,168	9,533	4,179	9,770	4,264
AUGUST	9,218	4,175	9,243	4,196	9,490	4,306
SEPTEMBER	8,925	3,832	8,992	3,869	9,250	3,999
OCTOBER	7,855	3,427	7,951	3,438	8,058	3,491
NOVEMBER	7,660	3,176	6,315	2,882	6,397	2,903
DECEMBER	6,022	3,140	7,954	3,143	8,033	3,183
TOTAL		42,280		41,277		41,932

NOTE: Recorded Net Peak demands and System requirements include off-system wholesale contracts.

FUEL REQUIREMENTS AND ENERGY SOURCES

DEF's actual and 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. DEF's fuel requirements and energy sources reflect a diverse fuel supply system that is not dependent on any one fuel source. Near term natural gas consumption is projected to increase as plants and purchases with tolling agreements are added to meet future load growth and natural gas generation costs reflect relatively attractive natural gas commodity pricing.

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	NUCLEAR		TRILLION BTU	0	0	0	0	0	0	0	0	0	0	0	0
(2)	COAL		1,000 TON	5,176	4,425	3,714	3,589	2,711	2,433	4,305	5,000	2,616	2,729	2,763	2,783
(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	167	162	103	85	99	46	22	34	59	63	71	39
(9)		STEAM	1,000 BBL	55	49	80	77	42	34	16	17	39	34	43	34
(10)		CC	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CT	1,000 BBL	112	113	23	8	58	12	6	18	20	29	28	5
(12)		DIESEL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(13)	NATURAL GAS	TOTAL	1,000 MCF	182,286	198,101	196,034	216,335	232,153	237,637	210,707	206,525	243,743	244,153	255,116	257,998
(14)		STEAM	1,000 MCF	32,855	37,806	30,039	28,111	25,923	18,051	16,159	16,011	15,364	16,054	15,431	16,275
(15)		CC	1,000 MCF	144,737	154,154	160,199	182,004	198,930	214,429	190,160	185,682	223,443	222,689	229,518	231,154
(16)		CT	1,000 MCF	4,694	6,141	5,796	6,220	7,301	5,157	4,387	4,832	4,936	5,410	10,167	10,569
	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	5,612	6,185	4,954	2,626	1,555	122	0	0	0	0
(18.1)	OTHER, NATURAL GAS	ANNUAL FIRM INTERCHANGE, CT	1,000 MCF	N/A	N/A	21,599	7,068	6,764	3,164	2,553	3,310	3,642	4,133	1,040	663
(19)	OTHER, COAL	ANNUAL FIRM INTERCHANGE, STEAM	1,000 TON	N/A	N/A	12	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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	ANNUAL FIRM INTERCHANGE 1/		GWh	1,755	2,390	2,704	697	665	312	252	325	357	405	99	62
(2)	NUCLEAR		GWh	0	0	0	0	0	0	0	0	0	0	0	0
(3)	COAL		GWh	11,760	9,718	8,129	7,790	5,836	5,229	9,641	10,735	5,339	5,593	5,666	5,704
(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	38	73	8	3	23	4	2	7	7	12	12	2
(10)		STEAM	GWh	0	34	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	38	39	8	3	23	4	2	7	7	12	12	2
(13)		DIESEL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(14)	NATURAL GAS	TOTAL	GWh	22,962	25,227	26,747	29,663	32,271	34,002	30,125	29,353	35,047	35,014	36,483	36,828
(15)		STEAM	GWh	2,931	3,422	2,898	2,736	2,516	1,695	1,500	1,470	1,418	1,486	1,434	1,511
(16)		CC	GWh	19,674	21,343	23,290	26,332	29,078	31,796	28,176	27,397	33,138	32,996	34,044	34,266
(17)		CT	GWh	357	462	558	595	677	510	449	487	491	533	1,006	1,050
(18)	OTHER 2/														
	QF PURCHASES		GWh	1,654	1,685	1,693	1,703	1,703	1,760	1,766	1,759	1,760	1,759	626	389
	RENEWABLES OTHER		GWh	23	0	0	0	0	0	0	0	0	0	0	0
	RENEWABLES MSW		GWh	708	668	789	783	777	835	837	835	835	835	837	835
	RENEWABLES BIOMASS		GWh	196	395	407	406	403	421	422	421	421	421	422	421
	RENEWABLES SOLAR		GWh	0	0	14	39	58	119	300	443	523	642	836	987
	IMPORT FROM OUT OF STATE		GWh	1,958	2,183	787	848	681	362	214	17	0	0	0	0
	EXPORT TO OUT OF STATE		GWh	-79	-59	0	0	0	0	0	0	0	0	0	0
(19)	NET ENERGY FOR LOAD		GWh	40,975	42,280	41,277	41,932	42,417	43,044	43,559	43,895	44,289	44,680	44,982	45,227

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	ANNUAL FIRM INTERCHANGE 1/		%	4.3%	5.7%	6.6%	1.7%	1.6%	0.7%	0.6%	0.7%	0.8%	0.9%	0.2%	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		%	28.7%	23.0%	19.7%	18.6%	13.8%	12.1%	22.1%	24.5%	12.1%	12.5%	12.6%	12.6%
(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	%	0.1%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(10)		STEAM	%	0.0%	0.1%	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%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(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	%	56.0%	59.7%	64.8%	70.7%	76.1%	79.0%	69.2%	66.9%	79.1%	78.4%	81.1%	81.4%
(15)		STEAM	%	7.2%	8.1%	7.0%	6.5%	5.9%	3.9%	3.4%	3.3%	3.2%	3.3%	3.2%	3.3%
(16)		CC	%	48.0%	50.5%	56.4%	62.8%	68.6%	73.9%	64.7%	62.4%	74.8%	73.8%	75.7%	75.8%
(17)		CT	%	0.9%	1.1%	1.4%	1.4%	1.6%	1.2%	1.0%	1.1%	1.1%	1.2%	2.2%	2.3%
(18)	OTHER 2/														
	QF PURCHASES		%	4.0%	4.0%	4.1%	4.1%	4.0%	4.1%	4.1%	4.0%	4.0%	3.9%	1.4%	0.9%
	RENEWABLES OTHER		%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	RENEWABLES MSW		%	1.7%	1.6%	1.9%	1.9%	1.8%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.8%
	RENEWABLES BIOMASS		%	0.5%	0.9%	1.0%	1.0%	0.9%	1.0%	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%
	RENEWABLES SOLAR		%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.7%	1.0%	1.2%	1.4%	1.9%	2.2%
	IMPORT FROM OUT OF STATE		%	4.8%	5.2%	1.9%	2.0%	1.6%	0.8%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
	EXPORT TO OUT OF STATE		%	-0.2%	-0.1%	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.

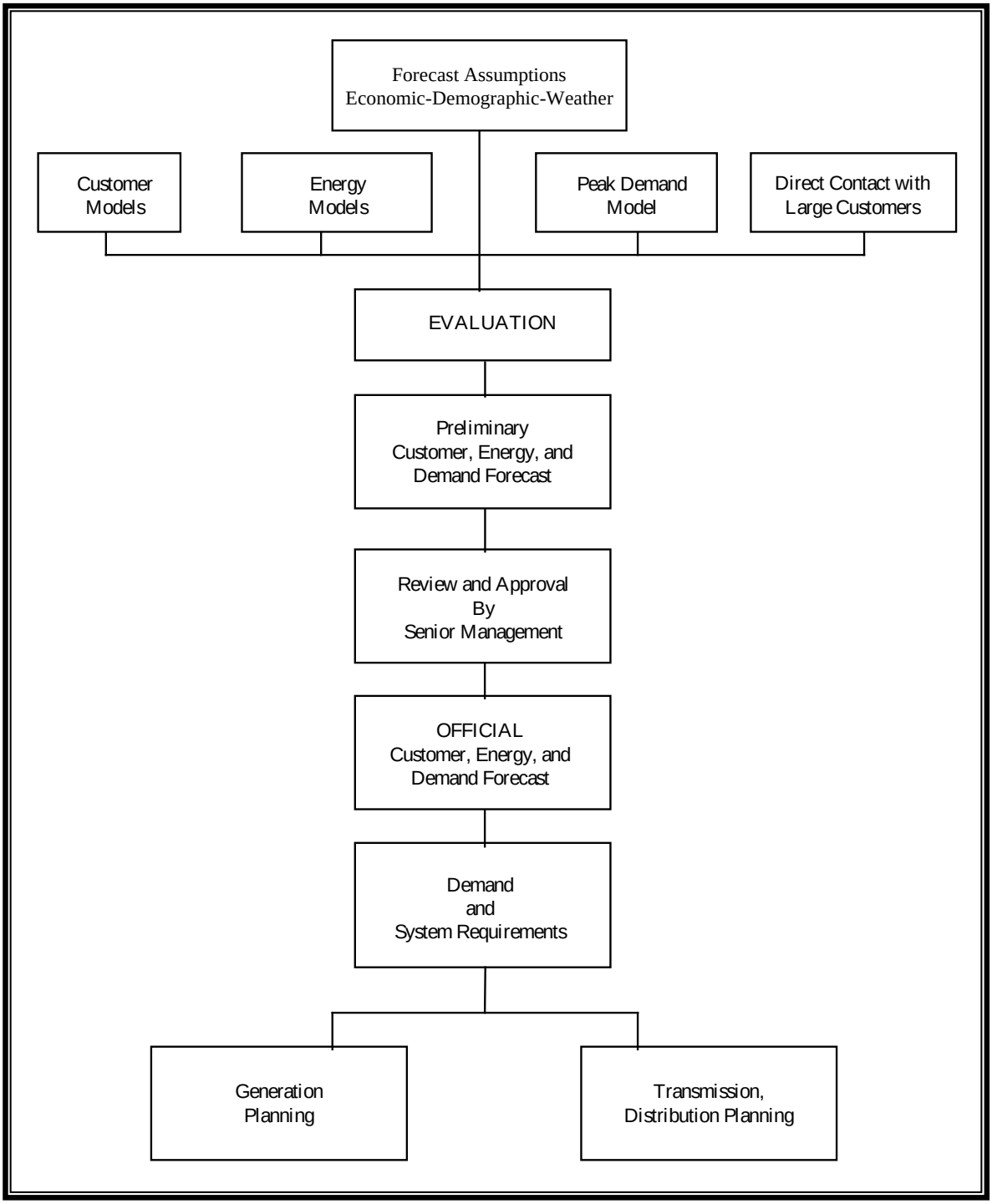
Figure 2.1, entitled "Customer, Energy and Demand Forecast," gives a general description of DEF's forecasting process. Highlighted in the diagram is a disaggregated modeling approach that blends the impacts of average class usage, as well as customer growth, based on a specific set of assumptions for 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 a number of 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. The expected consumption period read dates for each projected billing cycle determines the exact historical dates for developing the thirty year average weather condition each month. Each class displays different weather-sensitive base temperatures from which degree day 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. 71 April 2015) 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 2015 forecast, along with EIA 2015 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 nearly 31 percent of the industrial class MWh sales in 2015. These energy intensive customers 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, and international trade pacts. 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 third year of lower electric consumption from this sector as the current strength of U.S. Dollar makes all domestic crop-nutrient production less price competitive at home and abroad. Also, the U.S. farm sector has been hurt by sanctions on Russia which imports U.S. farm products. The forecast does account for one customer's intention to open a new mine by 2019 and a major mine shut down by 2024. An upside risk to this projection lies in the price of energy, which is a major cost in mining and producing phosphoric fertilizers. Once currency issues stabilize and demand for farm products improve, one would expect a favorable environment for this industry.

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), Seminole Electric Cooperative, Inc. (SECI), and the cities of New Smyrna Beach and Homestead.

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 targets as stated in Docket No. 130200-EI .

7. 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.

8. 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. PR contracts are typically projected to terminate as terms reach their expiration date.

ECONOMIC ASSUMPTIONS

The economic outlook for this forecast was developed in the Summer of 2015 as the nation's economy continued on an upward rebound from the Great Recession. Most economic indicators pointed to significant year-over-year improvements. These included strong employment growth and declining unemployment, lower home foreclosures, moderately higher construction levels and much improved consumer confidence. Nationally, energy prices were declining, along with interest rates, and consumers were spending (and borrowing) again. What has changed of late 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 down near 5 percent, the tightening of the labor supply typically leads to wage increases. Increased consumer confidence, along with the prolonged period of low mortgage rates has revived the desire to own homes. While the nation's manufacturing sector may be feeling the pain of the strong U.S. currency and weak global economy, the U.S. service sector is riding a wave of expansionary trends. Low energy prices have invigorated the American consumer, maybe not as much as initially estimated, but people are spending and outstanding credit is rising.

In Florida, the State economy continues to improve. The U.S. Census Bureau announced that Florida's population was now at 20.3 million, and had grown at an average of 1,000 residents per day in 2014-2015 twelve month period ending July 1st. This has only occurred twice in recent Florida history – 2004 & 2005. Nationally, reports have stated that baby-boomers are retiring at a rate of 10,000 per day. Duke Energy load forecasts have been expecting for years that Florida will benefit from an on-rush of retirees. After some delay created by the financial crisis, one can safely say this trend has begun. This impact is expected to last 15 years and peak in the mid-2020s.

The Florida unemployment rate has dropped to 5.4 percent at the end of 2015, down from 6.3 percent a year earlier. The State's employment picture has been impressive as well, but the discussion must be limited to the "private service-producing" sectors of the State economy. While the construction and manufacturing employment sectors are well off their recession lows, it is the non-manufacturing, non-governmental employment sectors that are growing impressively. These are exactly the sectors that benefit from a growing population. Helping this all along is the major drop in oil prices which only further boosts the Florida tourism industry. Whether it is driving by car or arriving by plane, lower energy prices help the state economy. This forecast does not expect energy prices to remain at current levels, but guessing just when the supply/demand imbalance in the energy industry corrects, one can reasonably assume "sooner rather than later." This forecast does assume a phased-in impact upon DEF electric prices from the U.S. EPA proposed Clean Power Plan (CPP) beginning in 2022. It is safe to assume that if efforts to thwart the proposal are successful, a lower electric price projection would be incorporated.

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 force a deviation from the forecast.

Also incorporated in this energy forecast is a projection of customer-owned solar photovoltaic generation and electric vehicle ownership. The net energy and coincident peak impact of both are expected to result in only marginal impacts throughout this projection's ten year horizon.

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, load management, 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, and the length of the billing month. The incorporation of residential and commercial "end-use" energy have 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 industrial customer representatives 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. The projection of industrial accounts are expected to continue its historic decline. The decline in manufacturing nationwide, the increased competitiveness between the states, mergers between companies within the state, all have resulted in a continued decline in customer growth for this class.

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 New Smyrna Beach, Homestead, and another power provider, 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.

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 potential firm retail load, interruptible and curtailable tariff non-firm load, conservation and load management program capability, wholesale demand, and company use demand.

Potential firm retail load refers to projections of DEF retail hourly seasonal net peak demand excluding the non-firm interruptible/curtailable/standby tariff load but 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 firm retail net peak demand assuming no utility activated load control or energy efficiency reductions 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 without the impacts of year-to-year variation in utility-sponsored DSM programs. Seasonal 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 class-of-business (applying actual surveyed DEF load research results) lead to class and total retail hourly load profiles when a 30-year normal weather template replaces actual weather. The projections of monthly retail peak become the potential retail demand. 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 the 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, Curtailable & Standby service (IS, CS and SBG) 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. Adding this piece of the demand forecast to 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 monthly 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.

CONSERVATION

On August 20, 2015, the PSC issued Order No. PSC-15-0332-PAA-EG, approving the DEF's Demand Side Management Plan for 2015 through 2024.

DEF's currently approved DSM programs consist of five residential programs, six commercial and industrial programs and one research and development program that will continue to be offered through 2024. DEF also offers a Qualifying Facilities Program as discussed in Chapter 3. The programs are subject to periodic monitoring and evaluation for the purpose of ensuring that all demand-side resources are acquired in a cost-effective manner and that the program savings are durable. A brief description of each of the currently offered DSM programs is provided below.

RESIDENTIAL CONSERVATION PROGRAMS

Table 1 depicts the expected residential DSM savings for 2015 through 2024. The 2015 savings reflect the actual achievements as reported on DEF's 2015 Annual DSM Report to the FPSC and the savings for 2016 - 2024 reflect the impacts of the residential goals as approved in the 2014 Goals Proceeding (Order PSC 14-0696-FOF-EU).

TABLE 1

Residential DSM MW and GWH Savings

Year	Annual Summer MW	Cumulative Summer MW	Annual Winter MW	Cumulative Winter MW	Annual GWH	Cumulative GWH
2015	25.3	25.3	41.5	41.5	39.4	39.4
2016	24.0	49.3	53.1	94.6	23.8	63.2
2017	22.2	71.5	48.7	143.3	20.8	84.0
2018	20.0	91.5	43.2	186.5	17.0	101.0
2019	17.7	109.2	37.5	224.0	13.0	114.0
2020	15.5	124.7	32.2	256.2	9.3	123.3
2021	13.7	138.4	27.8	284.0	6.2	129.5
2022	12.2	150.6	24.5	308.5	3.8	133.3
2023	11.3	161.9	22.3	330.8	2.2	135.5
2024	10.7	172.6	20.9	351.7	1.2	136.7

The following provides an overview of each Residential Program:

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 is expects to provide incentives to customers for the installation of approximately 90,000 energy saving measures over the ten year

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 expanded the eligibility requirement by increasing the census block requirements from 150% of federal poverty guidelines to 200% of federal poverty guidelines. DEF has also increased the targeted annual participation in this program from 3,000 to 4,500 participants. DEF plans to provide home energy reports to approximately 15,000 customers who have participated in this program in prior years. These reports will provide energy saving tips and remind customers about low cost energy saving measures. DEF also added insulation and duct repair to the list of measures included in this program.

Low Income Weatherization Assistance Program – Through this program DEF will partner with local agencies to provide energy efficiency assistance to low income customers. DEF plans to increase the funding to the agencies which will enable more customers to benefit from this program. DEF projects that approximately 5,000 customers will receive assistance through this program over the ten year period.

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 depicts the expected commercial/industrial DSM savings for 2015 through 2014. The 2015 savings reflect the actual achievements as reported on DEF's 2015 Annual DSM Report to the FPSC and the projected savings for 2016 - 2024 reflect the impacts of the

commercial/industrial goals as approved in the 2014 Goals Proceeding (Order PSC 14-0696-FOF-EU).

TABLE 2

Commercial/Industrial DSM MW and GWH Savings

Year	Annual Summer MW	Cumulative Summer MW	Annual Winter MW	Cumulative Winter MW	Annual GWH	Cumulative GWH
2015	34.9	34.9	27.6	27.6	36.3	36.3
2016	11.6	46.5	5.4	33.0	13.6	49.9
2017	11.0	57.5	5.6	38.6	12.0	61.9
2018	10.0	67.5	5.1	43.7	10.0	71.9
2019	9.1	76.6	5.0	48.7	8.0	79.9
2020	8.2	84.8	5.2	53.9	5.9	85.8
2021	6.9	91.7	4.8	58.7	3.9	89.7
2022	6.0	97.7	4.7	63.4	2.4	92.1
2023	5.6	103.3	5.0	68.4	1.4	93.5
2024	5.0	108.3	4.6	73.0	0.8	94.3

The following provides a list of the Commercial programs 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. The list of measures and incentive levels included in this program have been updated to reflect the impacts of new codes and standards.

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 generation capability and are willing to reduce their DEF demand when deemed necessary.

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.

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, 2015 DEF had a summer total capacity resource of 11,360 MW (see Table 3.1). This capacity resource includes fossil steam generators (3,460 MW), combined-cycle plants (3,222 MW), combustion turbines (2,419 MW; 143 MW of which is owned by Georgia Power for the months June through September), utility purchased power (413 MW), independent power purchases (1,365 MW), and non-utility purchased power (481 MW). Table 3.2 presents DEF's firm capacity contracts with Renewable and Cogeneration Facilities.

Demand-Side Programs

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. 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 summer capacity uprates at the Hines Energy Center through the installation of Inlet Chilling, a combined cycle facility in 2018 in Citrus County, a purchase and proposed acquisition of the Calpine Osprey Energy Combined Cycle Unit in Auburndale and five planned Combustion Turbine Units at an undesignated site(s) with

four units in 2024 and one unit in 2025. One new addition to the plan is the summer capacity of the Intercession City #11 peaker. DEF and Georgia Power have operated this unit jointly with Georgia Power controlling the capacity during the summer months. Based on a contractual obligation, DEF will purchase this capacity and anticipates having this firm capacity available in 2017. DEF continues to seek market supply-side resource alternatives to enhance DEF's resource plan and has extended a purchase power agreement with Southern Power Company beginning in 2016. In addition to total summer existing capacity resources provided above, DEF is planning to install 550 MW of solar PV over the next 10 year period as an energy resource.

The promulgation of the Mercury and Air Toxics Standards (MATS) by EPA in April of 2012 presents new environmental requirements for the DEF units at Anclote, Suwannee and Crystal River.

- Two steam units at Anclote and three steam units at Suwannee have switched to natural-gas-only operations in order to comply with the MATS rule. Residual Fuel Oil is no longer available at these two sites.
- Crystal River Units 1 and 2 are not capable of meeting the emissions requirements for MATS in their current configuration and using the current fuel. In addition, under the terms of the revised air permit, in accordance with the State Implementation Plan for compliance with the requirements of the Clean Air Visible Haze Rule, these units are required to cease coal fired operation by the end of 2020 unless scrubbers are installed prior to the end of 2018.
- DEF has received a one year extension of the deadline to comply with MATS for Crystal River Units 1 and 2 from the Florida Department of Environmental Protection. This extension was granted to provide DEF sufficient time to complete projects necessary to enable interim operation of those units in compliance with MATS during the 2016 – 2020 period.
- DEF anticipates burning MATS compliance coals in Crystal River Units 1 and 2 beginning no later than April 2016. Although specific dates have not been finalized, DEF anticipates retiring the Crystal River Units 1 and 2 in 2018 in coordination with the 2018 Citrus Combined Cycle operations.

- DEF has received a one year extension of the deadline to comply with MATS for Crystal River Units 4 and 5 from the Florida Department of Environmental Protection. This extension was granted to provide DEF sufficient time to complete projects necessary to enable long term operation of these units in compliance with the MATS.
- Additional details regarding DEF's compliance strategies in response to the MATS rule are provided in DEF's annual update to the Integrated Clean Air Compliance Plan filed in Docket No. 150007-EI.

On August 3, 2015, EPA released the final New Source Performance Standards (NSPS) for CO_2 emissions from existing fossil fuel-fired EGUs (also known as the Clean Power Plan or CPP). The final CPP establishes state-specific emission goals and has been challenged in the D.C. Circuit by 27 states and a number of industry groups. Oral argument is scheduled for June 2016. In addition, on February 9, 2016 the U.S. Supreme Court placed a stay on the CPP until such time that all litigation is completed. Although the ongoing litigation results in considerable uncertainty around the CPP and the final outcome of greenhouse gas regulation, DEF continues to expect that CO_2 emissions limitations in one form or another will be part of the regulatory future and has postulated a CO_2 emission price forecast as a placeholder for the impacts of this regulation. DEF continues to plan to meet all regulatory requirements of the CPP that are placed into law.

DEF continues to look ahead to the projected retirements of several of the older units in the fleet, particularly combustion turbines at Higgins, Avon Park, Turner and Rio Pinar as well as the three steam units at Suwannee. Turner Unit P3 was retired July 2015. The Rio Pinar and Turner Units P1, P2 and P4 continue to show anticipated retirement dates in 2016. Suwannee steam units 1, 2 and 3 are projected to retire in November of 2016. Continued operations of the peaking units at Higgins and Avon Park are planned until the year 2020. 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 2016 through 2025. 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. 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, 2015

PLANTS	NUMBER OF UNITS	SUMMER NET DEPENDABLE CAPABILITY (MW)	
Fossil Steam			
Crystal River	4	2,291	
Anclote	2	1,041	
Suwannee River	3	128	
Total Fossil Steam	9	3,460	
Combined Cycle			
Bartow	1	1,105	
Hines Energy Complex	4	1,912	
Tiger Bay	1	205	
Total Combined cycle	6	3,222	
Combustion Turbine			
DeBary	10	637	
Intercession City	14	984	*(1)*
Bayboro	4	174	
Bartow	4	175	
Suwannee	3	155	
Turner	3	79	
Higgins	4	109	
Avon Park	2	48	
University of Florida	1	46	
Rio Pinar	1	12	
Total Combustion Turbine	46	2,419	
Total Units	**61**		
Total Net Generating Capability		**9,101**	

(1) Includes 143 MW owned by Georgia Power Company (Jun-Sep)

Purchased Power			
Firm Qualifying Facility Contracts	8	481	
Investor Owned Utilities	2	413	
Independent Power Producers	3	1,365	
TOTAL CAPACITY RESOURCES		**11,360**	

TABLE 3.2

DUKE ENERGY FLORIDA
FIRM RENEWABLES
AND COGENERATION CONTRACTS

AS OF DECEMBER 31, 2015

Facility Name	Firm Capacity (MW)
Mulberry Cogen	115
Orange Cogen (CFR-Biogen)	74
Orlando Cogen	115
Pasco County Resource Recovery	23
Pinellas County Resource Recovery 1	40
Pinellas County Resource Recovery 2	14.8
Ridge Generating Station	39.6
Florida Power Development	60
TOTAL	**481.4**

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[a] INSTALLED	FIRM[b] CAPACITY	FIRM CAPACITY		TOTAL CAPACITY	SYSTEM FIRM SUMMER PEAK	RESERVE MARGIN		SCHEDULED	RESERVE MARGIN	
	CAPACITY	IMPORT	EXPORT	QF[c]	AVAILABLE	DEMAND	BEFORE MAINTENANCE		MAINTENANCE	AFTER MAINTENANCE	
YEAR	MW	MW	MW	MW	MW	MW	MW	% OF PEAK	MW	MW	% OF PEAK
2016	8,714	2,124	0	177	11,016	8,815	2,201	25%	0	2,201	25%
2017	9,250	1,880	0	177	11,308	9,038	2,270	25%	0	2,270	25%
2018	9,297	1,880	0	177	11,354	9,146	2,209	24%	0	2,209	24%
2019	10,117	1,880	0	177	12,174	9,546	2,628	28%	0	2,628	28%
2020	10,292	1,880	0	177	12,349	9,652	2,697	28%	0	2,697	28%
2021	10,292	1,455	0	177	11,924	9,772	2,152	22%	0	2,152	22%
2022	10,292	1,455	0	177	11,924	9,893	2,031	21%	0	2,031	21%
2023	10,292	1,505	0	177	11,974	10,011	1,963	20%	0	1,963	20%
2024	11,141	860	0	177	12,178	10,158	2,020	20%	0	2,020	20%
2025	11,353	745	0	177	12,276	10,269	2,007	20%	0	2,007	20%

Notes:

a. Total Installed Capacity does not include the 143 MW to Southern Company from Intercession City, P11, in 2016.

b. FIRM Capacity Import includes Cogeneration, Utility and Independent Power Producers, and Short Term Purchase Contracts.

c. 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
2015/16	10,042	2,191	0	177	12,410	9,437	2,973	32%	0	2,973	32%
2016/17	9,974	1,959	0	177	12,110	9,395	2,716	29%	0	2,716	29%
2017/18	9,974	1,959	0	177	12,110	9,480	2,630	28%	0	2,630	28%
2018/19	11,015	1,959	0	177	13,151	9,596	3,556	37%	0	3,556	37%
2019/20	11,363	1,959	0	177	13,499	9,930	3,570	36%	0	3,570	36%
2020/21	11,177	1,959	0	177	13,313	9,634	3,680	38%	0	3,680	38%
2021/22	11,177	1,534	0	177	12,888	9,735	3,153	32%	0	3,153	32%
2022/23	11,177	1,534	0	177	12,888	9,836	3,053	31%	0	3,053	31%
2023/24	11,177	1,419	0	177	12,773	9,964	2,810	28%	0	2,810	28%
2024/25	12,074	783	0	177	13,034	10,062	2,972	30%	0	2,972	30%

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, 2016 THROUGH DECEMBER 31, 2025

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
								CONST.	COM'L IN-	EXPECTED	GEN. MAX.	NET CAPABILITY			
	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]
CRYSTAL RIVER	1	CITRUS	ST	BIT		RR	WA		04/2016			(41)	(41)	FC	(1)
CRYSTAL RIVER	2	CITRUS	ST	BIT		RR	WA		04/2016			(55)	(55)	FC	(1)
TURNER	P1-2,4	VOLUSIA	GT							06/2016		(79)	(104)	RT	(1)
RIO PINAR	P1	ORANGE	GT							06/2016		(12)	(15)	RT	(1)
SUWANNEE RIVER	1-3	SUWANNEE	ST							11/2016		(128)	(129)	RT	(1)
HINES	1-3	POLK	CC	NG		PL			10/2016			165	0	RP	(1)
HINES	4	POLK	CC	NG		PL			01/2017			55	0	RP	(1)
OSPREY CC	1	POLK	CC	NG		PL			01/2017			244	248	P	(2)
INTERCESSION CITY	P11	OSCEOLA	GT	NG	DFO	PL, TK			07/2017			143		P	(1)
CRYSTAL RIVER	1	CITRUS	ST	BIT		RR	WA		10/1966	04/2018		(329)	(331)	RT	(1)
CRYSTAL RIVER	2	CITRUS	ST	BIT		RR	WA		11/1969	04/2018		(444)	(448)	RT	(1)
CITRUS	1	CITRUS	CC					11/2015	05/2018			1640	1820	P	(1) and (3)
OSPREY CC	1	POLK	CC	NG		PL			01/2020			331	348	P	(4)
AVON PARK	P1-2	HIGHLANDS	GT							06/2020		(48)	(70)	RT	(1)
HIGGINS	P1-4	PINELLAS	GT							06/2020		(109)	(116)	RT	(1)
UNKNOWN	P1	UNKNOWN	GT					01/2022	06/2024			212	224	P	(1)
UNKNOWN	P2	UNKNOWN	GT					01/2022	06/2024			212	224	P	(1)
UNKNOWN	P3	UNKNOWN	GT					01/2022	06/2024			212	224	P	(1)
UNKNOWN	P4	UNKNOWN	GT					01/2022	06/2024			212	224	P	(1)
UNKNOWN	P5	UNKNOWN	GT					01/2023	06/2025			212	224	P	(1)

a. See page v. for Code Legend of Future Generating Unit Status.

b. NOTES

(1) Planned, Prospective, or Committed project.

(2) Osprey CC Acquisition is pending approval from the PSC. The generation is constrained due to Transmission limitations.

(3) Approximately 50% of plant capacity is planned in service 5/2018 with the balance in service 11/2018

(4) Osprey CC Acquisition total capacity is available once Transmission Upgrades are in service, total Summer capacity goes up to 575MW and total Winter capacity goes up to 596MW

DUKE ENERGY FLORIDA

SCHEDULE 9
STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES
AS OF JANUARY 1, 2016

(1)	Plant Name and Unit Number:	**Citrus Combined Cycle**	
(2)	Capacity		
	a. Summer:	1640	
	b. Winter:	1820	
(3)	Technology Type:	COMBINED CYCLE	
(4)	Anticipated Construction Timing		
	a. Field construction start date:	11/2015	
	b. Commercial in-service date:	5/2018 - 11/2018	(EXPECTED)
(5)	Fuel		
	a. Primary fuel:	NATURAL GAS	
	b. Alternate fuel:	N/A	
(6)	Air Pollution Control Strategy:	SCR and CO Catalyst	
(7)	Cooling Method:	Cooling Tower	
(8)	Total Site Area:	410 ACRES	
(9)	Construction Status:	IN PROGRESS	
(10)	Certification Status:	IN PROGRESS	
(11)	Status with Federal Agencies:	ALL FEDERAL PERMITS RECEIVED	
(12)	Projected Unit Performance Data		
	a. Planned Outage Factor (POF):	6.66 %	
	b. Forced Outage Factor (FOF):	6.36 %	
	c. Equivalent Availability Factor (EAF):	87.40 %	
	d. Resulting Capacity Factor (%):	77.9 %	
	e. Average Net Operating Heat Rate (ANOHR):	6,589 BTU/kWh	
(13)	Projected Unit Financial Data		
	a. Book Life (Years):	35	
	b. Total Installed Cost (In-service year $/kW):	924.19	
	c. Direct Construction Cost ($/kW): ($2016)	813.96	
	d. AFUDC Amount ($/kW):	99.90	
	e. Escalation ($/kW):	10.33	
	f. Fixed O&M ($/kW-yr): ($2016)	7.17	
	g. Variable O&M ($/MWh): ($2016)	2.13	
	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, 2016

(1)	Plant Name and Unit Number:	**Undesignated CTs (P1 - P4)**	
(2)	Capacity		
	a. Summer:	849	
	b. Winter:	897	
(3)	Technology Type:	COMBUSTION TURBINE	
(4)	Anticipated Construction Timing		
	a. Field construction start date:	1/2022	
	b. Commercial in-service date:	6/2024	(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	ACRES
(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 (%):	7.5	%
	e. Average Net Operating Heat Rate (ANOHR):	10,239	BTU/kWh
(13)	Projected Unit Financial Data		
	a. Book Life (Years):	35	
	b. Total Installed Cost (In-service year $/kW):	770.78	
	c. Direct Construction Cost ($/kW): ($2016)	613.59	
	d. AFUDC Amount ($/kW):	34.06	
	e. Escalation ($/kW):	123.12	
	f. Fixed O&M ($/kW-yr): ($2016)	3.18	
	g. Variable O&M ($/MWh): ($2016)	11.52	
	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, 2016

(1)	Plant Name and Unit Number:	**Undesignated CT P5**	
(2)	Capacity		
	a. Summer:	212	
	b. Winter:	224	
(3)	Technology Type:	COMBUSTION TURBINE	
(4)	Anticipated Construction Timing		
	a. Field construction start date:	1/2023	
	b. Commercial in-service date:	6/2025	(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	ACRES
(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 (%):	7.5	%
	e. Average Net Operating Heat Rate (ANOHR):	10,239	BTU/kWh
(13)	Projected Unit Financial Data		
	a. Book Life (Years):	35	
	b. Total Installed Cost (In-service year $/kW):	790.05	
	c. Direct Construction Cost ($/kW): ($2016)	613.59	
	d. AFUDC Amount ($/kW):	34.91	
	e. Escalation ($/kW):	141.54	
	f. Fixed O&M ($/kW-yr): ($2016)	3.18	
	g. Variable O&M ($/MWh): ($2016)	11.52	
	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 10
STATUS REPORT AND SPECIFICATIONS OF PROPOSED DIRECTLY ASSOCIATED TRANSMISSION LINES

OSPREY

(1) POINT OF ORIGIN AND TERMINATION:	Osprey - Haines City East
(2) NUMBER OF LINES:	1
(3) RIGHT-OF-WAY:	Existing and new transmission line rights-of-way
(4) LINE LENGTH:	18 miles
(5) VOLTAGE:	230 kV
(6) ANTICIPATED CONSTRUCTION TIMING:	1/1/2020
(7) ANTICIPATED CAPITAL INVESTMENT:	$66,000,000
(8) SUBSTATIONS:	Osprey, Haines City East
(9) PARTICIPATION WITH OTHER UTILITIES:	N/A

DUKE ENERGY FLORIDA

SCHEDULE 10
STATUS REPORT AND SPECIFICATIONS OF PROPOSED DIRECTLY ASSOCIATED TRANSMISSION LINES

OSPREY

(1) POINT OF ORIGIN AND TERMINATION:	Osprey - Kathleen
(2) NUMBER OF LINES:	1
(3) RIGHT-OF-WAY:	New transmission line right-of-way
(4) LINE LENGTH:	23 miles
(5) VOLTAGE:	230 kV
(6) ANTICIPATED CONSTRUCTION TIMING:	1/1/2020
(7) ANTICIPATED CAPITAL INVESTMENT:	$84,000,000
(8) SUBSTATIONS:	Osprey, Kathleen
(9) PARTICIPATION WITH OTHER UTILITIES:	N/A

INTEGRATED RESOURCE PLANNING OVERVIEW

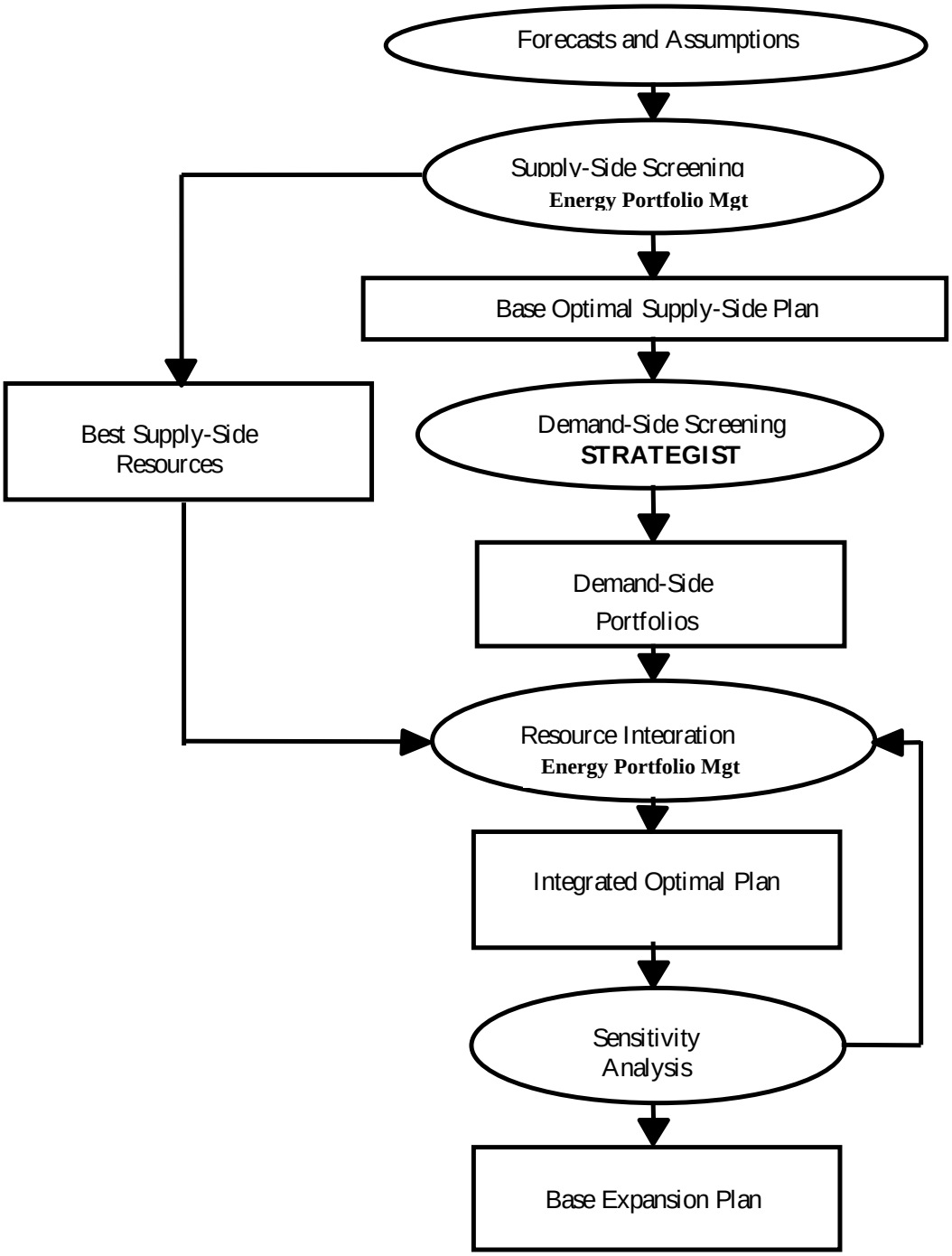
DEF employs an Integrated Resource Planning (IRP) process to determine the most cost-effective mix of supply- and demand-side alternatives that will reliably satisfy our customers' future demand and energy needs. DEF's IRP process incorporates state-of-the-art computer models used to evaluate a wide 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 20 percent 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 takes into account 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 percent 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 percent 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, data for large numbers of potential demand-side resources are also collected. These resources are pre-screened to eliminate those alternatives that are still in research and development, addressed by other regulations (e.g. building code), or not applicable to DEF's

customers. Strategist® is updated with cost data and load impact parameters for each potential DSM measure to be evaluated.

The Base Optimal Supply-Side Plan is used to establish avoidable units for screening future demand-side resources. Each future demand-side alternative is individually tested in this plan over the ten-year planning horizon to determine the benefit or detriment that the addition of this demand-side resource provides to the overall system. Strategist® calculates the benefits and costs for each demand-side measure evaluated and reports the appropriate ratios for the Rate Impact Measure (RIM), the Total Resource Cost Test (TRC), and the Participant Test.

Resource Integration and the Integrated Optimal Plan

The cost-effective generation alternatives and the demand-side portfolios developed in the screening process can then be optimized together 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 ratepayers.

Developing the Base Expansion Plan

The integrated optimized plan that provides the lowest revenue requirements may then be further tested using sensitivity analysis. 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.

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 percent debt and 53 percent equity capital structure, projected cost of debt of 4.44 percent, and an equity return of 10.5 percent. The assumptions resulted on a weighted average cost of capital of 7.65 percent and an after-tax discount rate of 6.90 percent.

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 summer capacity uprates at the Hines Energy Center through the installation of Inlet Chilling, a combined cycle facility in 2018 at Citrus County, a purchase and proposed acquisition of the Calpine Osprey Energy Combined Cycle Unit and five planned Combustion Turbine Units at an undesignated site(s) with four in 2024 and one in 2025. DEF continues to seek market supply-side resource alternatives to enhance DEF's resource plan and has extended a purchase power agreement with Southern Power Company beginning in 2016. In addition to the planned resources discussed above, DEF's plan reflects 550 MW of solar PV over the next 10 year period as an energy resource.

DEF's Base Expansion Plan projects the need for additional capacity with proposed in-service dates during the ten-year period from 2016 through 2025. 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.

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)

Purchases from Waste Heat from Exothermic Processes:

PCS Phosphate (As Available)

Purchases from Waste Wood, Tires, and Landfill Gas:

Ridge Generating Station (39.6 MW)

Purchases from Woody Biomass:

Florida Power Development (60 MW)

Photovoltaics

DEF-owned Solar Facilities (Less than 1 MW in 2015; 8.9 MW projected 2016)

Customer-owned renewable generation under DEF's Net Metering Tariff (28 MW as of 12/31/15)

In addition, DEF has contracts with E2E2 Inc. (30 MW) and U.S. EcoGen (60 MW) which are projected to come into service in 2017 and 2018, respectively. U.S. Ecogen will utilize an energy crop, while the E2E2 Inc. facility will utilize municipal solid waste as its fuel source.

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 developers are projecting in-service dates beyond 2016.

DEF continues to seek out renewable suppliers that can provide reliable capacity and/or energy at consistent with the FPSC Rule 25-17.080 through 25-17.310. DEF continues to keep an open Request for Renewables (RFR) soliciting proposals for renewable energy projects. DEF's open RFR continues to receive interest and to date has logged over 435 responses. DEF will continue to submit renewable contracts in compliance with FPSC rules.

Depending upon the mix of generators operating at any given time, the purchase of renewable energy may reduce DEF's use of fossil fuels. Firm renewable energy sources 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 energy 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 a sustainable and least cost 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 a supply-side resource in both DEF's near-term and long-term generation plans. The near-term scaled demonstration facilities will allow DEF to examine solar PV generation technology efficiency, sufficiency, and adequacy, the cost of providing such technology, and the value of such technology to our customers. As the costs of solar generation continues to decline, DEF will continue to seek and build projects that will provide long term benefits to our

customers and environment. Adding these near-term scaled solar facilities is a natural evolution of integrating new generation technology and supplements the solar PV research and demonstration pilots under DEF's conservation programs. As Florida becomes increasingly dependent on natural gas as a fuel supply, DEF is also interested in the long term benefit renewables can provide in energy diversity. DEF has included solar PV resources in its long-term forecast; however, 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. The forecast includes 550,000 KW of DEF-owned solar to be installed over the 10 year planning period.

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.

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 715 filing, and to assure the system meets DEF, Florida Reliability Coordinating Council, Inc. (FRCC), and North American 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 normally runs this analysis for system peak and off-peak load levels for possible contingencies, including both summer and winter. 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_Rev3.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

DEF proposed bulk transmission line additions are summarized in the following Table 3.3. DEF has listed only the larger transmission projects. These projects may change depending upon the outcome of DEF's final corridor and specific route selection process.

TABLE 3.3
DUKE ENERGY FLORIDA
LIST OF PROPOSED BULK TRANSMISSION LINE ADDITIONS
2016 – 2025

MVA RATING WINTER	LINE OWNERSHIP	TERMINALS		LINE LENGTH (CKT-MILES)	COMMERCIAL IN-SERVICE DATE (MO./YEAR)	NOMINAL VOLTAGE (kV)
1000	DEF	DEBARY	ORANGE CITY	6	10/27/2016	230

CHAPTER 4

ENVIRONMENTAL AND LAND USE INFORMATION

DUKE ENERGY. FLORIDA

CHAPTER 4
ENVIRONMENTAL AND LAND USE INFORMATION

PREFERRED SITES

DEF's 2016 TYSP Preferred Sites include the Osprey site, Citrus County for combined cycle natural gas generation (adjacent to the DEF Crystal River Site), Suwannee County for natural gas generation and/or solar generation, Osceola solar site, and Perry solar site. DEF's expansion plan beyond this TYSP planning horizon includes potential nuclear power at the Levy County greenfield. These Preferred Sites are discussed below.

OSPREY SITE

The Osprey Energy Center is currently in operation and holds all the environmental permits required. It is a 537 MW natural gas-fired, combined-cycle generating facility (see Figure 4.1.a below) located in Auburndale, Florida. The Osprey Site consists of approximately 18.5 acres situated approximately 1.5 miles south of downtown Auburndale. The Osprey Site was formerly a citrus grove and was unused until construction of the Osprey Project began. Land uses adjacent to the Osprey Site include the Tampa Electric Company (TECO) Recker Substation and existing TECO 230 kV transmission line, a 150 MW cogeneration plant, a 120 MW combustion turbine power plant, and the City of Auburndale cemetery.

The Plant commenced commercial operation in May 2004 with a nominal baseload power output of 537 MW and peaking output of 599 MW. The major equipment at the Plant includes two Siemens Westinghouse combustion turbines whose exhausts are routed to two heat recovery steam generators, which generate and provide steam to one steam turbine. Osprey Energy Center sells the full output of the power plant to large, load-serving customers in Florida, through power purchase agreements (PPAs). The transmission Interconnection and Operating Agreement was executed between Tampa Electric Company (Transmission Provider) and Calpine Construction

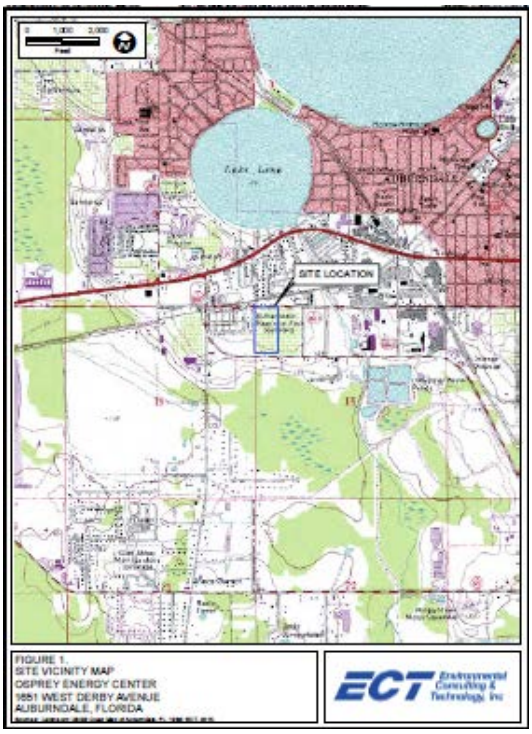
Finance Company, L.P. (interconnection Customer) on November 16, 2001. The point of interconnection is defined as Recker Substation in Polk County, Florida.

Natural gas fuel is supplied to the Site by a 16-inch diameter natural gas transmission lateral owned by Gulfstream. Calpine Energy entered into a fine transportation service agreement with Gulfstream in July 2003.

The Osprey Energy Center has an amended and restated water supply agreement executed on August 5, 2002, between Calpine Construction Finance, LP and the City of Auburndale, Florida (City) that will remain in place for a term of 21 years from the day that reclaimed water is first delivered to the Plant. The Reclaimed Water Agreement can be extended for an additional five year term, upon written notification at least six months prior to expiration of the initial term. Geographically, the Osprey Plant is positioned within 30 miles of the Hines Energy Center and 40 miles of Intercession City, which aligns well with existing DEF generation resources.

FIGURE 4.1.a

Existing Osprey Acquisition Site Location



SUWANNEE COUNTY

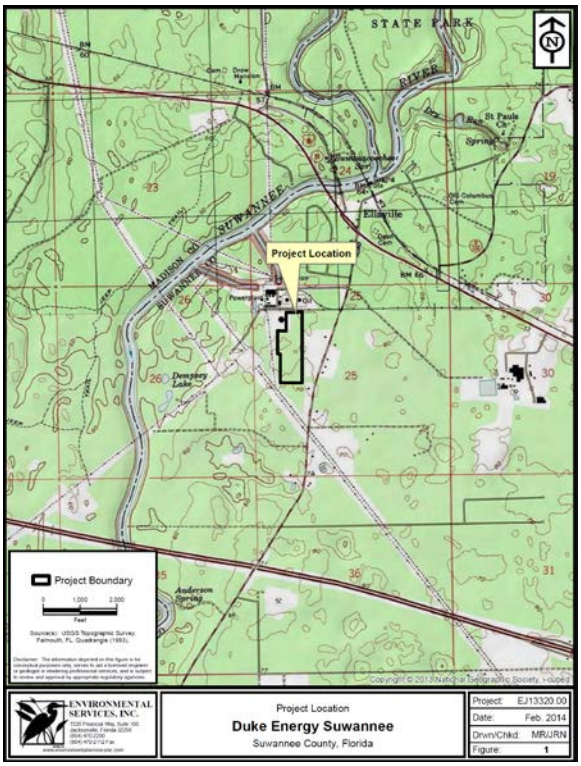
DEF has identified the existing Suwannee River Energy Center site in Suwannee County for simple cycle CTs, combined cycle and/or solar technologies (see Figure 4.1.b below). The project area totals approximately 68 acres and is located west of River Road, south of U.S. 90. The project area consists of a naturally occurring pine- oak community of the subject parcel and has a canopy primarily composed of longleaf and slash pine as well as turkey and laurel oak. There are no wetlands within the limits of the project area.

DEF's assessment of the Suwannee site addressed whether any threatened and endangered species or archeological and cultural resources would be adversely impacted by the development of the site the facilities. Gopher tortoises, a state listed species, may be impacted by the development of the project. DEF will acquire a permit from the Florida Fish and Wildlife Conservation Commission to relocate any gopher tortoises from the project area prior to construction. No archaeological or cultural resources will be adversely impacted by the project.

The new solar project will not require an increase of water use beyond what is already permitted to be used by the site from the Suwannee River Water Management District. Development of the project site will also require an Environmental Resource Permit and Air Permit from the Florida Department of Environmental Protection. Suwannee County requires a special exception approval to construct the project on the property.

FIGURE 4.1.b

Suwannee County Preferred Site Location



CITRUS COUNTY

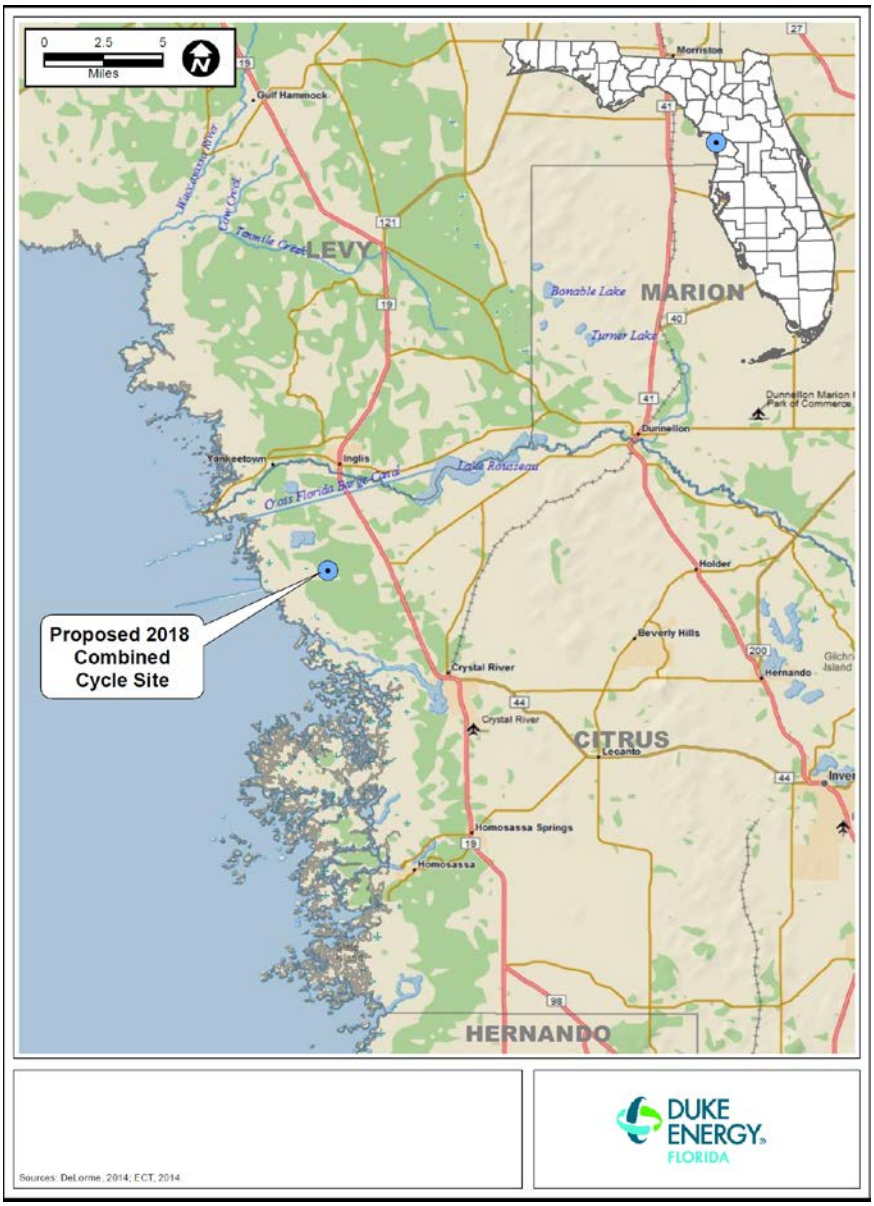
DEF has identified a site in Citrus County as a preferred site for new combined cycle generation (see Figure 4.1.c below). The Company has begun construction of a new combined cycle facility on the property with the unit coming on line during 2018. The Citrus site consists of approximately 400 acres of property located immediately north of the Crystal River Energy Center (CREC) transmission line right-of-way and east of the Crystal River Units 4 and 5 coal ash storage area and north of the DEF Crystal River to Central Florida 500-/230-kV transmission line right-of-way. The property consists of regenerating timber lands, forested wetlands, and rangeland bounded to the south by the CREC North Access Road. The site was previously part of the Holcim mine. A new natural gas pipeline will be brought to the Project Site by the natural gas supplier on right of way provided by the supplier. The water pipelines and transmission lines

will use existing DEF rights-of-way. No new rail spur is proposed and site access will be via existing roadways.

DEF's assessment of the Citrus site addressed whether any threatened and endangered species or archeological and cultural resources would be adversely impacted by the development of the site the facilities. No significant issues were identified in DEF's evaluations of the property. A certification has been issued by the State of Florida under the Power Plant Siting Act. Federal permits for the development of the site will include a National Pollution Discharge Elimination System (NPDES) permit, Title V Air Operating Permit and a Clean Water Act Section 404 Permit. The site has received Land Use Approval from Citrus County. The new project is proposing to use the existing CR3 intake structure and a new discharge structure in the existing discharge canal.

FIGURE 4.1.c

Citrus County Preferred Site Location

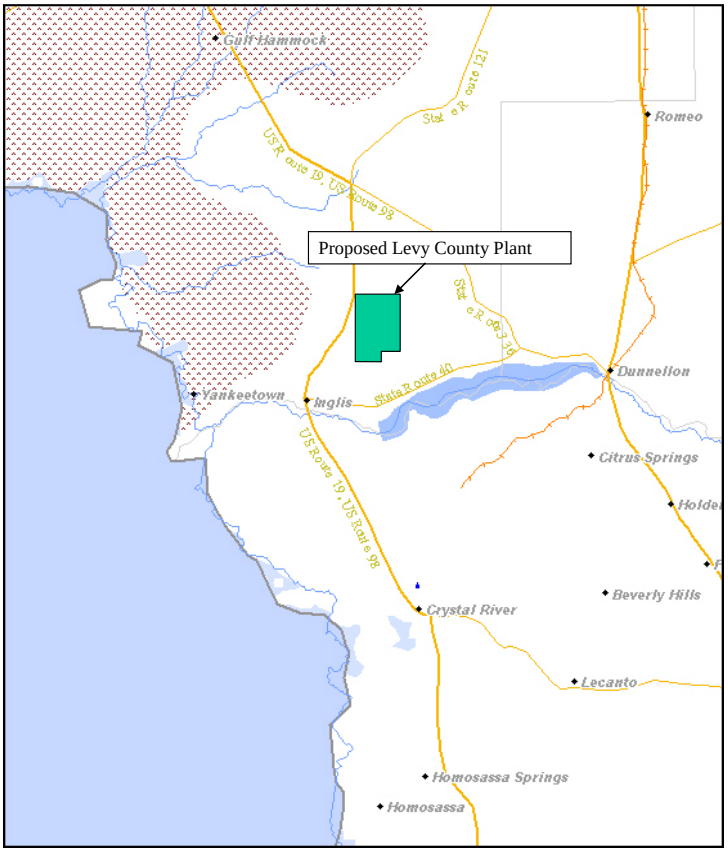


LEVY COUNTY NUCLEAR POWER PLANT – LEVY COUNTY

Although the proposed Levy Nuclear Project is no longer an option for meeting energy needs within the originally scheduled time frame, Duke Energy Florida continues to regard the Levy site as a viable option for future nuclear generation and understands the importance of fuel diversity in creating a sustainable energy future. Because of this the Company will continue to pursue the combined operating license outside of the Nuclear Cost Recovery Clause with shareholder dollars as set forth in the 2013 Settlement Agreement. The Company continues to monitor developments that could affect the future viability of new nuclear development in Florida, including the recently proposed U.S. EPA Clean Power Plan which could place a premium on carbon free generation. The Company will make a final decision on new nuclear generation in Florida in the future based on, among other factors, energy needs, project costs, carbon regulation, natural gas prices, existing or future legislative provisions for cost recovery, and the requirements of the NRC's combined operating license. The Levy County site is shown in Figure 4.1.d below.

FIGURE 4.1.d

Levy County Nuclear Power Plant (Levy County)

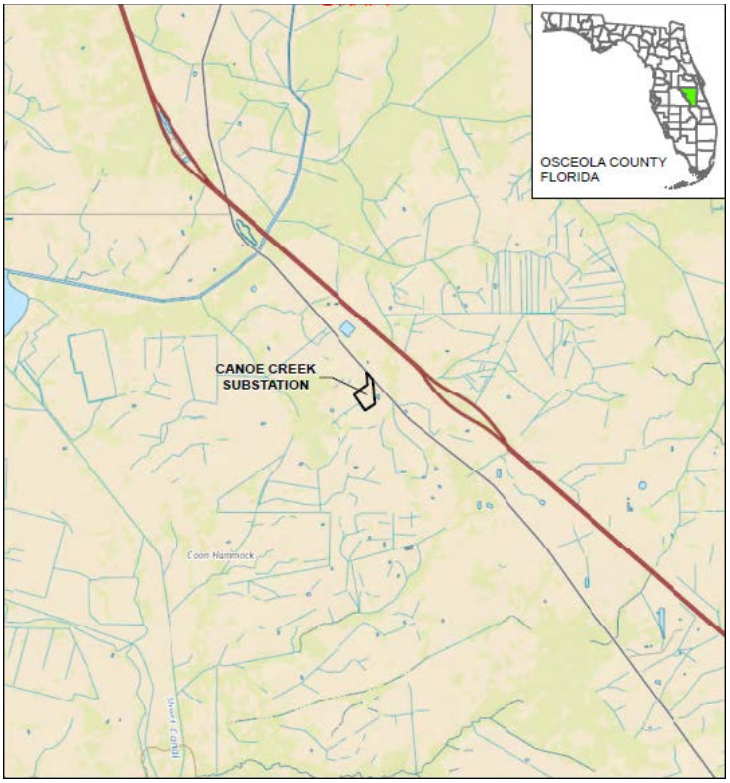


OSCEOLA SOLAR SITE

Duke Energy Florida owns 25 acres of land in Osceola County off Canoe Creek Rd. in Kenansville, FL which is south of the city of St. Cloud. There is a 230 KV substation already on the existing site. A solar PV generating facility is under construction on approximately 17 acres of land at the site. Adjacent land is used primarily for cattle grazing and agriculture. A thorough environmental review of the area discovered no wetland impacts. No other impacts or features were discovered in the review of the area. No additional sources of water will be needed to support the solar site. A site map of the area is shown below in Figure 4.1.e.

FIGURE 4.1.e

Existing Osceola Solar Site Location



PERRY SOLAR SITE

Duke Energy Florida owns 25 acres located in Perry, FL about 50 miles Southeast of Tallahassee. A solar PV generating facility is under construction on approximately 22 acres of land at the site. The existing land use is the 69/115 KV transmission substation presently in operation on site. Adjacent land is used primarily for residential, a nearby K-12 school, a cemetery and agriculture use. The property is in Taylor County, FL. A thorough environmental review of the site discovered no wetland impacts and the need for (permitted) gopher tortoise relocation. No other impacts or features were discovered in the review of the area. No additional sources of water will be needed to support the solar site. A site map of the area is shown below in Figure 4.1.f.

FIGURE 4.1.f

Existing Perry Solar Site Location