I. Meeting Packet

State of Florida
Public Service Commission
REVISED INTERNAL AFFAIRS AGENDA
Tuesday – July 12, 2022
9:30 AM
Room 148 - Betty Easley Conference Center

1. Draft 2021 Report on the Status of Competition in the Telecommunications Industry (Attachment 1)

2. UCF Florida Solar Energy Center (Attachment 2)

3. Review of Florida Power & Light Company's Ten-Year Site Plan (Attachment 3)

4. General Counsel's Report

5. Executive Director's report

6. Other Matters

BB/aml

OUTSIDE PERSONS WISHING TO ADDRESS THE COMMISSION ON ANY OF THE AGENDAED ITEMS SHOULD CONTACT THE OFFICE OF THE EXECUTIVE DIRECTOR AT (850) 413-6463.

Attachment 1

State of Florida

Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: June 28, 2022

TO: Braulio L. Baez, Executive Director

FROM: Cayce H. Hinton, Director, Office of Industry Development and Market Analysis CH
Mark Long, Public Utilities Supervisor, Office of Industry Development & Market Analysis
Jeff Bates, Research Associate, Office of Industry Development & Market Analysis
Eric Wooten, Public Utility Analyst III, Office of Industry Development & Market Analysis
Dale Eastmond, Public Utility Analyst II, Office of Industry Development & Market Analysis

RE: Draft of the Report on the Status of Competition in the Telecommunications Industry

CRITICAL INFORMATION: Please place on the July 12, 2022 Internal Affairs. FPSC approval of draft report is sought. Report is due to the Governor and Legislature by August 1, 2022.

Section 364.386, Florida Statutes, requires that the Commission prepare an annual report on the status of competition in the telecommunications industry. The report is to be submitted to the Governor, the Speaker of the House of Representatives, the President of the Senate, and the majority and minority leaders of the Senate and the House of Representatives by August 1 of each year. The attached draft report on the "Status of Competition in the Telecommunications Industry" has been prepared to fulfill the legislative requirement. Staff is seeking approval of the draft report.

Attachment

cc: Mark Futrell, Deputy Executive Director, Technical
Apryl Lynn, Deputy Executive Director, Administrative
Keith Hetrick, General Counsel

DRAFT 06/28/2022

Report on the

Status of Competition in the Telecommunications Industry

AS OF DECEMBER 31, 2021

Florida Public Service Commission

DRAFT 06/28/2022

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List of Acronyms

CDC	Centers for Disease Control and Prevention
CLEC	Competitive Local Exchange Company
FCC	Federal Communications Commission
FPSC	Florida Public Service Commission
F.S.	Florida Statutes
ILEC	Incumbent Local Exchange Company
IP	Internet Protocol
Mbps	Megabits per second
PSTN	Public Switched Telephone Network
TDM	Time Division Multiplexing
USF	Universal Service Fund
USAC	Universal Service Administrative Company
VoIP	Voice over Internet Protocol

Executive Summary

Section 364.386, Florida Statutes, requires the Florida Public Service Commission (FPSC or Commission) to submit a report on the status of competition in the telecommunications industry to the Legislature by August 1 of each year. As of December 31, 2021, there were 10 incumbent local exchange companies and 256 competitive local exchange companies certificated by the Commission to operate in Florida.

In 2021, the Florida wireline market continued to follow the national trend with AT&T, CenturyLink and Frontier all experiencing access line losses. The local and national markets continued to consolidate with several mergers and acquisitions. Several intrastate issues were resolved or initiated in 2019. Lifeline subscriptions in Florida fell to 273,641 in 2021, a 26.3 percent decrease.

Consumers in Florida continue to migrate from traditional wireline service to wireless and cable/Voice over Internet Protocol (VoIP) services. Carriers reported approximately 1.2 million total wireline access lines in Florida for 2021, about 16.9 percent fewer than the previous year. Residential and business wirelines both experienced significant drops in 2021.

Total residential access lines declined 19.1 percent. The transition to VoIP and wireless-only services continues to be responsible for much of this decline. For the third year in a row, AT&T edged CenturyLink as Florida's largest residential access line provider. CenturyLink experienced a 19 percent decline in residential lines during 2021 while AT&T declined 19.2 percent. Frontier again experienced the biggest residential loss with a 22.9 percent decline in residential access lines during the same period.

For the 11th year in a row, total business access lines exceeded total residential access lines; however, total business access lines declined 15.4 percent in 2021. More than half of AT&T and Frontier's wireline subscribers were business lines, while CenturyLink's business wireline subscribers made up less than half of their total access line amounts. Over 99 percent of competitors' access lines were business lines, although their business market share declined to 30.7 percent in 2021.

As reported for the past several years, intermodal competition from wireless and VoIP services continued to drive the telecommunications markets in 2021. According to the most recent FCC data, there are an estimated 22 million wireless subscriptions in Florida, and greater than 4.7 million VoIP connections.

Analysis of the telecommunications data obtained by the Commission produced the following conclusions:

- Many competitive local exchange companies (CLECs) reported offering a variety of services and packages comparable to those offered by incumbent local exchange companies (ILECs). Subscribers to wireless and business VoIP services continued to increase while cable, residential VoIP and switched access lines decreased. These factors

contribute to the conclusion that competitive providers are able to offer functionally equivalent services to both business and residential customers.

- The traditional wireline market continues to decrease; however, the population of Florida and the need for telecommunications services continues to expand. Wireless subscription growth and VoIP are meeting the increased demand for service. Consumers are choosing to obtain a majority of wireless and VoIP subscriptions from competitors. Given the decline in the traditional wireline market and competitors' substantial wireless and VoIP market shares, consumers are able to obtain functionally equivalent services at comparable rates, terms, and conditions.
- A competitive market requires comparable affordability and reliability of service. The vast majority of Florida households subscribe to telephone service. Consumers are willing and able to choose telecommunications service from competitors using a variety of technologies, so competitors have been maintaining significant market share over an extended period. Based on competitors' substantial market share and market pressures requiring comparable affordability and reliability, competition is having a positive effect on the maintenance of reasonably affordable, reliable telecommunications services.

Chapter I. Introduction and Background

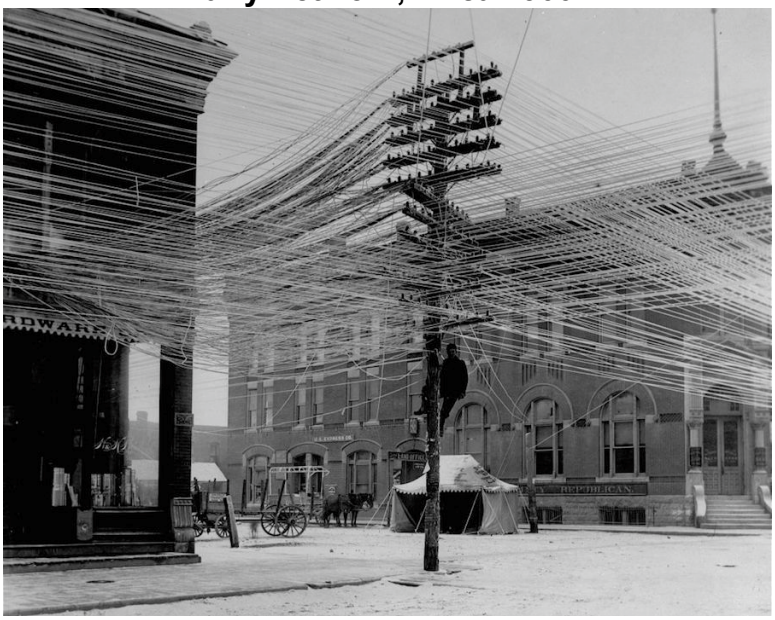
Telephone service has been regulated to some degree nearly since the moment the technology was patented by Alexander Graham Bell (Bell) in 1876.[1] This section summarizes the major historical regulatory events both at the federal and state levels. For the purposes of this report, the history of federal telecommunications regulation is useful because state regulation of these markets has always been intertwined with, and largely a derivative of, federal laws and rules.

A. Federal Regulation

When Bell's patents expired in 1894, competitors were allowed to build their own facilities. This accelerated the development of the nationwide telephone network. In the 18 years Bell held the patents, the daily calling average per 1,000 people peaked at 37. In the first 15 years of competition it increased tenfold.[2] Competitors gained over 50 percent market share by 1907.[3]

Early competition also had its drawbacks. Populated areas saw many lines crisscrossing the streets as competitors raced to build their independent networks. Figure 1-1 shows the lines in Pratt, Kansas circa 1900.

Figure 1-1
Early Network, Circa 1900



Source: America calling: a social history of the telephone to 1940

[1]Diane Katz and Theodore Bolema, "Crossed Lines: Regulatory Missteps in Telecom Policy," Mackinac Center, December 3, 2003, <https://www.mackinac.org/6033>, accessed on June 10, 2022.

[2]Adam D. Thierer, "Unnatural Monopoly: Critical Moments in the Development of the Bell System Monopoly," Washington, D.C.: *The Cato Journal*, Fall 1994, p. 270, <https://www.cato.org/sites/cato.org/files/serials/files/cato-journal/1994/11/cj14n2-6.pdf>, accessed on June 10, 2022.

[3]Ibid.

Bell's American Telephone and Telegraph Company (AT&T) responded to this competition by acquiring its competitors' networks. Once it had acquired enough rivals to control a market, it would refuse to interconnect with any independent providers.[4] AT&T even acquired a controlling interest in its chief rival, The Western Union Telegraph Company (Western Union). These actions eventually got the attention of federal antitrust lawyers and the Interstate Commerce Commission (ICC), which received authority to regulate telephone service in 1910.[5]

In 1913, AT&T reached a settlement with the Justice Department. AT&T agreed to divest its Western Union stock, interconnect with other companies, and not acquire any more independent companies without approval from the ICC.[6] This began a decades-long practice by AT&T where, after pressure from potential competitors, courts, or regulators, AT&T would enter into agreements with state and/or federal authorities in order to maintain its control of the national telephone market.[7]

By the 1920s, AT&T had sold the idea of telecommunications as a necessary "universal service" and a "natural monopoly" to state and federal regulators, who in turn discouraged or outright banned competitive telephone services.[8] During this period, AT&T repeatedly agreed to be subject to heavy, rate-restricted regulation in exchange for a guaranteed monopoly in a particular area.[9] AT&T's market share rebounded during this period until it controlled nearly 80 percent of the national market.[10]

Telephone regulation then looked a lot like today's electric regulation. The local telephone markets were considered monopolies and were rate-of-return regulated. Companies submitted cost information, regulators established their rate base and a revenue requirement, and the companies' rates were set to recover that amount. This became the de facto regulatory regime at both the federal and state levels.

By enacting the Communications Act of 1934 (1934 Act) as part of President Roosevelt's New Deal, Congress created a new agency, The Federal Communications Commission (FCC), and

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[4]Richard Gabel, "The Early Competitive Era in Telephone Communication, 1893-1920," 34 *Law and Contemporary Problems*, Spring 1969, p. 350, <https://scholarship.law.duke.edu/lcp/vol34/iss2/8>, accessed on June 10, 2022.

[5]Frank Dixon, "The Mann-Elkins Act, Amending the Act to Regulate Commerce," *The Quarterly Journal of Economics*, Oxford University Press, vol. 24, no. 4, August 1910, p. 596, <https://www.jstor.org/stable/pdf/1883490.pdf>, accessed on June 10, 2022.

[6]Milton Mueller, "Universal Service: Competition, Interconnection and Monopoly in the Making of the American Telephone System," Syracuse University, 2013, pp. 127-128, <https://surface.syr.edu/books/18>, accessed on June 10, 2022.

[7]Matthew Lasar, "How AT&T Conquered the 20th Century," *Wired*, September 3, 2011, <https://www.wired.com/2011/09/att-conquered-20th-century/>, accessed on June 10, 2022.

[8]Ibid.

[9]Ibid.

[10]Ibid.

transferred to it the ICC's telecommunications jurisdiction.[11] The new law enabled the FCC to codify its rate-of-return regulation of AT&T while also protecting AT&T's monopoly market position.[12] This regulatory regime continued for several decades, allowing AT&T to grow into the largest corporation in the world. At its peak, AT&T became larger than most countries' economies, and larger than the five largest U.S. oil companies combined.[13]

Starting in the 1950s, cracks in the monopoly regime began to develop, and AT&T's ability to negotiate its way out of competition began to erode, first with the courts, and eventually with the FCC itself. Federal proceedings and lawsuits with nicknames such as "Hush-A-Phone," "Carterfone," and "Above 890" forced AT&T to interconnect with competitors' telephone equipment, wireless radio phones, and microwave networks.

Still, AT&T remained the largest corporation in the world when the federal government filed another antitrust suit in 1974. This action led AT&T to enter into one final agreement; this time to break itself up into smaller companies. The long distance and equipment markets had slowly become competitive and would soon be federally deregulated. AT&T offered to divest itself into eight major companies: seven regional Bell Operating Companies were established to continue the local monopolies, and AT&T, while barred from providing local service, remained as a competitor in the long distance and equipment markets.[14] This action, known simply as Divestiture, became final in 1984, and as a result AT&T's size dropped 70 percent.

Between 1984 and the 1990s, technology continued to put pressure on the local and long distance telephone markets. Cable, cellular, and broadband services all showed promise as substitutes for traditional phone service. Divestiture had created the opportunity for Congress to rewrite the 1934 Act to accommodate these technologies and open the local markets to competition.

Congress passed the Telecommunications Act of 1996 (1996 Act), rewriting the majority of the 1934 Act and setting up the ground rules for local competition.[15] The new law encouraged local competition nationwide, and required massive rulemakings from both the FCC and state regulators to ensure wholesale prices, consumer protections, and universal service principles were fair and reasonable.[16] This effectively ended rate-of-return regulation for the vast majority of local telephone services nationwide.

Congress delegated to the FCC and the States the ability to write rules implementing the 1996 Act. Carriers were required to interconnect with one another, and the existing companies, called Incumbent Local Exchange Carriers (ILECs), were required to lease elements of their networks to the new competitors, called Competitive Local Exchange Carriers (CLECs). Wholesale rates

[11]Communications Act of 1934, Pub. L. No. 73-416, 48 Stat. 1064.

[12]Ibid.

[13]Ray Horak, *Webster's New World Telecom Dictionary*, Wiley Publishing, Indianapolis, Indiana, 2008, p. 42.

[14]*United States v. American Tel. and Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982).

[15]"Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56.

[16]Ibid.

for these Unbundled Network Elements (UNEs) had to be established at the state level using a specific and complicated cost methodology. Small, rural, independent ILECs could escape the voluminous interconnection rules if they could demonstrate to the state utility commission that they could not implement the rules or if there was no demand by competitors in their area.[17]

Companies were encouraged to negotiate interconnection agreements, adopt another company's agreement, or resell a complete service. A process was also established for the regulator to step in should companies disagree and require arbitration. While the FCC was responsible for establishing the national framework for executing the 1996 Act, it took several years for the States and the FCC to complete the initial implementation of the 1996 Act.

While Congress hoped that the 1996 Act would settle the endless litigation in the telecommunications market, the opposite proved true. The FCC's attempts to implement the interconnection and UNE access provisions were struck down, at least in part, no fewer than three times by federal courts. Finally, four tries and over eight years after the 1996 Act was passed, the FCC's "Triennial Review Remand Order" was issued.[18] The Triennial Review Remand Order, following directives from the courts, limited CLEC access to several UNEs where competitive alternatives existed, as well as local loops combined with local switching, known as the UNE Platform. The UNE Platform was the primary method non-cable CLECs used to provide residential service. Once the courts struck down UNE Platform access, CLECs essentially abandoned the residential market to cable and wireless companies.

B. Florida Regulation

While all this activity was occurring at the federal level, state actions were just as busy. The Florida Legislature added telephone and telegraph regulation to the Florida Railroad Commission's responsibilities in 1911.[19] The agency's name was changed to the Florida Public Service Commission (FPSC or Commission) in 1965.

As previously described, rate-of-return regulation was the norm up through the 1980s in Florida. In 1990, the Florida Legislature recognized the emerging competitive markets for some telecommunications services provided by the local carriers and delegated to the FPSC the authority to, in some circumstances, allow price cap regulation for those services.[20] If the FPSC decided that effective competition existed for a particular service or market, it could allow

[17]47 U.S.C. § 251(f).

[18]FCC 04-290, WC Docket No. 04-313, CC Docket No. 01-338, Unbundled Access to Network Elements, Review of Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Order on Remand, released February 4, 2005.

[19]See 1911 Fla. Laws 6186.

[20]Price caps are a regulatory scheme where, instead of regulators limiting a company's percent return on investment, a company could elect to have its prices capped at a regulator-approved level, allowing the company to keep any profits generated by selling its services at or below the price caps.

market conditions to control prices and eliminate rate-of-return regulation for that service or market.[21]

Competition for more services developed and, by 1995, the emergence of cable companies made it obvious that competition for all local services was inevitable. In anticipation of a federal law becoming imminent, the Florida Legislature passed a sweeping revision to Chapter 364, Florida Statutes (F.S.), finding that "the competitive provision of telecommunications services, including local exchange service, is in the public interest."[22] Competitive entry into the local market was allowed, and CLECs were able to enter subject to a lesser degree of regulatory oversight than ILECs. Also, ILECs were allowed to elect price caps for all their services, eliminating them from rate-of-return regulation altogether.[23] The Legislature also required the FPSC to start publishing this report on the status of competition in Florida.

The Legislature followed up in 1998 by requiring the FPSC to issue a series of five reports on competition, including forward-looking cost estimates of local service, impacts to low-income assistance programs such as Lifeline, the relationships between costs and existing prices, what are fair and reasonable local rates, and impacts on multi-tenant environments.[24]

To further accommodate the growing competitive landscape, in 2003 the Legislature passed another major amendment to Chapter 364, F.S. The changes included lesser FPSC oversight of long distance companies, and ILECs were allowed to petition the FPSC for lesser regulatory oversight, similar to the regulation of their local competitors. It also expanded Lifeline eligibility for low-income Florida consumers, and exempted from FPSC jurisdiction Voice-over-Internet-Protocol (VoIP) services, which at that time were largely utilized by cable companies to provide telephone service.[25]

In 2005, the Legislature again amended Chapter 364, F.S., addressing local governments and broadband deployment, FPSC jurisdiction regarding advanced services, Lifeline awareness and participation, and storm damage recovery. The Amendment established rules that governmental entities, such as municipalities, must follow in order to provide communications services (cable, broadband, etc.) in competition with private providers. The 2005 revisions also clarified the FPSC's jurisdiction, or more precisely the exemption from the FPSC's jurisdiction, for advanced services, including wireless, broadband, and VoIP. The new law also further clarified and expanded Lifeline eligibility and procedures. Finally, as a result of the storm season in 2004, it permitted the recovery of costs and expenses related to damage caused by named tropical storms.[26]

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[21]See 1990 Fla. Laws 244.

[22]See 1995 Fla. Laws 403.

[23]Ibid.

[24]See 1998 Fla. Laws 277.

[25]See 2003 Fla. Laws 32.

[26]See 2005 Fla. Laws 107 and 132.

In 2006, carrier of last resort obligations in multitenant environments were amended, and some previously enacted rate requirements were repealed. [27] In 2007, changes included further rate reductions, rebalancing, and repeals. Also, an automated enrollment process for Lifeline was created, and the ILECs' overall carrier of last resort obligations were allowed to sunset.[28]

In 2009, the definition of basic service was narrowed and regulation for non-basic services was decreased. Service quality oversight for non-basic services was eliminated and company tariffs were no longer required to be filed with the Commission. Lifeline eligibility was again expanded. The Florida Department of Management Services was designated as the agency to oversee broadband deployment in Florida. In 2010, the rate-of-return sections in Chapter 364, F.S., were repealed.[29]

The most recent revision to Chapter 364, F.S., came in 2011. This amendment finalized the deregulation of all retail services by the ILECs. This included the elimination of rate caps, the consumer protection and assistance duties of the FPSC, and all service quality oversight. It also repealed the previously-enacted storm damage recovery provisions.[30]

Although telecommunications is largely deregulated in Florida at this time, the FPSC still retains authority to monitor intercarrier relations and resolve wholesale disputes, oversee the Lifeline and Florida relay programs, and issue certificates of authority to provide telecommunications service. The FPSC has continuing authority over numbering issues, including area code relief, number conservation, and local number portability. The FPSC also resolves complaints relating to Lifeline, relay service, and payphones.

C. Status of Competition Report

Chapter 364, F.S., requires the Commission to prepare and deliver a report on the status of competition in the telecommunications industry to the President of the Senate, the Speaker of the House of Representatives, and the majority and minority leaders of the Senate and the House of Representatives on August 1 of each year. Section 364.386, F.S., requires that the report address the following four elements:

1. The ability of competitive providers to make functionally equivalent local exchange services available to both residential and business customers at competitive rates, terms, and conditions.
2. The ability of customers to obtain functionally equivalent services at comparable rates, terms, and conditions.
3. The overall impact of competition on the maintenance of reasonably affordable and reliable high-quality telecommunications services.

[27]See 2006 Fla. Laws 080.

[28]See 2007 Fla. Laws 029.

[29]See 2009 Fla. Laws 226.

[30]Regulatory Reform Act, ch. 36, 2011 Fla. Laws 1231.

4. A list and short description of any carrier disputes filed under Section 364.16, F.S.

The Commission is required to make requests to local exchange telecommunications providers each year for the data required to complete the report. The data request was mailed on February 28, 2022, to 10 ILECs and 256 CLECs. Responses were due April 15, 2022. The data and analyses that follow accurately reflect the information provided by the ILECs and the reporting CLECs.

This report is divided into chapters that summarize key events and data that may have a short-term or long-term effect on the Florida telecommunications market. Chapter II presents data regarding wireline access line competition in Florida, including access line trends, residential/business access line mix, and market share. Chapter III discusses the continued development of the wireline market's principle forms of intermodal competition: broadband, wireless, and VoIP. Chapter IV primarily uses data outlined in the other chapters to address the four statutory issues delineated above. Chapter V provides a summary of state activities affecting local telecommunications competition in 2021, including intercarrier matters, Lifeline, and the Telecommunications Relay Service. Chapter VI details some of the major federal activities that may affect the Florida market.

Chapter II. Wireline Competition Overview

For the past decade, the technologies used to deliver voice telephony have continued to evolve. Analog circuits using traditional copper wires and Time Division Multiplexing (TDM) are being replaced by wireless cell-based transmission and VoIP, which is provided via a digital broadband connection, either wireless or wired. Wireless, VoIP, and broadband are all exempt from FPSC jurisdiction. The FPSC is therefore limited in what data it can collect regarding these technologies. Trends in these technologies are summarized in Chapter III.

TDM-based wireline service, which is the primary subject of this report, is still used throughout the country and Florida. In fact, the wireless and broadband networks utilize many of the traditional wireline facilities for interoffice and long distance transport.

This chapter discusses the incumbent carriers' corporate trends as disclosed in their federal financial reports. It then discusses the number, market mix, and market share of residential and business wirelines. Knowledge of the number of wirelines and the trends for market participants is essential to understanding the state of the market.

A. Incumbent Carriers

Florida's ILECs have been experiencing switched access line losses for well over a decade. These losses appear consistent with the companies' national trends reflected in the companies' respective annual reports filed with the Securities and Exchange Commission. There are 10 ILECs providing wireline services in Florida, the largest of which are AT&T, CenturyLink, and Frontier.[31] These companies' annual reports showed that, like in Florida, they continue to face access line losses nationally as customers disconnect traditional landline services and migrate to alternative services.

In Florida, AT&T's switched access lines declined by over 88,000 (17.8 percent), with residential access lines decreasing by over 42,000 (19.2 percent) and business lines by over 46,000 (16.7 percent).[32] Nationwide, AT&T reported losses of approximately 1,086,000 switched access lines (14.95 percent) in 2021. AT&T is the only major ILEC in Florida that reports access line numbers at the national level in its annual reports. AT&T reported a nearly 4.2 percent increase in operating revenues nationally.[33]

CenturyLink's Florida switched access lines declined by nearly 52,000 (15.6 percent), with residential access lines decreasing nearly 35,000 (19.0 percent) and business access lines

[31]Responses to local competition data request 2022.

[32]AT&T's response to the local competition data request 2022.

[33]AT&T Inc., "Form 10-K," December 31, 2021, <https://otp.tools.investis.com/clients/us/atnt2/sec/sec-show.aspx?Type=html&FilingId=15576872&Cik=0000732717>, accessed on April 21, 2022; responses to local competition data request 2022.

decreasing over 17,000 (11.6 percent).[34] Nationwide, CenturyLink reported operating revenues of approximately $19.69 billion, reflecting a decline of nearly 4.95 percent from 2020.[35]

Frontier's switched access lines in Florida declined by over 19,000 (11.5 percent), with residential access lines decreasing over 11,000 (22.9 percent) and business lines by over 8,000 (6.9 percent).[36] Nationwide, Frontier reported 2021 revenue of $6.4 billion, reflecting a decline of eight percent.[37]

The seven rural Florida ILECs experienced a contraction in the number of switched access lines. In 2021, rural carriers in Florida saw their total access lines decline by over 16,400 (15.4 percent). Residential lines decreased over 13,900 (18.2 percent) and business lines decreased by nearly 2,500 (8.4 percent).[38]

B. Wireline Trends in Florida

Figure 2-1 illustrates the overall trend in Florida for both residential and business lines (not including VoIP connections). Based on current data, the rate of decline in residential and business lines accelerated somewhat in 2021. Business access lines totaled over 700,000, representing a decrease of 15.4 percent from 2020 to 2021. Residential access lines totaled over 400,000 as of December 2021, representing a decline of 19.1 percent from the previous year. Total combined traditional wirelines for ILECs and CLECs declined 16.9 percent, from approximately 1.4 million in December 2020 to nearly 1.2 million as of December 2021. For the five-year period from 2017 through 2021, the total number of traditional wirelines decreased by over 1.3 million, a decline of 53.7 percent.

[34] CenturyLink/Lumen's response to local competition data request 2022.

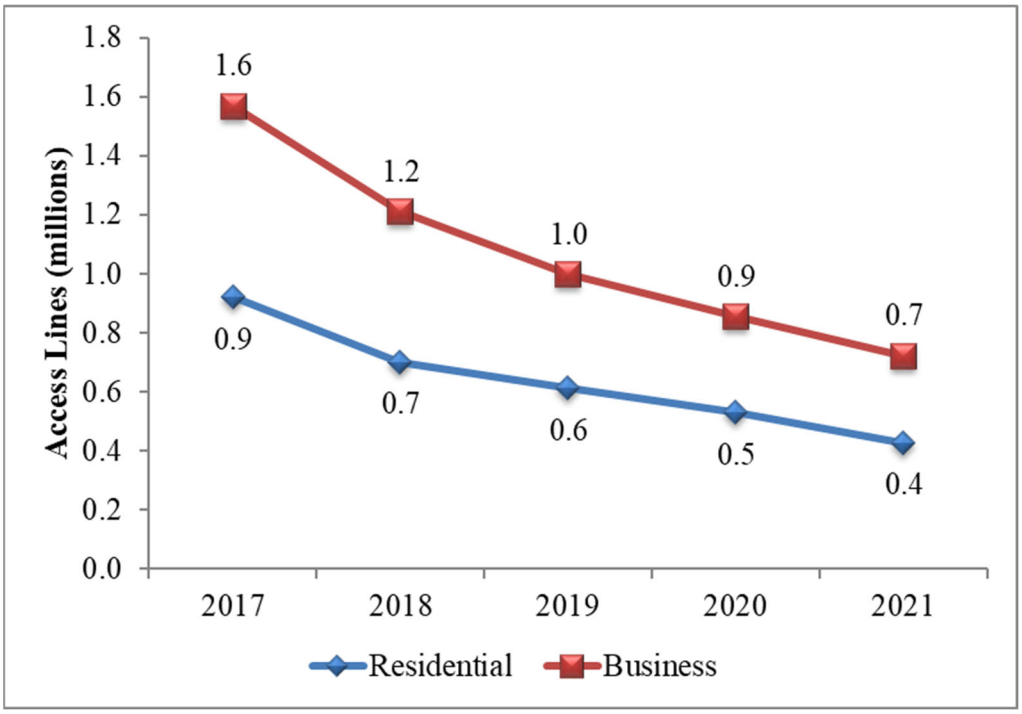
[35]Lumen Technologies, Inc., "Form 10-K," December 31, 2021, https://d18rn0p25nwr6d.cloudfront.net/CIK-0000018926/7a81bfa0-4166-42bc-bae9-e1f1edbc7e06.html, , accessed on April 25, 2022.

[36]Frontier's response to local competition data request 2022.

[37]Frontier Communications Corporation, "Form 10-K," December 31, 2021, https://d18rn0p25nwr6d.cloudfront.net/CIK-0000020520/d0ec56a0-e576-48bf-826c-15d77432897b.html, accessed on April 25, 2022.

[38]Responses to local competition data request 2022.

Figure 2-1
Florida Wireline Access Line Trends



Source: Responses to local competition data request (2018-2022)

C. Wireline Market Mix, Market Share, and Market Composition

1. Market Mix

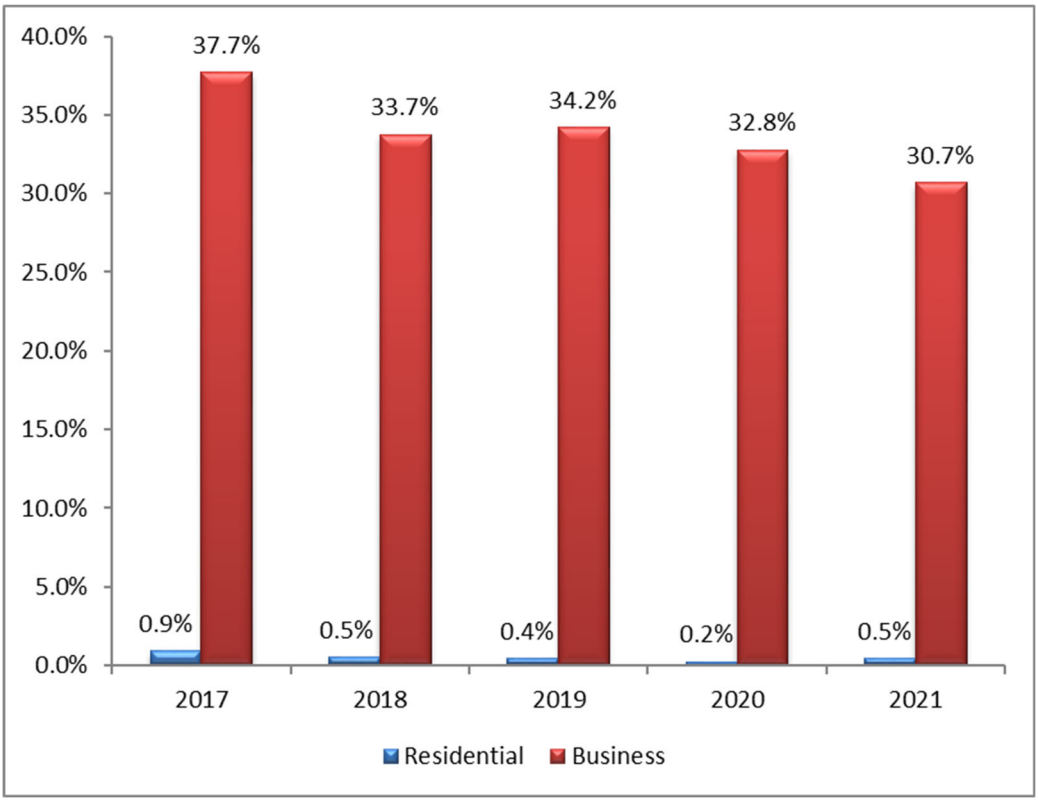
The business-to-residential ratio of customers served by ILECs and CLECs has shifted over time. In general, both ILECs and CLECs have seen an increased concentration of traditional wireline business customers as residential customers migrate to other options. The business-to-residential customer mix for ILECs was about 30 percent business and 70 percent residential in 2004. By 2017, the mix for ILECs had shifted so much that the percentage of business wirelines exceeded the percentage of residential wirelines. In 2021, the ILECs' ratio was 54 percent business lines to 46 percent residential lines.

The shift in mix has been even more pronounced in the CLEC market. In 2004, the business-to-residential customer mix for CLECs was about 63 percent business to 37 percent residential. In 2021, the CLEC customer mix was over 99 percent business lines.

2. Market Share

CLECs have traditionally focused more on business customers. Figure 2-2 illustrates FPSC data on CLEC market share by business and residential customer classes. The inverse of this percentage would be market share for the ILECs in Florida. According to FPSC data, the CLEC residential market share increased slightly from 0.2 percent in 2020 to 0.5 percent in 2021, while the CLEC business market share decreased from 32.8 percent in 2020 to 30.7 percent in 2021.

Figure 2-2
Florida Residential & Business CLEC Market Share



Source: Responses to local competition data request (2018-2022)
Note: 2020 data updated from previous report

3. Market Composition

The market composition of access lines served by local exchange companies is illustrated in Table 2-1. In 2021, ILEC residential access lines decreased by 19.3 percent, while ILEC business lines decreased by 12.9 percent. The CLECs experienced a slight increase in the number of residential access lines, but given their small market presence, this yielded a substantial percentage gain of 55.8 percent. CLEC business access lines decreased by 20.7 percent.

Table 2-1
Florida Wireline Access Line Comparison

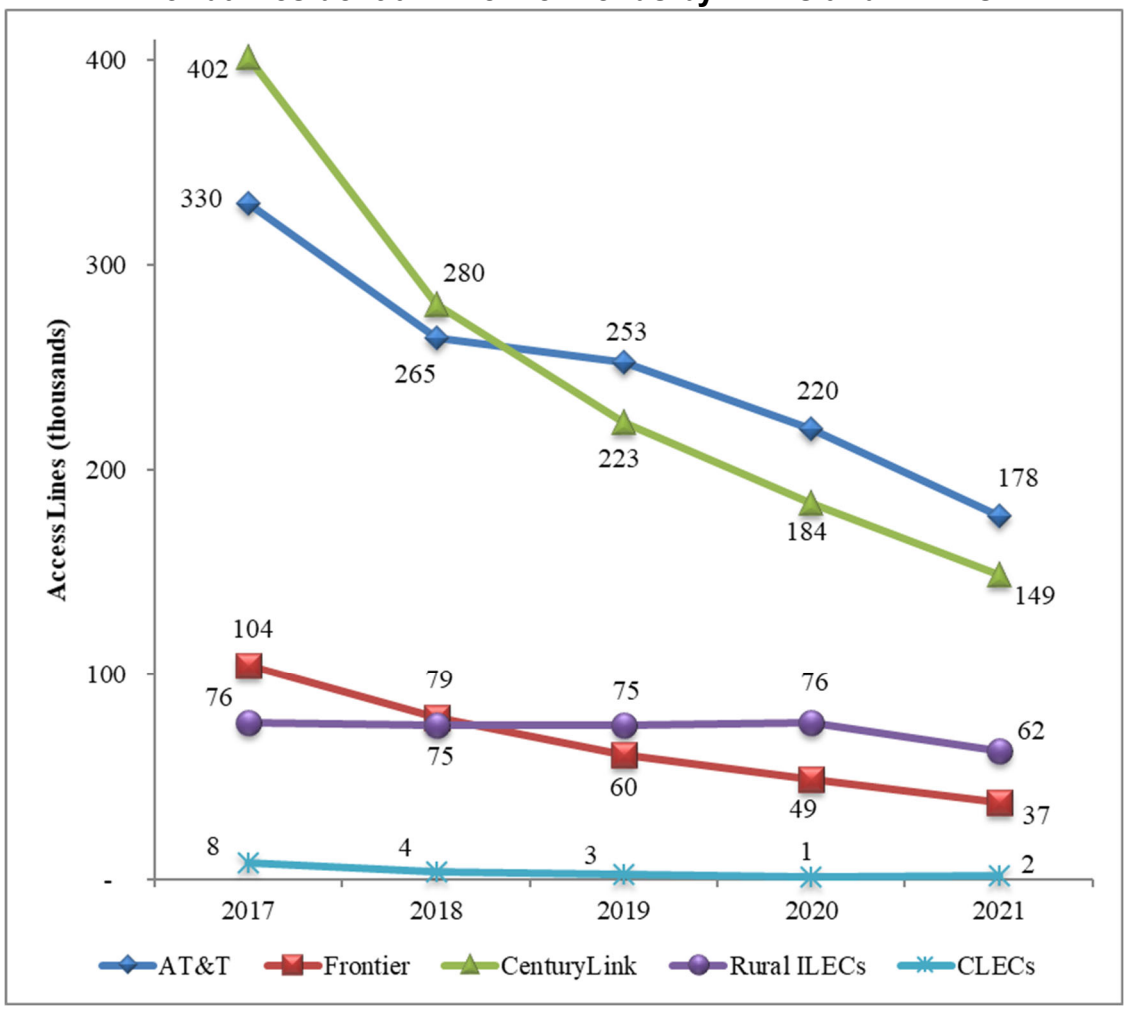
		ILECs	CLECs	Total
2018	Residential	698,975	3,695	702,670
	Business	803,240	409,122	1,212,362
	Total	1,502,215	412,817	1,915,032
2019	Residential	611,329	2,600	613,929
	Business	658,040	341,707	999,747
	Total	1,269,369	344,307	1,613,676
2020	Residential	528,480	1,265	529,745
	Business	575,682	280,541	856,223
	Total	1,104,162	281,806	1,385,968
2021	Residential	426,460	1,971	428,431
	Business	501,370	222,608	723,978
	Total	927,830	224,579	1,152,409
Change 2018-2021	Residential	-19.3%	55.8%	-19.1%
	Business	-12.9%	-20.7%	-15.4%
	Total	-16.0%	-20.3%	-16.9%

Source: Responses to local competition data request (2019-2022)
Note: 2020 data updated from previous report

4. Residential Wireline Access Line Trends

Figure 2-3 displays the wireline residential access line trends separately for AT&T, Frontier, CenturyLink, aggregate rural ILECs, and aggregate CLECs. Over the past five years, AT&T has averaged losses of nearly 16 percent per year. Frontier and CenturyLink exceeded AT&T with average respective losses of approximately 23 percent per year. During that period, CLEC residential lines declined by an annual average of nearly 25 percent, while rural ILEC access lines declined by an average of nearly six percent.

Figure 2-3
Florida Residential Wireline Trends by ILECs and CLECs



Source: Responses to local competition data request (2018-2022)
Note: 2020 data updated from previous report

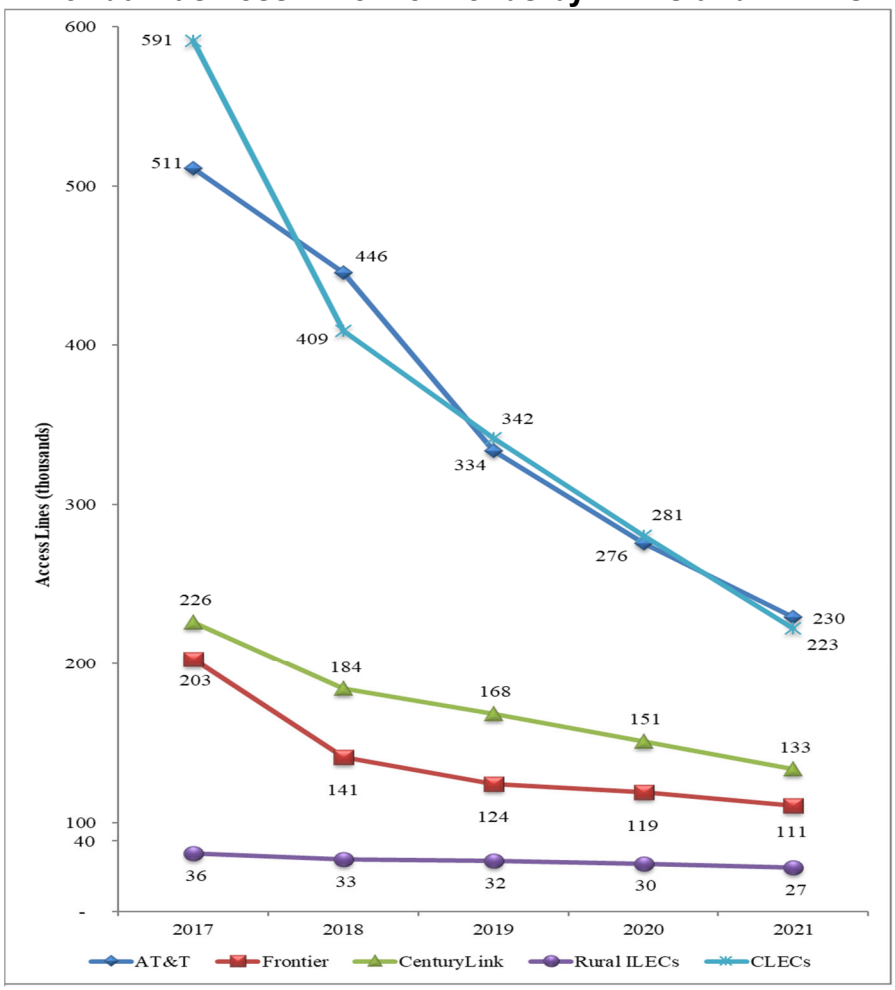
AT&T experienced residential wireline losses of 13.0 percent in 2020 and 19.2 percent in 2021. Frontier lost 19.5 percent of its residential wirelines in 2020 and 22.9 percent in 2021, while CenturyLink lost 17.6 percent of its residential lines in 2020 and 19.0 percent in 2021. The rural ILECs reported line gains of 1.4 percent in 2020 and losses of 18.2 percent in 2021, and the CLECs reported residential wireline declines of 51.3 percent in 2020 and gains of 55.8 percent in 2021. The rate of line loss in all categories accelerated, except for CLECs which experienced an increase in residential lines.

5. Business Wireline Access Line Trends

Figure 2-4 displays the wireline business access line levels separately for AT&T, Frontier, CenturyLink, aggregate rural ILECs, and aggregate CLECs. Over the past five years, AT&T has experienced an average decline of over 17 percent per year, while Frontier and CenturyLink have experienced average annual declines of nearly 13 percent and 12 percent, respectively. The average annual decline in rural ILEC business access lines over the past five years is nearly six

percent, while CLEC business access lines declined by nearly 20 percent annually over the same period.

Figure 2-4
Florida Business Wireline Trends by ILECs and CLECs



Source: Responses to local competition data request (2018-2022)
Note: 2020 data updated from previous report

AT&T's rate of business line losses moderated, while the rate of loss for all other categories accelerated. AT&T experienced business wireline losses of 17.4 percent in 2020 and 16.7 percent in 2021. Frontier lost 4.3 percent of its business wirelines in 2020 and 6.9 percent in 2021, while CenturyLink lost 10.3 percent of its business lines in 2020 and 11.6 percent in 2021. The rural ILECs reported line losses of 5.6 percent in 2020 and 8.4 percent in 2021, and the CLECs reported business wireline declines of 17.9 percent in 2020 and 20.7 percent in 2021.

Chapter III. Intermodal Competition Overview

Total wireline access lines in Florida peaked over 20 years ago at approximately 12 million.[39] Florida's population has increased significantly since that time and communications services have continued to expand, yet as previously shown in Table 2-1, wirelines were down below 1.2 million by the end of 2021. So where did 90 percent of the access lines go?

Wireless companies began attracting customers in the 1980s and by 1995 there were over 24 million cellular subscribers in the U.S.[40] Cable companies discovered that they could provide telephone service using VoIP and sought authorization from Congress to do so. These pressures resulted in the 1996 Act, which set up rules for these technologies to directly compete with ILECs, as well as companies that wished to compete using the ILECs' own technology and networks. While the ILECs have continued to dominate the traditional wireline markets, demand and competition has exploded for the wireless and VoIP services. These other modes are simply different technological evolutions of telephone service, much as connecting a call through an operator was replaced by direct dialing many decades ago. The additional capabilities available with these technologies have led the vast majority of residential consumers and businesses to make the transition to these modes.

A major development that has attracted so many customers to these technologies is the speed and volume of information that can be transmitted. High-speed Internet and data services, generically known as broadband, allow customers to do much more than talk: they can send and receive audio, video, and other large streams of data to meet many of their business and entertainment needs. Broadband facilities not only serve retail customers, but they have also become the backbone of wired and wireless interoffice data transport.

The benefit of real-time broadband services became evident during the recent COVID-19 pandemic. Sportscasters and other announcers needed to be able to remotely broadcast events due to travel restrictions. Historically, long distance interviews have been done via satellite with a noticeable delay between transmission and reception. With broadband, however, sports events were broadcast live with announcers thousands of miles apart. John McEnroe announcing the 2020 French Open tennis tournament from his home office in Malibu, California, nine time zones away, could only be accomplished by using terrestrial broadband facilities that carried his voice across the globe nearly instantaneously.[41]

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[39]Florida Public Service Commission, "Competition in Telecommunications Markets in Florida," Tallahassee, FL, December 2000, p. 46, <http://www.floridapsc.com/Files/PDF/Publications/Reports/Telecommunication/TelecommunicationIndustry/2000.pdf>, accessed on May 10, 2022.

[40]Statement of Anne K. Bingaman Assistant Attorney General Antitrust Division United States Department of Justice, Submitted to the Subcommittee on Oversight and Investigations United States House of Representatives On Competition in the Cellular Telephone Service Industry, October 12, 1995, <https://www.justice.gov/archive/atr/public/testimony/0460.pdf>, accessed on May 10, 2022.

[41]Marc Berman, "Mary Carillo will call French Open remotely amid 'shabby' COVID-19 protocols'" New York Post, September 23, 2020, <https://nypost.com/2020/09/23/mary-carillo-will-call-french-open-remotely-amid-covid-19-spike/>, accessed on May 10, 2022.

A. Wireless

In the early 1990s, wireless service was still new, signal strength and network availability were limited, and the services were marketed primarily to enterprise and other business users. The general population of consumers could not afford the cost of the cellular phone, and the limited availability of network access meant that mass adoption of the platform would take time.

However, as technology became more affordable and easier to upgrade, consumers started to enter the wireless market en masse. Eventually this led to the integration of wireless technology and broadband internet connections. Past reports have consistently shown that adoption of wireless services in the United States, and Florida specifically, far surpasses the adoption of other modes of communications.

1. Market Share

As shown in Figure 3-1, US market share among the top five wireless companies was split with AT&T leading at 43.2% (approximately 201.8 million subscribers), followed by Verizon at 30.6% (142.8 million), T-Mobile at 24.8% (108.7 million), Dish Network at 1.8% (8.5 million), and UScellular at 1% (approximately 4.9 million).[42,43,44,45,46]

[42]AT&T Inc. "Form 10-K," December 31, 2021, <https://otp.tools.investis.com/clients/us/atnt2/sec/secshow.aspx?FilingId=15576872&Cik=0000732717&Type=PDF&hasPdf=1>, accessed on April 26, 2022.

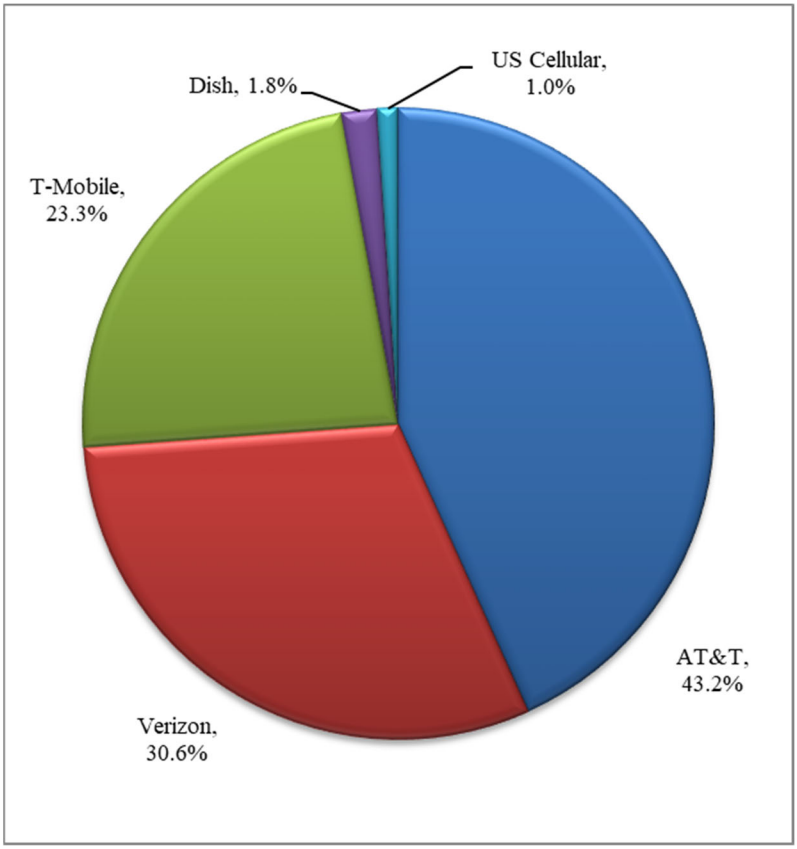
[43]Verizon Communications Inc., "4Q 2021 Earnings Results," January 25, 2022, <https://www.verizon.com/about/investors/quarterly-earnings>, accessed on April 26, 2022.

[44]T-Mobile US Inc., "Form 10-K," February 11, 2022, <https://s29.q4cdn.com/310188824/files/doc_financials/2021/q4/TMUS_12_31_2021_FORM_10-K_14.pdf>, accessed on April 26, 2022.

[45]DISH Network Corporation, "Dish Network reports fourth quarter, year-end 2021 financial results," February 24, 2022, <https://about.dish.com/2022-02-24-DISH-Network-reports-fourth-quarter,-year-end-2021-financial-results>, accessed on April 26, 2022.

[46]United States Cellular Corporation, "UScellular reports fourth quarter and full year 2021 results," February 17, 2022, <https://investors.uscellular.com/news/news-details/2022/UScellular-reports-fourth-quarter-and-full-year-2021-results/default.aspx>, accessed on April 26, 2022.

Figure 3-1
U.S. Wireless Market Share, Fourth Quarter 2021



Source: Companies' 2021 10K Earnings Reports

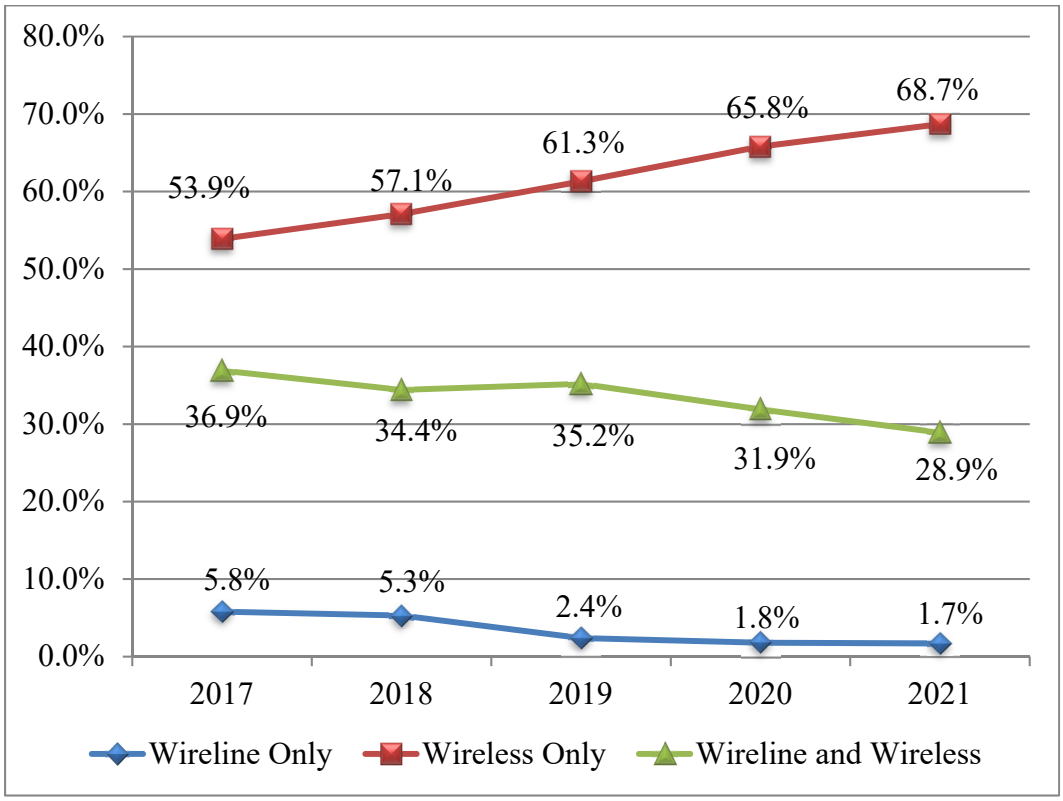
2. Wireless Substitution

According to the most recent data from carriers' financial reports, the five largest wireless service providers in the United States accounted for over 439 million connections by year-end 2021.[47] Less than 30 percent of U.S. households subscribe to both wireline and wireless service. As shown in Figure 3-2, wireless-only households in the United States rose from 62.5 percent in June 2019 to 68 percent in 2021.[48]

[47]Companies' 2021 Quarterly and Annual filings with the SEC.

[48]Steven Blumberg and Julian Luke, "Wireless substitution: Early release of estimates from the National Health Interview Survey January-June 2021," National Center for Health Statistics, November 2021, <https://doi.org/10.15620/cdc:111171>, accessed on April 26, 2022.

Figure 3-2
U.S. Wireless Substitution Rates



Source: CDC/NCHS, National Health Interview Survey

3. Florida Trends

Updated information for Florida's wireless trends is not regularly available, but in the past Florida's wireless subscription distribution has tracked closely with national trends. The most recent data available from the FCC, from December 2019, estimated Florida's wireless subscriptions to be 22,279,000. This was an increase of approximately 1.8 percent from December 2018 (21,419,000).[49] Florida's population was estimated at 21,477,737 in 2019, and with over 22 million wireless subscriptions, Florida had more connected wireless devices than people.[50]

By the end of 2019, 61.6 percent of Florida adults subscribed to wireless only service, 32.6 percent subscribed to both wireless and wireline service, and 3.6 percent subscribed to wireline-

[49]FCC, "Voice Telephone Services Report, State-Level Subscriptions," released March 2022, <https://www.fcc.gov/voice-telephone-services-report>, accessed on April 26, 2022.

[50]United States Census Bureau, Florida Population Estimate 2019, <https://datacommons.org/tools/timeline#&place=geoId/12&statsVar=Count_Person>, accessed on June 22, 2022.

only service.[51] By comparison, the national averages for the same period were 61.3 percent, 35.2 percent, and 2.4 percent, respectively.[52]

4. New Technology

The demand for wireless broadband service continues to grow with each new evolution of technology. The fifth generation of wireless connectivity, known as 5G, has brought a more robust broadband experience to wireless services. Advancements made from spectrum auctions aimed at repurposing existing sub-6GHz spectrum such as "C-Band" frequencies are allowing wireless providers to develop new products that will offer 5G speeds in the 50-500 Mbps range over broader areas. Millimeter wave (mmWave) frequencies, usually near 20GHz and above, will ultimately offer Gigabit and higher speeds, but have a relatively short range and require more expensive equipment, thus at present are best suited for high-density urban areas. Fiber wireless access service (FWA) is a fiber-based last-mile technology that can be easily deployed to provide super high speed broadband services in harder-to-reach service areas.[53]

AT&T began to deploy its C-Band spectrum in January 2022 in select areas. Its initial rollout included parts of Jacksonville, Orlando, and Miami. Its "5G+" mmWave service is available in Florida's NFL, NBA, and NHL stadiums.[54,55,56]

According to its 10-K annual report, by year-end 2021 Verizon's mmWave "5G Ultra Wideband" was available in parts of 87 cities, and "5G Home" was available in parts of 65 cities, while Verizon's C-Band spectrum reached approximately 100 million people by the end of February 2022.[57] According to its coverage map, Verizon offers both C-Band and mmWave service in parts of Jacksonville, Tampa, Orlando, Miami, Panama City, and Pensacola. Verizon is also deploying FWA service in these areas.

By December 31, 2021, T-Mobile's C-Band-based "Extended Range 5G" covered 310 million people, reaching 94 percent of Americans. Its mmWave-based "Ultra Capacity 5G" service

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[51]FCC, "Voice Telephone Services Report, State-Level Subscriptions," released March 2022, <https://www.fcc.gov/voice-telephone-services-report>, accessed on April 26, 2022.

[52]Steven Blumberg and Julian Luke, "Wireless substitution: Early release of estimates from the National Health Interview Survey January-June 2021," National Center for Health Statistics, November 2021, <https://doi.org/10.15620/cdc:111171>, accessed on April 26, 2022.

[53]Salvatore Salamone, "Is 5G Fixed Wireless Access the New ISDN?," *Network Computing*, February 4, 2019, <https://www.networkcomputing.com/wireless-infrastructure/5g-fixed-wireless-access-new-isdn>, accessed on May 12, 2022.

[54]Chloe Albanesius, "AT&T C-Band Rollout Begins in 8 US Cities," *PCMag*, January 19, 2022, <https://www.pcmag.com/news/att-c-band-rollout-begins-in-8-us-cities>, accessed on June 22, 2022.

[55]AT&T Inc., "Form 10-K," December 31, 2021, <https://otp.tools.investis.com/clients/us/atnt2/sec/sec-show.aspx?FilingId=15576872&Cik=0000732717&Type=PDF&hasPdf=1>, p. 3, accessed on April 26, 2022.

[56]AT&T Inc., "Wireless Coverage," <https://www.att.com/maps/wireless-coverage.html>, accessed on June 22, 2022.

[57]Verizon Communications Inc., "4Q 2021 Earnings," January 25, 2022, https://www.verizon.com/about/file/60091/download?token=f8DUOn9-, pp. 8-9, accessed on April 26, 2022.

covered 210 million people by the end of 2021 and can deliver 400 Mbps or more.[58] In Florida, T-Mobile advertises wide availability of both its Extended Range 5G and Ultra Capacity 5G throughout the state.[59]

Dish Network expects to launch its 5G network in Las Vegas in 2022 and plans to begin offering service in 25 major markets and 100 smaller cities by June, 2022.[60] Its initial rollout in Florida plans to include the Ocala, Orlando, Daytona, and Melbourne areas in the central part of the state.[61]

UScellular is continuing its modernization program and improved its mid-band spectrum holdings.[62] The company offers fixed wireless access using 5G and mmWave spectrum delivering speeds of up to 300 Mbps.[63] It does not claim to have deployed any 5G coverage directly in Florida, but advertises a widely available 5G Roaming service through 5G Partner Coverage.[64]

B. Voice over Internet Protocol (VoIP)

VoIP technology utilizes digital computer protocols in order to complete telephony voice calls over the Internet. Interconnected VoIP allows users to make and receive calls between their VoIP networks and the public switched telephone network (PSTN).[65] These calls can be provided via separate interconnected digital channels, privately managed, or "over the top" of existing Internet traffic. Interconnected VoIP is a substitute for traditional TDM-based service, and so is included in this report to the extent information is available. Non-interconnected VoIP services lack the capability of interconnecting with the PSTN and are not considered a substitute for TDM.[66] Non-interconnected VoIP is not discussed in this report.

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[58]T-Mobile, "U.S. Q4 2021 Consolidated Balance Sheets," December 31, 2021, <https://s24.q4cdn.com/400059132/files/doc_financials/2021/q4/ER-tables-2021.pdf>, pp. 6-7, accessed on April 26, 2022.

[59]T-Mobile, coverage map, <https://www.t-mobile.com/coverage/coverage-map>, accessed on June 22, 2022.

[60]Bevin Fletcher, "Dish Promises 5G launch in 25 major markets before June deadline," *Fierce Wireless*, February 24, 2022, https://www.fiercewireless.com/5g/dish-marks-5g-progress-plans-launch-5g-25-major-markets-june, accessed on May 9, 2021.

[61]Sascha Segan, "Can Dish Launch 125 5G Cities by Tomorrow?," *PCMag*, June 13, 2022, <https://www.pcmag.com/news/can-dish-launch-125-5g-cities-by-tomorrow>, accessed on June 22, 2022.

[62]US Cellular Corporation, "UScellular reports fourth quarter and full year 2021 results," February 17, 2022, <https://investors.uscellular.com/news/news-details/2022/UScellular-reports-fourth-quarter-and-full-year-2021-results/default.aspx>, accessed on April 26, 2022.

[63]Monica Alleven, "UScellular launches mmWave-based FWA in 10 cities," *Fierce Wireless*, April 28, 2022, <https://www.fiercewireless.com/tech/uscellular-launches-mmwave-based-fwa-10-cities>, accessed on May 9, 2022.

[64]Uscellular, coverage map, <https://www.uscellular.com/coverage-map>, accessed on June 23, 2022.

[65]47 C.F.R. § 9.3.

[66]47 U.S.C. § 153(36). An example of a non-interconnected VoIP network is a video game console service such as Xbox Live.

VoIP providers include cable companies, ILECs, CLECs, and Over the Top (OTT) providers. Customers usually subscribe to a broadband service and lease/purchase telephone equipment from the VoIP provider. Calls are sent through the broadband connection.

OTT companies include Magic Jack, Vonage and Skype. OTT calls can be viewed as interconnected VoIP services because of their ability to connect to internet infrastructure and route calls through the PSTN. These companies require the customer to have a broadband internet connection. Some use plugin converters between the consumer's existing phone and their standard phone jack. Calls are made through an existing internet connection.

Because VoIP is not regulated in Florida, the FPSC has no direct way to access VoIP access line data. Florida Internet and Television (FiTV) is able to provide some information on residential VoIP subscriptions, but the FPSC staff relies on FCC data for Florida business VoIP subscriptions.[67] The FCC tracks this data and periodically reports it. However, the FCC's currently-published data only includes information through December 2019 and so is two years behind most of the other data in this report.

FCC data from December 2016 through end of year 2019 showed an annual growth rate for VoIP of two percent per year, while subscribership to traditional wireline services decreased by 13 percent.[68] The FCC also reported that there were nearly 68 million Interconnected VoIP subscribers in the U.S.[69] Table 3-1 shows U.S. VoIP subscribership by customer type as of December 31, 2019. Data collected by the FPSC also shows nearly 2 million residential VoIP subscribers in Florida as of December 2021.[70]

[67]FiTV represents Florida's largest cable-based communications providers.

[68]FCC, "Voice Telephone Services: Status as of December 31, 2019," released March 9, 2022, <https://www.fcc.gov/voice-telephone-services-report>, accessed on April 28, 2022.

[69]Ibid, Figure 3, accessed on April 28, 2022.

[70]Responses to FPSC competition data request 2022.

Table 3-1
U.S. Interconnected VoIP Subscribership by Customer Type
(In Thousands)

Total	Over-the-Top	All Other VoIP	Total
ILEC	71	12,240	12,310
Non-ILEC	11,715	43,956	55,671
Total	11,786	56,195	67,981
Residential			
ILEC	2	7,964	7,966
Non-ILEC	2,249	26,082	28,331
Total	2,251	34,046	36,297
Business			
ILEC	69	4,275	4,344
Non-ILEC	9,467	17,874	27,340
Total	9,535	22,149	31,684

Source: FCC Voice Telephone Services Report, December 31, 2019 (Figure 3)

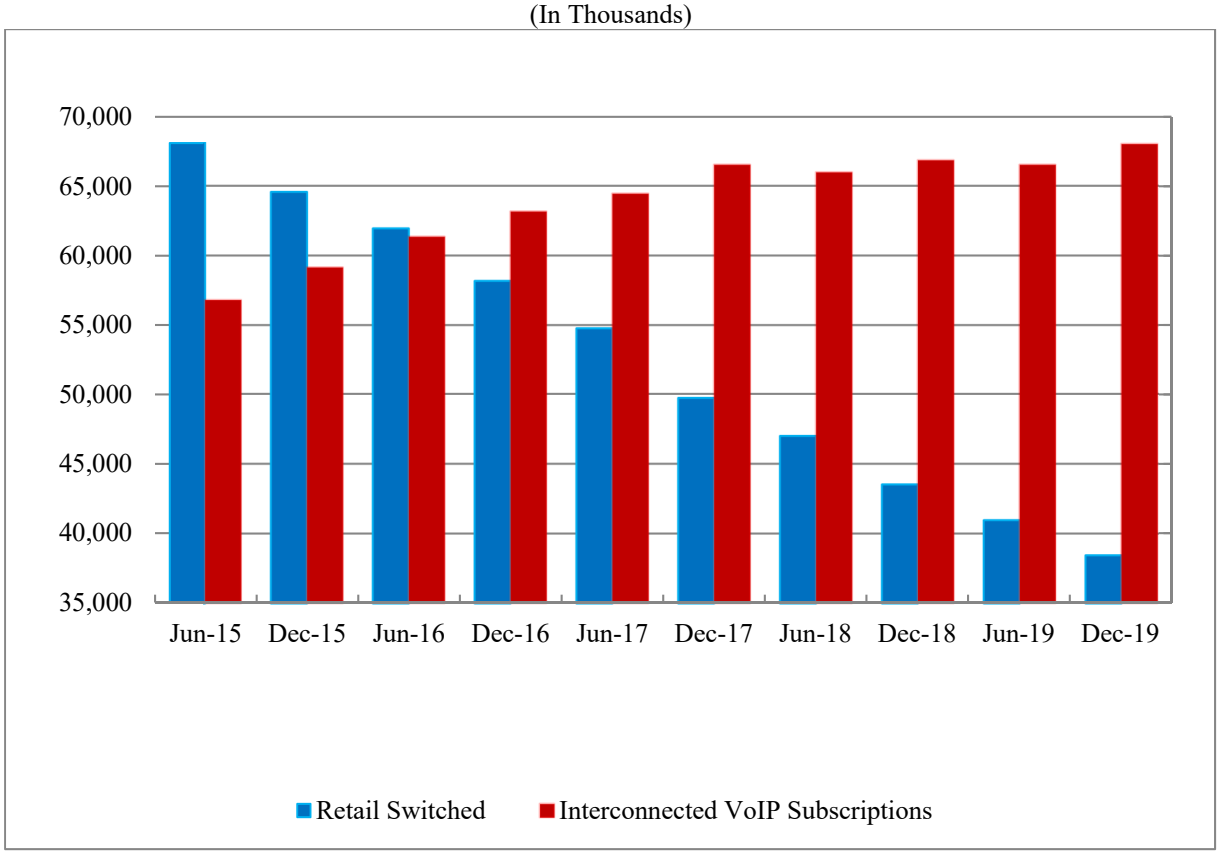
1. National Market

VoIP subscriptions have experienced steady increases for the past several years, both nationally and in Florida, while traditional switched lines have decreased. However, recent data continues to indicate that customer migration to VoIP, particularly for residential customers, may have plateaued. Shown in Figure 3-3, the FCC reported approximately 67.9 million VoIP subscriptions and nearly 38.4 million retail switched lines by December 2019. These figures total approximately 106 million wireline voice retail connections.[71] Of those 106 million connections, 49 percent (52 million) were residential and 51 percent (55 million) were business.[72]

[71]FCC, "Voice Telephone Services: Status as of December 31, 2019," released March 9, 2022, <https://www.fcc.gov/voice-telephone-services-report>, accessed on April 28, 2022.

[72]Ibid.

Figure 3-3
U.S. Retail Voice Telephone Subscriptions
(In Thousands)



Source: FCC VoiceTelephone Services Report, December 2019

a. Facilities-Based VoIP Providers

According to the FCC, non-ILEC companies accounted for nearly 28.3 million residential VoIP subscribers as of December 2019, compared to nearly eight million residential ILEC VoIP subscribers. This represents a market share of 78 percent for the non-ILECs in this market.[73] Comcast, the country's largest cable provider, reported a decrease just above five percent from 2020 (9.6 million) to 2021 (9.1 million).[74] The second largest cable provider, Charter Communications, reported a total of approximately 8.6 million residential VoIP subscribers at year-end 2021, a decrease of just under six and a half percent from 2020.[75] AT&T reported

[73]Responses to FPSC competition data request 2022.

[74]Comcast Corporation, "Comcast 2021 Annual Report on Form 10-K," released February 04, 2021, <https://www.cmcsa.com/financials/annual-reports>, accessed on May 2, 2022.

[75]Charter Communications, Inc., "Charter Investors: Results, SEC Filings & Tax Information," News Release, released January 28, 2021, <https://ir.charter.com/financial-information/annual-reports>, accessed on May 2, 2022.

approximately 3.3 million U-verse VoIP subscribers at year-end 2021, which is nearly a 12.7 percent decrease from the previous year.[76]

Each of these top three facilities-based providers reported that improvements in wireless carriers' broadband infrastructure is a factor in consumer decisions to leave wireline broadband and VoIP services. These providers have developed wireless and video services and bundle them in an attempt to retain customers.

b. Over the Top VoIP Providers

Routing voice calls over a customer's existing Internet connection allows over-the-top providers to have a much lower cost of service than wireline and wireless competition. According to the FCC, there were nearly 11.7 million OTT VoIP subscribers in the U.S. as of December 2019. This total included more than 2.2 million residential subscribers and over 9.5 million business subscribers nationwide. The FCC's figures showed a decrease of just under three percent in residential subscribers, and approximately 23.5 percent increase in business subscribers from December 2018 to end of year 2019.[77]

2. Florida Market

As previously stated, the FPSC does not have jurisdiction over VoIP services, which limits the agency's ability to determine an accurate estimate of the total number of VoIP subscribers in Florida. However, several ILECs and CLECs in Florida voluntarily responded to the Commission's data request and provided information on the number of residential VoIP subscribers. FiTV reported over 1.6 million residential VoIP subscribers for the five largest member providers in 2021. The FCC reported non-ILECs in Florida served approximately 1.9 million business interconnected VoIP subscribers by December 2019, an increase of just over 13 percent from end of year 2018.[78] In total, the FCC reported that Florida had 4.7 million Interconnected VoIP subscriptions in 2019.[79]

Figure 3-4 shows an estimated 2.1 million residential VoIP subscribers in Florida as of 2021. This data indicates a decrease of roughly 235,000 residential VoIP subscriptions from 2020 through 2021. Over a five year time frame, the Florida residential VoIP market has averaged a decline rate just over eight percent. As previously stated, the major VoIP carriers have expressed that increased competition from wireless competitors has affected VoIP subscriptions.

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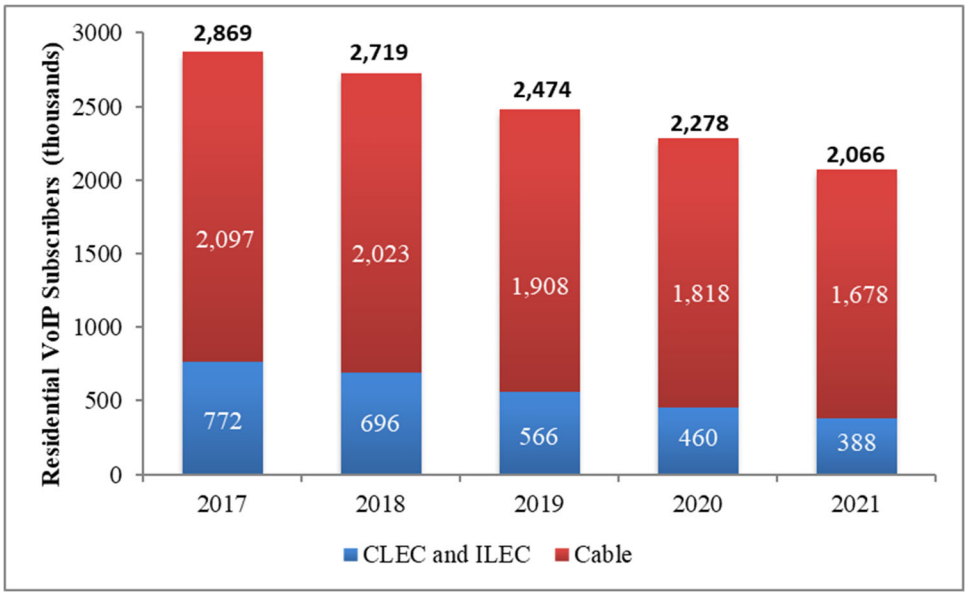
[76]AT&T Inc., "2021 Annual Report 10-K," released February 25, 2021, <https://otp.tools.investis.com/clients/us/atnt/SEC/secfiling.aspx?comingfrom=secshow>, accessed on May 2, 2022.

[77]FCC, "Voice Telephone Services: Status as of December 31, 2019," Table 1, released March 9, 2022, <https://www.fcc.gov/voice-telephone-services-report>, accessed on May 2, 2022.

[78]FCC, "Voice Telephone Services Report, State-Level Subscriptions," Supplemental Table 1, Florida, released March 9, 2022,<https://www.fcc.gov/voice-telephone-services-report>, accessed on May 2, 2022.

[79]Ibid.

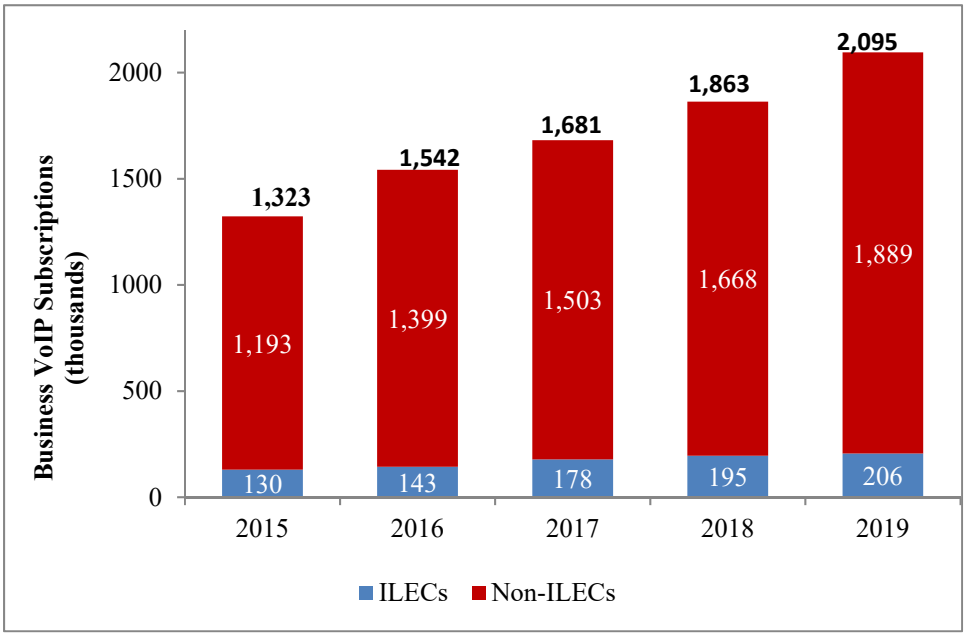
Figure 3-4
Florida Residential Interconnected VoIP Subscribers



Source: Responses to FPSC data requests (2016-2022)

While Florida's residential VoIP market contracted over the past five years, its business VoIP market, continued to expand, at least through 2019. Figure 3-5 displays VoIP business subscribers by ILEC and non-ILEC carriers as reported by the FCC. Business VoIP growth lagged behind residential growth for several years as cable companies concentrated on the residential market, but as that market matured, they turned their attention towards business customers.

Figure 3-5
Florida Business Interconnected VoIP Subscribers



Source: FCC, Voice Telephone Services Report, December 2019, State Level Subscriptions

Chapter IV. Competitive Market Analysis & Statutory Issues

A. Statutory Issue – Competitive Providers

The ability of competitive providers to make functionally equivalent local exchange services available to both residential and business customers at competitive rates, terms, and conditions.

Functionally equivalent services are available to consumers via wireline telephony, wireless telephony, or VoIP. As of June 16, 2022, 221 CLECs had responded to the Local Competition Report data request. Of those responding, 54 companies indicate they provided non-VoIP local voice service in Florida in 2021.[80] Many offer multiple services and/or bundled packages.

The data discussed in the previous chapters suggests that CLECs, VoIP, and wireless carriers are able to provide functionally equivalent services to residential and business customers at rates, terms and conditions acceptable to consumers. Responses to FPSC data requests indicate that a substantial number of CLECs offer a variety of functionally equivalent services at comparable terms. Several CLECs reported providing a number of services: local phone service (54), VoIP (92), broadband Internet access (68), video services (12), and bundled services (53).[81]

In response to FPSC data request questions, the majority of CLECs reported no barriers to competition or elected not to respond. However, the companies that did report competitive concerns mentioned issues with the speed of how interconnection agreements are processed by ILEC carriers and the need to improve communications between the involved entities.[82] We note that the CLECs have not filed any petitions with the Commission to address these issues. Some of these issues may be addressed by the FCC.

Conclusion: Dozens of competitors offered multiple combinations of services to attract customers. Also, subscriptions to wireline telephony decreased again in 2020, indicating consumer choice continues to be primarily wireless and VoIP services. Based on the multiple services offered by alternative providers and their significant market share, companies are offering functionally equivalent services to both business and residential customers.

B. Statutory Issue – Consumers

The ability of consumers to obtain functionally equivalent services at comparable rates, terms, and conditions.

If companies are making functionally equivalent services available at comparable rates, terms, and conditions, as concluded in the previous issue, this issue determines whether or not there are significant impediments to consumers obtaining those services. One of the best determinants of

[80]Responses to local competition data request 2022 as of June 16, 2022.

[81]Responses to local competition data request 2022 as of June 16, 2022.

[82]Responses to local competition data request 2022.

whether consumers can obtain alternative services is the degree to which they are actually subscribing to them in large numbers.

Since reaching a peak in the year 2000, total traditional access lines have declined by over 90 percent in Florida, even as the population has grown significantly. Given the importance of telecommunications service and the large decline in traditional access lines, consumers must be finding service elsewhere. Competitors have been successfully maintaining substantial and increasing shares in traditional access lines and other technologies, such as wireless and VoIP.

Conclusion: The ILEC wireline residential market share continues to increase; however, the traditional wireline market continues to decrease despite population growth. Increasing demand for service is being met by wireless subscription growth and VoIP. There are more wireless connections in Florida than people. The majority of consumers are choosing to obtain wireless and VoIP service from competitors. Given competitors' substantial wireless and VoIP market shares, consumers are able to obtain functionally equivalent services at comparable rates, terms, and conditions.

C. Statutory Issue – Affordability & Reliability

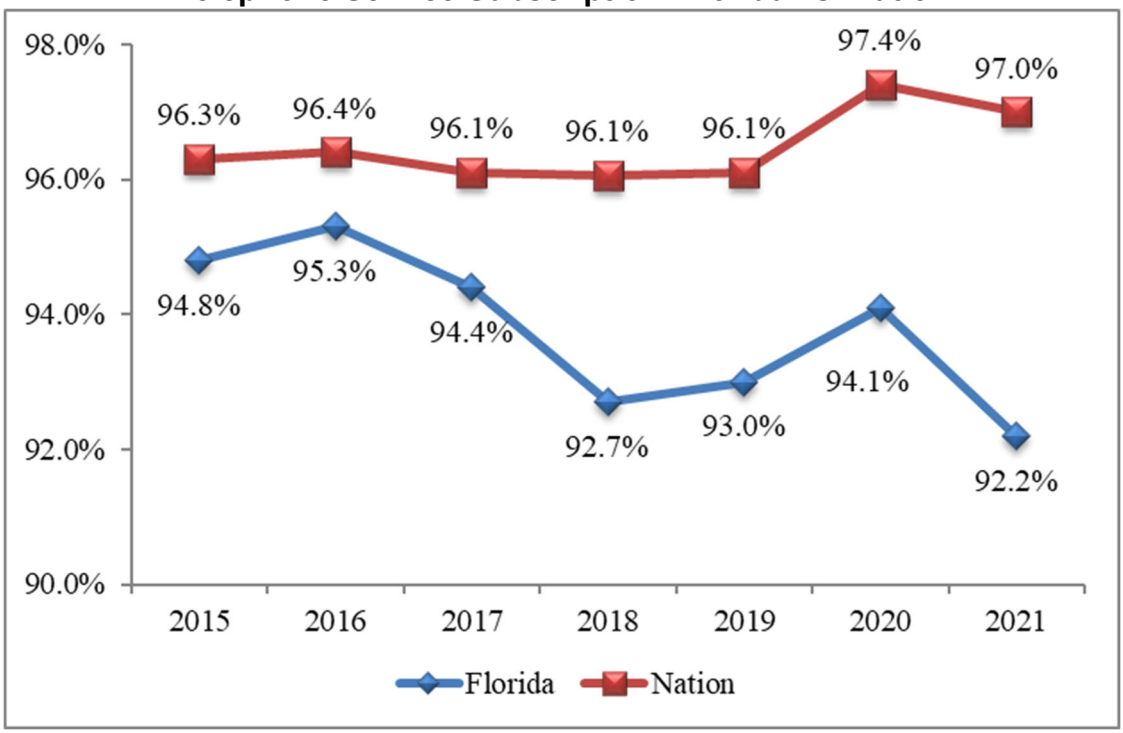
The overall impact of competition on the maintenance of reasonably affordable and reliable high-quality telecommunications services.

In order to successfully compete in a free market, a business needs to provide equivalent value to consumers. The value of telecommunications service is most broadly determined by affordability and reliability. As shown in Figure 4-1, the average Florida household telephone subscription rate has averaged 93.8 percent over the last seven years.[83] This high telephone subscription rate is not a recent occurrence; the average household telephone subscription rate has been 93.3 percent over the past 35 years.[84]

[83]FCC staff, interview, April 4, 2022.

[84]FCC staff, interviews (1986-2022).

Figure 4-1
Telephone Service Subscription: Florida vs. Nation



Source: FCC staff interviews

Following the passage of the Florida Regulatory Reform Act in 2011, the FPSC no longer retains jurisdiction over telecommunications consumer complaints and holds no data on quality of service.[85] However, consumers freely choosing competitors for telecommunications service suggests that they view competitors' services as having reliability that is sufficiently comparable to ILEC service.

Conclusion: A competitive market requires comparable affordability and reliability of service. The vast majority of Florida households subscribe to telephone service. Consumers are willing and able to choose telecommunications service from competitors using a variety of technologies. Based on competitors' substantial market share and market pressures requiring comparable affordability and reliability, competition is having a positive effect on the maintenance of reasonably affordable, reliable telecommunications services.

[85] Regulatory Reform Act, Ch. 36, 2011 Fla. Laws 1231.

D. Statutory Issue – Carrier Disputes

A listing and short description of any carrier disputes filed under Section 364.16, F.S.

Conclusion: There were no carrier disputes filed with the FPSC under Section 364.16, F.S., in 2021.

Chapter V. State Activities

This chapter provides a summary of state activities affecting local telecommunications competition in 2021. The state activities discussed in this chapter are important in helping to gauge how well the market is functioning for Florida businesses and consumers.

A. Intercarrier Matters

Wholesale performance measurement plans provide a standard against which the Commission can monitor performance over time to detect and correct any degradation in the quality of service ILECs provide to CLECs. The Commission adopted performance measurements for AT&T in August 2001 (revised in 2010), for CenturyLink in January 2003 (revised in 2013 and 2016), and for Verizon in June 2003 (revised in 2007 and later adopted by Frontier). Trending analysis is applied to monthly performance measurement data provided by each ILEC.[86]

AT&T is the only ILEC that is required to make payments to CLECs when certain performance measures do not comply with established standards and benchmarks. AT&T's current Performance Assessment Plan consists of 47 measurements; financial remedies are applied to 24 of these measures. In 2021, AT&T declared brief statewide force majeure events in February for Ordering and Billing measures, and also had COVID-19 declarations remaining from March 2020 for Maintenance and Repair and Provisioning measures persist until June 2021. AT&T paid $131,998 in remedies in 2021, representing an increase of 45.2 percent from 2020.

On October 15, 2015, CenturyLink filed proposed revisions to its Performance Measurement Plan as a result of a negotiated settlement with the Nevada Public Utilities Commission. The revisions included revising reporting requirements from monthly to quarterly, eliminating several performance measures from the plan, and amending two measures. The proposal was approved for Florida by the Commission on February 15, 2016.[87] CenturyLink has reported no noncompliances since the revisions were adopted.

Frontier Communications completed its purchase of Verizon Florida's wireline operations in April 2016. In its role as a major ILEC, Frontier is responsible for a Performance Measurement Plan that includes 29 measures. In 2021, Frontier maintained an average monthly compliance rate of 84.2 percent. This result improved upon 2020's average monthly compliance rate of 83.1 percent.

The Commission processed a number of other telecommunications-related items in 2021. The Commission processed 76 service schedule and tariff filings, 66 interconnection agreements and amendments, 9 carrier certifications, 11 certificate cancellations, and 22 general inquiries/informal complaints.

[86]FPSC Dockets: Nos. 20000121A-TP (AT&T), 20000121B-TP (CenturyLink), and 20000121C-TP (Frontier FL).

[87]FPSC Order No. PSC-2016-0072-PAA-TP, Docket No. 20000121B-TP, Investigation into the establishment of operations support systems permanent performance measures for incumbent local exchange telecommunications companies (CenturyLink Florida Track), issued February 15, 2016, <http://www.psc.state.fl.us/library/filings/2016/00858-2016/00858-2016.pdf >, accessed on May 4, 2022.

B. Lifeline

In 2007, the FPSC established the Lifeline Electronic Coordinated Enrollment Process (Coordinated Enrollment) in conjunction with the Florida Department of Children and Families (DCF).[88] The Coordinated Enrollment process establishes a computer interface between the FPSC and DCF. Prior to 2020, prospective Lifeline customers applying for either the Supplemental Nutrition Assistance Program (SNAP) or Medicaid could automatically be enrolled in the Lifeline program. Customers opting to be enrolled in the Lifeline program would then be directed to choose an eligible telecommunications carrier (ETC) from which to receive Lifeline service. That customer's information would be uploaded to an FPSC database that is accessible by the relevant ETC.

This Coordinated Enrollment process can no longer directly enroll eligible consumers for the federal Lifeline program as a result of reforms by the FCC. Specifically, the FCC directed the Universal Service Administrative Company (USAC) to develop the National Lifeline Eligibility Verifier (National Verifier).[89] The purpose of the National Verifier is to determine initial subscriber eligibility, conduct annual recertification, populate a national database consisting of Lifeline customers, and provide support payments to providers serving these customers. On March 24, 2020, the National Verifier became the sole eligibility verification process for Florida Lifeline customers.[90]

Following the adoption of the National Verifier, the Coordinated Enrollment database functionality has shifted. While DCF continues to populate the database with customer information, these customers are no longer deemed eligible at the time ETCs access this information. ETCs are now charged with contacting and directing their customers to apply for the Lifeline program with USAC before being able to provide Lifeline service to them.

Though consumers are encouraged to apply for the Lifeline program online through the National Verifier portal, ETCs have been instructed by USAC on how to assist customers applying for the National Verifier.[91] Upon completion of an application, and subsequent approval for the Lifeline program, customers are able to find a Lifeline service provider through USAC's "Companies

[88] § 364.10(g) (2), F.S.

[89] FCC 16-38, WC Docket No. 11-42, WC Docket No. 09-197, WC Docket No. 10-90, Lifeline and Link Up Modernization, Telecommunications Carriers Eligible for Universal Service Support, Connect America Fund, Third Report and Order, FCC 16-38, released April 27, 2016, <https://docs.fcc.gov/public/attachments/FCC-16-38A1.pdf>, accessed on May 5, 2022.

[90] Prior to the National Verifier's hard launch status in Florida, Lifeline customer eligibility verification was conducted by ETCs for qualifying program participation, and by the Florida Office of Public Counsel for income eligibility verification.

[91] USAC, "National Verifier Application Portal," <https://nationalverifier.servicenowservices.com/lifeline>, accessed on May 5, 2022.

Near Me" tool.[92] Consumers who wish to receive a paper application, or who do not have access to the internet, may call the Lifeline customer service hotline.[93] Individuals who are disabled may request assistance in completing an application by phone using the same Lifeline customer service hotline.

Using SNAP participation as a proxy for Lifeline eligible households, as of June 2021 eligible households decreased by 14.3 percent, while the participation rate of those households in the Lifeline program decreased by 35 percent from the prior year.[94] The decline in subscribership for this year is largely attributed to the decline in subscribership of one major ETC stemming from the expiration of Lifeline program rule waivers. Table 5-1 shows the Lifeline eligibility and participation rates in Florida for the last six years.[95]

Table 5-1
Florida Lifeline Eligibility and Participation Rate

Year	Lifeline Enrollment	Eligible Households	Participation Rate
Jun-16	852,255	1,747,684	48.76%
Jun-17	685,864	1,690,899	40.56%
Jun-18	694,647	1,655,134	41.97%
Jun-19	604,693	1,540,682	39.25%
Jun-20	371,180	2,151,503	17.25%
Jun-21	273,641	1,882,842	14.53%

Source: Florida DCF, ACCESS Florida: Standard Data Reports

C. Telecommunications Relay Service

Telecommunications Relay Service (TRS) facilitates telephone calls between people with hearing loss or speech disabilities and other individuals by using special equipment and a communications assistance operator to relay information. Section 427.704, F.S., charges the Commission with overseeing the administration of a statewide telecommunications access

[92]USAC, "Companies Near Me Tool," <https://data.usac.org/publicreports/CompaniesNearMe/Download/Report>, accessed on May 5,2022.

[93]USAC, Lifeline Customer Service Hotline, 1 (800) 234-9473.

[94]FPSC, "2021 Florida Lifeline Report," released December 2021, <http://www.psc.state.fl.us/Files/PDF/Publications/Reports/Telecommunication/LifelineReport/2021.pdf>, Figure 3, accessed on May 5, 2022.

[95]Ibid.

system which provides TRS. Funding for TRS in Florida is through a surcharge on telephone landlines. The current assessment rate is $.? (To be determined at the July 7, 2022 Agenda).[96]

Relay services are currently provisioned under contract by Sprint Communications Company, L.P., a wholly-owned subsidiary of T-Mobile USA, Inc. (Sprint). On March 4, 2021, staff opened a docket to initiate a new Request for Proposals (RFP) to provide relay service in Florida.[97] On May 11, 2021, the FPSC issued a Request for Proposals for a new relay service contract beginning March 1, 2022. In response, Hamilton Relay and Sprint filed proposals. On October 12, 2021, the Commission approved staff's recommendation to select Sprint's proposal, based on staff's evaluation of technical, financial, and price elements.

[96]The rate may not exceed $.25 per landline.

[97] Docket No. 20210049-TP, Request for submission of proposals for relay service for the deaf, hard of hearing, deaf/blind, or speech impaired, and other implementation matters in compliance with the Florida Telecommunications Access System Act of 1991, <http://www.floridapsc.com/ClerkOffice/DocketFiling?docket=20210049>, accessed October 20, 2021.

Chapter VI. Federal Activities

A. Mergers and Acquisitions

Telecommunications carriers seeking to transfer assets or corporate control in mergers and acquisitions must first receive approval from the FCC, which examines the public interest impact of proposed mergers or acquisitions. In 2021, there were approximately 67 completed telecommunications mergers and acquisitions nationally. Recent transactions of interest to Florida are described below.

1. CenturyLink/Lumen Technologies

On September 14, 2020, CenturyLink announced it was rebranding itself as Lumen Technologies, Inc. (Lumen).[98] Lumen separated its business segments into three brands: Lumen, Quantum Fiber, and CenturyLink.[99] Lumen will focus on enterprise and wholesale markets. Quantum Fiber will provide fiber-based services to residential and small businesses. CenturyLink will continue to provide legacy copper-based services.

On August 3, 2021, Lumen announced it was selling twenty of its 36 U.S.-based, CenturyLink-branded ILEC service territories to Apollo Global Management for a total of $7.5 billion. The divestiture included fiber, copper networks, tower site connections and central offices.[100] The Florida ILEC was not among the territories sold and will remain a CenturyLink-branded Lumen subsidiary.[101] The transaction is expected to close in the second half of 2022.[102]

2. Hargray of Tallahassee LLC, Hargray Long Distance & Metronet Systems, LLC

On December 13, 2021, Hargray of Tallahassee (HOT) and Low Country Carriers d/b/a Hargray Long Distance (LCC), both subsidiaries of Cable One, Inc., entered into an Asset Purchase and Contribution Agreement with MetroNet Systems, LLC (MetroNet). Under the terms of the

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[98]Lumen Technologies, Inc., "CenturyLink Transforms, Rebrands as Lumen," September 14, 2020, <https://ir.centurylink.com/news/news-details/2020/CenturyLink-Transforms-Rebrands-as-Lumen/default.aspx>, accessed on April 6, 2022.

[99]Lumen Technologies, Inc., "Form 10-K for the fiscal year ended December 31, 2021," February 24, 2022, <https://d18rn0p25nwr6d.cloudfront.net/CIK-0000018926/12795305-7ff0-4e6a-ba1f-e0f9335f51d8.pdf>, accessed on April 6, 2022.

[100]Catherine Sbeglia Nin, "Lumen sells CenturyLink ILEC assets to Appollo in $7.5 billion deal," *RCRWireless.com*, August 5, 2021, <https://www.rcrwireless.com/20210805/business/lumen-sells-centurylink-ilec-assets-to-apollo-in-7-5-billion-deal>, accessed on April 6, 2022.

[101]Lumen is **selling** its ILEC network and assets in Alabama, Arkansas, Georgia, Illinois, Indiana, Kansas, Louisiana, Michigan, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia and Wisconsin. Lumen is **retaining** its ILEC network and assets in Arizona, Colorado, Florida, Idaho, Iowa, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming. <https://news.lumen.com/apollo-transaction-faqs>, accessed on May 23, 2022.

[102]C. S. Nin.

agreement MetroNet will purchase certain assets and customers of HOT. As a result of the purchase, MetroNet will provide interstate and international telecommunication services to previous customers of HOT and LCC.[103] HOT is currently a CLEC certificated by the FPSC. After the transfer, HOT will no longer be in operation and will cancel its Florida CLEC certificate.

3. Global Communication Networks, Inc. & UPSTACK GLOBAL LLC

On October 15, 2021, UPSTACK GLOBALL LLC (UPSTACK), and Global Communications Network, INC. (GCN) executed an Asset Purchase Agreement for UPSTACK to purchase all of the assets of GCN. GCN is a Florida-based corporation that offers resale broadband internet access and telecommunication services. UPSTACK is headquartered in New York; it offers services using network, datacenter and cloud technologies. UPSTACK will continue to provide telecommunication services to current GCN customers. The Joint Application to the FCC states that the proposed transfer of GCN's customer base to UPSTACK will have no adverse impact on GCN's existing customers. Current customers will continue to receive the same services at the same rates, terms and conditions.[104]

4. Wholesale Carrier Service, Inc. & BCM One, Inc.

On February 23, 2021, BCM One, Inc. (BCM) and Wholesale Carrier Services, Inc. (WCS) entered a Share Purchase Agreement for BCM to acquire WCS. WCS is a Florida-based corporation that provides enterprise solutions and telecommunication services to businesses. WCS offers TDM, VoIP and data connectivity services. BCM is a telecommunications provider in New York that provides integrated technological solutions to help businesses increase connectivity efficiency. Both corporations are regulated by the FCC and FPSC.[105] Upon closing, BCM will continue to provide services to existing customers of WCS at the same rates, terms and conditions.[106]

B. Broadband Deployment

The federal government has recognized there is no one-size-fits-all solution to delivering broadband service to rural areas. The 2021 Infrastructure Investment and Jobs Act (IIJA)

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[103]Domestic Section 214 Application Filed For The Transfer Of Control Of Hargray Of Florida, Inc., Hargray Of Georgia, Inc., And Delta Communications, L.L.C. To Newco, November 17, 2021, <https://docs.fcc.gov/public/attachments/DA-21-1445A1.pdf>, accessed on April 15, 2022.

[104]FCC, Domestic Section 214 Application Filed For The Acquisition Of Assets Of Global Communication Networks, Inc. By UPSTACK GLOBAL LLC, November 16, 2021, <https://docs.fcc.gov/public/attachments/DA-21-1438A1.pdf>, accessed on April 15, 2022.

[105]Ibid, footnote 8.

[106]FCC, Domestic Section 214 Application Filed For The Transfer Of Control Of Wholesale Carrier Services, Inc. To Thompson Street Capital Partners V. L.P., March 17, 2021, <https://docs.fcc.gov/public/attachments/DA-21-321A1.pdf>, accessed on April 15, 2022.

allocates $65 billion in broadband infrastructure investment, creating multiple programs that envision using many technologies including fiber, fixed wireless, and satellites.[107]

Multiple federal agencies are responsible for broadband deployment and affordability programs through existing mechanisms as well as the IIJA. The FCC is in charge of several programs, including the Rural Digital Opportunity Fund (RDOF), which will provide $20.4 billion in support to providers nationally over ten years for unserved and underserved areas. The FCC initially awarded RDOF support of nearly $192 million to 11 providers over ten years to provide service in Florida. More details about the status of that support may be found in the High Cost discussion under the Universal Service section of this chapter.[108]

The FCC's Affordable Connectivity Program (ACP) was created from the Emergency Broadband Benefit Program with an allocation of $14.2 billion from the IIJA. The ACP provides a discount of up to $30 per month toward internet service for eligible households and up to $75 per month for households on qualifying Tribal lands. It also provides a one-time discount of up to $100 to purchase a laptop, desktop computer, or tablet from participating providers.[109,110] As of April 18, 2022, 820,345 households in Florida were enrolled in the ACP through 78 providers offering mobile and/or fixed broadband access.[111] The FCC has also implemented COVID-19 related programs such as the Connected Care Pilot Program, COVID-19 Telehealth Program, and the Emergency Connectivity Fund.

NTIA has been charged by the IIJA with administering nearly a dozen different broadband deployment programs. These programs will invest over $47 billion in broadband infrastructure.[112,113,114]

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[107]117th Congress (2021-2022), "H.R.3684 - Infrastructure Investment and Jobs Act," November 15, 2021, <https://www.congress.gov/bill/117th-congress/house-bill/3684>, accessed on June 23, 2022.

[108]FCC, Auction 904: Rural Digital Opportunity Fund, updated April 15, 2022, <https://www.fcc.gov/auction/904>, accessed on April 20, 2022.

[109]FCC, "FCC Launches Affordable Connectivity Program," released December 31, 2021, <https://www.fcc.gov/document/fcc-launches-affordable-connectivity-program>, accessed on April 13, 2022.

[110]FCC, "FCC Adopts Rules To Implement Affordable Connectivity Program," released January 14, 2022, <https://www.fcc.gov/document/fcc-adopts-rules-implement-affordable-connectivity-program>, accessed on April 13, 2022.

[111] USAC, ACP Enrollment and Claims Tracker, updated April 18, 2022, <https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/>, accessed on April 20, 2022.

[112]NTIA, "Commerce Department's NTIA Announces $288 Million in Funding Available to States to Build Broadband Infrastructure," released May 19, 2021, <https://www.ntia.doc.gov/press-release/2021/commerce-department-s-ntia-announces-288-million-funding-available-states-build>, accessed on April 13, 2022.

[113]NTIA, Connecting Minority Communities Pilot Program, updated December 2, 2021, <https://www.ntia.doc.gov/press-release/2021/commerce-department-s-ntia-announces-288-million-funding-available-states-build>, accessed on April 20, 2022.

[114]NTIA, "NTIA's Role in Implementing the Broadband Provisions of the 2021 Infrastructure Investment and Jobs Act," released November 16, 2021, <https://broadbandusa.ntia.doc.gov/news/latest-news/ntias-role-implementing-broadband-provisions-2021-infrastructure-investment-and>, accessed on April 13, 2022.

The Rural Utilities Service of the United States Department of Agriculture maintains several programs for broadband deployment, including the Community Connect Grant Program ($35 million in 2021), the Rural Broadband Loan and Loan Guarantee Program (over $11 million in 2021), and the Rural eConnectivity Program ($1.15 billion available in 2021).[115]

C. Universal Service

Universal service is the policy that seeks to ensure all Americans have access to communications services through a series of financial support programs. The federal Universal Service Fund (USF) supports the budgets of universal service programs. The USF is funded by telecommunications providers based on an assessment of interstate and international revenues. Carriers are allowed by federal rules to pass these costs on to their customers through their bills.

In general, Florida consumers pay more into the USF than what is returned to eligible service providers in Florida.[116] For 2021, only consumers in California and New York were larger net contributors than consumers in Florida. The FPSC monitors and participates in ongoing proceedings at the FCC and with the Federal-State Joint Board on Universal Service. The FCC and USAC publish annually the incoming contributions to as well as the outgoing payments from the fund. This data is generally about one year in arrears, so the most current data for this report is through December 2020. Table 6-1 shows Florida's estimated contribution and receipts for 2020 and provides a comparison of net contributions for 2018 and 2019. The total estimated consumer contribution for 2020 includes approximately $11 million related to USAC's administrative expense.

[115]USDA Rural Development, Telecom Programs, <https://www.rd.usda.gov/programs-services/telecommunications-programs>, accessed on April 20, 2022.

[116]FCC, "Universal Service Monitoring Report-2021," released January 14, 2022, <https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf >, accessed on May 6, 2022.

Table 6-1
Federal Universal Service Payments and Contributions in Florida
(Thousands of Dollars)

	2018	2019	2020		
	Estimated Net	Estimated Net	Service Providers Payments	Estimated Contributions	Estimated Net
High-Cost	(230,036)	(249,610)	41,420	(289,718)	(248,298)
Low Income	$11,342	2,486	39,875	(48,853)	(8,978)
Schools & Libraries	(42,707)	(37,729)	85,951	(117,876)	(31,925)
Rural Health Care	(13,412)	(9,705)	4,795	(17,050)	(12,255)
Admin. Expense	(12,088)	(11,233)		(11,648)	(11,648)
Total	($286,901)	($305,791)	172,041	(485,145)	(313,104)

Source: FCC Universal Service Monitoring Report, various years, Table 1.9

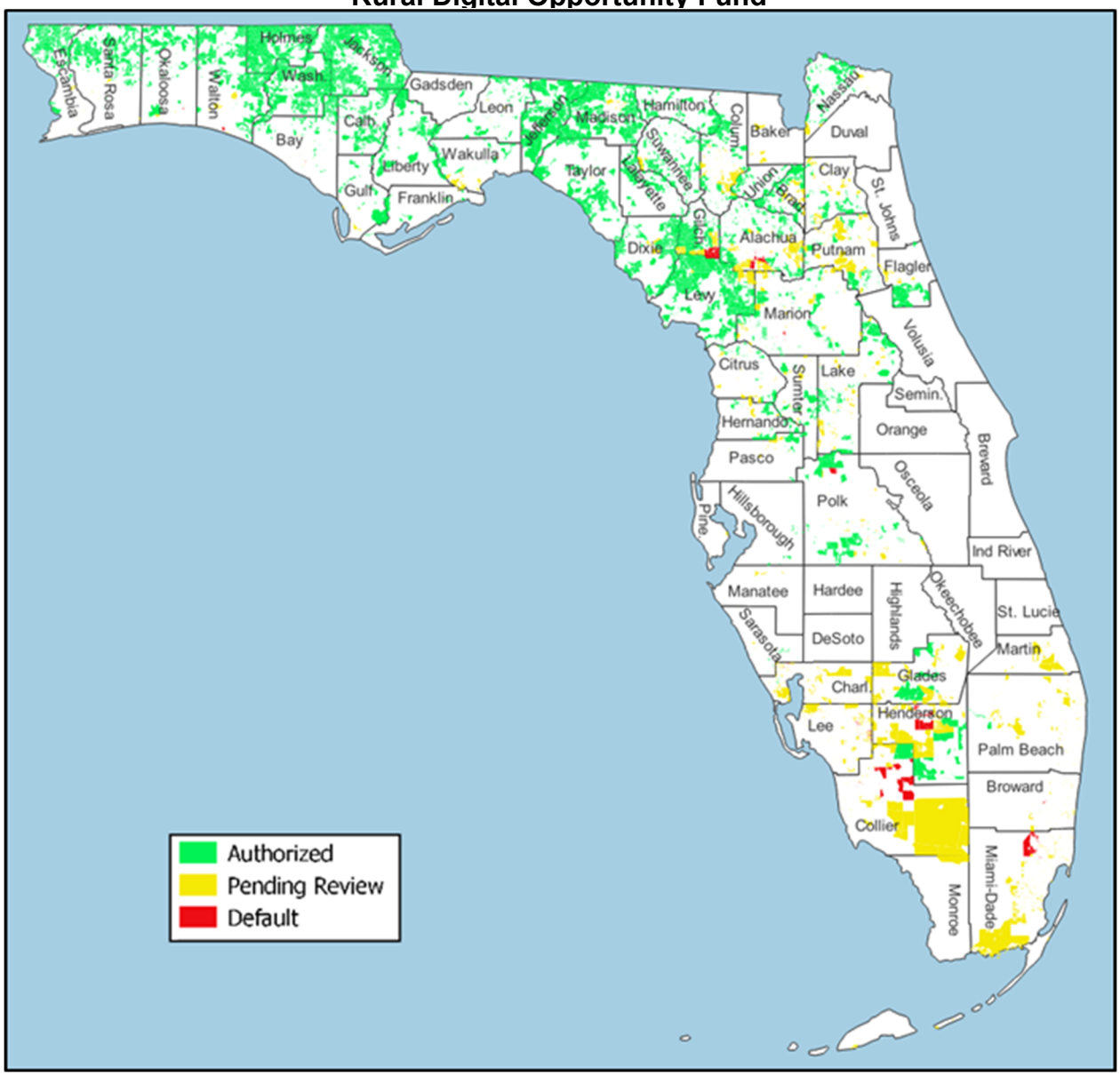
1. High Cost

Since 2011, the FCC has been modernizing the federal high-cost programs to maintain voice services and extend broadband capable infrastructure.[117] On January 30, 2020, the FCC adopted a Report and Order establishing the framework for the $20.4 billion Rural Digital Opportunity Fund (RDOF) to bring high speed fixed broadband service to rural homes and small businesses, using reverse auctions in two phases.

The Phase I auction will target over six million homes and businesses in census blocks that are entirely unserved by voice and broadband with download speeds of at least 25 Mbps. The RDOF is structured to prioritize higher network speeds and lower latency. Figure 6-1 provides a map identifying areas in Florida eligible for Phase I RDOF support.

[117]FCC 11-161, WC Docket No. 10-90, Connect America Fund, Report and Order and Further Notice of Proposed Rulemaking, released November 18, 2011, <https://docs.fcc.gov/public/attachments/FCC-11-161A1.pdf>, accessed on May 6, 2022.

Figure 6-1
Areas in Florida Eligible for Phase I
Rural Digital Opportunity Fund



Source: FCC, US Census Bureau Shapefile

Seven providers in Florida have been authorized by the FCC to receive RDOF support of over $152.1 million over ten years.[118] The FCC decision on RDOF support of $33.6 million over ten

[118]Designated by the FCC as "authorized" include: Bright House Network Information Services, Conexon Connect LLC, Consolidated Communications of Florida Company, Embarq Florida, Inc,, Frontier Florida LLC, Mediacom Wireless of Florida LLC, and Windstream Florida LLC.

years for StarLink remains pending.[119] Default areas will not receive RDOF funding in Phase I. Phase II will cover locations in census blocks that are partially served, as well as locations not funded in Phase I.

2. Schools and Libraries

The schools and libraries support program, commonly known as the E-Rate Program, provides financial support to eligible schools and libraries for connectivity. The discounts range from 20 percent to 90 percent of the costs of eligible services, depending on the level of poverty and whether the school or library is located in an urban or rural area. The E-Rate program has two funding categories that support schools and libraries. Category One provides connectivity to schools and libraries (e.g. access lines, broadband connections, etc.) and Category Two provides connectivity for services within schools and libraries (e.g. routers, servers, etc.).

3. Low Income

The Lifeline program provides a monthly discount on phone or broadband service for qualifying low-income consumers. The FCC reformed the Lifeline program in 2016 to transition to a more broadband-focused program.[120,121]

The FCC's 2016 reforms included a phase-down of federal support for voice-only services. On December 1, 2019, the support provided for voice-only services was reduced to $7.25 per Lifeline customer. Support for voice-only Lifeline service was scheduled to be completely phased out on December 1, 2021. However, on November 5, 2021, the FCC released an Order that delayed the complete phase-out of voice-only Lifeline service support until December 1, 2022.[122] Broadband services that include a voice component will continue to be eligible to receive Lifeline support after the new phase-out date. Table 6-2 outlines the FCC's revised phase-down schedule.

[119]FCC, Auction 904: Rural Digital Opportunity Fund, updated April 15, 2022, <https://www.fcc.gov/auction/904>, accessed on April 20, 2022.

[120]FCC 16-38, WC Docket No. 11-42, WC Docket No. 09-197, WC Docket No. 10-90, Lifeline and Link Up Modernization, Telecommunications Carriers Eligible for Universal Service Support, Connect America Fund, Third Report and Order, Further Report and Order, and Order on Reconsideration, released April 27, 2016, <https://docs.fcc.gov/public/attachments/FCC-16-38A1.pdf>, accessed on June 11, 2021.

[121]USAC, "Universal Service Administrative Company 2020 Annual Report," <https://www.usac.org/wp-content/uploads/about/documents/annual-reports/2020/USAC_Annual_Report_2020.pdf>, page 5, accessed on June 8, 2021.

[122]FCC, Order, DA 21-1389, WC Docket No. 11-42, Lifeline and Link Up Reform and Modernization, <https://docs.fcc.gov/public/attachments/DA-21-1389A1.pdf>, accessed on May 5, 2022.

Table 6-2
Lifeline Support Phase Down Schedule

Effective Dates	Fixed Voice	Mobile Voice	Fixed Broadband	Mobile Broadband
Through 11/30/20	$7.25	$7.25	$9.25	$9.25
From 12/1/20 to 11/30/22	$5.25	$5.25	$9.25	$9.25
After 11/30/22	0	0	$9.25	$9.25

Source: FCC 2016 Lifeline Modernization Order (FCC 16-38) and 2021 Phase Down Pause order (DA 21-1389)

4. Rural Health Care

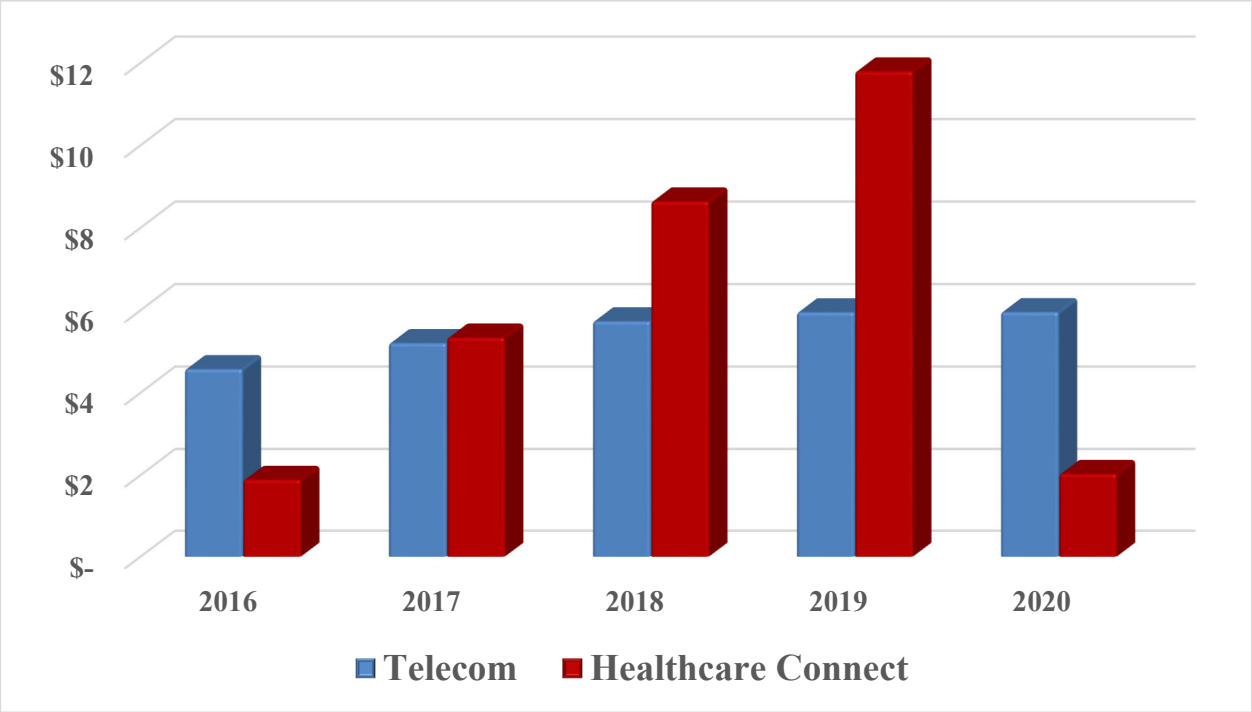
The goal of the Rural Health Care (RHC) Program is to ensure the affordability of telehealth services in rural communities to promote healthcare in underserved and hard to reach geographic areas. To achieve these goals, the RHC Program provides funding to eligible rural healthcare providers for broadband and telecommunications services.[123] Funding is distributed through two programs: the Telecommunications Program and the Healthcare Connect Fund Program.

The Telecommunications Program subsidizes the difference between urban and rural rates for telecommunications services. By comparison, the Healthcare Connect Fund Program promotes the use of broadband services by providing a flat 65% discount on an array of communications services to both individual rural healthcare providers and any related healthcare consortia.[124] Figure 6-4 illustrates a comparison of the amounts disbursed for funding years 2016-2020 (the latest data years available) by each program in the state of Florida.

[123]USAC, "2020 Annual Report," <https://www.usac.org/wp-content/uploads/about/documents/annual-reports/2020/USAC_Annual_Report_2020.pdf>, page 16, accessed on June 11, 2021.

[124]FCC, "Universal Service Monitoring Report - 2020," <https://docs.fcc.gov/public/attachments/DOC-369262A1.pdf>, accessed on June 11, 2021.

Figure 6-2
Rural Health Care Funding Disbursements for Florida by Program
(In Millions)



Source: Universal Service Monitoring Report

D. Public Safety

Florida has faced numerous public safety challenges in the use of its telecom networks.

1. COVID-19

The increase in the use of telework, telemedicine, remote learning, and other network applications caused by COVID-19 has highlighted the importance of internet access. In response, the federal government has provided extensive support for broadband connectivity.

- The FCC's Connected Care Pilot Program will provide up to $100 million from the Universal Service Fund over a three-year period to selected applicants to support the provision of connected care telehealth services; in Florida, the FCC awarded over $1.5 million to two projects in 2021.[125]

[125]FCC, Connected Care Pilot Program, updated March 21, 2022, <https://www.fcc.gov/wireline-competition/telecommunications-access-policy-division/connected-care-pilot-program>, accessed April 21, 2022.

- The FCC's COVID-19 Telehealth Program supports telecommunications services, information services, and connected devices necessary to enable telehealth during the COVID-19 pandemic; in the final round of support in 2021 and 2022, the FCC awarded over $16.4 million in support of 28 telehealth projects in Florida.[126]

- The FCC's Emergency Connectivity Fund is a $7.17 billion program that will help schools and libraries provide the tools and services their communities need for remote learning during the COVID-19 emergency period. In Florida, the FCC provided a total of over $226 million to 377 schools, school districts, libraries, library systems and consortia during first two application windows in 2021 and 2022.[127]

In addition to these programs, the FCC has also extended multiple waivers for compliance with Lifeline Program rules and Telecommunications Relay Service rules to June 30, 2022.[128,129]

2. Emergency Response

The FCC has taken various steps to ensure efficient emergency response including the following:

- On September 30, 2021, the FCC proposed rules to improve the reliability of communications networks when disasters strike by promoting resilient communications and situational awareness during disasters through roaming agreements, mutual aid, and other measures under the existing Wireless Network Resiliency Cooperative Framework. The proposed rules also seek comment on improving backup power availability at key communications sites, enhancing coordination between communications providers and power companies, and other measures to reduce power-related disruptions.[130]

[126]FCC, COVID-19 Telehealth Program (Invoices & Reimbursements), updated March 14, 2022, <https://www.fcc.gov/covid-19-telehealth-program-invoices-reimbursements>, accessed on April 21, 2022.

[127]FCC, Emergency Connectivity Fund, updated April 19, 2022, <https://www.fcc.gov/emergency-connectivity-fund>, accessed on April 21, 2022.

[128]FCC, "WCB Extends Prior COVID Lifeline Program Waivers to June 30, 2022," released March 25, 2022, <https://www.fcc.gov/document/wcb-extends-prior-covid-lifeline-program-waivers-june-30-2022>, accessed on April 13, 2022.

[129]FCC, "TRS COVID-19 Waivers Extended through June 30, 2022," released March 25, 2022, <https://www.fcc.gov/document/trs-covid-19-waivers-extended-through-june-30-2022>, accessed on April 13, 2022.

[130]FCC, "FCC Acts to Improve Communications Reliability During Disasters," released September 30, 2021, <https://www.fcc.gov/document/fcc-acts-improve-communications-reliability-during-disasters>, accessed on April 14, 2022.

Appendix - List of Certificated CLECs as of 12/31/2021

** Indicates the company did not respond to the Commission's data request

Access One, Inc.
ACN Communication Services, LLC
Airespring, Inc.
Airus, Inc.
Altaworx LLC
American Dark Fiber, LLC
American Telephone Company LLC
ANEW Broadband, Inc.
ANPI Business, LLC
AT&T Corp.
ATC Outdoor DAS, LLC
Atlantic Broadband Enterprise, LLC
Atlantis Communications LLC
ATN, Inc.
Bandwidth.com CLEC, LLC
Barr Tell USA, Inc.
BCM One, Inc.
BCN Telecom, Inc.
BeCruising Telecom LLC d/b/a BeCru
BellSouth Telecommunications, LLC d/b/a AT&T Florida d/b/a AT&T Southeast
Benchmark Communications, LLC d/b/a TotalComUSA
**BetterWorld Telecom
BIF IV Intrepid OpCo LLC
**Branch Communications, LLC
Bright House Networks Information Services (Florida), LLC
Broadband Dynamics, L.L.C.
BroadRiver Communication Corporation
Broadview Networks, Inc.
Broadvox-CLEC, LLC
Broadwing Communications, LLC
BT Communications Sales LLC
BullsEye Telecom, Inc.
Business Telecom, LLC
Call One Inc. of Illinois
Callis Communications, Inc.
Campus Communications Group, Inc.
**Cathect Communications Inc.
CBTS Technology Solutions LLC
CenturyLink Communications, LLC d/b/a Embarq Communications d/b/a Lumen d/b/a Lumen Technologies d/b/a Lumen Technologies Group
**City Communications, Inc
City of Bartow
City of Gainesville, a municipal corporation d/b/a GRUCom
City of Lakeland
City of Ocala
Clear Rate Communications, Inc.
Cloud Computing Concepts, d/b/a C3
Cogent Communications of Florida
Comcast Business Communications, LLC
Comcast Digital Phone
Communications Authority, Inc
ComNet (USA) LLC
Comtech21, LLC
Consolidated Communications Enterprise Services, Inc.
Consolidated Communications of Florida Company
Conterra Ultra Broadband, LLC
Convergia, Inc.
CoreTel Florida, Inc.
Cox Florida Telcom, L.P. d/b/a Cox Communications d/b/a Cox Business d/b/a Cox
Crexendo Business Solutions, Inc.
Crosstel Tandem, Inc.
Crown Castle Fiber LLC
CSG-Cloud, LLC
Custom Network Solutions, Inc.
Custom Tel, LLC
Dais Communications, LLC
Data Stream Telecom of Florida Inc.
DeltaCom LLC
**Discount CLEC Services Corporation
dishNET Wireline L.L.C.
DSCI, LLC
EarthGrid PBC
Easton Telecom Services, L.L.C.
Easy Telephone Services Company
Electric Lightwave, LLC d/b/a Allstream
Embarq Florida, Inc. d/b/a Centurylink
ENA Services, LLC
eNetworks NC, LLC
Enhanced Communications Network, Inc.
Entelegent Solutions, Inc.
ExteNet Asset Entity, LLC
ExteNet Systems, Inc.
Faster.IO, Inc.
FiberLight, LLC
First Choice Technology, Inc.

First Communications, LLC
FL Network Transport, LLC
Florida Phone Systems, Inc.
FPUAnet Communications
France Telecom Corporate Solutions L.L.C.
Frontier Communications of America, Inc.
Frontier Communications of the South, LLC
Frontier Florida LLC
Fusion Cloud Services, LLC
Fusion Communications, LLC d/b/a Fusion Communication Services, LLC
Fusion, LLC d/b/a Fusion Connect, LLC
Gainesville Regional Utilities d/b/a GRU Communication Services/GRUCom/GRU
GC Pivotal, LLC d/b/a Global Capacity
Georgia Public Web, Inc.
GetGo Communications LLC
GIGAMONSTER NETWORKS, LLC
Global Crossing Local Services, Inc.
**Goff Network Technologies - Florida, Inc. d/b/a USA FIBER
Granite Telecommunications, LLC
Great America Networks, Inc.
Harbor Communications, LLC
Hargray of Florida, LLC
Hargray of Tallahassee LLC
Hayes E-Government Resources, Inc.
HD Carrier, LLC
HFA of Florida LLC
Home Town Telephone, LLC
Hudson Fiber Network Inc
inContact, Inc.
INDIGITAL, INC d/b/a Indigital
**INNOVATIVE TECH PROS, CORP D/B/A INNOVATIVE TECH PROS
Integrated Path Communications, LLC
InteleTel, LLC
Intelletrace, Inc.
Intellifiber Networks, LLC
Interactive Services Network, Inc. d/b/a ISN Telcom d/b/a IPFone
InterGlobe Communications, Inc.
InterMetro Fiber, LLC
Intrado Communications, LLC
Intrado Safety Communications, Inc.
IPC Network Services, Inc.
ITS Fiber, LLC d/b/a ITS Fiber
ITS Telecommunications Systems, Inc. d/b/a ITS Fiber
ITS Telecommunications Systems, Inc. d/b/a ITS Fiber
**JEA
Knology of Florida, LLC d/b/a WOW! Internet, Cable and Phone
Level 3 Communications, LLC
Level 3 Telecom of Florida, LP
Light Source Communications, LLC
**Lightspeed CLEC, Inc.
Luxury Telecommunications LLC d/b/a Luxury Telecommunications
Magna5 LLC
Maryland TeleCommunication Systems, Inc.
MassComm, LLC
MasTec Network Solutions, LLC
Matrix Telecom, LLC
MCC Telephony of Florida, LLC
MCImetro Access Transmission Services LLC d/b/a Verizon Access Transmission Services
McLeodUSA Telecommunications Services, L.L.C.
Metro Fibernet, LLC d/b/a MetroNet
Metropolitan Telecommunications of Florida, Inc. d/b/a MetTel
Micro-Comm, Inc.
MIX Networks, Inc.
Mobilitie, LLC
MOSAIC NETWORX LLC
MULTIPHONE LATIN AMERICA, INC.
Myakka Communications, Inc.
Nebula Telecommunications of Florida LLC
Neo Network Development, Inc.
Netsync Fiber Inc
Network Innovations, Inc.
Network Telephone, LLC
Neutral Tandem-Florida, LLC
New Horizons Communications Corp.
NextCity Networks, LLC
NGA 911, L.L.C.
Northeast Florida Telephone Company d/b/a NEFCOM
NOS Communications, Inc.
One Voice Communications, Inc.
Onvoy, LLC
Open Infra East Inc.
**Opextel LLC d/b/a Alodiga
**Optical Telecommunications, Inc. d/b/a Hcontrol Corporation d/b/a SH Services LLC
Orlando Telephone Company, Inc. d/b/a Summit Broadband
PacOptic Networks, LLC
PaeTec Communications, LLC
PeakNet, LLC
Peerless Network of Florida, LLC
Phone Club Corporation

PNG Telecommunications, Inc. d/b/a PowerNet Global Communications
Preferred Long Distance, Inc.
Protection Plus of the Florida Keys, Inc. d/b/a ENGAGE COMMUNICATIONS
QCSTelecom, Inc.
QuantumShift Communications, Inc.
Quincy Telephone Company d/b/a TDS Telecom
RCLEC, Inc.
Reddot Networks Inc.
Sandhills Telecommunications Group, Inc. d/b/a SanTel Communications
SBA DAS & Small Cells, LLC
Seminole Telecom of Florida, LLC
Simwood Inc.
SKYNET360, LLC
Smart Choice Communications, LLC
Smart City Networks, Limited Partnership
Smart City Solutions II, LLC d/b/a Smart City Metro
Smart City Solutions, LLC d/b/a Smart City Communications
Smart City Telecommunications LLC d/b/a Smart City Telecom
Southeastern Services, Inc.
Southern Light, LLC
**Southern Telecom, Inc. d/b/a Southern Telecom of America, Inc.
**Spectrotel of Florida LLC d/b/a Touch Base Communications
Spectrum Fiberlink Florida, LLC
Sprint Communications Company Limited Partnership
SQF, LLC
**Stanley Utility Contractor, Inc.
Stratus Networks, Inc.
Synergem Technologies, Inc.
T3 Communications, Inc.
Talk America, LLC d/b/a Windstream Talk America, LLC
TampaBay DSL Inc d/b/a PBX-Change
Tel-Star Communications of Florida Inc.
Telco Experts, LLC
TelCove Operations, LLC
Telecom Management, Inc. d/b/a Pioneer Telephone
Telepak Networks, Inc.
Teleport Communications America, LLC
**TELETECH COMMUNICATIONS INC
Teliax, Inc.
Telrite Corporation
Terra Nova Telecom, Inc.
TerraNovaNet, Inc.
TIME CLOCK SOLUTIONS, LLC
Time Warner Cable Business LLC
**Tone Communication Services LLC
Touchtone Communications Inc. of Delaware
**Tristar Communications Corp.
Triton Networks LLC
United Commercial Telecom, LLC
Uniti Fiber LLC
Uniti National LLC
US LEC of Florida, LLC
US Signal Company, L.L.C.
Utility Board of the City of Key West d/b/a Keys Energy Services
Vanco US, LLC
Velocity, A Managed Services Company, Inc.
Verizon Select Services Inc.
Vero Fiber Networks, LLC d/b/a Vero Networks
Vesta Solutions, Inc.
VoDa Networks, Inc.
Vodafone US Inc.
Voxbeam Telecommunications Inc.
WANRack, LLC
Wholesale Carrier Services, Inc.
Wide Voice, LLC
WiMacTel, Inc.
Windstream Florida, LLC
Windstream KDL, LLC
Windstream New Edge, LLC
Windstream Norlight, LLC
Windstream NuVox, LLC
Wire 3 LLC
WonderLink Communications, LLC
XO Communications Services, LLC
YMax Communications Corp.
Zayo Group, LLC

Glossary

4G	4G is the short name for fourth-generation wireless, the stage of broadband mobile communications that superseded the third generation (3G). A 4G network requires a mobile device to be able to exchange data at 100 Mbit/sec or greater.
5G	5G is the short name for fifth-generation wireless broadband technology. 5G provides higher bandwidth, faster speeds and coverage than the current 4G. 5G offers speeds of up to 1 Gb/s for tens of connections or tens of Mb/s for tens of thousands of connections.
Access Line	The circuit or channel between the demarcation point at the customer's premises and the serving end or class 5 central office.
Backhaul	In wireless networks, the connection from an individual base station (tower) to the central network (backbone). Typical backhaul connections are wired high-speed data connections (T1 line, etc.), but they can be wireless as well (using point-to-point microwave or WiMax, etc.).
Broadband	A term describing evolving digital technologies offering consumers integrated access to voice, high-speed data, video on demand, and interactive information delivery services.
Circuit	A fully operational two-way communications path.
CLEC	*Competitive Local Exchange Company*. Any company certificated by the Florida Public Service Commission to provide local exchange telecommunications service in Florida on or after July 1, 1995.
Communications Act, 1996 Act or The Act	The federal Communications Act of 1934, as amended by the Telecommunications Act of 1996, established a national framework to enable CLECs to enter the local telecommunications marketplace.
Dark Fiber	Installed but currently unlit/unused fiber-optic cable.
Digital Signal 0, 1, 3 (DS0, DS1, DS3)	DS0 is a basic digital signaling rate of 64 kilobits per second, equal to the capacity of one analog voice channel. DS1 has a signaling rate of 1.544 megabits per second (24 voice channels). DS3 has a signaling rate of 44.736 Mbps (672 voice channels).
DSL	Digital Subscriber Line, a technology that connects the user to broadband connections across a telephone network. It uses the same copper loops as wireline telephone service.
Facilities-based VoIP service	VoIP service provided by the same company that provides the customer's broadband connection. Facilities-based VoIP services are generally provided over private managed networks and are capable of being provided according to most telephone standards. While this service uses Internet Protocol for its transmission, it is not generally provided over the public Internet.

ILEC	*Incumbent Local Exchange Company*. Any company certificated by the FPSC to provide local exchange telecommunications service in Florida on or before June 30, 1995.
Interconnected VoIP service	According to the FCC, it is a VoIP service that (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) requires Internet protocol-compatible customer premises equipment; and (4) permits users generally to receive calls that originate and terminate on the public switched telephone network.
Intermodal	The use of more than one type of technology or carrier to transport telecommunications services from origination to termination. When referring to local competition, intermodal refers to non-wireline voice communications such as wireless or VoIP.
Internet Protocol (IP)	The term refers to the standards that keep the Internet functioning. It describes software that tracks the Internet address of nodes, routes outgoing messages, and recognizes incoming messages.
Over-the-Top VoIP service	VoIP service that is provided independently from a particular broadband connection and is transmitted via the public Internet.
Switched Access	Local exchange telecommunications company-provided exchange access services that offer switched interconnections between local telephone subscribers and long distance or other companies.
TDM	Time Division Multiplexing is a method of transmitting and receiving independent signals over a common signal path. TDM circuit switched lines represent the traditional wireline access line data within this report and do not include VoIP connections.
Universal Service Fund	This fund provides compensation to communications entities for providing access to telecommunications services at reasonable and affordable rates throughout the country, including rural, insular, high-cost areas, and public institutions.
Universal Service Administrative Company (USAC)	An independent American nonprofit corporation designated as the administrator of the federal Universal Service Fund by the Federal Communications Commission. USAC is a subsidiary of the National Exchange Carrier Association.
VoIP	*Voice over Internet Protocol*. The technology used to transmit voice conversations over a data network using Internet Protocol.
Wireline	Synonymous with “landline” or land-based technology for providing telephone service.

Attachment 2

FSEC's Role in Florida's Energy Future

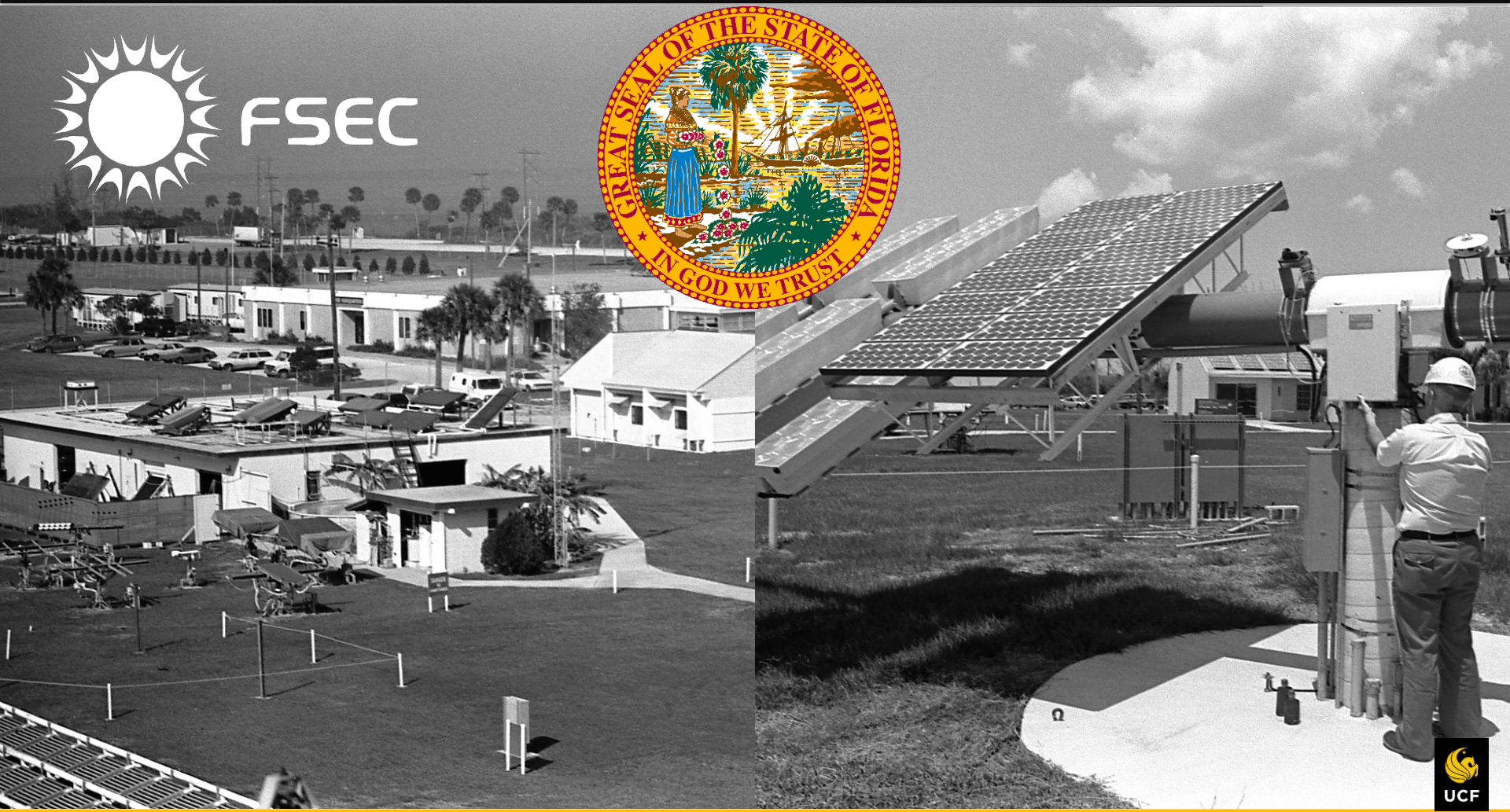
Florida Public Service Commission Internal Affairs

July 12, 2022

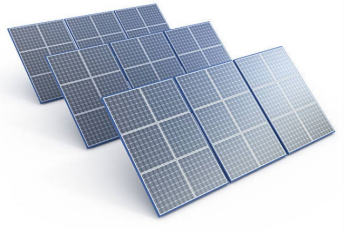
James Fenton, Director FSEC & Prof. MSE

UCF | FSEC Energy Research Center

UNIVERSITY OF CENTRAL FLORIDA


FSEC
GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST
UCF

FSEC Principal Energy Program Areas



Solar

High Performance Buildings

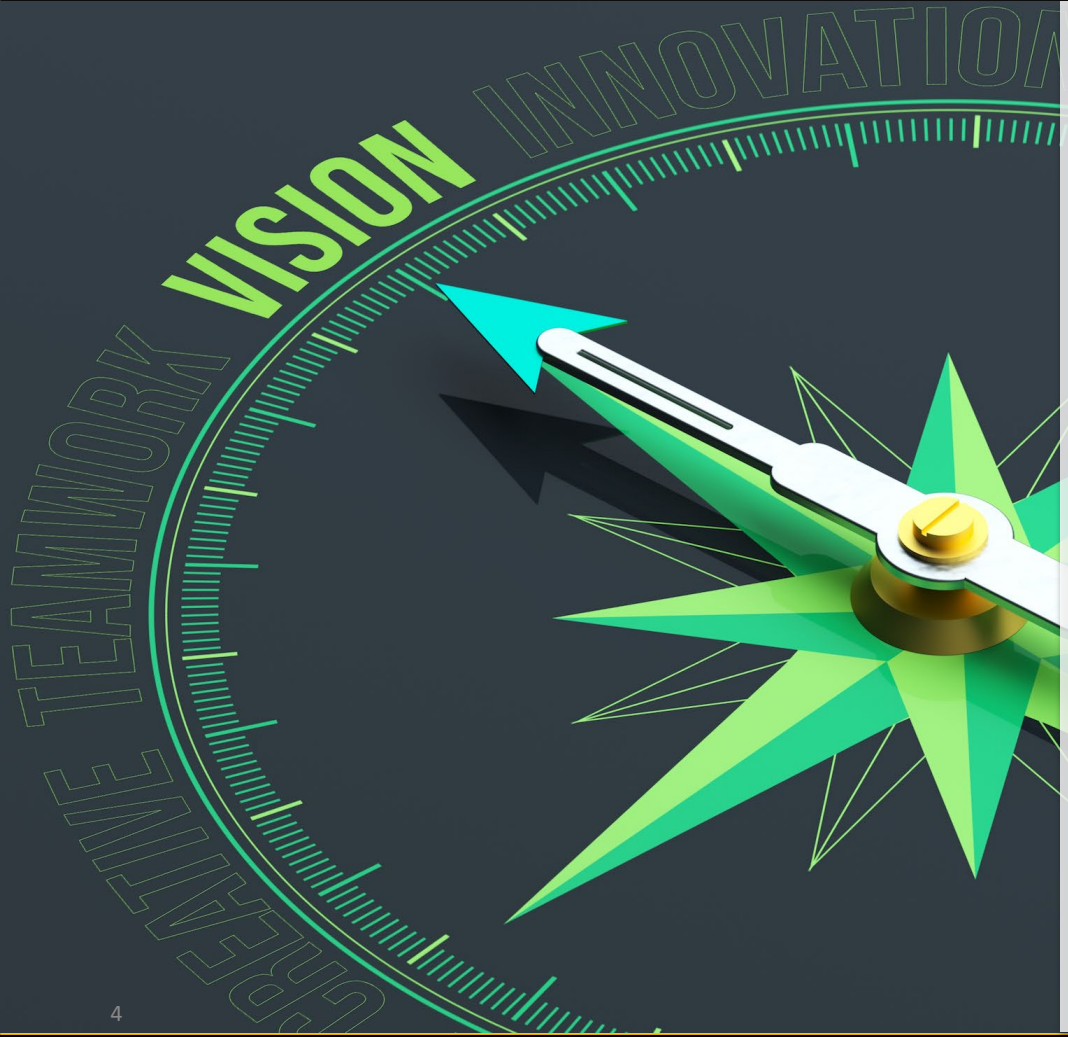
Sustainable Transportation

Storage

Energy Systems Integration

Education and Training

Policy



VISION

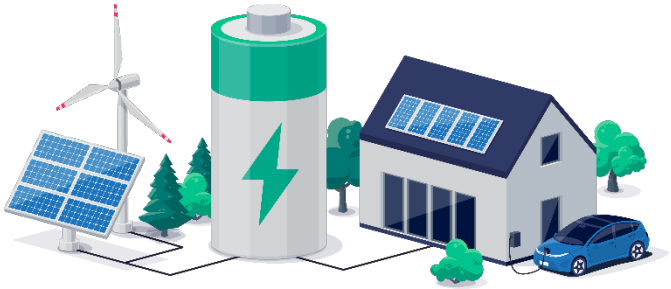
Promote the rapid transition to a sustainable energy economy through renewable energy, energy efficiency, and sustainable transportation research, demonstration, and education.

MISSION

Develop, research, and evaluate energy technologies that enhance the environment and economy, and transfer the results to the public, students and practitioners.

VISION FOR FLORIDA

Spend Little to No Funds on Imported Primary Fuels



100% Renewables Using Florida Energy

- Building Energy Efficiency Improvements
- Utility & Rooftop Solar
- Energy Storage
- Transportation Electrification
- Smart-charging Electric Vehicles (V2G)
- Demand Response

100% Renewables & Net Zero Emissions

- Sustainable aviation fuels
- High-speed electric trains
- Hydrogen as a fuel and feedstock

PARTNERS

Advisory Board Partners

Energy Consumers

amazonfresh

CITY OF ORLANDO

Publix

UNIVERSAL ORLANDO RESORT

The Walt Disney Company

Builders/ Energy Providers

C.T. HSU + ASSOCIATES, P.A.
ARCHITECTURE • PLANNING • INTERIOR DESIGN

kb HOME

LifeStyle SINCE 1984 solar-powered HOMES

Nova CHARGE Empowering The Future

Palm Harbor Homes

SUNPOWER by esaSolar

Electric Utilities

DUKE ENERGY

FMPA MUNICIPAL POWER

FPL

KUA KISSIMMEE UTILITY AUTHORITY

OUC The Reliable One

Manufacturers

innventure

HITACHI Inspire the Next

JinKO Solar Building Your Trust in Solar

MITSUBISHI ELECTRIC COOLING & HEATING

saft

TRANE TECHNOLOGIES watsco

Associations/ Government

A.E.S.P. ASSOCIATION OF ENERGY SERVICES PROFESSIONALS

DRIVE ELECTRIC FLORIDA

The Florida Department of Agriculture and Consumer Services

GULF COAST ENERGY NETWORK

FSEC Project Current Partners

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Buildings Technology Office

SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. Department Of Energy

Pacific Northwest NATIONAL LABORATORY

NREL Transforming ENERGY

Sandia National Laboratories

NSF

ASHRAE

DRIVE ELECTRIC USA

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

Florida Department of Agriculture and Consumer Services

Central Florida Clean Cities Coalition

RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

ICC-SRCC
SOLAR RATING & CERTIFICATION CORPORATION

Associated Gas Distributors of Florida

FlaSEIA
Florida Solar Energy Industries Association

A.F.Mensah

ATLANTIC HOUSING PARTNERS

ASU Arizona State University

The Levy Partnership

OBANTARLA

Owens Corning

SEI Associates

Tactical Energy

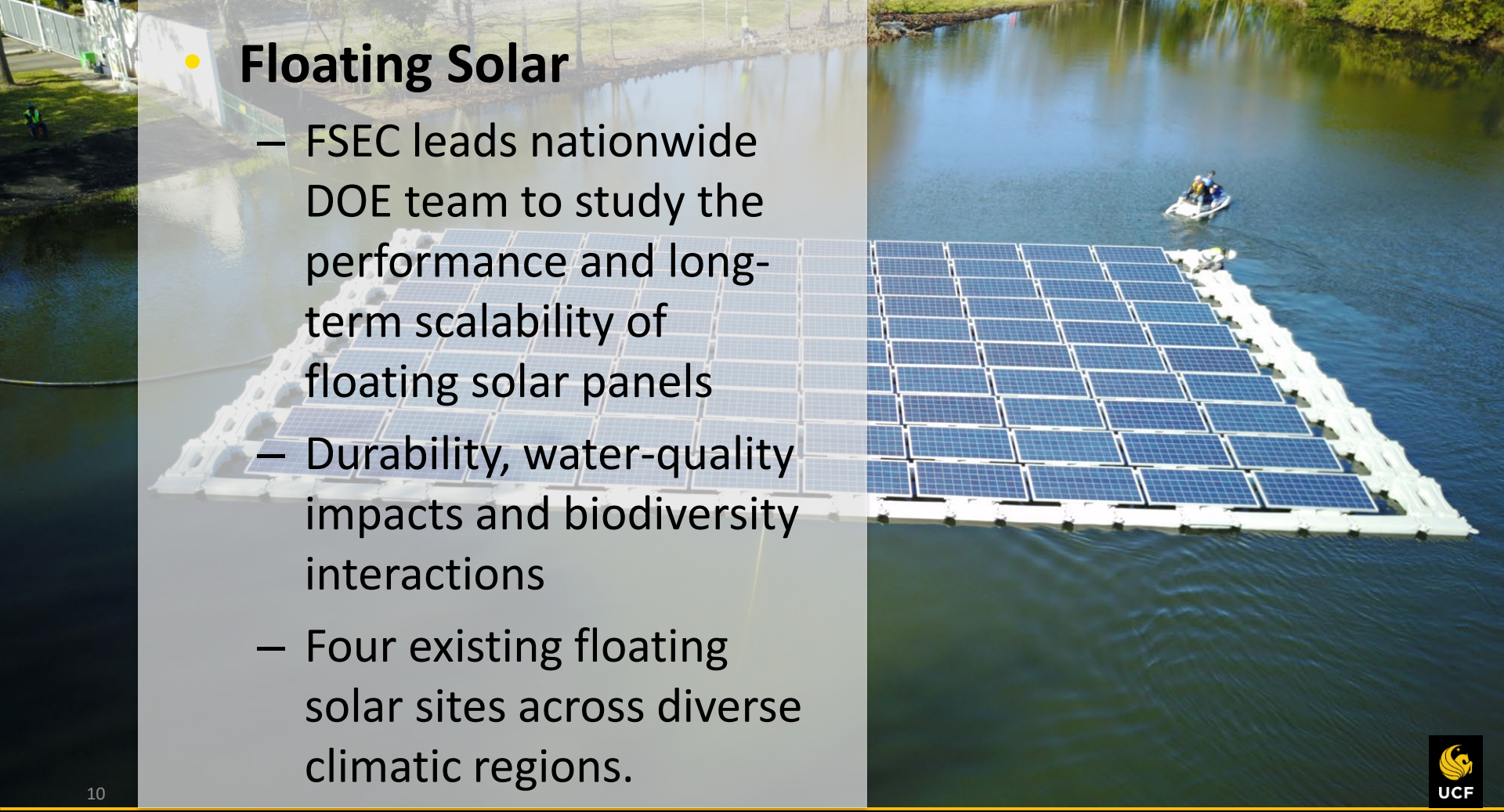
FPL solar now

OUC The Reliable One

UCF

Floating Solar

- FSEC leads nationwide DOE team to study the performance and long-term scalability of floating solar panels
- Durability, water-quality impacts and biodiversity interactions
- Four existing floating solar sites across diverse climatic regions.



ENERGY RESILIENCY

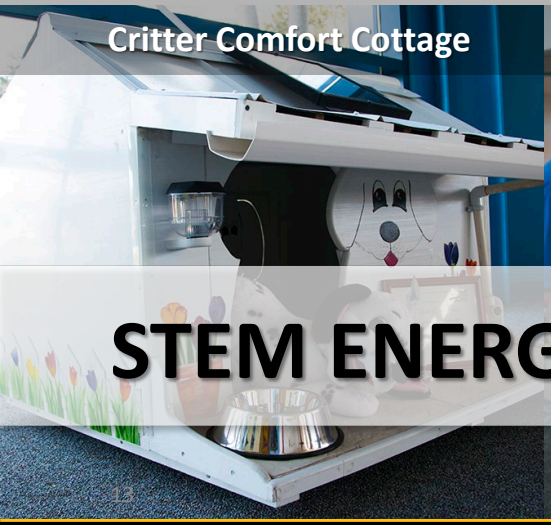
SunSmart E-Shelter Schools MAX Project

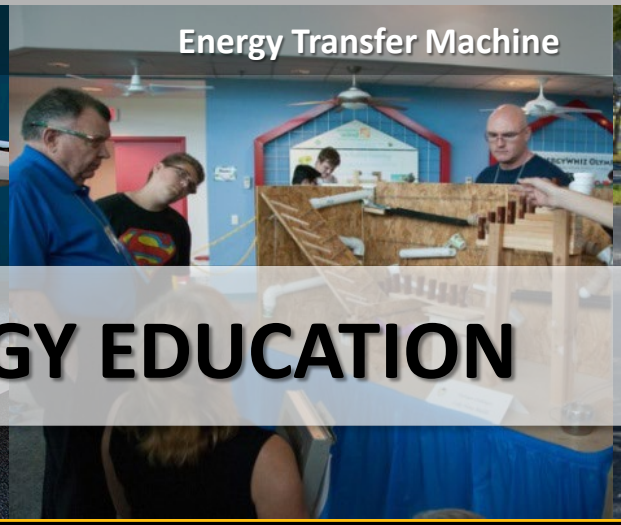
- Inspections & Repairs at 113 schools
- Additional $1M from FDACS to make upgrades
- Replace batteries, upgrade inverters, or other needed repairs
- $18M, 2002-present


Solar Energy Cook-off

Energy Innovations

Junior Solar Sprint


Critter Comfort Cottage


Energy Transfer Machine


Electrathon

STEM ENERGY EDUCATION

EnergyWhiz, https://vimeo.com/9522310

Florida SOLAR ENERGY Apprenticeship Program

Solar Energy Technician

- **First and only solar apprenticeship program in the country registered with the US Department of Labor**
- FSEC and FlaSEIA partnership
- Pathway to solar contractor license or higher education
- FSEC developing and producing online training and instructional materials

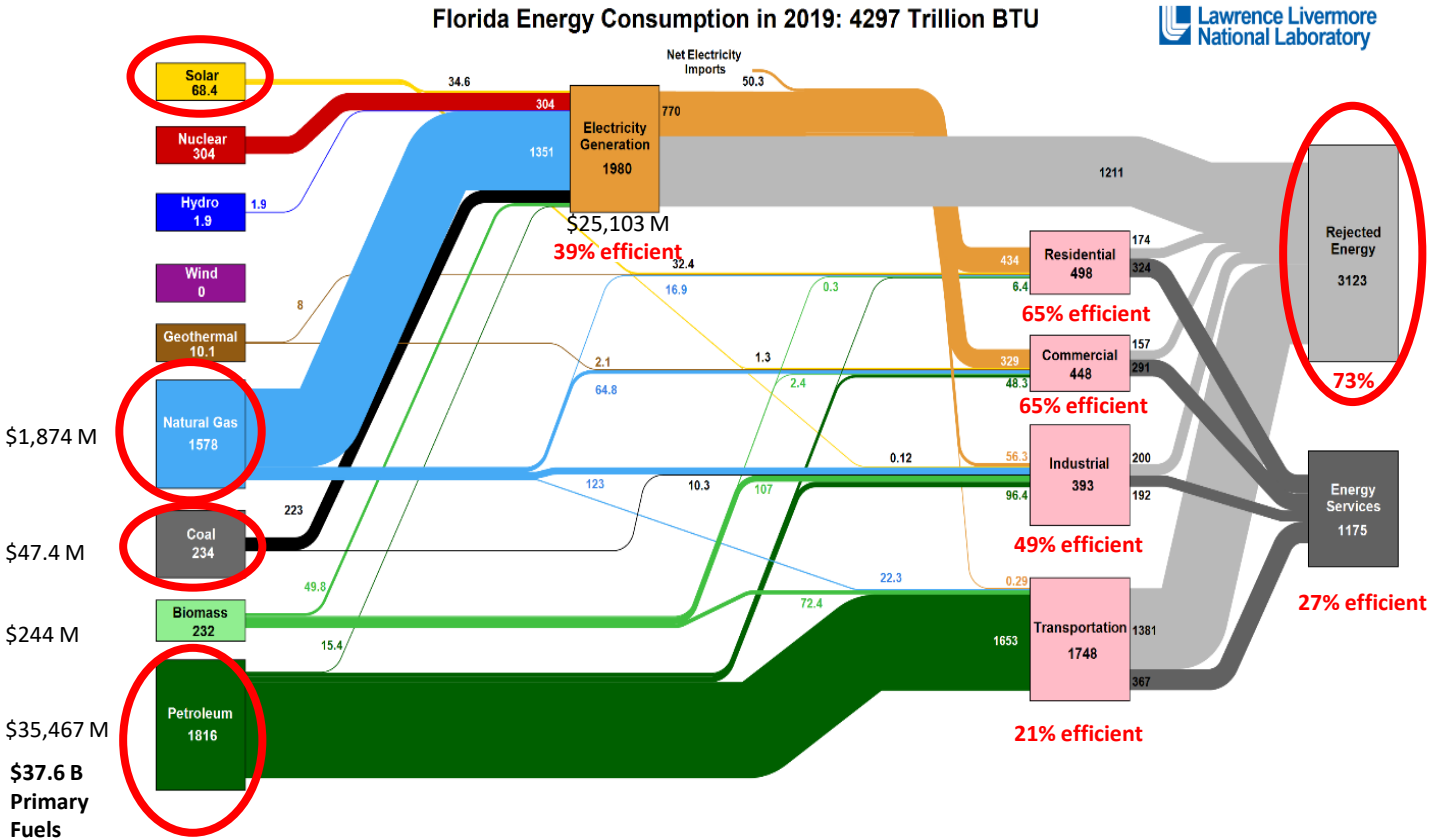
https://floridasolarapprentice.com/

STANDARDS OF APPRENTICESHIP
APPRENTICESHIP
Florida Solar Energy Apprenticeship Program, GNJ 2022-FL-111515
REGISTERED
REGISTERED BY
FLORIDA DEPARTMENT OF EDUCATION
DIVISION OF CAREER AND ADULT EDUCATION
APPRENTICESHIP SECTION

UCF

THE BIG PICTURE

Florida's Energy Future Must be More Efficient

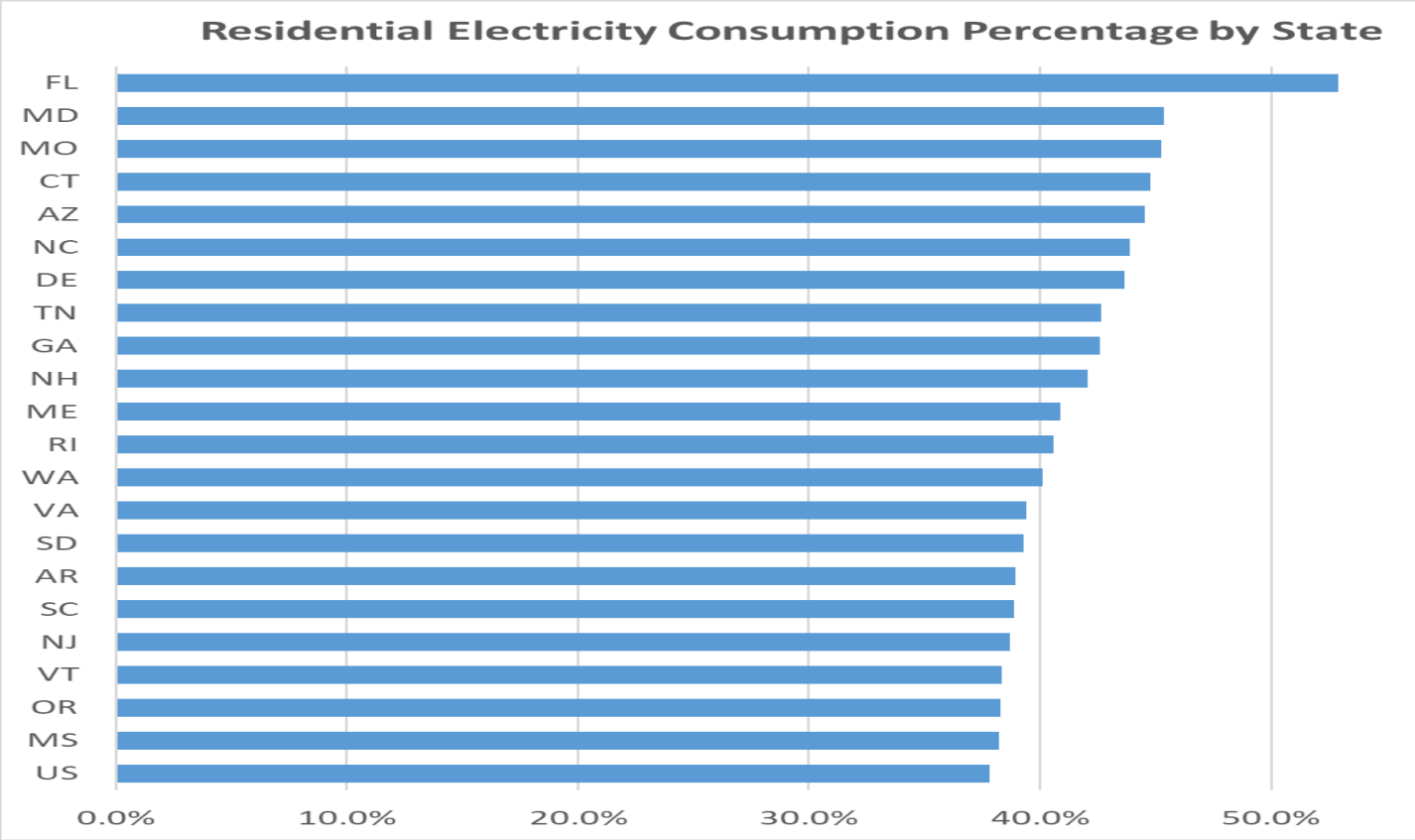


73% of primary energy is wasted

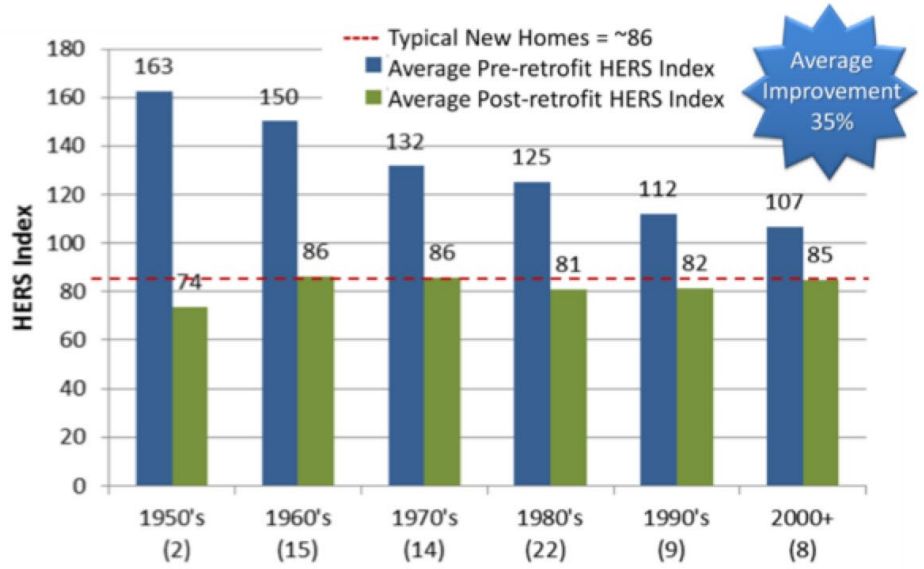
- **Florida spent $63 billion on energy, almost all from imported coal, oil, gas, and nuclear**
- **Florida Electricity: 54% Residences, 39% Commercial establishments > 90% Buildings**

*2019 Latest Energy Flow Chart Available from LLNL https://flowcharts.llnl.gov/commodities/energy

54% of Florida's Electricity is Residential; Highest in the Nation



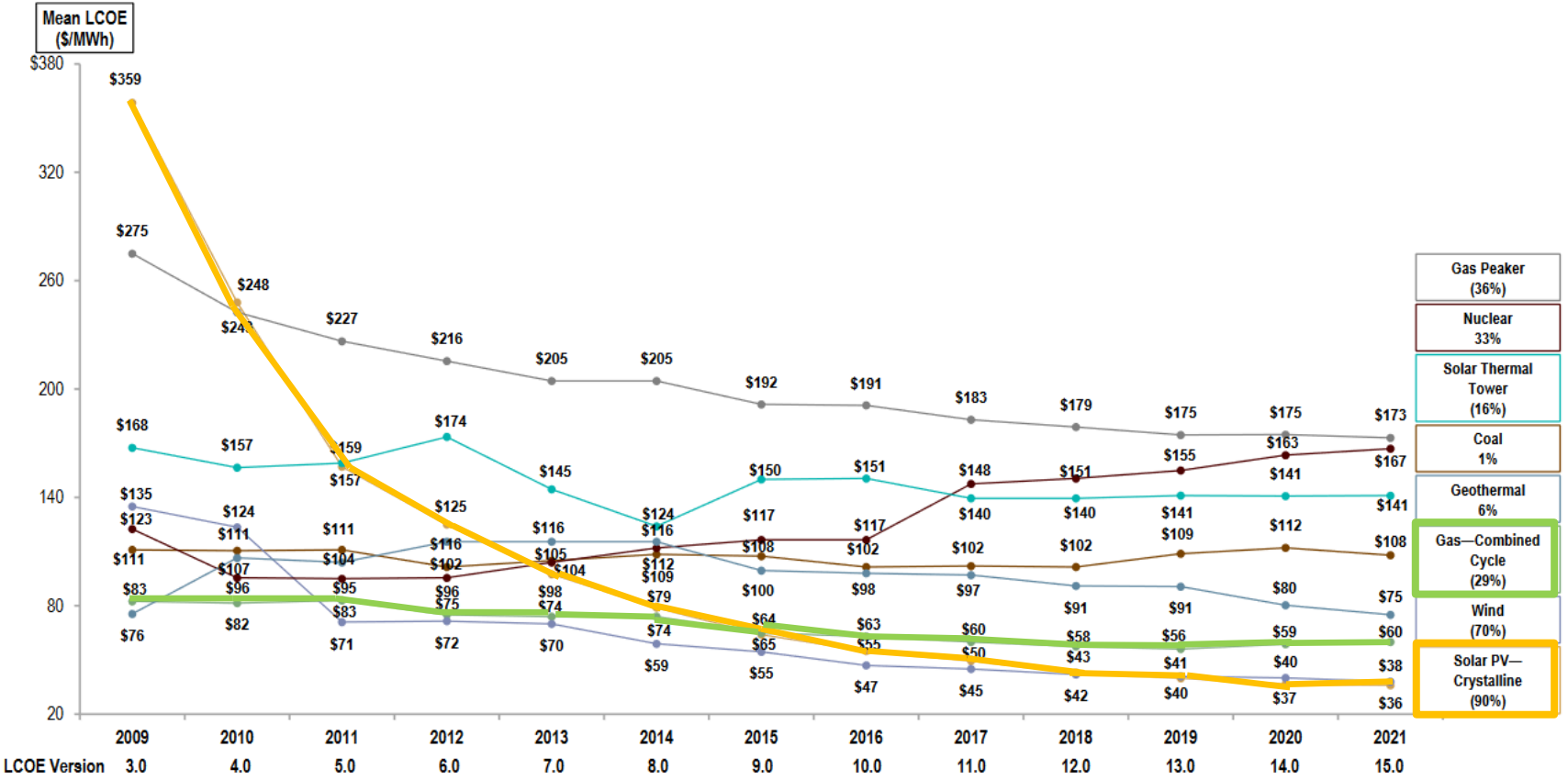
Efficiency Retrofits Are Cost Effective



Average HERS Index Pre- and Post-Retrofit

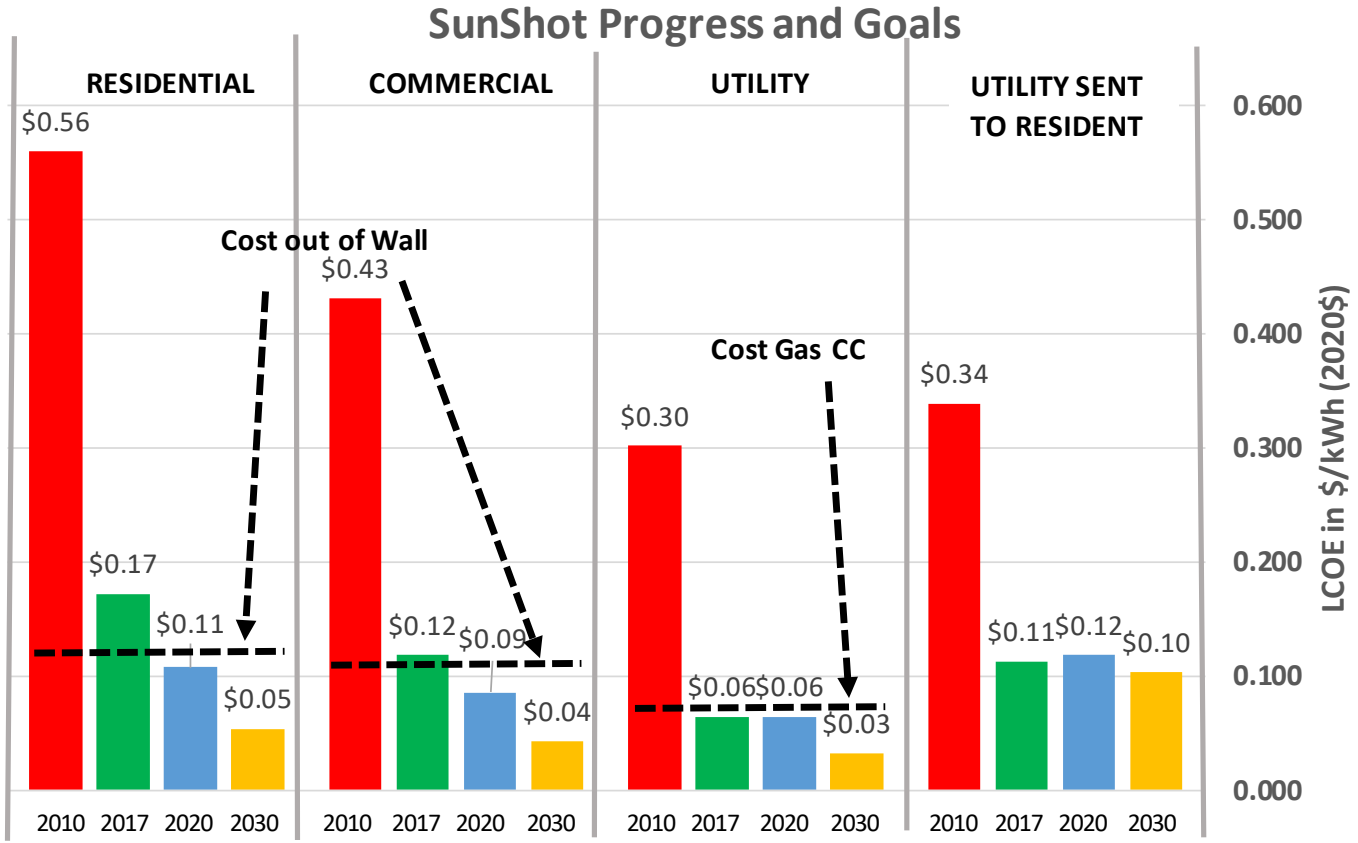
Building America Partnership for Improved Residential Construction

Levelized Cost of Energy Comparison – Utility-Scale Generation



https://www.lazard.com/media/451881/lazards-levelized-cost-of-energy-version-150-vf.pdf

Rooftop Solar Has Lowest Cost

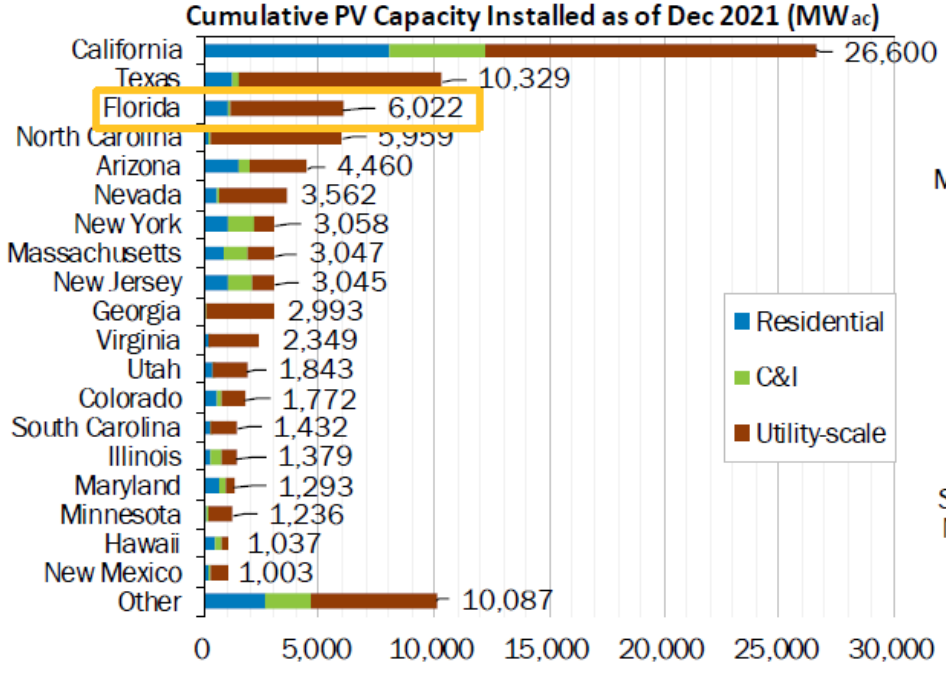


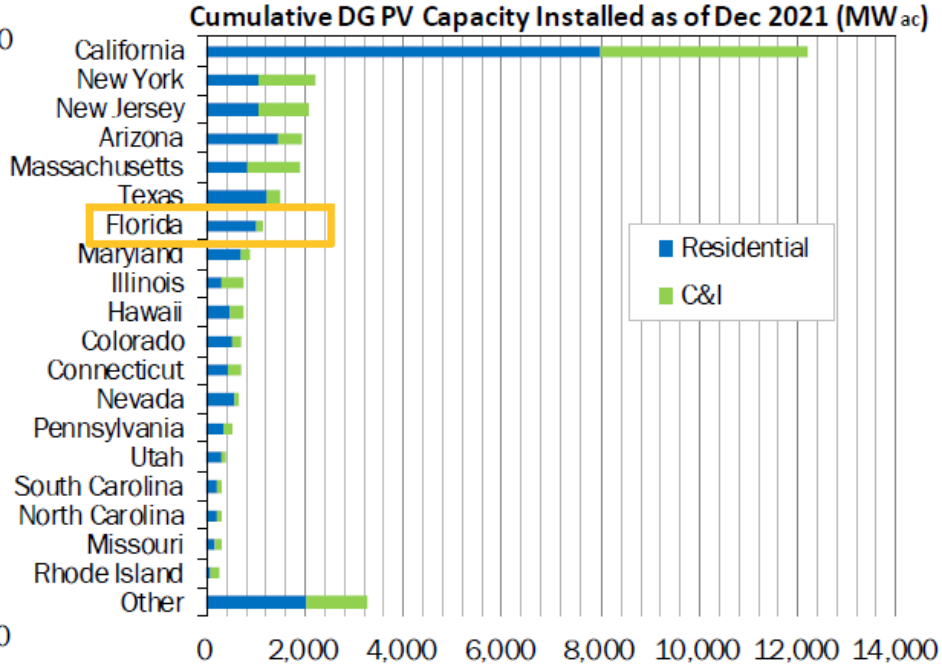
- When utilities add power plants the customers pay more (shareholders win)
- When customers add solar on their roof customers pay less (residents win)

- 2020 Rooftop solar is less expensive than electricity out of the wall and less expensive than utility solar transmitted and distributed to the customer through the wall. In 2030 rooftop solar is half the cost of utility solar distributed to the customer!

U.S. Installation Breakdown by State

At the end of 2021, 92.5 GWac of solar PV systems were installed in the U.S, of which 59.5 GW were utility-scale PV, 21.0 GW were residential PV, and 12.0 GW were C&I PV.





Note: EIA monthly data for 2021 are not final.
Sources: EIA, "Electric Power Monthly," forms EIA-023, EIA-826, and EIA-861 (February 2022, February 2021).

PV Installer Fastly Growing Job

United States

- PV installer fastest growing occupation* 2016 to 2026 (105%)
- 2017 Median Pay of $39,490

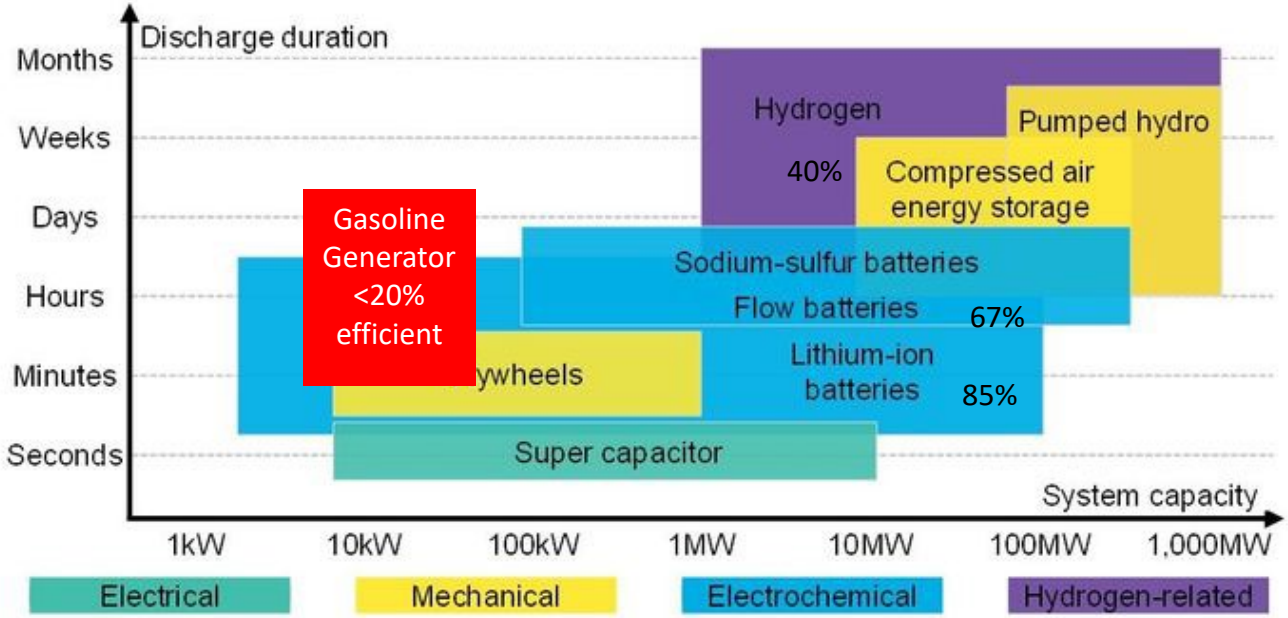
Florida (2019)

- 10,528 State Solar Jobs, 1st New Solar Jobs (1,769), 20.6% Growth Rate
- 7,445 Installation Jobs, 2nd in Nation
  - 6,539 Residential jobs
  - 817 Non-Residential jobs
  - 89 Utility-scale jobs
- 991 Manufacturing Jobs, 9th in Nation
- Future Florida Job growth is on the Roof and Manufacturing floor

*Bureau of Labor Statistics, US Department of Labor

https://solarstates.org/#state/florida/counties/solar-jobs/2018

Size and discharge durations by storage technology



Source: Bloomberg New Energy Finance. Note: system capacities and discharge durations are based on general use, rather than technical limitations.

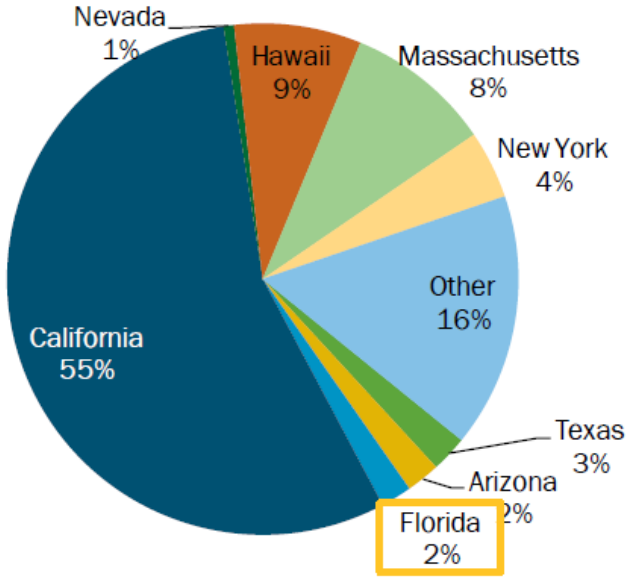
U.S. Behind-the-Meter Energy Storage Installations

Four states have over 75% of the behind-the-meter storage capacity in the U.S.

- California represents over 50% of U.S. installs.
- Florida has 2% of the U.S. installs.

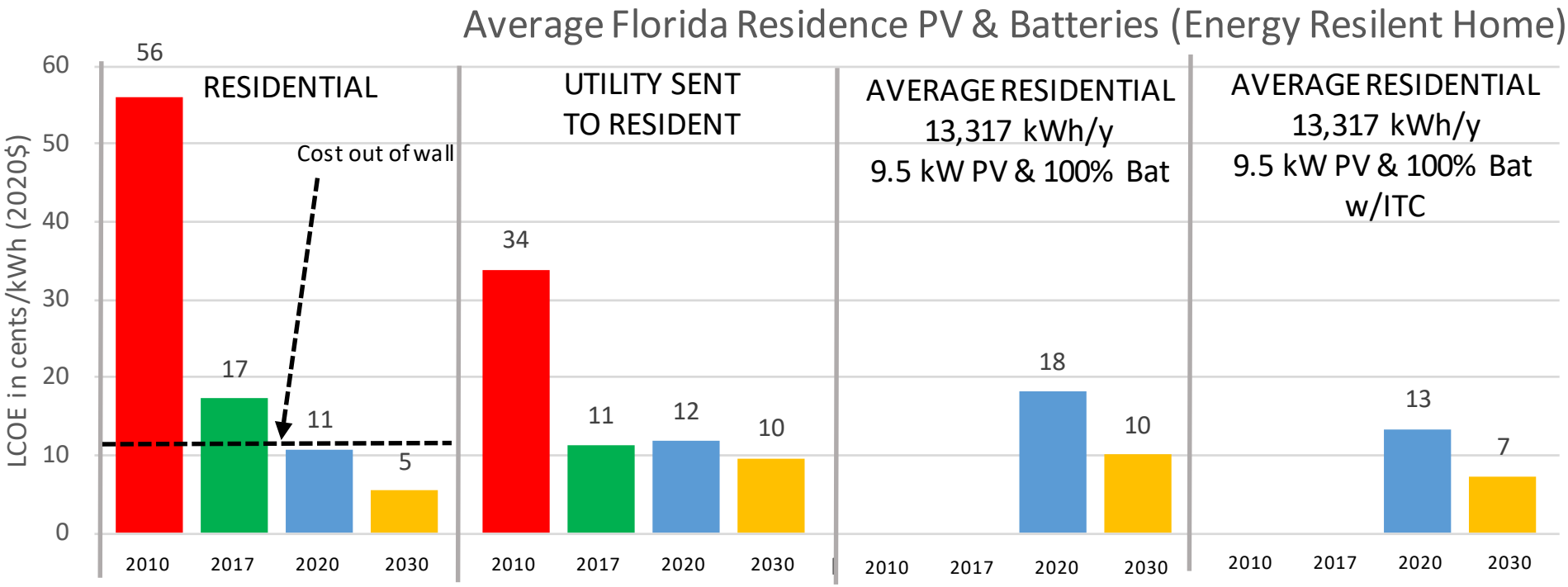
- Storage markets are expanding, often in response to
  - State policies and incentives (e.g., to address high solar installation levels),
  - Resilience concerns (e.g., California wildfires)
- Most behind-the-meter installations are in the residential sector.
- 6% of all U.S. residential PV systems installed in 2020 included storage
- Florida is expected to be one of the leading solar-plus-storage markets by 2026.

2021 Cumulative Behind-the-meter U.S. Energy Storage Installations by State (3.6 GWh)



Source: Wood Mackenzie Power & Renewables and Energy Storage Association, U.S. Energy Storage Monitor: Q4 2021. Ohio nonresidential deployment MW data were corrected for a suspected data entry error.

Rooftop Solar with 100% Batteries Has Lowest Cost



- In 2030 Rooftop solar with batteries (Energy Resilient Home) is **equal in cost** to buying utility solar transmitted and distributed to the customer through the wall. With Federal ITC 30% less expensive than utility solar out of the wall, while able to have on demand backup power.

UTILITY STORAGE INTEGRATION

FSEC Energy Storage Pilot Project
Utility Sub-station Deferral

Power Conversion System (PCS) 500 KVA

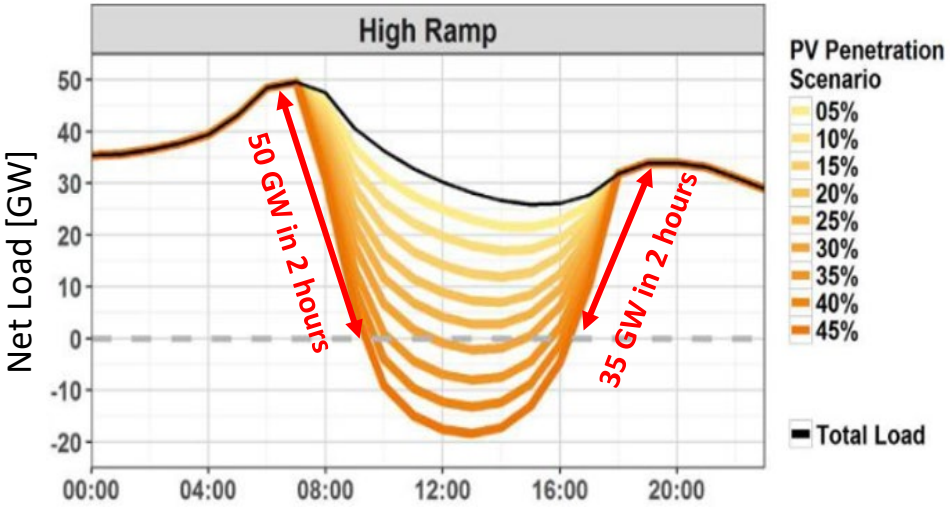
DC Combiner

Step up Transformer: 500 KVA (480 V/600V)

- Max Power: **186.3 KW**
- Capacity: **372 kWh**
- Nominal DC Voltage: **1331.2 V**
- Weight: **~7600 lbs**

UCF

Increasing Renewable Penetration Leads to Steep Ramps

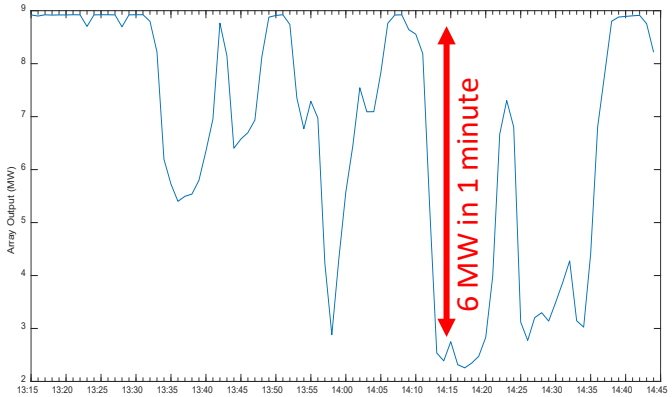


Long-duration storage (8+ hours)

*Duck curve in Florida during a day based on Florida Reliability Coordinating Council

Orlando Utility Commission(OUC)

Output Variation from an 8.9 MW_{AC} PV Array[2]



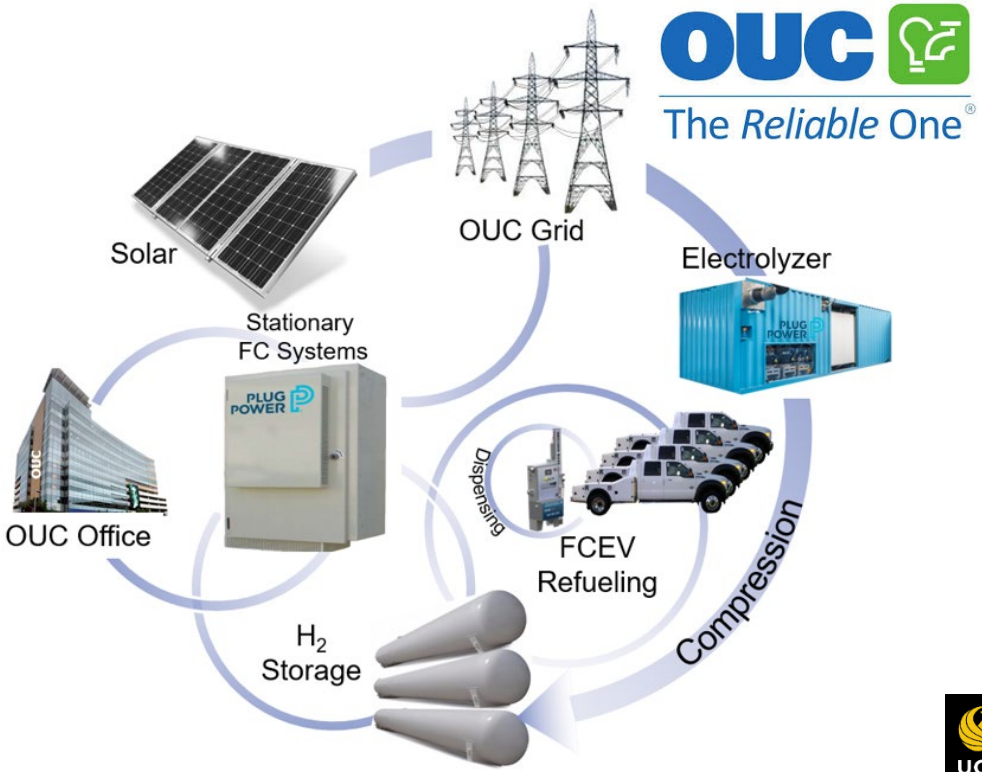
Short-duration storage (1+ minutes)

OUC's installed solar capacity is < 1% of load, but increases to 10% by 2022, and could be 20% by 2024+

Hydrogen production at utility scale can provide both long and short duration capacity as a controllable load.

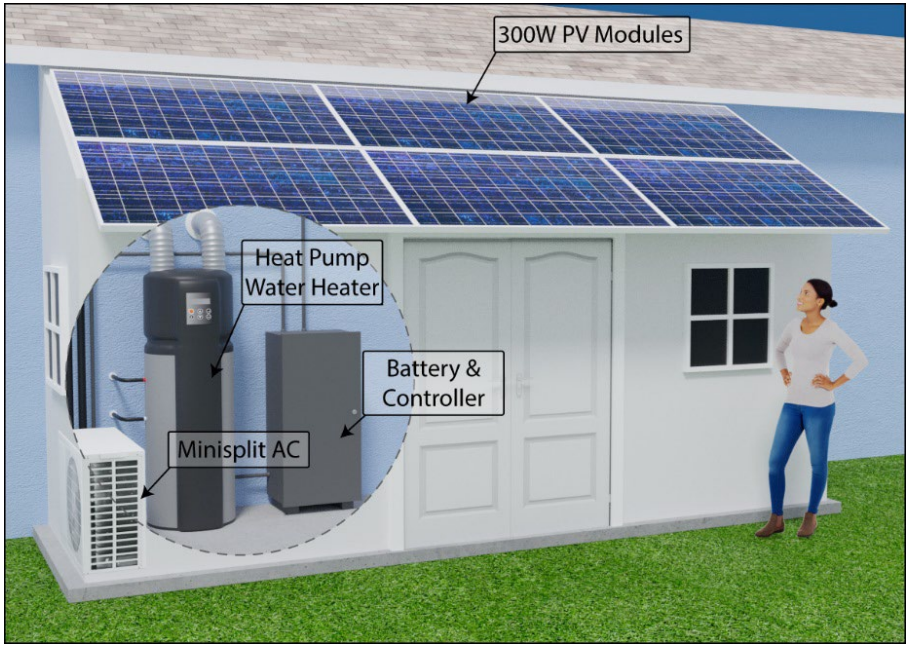
‘Integrated Hydrogen Production and Consumption for Improved Utility Operations’

- Grid Stabilization: Hydrogen Offers a Green Solution to Intermittent renewables
- Orlando Utility Commission (OUC) has been awarded a grant from the U.S. Department of Energy to make solar energy a more reliable, affordable, and sustainable resource
- Ensures that the hydrogen is produced at the lowest electricity cost, and consumed for the greatest possible value.
- *Collaborators: Plug Power, OneH2, FSEC-UCF*



Building Storage Integration

PV GEMS (Phase 2)



A pre-packaged retrofit solution targeting 75% reduction in space conditioning and water heating energy.

- PV GEMS: PV-Powered, Grid-Enhanced Mechanical Solution
- $4.4M ($3.6M + $885k cost share)
- Development of pre-production prototypes, demonstration in occupied buildings, and commercialization activities.
- **Seeking Large-scale Deployment Partners**: State & local govt, financing orgs & programs, utilities, affordable housing orgs, regional efficiency orgs, marketers.
- Partners:

watsco COOLING THE AMERICAS

ROC usa® Resident Owned Communities BETTER TOGETHER

Rheem

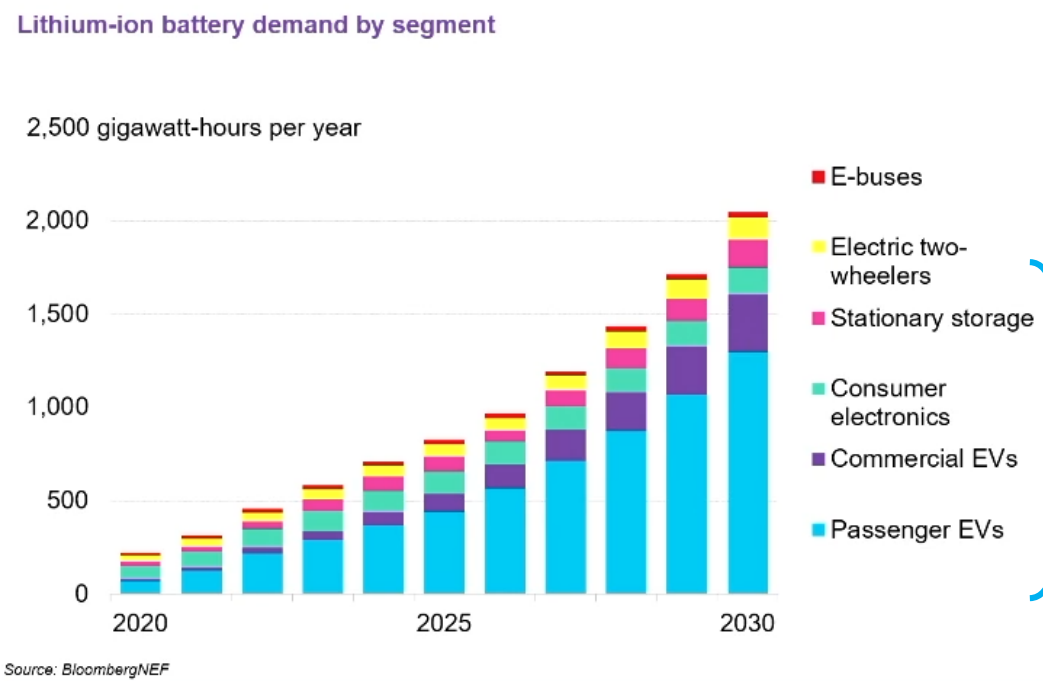
NASEO National Association of State Energy Officials

UCF

Contact: Eric Martin, martin@fsec.ucf.edu

V2G – Where the Batteries Are

Lithium-ion battery demand will increase ten-fold in a decade



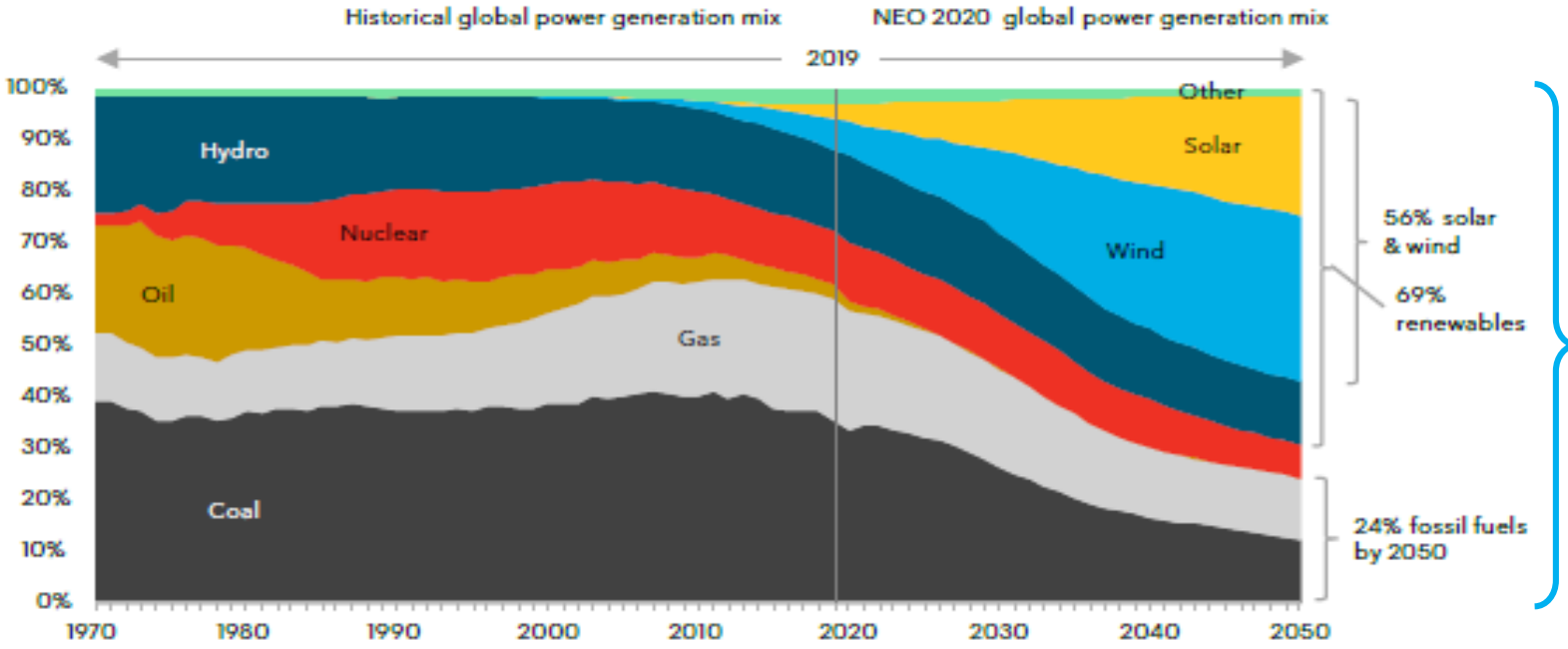
Source: BloombergNEF

Almost all behind the meter. 24 times stationary storage

With available Ford Intelligent Backup Power, the F-150 Lightning automatically kicks in to power your home. Enough to power a home for 3 days with the extended-range battery.

BloombergNEF New Energy Outlook
2020 Economic Transition Scenario

Figure 2: Global electricity generation mix

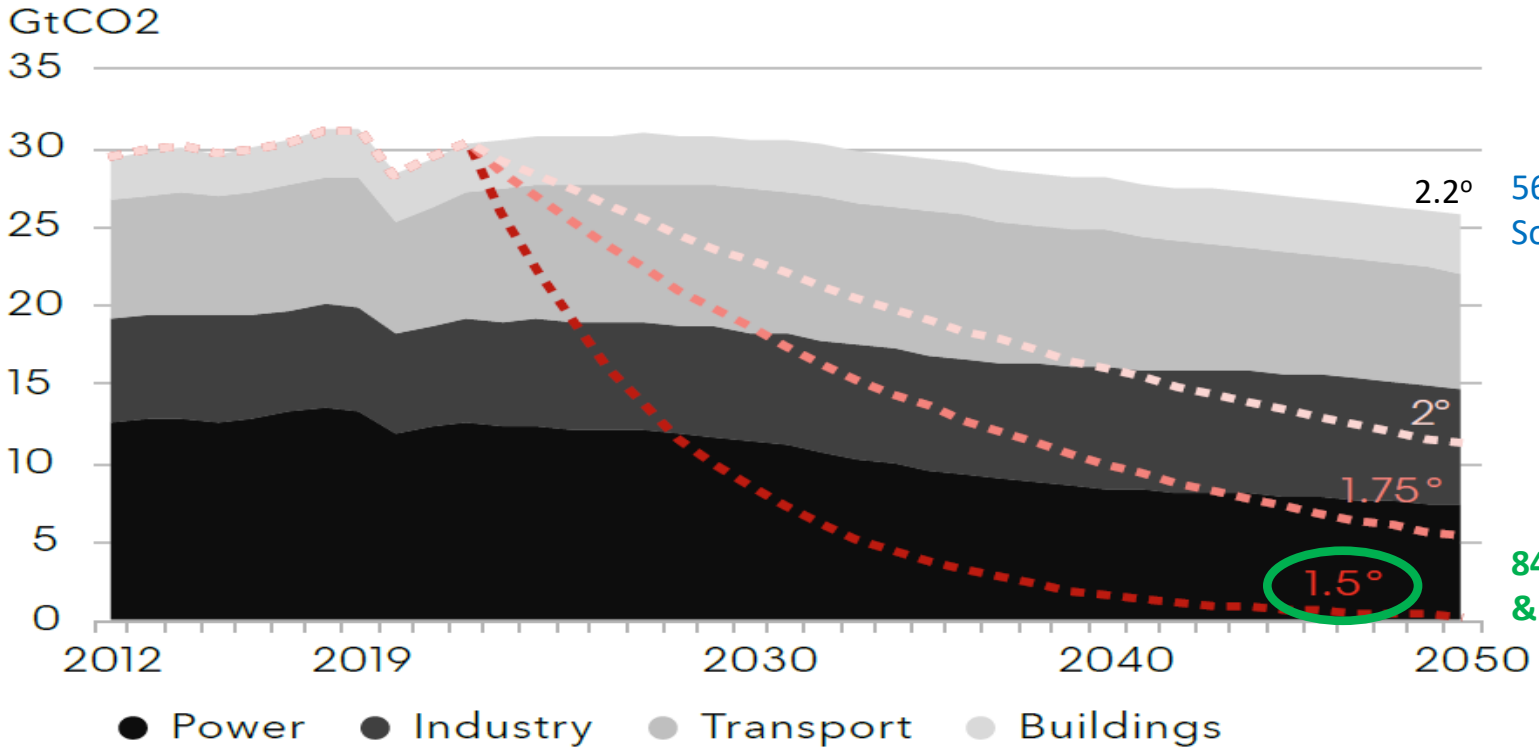


40,451 TWh in 2050

24,000 TWh in 2020

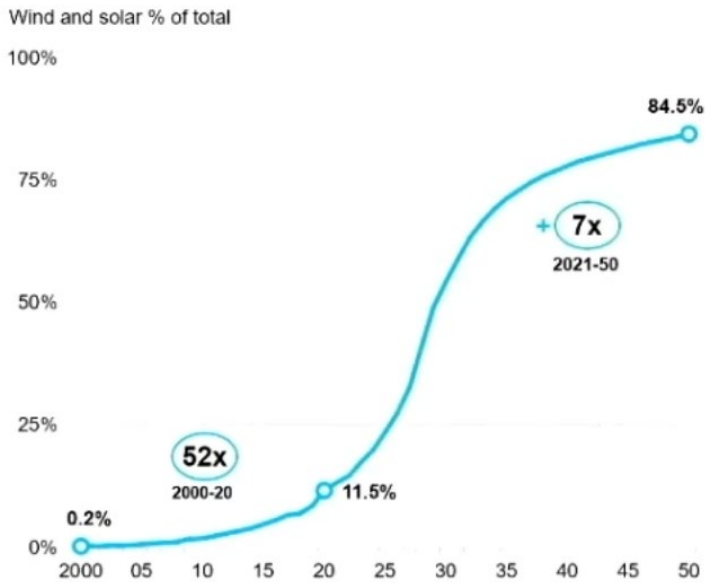
Source: BloombergNEF, IEA

Emissions in the Economic Transition Scenario, by sector, and a range of carbon budgets

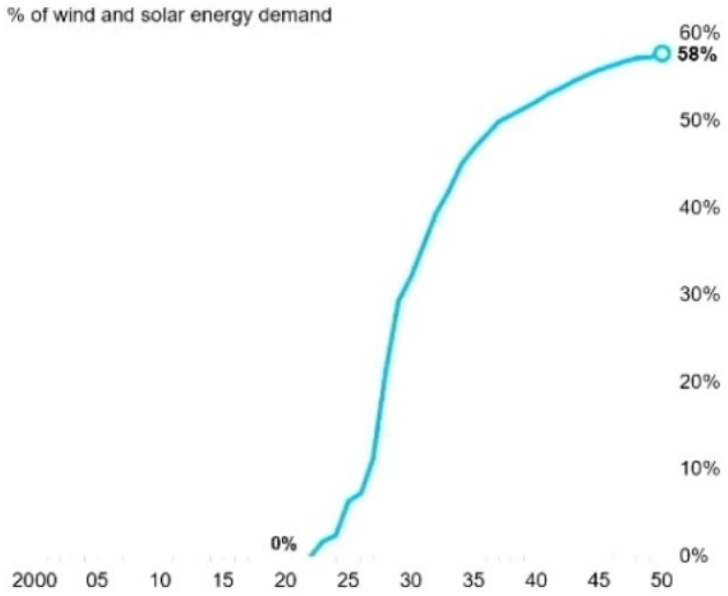


Source: BloombergNEF

Renewable energy has scaled…
… but has a long way to go



Green hydrogen has not scaled at all…
… but it could scale, massively



In 2050 102,000 TWh of Electricity, 84.5 % wind and solar, 58% of which is used to make hydrogen to achieve NZE

BNEF Summit London October 18-19, 2021
BNEF Talk: Peak Scaling by Jon Moore, CEO, BloombergNEF solar and wind and then hydrogen
https://about.bnef.com/summit/london/videos/?vid=641126950

Vision for Florida

Spend Little to No Funds on Imported Primary Fuels

100% Renewables Using Florida Energy

- Building Energy Efficiency Improvements
- Utility & Rooftop Solar
- Energy Storage
- Transportation Electrification
- Smart-charging Electric Vehicles (V2G)
- Demand Response

100% Renewables & Net Zero Emissions

- Sustainable aviation fuels
- High-speed electric trains
- Hydrogen as a fuel and feedstock

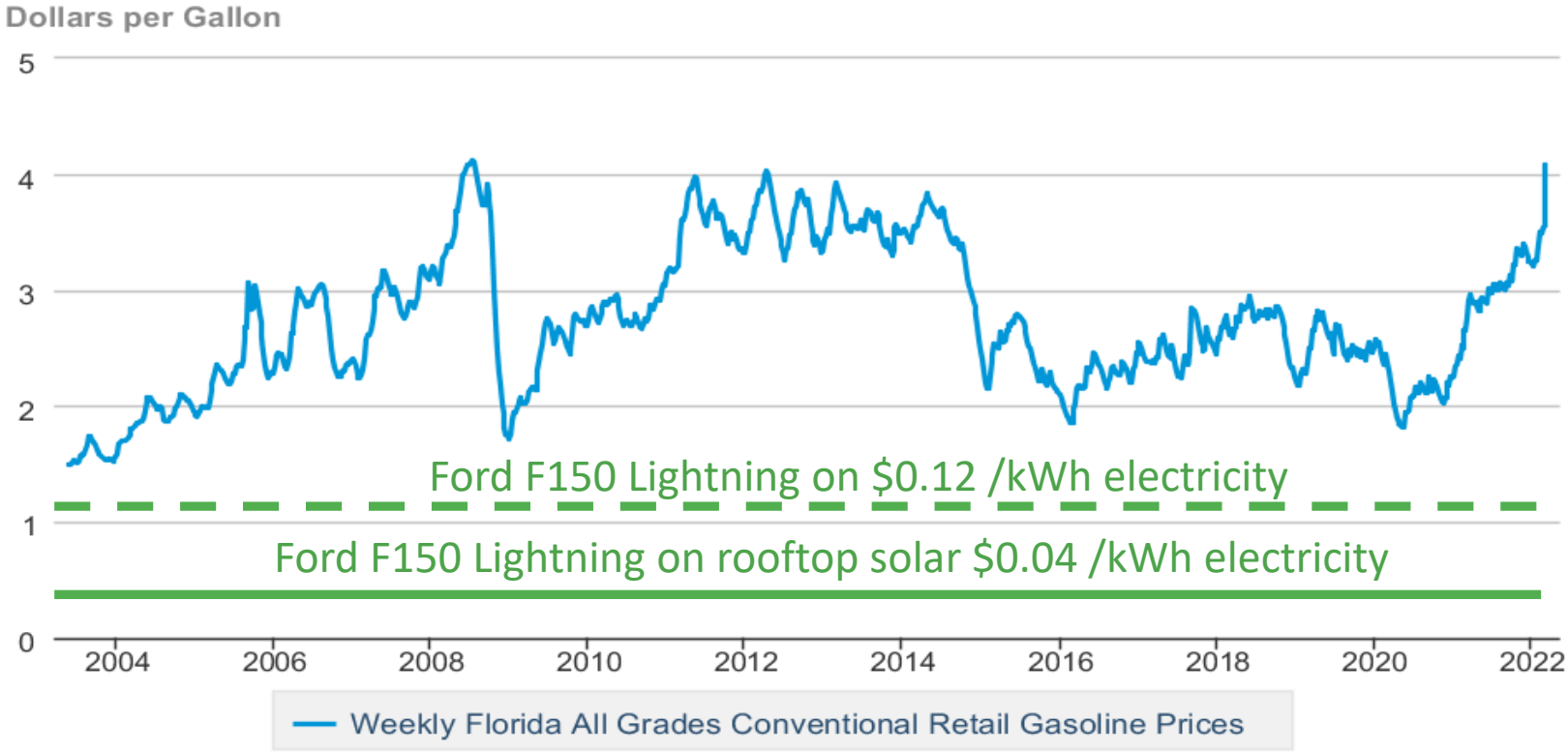
James Fenton, jfenton@fsec.ucf.edu
https://energyresearch.ucf.edu/

Easter Parades in New York City

Year 1900: One Motor Vehicle

Year 1913: One Horse & Carriage

Weekly Florida All Grades Conventional Retail Gasoline Prices



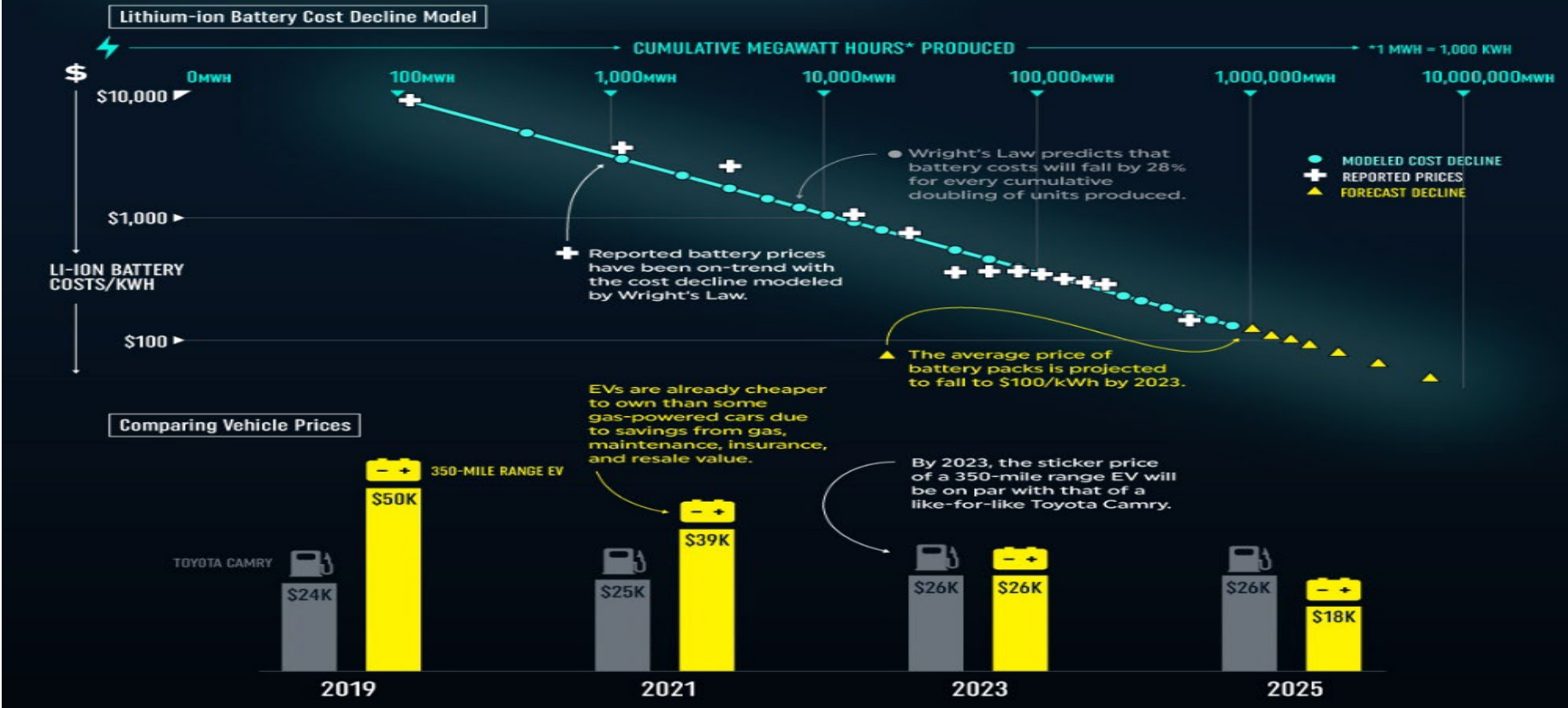
Source: U.S. Energy Information Administration

VISUAL CAPITALIST DATASTREAM

ELECTRIC VEHICLE PRICES FALL

as Battery Technology Improves

BATTERIES are the largest cost components of Electric Vehicles (EVs). As battery costs decline, retail EV prices are projected to be on par with gas-powered cars by 2023.



Figures represent [illegible] 2021

https://www.visualcapitalist.com/electric-vehicle-battery-prices-fall/

FLORIDA SUSTAINABLE TRANSPORTATION & TECHNOLOGY 2022 EXPO

ARE YOU Registered?

BIODIESEL | COMPRESSED NATURAL GAS | ELECTRICITY | PROPANE

March 30-31, 2022 @ FSEC

Reasons for Hydrogen Hub in the Southeast

5 of the U.S. Largest Utilities (Dominion, Duke Energy, NextEra, Southern Co, TVA)

Major U.S. Ports, inland ports, largest rail system in the U.S., interstate corridors

Unique natural gas and fossil pipelines (gateway to the NE)

SpacePort – Sustainable rocket fuel manufactured locally using H2

3.96B GDP (20+% of U.S.)

Approximately 85M population (1/4 of the U.S.)

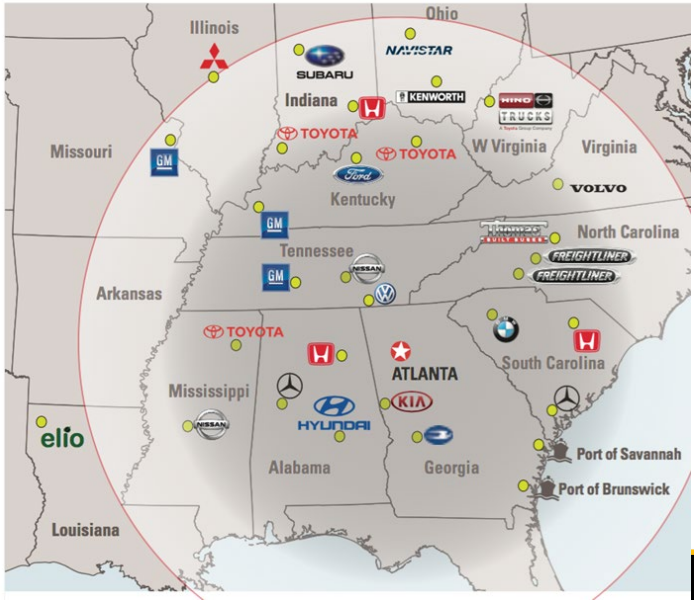
4 major NASA sites and over 85 military sites (22 major installations)

Cars, Light & Heavy Vehicle Manufacturing centered in SE (fuelcells!)

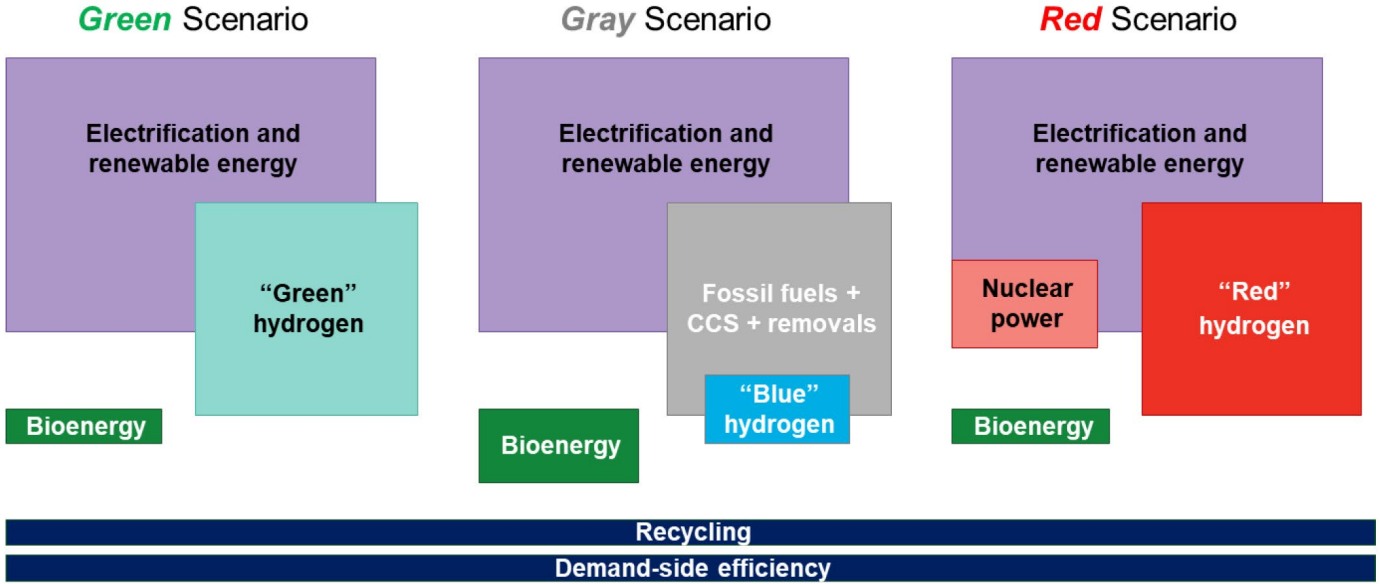
4 DOE National Laboratories (JLab, NETL, ORNL, SRNL)

Proven Renewables – solar, hydropower, growing wind potential

Cars, Light & Heavy Vehicles within a 500 Mile Radius

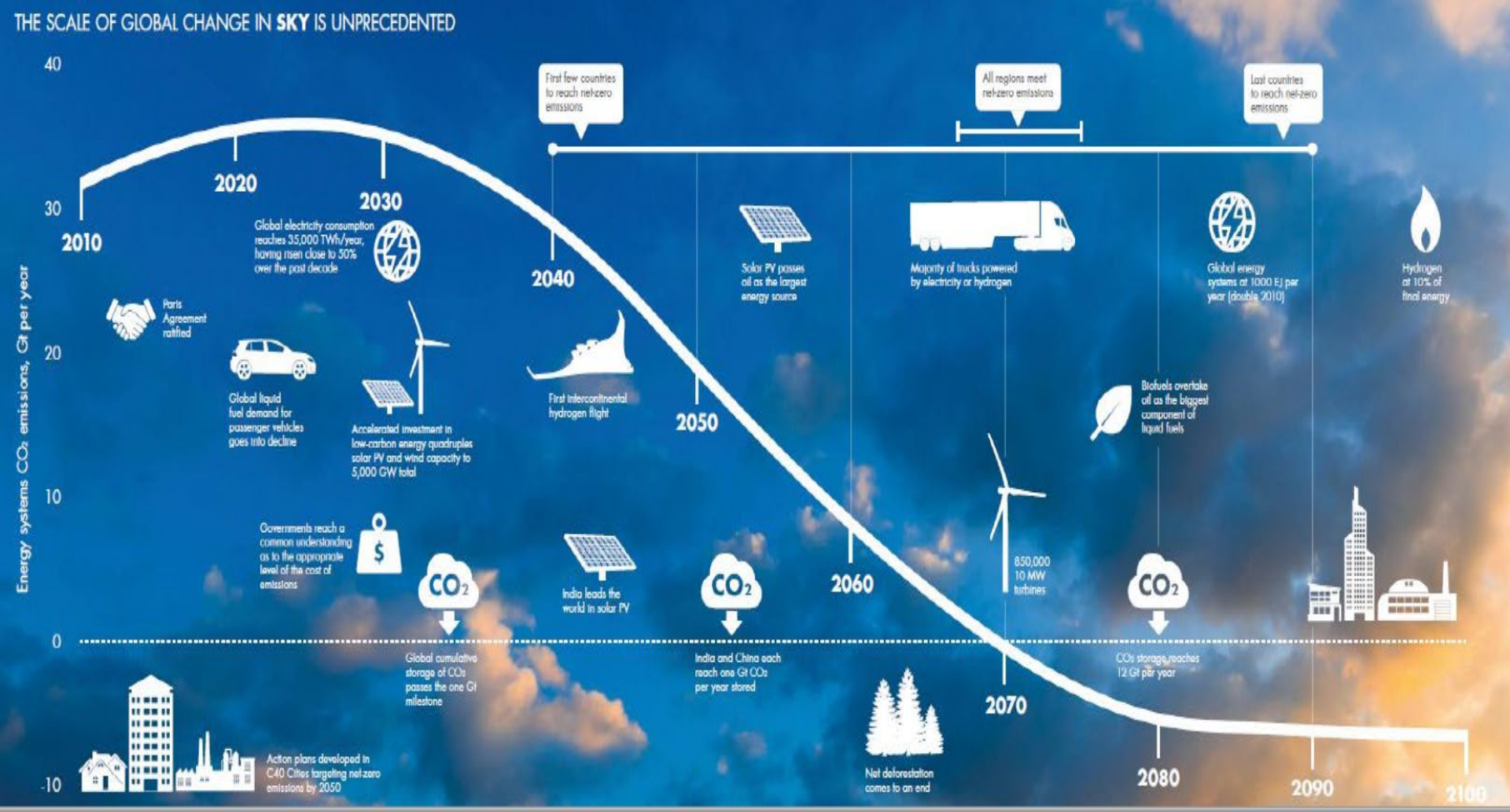


Possible Paths to Net Zero Emissions by 2050

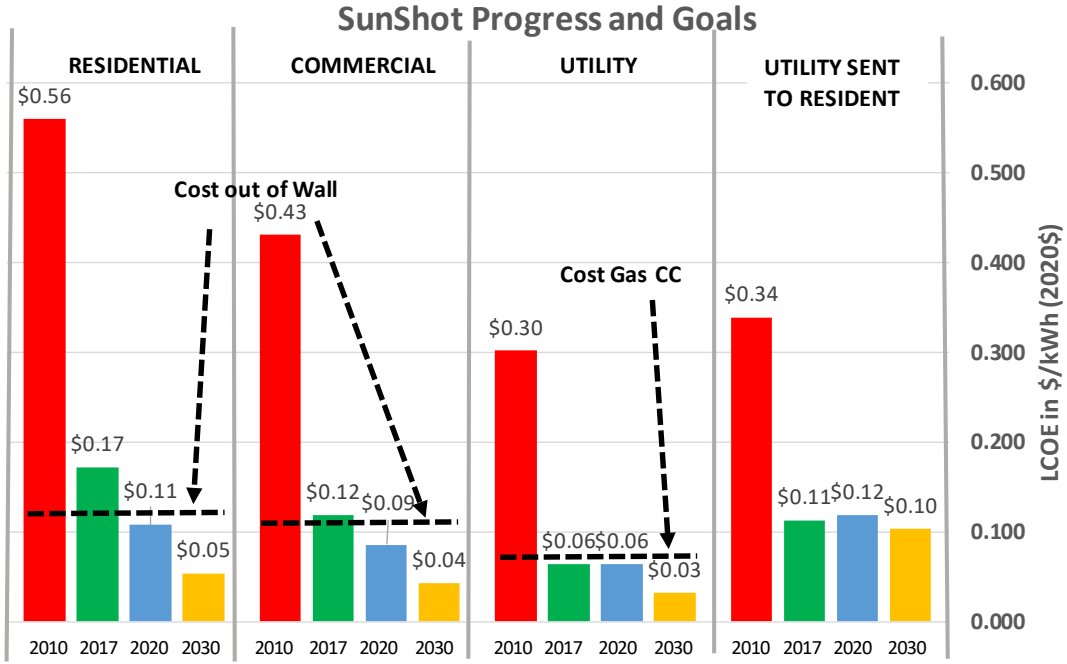


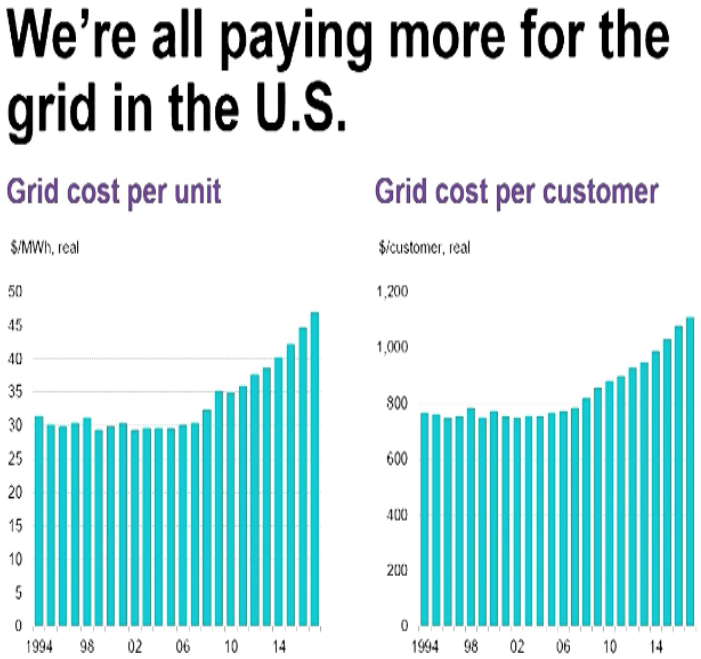
Source: BloombergNEF

- **SunShot** Initiative, 2011
- Greater electrification, clean electricity, and energy storage
- Decarbonization technology – hydrogen, carbon capture/storage or nuclear
- Role for bioenergy, recycling, efficiency improvements and carbon removals
- **Energy Earthshots**, 2021 (Hydrogen ($1/kg), Long Duration (10+h), Carbon Negative)


THE SCALE OF GLOBAL CHANGE IN SKY IS UNPRECEDENTED
Energy systems CO_2 emissions, Gt per year
40
30
20
10
0
-10
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
First few countries to reach net-zero emissions
All regions meet net-zero emissions
Last countries to reach net-zero emissions
Global electricity consumption reaches 35,000 TWh/year, having risen close to 50% over the past decade
Paris Agreement ratified
Global liquid fuel demand for passenger vehicles goes into decline
Accelerated investment in low-carbon energy quadruples solar PV and wind capacity to 5,000 GW total
First intercontinental hydrogen flight
Solar PV passes oil as the largest energy source
Majority of trucks powered by electricity or hydrogen
Global energy systems at 1000 EJ per year (double 2010)
Hydrogen at 10% of final energy
Biofuels overtake oil as the biggest component of liquid fuels
850,000 10 MW turbines
Governments reach a common understanding as to the appropriate level of the cost of emissions
$
CO_2
Global cumulative storage of CO_2 passes the one Gt milestone
India leads the world in solar PV
CO_2
India and China each reach one Gt CO_2 per year stored
CO_2
CO_2 storage reaches 12 Gt per year
Net deforestation comes to an end
Action plans developed in C40 Cities targeting net-zero emissions by 2050

Rooftop Solar Has Lowest Cost

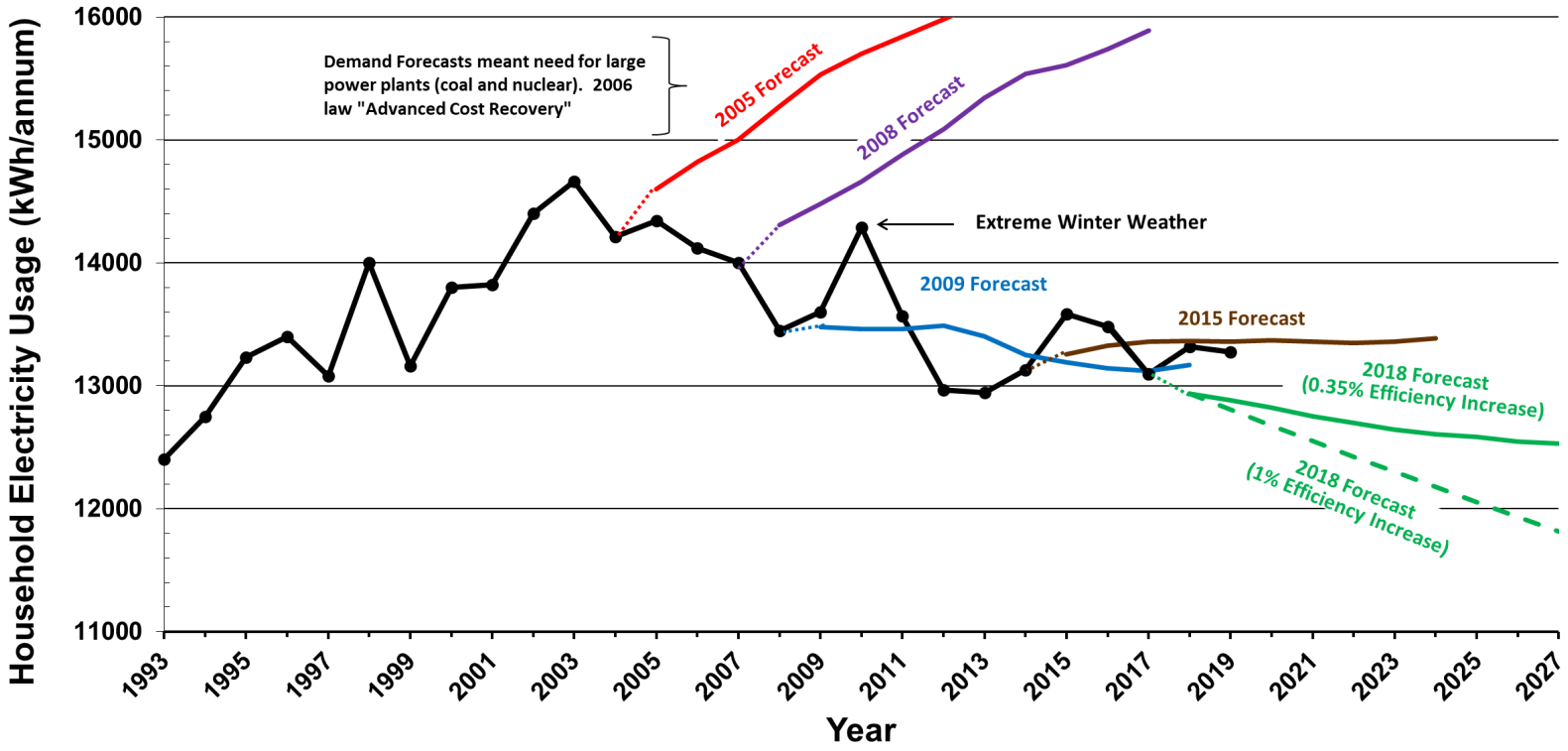




- 2020 Rooftop solar is less expensive than electricity out of the wall and less expensive than utility solar transmitted and distributed to the customer through the wall.
- 2030 Rooftop solar supply is half the cost of electricity out of the wall and half the cost of utility solar transmitted and distributed to the customer.
- When utilities add power plants the customers pay more (shareholders win)
- When customers add solar on their roof customers pay less (residents win)

Florida Utility Forecasts Show Lots of Utility Solar
Residential Energy Efficiency Improvements and Customer Owned Solar Forecasts Are Missing

State of Florida: Energy Consumption per Household
(In 2019 9,178,136 Residential Customers used 53.9% of the electricity = 121,825 GWh)



Attachment 3

State of Florida

Public Service Commission

CAPITAL CIRCLE OFFICE CENTER ● 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: July 7, 2022

TO: Braulio L. Baez, Executive Director

FROM: Jacob Imig, Senior Attorney, Office of General Counsel
Lee Eng Tan, Supervising Attorney, Office of General Counsel
Tom Ballinger, Director, Division of Engineering
Judy Harlow, Director, Division of Economics

RE: Review of Florida Power & Light Company's Ten-Year Site Plan

CRITICAL INFORMATION: Please place on the July 12, 2022 Internal Affairs.
Commission direction is sought to open a docketed proceeding

On April 1, 2022, Florida Power & Light Company (FPL) submitted its Ten-Year Site Plan (TYSP), which includes a "significant change" to the analyses performed as part of the annual planning process. Specifically, FPL developed a novel hybrid winter peak load forecast approach to replace a long-standing approach that is consistent with industry practices. The novel hybrid winter peak load forecast approach is the only known method of its kind in the industry. FPL is proposing a shift from modeling its expected winter peak using accepted statistical techniques and twenty years of historical weather data to using a single year, worst-case-scenario assumption for planning purposes. If FPL's novel approach is accepted, it is reasonable to expect that other Florida utilities may adopt a similar approach. FPL has thus far provided no substantive support or justification in response to Staff data requests regarding the need for the novel hybrid winter peak load forecasting approach. Based upon Staff's initial review, and comments provided by parties, both at the June 1, 2022 Commission Workshop and in post-Workshop comments, Staff seeks Commission direction to open a docket to conduct a formal review of FPL's novel hybrid winter peak load forecasting approach and afford interested parties a point of entry. The following background and analysis addresses Staff's recommendation in greater depth.

Cc: Keith Hetrick, General Counsel
Apryl Lynn, Deputy Executive Director, Administrative
Mark Futrell, Deputy Executive Director, Technical

History

Pursuant to Section 186.801, Florida Statutes (F.S.), each electric utility submits to the Public Service Commission (Commission) a TYSP which estimates its power-generating needs and the general location of its proposed power plant sites. The TYSP is submitted and reviewed not less frequently than every two years. Pursuant to Section 186.801(2), F.S., the Commission conducts a preliminary study of the utilities' plans and classifies the plans as *suitable* or *unsuitable*. This information is then provided to the Department of Environmental Protection for consideration in subsequent electrical power plant certification proceedings. The statute also recognizes that a TYSP submitted by an electric utility is tentative information for planning purposes only. To fulfill the statutory requirement contained in Section 186.801, F.S., the Commission adopted Rules 25-22.070 through 25-22.072, Florida Administrative Code (F.A.C.) in 1997. Rule 25-22.071, F.A.C., requires the Plan to be filed annually, by April 1 of each year.

The informal, non-binding nature of the Commission's annual review is premised on the use of well-known and tested forecasting methodologies, which are consistent with industry-wide practices used in generation planning. Utilities have, over time, made minor adjustments to load forecasting assumptions based upon observed phenomena and statistically significant data that has been reviewed by the Commission and Staff as part of the annual, informal TYSP process. Despite the informal nature of the TYSP process, the assumptions and methodologies of a utility's planning process establish the foundation for decisions regarding the prudency of future investments and expenses that affect the cost of service borne by customers. The generation planning processes annually conducted by Florida utilities have routinely resulted in the identification of new generation resources to ensure adequate and reliable service, because of the growth in customers to the state and the eventual need to replace or modernize existing generating facilities.

Background

FPL's TYSP includes two resource plans this year: the "Business as Usual Plan," which follows historic industry-wide practices to estimate peak demand, and the "Recommended Plan," which deviates from established industry practices.[1] The Recommended Plan uses a novel hybrid approach to winter peak load forecasting that is intended to address the effects of potential extreme weather on the utility's ability to reliably meet customer energy needs. While both plans result in new generating capacity additions to maintain adequate and reliable service, the Recommended Plan results in significantly greater additions of new capacity to meet the increased winter peak demand. There are also immediate impacts of FPL's change to its winter peak demand forecasting approach that affect the cost of service. In its TYSP, FPL explains its decision to delay the retirement of Manatee Units 1 and 2, Gulf Clean Energy Center Units 3 and 4, and Lansing Smith Unit A, and to retain these five units for use only in extreme cold winter conditions. FPL also entered into two short-term firm capacity purchase contracts for the winter of 2022 for the purpose of meeting the extreme winter peak load forecast. The costs of these contracts are at issue in the Fuel and Purchased Power Cost Recovery Clause (Docket No. 20220001-EI). FPL is also proposing, in its pending Storm Protection Plan (Docket No. 20220051-EI), to implement a new Transmission Winterization Program and a new Distribution

[1] FPL's "Business as Usual Plan" was filed in response to Staff's request in order to establish a baseline and to provide a comparison of the results of the two plans.

Winterization Program to upgrade the capacity of certain existing critical transmission and distribution facilities to better meet the forecasted increase in demand associated with an extreme cold weather event. The novel hybrid winter peak load forecast approach thus has broad and wide-reaching effects, and as such, intersects with other current docketed matters.

The Novel Hybrid Approach

An electric utility's peak demand forecast informs the utility and the Commission of the adequacy of existing resources and whether new resources are needed, including the capacity and timing of such additions. FPL has traditionally followed the industry-wide practices in estimating its future peak demand based, in part, on actual weather over the preceding twenty years. The utility uses this historical data and accepted statistical techniques to develop models that can be used to project the winter and summer peak demands for each year in the planning period. These forecasting techniques have been developed in a statistically sound, deliberate manner and similar models have been consistently used by FPL in all its previous planning analyses that result in its annual TYSP. FPL has traditionally assumed that its forecast of future peak demand will have an equal probability that the actual, observed peak demand is higher or lower than the forecast (50 percent chance of being higher and 50 percent chance of being lower). However, following the effects of 2021 Winter Storm Uri in Texas, FPL developed the novel and untested hybrid winter peak forecast approach currently proposed. This approach estimates January peak demand based on temperatures experienced during the extreme cold weather event in Florida in late December 1989 and applies these weather conditions to FPL's system load shape from a single extreme cold weather event in 2010. Using this approach, FPL's winter peak demand forecast increases by 43 percent over the forecast from its traditional approach. FPL is proposing to incorporate the temperature impacts from 1989 in all future load forecasts as part of its TYSP and intends to have sufficient resources available as if this weather scenario were to occur every January. If FPL's novel approach were accepted, it is reasonable to expect that other Florida utilities may adopt a similar approach.

Workshop Comments

Public comment was provided orally at the June 1, 2022 Commission Workshop and written comment was filed subsequently on June 15, 2022. OPC posited that FPL's Recommended Plan was not consistent with historical growth assumptions, that the utility provided no evidence or probability analyses showing why the novel hybrid load forecast planning was needed, and that there were due process concerns due to lack of notice regarding effects on FPL customers' substantial interests. SACE and Vote Solar noted in written comment that FPL's winter peak load forecast is not the industry-wide practice and is not used by any other utility in the country. FPL customers also submitted written comments, most of which concerned increased rates, and claimed much of FPL's winterization plans to be unnecessary because the winter event FPL based its projections on was unlikely to occur. All of those in opposition argued that the Commission should find FPL's Recommended Plan unsuitable.

Analysis and Recommendation

Staff believes a formal proceeding would afford the Commission an opportunity to more fully review FPL's novel hybrid winter peack load forecast approach. Section 186.801, F.S., does not provide a point of entry for such untested concepts, and therefore, is not sufficient to

address other parties' concerns with the lack of sufficient support regarding FPL's novel hybrid winter peak load forecast approach. Staff agrees with FPL that the novel hybrid winter peak load forecast approach is a "significant change" to FPL's TYSP process. However, FPL has thus far not adequately supported the new approach with substantive data and information in response to Staff data requests and in response to questions at the June 1, 2022 Commission Workshop. The Commission has not fully reviewed the assumptions made in FPL's novel hybrid winter peak load forecasting approach. Further, the novel hybrid winter peak load forecast has resulted in decisions regarding the retirement of existing units, and costs and programs pending Commission decisions in other dockets outside of the TYSP. Staff is concerned that FPL's untested planning approach would be implemented by Commission review in a piecemeal manner in other dockets without the ability to review the totality of the impact of the planning methodology. Staff believes that opening a docket allows for a full review of the hybrid planning approach and provides FPL with the opportunity to offer substantive support and justification for its deviation from industry practice.

Section 186.801, F.S., allows the Commission to determine the suitability or unsuitability of a TYSP through an informal process. However, it appears that the "significant change" to FPL's TYSP process with its novel hybrid approach necessitates a formal evidentiary vetting as a precursor to consideration of FPL's Recommended Plan. In essence, it is the novel winter peak load forecast approach that could result in additional generation facilities and operating costs that could place upward pressure on retail rates over and above those facilities and costs resulting from traditional planning approaches, ultimately affecting the financial and reliability interests of FPL customers. Therefore, a formal process to review the novel winter peak load forecast approach is appropriate prior to the informal review of the Recommended Plan under Section 186.801, F.S. Under *Capeletti Bros. Inc., v. State, Dept. of Transportation,* 362 So. 2d 346, 348 (Fla. 1st DCA 1978), when an agency affects the substantial interests of a party through informal means, the agency must provide a clear point of entry to a formal evidentiary proceeding under Chapter 120, F.S. Due process requires that FPL's customers be given notice and an opportunity to be heard about the "significant change" to FPL's planning process.

Therefore, Staff seeks Commission direction to open a docket to conduct an evidentiary proceeding under Sections 120.69 and 120.57(1), F.S., to fully review FPL's novel hybrid winter peak load forecasting approach. Any party substantially affected by the process change in the FPL Recommended Plan would have an opportunity to intervene and vet the change to the planning process. If the Commission directs Staff to open a docket, Staff will continue its review of FPL's Business as Usual plan, which is based on forecasting methodologies consistent with industry-wide practices, and defer review on FPL's Recommended Plan as part of its annual TYSP review process.

III. Supplemental Materials for Internal Affairs

Note: The records reflect that there were no supplemental materials provided to the Commission during this Internal Affairs meeting.

IV. Transcript

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

PROCEEDINGS: INTERNAL AFFAIRS

COMMISSIONERS PARTICIPATING: CHAIRMAN ANDREW GILES FAY
COMMISSIONER ART GRAHAM
COMMISSIONER GARY CLARK
COMMISSIONER MIKE LA ROSA
COMMISSIONER GABRIELLA PASSIDOMO

DATE: Tuesday, July 12, 2022

TIME: Commenced at 9:30 a.m.
Concluded at 10:38 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: DANA W. REEVES
Court Reporter and
Notary Public in and for
the State of Florida at Large

PREMIER REPORTING
114 W. 5TH AVENUE
TALLAHASSEE, FLORIDA
(850) 894-0828

P R O C E E D I N G S

CHAIRMAN FAY: Good morning. If you could grab your seats we will get started. All right. Thank you.

First, as usual in our internal affairs I want to recognize our Employee of the Month for June. It's Chris Richards, who works in our cost recovery section. Chris does a number of different things as a team player in that section, but he's been the lead analyst on several staff-assisted rate cases, and has used those cases to help train others. On his own volition, he's compiled some databases and various financial operation metrics that are used in utility rate cases. And, interesting enough, Chris is a veteran. He came to us after some service in the Air Force in serving as an air traffic controller. And he would not say if dealing with us was more difficult than air traffic control operations, but his background, I think, is really valuable to us. So with that, we'll just recognize -- Chris is not here today, but we'll recognize him as our June employee of the month.

With that, we will move to our first report, which is the report on the status of competition in the telecommunications industry. You're recognize

Mr. Wooten.

MR. WOOTEN: Chairman Fay, Commissioners. Good morning. Eric Wooten with IDM. Item number one is a draft of the 2022 report on the status competition in the telecommunications industry. Report shows that, consistent with previous years, the wireline market continues to decline, market shares remain relatively stable, and consumers continue to transition to wireless and business VOIP service. The report must be submitted to the legislature by August 1st and staff is seeking your approval to do so, as well as administrative authority to make minor edits, if needed.

Staff is available for questions.

CHAIRMAN FAY: Thank you, Mr. Wooten. Let me check with our Commissioners to see whether we have any questions.

I just had one quick question for you. On page 35 you've got a note in there about the rate that was set in that July meeting. You'll see it's flagged in the report. Do we update to include that information? Do we need to give you authority to update it or how's that put in there?

MR. WOOTEN: Yeah, I think that we do add this before we submit it. And -- yeah, 10 cents is what

the rate ended up being.

CHAIRMAN FAY: Great. Okay. So we'll just accept the report and then you'll make that -- you'll input that for the change to the final version?

MR. WOOTEN: Yes.

CHAIRMAN FAY: Okay. Great. With that, with no questions, thank you, Mr. Wooten. Appreciate it.

MR. WOOTEN: Thank you.

CHAIRMAN FAY: Commissioners, next we will move to our presentation, which is attachment two in your folder from Mr. James Fenton. Mr. Fenton, we'll give you a minute to get set up there.

MR. FENTON: Good morning.

CHAIRMAN FAY: Good morning. Mr. Fenton, I can tell from your tie that this is going to be an energetic presentation this morning, so --

MR. FENTON: I was told by an elected official in Florida, that if you could bottle the hot air that comes out of me, we could solve Florida's energy problem, so -- yeah, I've been told I'm full of hot air.

So I appreciate the opportunity to speak with you today. Not only will I talk to you about FSEC,

or the Florida Solar Energy Center and its relationship with UCF, but also its role with the legislature. But I want to look forward into the future as to where we're going. All the business models when it comes to making or using electricity are going to change completely as we move forward in the future. And with all that, there are opportunities.

The Florida Solar Energy Center was founded in 1975 by the Florida Legislature, who were created to test and certify the solar thermal hot water heaters, people were putting on their roofs. There was no UL at the time for that kind of application. Not only did we certify that the pieces of equipment actually worked very well as planned, this will be both pool heaters as well as domestic hot water heaters, but also that their installation was done properly. So line drawings and all this were -- had to be approved and were certified through us.

As we moved into the future, and we will be celebrating our 50th anniversary in the year 2025, we expanded not only from solar thermal, but in the solar photovoltaics, PV, solar to electricity, in all types of applications -- and I'll give some of

those to a little bit later -- high-performance buildings. Florida uses most of its electricity, about 90 percent of it go to buildings.

Sustainable transportation. I've got a picture up there of a school bus, but I envision that we probably, in five to ten years, will have nothing but electric vehicle school buses running around in the state of Florida. There are currently 18,000 of them that are running around today. Mobile batteries that can be used for storage in the future when they're not being transporting students, you will see a lot of this sort of interesting interaction.

There is storage, particularly as we're adding more renewables onto the grid. This can be both at the utility level as well as at the customer level. And then there's all this energy systems integration; buildings, smart buildings, electric vehicles, bringing all these things together. And then education and training, both at the K-12, as well as the workforce, and then there's policy. So we're active in all these areas.

The vision was to promote the rapid transition to sustainable energy economy, renewable energy, energy efficiency, and sustainable transportation

research, demonstration and education. Our mission is to develop research and evaluate energy technologies that enhance the environment and economy and transfer the results to the public, students and practitioners.

But what's the vision for Florida? As I'll show you, we spend a lot of money buying primary energy. These are things like oil, coal, natural gas, even the nuclear fuel rods. Okay. None of which are made in the state of Florida. So we effectively ship a lot of money out of the state of Florida to get the energy that we need to make our life go 'round. As we're switching more and more to locally made energy, which has no cost in its primary fuel, the sun, okay, we've got to use that in a wise fashion because clearly the sun doesn't shine all the time.

Building Energy efficiency improvements, as I said, 90 percent of all electricity is used in our buildings, but clearly making buildings more energy efficient is key. The utilities, as I'll show, are building solar out like crazy here in Florida. Rooftop solar is moving up. Both of them need to move four times faster and we need to stop arguing about who owns the solar and make sure that Florida

covers itself with solar. Energy storage, because the sun doesn't shine, and then electrification of our transportation, and the intelligent use of those vehicles to provide energy for other activities.

When we get higher and higher down that path of higher renewables, and if we wanted -- the goal might be to get to net zero emission, or it'd be 100 percent renewables, i.e. keeping all the money in the state of Florida, we start running into things like aviation fuels and how do you make renewable aviation fuels, or high speed and more electric trains. It's a shame that I have to fly to the state's capital by leaving the state to get here. Okay. If you gave me a high speed train, I'd be here in a hurry. So, like to do that. And then we'll talk a little bit about hydrogen and where that role is into the future.

A lot of energy is -- involves partnership. It involves everybody, consumers, energy building providers, electric utilities, manufacturers, associations, and government. These are the list of many of the members that serve on our advisory board. So you can see that we have a lot of Florida companies, but some companies that also

reach outside the Florida and, of course, to the state's Energy Office, which is in the Florida Department of Agriculture and Consumer Affairs, we have associations and government involved.

These are our current funding sources. Predominantly, we get about 3 million dollars a year in funds that initially came from the state directly to FSEC, now being part of UCF, which we've been for some long time. We get 3 million dollars. From my perspective, unfortunately, that budget hasn't changed in 20 years. I still get 3 million dollars. Okay. My payroll is close to 8 million dollars. So most of the researchers that work at our place, mostly are supported on federal Department of Energy funding, through the Department of Energy, Renewable Energy Efficiency Office, buildings, technologies, solar vehicle offices, and so forth. But there are fundings directly from national labs, several businesses, partnerships with other entities that make up our source of funds.

We do lead the nation in floating solar. I do want to point out that that's a tremendous opportunity for the state of Florida. We have more manmade bodies of water acreage wise than any other

state in the United States. So how can you use solar energy floating on water, ensuring that the water quality is all there, and then get the electricity out of those bodies of water and do that in a cost-effective way? We have the largest number in the nation, so we got to work on that. We're actually leading a team, which includes the National Renewable Energy Lab, looking at what the effect on aquatic diversity and so forth is. And the interesting thing is, of course, the water pools have panels, and the panels are more efficient if they're cooler than if they're hot.

Energy resiliency also shows up. So the coupling of PV with energy storage is an opportunity. And through the state of Florida, we lead the country, once again, in that we have over 115 K-12 schools that also act as emergency shelters, of which we have 10 kilowatts of PV and lead acid battery backup. And this started in the 2002 time frame, where we were putting just small numbers of PV on various schools. All the data is made available for the students and they're able to calculate those and do the appropriate math homework associated with renewable energy on their own schools and look at how they can compete

against other schools. Over the last several years, with the help of FDACS and Department of Energy, we've been replacing batteries and upgrading inverters or other needed repairs. One of the goals for the state of Florida is that every emergency shelter should be able to survive a hurricane with enough renewable energy there. We can argue who owns it, who takes care of it, but that should be a goal. This is nice in that we do, indeed, have these units operating during hurricanes, through hurricanes. Okay. But 10 kilowatts of PV is kind of ballpark what a house uses, not what you need for an emergency shelter.

A lot of K-12 education activities. This is photos of various things that occurred at our energy whiz. You want to go watch a cute three-minute video? That link is there for you. It shows about the activities the students get engaged through. So the upper left is a solar energy cook-off. The students actually make -- build their own solar cooking oven and then they prepare a meal and then we have judges that do food tasting and presentation and so on so forth. And that's like their third through high school.

Energy Innovations, the middle one at the top

there, involves where we give students a PV panel and they figure out what to do with it. Okay. The junior solar sprint, are for the smaller car races, where they build a small car, and then race those for various students. We typically get on the order of 400 to 800 students competing in this throughout the state. We've -- not only do we have the major event in Cocoa, but we have regional events up here as well.

Lower left is the critter comfort cottage. Build an energy efficient critter comfort cottage, energy transfer machines, and then even the electrothon, battery-powered go-karts.

As I'll show you, solar is increasing in Florida substantially. I'll give you those numbers. But we're very proud of the fact that we've created in Florida the nation's first solar energy apprenticeship program. As I'll show you, solar energy jobs are growing like crazy. Okay. And as we add more and more renewables, we need to get the workforce. This is not the traditional university bachelor's, master's, PhD. This is your two-year degrees. So I'm hoping that the universities in the state of Florida partner with our community colleges and whatnot and have a very

good technician kind of education associated with solar electric vehicles and whatnot. As we grow in these areas, we'll be having a supply chain problem with our workforce.

Okay. Now, let's talk a little bit about where we are and where we need to be. It's a busy diagram. It's called the Sandkey diagram or an energy transfer diagram or whatnot. But over on the left side, those are the sources of primary energy. You can see that natural gas, coal and petroleum are the bulk of what we use to make things happen. You can see that we spend -- in the lower left there, the 37.6 billion dollars on primary fuels. You know, there's 35 billion of that is transportation fuel.

And then you can see in the upper orangish colored box there, which the area that you regulate, the solar, the natural gas, the coal feeding into making electricity, we take that energy and we turned it into 25-billion-dollars-worth of electricity, in processes that are 39 percent efficient. While the combined cycle of natural gas turbine is 60 percent efficient, there are a lot of other power plants that aren't as efficient. Right. And then,

likewise, that electricity, or maybe even the primary-source energy is fed to our residents or commercials, our industry, or our transportation.

And you can see that the buildings, that the residential and commercial are pretty efficient. They're 65. We can do a lot better. Industry's at 49, but, to be honest with you, transportation stinks in lots of ways, unintended. Twenty-one percent efficient. Or another way to look at it is we spend 63 billion, the 37.6 on primary fuels, and the 25 billion on electricity, and we waste 73 percent of it. I mean, it's just hideous if you want to look at that. That's Florida money that, unfortunately, we ship out of the state most of it. Okay. And we buy this product, and then we waste it. So, clearly, we need to do much better when it comes to using our energy more wisely.

I do want to point out some interesting things here. The Florida -- 54 percent of Florida's electricity is used in our residences. As you can see here, that by far and away, we're the biggest electricity hogs in our homes. Now, we have a lot of homes, but this is per home. So you can see here that we have a high percentage of electricity. So the opportunity to save and the best kilowatt

hours, the kilowatt hour you don't use, is we got a lot of room to work on our homes. We actually did this during the foreclosure period of time in Florida when there were a lot of homes on foreclosures. The banks actually reached out to us and had us do energy audits on several of their homes, and then they contracted us to go ahead and make those energy-efficiency improvements. So this is somewhat 10-year-old data, like, but you can see on the graph in the lower left, I have something there, it's called the Home Energy Rater Service Index. We can grade homes, much like we do the yellow appliance stickers, you have on your homes, and you can make improvements into those homes, which then lower your electric bill.

And so you can see there with all those blue bars from the 1950's houses to the 2000 houses, that we were able with these cost-effective measures, the return on investment is relatively quick, get down to the point where it's got the same, if you will, energy footprint of a brand-new home, okay, in the ballpark 80's. A net zero energy home would be zero. Okay. So you can make efficiency improvements. Okay. And they are cost-effective to the homeowner.

Okay. Let's talk about the landscape when it comes to utility energy. In 2009, nobody in their right mind would put a solar panel anywhere. You can see here that it was $359 a megawatt. That's the equivalent of 36 cents a kilowatt hour. You can see that I've got the gas combined-cycle in the sort of green color. I realize this is a very busy slide, but I just want to show you that the natural gas combined cycle-power plant been cheaper than coal for quite some time. It's down there at the bottom, but you can see that solar crossed over with the utility-equivalent cost. And this is the levelized cost of electricity in the year 2015.

You'll notice that the gas peaker in 2021 is $173 a megawatt, or 17 cents. So an electric utility does not want to turn on a gas peaker if it can, because it's selling electricity to customers at 12 cents. That's the last thing they want to turn on, but you can start to see then with solar-plus-batteries that we can start replacing gas peakers, and the utilities are starting to do that.

Okay. Now let's talk about who owns the solar. Okay. That's what the battle is about. The real battle should be that Florida needs to be

putting solar way more than anywhere else. I still would like you to do efficiency first, but I want to show a point -- a point here. If you look at the -- I've four columns of graphs, the residential, commercial, utility, and then utilities sent to the resident. If we look at 2010, you can see that on the residential column, that the red bar is substantially more expensive than the cost out of the wall. Nobody in their right mind would put solar on their roof.

2017 -- and this is without income tax credits, no subsidies, no nothing. You can see in 2017, it dropped down to 17 cents, and you can see that we've -- we crossed over as residential customers in about 2018, 2019. It's actually cheaper than buying electricity out of the wall. And in 2030, it's expected to be about five cents a kilowatt hour.

Commercial is similar. Commercial's cost out of the wall, of course, has demand charges and a few other things, and their scale is bigger and so they -- they have less costs. And then the utility was 30 cents, too expensive in 2010. But in -- as I showed earlier, about 2015 they crossed over with the cost of a gas combined-cycle plant. And it's

sort of leveled out. And the anticipation is it'll cost three cents.

So it is true when our utilities say that we can make solar cheaper than you can, that is true. Economies of scale do, indeed, work. The real question is, what's the price for the utility to ship you that solar? And you can see the utility sets a resident price, okay, which has to include the transmission, the distributions and all those other costs associated with it. You can see that in 2030, while the utility making solar will be at three cents a kilowatt hour, it'll cost you 10 cents to ship it to you. You can make it yourself for five. So, yes, we have to figure out business models to make this solar thing work.

Here's some numbers. These are new. These are based on the end of 2021. Over on the left columns -- bars there, you have the cumulative PV capacity. So that's utility plus distributed generation. And you can see that Florida is in third place. It works based on population to some degree. Okay. California, Texas and Florida. You'll notice that the red lines are the actual utility over on the left. You'll notice where our place is over to the right. Okay.

One of the other interesting things that you've noticed, and I've always been hesitant to talk about California in Florida, because I always get in trouble when I do that, but if you'll notice to the left, the Florida total, six gigawatts solar is less than what California has on its rooftops. So rooftop solar does work. And, in fairness, we are growing considerably at the utility scale.

Over to the right you can see, though, that New York, New Jersey, Massachusetts beat us in residential solar. Now, it's not because they have more sunshine than us. In fairness, their electricity prices are much higher. In fairness, the utilities in Florida have done an outstanding job of keeping our electricity prices low. Okay. And so the transition in New York and New Jersey occurred much faster than it's occurred in Florida. But our growth numbers in both areas are outstanding, and we should pat ourselves on the back. We still have a long way to go.

These are the current numbers I have on job installations. Now, this 2019 between the pandemic and other kinds of things, it's hard to get these numbers, but the one of the -- a couple of key things. PV installer is the fastest growing job

occupation in the United States. That still is, and it's growing like crazy in Florida, hence the need for the apprenticeship program. In 2017, the median pay. These weren't ditch diggers. These are people that get up on your roof and have to really think about what they're doing every time. Every installation on a roof is a custom installation.

In Florida in 2019, we had 10,000 solar state jobs. We were number one in new solar jobs, and we had a 20.6 percent growth rate. Now we have 7,450 installation jobs. I do want to point out, all those jobs are on the roof. You'll see here that there's only 89 that were utility scale jobs. Okay. So maybe the more important story on rooftop solar is the jobs. Okay.

Now, it turns out that we actually do manufacture solar and solar thermal hot water heaters here in Florida, and we're ninth in the nation in that. So that's pretty good when it comes to manufacturing. So there's a lot of opportunity in both the solar growth at the utility and residential, as well as all the job opportunities that go with that.

Talk about storage a little bit. Storage is

very confusing in a lot of ways. Okay. When we talk about power plants, we typically talk about what's on the x axis there, megawatts, 100 megawatts. Okay. Our nuclear power plant, 1,000 megawatts. And if you assume it runs 24 hours, you can then figure out how many megawatt hours you want. Okay. With storage, of course, there's the power, but there's also the energy, or in the axis I've got here, why -- how long it lasts.

So, as an example, a super capacitor can do a lot of power, but it can only do it for seconds. Lithium ion batteries can do hours. Okay. Flow batteries can go maybe a day or two. Your gasoline generator that you might use for your backup power, depending on how often you have to pour gasoline back into it, it'll keep you through days. And I've done that, unfortunately, twice in my lifetime here in Florida, that lost power for six days, ran my gasoline generator both times.

And then you're talking about if you want seasonal storage for weeks, well, pumped hydro, which literally pumping water up a hill -- other than Tallahassee, we don't have too many of those. Okay. So it's kind of a not a very good option for Florida. And the other option is compressed air

that you can store in the ground. Unfortunately, we hit water. Okay. So our only option really is hydrogen in the future. As we get more and more renewables, we'll have to start doing that. And I'll get into where the business opportunities are for that in the future.

But it's key to think about this as far as time, as well as power, and it's the same thing that works with the cars. Okay. The electric vehicles. Okay. We tend to think miles and range, but if you drive 60 miles an hour, you can figure out how much time you got, just as much as you can range.

Okay. Another interesting thing that's been happening is that even though there really truly is a business model for a customer to put energy storage in their house right now, we don't have time of use prices, okay, we do have net metering. Okay. So the people that are putting storage in are sort of thinking about the future, maybe a little bit of the resiliency, you know, maybe they want to be more in control of their energy, but Florida actually had two percent of behind-the-meter storage installation. And the DOE anticipates that Florida will be one of the leaders

in solar-plus-storage markets by the year 2026. So there's a lot more interest in this. Literally California wildfires, all those kinds of issues lead to things, but there are more and more people thinking that, and the costs have come down substantially.

So let's go back to that same graph I showed you earlier, it's the residential on the left, it's the utility sent to the resident in the middle there. And then the next plot shows the average residential home in Florida, which uses 13,000 kilowatt hours per year. If you put 9.5 kilowatts of PV on that home, that would be what's called a net zero energy home. They would, on average, not buy electricity from the utility. Still connected, of course. Okay. If you went out and bought a battery that could supply on average your daily electricity, storing it from the sun into your battery, in 2020 that would cost you then over the lifetime of the equipment, and proper economics and whatnot, 18 cents. Notice the price in 2030, though. If these forecasts are correct, the ability for the average citizen in Florida, 54 percent of them, residents, okay, to own solar and to own battery, then to have a backup system built

in will be cheaper than me buying solar electricity from the utility, where it's the wires that usually fall apart, not the solar. So business interests are going to change. The Income Tax Credit over to the right, you can see the prices even are better. So whether it's 2030, 2034, 2029, business models are going to be different.

Okay. Now, we're also working on utility storage integration at FSEC. So I actually have some pretty big batteries running around at FSEC. This is a photo of that. Close to two megawatt hours. Okay. We're working together with these five large battery pods. If you look in the diagram to the right there, you can see eight batteries, I think, in there. Each of those is about an electric vehicle battery. So I have 40 of these electric vehicle batteries in my building. Okay. We're doing this in a project with utility up in Maryland, because they believe that using these batteries is cheaper than them putting a substation in, but they're asking us to help with all the controls as to how you move the electricity in and around. So we actually build it -- put this together in our facility, and then it will be transferred up to Maryland. Okay. So this is an

example of us working with utilities on that.

We're also working with a utility, Orlando Utility Commission, on hydrogen. That curve in the upper left is what you're going to deal with as a Commission. Okay. At least on a high ramp rate issue, as we get more solar penetration. That's actually Florida's curve today with a high ramp rate, as we add higher percentages of solar. We're at about five percent now. It's that first yellow line. But as you start seeing us move down that curve as we add more and more, you can see that we're turning off conventional power plants at around 8:00 in the morning, 50 gigawatts -- gigawatts is a nuclear power plant, by the way -- but 50 nuclear power plants, I'm going to turn off in two hours. Then I got to turn 35 of them back on two hours later in the evening. So you clearly need storage, and it has to be longer than eight hours. Lithium ion batteries are great for shifting the peak for four hours.

Over to the right, that graph there shows you -- oops. Switched the slide. How did they do that?

The graph on the right there is an actual solar field that OUC has when clouds come over. So

while that's six-megawatts-in-one-minute drop is due to cloud cover, the PV system was only 8.9. But you run into these situations where clouds arrive in Florida quite a bit, we have a good solar resource, but we got clouds, so there's fluctuations. So, once again, you need storage. And we're working on a project with OUC where we're actually using their solar fields, and they have their own power purchase agreements 75 -- of 75 megawatt solar fields, and the idea is to use the electrolyzer, which takes electricity from the solar, generates hydrogen and use that as a utility controllable load to smooth out those curves. Then we'll use the hydrogen for fueling and whatnot.

The other interesting thing is, so for the utility level, it's going to be about storage. I think at the utility level it would also be storage and will also be about using the energy storage in the batteries of our vehicles. This is an example of what buildings might do. You're going to have solar, you're going to have the grid, you're going to have home appliances. When you turn on home appliances, have too much solar energy, do I actually subcool my house, or do I put it in the battery, do I put in the car, or take it out of the

car. You're dealing with all these kinds of things. What's the roles of the utilities, what's the role of business and so forth in this sure future building energy innovation.

We actually have a project that's been funded by the DOE where we're actually looking -- this is a module, if you will, an add-on to a house as an example, where you have six PV panels, you have a battery, you have a heat pump, hot water heater, and a mini-split air conditioner. And basically that solar is not affecting the grid at all. All that solar electricity either goes into the battery, goes into making cool air, or goes into making hot water. And we can store hot water as a source of energy in the tank in the heat pump hot water heater. And so, in effect, this is a way to take away those loads off buildings, and, at the same time, add more solar to the grid without using any expensive storage. So there's a lot of interesting opportunities, and we're working on those.

I do want to point this out. This is something I think key to the Commission and anybody in the state of Florida. This shows you the amount of energy storage as a function of 2020 to 2030.

Let's look at the 2030 curve. You'll notice that in passenger vehicles, vehicles owned by customers, there'll be 24 times as much energy storage as the utilities will put out there. So in year 2030, all our vehicles will have more storage than the utilities are using. Now, I remind you, most of our vehicles sit still. So how do we go ahead -- and this would work out perfectly well with school buses and other things -- how do we go ahead and use that battery is a good asset to help with the grids and help with resiliency and how you're going to have to couple transportation with your buildings and your energy use in Florida? And what are the business models to make all that happen? It's going to be an exciting time. And you may be aware of the Ford F150 EV Lightning.

And, by the way, the gasoline equivalent price for Ford F150 EV Lightning today is $1.08 a gallon, electricity out of the wall in Florida. Just think about it. If you're happy enough with the Ford F150 that's way cheaper than your diesel or gasoline engine.

Okay. I'm going to finish up here with this -- good news/bad news kind of stuff about the future. This shows you a plot of where the world

is in the year 2019, with the composition of energy we use to make electricity. And you can see here that we've started with the wind and the solar and other types of renewables like hydroelectric. By the time we get to 2050, business-as-usual kind of money. No government regulation, just the way the economy seems to be going. We'll get to 69 percent renewables by the year 2050 in the world. That's substantial. Okay. That's a very good story.

Question is, is it enough? And this shows you a plot of where co2 concentrations are in the past and where we think they're going to be. It also shows where most of those co2 comes from. The power industries on the bottom there, followed by industry, transportation, and then buildings.

Right now, if we continue sort of with that business-as-usual model, we'll be at 2.2 degrees Celsius and warming. We want to get that net zero, or down to 1.5 degree warming, we have to move from 56 percent wind and solar to 84.5 percent wind and solar. And Florida doesn't have too much wind. But you can see -- now, from a money perspective, it's in our best interest to keep all the money in Florida, so we should be doing it anyhow. Okay. But we could really make a difference here if we

move forward with that.

Now, I'm going to finish up with this. This shows you that same slide on the left there with the wind and solar. You can see the year 2000, the world only had .2 percent. Today, it's 11.5, Florida's at four. Okay. But by 2050, if you're going to go down this path in the net zero world and whatnot, you're going to get the 84.5 percent wind and solar.

The graph on the right shows how much renewable-energy hydrogen we make today, and you can see it's at zero. By the year 2030, it's up to 30 percent. By the time 2050 comes around, 58 percent, the wind and solar is being used to make hydrogen.

So you can see there's a lot of interest in our electric utilities and the hydrogen game, and that's started to happen already within the last year. There's a lot of activity going on with this. You're going to have interesting opportunities as the electric utility industry. Okay. We'll be making electricity maybe a lot less than they'll be making hydrogen or being in charge of moving electrons around wisely.

So I conclude that with it's now cheaper to

save the climate than it is to destroy it. It's a good reason to save it. Thank you.

CHAIRMAN FAY: Great. Thank you. Mr. Fenton. Thirty minutes exactly. I don't know how many times you practiced that, but that was very impressive.

MR. FENTON: Yeah. Well, I was supposed to give you time for questions, too. I hope I still have.

CHAIRMAN FAY: You sure do.

Commissioners, we're happy to take any questions for Mr. Fenton.

Commissioner La Rosa, you're recognized.

COMMISSIONER LA ROSA: Thank you, Chairman. And, first, I just want to say -- start off by saying thank you. And we had a conversation last week. And you know what brought my attention to FFRF FSEC was the fact that it was working with University of Central Florida. As an alumnus of UCF, certainly proud that UCF is very much focused on technology, of course, here in the energy world is something that we pay a lot of attention to. So, thank you. I know you had to travel to it, to get in this morning. So certainly appreciate all the information. Of course, there's a lot you

threw at us, a lot of good, you know, takeaways that we can certainly use to research and continue doing what we do.

Question for you on slide 20, specifically, you had the charts there of solar rooftop. Slide 20, I think it is. Yeah, the rooftop solar and you're showing how it's, you know, as it's lower cost from 2010 to 2017 to 2020.

MR. FENTON: Yeah. I know the one.

COMMISSIONER LA ROSA: What's the biggest, I want say impact or, you know, the area of focus between 2020 and 2030 that really makes that price drop?

MR. FENTON: Well, economy of scale works -- with energy technologies, not ones that involve taking stuff out of the ground too much -- I mean, in fairness, PV does and all that. Okay. As you manufacture more and more, we increase in our manufacturing ability and the cost drive-down. So solar, these have what they call learning curves. For every time you double the numbers you make, the price goes down 20 percent, or something like that. And that's what's been going on. So most of it is just more and more manufacturing.

Now, there's tremendous opportunity, what I

call the soft costs. Okay. Market acquisition for customers, residential customers, there's a big cost associated with that. There's all the paperwork, every different region in the state of Florida has different paperwork that you have to fill out. So these costs here are mostly probably just due to the manufacturing size, just when the market gets big, costs go down, which you're seeing with electric vehicles, as well.

COMMISSIONER LA ROSA: Is it safe to assume that the reliability of solar panels and the product that's actually in the market today is maybe better than it was in 2017 and assuming better in 2030?

MR. FENTON: That's true. So your PV panels, utility wise or residential, typically have a 30-year warranty with them. That warranty will tell you that, you know, roughly a half a percent a year. So that would mean by the time the 30 years comes around, it's producing 87.5 percent electricity than what it used to do. Like I remind most people, the payback, if you want to look in the years, is usually about 11. So after year 11, you're getting free electricity. Well, you're only getting 87 percent of the free stuff you used to

get, you know, back then. So that -- the power electronics typically have to be replaced every 10 years. And when we do costs, we include all those replacement costs.

The interesting thing going forward with some of these things is, believe it or not, we're capable of a 30-year battery in your car, but since we've been pushing harder and harder on getting that range up, we tend to charge the batteries and run that at higher voltages, so I can get you as many miles out as you want. When we get to the point where the costs come down and we start making them longer, we're going to be having a 30-year battery. Well, when you go out and buy your electric car with a 30-year battery, who owns the battery? Is the bill -- does utility buy it the day you buy the car? How do we deal with the business models with that? I don't know. It's going to be a crazy future going through.

But these costs have come down, where conventional power plants, the costs go up, transmission lines and everything else. And so how do we use all this equipment wisely and integrate it in a way? I honestly believe the utilities are going to have to measure an electron bit with every

electron. And so, yes, these costs will come down. We can argue how fast -- by the way, in Germany, their labor force and everything else is more expensive than ours, but their cost to put solar on the roof is about half because they've gotten rid of all the soft costs. There's one two-page form you fill out for the whole country of Germany. We have multiple page -- multiple jurisdictions also. I think we can drive costs down, and we'll continue to do that.

COMMISSIONER LA ROSA: You mentioned -- and I don't remember -- I didn't mark the exact slide, but you talked a little bit about floating solar. I had the opportunity recently to go down to check out a floating solar site there at TECO in the Tampa area. You mentioned that Florida would be a, you know a great landscape for solar because of our because our bodies of water, lakes and oceans and so forth. Where do you see, or have you been able to kind of quantify where the best locations are as far as -- is it lakes, is it retention ponds, you know, controlled bodies of water?

MR. FENTON: We -- they have done that. Okay. The more important issue you've got is that if the utility owns the solar, there's that aspect of it

from a utilities perspective, and like transmission lines nearby, and so on and so forth. Okay. So it tends to be not only the aquatic life and everything else, but if I make this electricity, depending on how size it is, where do I transport it, use it -- of course, a lot of water bodies don't have loads nearby. Okay. And so if a customer owns it, or a city owns it, or a government owns it, the way the rules are set up now, I have to offset my electric load. Okay. So you're going to have to figure out the business model to make that all happen. And I don't know the answer to that. I've got my opinions. Okay.

Because a lot of water bodies that can make electricity. I mean, we could argue that the goal is to build them and keep the electricity local and use it somehow and -- but who's in charge of doing that? Who owns it, all this and that. As water bodies are where water bodies are. Right.

There are issues associated with the wildlife, and so on and so forth, but there aren't gopher tortoises you have to move or these other kind of things. So I don't know how to answer that, but since we are number one, we should figure it out. And, in most cases, the solar is really -- the

future of solar is where's the free real estate.

COMMISSIONER LA ROSA: Regulations certainly always make things a little more complicated.

MR. FENTON: Yeah, unfortunately, it always is.

COMMISSIONER LA ROSA: I appreciate your presentation. You know, if I was to sum it up, I'd say this is that, you know, the next 10 years will look very different from the last 10 years. So thank you for the info. Much appreciated, of course what you've presented today, our conversations offline. So thank you.

CHAIRMAN FAY: Thank you. Commissioner Graham.

COMMISSIONER GRAHAM: Thank you, Mr. Chairman. Let's go back to that same slide that Commissioner La Rosa was looking at with the rooftop solar. I've seen other people talk about these numbers and predict these numbers. Your numbers seem to be a little lower. You said that they do not include any of the subsidies?

MR. FENTON: No, these do not include any of the subsidies.

COMMISSIONER GRAHAM: Does it include net metering?

MR. FENTON: Well, this is the cost -- yes, I guess it does include net metering. It depends, though. As an example, so my wife wouldn't let me put solar on the back of my house. Okay. So for me to be net zero, I'd have to have 15 kilowatts. I have five kilowatts. My five kilowatts through those numbers. I don't net meter because my wife stays at home and runs the air conditioner all day long and I consume all my electricity. So net metering is a vehicle we use -- this is the cost to make the electricity. Now, depending on if I put, you know, 15 kilowatts on my house, yes, I'd be net metering quite a bit. Okay. So I -- this is the cost of making electricity. Okay.

COMMISSIONER GRAHAM: Okay. So looking at your graph here from the utility scale solar to the utility sending to the resident, you're bumping it up roughly six, seven cents?

MR. FENTON: Yep. It was about four cents -- I have a plot of this that actually shows what the cost for utilities to transmit to the customers were. They were back 3.4 to four, for the previous 20 years, and over about the last 10 years they've been going up. And you're correct that in 2030, it's seven cents, and 2020 they're at six. So

those costs have been going up.

COMMISSIONER GRAHAM: So basically, the cost of the utilities are eating now through net metering is going to be roughly that same cost? Because if you're generating more electricity than you're using, you're sending it back to the utility --

MR. FENTON: Well, personally, we've been charging for electricity based on the volumetric use of that electricity. I wish that we switched around and didn't charge me based on dollars-per-kilowatt, charged me dollars-per-kilowatt for the energy generation, then charge me a fixed charge for the cost of the wires. We can calculate all that. We just chose to do that. So as an example, a snowbird doesn't pay for the wires the six months they're not in their house either.

So it gets very complicated to look at that. So net-metering-wise, that's the transmission and distribution costs that the average customer would pay on their electric bill, is what I've included in there. Okay. Whether they're using electricity or not, that's just the average cost. So clearly a customer who uses a lot more electricity is

probably getting a better value for those wires than a customer who uses little, but those are just the average numbers I've been using. I don't know if I answered your question.

COMMISSIONER GRAHAM: Of, you did. Thank you.

MR. FENTON: Now, if you used the batteries, of course, we don't have to worry about net metering anymore. And I'm telling you, by 2030, the batteries are in the game, too. So we'll have these battles over net metering, and we should. Okay. I think the most important thing is that Florida should stop shipping money out. I mean, I look at it this way, we have a pie tin with one piece of pie and we're arguing about whether customers should have crumbs associated with net metering. We shouldn't be arguing about does Florida needs to make 20 pie tins of pie and let's fight over it later.

COMMISSIONER GRAHAM: Well, it's funny. One of the things you mentioned earlier, talking about shipping costs out for the fuel that we're burning.

MR. FENTON: Yeah.

COMMISSIONER GRAHAM: You talked about nuclear -- nuclear fuel rods. I mean, for the most part, when it comes to nuclear energy, that dollar

amount is irrelevant.

MR. FENTON: No, I'm okay with nuclear. The only problem I have with nuclear is we're still waiting for Vogel to come online in Georgia and it just takes a long time to build it. There is a lot of talk in the hydrogen. I didn't go into too many details with that. But the idea that maybe we might have small nuclear reactors that actually exclusively make hydrogen, and that could be a possibility going into the future. You know, by 2040, 2050, yeah. Tomorrow, it's all about solar.

COMMISSIONER GRAHAM: But why aren't we doing more like they're doing, say, over in France overseas, where -- and I don't know -- I don't know the correct terminology, but if we go with the spent nuclear rods down to, we'll call it to a primary level, they'll go to a secondary and tertiary. But we normally get rid of it. They're still pulling energy out of it. Are we ever going to get to the point we start doing that?

MR. FENTON: Yeah -- we may. I use a slightly different analogy than you used on that. So if you took a football field. Okay. Describe the football field -- and I don't know the exact dimensions depth-wise, but when a nuclear reactor

gets decommissioned in Florida we take and dump all that nuclear stuff in a football field. Okay. France recycles, reuses multiple times, and so they'll get 10 nuclear power plants out of a single football field where we only get one. The reason we did that was because we're concerned about nuclear proliferation and the fact that as you enrich the ores, bad people will get it and make dirty bombs. Okay. We can argue where we are today and whatnot. Okay.

I am working with Southern Company which owns Vogel up in the Georgia area, and they're working on hydrogen like crazy, just like some of our utilities here in Florida. So, we'll see. I think we need everything. Okay. Fossil-free wise. Okay. We clearly don't have fossil-free energy there. We have some nuclear power plants that are still doing well, and they're upgrading those all the time on their heat. They're good baseload power plants. We'll see. It just takes a while to build one. And by the time we -- if we were trying to get to net zero emissions by 2050, I don't think we could build nuclear fast enough.

COMMISSIONER GRAHAM: One last question that -- that same sheet that we were talking about

the rooftop solar, can you get somebody to send me the calculations for that, for those graphs?

MR. FENTON: I'll be more than happy to give you the calculator. You can run it yourself if you want.

COMMISSIONER GRAHAM: Okay. Because --

MR. FENTON: These numbers -- the numbers that you see in the first three left columns are actually taken from the DOE. But when I did the battery calculations and went like that, you know, we take into account the solar resource and whatnot, be more than happy to share that with you.

COMMISSIONER GRAHAM: Okay. Thank you.

CHAIRMAN FAY: Great. Thank you, Mr. Fenton. I just have a few questions for you. The first being, obviously you're an advocate for solar overall, but do you guys look at the resiliency components to it at all? I mean, obviously, when you talk about the floating panels and residential panels and utility panel, there's always discussion of hurricane season in Florida and, you know, how does it withstand those things. Is that something you look at?

MR. FENTON: Oh, yes. Oh, yes. Oh, yeah. So -- and that's where I think -- so I'll try this

again. I hope I've explained to you that the cost of making solar energy has gone down for everybody. Okay. We're all winning with that. It's question of how you use it, whatnot. So if you choose to go ahead and put solar on your roof, hopefully you're more efficient. And the reason why I want you to be more efficient. Okay. While the solar is real cheap, the battery storage market, there is no business model for us. I don't make money by owning batteries in my house. I can make money on the solar, I can make money on the energy efficiency all year long. I don't make money on batteries in my house.

I myself went out bought a gasoline generator. I don't have batteries in my house. It's an insurance policy. I hope I never turn it on. Okay. But I wouldn't -- there's no business model. Net metering does work and so on and so forth. So why would I buy batteries?

Now, I haven't bought a Ford F150 EV Lightning either yet, of course I can't get one either, but you're going to start to see where the electric vehicles are cheaper than what I'm doing now. The solar is cheaper than what I'm doing now. And when I lose power, I've already paid for those two

assets. So I think Florida resiliency can happen at least in your residential or even in communities where you bring together the vehicles and the wall. So your electric vehicle always be plugged in. You may be buying or you may be selling.

CHAIRMAN FAY: Yeah. And I was thinking more towards like the resiliency of the floating panels like --

MR. FENTON: Oh, you mean, as far as when hurricanes come along, how the floating --

CHAIRMAN FAY: Yeah, you're looking at cost --

MR. FENTON: Yeah. Off the top of my head, I don't know the answer to that. I do know that there are several countries that have them in typhoon areas and things like that, they're actually even putting them out in the oceans. They tend to be anchored, kind of like a little bit like platforms, you know, kind of things, anchored to the ground somehow. So I don't really truly know that. We -- with the floating solar that we have it OUC, I think they rode out a hurricane with one of them and in some cases they may have brought them to shore, too. I just don't know the answer that. I can get that for you, though.

CHAIRMAN FAY: Okay. Yeah. I was just

wondering if it's something that you are able in some model to quantify, you know, what those replacement costs --

MR. FENTON: Right. Right. We have to do that -- and clearly we do that with wind and things like that, of course, with installations with PV. Okay. So, yeah, I just, off top my head, don't know the answer to your question, but I'll get it for you.

CHAIRMAN FAY: Okay. Great. And then the apprenticeship, I did look at the website that you guys have included there in the program, and I know there is increased demand in this sector. And I was fortunate enough to listen to one of the FCC commissioners speak and he talked repeatedly about the lack of trained individuals to build out the 5g network. And so it seems like with some advancements of technology, there is a lack of individuals to fill those. It looks like it's still a two-year program. Do you -- I mean, you speak of that as kind of being this expedited component of what folks could do to go into this field and there's a lot of jobs with it. Is that a -- is that considered, like, a quick version of being trained to install these?

MR. FENTON: Well, it is an apprenticeship program. So you get hired, you're an employee. Okay. And then during that period of time, you're being trained with the employer doing a reasonable amount of the hands-on training with you. As you go through it, then you do book learning and courses and things like that. So it's not two years of community college. You're still doing a 40-hour job. Okay. And then doing that on top of it. Okay. So we can argue with that's quick, but you're employed the whole time.

Now, we offer, as an example, week-long courses, which installers can take and then pass the NABCEP certified test, and you can do that in a week. Okay. So it sort of depends. The apprenticeship program is that the industry recognizes, and this is done in concert with the Florida Solar Energy Industries Association. It's a partnership with the industry in the state where they recognize that the best way to do is on-job training, but they're not equipped to do the book learning, and so we're coming up with this program.

And I think you're going to see that some of this can be done online, but most of the work will be done in the apprenticeship level. And this is

going to be the same thing with HVAC, energy-efficiency retrofits. We're going to have to find a way to provide education to the work -- the construction workforce, to be able to do all these things going forward in more of an apprenticeship program, rather than sitting in a two-year classroom or a four-year classroom. So this is a unique thing and it's done in partnership with the industry. So I'm upbeat that it's going to succeed.

CHAIRMAN FAY: Yeah, that's -- that's great. And, I mean, it's your point it is -- I think it's 4,000 hours of on-the-job training is a component of it. It's not like classroom format.

MR. FENTON: That's right. And I think the universities in Florida, I remind everybody, we have an agricultural institution in this state, was established way back when as a land grant. Okay. University of Florida provides that service. You established, the legislature did almost 50 years ago, the Energy Research Institute. With more funding, I'd be more than happy to do it. Okay. I think that's our job. We have to come up with the curriculum, make sure the curriculum exists, but it'll be the community colleges that disseminate

that curriculum, not us. But we need to be the keeper and make sure that that is done wisely and that these things are all done safely.

CHAIRMAN FAY: Gotcha. Thank you. Yeah. I think we might actually have a UF alumni on this Commission. You want to speak nicely of that --

MR. FENTON: Yeah, yeah, yeah. UF/IFAS does a great job. Okay. And, you know, Abraham Lincoln deserves some credit, made a big change. I'm telling you, as an example right now, the Clean Energy workforce in Florida is twice as big as agriculture. Today is twice as big as agricultural workforce. So imagine what it's going to be five, ten years from now. But we need to prepare ourselves for that.

CHAIRMAN FAY: Appreciate that. And then the last thing is, you speak of the -- I guess it's called the EnergyWhiz event, and I did look at your link on your slides, and it looked like that was -- the stuff that was on there was almost like a decade ago that it had been put together, but is it something you're still doing even after COVID? I mean, your --

MR. FENTON: Yeah, we -- so during COVID, we had to do everything virtually. Okay. This last

end of April, we actually had a live event. Okay. After having not had it for two years. It was pretty darn successful. We're upbeat about that. We've expanded it. In a lot of cases, it's in partnership with the utilities. A lot of the electric utilities, when they put in a 75 megawatt solar field throughout the state, they reached out to us to bring in a local school and do some little training events associated with that. We actually even have regional EnergyWhiz's now. I think this next April coming around, we'll probably be back to the same size that we've always been. This last year, we were probably down to about 400 kids running around instead of the usual 800.

CHAIRMAN FAY: Yeah, that's great. And I would highly encourage that. I've worked on some issues with the Student Energy Group nationally and trying to get people into the field is -- is always a challenge. I think events like that do draw the interest from students that might not otherwise have it. So I --

MR. FENTON: I have a request for you, you as Commissioners, you need to go speak to education to get their field trip money back. Our biggest problem in getting the kids to come was no

resources for allowing the kids to come. Basically when -- during the pandemic, we stopped field trips, no school did field trips. And so our biggest problem was getting the students to come back to this event, was just lack of schools having field trip money. I know that's not your purview, but that could be something you can help push on that allow the kids to be able to get back in and do that more.

CHAIRMAN FAY: I'm just relieved. I thought you were going to ask me to compete in the solar car race or something and --

MR. FENTON: You're more than willing to come down and be judges, we always love them. And if you'd like to eat, those kids do a pretty good job on the cook-off.

CHAIRMAN FAY: Yeah. Well, thank you for that, continuing to do that.

Commissioners, do I have -- Commissioner Graham and then Commissioner Passidomo I'll come to you.

Commissioner Passidomo, you're recognized.

COMMISSIONER PASSIDOMO: Okay. Thank you, Mr. Chairman. I feel compelled as the UF grad to defend my alma mater this time. But I just have a

quick question. You said this is this data is coming from DOE. And I'm just wondering exactly how frequent these are -- these numbers are updated? I just know we're having a lot of supply chain constraints, as well as, you know, PV tariffs --

MR. FENTON: Yeah. So these numbers here are year-on year-average numbers, okay, in the past. And then, of course, the 2010, 2017 and 2020 are indeed past numbers now. So the only thing up there is the 2030 -- you know, and it's a projection. Okay.

The supply chains are just horrible. Okay. We had concerns about the tariffs that even stopped -- the solar tariffs even stopped some of our large utility solar fields, because they would have retroactively punished our utilities if they purchased the price of this then retroactively changed the tariff. So it's a big issue. Okay.

So these costs do change. While we anticipated that the continued cost of solar would keep dropping, okay, continually as it went in, over the pandemic and a few other things, it's sort of -- I would describe it as it flattened out a little bit, okay, but didn't go up like the price

of natural gas doubling or any of those kinds of things. All right. And then we anticipate it will continue to go down. So we do have those numbers, you know, on a weekly basis and whatnot. Okay. This is just a year over year.

COMMISSIONER PASSIDOMO: And so you reviewed it on a weekly basis? Is that what you're saying?

MR. FENTON: Yeah, yeah. I don't do it. I get the numbers from somebody, but, yeah, they give it back to us. And that's true with electric vehicle battery sales. That's true with everything, heat pumps, you know, all those appliances. We have a software package that we've created that the Florida builders actually use to go into houses, and not only can you grade the house on how well it's doing, but you can determine all the cost-effectiveness, you can grab this window, stick it in the house, figure out it's more cost-effective, how's it going to affect the electric bill and what the prices of all those things are. And so, yeah, we have to update that stuff all the time. It drives us crazy, because it's been a mess lately. Our biggest time is just lag time on getting containers for shipping. Everything is just a shipping nightmare.

COMMISSIONER PASSIDOMO: I understand that. I just wanted to make sure -- I know -- always being cognizant of how up to date --

MR. FENTON: And some numbers just take a lag time to get from the Department of Energy. They can be two years old by the time we get them. They are correct from two years ago, but they may not be reflecting what you see today. So the 2030 are the only projection numbers up there.

CHAIRMAN FAY: Great. Commissioner Graham, follow-up?

Okay. With that, Commissioners, I think that will conclude our presentation. Mr. Fenton, once again, as Commissioner La Rosa said, we do appreciate you taking the time.

MR. FENTON: Anytime. And if you guys just got questions on the side or staff want to interact with us, we'll be more than happy to help.

CHAIRMAN FAY: Great. Sounds like we might have some follow-up questions from the presentation. So thank you.

All right, Commissioners. With that, we will move on to the next item on our agenda, the review of Florida Power and Light's 10-year site plan. Mr. Baez.

MR. BAEZ: Thank you, Mr. Chairman. Good morning, Commissioners.

As you know, this item came about through an informal review of the utilities 10-year site plans. FPL had included two resource plans in its filing this year, a quote, "recommended plan" and then a business-as-usual plan. The recommended plan had resulted from a change to the company's winter peak load forecasting methodology. The business-as-usual plan was based on the company's long-standing approach to forecasting its peak load.

Subsequent to the release of staff's memorandum FPL had has withdrawn its recommended plan. So, at this time, we believe that a separate docket, that we were recommending in the memorandum on your package, is now moot and it's not necessary at this time, because of the withdrawal of the recommended plan, including that new methodology I had mentioned. The staff is going to continue its review of FPL's business-as-usual plan, along with the plans filed by all the utilities and present you with its analysis and recommendation on the suitability of those plans at a future Internal Affairs meeting.

If you have any questions, be happy to try and answer them.

CHAIRMAN FAY: Thank you. Commissioners, any questions on this?

I just have a quick question for you, Mr. Baez. So at a later date, I don't know what IA that would be, but then we would be reviewing and either determine sustainable or unsustainable for all the site plans in the future?

MR. BAEZ: As it stands now, we're anticipating the next time we bring this forward to you would be in the form of the traditional draft report compiled by the staff at which point there would be contained in their recommendations as to the suitability or unsuitability of each of the plans generally. Same way as we do every year. I'm thinking early fall -- October, I'm being told. So that's what we're anticipating at this point.

CHAIRMAN FAY: Okay. Great. So at this time we don't -- there's nothing that we need to formalize on our end. The memo addresses it --

MR. BAEZ: Correct. I think that the withdrawal took care of the conversation that we were contemplating.

CHAIRMAN FAY: Great. And, with that, I

didn't want to go out of order, but I was going to go to the General Counsel's report and then your report. Do you have anything else you would like to update on?

MR. BAEZ: I can tell you right now, we don't have anything to report today.

CHAIRMAN FAY: And then, Mr. Hetrick, do you have any?

MR. HETRICK: Thank you, Mr. Chairman. I would just say we're extraordinarily busy and also trying to fill a number of vacant positions, but don't have anything really to report at this time.

CHAIRMAN FAY: Okay. Great.

With that -- and we do have some, Mr. Hetrick, some stuff from the courts that have come to us that we're reviewing.

MR. HETRICK: Yes. We recently had the Supreme Court, I guess -- I'm going to let Mary Anne, I think, give a quick update on that one.

MS. HELTON: Thank you, Mr. Hetrick.

We've received two decisions recently, one was remanding your decision to find Duke's outage at Bartow 50 percent. We found it 50 percent prudent and 50 percent imprudent, and the court has asked us to further explain in that decision why -- no.

I take that back. I'm sorry. I'm confused. We're writing a brief right now on that one.

We've got several appeals going. We had a decision on the turbines at Bartow where the ALJ found that the utility had acted imprudently. When the recommended order came to us, we issued that order as a final order. The court entered its opinion, I think it was last week, finding that it disagreed with the ALJ's ruling, found that we acted appropriately under Chapter 120, but that we are to now enter an order finding that Duke acted prudently. So that will be coming to you.

And then the other decision that was remanded was the Duke clean energy program, where we have been -- that's the decision where we've been asked to explain whether you believe that the program subsidizes a certain class of customers or not, and we are in the process of determining how to respond back to the court with respect to that decision. So those are the two that have -- require further action on our part.

CHAIRMAN FAY: Okay. Great. Thank you for the update. And to Mr. Hetrick's point, I know we're always looking for attorney -- qualified attorneys in our agency and appreciate the work

that you do, especially when you might be down a few folks, too. So thank you for all that.

Commissioner Graham.

COMMISSIONER GRAHAM: A question to Mary Anne. Let me see if I understand correctly what you said. The court sent back here and says that we are correct because we accepted ALJ's findings, but ALJ was incorrect?

MS. HELTON: I have not -- I was out last week except for the day that we were in hearing, so I have not actually studied that opinion. That is my understanding. As you all recall, when we were looking at that recommended order, we are very limited in how the Commission can act on a recommended order. We have to accept the facts that come to us from the ALJ as written out in the recommended order, unless we can find that they are unsupported by the record. And then we also can only make changes to legal conclusions if we have some reason to make the change that's set out in chapter 120. So when we looked at that decision, and looked at the exceptions or lack of exceptions that have been filed by the parties to the case, we were pretty much hamstrung, I think, with respect to how we could act.

So our recommendation, and you agreed with it, was to accept the recommended order from the ALJ. When the court looked at the recommended order, the court disagreed with some of the conclusions that the ALJ had made. I can't speak to what those were specifically, unfortunately, because I haven't studied the order, but the court said that they didn't reweigh the evidence, but came up with a different conclusion than the ALJ did.

COMMISSIONER GRAHAM: So why was it that the court was able to do it and we were not allowed?

MS. HELTON: Because they're the Supreme Court and we're not.

COMMISSIONER GRAHAM: Okay.

CHAIRMAN FAY: Great. Thank you. Any other questions?

With that, Commissioners, any other matters to take up this meeting? With that, then we are adjourned. Thank you so much.

(Proceedings concluded.)

CERTIFICATE OF REPORTER

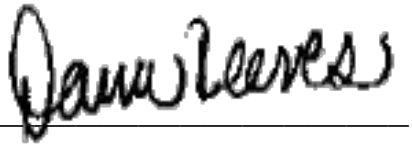
STATE OF FLORIDA)
COUNTY OF LEON)

I, DANA W. REEVES, Professional Court Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 26th day of July, 2022.



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