



Stephanie A. Cuello
SENIOR COUNSEL

April 27, 2022

VIA ELECTRONIC FILING

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

Re: *Duke Energy Florida, LLC's Demand Side Management Annual Report for
Calendar Year 2021*; Undocketed

Dear Mr. Teitzman:

Please find enclosed for electronic filing Duke Energy Florida, LLC's Response to Staff's First Data Request (Nos. 1-15).

Thank you for your assistance in this matter and if you have any questions, please feel free to contact me at (850) 521-1425.

Sincerely,

s/ Stephanie A. Cuello

Stephanie A. Cuello

SAC/mw
Enclosure

Cc: Michael Barrett, Division of Economics

**Duke Energy Florida, LLC's Response to
Staff's First Data Request (1-15)
Regarding the 2021 DSM Annual Report**

1. Please describe how Duke Energy Florida, LLC (DEF or Company) monitors federal energy efficiency standards and Florida Building Code requirements. Address in your response how the Company modifies existing programs to reflect changes, when necessary.

Response:

DEF's approach for monitoring any new federal energy efficiency standards and Florida Building Code requirements involves both internal and external resources. DEF stays informed about new federal energy efficiency standards and Florida Building Code requirements through participation in trade associations, industry groups, and building associations. DEF also stays informed about new technologies through monitoring activity in the other Duke jurisdictions, meetings with peer utilities and review of regulatory filings.

DEF also researches and evaluates new DSM technologies as they become available in the marketplace to identify potential program opportunities. This is a rigorous process that involves further analysis of both customer and company costs and benefits, projected participation levels, analysis of cost effectiveness test results, discussion of operational considerations, and customer rate.

2. Please answer the following regarding DEF's conservation research and development (CRD) initiatives that evaluate emerging DSM opportunities:

- A. Identify and describe any new CRD initiatives that were launched in 2021.

Response:

Through this program, DEF launched a project for a study to evaluate the demand response capability of internet-connected residential batteries. Residential batteries potentially offer the ability to provide power reduction for demand response while eliminating any discomfort to the customer (as compared to residential appliance demand response). Certain battery manufacturers have developed technologies that allow for the collection of capacity and charge data, communication protocols for external aggregator software providers, and the ability to dispatch stored energy to serve the needs of the customer or the grid. This project will focus on the capabilities of a particular aggregator to collect data from multiple battery manufacturers, the feasibility of utilizing aggregation technology for dispatching demand response event commands, and the net impact of these events on shaping demand. Such an aggregation system enables existing units that are already installed by residential customers in Duke Energy territory to be used in this study. The results of this study could be used to develop a cost-effective demand response program in the future.

- B. Provide updates on the status of all on-going CRD initiatives that began before 2021, and if applicable, attach interim and/or final reports on work completed in 2021.

Response:

- Continued a project with the University of Central Florida (UCF) to document the value of long-duration customer-side energy storage systems. This project is using the technology at UCF's Microgrid Control lab to directly test a long-duration energy storage system. Use cases to be investigated include study of battery performance during charging and discharging, documenting the effects of cycling on battery performance (battery degradation, efficiency, etc.), optimal operation of a battery energy storage system in a distribution system with high penetration of solar energy, control of behind-the-meter distributed energy resources to provide services including peak capacity management, DR (consuming or generating), frequency regulation, ramping capability and voltage management.
- Continued a pilot to develop software, firmware, and applications for a Smart Home Gateway to evaluate the potential for a future home energy management program and its ability to enhance the Company's future energy efficiency and DR programs. The Smart Home Gateway currently includes processing and communications capabilities to perform on-site operations including receiving energy data from the customer's AMI meter, communications using four radios and on-site processing. Capabilities are under development and testing that include enabling appliance demand response using CTA-2045 (EcoPort) local control and enabling local control of Energy Management Circuit Breakers (EMCBs) for monitoring and demand response. These technologies will allow automatic control of devices according to the customer's preference, and enabling open-source, utility demand response. The Smart Home Gateway can also potentially be used to engage customer awareness of how energy is being used in the home.
- Continued a project with the University of South Florida (USF) to leverage customer-sited solar PV and energy storage at the USF 5th Avenue Garage Microgrid. The system provides load smoothing, islanding, and demand response. A publicly available dashboard that shows live data, project specific facts and the capability of downloading data for further study is available for the site at <https://dashboards.epri.com/duke-usfsp-parking>. Additional testing is planned to utilize a new demand response interface to the energy storage system. Results of this research may be used for design of a potential cost-effective DR program. USF continued research on microgrid operation.
- Continued the Electric Power Research Institute (EPRI) Solar DPV project for data collection to document customer solar resources with a focus on larger PV arrays with and without energy storage. This project also provides the data stream for the dashboard mentioned above.
- Continued participation in an EPRI project to study the potential of using customer demand response to compensate for variable loads and intermittent renewable generation resources.
- Continued the Energy Management Circuit Breaker (EMCB) Project. This project

continued to explore the potential for developing a program for customer circuit breakers that includes communication, metering, and remote operation for potential applications including EE, DR, and integration of distributed energy resources. The prototype EMCB hardware and software in the field pilot program have been replaced with commercial versions, and operational data is being collected from appliances in 9 customer homes. The prototype EMCB-EV (a self-contained electric vehicle charger) will be replaced with a commercial version of this device. We will test the effectiveness of this product and consider potential program opportunities for implementation. This data will be used to document the operation of these breakers and assess the cost-effectiveness for potential EE and DR programs.

- Completed a project to do field evaluation with EPRI and the Grid Modernization Lab Consortium (GMLC) of a utility-integrated DSM solution using open standards and open source platforms. A consortium of National Labs, the Grid Modernization Lab Consortium, has developed both the software and hardware, all based on open-source technologies, to leverage DSM of residential loads to provide grid resiliency using a Home Energy Management System (HEMS). In 2021, DEF tested the cloud-based HEMS in 7 customer homes. This project leveraged the homes and equipment installations from our CTA-2045 Projects. The final report for this project will be available publicly in June 2022.
- Completed a project with EPRI to assess the DR opportunities for new and existing variable capacity heat pump systems for potential future load-management programs. DEF used manufacturer cloud communications to control existing, variable-capacity heat pumps at volunteer participants' homes. DR events were executed, and data showed promising results. This pilot confirmed the viability of cloud communications to provide triggering and impacts of DR events on variable-capacity heat pumps. The participant customers reported very little impact on comfort during the demand response events. Please see Attachment A, the Final Report for this project.
- Continued a project that will provide knowledge in methods to utilize customer Wi-Fi infrastructure to develop a dedicated, durable, and secure utility communication channel to connected devices. The project will also provide knowledge on the effectiveness of Wi-Fi-signal-strength-improvement technology. This technology could lead to lower costs and improved cost-effectiveness for existing and future DR and EE programs.
- Completed a project to gather robust data about residential customers that drive electric vehicles (EV). The project will determine what type of hardware customers use to charge their vehicle, where they charge (at home, work, or public charging station, in/out of DEF service territory, etc.) and how much power and energy are consumed by EV charging. In 2020 and 2021, the project assessed the effectiveness of incentives to shift on-peak EV charging to off-peak times. The incentives to charge off-peak and incentives to avoid charging on-peak were both shown to be very effective at changing charging behavior. Please see Attachment B, the Final Report for this project.
- Completed a pilot to determine the viability of using precision temperature measurement and analysis to determine issues with customer HVAC systems, duct work, or building envelope that could resolve high bill complaints. Precision temperature measurements were made at several points within the participant's homes.

Analysis of the temperature data and rate of change of the temperature provided conclusions on what could be causing a customer's high energy usage. These conclusions did not fully explain the temperature issues in the participant's home. We decided not to move forward with this technology at this time.

- Partnered with EPRI and other research organizations to evaluate EE, energy storage, and alternative energy / innovative technologies.

3. Please answer the following regarding DEF's Low Income Programs:

A. Describe the conservation efforts DEF used in 2021 to ensure low-income customers are aware of, and have access to, conservation programs. Address in your response whether any of these efforts were changed or modified in 2021, compared to prior years.

Response:

DEF uses a variety of marketing channels to promote its conservation programs to all customers including low-income customers. These channels include bill inserts, emails, direct mail, social media, and promotional information on its website.

Specific to the low-income programs, DEF works with local governments and non-profit agencies to educate them about benefits available to low-income customers. DEF meets with these organizations and shares information about what is offered through the programs and what DEF can do to assist them in getting incentives through these programs. COVID-19 continued to have an impact on activities in 2021 as both DEF and the low-income agencies suspended direct install of measures in customers' homes due to concerns about customer safety. The agencies have resumed activities and submitted applications for rebates through the Weatherization Program. DEF also resumed in-home installs through its Neighborhood Program.

B. Identify DEF's partnerships with government and non-profit agencies in 2021 designed to help identify low-income neighborhoods and educate customers on conservation opportunities.

Response:

- Pinellas County Urban League
- Mid-Florida Community Services
- Capitol Area Community Action Agency
- Central Florida Community Action Agency
- Orange County Community Development
- Osceola County Council on Aging
- Meals on Wheels
- Lake County Community Action Agency
- Tampa Hillsborough Action Plan
- Seminole County Government

4. On Page 2 of the Report, DEF provides Variance Explanations for 2021. Please answer the following:

A. Specifically describe how the “continued impacts of COVID-19” resulted in lower participation in 2021 compared to 2020 in the Neighborhood Energy Saver Program.

Response:

Impacts from COVID-19 impaired our ability to implement the normal field operations of the Neighborhood Energy Saver Program (NES). We were not able to deploy our teams into homes to installed measures in the program

B. Explain how the Neighborhood Energy Saver Program is uniquely vulnerable to these impacts compared to other residential programs by the Company.

Response:

NES is uniquely vulnerable to impacts by COVID-19 because it requires our team to have direct contact with customers, when they are in their homes installing measures. Without the ability to perform this “hands on” task, it was impossible to perform the job.

C. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

DEF increased staffing by re-establishing enough work crews to achieve our goals. We are working on simultaneous projects to increase participation. In addition, we continue to identify and work projects close to each other so that teams can minimize travel and stay in one area for extended times.

D. DEF provides information reflecting that the Utility Cost per Installation of the Neighborhood Energy Saver program was \$552 in 2021. A comparative review of the same information from the 2020 Report (Page 5) reflects that the same cost was \$1207, and a similar comparison shows the cost was \$189 in 2019. Please explain the variance in final costs for this program between the three periods (from 2019 to 2020 to 2021). Discuss in your response how DEF monitors fluctuating costs in this program.

Response:

The increase in costs is driven by the impact of COVID-19 and production to achieve goals.

Duke Energy has an existing contract with our vendor of which all associated costs are fixed. However, DEF actively communicates regarding cost of installed measures in the customers home and makes proper adjustments in the annual budget to accommodate market fluctuations and costs. In addition, the NES Program Manager monitors the budget monthly to ensure costs do not exceed projected monthly budget.

5. Page 4 of the Report addresses the Residential Incentive program. Please explain whether this program is available to customers that rent, or do not own their residence. Address in your response why the Total Number of Customers Eligible (presented in Column “c”) is equal to the Total Number of Customers (presented in Column “b”).

Response:

The Residential Incentive program is available to customers that rent, or do not own their residence. The total eligible numbers are correct and the same as the total number of customers.

6. According to Page 6 of the report, the actual number of program participants in the Low Income Weatherization Assistance program was lower than the number the Company projected for this program.
 - A. Identify the specific reasons why this program did not achieve the projected participation levels for 2021.

Response:

The primary reason this program did not achieve the projected participation levels was because the weatherization agencies suspended direct install of measures in homes due to COVID-19.

- B. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

Participation in this program is dependent on the weatherization agencies. DEF reimburses the weatherization agencies for measures they install. Some weatherization agencies are currently back in the field and actively engaging with customers.

7. According to Page 7 of the report, the actual number of program participants in the Residential Load Management program was lower than the number the Company projected for this program.

- A. Identify the specific reasons why this program did not achieve the projected participation levels for 2021.

Response:

Program inventory was negatively impacted by supply chain disruptions resulting from the COVID-19 pandemic.

- B. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

The Company will continue to investigate and implement new supply chain channels to aid the program through supply chain disruptions resulting from the COVID-19 pandemic.

8. According to Page 8 of the report, the actual number of program participants in the Business Energy Check program was lower than the number the Company projected for this program.

- A. Identify the specific reasons why this program did not achieve the projected participation levels for 2021.

Response:

DEF believes that participation in this Program was impacted by COVID-19 due to managed restrictions of on-site visits by DEF and their customers. It is important to note however, that although the reported participation for the Business Energy Check Program was less than projected, the demand and energy savings from the commercial programs overall well-exceeded the projected savings included in the Program Plan.

- B. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

DEF will continue to monitor CDC requirements to adjust our requirements to increase audit participation. DEF has increased marketing and adjusted marketing plans to meet 2020-2024 Program Plan, which includes a variety of emails, targeted publications, offered energy forums and continued site visits, phone assisted audits and online offerings.

9. According to Page 9 of the report, the actual number of program participants in the Better Business program was lower than the number the Company projected for this program.

A. Identify the specific reasons why this program did not achieve the projected participation levels for 2021.

Response:

DEF believes that participation in this Program was impacted by COVID-19 due to managed restrictions of on-site visits by DEF and their customers. It is important to note however, that although the reported participation for the Better Business Program was less than projected, the demand and energy savings from the commercial programs overall well-exceeded the projected savings included in the Program Plan. Because there is a wide diversity in both the types of commercial customers and the demand and energy requirements of those customers, the types of measures incentivized are often a larger driver of program achievements and cost-effectiveness than the actual number of participants.

B. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

DEF will continue to monitor CDC COVID-19 Restrictions to adjust our requirements in order to increase program participation. DEF has adjusted and increased marketing plans to meet 2020-2024 Program Plan, which includes a variety of emails, targeted publications, offered energy forums focusing on our program measures and will continue onsite audits, phone assisted audits and online offerings.

10. According to Page 11 of the report, the actual number of program participants in the Florida Custom Incentive program was lower than the number the Company projected for this program.

A. Identify the specific reasons why this program did not achieve the projected participation levels for 2021.

Response:

DEF believes that participation in this Program was impacted by COVID-19 due to managed restrictions of on-site visits by DEF and their customers. It is important to note however, that although the reported participation for the Custom Incentive Program was less than projected, the demand and energy savings from the commercial programs overall well-exceeded the projected savings included in the Program Plan. Custom Incentive Program is dependent upon various nonprescriptive measure offerings, which are analyzed under the RIM process, to meet goal projections. Updates under DEF's latest filing plan has changed the number and type of measures that will pass under the RIM analysis for the Custom Incentive Program.

- B. What, if any, program modifications is the Company considering or researching to ensure that this program will be able to more closely achieve projected participation levels? Please explain.

Response:

DEF will continue to monitor CDC COVID-19 Restrictions to adjust our requirements to increase program participation. DEF has adjusted and increased marketing plans to meet 2020-2024 Program Plan, which includes a variety of emails, targeted publications, offered energy forums focusing on our programs and will continue onsite audits, phone assisted audits and online offerings.

11. In 2020, the Company implemented the use of several technology tools or adjusted practices which allowed it to continue to offer DSM program(s) or services while still adhering to public health recommendations. Were all such tools and practices continued in 2021? Please describe any changes, additional use of technology tools, or adjusted practices made in 2021 beyond those that were launched in 2020.

Response:

DEF continued the use of several technology tools and practices in 2021 to offer DSM programs and services. Due to continued COVID challenges DEF relied heavily on its online presence and tools to advise customers of offerings, similar to 2020.

12. Please respond to the following questions regarding residential and commercial/industrial DSM programs for which DEF suspended on-site visits in 2021.

- A. Discuss how DEF communicated with or responded to customers about suspended programs.

Response:

DEF placed a banner on its website informing customers of suspended programs or measures and worked with trade allies to bring awareness to suspended programs. Customers with existing appointments were contacted to convert to online or phone assisted audits or were informed they could reschedule appointments.

- B. Discuss how, or if, DEF changed any aspect of its communication with customers to draw a distinction between suspended and non-suspended programs.

Response:

DEF utilized and increased online communication channels to inform customers of the distinction between suspended and non-suspended programs through its website, social media presence and emails to customers.

- C. Describe any educational and/or promotional resources that were developed by DEF during 2021 to encourage participation in non-suspended programs.

Response:

DEF relied heavily on online communications channels through its website, emails to customers and social media to promote online audits and advise of opportunities for savings available in non-suspended programs. DEF also used newsletters and bill inserts to encourage customers to complete audits and shared information about opportunities for savings through non-suspended programs.

- D. For each program that suspended on-site visits, please fill in the data to complete the following table (or provide a response in an electronic file with formulas intact and the cells unlocked):

[Program Name] Wait List and Participation Details			
Period	Program Offered or Suspended (mark "O" or "S")	Number of Program Participants	Number of Wait-Listed Participants
January 2021			
February 2021			
March 2021			
April 2021			
May 2021			
June 2021			
July 2021			
August 2021			
September 2021			
October 2021			
November 2021			
December 2021			
January 2022			
February 2022			
March 2022 (if available)			

Response:

Home Energy Check, Residential Incentive and Residential Load Management programs resumed on March 1, 2021. There were no wait listed participants as the programs were suspended and rescheduling of appointments and audits were required. Low Income Weatherization Assistance program resumed on March 2, 2021. There were no wait listed participants as the program was suspended and field work only resumed on that date. Neighborhood Energy Saver program resumed on May 17, 2021. There were no wait listed participants the program was suspended and rescheduling of in-home installations were required.

13. In 2021, what was the Company’s System Average Line Loss percentage?

Response:

RESIDENTIAL/COMMERCIAL INDUSTRIAL LOSS FACTOR

Residential	23,037,266	54.89%	6.39%
Commercial Industrial	18,931,092	45.11%	4.59%
Total	<u>41,968,358</u>	<u>100.00%</u>	<u>5.58%</u>

14. In 2021, did supply chain disruptions impair the Company’s ability to offer conservation programs? If so, provide a detailed response that identifies the program(s), the specific challenge(s), and the responsive actions taken.

Response:

The supply chain disruptions impaired the Company’s ability to meet conservation program goals not the ability to offer the programs. Long lead times and chip shortages were some of the factors to the supply chain disruptions. DEF worked with their vendors and suppliers to ensure the supply issue would improve and would not cause future delays. DEF also communicated challenges to partners and agencies to ensure awareness of the industry wide issue.

15. Pursuant to Rule 25.17.0021(5)(k), Florida Administrative Code, DEF’s Report shall contain, at a minimum, “a justification for variances larger than 15% for the annual goals established by the Commission.”

- A. Please state the justification in 2021 for the variance larger than 15% for DEF’s Residential Winter Demand Reduction (MW) goal.

Response:

DEF has and will continue to promote energy efficiency and demand response measures to provide Winter Demand Reduction (MW) savings. DEF achieved the highest cost-effective results possible with the unprecedented challenges that it continued to face in 2021. The goal value set in 2015 and was based on a significant taper in potential achievements that the company expected at the time.

- B. Please state the justification in 2021 for the variance larger than 15% for DEF’s Residential Summer Demand Reduction (MW) goal.

Response:

DEF has and will continue to promote energy efficiency and demand response measures to provide Summer Demand Reduction (MW) savings. DEF achieved the highest cost-effective results possible with the unprecedented challenges it continued to face in 2021. The goal value was set in 2015 and was based on a significant taper in potential achievements that the company expected at the time.