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March 12, 2021

**VIA ELECTRONIC FILING**

Adam Teitzman, Commission Clerk  
Division of the Commission Clerk and Administrative Services  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, FL 32399-0850

Re: Docket No. 20210015-EI  
Petition by FPL for Base Rate Increase and Rate Unification

Dear Mr. Teitzman:

Attached for filing on behalf of Florida Power & Light Company ("FPL") in the above-referenced docket are the Direct Testimony and Exhibits of FPL witness Thomas Broad.

Please let me know if you should have any questions regarding this submission.

(Document 8 of 69)

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Wade Litchfield', written in a cursive style.

R. Wade Litchfield  
Vice President & General Counsel  
Florida Power & Light Company

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**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**  
**FLORIDA POWER & LIGHT COMPANY**  
**DIRECT TESTIMONY OF THOMAS BROAD**  
**DOCKET NO. 20210015-EI**  
**MARCH 12, 2021**

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1 **I. INTRODUCTION**

2

3 **Q. Please state your name and business address.**

4 A. My name is Thomas Broad, and my business address is Florida Power & Light  
5 Company, 700 Universe Boulevard, Juno Beach, Florida, 33408.

6 **Q. By whom are you employed, and what is your position?**

7 A. I am employed by NextEra Energy as the Vice President of Power Generation  
8 Operations and Pipelines in the Power Generation Division (“PGD”) Business  
9 Unit.

10 **Q. Please describe your duties and responsibilities in that position.**

11 A. I am responsible for the operations and maintenance of all of the Company’s  
12 fossil/solar power plant generation across Florida, including traditional fossil fuel-  
13 fired steam boilers, combined cycle (“CC”), aero-derivative and large frame  
14 simple cycle combustion turbine (“CT”), and solar / battery technologies.

15 **Q. Please describe your educational background and professional experience.**

16 A. I earned a Bachelor of Science Degree in Engineering - Marine from Maine  
17 Maritime Academy and a Master of Business Administration from Nova  
18 Southeastern University. I also am a Certified Six Sigma Black Belt. Overall, I  
19 have more than three decades of Power Generation related experience. My  
20 extensive professional background involves technical, managerial, and  
21 commercial experience in progressively more demanding assignments.

22

23

1 I joined Florida Power & Light in 1985 on the Marketing Services Team. I have  
2 since served as Vice President - Central Maintenance, where I led the safe and  
3 cost-effective execution of major maintenance activities throughout the U.S. and  
4 Canada. I also served as Vice President - Engineering & Construction, where I  
5 was responsible for leading all engineering and construction activities for NextEra  
6 Energy's generation fleet. Beginning 2018, I then served as Vice President –  
7 Solar, Battery Storage, and Pipelines for NextEra Energy projects across the  
8 United States, Canada and Spain.

9  
10 I am currently Vice President of PGD's Fossil/Solar Operations with responsibility  
11 for over 600 employees and 69 electrical generating units with a combined non-  
12 nuclear production capacity of approximately 25,000 MW in 2020. FPL's  
13 generating fleet ("fossil/solar") is the largest and most fuel-efficient utility fleet in  
14 the country. With FPL and Gulf utilities merging, this capacity increases another  
15 2,400 MW totaling more than 27,000 MW.

16 **Q. Are you sponsoring any exhibits in this case?**

- 17 A. Yes. I am sponsoring the following exhibits:
- 18 • TB-1 Consolidated MFRs Sponsored or Co-sponsored by Thomas Broad
  - 19 • TB-2 Supplemental FPL and Gulf Standalone Information in MFR Format  
20 Sponsored or Co-sponsored by Thomas Broad
  - 21 • TB-3 FPL Fossil/Solar Fleet MW Capability and Technology Changes
  - 22 • TB-4 FPL Fleet Performance Improvements
  - 23 • TB-5 FPL 15 Year NFOM, NHR & EFOR Performance Comparison

- 1 • TB-6 Pg. 1 of 2 FPL Fossil/Solar Fleet Heat Rate Comparison
- 2 • TB-6 Pg. 2 of 2 Cumulative Benefits from FPL’s Modernized Fleet
- 3 • TB-7 FPL’s/Gulf’s Fleet Level O&M, Heat Rate and EFOR Performance
- 4 Comparisons
- 5 • TB-8 FPL’s/Gulf’s CC & PV Plant Level O&M Performance Comparisons
- 6 • TB-9 FPL’s/Gulf’s Total O&M and CAPEX Maintenance Expenditure,
- 7 Heat Rate & EFOR Comparisons

8 **Q. Are you sponsoring or co-sponsoring any consolidated Minimum Filing**  
9 **Requirements (“MFRs”) in this case?**

10 A. Yes. Exhibit TB-1 lists the consolidated MFRs that I am sponsoring or co-  
11 sponsoring.

12 **Q. Are you sponsoring or co-sponsoring any schedules in “Supplement 1 – FPL**  
13 **Standalone Information in MFR Format” and “Supplement 2 – Gulf**  
14 **Standalone Information in MFR Format”?**

15 A. Yes. Exhibit TB-2 lists the supplemental FPL and Gulf standalone information in  
16 MFR format that I am sponsoring or co-sponsoring.

17 **Q. How will you refer to FPL and Gulf when discussing them in testimony?**

18 A. When discussing operations or time periods prior to January 1, 2019 (when Gulf  
19 was acquired by FPL’s parent company, NextEra Energy, Inc.), “FPL” and “Gulf”  
20 will refer to their pre-acquisition status, when they were legally and operationally  
21 separate companies. For operations or time periods between January 1, 2019 and  
22 January 1, 2022, “FPL” and “Gulf” will refer to their status as separate ratemaking  
23 entities, recognizing that they were merged legally on January 1, 2021 and

1 consolidation proceeded throughout this period. Finally, operations or time  
2 periods after January 1, 2022 are referred to as FPL only because Gulf will be  
3 consolidated into FPL. Therefore, unless otherwise noted, my testimony addresses  
4 requests for the consolidated company.

5 **Q. What is the purpose of your testimony?**

6 A. The purpose of my testimony is to support the reasonableness of the fossil/solar  
7 generating fleet non-fuel operating and maintenance expenses (“O&M”) and  
8 capital expenditures (“CAPEX”) in providing service to customers. My testimony  
9 addresses two major areas: (1) fossil/solar generating fleet performance; and (2)  
10 fossil/solar generating fleet non-fuel O&M and maintenance/reliability CAPEX  
11 for the integrated FPL fleet. I convey that FPL aggressively manages its operating  
12 costs and remains one of the most cost-efficient generating utilities in the nation.  
13 At the same time, FPL has lowered its operating costs and has improved its overall  
14 performance since the last base rate proceeding. I further demonstrate that the  
15 FPL and Gulf fleets have provided and, with appropriate rate adjustments covering  
16 projected costs, the combined FPL fleet will continue to provide customers with  
17 reliable and even more efficient and cost-effective service.

18 **Q. Please summarize your testimony.**

19 A. Over the last thirty years, FPL has continuously transformed its fossil/solar  
20 generating fleet and has substantially improved its operating performance across  
21 key indicators integral to the reliable and cost-efficient generation of electricity for  
22 customers (as shown on Exhibits TB-3 and TB-4). Also, among large electric  
23 utility fossil fleets over the last 15 years (as shown on Exhibit TB-5), FPL’s

1 performance has been best-in-class in non-fuel O&M and heat rate, and essentially  
2 top decile or better in Equivalent Forced Outage Rate (“EFOR”). FPL’s  
3 generating fleet cost reductions and performance improvements provide  
4 substantial benefits to customers. These achievements, from 1990 through 2020,  
5 included:

- 6 • reducing heat rate (fuel use) by 33 percent
- 7 • reducing EFOR by 71 percent
- 8 • reducing air emission rates by 45 percent for CO<sub>2</sub>, 98 percent for NO<sub>x</sub>, and  
9 nearly 100 percent for SO<sub>2</sub>
- 10 • reducing total non-fuel O&M cost per kilowatt (“kW”) by 49 percent,  
11 despite increases in the Consumer Price Index (“CPI”) over that timeframe.

12  
13 These improvements have produced tremendous value for FPL customers. Since  
14 2001, heat rate improvements have saved approximately \$11 billion cumulatively  
15 in fuel cost savings for customers. In 2020 alone, FPL saved more than \$1 billion  
16 in combined non-fuel O&M expenses and fuel costs improvements compared to  
17 2001. These one-year savings are illustrative of the significant recurring value that  
18 customers are experiencing each year. Our excellent fleet performance has also  
19 frequently been top decile or best-in-class.

20  
21 The doubling of FPL’s fossil/solar generating fleet capacity over the last three  
22 decades to serve customers’ electricity needs along with the transformation of the  
23 Company’s generating technology from conventional steam combustion boiler to

1 other cleaner, more efficient combined cycle (“CC”) and free-fuel solar  
2 photovoltaic (“PV”) units are key drivers of FPL’s operating improvements (as  
3 reflected in Exhibits TB-3 through TB-6). FPL’s outstanding performance  
4 improvements provide customers with cleaner, more cost-effective and fuel-  
5 efficient generation. Maintenance/reliability CAPEX and non-fuel O&M funding  
6 are essential to providing these performance improvement benefits, and PGD’s  
7 prudent management of these funds plays a significant role in achieving our  
8 exceptional generating fleet performance. Furthermore, the integration of FPL and  
9 Gulf into one utility is allowing us to take full advantage of our demonstrated  
10 strengths and bring further benefits to customers.

11

## 12 **II. FOSSIL/SOLAR GENERATING FLEET PERFORMANCE**

13

14 **Q. What indicators does FPL use to measure the operating performance of its**  
15 **fleet of generating units?**

16 **A.** FPL uses a number of indicators to measure the performance of its fleet. These  
17 indicators include, among others shown on Exhibit TB-4: heat rate to measure the  
18 amount of fuel used to produce a unit of electricity; EFOR to measure reliability;  
19 and non-fuel O&M in dollars per installed kW of capacity (“\$/kW”) to measure  
20 resource management cost effectiveness. As shown in the exhibits to my  
21 testimony, the indicators for FPL’s generating fleet performance compare very  
22 favorably with the energy industry as well as with FPL’s long-term historical  
23 performance.

1 **Q. Please describe the indicator FPL uses to measure generating efficiency.**

2 A. The key indicator of generating efficiency in converting fuel to electricity is heat  
3 rate, measuring the amount of fuel required to generate a kilowatt hour (“kWh”)  
4 of power. Heat rate is expressed in British Thermal Units per kilowatt-hour  
5 (“Btu/kWh”) and calculated by dividing the total Btu heat input (from fuel burned)  
6 by the net kWh of electricity produced by those units. Significantly, the lower the  
7 heat rate, the less fuel is required to generate the same amount of electricity, and  
8 the greater the customer savings in fuel costs.

9 **Q. What actions have been taken to achieve and maintain generating fleet heat**  
10 **rate performance improvements to date?**

11 A. As shown in Exhibit TB-6-Pg.1, system heat rate performance gains have been  
12 achieved by constructing new, highly efficient gas-fired combined cycle units, and  
13 by converting older power plants into modern combined cycle units. These new  
14 units, along with upgrading our turbine and combustion technology, provide  
15 significant fuel cost savings to customers and reduced air emissions while utilizing  
16 existing sites. Integrating new, fuel-free solar plants into the generating fleet is  
17 further improving performance by generating electricity without fuel use.

18  
19 Additionally, maintaining power plant operating performance is essential because  
20 generating equipment wears and deteriorates over time, necessitating efforts to  
21 minimize heat rate degradation and restore lost generating unit performance.  
22 Sustaining the operational performance of this growing fleet of fuel-efficient  
23 facilities requires ongoing CAPEX to support this equipment maintenance.

1 **Q. Has the generating efficiency of FPL’s fleet improved over time?**

2 A. Yes. FPL’s long term generating efficiency improvement is included in Exhibit  
3 TB-4, showing a generating fleet heat rate reduction from 10,214 Btu/kWh to  
4 6,878 Btu/kWh, representing a 33 percent efficiency improvement from 1990  
5 through 2020. As further highlighted on Exhibit TB-6-Pg.1, an improvement in  
6 heat rate (29 percent) occurred between 2001 and 2020, representing  
7 approximately \$11 billion in cumulative fuel cost savings for customers over that  
8 timeframe, and more than half a billion dollars in 2020 alone. Since 2017, the fleet  
9 heat rate has improved by 8 percent. Although fuel prices may vary in the future,  
10 FPL customers will always have lower relative fuel charges because of FPL’s  
11 generating efficiency improvements. Additionally, Exhibit TB-7 reflects that both  
12 FPL and Gulf have actual and projected heat rate trend improvements from 2018,  
13 Gulf’s pre-acquisition year, into the future as both fleets are integrated, further  
14 modernized, and improved.

15 **Q. How does FPL’s generating fleet heat rate performance compare to that of**  
16 **others in the industry?**

17 A. As shown on Exhibit TB-6-Pg. 1, FPL’s generating fleet heat rate compares  
18 extremely favorably to the industry. Between 2001 and 2019, the industry average  
19 heat rate improved less than ten percent (from 10,472 Btu/kWh to 9,476 Btu/kWh).  
20 In contrast, FPL’s heat rate improved more than 25 percent (from 9,635 Btu/kWh  
21 to 7,070 Btu/kWh) over the same period. In fact, FPL’s fleet heat rate improved  
22 5 percent in just two years’ time from 2017 to 2019 (roughly three times the  
23 industry improvement over this period) due to several key actions: (a) retiring

1 2,800 MWs of less-efficient coal and oil/gas burning fossil steam capacity; (b)  
2 adding approximately 1,720 MWs of highly-efficient combined cycle capacity;  
3 and (c) adding 900 MWs of solar plants. FPL's generating fleet heat rate  
4 performance also has been best-in-class every year over the last 15 years as shown  
5 on Exhibit TB-5.

6  
7 Also, as shown on Exhibit TB-7, FPL's / Gulf's respective and combined fleet  
8 heat rates are much better than the average industry performance. Heat rates are  
9 expected to continue improving as the combined FPL / Gulf fleet is further  
10 transformed to more-efficient modernized technology.

11 **Q. Please explain how a modernized generating fleet using combined cycle and**  
12 **solar units benefits customers.**

13 A. FPL's generating plant technology transformation to combined cycle and solar  
14 powered units improves overall fleet heat rate performance, benefiting customers in  
15 three important ways: avoiding fuel cost, avoiding oil use, and avoiding air  
16 emissions. As shown on Exhibit TB-6-Pg. 2 for example, from 2001 through 2020,  
17 FPL's cumulative 29 percent heat rate improvement contributed benefits, as follows:

- 18 • ~ \$11 billion of fuel costs avoided
- 19 • ~ 600 million barrels of oil burn avoided
- 20 • ~ 165 million tons of CO<sub>2</sub> emissions avoided

21

22 In simple terms, a 29 percent heat rate improvement in FPL's generating fleet since  
23 2001 represents more than half a billion dollars in fuel cost savings in 2020 alone.

1 Since 1990, FPL has reduced its fossil/solar generating fleet CO<sub>2</sub> emission rate by  
2 45 percent and reduced NO<sub>x</sub> and SO<sub>2</sub> emission rates by 98 and nearly 100 percent,  
3 respectively (as shown on Exhibit TB-4). This impressive achievement has  
4 resulted in a reduced rate of greenhouse gas and other air emissions, thereby  
5 contributing to a cleaner environment. Additionally, our modern, state-of-the-art  
6 power plants require significantly fewer people than the older power plants they  
7 replaced, also providing non-fuel O&M cost savings for customers. FPL's fleet  
8 fuel cost savings and emission benefits from efficiency improvements will  
9 continue to grow as new and modernized units are placed in service. The planned  
10 addition of approximately 2,900 MW of highly efficient combined cycle / solar /  
11 battery storage generation from 2021 through 2022, coupled with the retirement  
12 of nearly 2,300 MW of coal and oil/gas burning fossil steam units, further  
13 exemplify the Company's commitment both to fuel cost reduction and  
14 environmental sustainability.

15 **Q. Please describe the indicator used to measure plant reliability.**

16 A. EFOR represents generating plant reliability and is a measure of a unit's inability  
17 to provide electricity when dispatched to operate. EFOR is reported as the  
18 percentage of hours when a generating unit could not deliver electricity relative to  
19 all the hours during which that unit was called upon to operate. FPL and Gulf  
20 continually strive for, and have achieved, low generating fleet EFOR. This results  
21 in greater availability of efficient generating capacity for customers.

22

23

1 **Q. Has the EFOR of the generating fleet also improved over time?**

2 A. Yes. As shown on Exhibit TB-4, the EFOR of FPL's generating fleet has been  
3 reduced more than 71 percent (from 1990 through 2020), and as shown on Exhibit  
4 TB-7, both FPL and Gulf's EFORs are exceptionally low, signifying highly  
5 reliable generating fleets.

6 **Q. How does the EFOR of FPL's and Gulf's generating fleets compare to the  
7 industry?**

8 A. Among large electric utility fossil fleets over the last 15 years, FPL has essentially  
9 been a top decile or better EFOR performer as shown on Exhibit TB-5. Also, both  
10 FPL's and Gulf's generating fleet EFOR performance, currently averaging 0.8  
11 percent, have significantly outperformed the higher latest industry average of 8.4  
12 percent as shown on Exhibit TB-7. Both fleets' EFORs are also considered best-  
13 in-class performance.

14 **Q. How does excellent generating fleet EFOR performance benefit customers?**

15 A. Excellent fleet EFOR performance represents better reliability and provides more  
16 opportunity for highly efficient capacity to operate and minimize customer fuel  
17 costs and air emissions.

18 **Q. Please summarize the operating performance of FPL's generating fleet.**

19 A. As discussed previously, the transformation of FPL's generating fleet since 1990  
20 (referenced on Exhibit TB-3) has enabled significant performance improvement  
21 across key indicators (as shown on Exhibit TB-4) integral to generating electricity  
22 for our customers. These performance improvements include:

- 23
- reducing heat rate (fuel use) by 33 percent

- 1           • reducing EFOR by 71 percent
- 2           • reducing air emission rates by 45 percent for CO<sub>2</sub>, 98 percent for NO<sub>x</sub> and
- 3           nearly 100 percent for SO<sub>2</sub>
- 4           • reducing total non-fuel O&M cost per kW by 49 percent (see Section III
- 5           below)

6

7           In brief, FPL’s fossil generating fleet has industry-leading performance, either top  
8           decile or best-in-class. In fact, as shown on Exhibit TB-5, among large electric  
9           utility fossil fleets over the last 15 years, FPL’s performance has been best-in-class  
10          in non-fuel O&M and heat rate, and essentially top decile or better in EFOR. This  
11          superior performance in these metrics is expected to continue, or get even better,  
12          in the future with sustained financial ability to make the changes and investments  
13          needed, along with the integration of best practices between the two companies.

14   **Q.    What has been FPL’s generating fleet performance improvement since its last**  
15   **rate case?**

16   A.    From 2017 – 2020, FPL’s Fossil/Solar Fleet performance improvements include:

- 17           • reducing heat rate by 8 percent
- 18           • reducing EFOR by 64 percent
- 19           • reducing air emission rates by 13 percent for CO<sub>2</sub>, 54 percent for NO<sub>x</sub> and
- 20           80 percent for SO<sub>2</sub>
- 21           • reducing total non-fuel O&M cost per kW by 16 percent

1 **Q. How has PGD integrated FPL and Gulf operations to become one utility?**

2 A. PGD is supporting the combined utility generating system functioning as one  
3 company in all respects including a common set of generation resources with  
4 functionally integrated operations. PGD's overall strategy was not to wait, but to  
5 integrate Gulf early on upon acquisition. This proactive plan included readying  
6 systems and applications to drive efficiencies and involved such facets as:

- 7 ○ People and culture
- 8 ○ Safety reviews and practices
- 9 ○ Integrating operational and maintenance processes
- 10 ○ Integrating Engineering and Central Maintenance staff organizations
- 11 ○ Quality and Six Sigma training
- 12 ○ Production Health Dashboard integration
- 13 ○ Cost controls and reviews (weekly and monthly)
- 14 ○ Production metric controls and reviews (weekly and monthly)

15

16 As an operationally consolidated company, FPL is well-positioned to continue  
17 driving costs below the national average, while optimizing its generation,  
18 including:

- 19 – Increased fuel diversity and efficiency
- 20 – Reduced emissions
- 21 – Excellent reliability and resilience
- 22 – Shared best practices

- 1           – Improved asset management
- 2           – Improved opportunity for coordinated storm response

3   **Q. What improvements are occurring on the Gulf system?**

4   A. As shown on Exhibit TB-7, since Gulf’s 2018 pre-acquisition status, a number of  
5   ongoing operating improvement areas include:

- 6           ○ EFOR has improved approximately 90 percent, from 3.2 percent in 2018  
7           to 0.3 percent in 2020 – representing top decile to best-in-class  
8           performance.
- 9           ○ Heat rate has improved approximately 8 percent from 9,320 Btu/kWh in  
10          2018 down to about 8,500 Btu/kWh in 2020. Combined cycle Plant Smith  
11          combustion turbine upgrades completed in 2019 increased base load  
12          capacity by approximately 100 MW, and along with the Blue Indigo PV  
13          Solar Site addition, are contributing to this greater generation efficiency.
- 14          ○ Non-fuel O&M has also markedly decreased in total dollar cost, from \$124  
15          million in 2018 to \$80 million in 2020. In terms of \$/kW, non-fuel O&M  
16          cost has likewise decreased 40 percent from approximately \$55/kW in  
17          2018 to \$33/kW in 2020. This \$/kW cost performance improvement from  
18          2018 to 2020 means that Gulf’s competitive position went from being 60  
19          percent higher than the fossil generating industry average to 12 percent  
20          below in the last two years.
- 21          ○ Additionally, CO<sub>2</sub> emission rates improved 18 percent over the same 2018  
22          to 2020 period consistent with the combined cycle and solar plant capacity  
23          additions mentioned above and general shift away from coal fuel.

1 Also, management's actions have produced a significant decrease in Gulf's  
2 Environmental Cost Recovery Clause costs, and productivity, reflected as  
3 megawatts managed per employee, improved from 8.5 in 2017 to approximately  
4 23 in 2020. Furthermore, various additional actions underway or planned (unit  
5 modernizations, additions, retirements and fuel conversions) would further  
6 contribute to improvements in EFOR, O&M, fuel efficiency, and emission rates.  
7 In fact, by the end of 2021, Gulf will have added three 74.5 MW solar facilities to  
8 their service area, providing 224 megawatts of fuel-free energy to Northwest  
9 Florida.

10 **Q. Has the Gulf acquisition provided any benefits to FPL's generation fleet?**

11 A. Yes. In addition to Gulf's highly reliable generating fleet, Gulf brought a separate  
12 labor force that now provides an overall larger, high-quality team to draw from for  
13 emergency and storm support. The combined entities also result in increased cost-  
14 efficiency and enhanced operations through best practice sharing. Furthermore,  
15 Gulf's workforce brings with it several important qualities:

- 16 ○ A proven dedication to reliable generation operations.
- 17 ○ Strong operational talent that allows for additional resource sharing to  
18 maintain reliability.
- 19 ○ The ability to provide storm support through a diversified and  
20 expanded presence in Florida.

21

22

1       **III. FOSSIL/SOLAR GENERATING FLEET NON-FUEL O&M AND CAPEX**

2

3       **Q.     How has FPL improved the generating fleet’s non-fuel O&M over time?**

4       A.     We have worked aggressively to reduce and contain expenses over the last three  
5             decades despite a 97 percent cumulative increase in CPI. During that timeframe,  
6             FPL’s total non-fuel O&M per unit of installed capacity was reduced 49 percent,  
7             from \$18.5/kW in 1990 to \$9.4/kW in 2020 (as shown on Exhibit TB-4). Another  
8             indication of FPL’s excellent O&M performance (as depicted on Exhibit TB-5), is  
9             when comparing to latest available 2019 industry peer group average cost  
10            (\$37.5/kW), FPL’s \$9.5/kW cost is 75 percent lower. In addition, if FPL’s  
11            generating fleet cost of \$18.5/kW in 1990 was escalated by CPI to 2020, it would  
12            be \$36.6/kW, or notably more than triple FPL’s \$9.4/kW actual cost. Given FPL’s  
13            2020 fleet capacity of about 25,000 MW, this approximate \$27/kW difference  
14            versus either the industry average or FPL’s CPI-escalated cost since 1990  
15            represents significant annual non-fuel O&M savings of more than \$600 million in  
16            2020 alone.

17

18            Since 2017 alone, FPL’s Fossil/Solar Fleet reduced total non-fuel O&M cost per  
19            kW by 17 percent from \$11.3 to \$9.4. Additionally, Exhibit TB-5 shows that over  
20            the last 15 years, FPL’s generating fleet has been best-in-class in total non-fuel  
21            O&M per kW among its large electric utility fleet peers. FPL witness Reed’s

1 Productive Efficiency O&M comparison (Exhibit JJR-6, page 12) further supports  
2 FPL's production fleet non-fuel O&M performance excellence.

3

4 Contributing to FPL's overall excellent generating fleet cost performance is  
5 PGD's resource management improvements as shown on Exhibit TB-4, indicating  
6 that by 2020, FPL's generating fleet staffing per MW of capacity was about 80  
7 percent less than it was in 1990.

8 **Q. Considering that combined cycle and solar photovoltaic plants are becoming**  
9 **an increasingly greater factor in FPL's expanding and improving operating**  
10 **fleet, how does FPL's O&M performance for these plant types compare to**  
11 **the industry's performance with the same CC and PV technologies?**

12 A. In a separate comparison of these transformative CC and PV technology plants  
13 shown on Exhibit TB-8, both FPL and Gulf performed at superior levels in the CC  
14 plant O&M cost category (roughly 70 percent better) compared to the industry.  
15 FPL's solar PV plant group's performance was also strong.

16 **Q. How does PGD operate and maintain its solar sites to achieve their superior**  
17 **cost efficiency?**

18 A. FPL currently has 33 operating solar sites in Florida comprising approximately  
19 2,300 MW of total installed generating capacity, which is expected to grow. To  
20 successfully operate and maintain these sites, PGD typically applies the principles  
21 of automation, lean staffing, and cost-effective maintenance and inspection  
22 practices, for example using drone technology. As mentioned by FPL witness  
23 Valle, FPL developed and continues to improve advanced monitoring technology

1 and performance analysis tools for its solar energy centers. FPL uses these tools  
2 to optimize plant operations, drive process efficiencies, and facilitate the  
3 deployment of technical skills as demand for services grows. In 2017, FPL  
4 established a Renewable Operations Control Center (“ROCC”) to serve as the  
5 centralized remote operations center for all FPL PV solar and energy storage  
6 facilities. The ROCC provides a mechanism to efficiently manage daily work  
7 activities and ensure effective deployment of best operating practices at all of  
8 FPL’s renewable energy centers. The FPL team has leveraged these capabilities  
9 along with its broad range of experience to develop robust and industry-leading  
10 operating plans that deliver high levels of reliability and availability at low cost.

11 **Q. How does PGD’s 2022 Test Year and 2023 Subsequent Year projected levels**  
12 **of base non-fuel O&M for the Steam and Other Production functions**  
13 **compare to the Commission’s benchmarks on MFR C-41?**

14 A. PGD’s Steam and Other Production levels of base non-fuel O&M for both the  
15 2022 Test Year and the 2023 Subsequent Year are well below the MFR C-41 O&M  
16 benchmark levels on both a portfolio and functional basis for both FPL and Gulf,  
17 as well as on a PGD consolidated level. For the 2022 Test Year, PGD’s base non-  
18 fuel O&M funds request is approximately \$106 million below the benchmark.  
19 PGD’s base non-fuel O&M funds request is approximately \$102 million below the  
20 benchmark for the 2023 Subsequent Year. This is an impressive accomplishment  
21 given the addition of two CC plants (~2,900 MW), four CTs (~900 MW), 55 large-  
22 scale solar PV plants (~4,000 MW), and three battery energy storage sites (~470  
23 MW) since 2018, the base year of FPL’s O&M benchmark calculation.

1 As shown on Exhibit TB-3, FPL distinctively transformed and modernized its  
2 generating fleet portfolio which, along with our aggressive efforts to reduce and  
3 contain expenses, avoided significant O&M costs for customers, reduced air  
4 emissions, reduced oil fuel reliance, significantly improved operating fleet  
5 performance, and made FPL an industry leader in low-cost generation.

6 **Q. Comparing the 2022 Test Year to the 2021 Prior Year, are there any accounts**  
7 **in which the change to PGD non-fuel O&M exceeds the threshold defined in**  
8 **MFR C-8?**

9 A. FPL has three accounts (502, 510, and 512) that are favorable to the defined  
10 thresholds as reductions referenced in MFR C-8, and one account (549) that has  
11 increased. I will address each such account.

12  
13 Decrease of FERC Steam Production Account 502 – Steam Expenses: The \$10.3  
14 million decrease in this category is primarily attributable to the Gulf Clean Energy  
15 Center (formerly known as Plant Crist) plant conversion from coal to natural gas,  
16 which eliminated the need for limestone for the scrubbers. Additional reductions  
17 were achieved with the Scherer Unit 4 and Manatee Units 1 & 2 steam plant  
18 retirements.

19  
20 Decrease of FERC Steam Production Account 510 - Maintenance Supervision and  
21 Engineering: The \$5.0 million decrease in this category is primarily attributable  
22 to the Scherer Unit 4 and Manatee Units 1 & 2 steam plant retirements.

23

1           Decrease of FERC Steam Production Account 512 - Maintenance of Boiler Plant:

2           The \$16.6 million decrease in this category is primarily attributable to the Gulf  
3           Clean Energy Center plant conversion from coal to natural gas, which eliminated  
4           the need for limestone and the associated O&M costs to operate and maintain its  
5           scrubbers. There are also staff reductions that reflect a more efficient natural gas  
6           plant configuration as well as reduced maintenance. Additional reductions were  
7           achieved with the Scherer Unit 4 and Manatee Units 1 & 2 steam plant retirements.

8

9           Increase of FERC Other Production Account 549 – Miscellaneous Other Power

10          Generation Expenses: The approximate \$6.9 million increase in this category is  
11          related to the addition of six solar sites in 2022 that total approximately 447 MW  
12          of clean generating capability as well as the creation of a consolidated control  
13          room and fossil center of work excellence for the combined cycle fleet.

14          **Q.    Regarding CAPEX, are there any significant long-term infrastructure**  
15          **capacity additions or replacements that will deliver improved system**  
16          **reliability or economic benefits?**

17          A.    Yes. Based upon our 2020 Ten Year Site Plan (“TYSP”), in addition to the 2,600  
18          MW of generating capability (approximately 1,720 CC MWs plus 900 PV MWs)  
19          added from 2017 to 2019, FPL’s and Gulf’s roughly 5,000 MW of projected  
20          generating capacity additions from 2020 to 2022 focus on several key areas: 33  
21          new solar sites comprising approximately 2,450 MW total installed renewable  
22          capacity; 2,200 MW of oil and coal steam unit retirements (at two sites); 1,200  
23          MW of modernized combined cycle capacity (the Dania Beach Clean Energy

1 Center “DBEC” Unit 7); 938 MW of new fast-starting CTs (at the Gulf Clean  
2 Energy Center); and approximately 470 MW of battery energy storage capacity  
3 charged by fuel-free solar generation, with the largest 409 MW battery facility in  
4 2021 to partially offset the retirement of Manatee Units 1 & 2. This 409-megawatt  
5 Manatee Energy Storage Center will be the world’s largest integrated solar  
6 powered battery system.

7  
8 In summary, FPL projects to add, or will have added, approximately 8,400 MW  
9 total of new generating capacity from 2017 to 2023 with more than 50 percent  
10 Solar PV/Battery Storage capacity versus Natural Gas CC/GT capacity. In 2024  
11 and 2025, FPL projects to add even more PV solar capacity (see FPL witnesses  
12 Valle and Sim’s testimony for 2024 and 2025 site additions). The reliable  
13 operation and maintenance of this additional highly efficient generating capability  
14 will also become PGD’s functional responsibility.

15 **Q. How will these new generation additions deliver improved system reliability**  
16 **or economic benefits?**

17 A. These new generation additions cited above will continue and, in some cases,  
18 improve the excellent performance and operational metrics that I have discussed  
19 previously and have shown on my Exhibit TB-4.

20 **Q. Apart from the new generation that you just discussed, are there any**  
21 **additional CAPEX projects that will improve fleet performance?**

22 A. Yes. There are several combined cycle generation upgrade projects that FPL is  
23 undertaking to provide greater generating efficiency and higher power outputs.

1           Additionally, in 2020, we initiated the fuel conversion of Gulf’s Clean Energy  
2           Center Units 6 & 7 from coal to cleaner natural gas which, as noted in FPL’s 2020  
3           TYSP, is expected to result in both lower cost energy generated by the units and  
4           significant cost savings.

5       **Q.    Would you please provide detail on the generation upgrade projects that you**  
6       **mentioned?**

7       A.    Yes. As referenced in the direct testimony of FPL witness Bores, there are several  
8       key generation upgrade projects that FPL has undertaken to provide benefits for  
9       customers. These upgrade projects across nine combined cycle units, primarily  
10       involving 26 General Electric (GE) and 9 Mitsubishi CTs, are projected to result  
11       in approximately \$780 million in cumulative present value of revenue  
12       requirements (“CPVRR”) savings over their operating life. Besides an  
13       incremental generating fleet efficiency improvement, the total projected peak  
14       capacity addition from these upgrades through 2022 is more than 1,000 MW.

15       **Q.    Would you please discuss the plant conversion of Gulf’s Clean Energy Center**  
16       **Units 6 & 7?**

17       A.    Yes. In 2020, Gulf converted the former Crist Units 6 & 7 from coal to burning  
18       cleaner natural gas. The result of this project is this plant now runs 100 percent  
19       on natural gas providing labor, materials and contractor savings. Specifically, a  
20       natural gas plant configuration enabled headcount reductions of over 60 personnel  
21       in 2020 and expected materials and contractor savings of approximately \$11.5  
22       million from 2022 forward.

23

1 The primary savings from the conversion are decreases in FERC non-fuel O&M  
2 cost steam production accounts 502 and 512. These decreases are referenced  
3 previously in my testimony and are integrated into the improving Gulf fleet O&M  
4 cost trend shown on my Exhibit TB-7. This coal-to-gas fuel conversion results in  
5 reduced CO<sub>2</sub> emission rates of over 40 percent at the Gulf Clean Energy Center  
6 which complements continued emission rate reductions summarized in fleet level  
7 operating metrics shown on my Exhibit TB-4.

8 **Q. What are FPL's / Gulf's actual and projected generating fleet non-**  
9 **construction CAPEX over the 2017-2023 period?**

10 A. "Non-construction" refers to all operating plant overhaul and non-overhaul  
11 maintenance/reliability capital expenditures. FPL's / Gulf's total fleet average  
12 non-construction CAPEX over the 2017 to 2023 timeframe is approximately \$630  
13 million annually. Approximately 75 percent of that CAPEX over the final five  
14 years is comprised of overhaul-related costs, and those expenditures are essential  
15 in maintaining reliability and minimizing fuel usage.

16 **Q. What is the definition of a "major overhaul"?**

17 A. A major overhaul is defined as an overhaul that is performed on larger equipment  
18 components, such as CTs, and has a duration of 21 days or greater.

19 **Q. What are the key drivers of the number of Major Overhauls scheduled for**  
20 **2022?**

21 A. The number of major overhauls required to be performed in 2022 are primarily  
22 due to the growth of our fleet and the timing and number of units added over the  
23 last two decades. From 2001 through 2022, FPL will have added more than 17,000

1 MW of combined and simple cycle units at 16 generating units on 11 different  
2 sites. These include about 60 new CTs and their associated major components –  
3 generators, heat recovery steam generators (“HRSG”) and steam turbine  
4 generators, along with the balance of plant equipment (motors, fans, valves, etc.).  
5 Each of these major components periodically requires a major overhaul, but the  
6 cycle varies depending upon the manufacturer of the equipment and the type of  
7 component.

8  
9 To secure the operational benefits of this growing fleet of fuel-efficient facilities,  
10 ongoing maintenance and associated CAPEX is necessary. There are  
11 approximately eight major overhauls scheduled to be performed in 2022. A Hot  
12 Gas Path for the Combustion Turbines is scheduled for Cape Canaveral Unit 3.  
13 Generator Minor outages are scheduled at Port Everglades Unit 5 and for Ft. Myers  
14 Unit 3. A Combustion Turbine Inspection is scheduled at Lauderdale Unit 6. A  
15 Steam Turbine Major is scheduled at Martin Unit 3. At West County, a  
16 Combustion Turbine and Generator Major is scheduled at Unit 1 and a Steam  
17 Turbine and Generator Major is scheduled at Unit 2. Major overhauls are  
18 necessary to maintain unit and system efficiency, performance and reliability.

19 **Q. Are these overhaul expenses in 2022 unusual?**

20 A. No. For FPL, base non-fuel O&M overhaul expenses for the period of 2017  
21 through 2023 average approximately \$34.9 million per year. The 2022 base non-  
22 fuel O&M overhaul expense forecast is approximately \$34.4 million. As

1 discussed earlier, FPL and Gulf are significantly below base non-fuel O&M  
2 benchmarks.

3 **Q. What steps have FPL and Gulf taken, or is FPL planning to take, to reduce**  
4 **O&M and CAPEX associated with operating and maintaining the generating**  
5 **fleet?**

6 A. PGD's cost practices and procedures for controlling expenses have resulted in its  
7 continually-improving cost profile as shown in Exhibits TB-4, TB-7, and TB-9.  
8 Both O&M and capital cost discipline is a day-to-day priority throughout PGD.  
9 We aggressively strive for continual operational excellence along with sharing and  
10 replicating cost efficiency improvements across the generating fleet. FPL has  
11 further implemented and continues to undertake significant actions to reduce costs  
12 primarily through retiring approximately 5,000 MW of older, less efficient  
13 generating units over the 2017 to 2022 timeframe as discussed in FPL's 2020  
14 TYSP including: Lauderdale Units 4 & 5 (900 combined MW), Martin Units 1 &  
15 2 (1,600 combined MW), St. Johns River Power Park Coal Plant (250 MW share),  
16 Manatee Units 1&2 (1,600 combined MW), and Scherer 4 Coal Unit (600 MW  
17 share). Gulf is further projected to be retiring approximately 600 MW of coal-  
18 fueled capacity at the Gulf Clean Energy Center along with its ownership portion  
19 of Plant Daniel Units 1 and 2 during the subsequent three-year (2023 - 2025)  
20 period, further reducing emission rates.

21  
22 Also, as mentioned earlier, contributing to FPL's overall excellent generating fleet  
23 cost performance is PGD's substantial resource management (staffing rate)

1 improvement as shown on Exhibit TB-4. Our modern, state-of-the-art power  
2 plants require significantly fewer people than the older power plants they replaced.  
3 Our solar power plants require even lower staffing.

4 **Q. Are FPL's generating fleet O&M and CAPEX forecasts reasonable?**

5 A. Yes. For the reasons outlined in detail in my testimony and exhibits, FPL's 2022  
6 test year and 2023 subsequent year generating fleet O&M and CAPEX forecasts  
7 are reasonable and reflect our intentions for continued superior performance. As  
8 discussed previously, PGD has the leadership and performance track record for  
9 managing and sustaining excellent generating fleet performance. Summarizing:

- 10 ➤ PGD's commitment to low-cost, reliable generating fleet performance has  
11 been demonstrated by holding non-fuel O&M \$/kW cost essentially level  
12 for the last 30 years despite inflation, resulting in best-in-class cost  
13 performance.
- 14 ➤ Our investments have provided and will continue to provide long-term  
15 customer benefits through direct operating or maintenance cost savings,  
16 increased generating efficiency that provides fuel and air emission  
17 avoidance, and maintained or improved system reliability.
- 18 ➤ Ongoing maintenance in the form of additional reliability overhauls and  
19 spare parts however is required to continue achieving the operational  
20 benefits of this growing fleet of fuel-efficient facilities. FPL has a  
21 demonstrated track record, as my testimony and exhibits demonstrate, to  
22 ensure such costs are reasonable and prudent.

- 1           ➤ In addition to FPL’s proven track record of providing cost-effective,  
2           reliable, efficient power, our combined total non-fuel O&M and CAPEX  
3           compares well to industry-weighted CC/PV/Coal technology costs  
4           developed by the U.S. Department of Energy’s Energy Information  
5           Administration (“EIA”).
- 6           ➤ Essentially, FPL’s combined fleet \$/kW costs outperform the industry  
7           across various comparative views, whether:
- 8           ○ by total fleet non-fuel O&M on Exhibit TB-7;
  - 9           ○ by key plant type (CC and PV) non-fuel O&M on Exhibit TB-8;
  - 10          ○ or by their combined total non-fuel O&M and CAPEX Major  
11          Maintenance expenditures versus EIA’s industry-weighted  
12          CC/PV/Coal cost on Exhibit TB-9.
- 13          ➤ In all cases, FPL’s costs are lower and more economical for customers  
14          while providing better heat rate and reliability. Our value proposition  
15          continues to get even better through investment, operational  
16          improvements, and cost-efficient performance. PGD has demonstrated  
17          prudent management of its operations over extended periods, with  
18          exceptionally positive results, and as an organization is enthusiastic and  
19          focused on continuing to transform and improve the consolidated FPL  
20          generating fleet to provide even more cost-effective, reliable, and  
21          environmentally friendly power for customers.

22   **Q.    Does this conclude your direct testimony?**

23   A.    Yes, it does.

**Florida Power & Light Company**

**CONSOLIDATED MFRs SPONSORED OR CO-SPONSORED BY THOMAS BROAD**

| MFR                  | Period                         | Title   |
|----------------------|--------------------------------|---|
| <b>SOLE SPONSOR:</b> |                                |   |
| B-18                 | Prior<br>Test<br>Subsequent    | FUEL INVENTORY BY PLANT                         |
| <b>CO-SPONSOR:</b>   |                                |   |
| B-15                 | Test<br>Subsequent             | PROPERTY HELD FOR FUTURE USE - 13 MONTH AVERAGE |
| B-24                 | Test<br>Subsequent             | LEASING ARRANGEMENTS                            |
| C-08                 | Test<br>Subsequent             | DETAIL OF CHANGES IN EXPENSES                   |
| C-15                 | Historic<br>Test<br>Subsequent | INDUSTRY ASSOCIATION DUES                       |
| C-34                 | Historic<br>Subsequent         | STATISTICAL INFORMATION                         |
| C-41                 | Test<br>Subsequent             | O & M BENCHMARK VARIANCE BY FUNCTION            |
| C-43                 | Test<br>Subsequent             | SECURITY COSTS                                  |
| F-08                 | Test<br>Subsequent             | ASSUMPTIONS                                     |

**Florida Power & Light Company**

**SUPPLEMENT 1 - FPL STANDALONE INFORMATION IN MFR FORMAT SPONSORED OR  
 CO-SPONSORED BY THOMAS BROAD**

| Schedule             | Period             | Title   |
|----------------------|--------------------|---|
| <b>SOLE SPONSOR:</b> |                    |   |
| B-18                 | Test<br>Subsequent | FUEL INVENTORY BY PLANT                         |
| <b>CO-SPONSOR:</b>   |                    |   |
| B-15                 | Test<br>Subsequent | PROPERTY HELD FOR FUTURE USE - 13 MONTH AVERAGE |
| B-24                 | Test<br>Subsequent | LEASING ARRANGEMENTS                            |
| C-08                 | Test<br>Subsequent | DETAIL OF CHANGES IN EXPENSES                   |
| C-15                 | Test<br>Subsequent | INDUSTRY ASSOCIATION DUES                       |
| C-34                 | Subsequent         | STATISTICAL INFORMATION                         |
| C-41                 | Test<br>Subsequent | O & M BENCHMARK VARIANCE BY FUNCTION            |
| C-43                 | Test<br>Subsequent | SECURITY COSTS                                  |
| F-08                 | Test<br>Subsequent | ASSUMPTIONS                                     |

**Florida Power & Light Company**

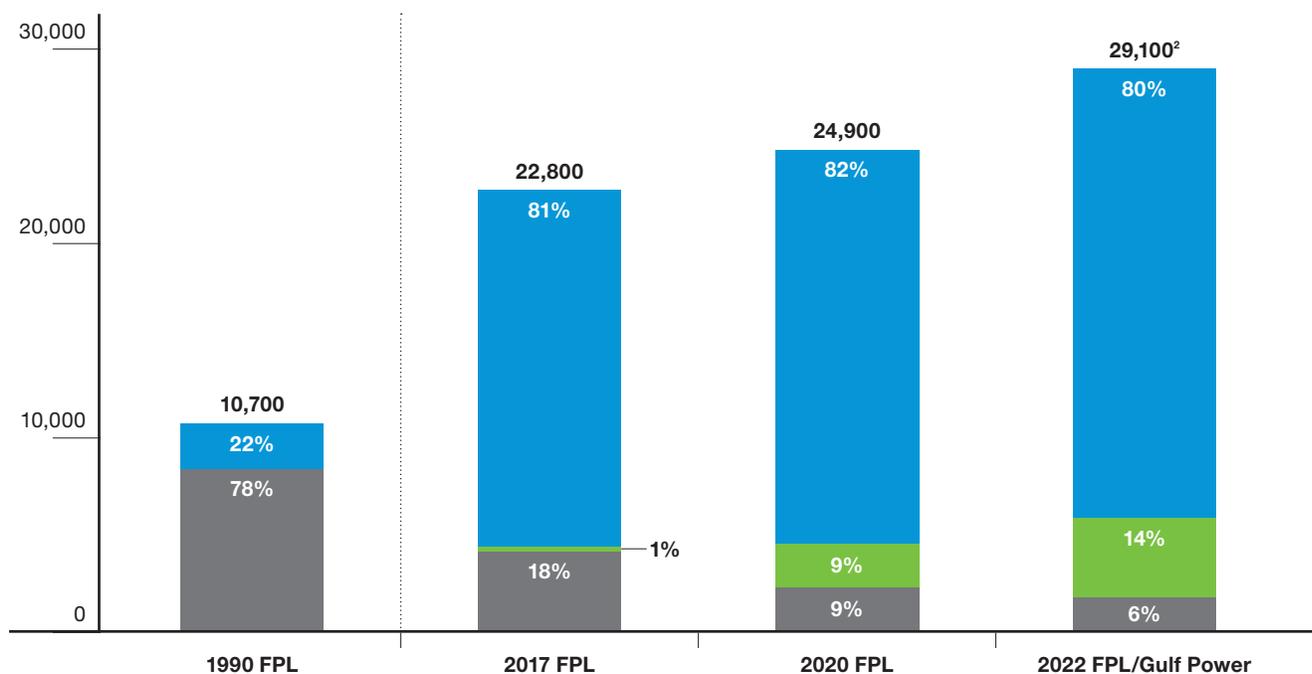
**SUPPLEMENT 2 - GULF STANDALONE INFORMATION IN MFR FORMAT SPONSORED OR  
 CO-SPONSORED BY THOMAS BROAD**

| Schedule             | Period             | Title   |
|----------------------|--------------------|---|
| <b>SOLE SPONSOR:</b> |                    |   |
| B-18                 | Test<br>Subsequent | FUEL INVENTORY BY PLANT                         |
| <b>CO-SPONSOR:</b>   |                    |   |
| B-15                 | Test<br>Subsequent | PROPERTY HELD FOR FUTURE USE - 13 MONTH AVERAGE |
| B-24                 | Test<br>Subsequent | LEASING ARRANGEMENTS                            |
| C-08                 | Test<br>Subsequent | DETAIL OF CHANGES IN EXPENSES                   |
| C-34                 | Subsequent         | STATISTICAL INFORMATION                         |
| C-43                 | Test<br>Subsequent | SECURITY COSTS                                  |
| F-08                 | Test<br>Subsequent | ASSUMPTIONS                                     |



## FPL Fossil/Solar Fleet MW Capability and Technology Changes<sup>1</sup>

For perspective, in several decades FPL's fossil/solar generating fleet transformed in scale and makeup from FERC "Steam" Boiler to efficient "Other"<sup>1</sup> CC and PV technology



■ Other (Combined Cycle/GT)
 ■ Other (Solar PV/Battery)
 ■ Steam (Combustion Boiler)

Modernizing and diversifying the expanded fleet provides customers with cleaner, state-of-the-art electric power generation and its associated performance benefits

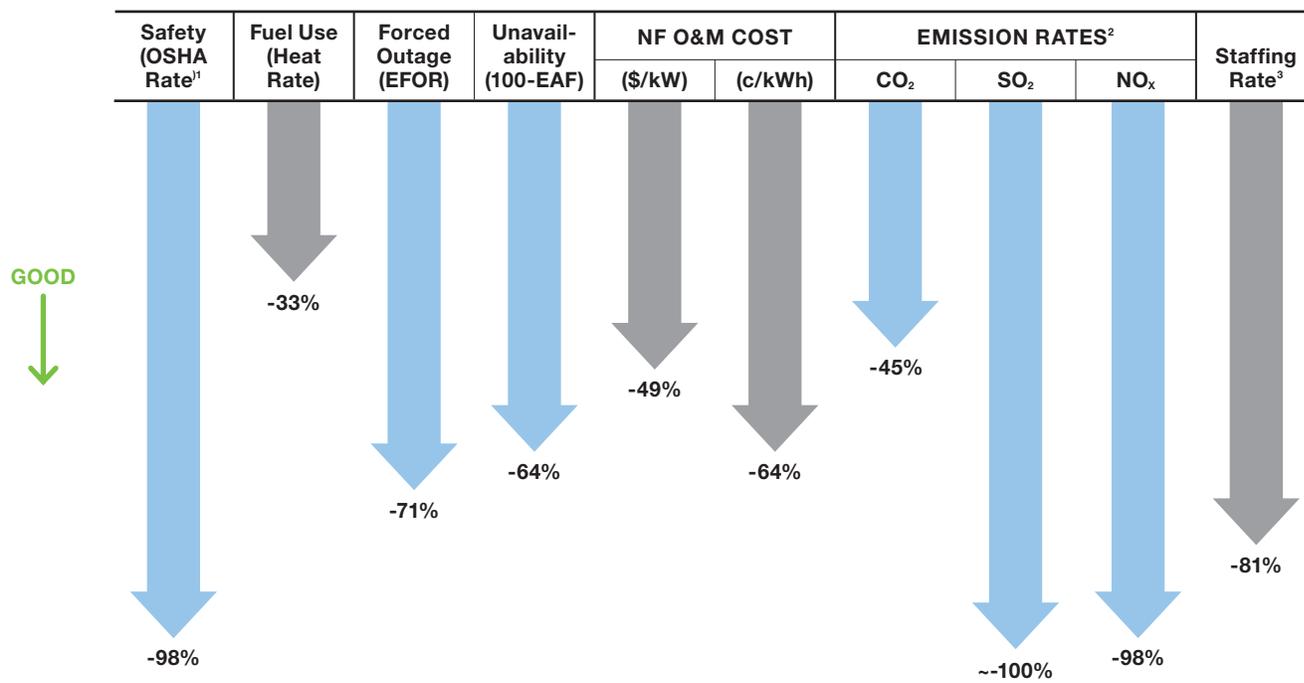
<sup>1</sup> By FERC "Steam" & "Other" Production Categories. "Other" Production capacity represents combined (& simple) cycle gas turbine (CCGT) and solar photovoltaic (PV) type units in FPL's fleet.

<sup>2</sup> Assumes combined company operations starting in 2022. MW capabilities reflect unit additions, retirements, and miscellaneous capacity changes.



## FPL Fleet Performance Improvements (i.e. impact factor reductions) (1990 vs. 2020)

**As FPL transformed its fossil/solar generating fleet, it made substantial operational and cost performance improvements**



| YEAR      | OSHA RATE | BTU/KWH        | EFOR %        | 100-EAF %      | \$/KW      | C/KWH      | LBS/MWH | LBS/MWH | LBS/MWH | EMPL/MW         |
|-----------|-----------|----------------|---------------|----------------|------------|------------|---------|---------|---------|-----------------|
| 1990      | 4.95      | 10,214         | 2.77          | 100-81.7=18.3  | 18.5       | 0.64       | 1,464   | 6.51    | 5.24    | 0.21            |
| 2020      | 0.10      | 6,878          | .80           | 100-93.4=6.6   | 9.4        | 0.23       | 809     | 0.01    | 0.12    | 0.04            |
| Results > | Safer     | More Efficient | More Reliable | More Available | Lower Cost | Lower Cost | Cleaner | Cleaner | Cleaner | More Productive |

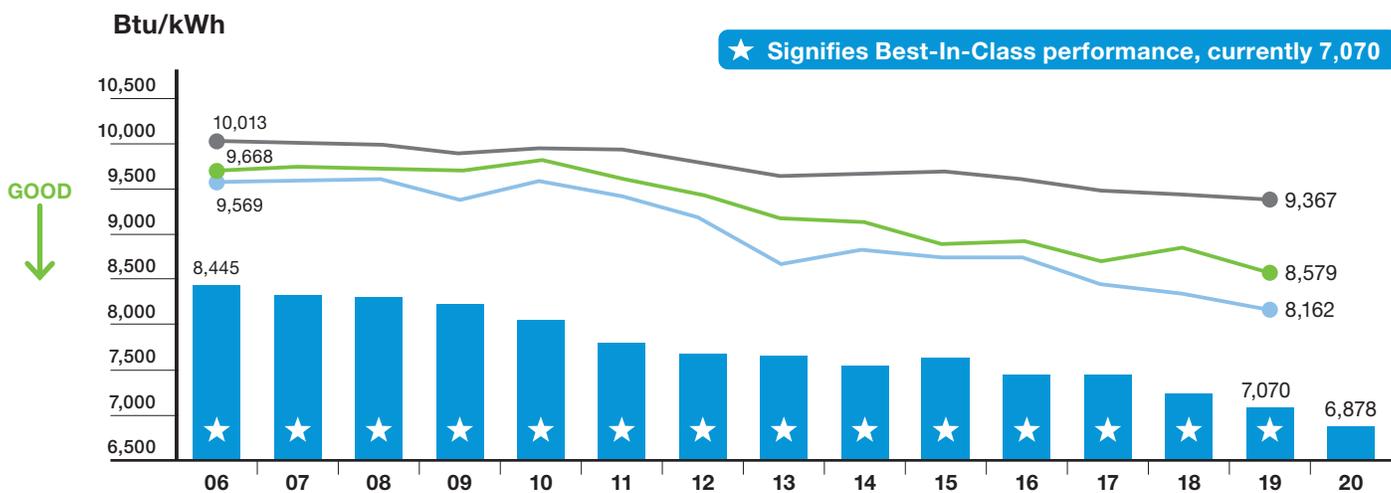
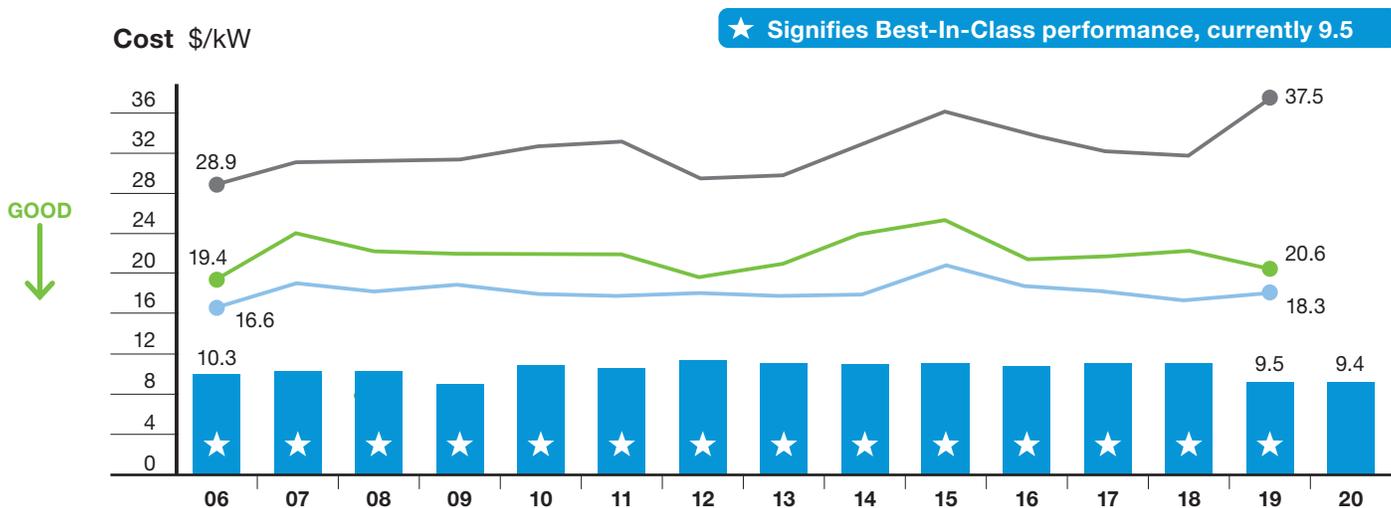
**FPL's fleet improvements in safety, fuel efficiency, reliability, cost, emissions and productivity are integral to more cost effectively generating electricity for customers**

<sup>1</sup> Injuries & Illnesses per 200,000 labor-hrs (~100 employees);  
<sup>2</sup> Emission rates include solar contribution;  
<sup>3</sup> 969 Employees / 24,912 MW.



## FPL Fossil/Solar vs. Industry Utility Peer Group\* Performance Comparisons

A comparison of non-fuel O&M, Heat Rate and EFOR performance indicates FPL has essentially been a Best-in-Class or Top Decile performer vs. industry for 15 years



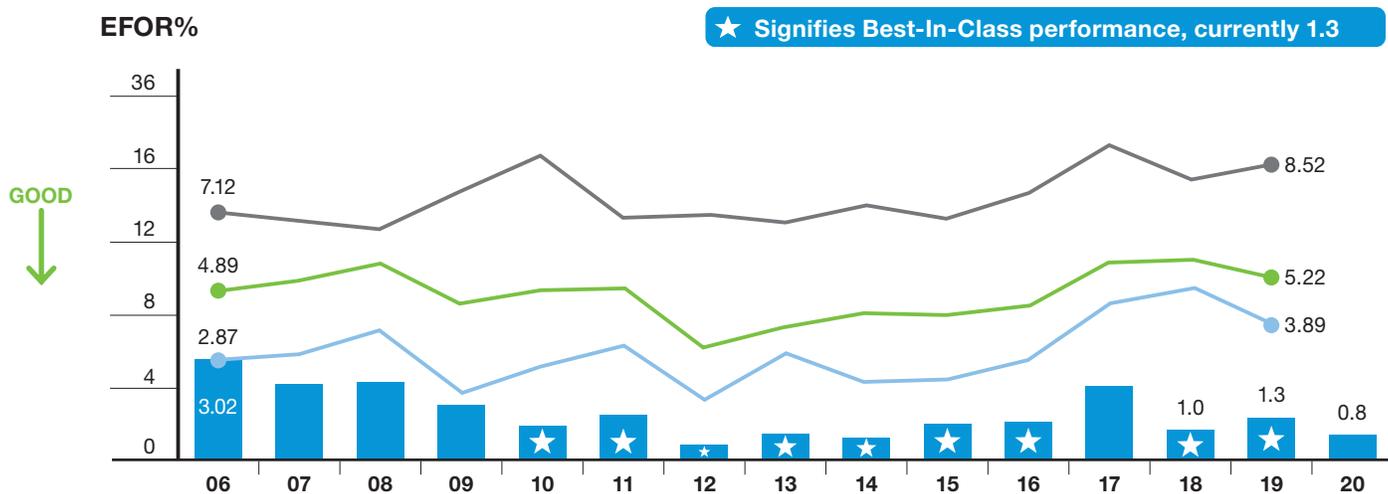
Peer Average      Top Quartile      Top Decile      FPL

\* Industry NFOM & NHR comparisons based on FERC Form 1-reporting large utility fossil 'Steam plus Other' capacity fleets (> 5,000 mw); from ABB's Velocity Power Industry database. Industry benchmarks (Top Decile, Quartile, Average) exclude FPL.



## FPL Fossil/Solar vs. Industry Utility Peer Group\* Performance Comparisons

A comparison of non-fuel O&M, Heat Rate and EFOR performance indicates FPL has essentially been a Best-in-Class or Top Decile performer vs. industry for 15 years



Peer Average

Top Quartile

Top Decile

FPL

\* Industry EFOR Source: North American Electric Reliability Council (NERC) for FERC 'Steam & Other' Capacity Fleets (>5,000 MW). Note: aside from the 2006 1.31% EFOR impact due to OEM Industry-wide CT compressor issue, FPL would also be Best-in-Class at 1.71% EFOR in 2006 as well. All EFOR performance excludes PV Solar consistent with NERC reporting.

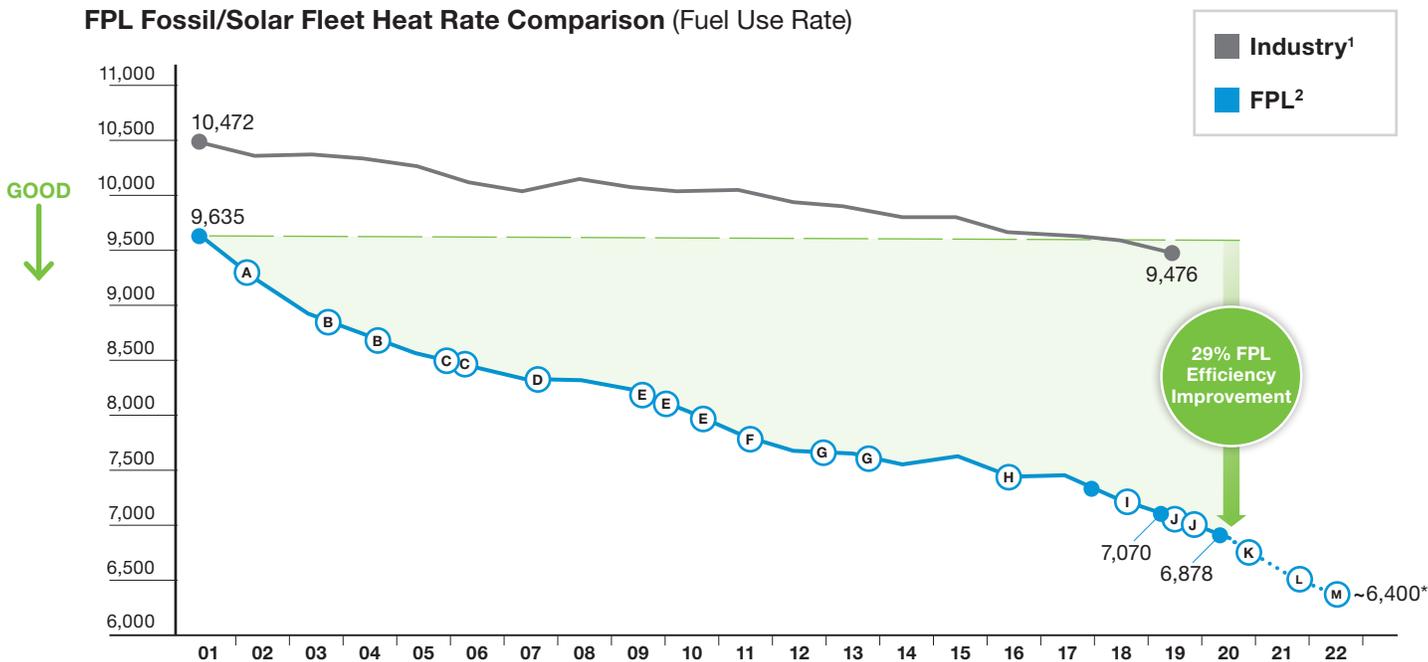


# FPL Fossil/Solar Fleet Heat Rate Comparison

(Fuel Use Rate)

Since 2001, FPL's modernization efforts improved our fossil/solar generating efficiency by 29%, driving us from 8% to beyond 25% better than the industry

FPL Fossil/Solar Fleet Heat Rate Comparison (Fuel Use Rate)



A. PFM CC Repowering (1,400 MW)

B. PSR 4&5 CC Repowering (1,900 MW)

C. PMG 8 & PMT 3 CC (2,000 MW)

D. PTF 5 CC (1,100 MW)

E. WCEC 1-3 CC (3,600 MW)

F. Solar (100 MW)

G. CCEC & RBEC (2,400 MW)

H. PEEC CC (1,200 MW) & Solar (200 MW)

I. Solar (600 MW) SJRPP Coal & PMR 1&2 & PFL 4&5 ret. (-2,760 MW)

J. Solar (300 MW) OCEC CC (1,720 MW)

K. Solar (1,100 MW)

L. Solar (670 MW), Batteries (470 MW) & Scherer 4 coal & PMT 1&2 ret. (-2,250 MW)

M. Solar (450 MW) & DBEC (1160 MW)

Our heat rate improvement trend significantly avoids fuel use and hundreds of millions in cost annually and will continue as more efficient units are integrated

<sup>1</sup> Source: ABB-Ventix; U.S. generating plants (Excl. FPL/NEE).

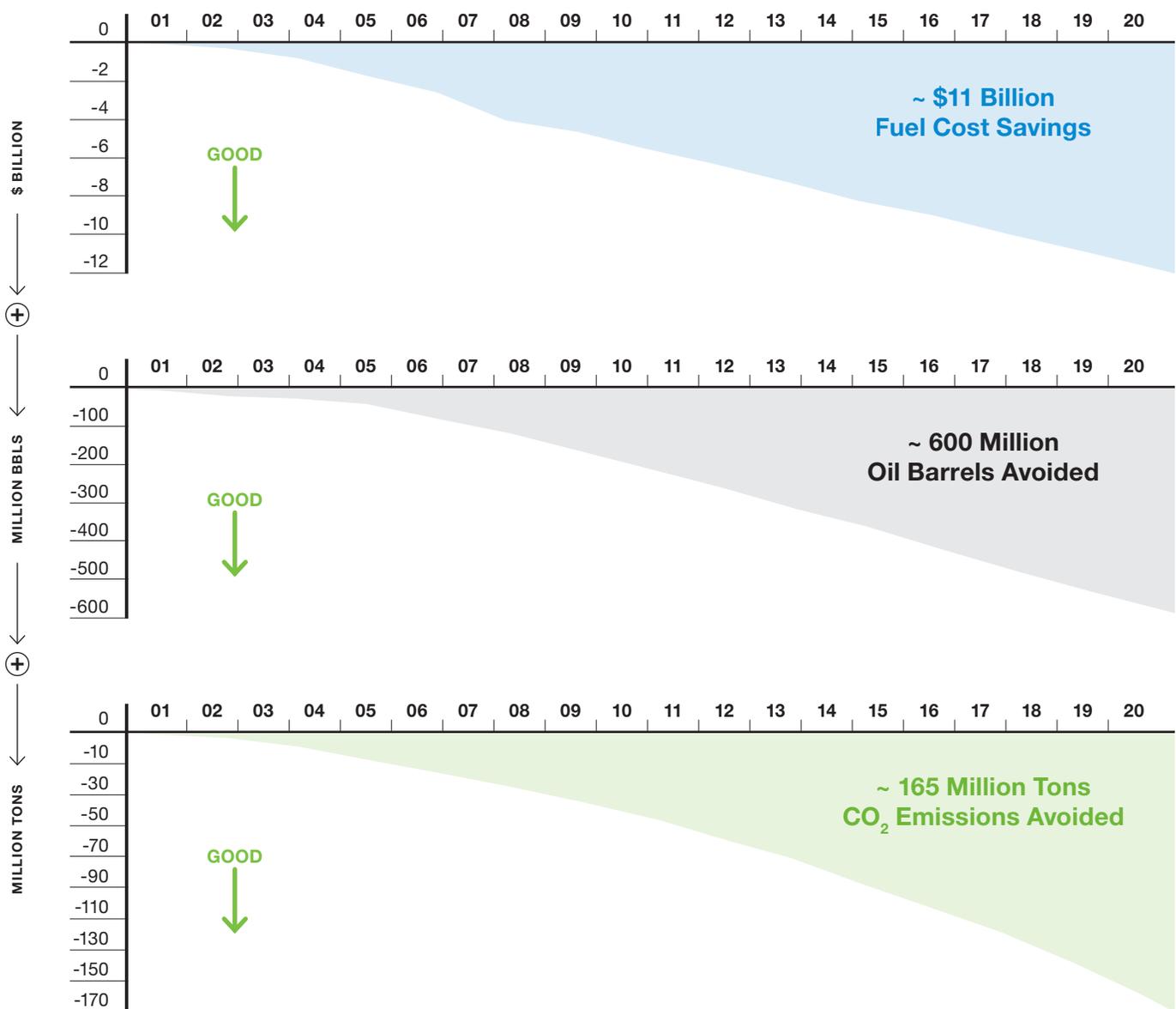
<sup>2</sup> FPL plant capacity rounded.

\* 2022 reflects merged FPL & Gulf fleet heat rate



## Cumulative Benefits from FPL's Modernized Fleet since 2001

In addition to fuel cost savings, modernizing FPL's fossil/solar generating fleet significantly avoided oil usage and emissions for Florida



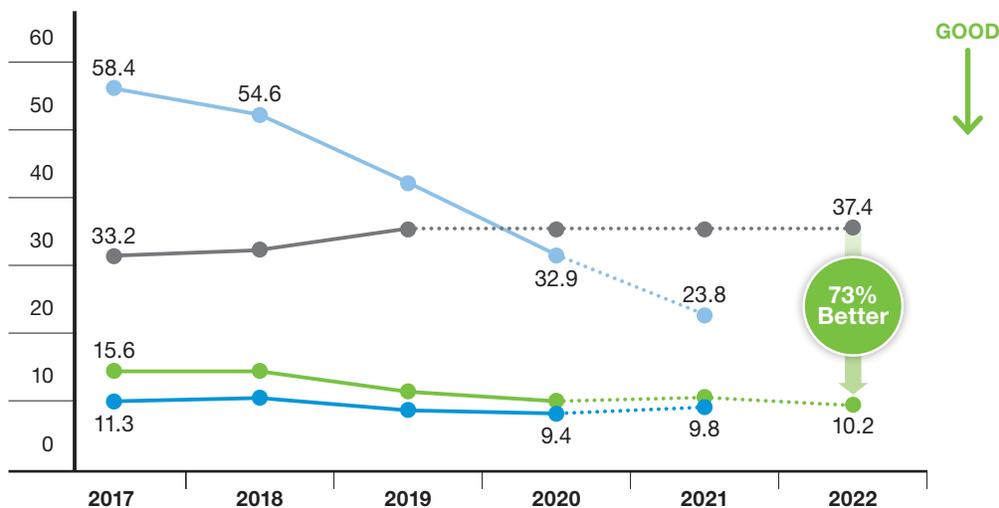
FPL's well-operated, modernized fleet has provided significant customer benefits which will further increase with generating fleet improvements



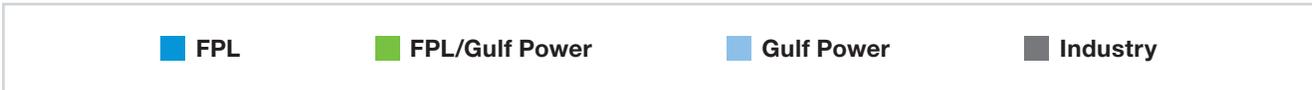
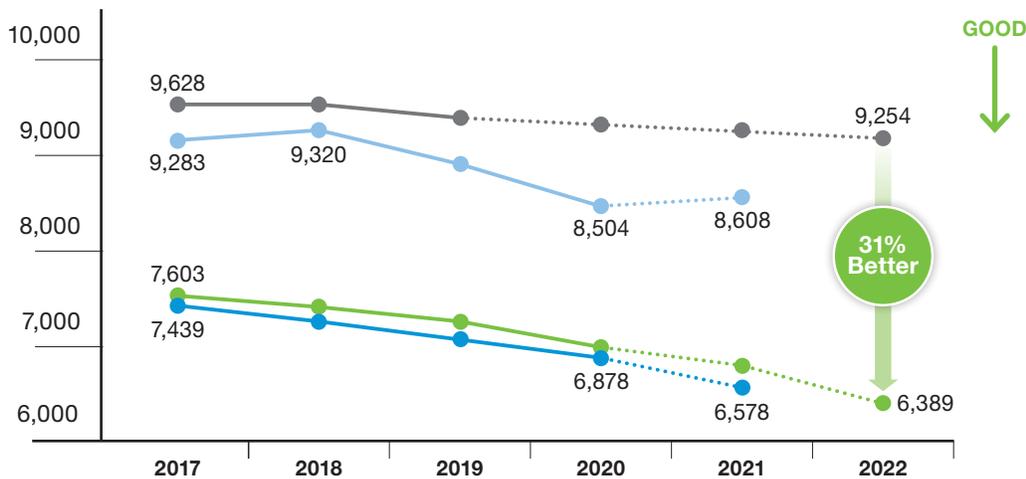
## NFOM, NHR and EFOR Comparisons

Comparing fleet level O&M, Heat Rate and EFOR performance between 2017 and 2022, FPL and Gulf Power are combining to significantly surpass the industry.

**NFOM 'Cost Efficiency' Comparison \$/kW**



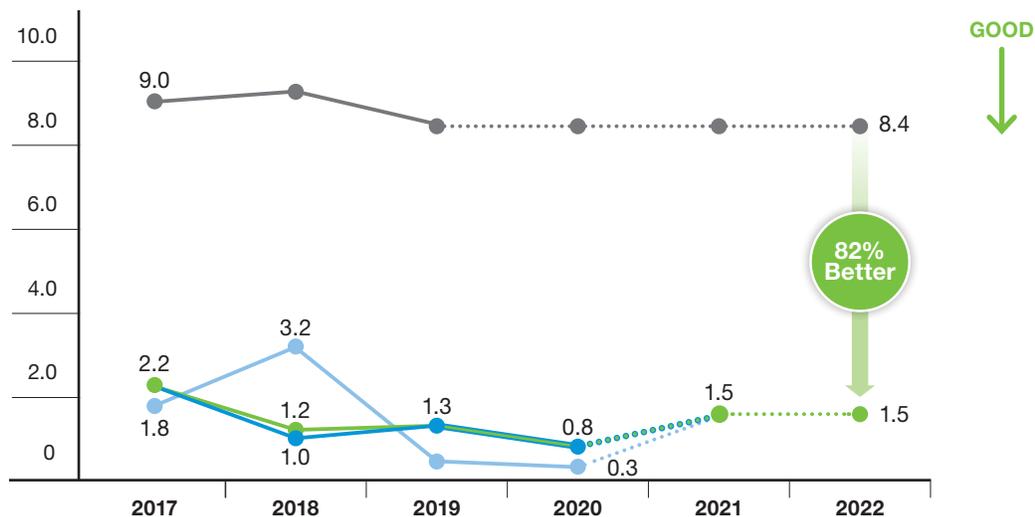
**NHR 'Fuel Efficiency' Comparison Btu/kWh**





## NFOM, NHR and EFOR Comparisons

EFOR 'Unreliability' Comparison %



Industry EFOR Source: North American Electric Reliability Council (NERC); Average EFOR for fossil steam and combined cycle units for all reporting companies. Gulf Power's 2018 EFOR excludes the impact of Hurricane Michael and 2020 EFOR excludes the impact of Hurricane Sally. All EFOR excludes PV Solar per NERC Reporting regs.

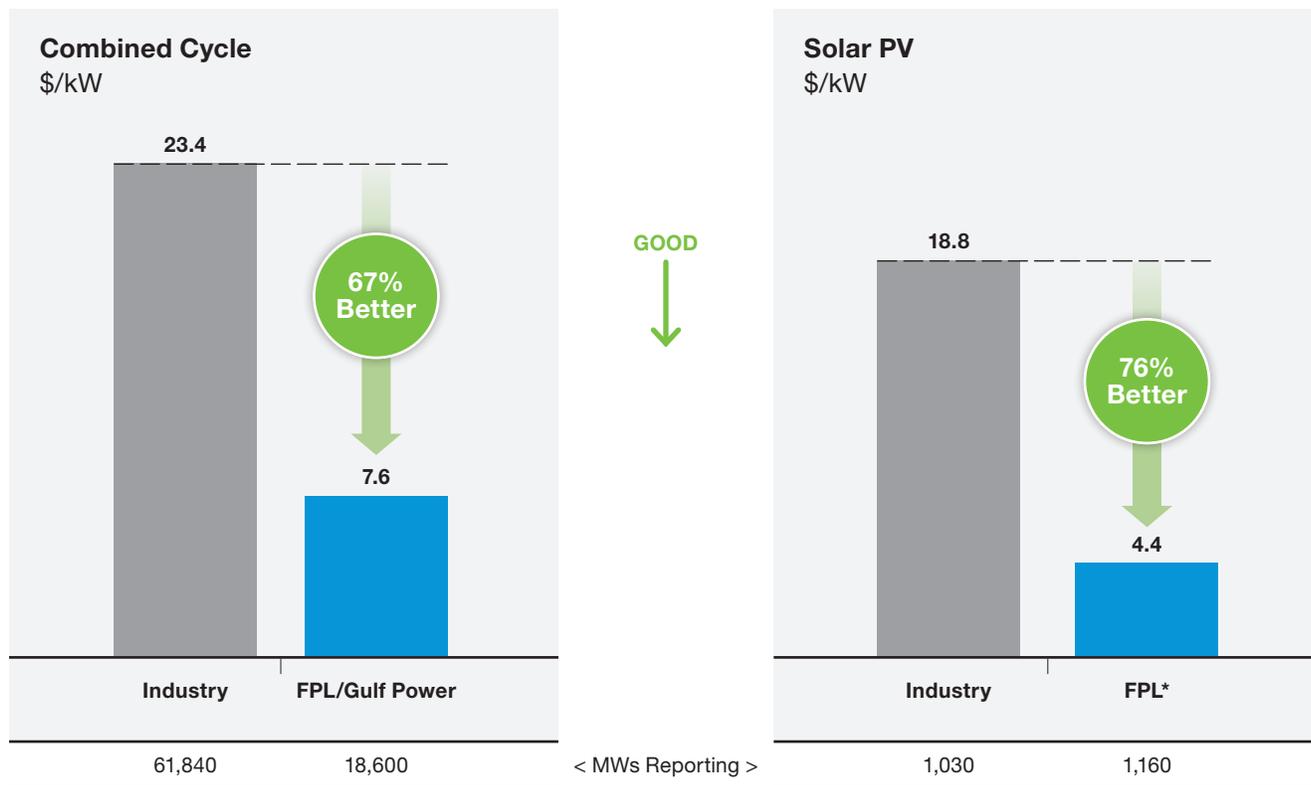
FPL and Gulf Power's combined lower cost, more efficient, and more reliable operations are translating to greater value and benefit for customers





## CC & PV Plant NFOM \$/kW Comparisons - 2019

Comparing plant type O&M costs for FPL/Gulf Power's progressive Combined Cycle and Solar Photovoltaic categories to industry also demonstrates excellence



Based on the latest available FERC data for CC and PV plant types, our cost/kW is also significantly better than the industry

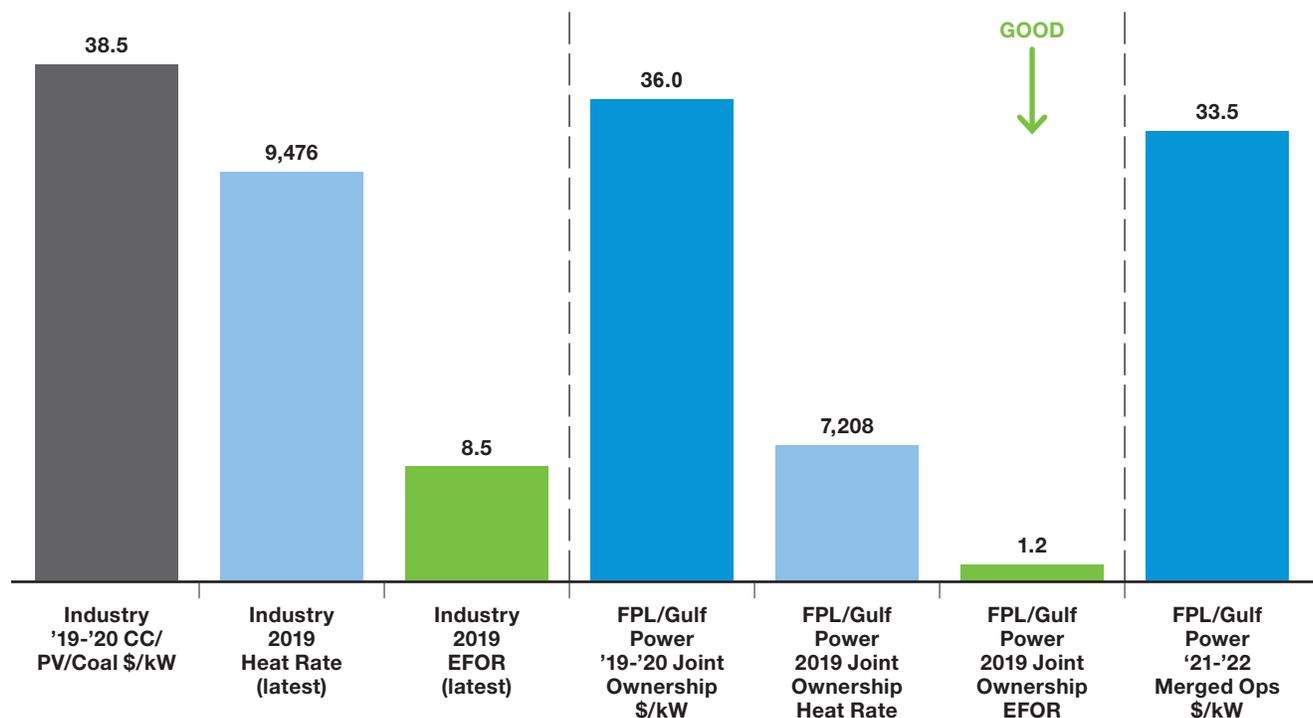
Source: FERC Form 1 consolidated in Ventyx/ABB Energy Velocity Suite:  
 - CC Plants (post 1990 COD): Industry - 92; FPL - 10; Gulf Power - 1  
 - Solar PV Plants (>= 10 MW): Industry - 44; FPL - 17; Gulf Power - 0:

\*Gulf Power's 1st Solar PV site is in 2020



## Total O&M + CAPEX Maintenance \$/kW Expenditure\*, Heat Rate and % EFOR Comparisons

Comparing FPL/Gulf Power's combined fossil/solar fleet Total O&M + CAPEX costs along with operational performance to Industry



Compared to the industry, the FPL/Gulf Power fleet's O&M + CAPEX costs are trending lower while providing more fuel efficient reliable generation with improvements in 2020

\* Cost comparisons involve similar Industry CC / PV / Coal technology weightings, and include all Fixed, Variable, and Major Maintenance costs converted to regional \$ per installed kW for two-year actual and projected periods ('19-'20 & '21-'22) since prior Test Year.

FPL/Gulf Power costs exclude CT upgrades and construction CAPEX, but reflect Total fossil/solar non-fuel O&M (Base plus Environmental and Capacity Clauses) including all central fleet support services, and CAPEX maintenance. All EFOR performance excludes PV Solar consistent with NERC reporting requirements.

Industry Source: U.S. Energy Information Administration (U.S. DOE/EIA) "Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants" 2013, prepared by SAIC for EIA's Electricity Market Model (EMM) & National Energy Modeling System (NEMS). Industry-weighted estimate used PGD's '19-'20: 82% CC, 10% Coal, & 8% PV MW mix; and 80% CC; 7% Coal, 14% PV by '21-'22).

Note: FPL's/Gulf Power's '19-'22 four year average Total Expenditure rate of \$34.8/kW (not displayed) was also 10% better than the comparable Industry-weighted '19-'22 average projection of \$38.4/kW.