FILED 6/21/2021
DOCUMENT NO. 06510-2021
FPSC - COMMISSION CLERK

Via electronic filing

June 21, 2021

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:

Please find attached for filing on behalf of the Smart Thermostat Coalition in the above-referenced docket the Direct Testimony of Tamara Dzubay, which is being submitted concurrently with a Petition to Intervene in this proceeding.

Please contact me if you have any questions regarding this submission.

Sincerely,

/s/ Jonathan Secrest
Jonathan Secrest (Bar No. 23804)
Dickinson Wright PLLC
150 E Gay St Suite 2400
Columbus, OH 43215-3192
Office: 614-744-2572
Cell: 614-744-2572
jsecrest@dickinsonwright.com

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition by Florida Power & Light Company for Base Rate Increase and Rate Unification	)))	Docket No. 20210015-EI Filed: June 21, 2021

DIRECT TESTIMONY OF TAMARA DZUBAY

ON BEHALF OF

THE SMART THERMOSTAT COALITION

June 21, 2021

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Tamara Dzubay. My business address is 25 Dockside Drive, Suite 700, Toronto, Ontario.

Q. On whose behalf are you offering testimony in this proceeding?

I am offering this testimony on behalf of the Smart Thermostat Coalition ("STC" or "Coalition"), an *ad hoc* coalition comprised of industry leaders in smart thermostat technology.[1]

Q. By whom are you employed and in what capacity?

A. I am Senior Manager, Regulatory Affairs & Emerging Markets at ecobee, a developer of smart thermostats and other smart home products for residential and commercial use.

Q. What is your educational and professional background?

A. I hold a Bachelor of Business Administration degree from the University of Michigan's Ross School of Business and a Master of Business Administration degree from Northwestern University's Kellogg School of Management. I have been employed at ecobee since 2018. During this time, I've presented on energy issues at state commissions and conferences, submitted comments to numerous state agencies and regulatory authorities in the United States, and participated in various grid modernization stakeholder advisory groups. I also coordinated the third-party impact evaluation of ecobee's thermostat optimization platform, eco+, which facilitates automated time-of-use management. Prior to joining ecobee, I worked in financial roles in the non-profit and private sector for 8 years focusing on the energy industry for half that time. This work

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[1] STC's participants are ecobee Inc. ("ecobee") and Google LLC ("Google").

included creating various energy pricing and financial models to evaluate the effects of different rate structures on proposed clean energy solutions.

Q. Have you submitted testimony in other regulatory proceedings?

A. Yes. I have submitted testimony before the Public Utilities Commission of Ohio in Case Nos. 18-49-GA-AIR *et al*. and Case Nos. 16-481-EL-UNC *et al.*; before the California Public Utilities Commission in Docket No. R.20-11-003; and in a proceeding before the Illinois Pollution Control Board. In addition, I have guest lectured on Topics in Energy & Sustainability at the University of Illinois and presented on Evolutions in Ratemaking at Columbia University.

Q. What is the purpose of your testimony in this proceeding?

A. I am testifying on behalf of STC to propose that the Florida Public Service Commission ("Commission") direct Florida Power & Light Company ("FPL") and Gulf Power Company ("Gulf Power") (collectively, "Companies") to implement a program that will:

> 1) Utilize smart thermostats as an enrollment incentive in tariff RTR-1 or any other residential time-varying tariff.
>
> 2) Create load management agreements between the Companies and vendors of distributed demand side technologies pursuant to which vendors can automate residential customer response to opt-in time-of-use ("TOU") tariff RTR-1 or other price signals, provide data regarding the magnitude and location of that response to the Companies, and receive compensation for the grid value of the response.

The residential TOU tariffs proposed in the pending Petition for Base Rate Increase and Rate Unification ("Petition") in this proceeding can be complemented by an option in which smart thermostat technology providers are able to work directly with the Companies to facilitate a response to time-varying price signals and make that response visible for grid operators, and in which smart thermostat deployment is used as an incentive for customer enrollment in such rates. Such a program has the potential to produce significant consumer and system benefits, enable efficient management of the distribution grid, and facilitate integration of distributed renewable resources.

II. BACKGROUND

A. Smart Thermostats

Q. What are "enabling technologies" as you refer to them in this testimony?

A. In this context, an enabling technology is a device that provides a mechanism for customer response to smart meter data that informs time-varying pricing. These devices include in-home displays, programmable communicating thermostats, and smart thermostats.

Q. What is an in-home display?

A. An in-home display ("IHD") is a device that allows customers to monitor household energy use by displaying energy usage data from a smart meter as it occurs. For this information to be useful, customers must take action on the information displayed by adjusting their energy usage to realize energy savings. In practice, customers have declined to use IHDs or have only used them for a short period of time, which makes them ineffective in providing energy savings as a stand-alone device.[2]

Q. What is a smart thermostat?

A. A smart thermostat is also a device that regulates a home's temperature by controlling HVAC equipment and allows users to designate a schedule through home and away set points. A smart thermostat is Wi-Fi-enabled and connects with an application on a

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[2] DTE Energy, SmartCurrents Dynamic Peak Pricing Pilot – Final Report (Aug. 15, 2014) at 122, *available at* https://www.energy.gov/sites/prod/files/2017/08/f35/DTE-SmartCurrents_FINAL_Report_08152014.pdf.

smartphone or tablet, which allows users to monitor and control their heating and cooling remotely. This connectivity enables manufacturers to add and adjust features and user settings.

A smart thermostat is able to make automated adjustments to the set point of HVAC systems through special features. These features include occupancy sensing, which identifies when a home is vacant, learning algorithms that use machine learning to establish customer temperature preferences, and geolocation, which determines a customer's proximity to home. These features serve to keep customers comfortable when they are home and save them energy when they are away from home. Building on these features, smart thermostat manufacturers have also developed software that can provide time-of-use optimization and demand response capabilities while accounting for customer input and comfort. Overall, smart thermostats represent a straightforward way to offer automated HVAC load management.

B. The Companies' Advanced Metering Infrastructure Investment

Q. What have the Companies identified as potential customer benefits from deployment of Advanced Metering Infrastructure ("AMI")?

A. The Commission authorized FPL's cost recovery for its investment in Advanced Metering Infrastructure ("AMI"), or "smart meters," on March 17, 2010 in Order No. PSC-IO-0153-FOF-EI. In that proceeding, FPL provided testimony asserting that AMI would provide a range of benefits, including by providing detailed energy consumption information and "enabl[ing] adoption by customers of innovative efficient technologies in the future."[3] The Commission recognized in this proceeding that AMI benefits might include having "more information on their usage" and it directed "FPL to bring us a program to help customers use AMI to reduce energy consumption," to be addressed through an annual progress report including "a detailed description of how FPL intends to utilize smart meters to allow customers to better manage their energy consumption, including new programs or rate offerings associated with smart meters."[4]

Gulf Power, which at the time of its AMI deployment was under separate ownership, similarly explained to the Commission that it expected benefits of AMI to include "critical peak pricing and peak demand management response, including the next generation of Energy Select."[5] Energy Select is a Gulf Power program in which customers can use technologies to automatically control their load to reduce demand at peak time. Although the program has been in existence since 1995, since Gulf Power's AMI deployment it has evolved to include an option for a customer to use thermostat automation to respond to a time-varying rate (schedule RSVP, Residential Variable Pricing).[6]

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[3] *In re Petition for Rate Increase by FPL*, Docket No. 20080677-EI, Testimony of Marlene M. Santos (Mar. 18, 2009) at 41.
[4] *In re Petition for Rate Increase by FPL*, Docket No. 20080677-EI, Order (Mar. 17 2010) at 170, 140, 96.
[5] *In re Petition for increase in rates by Gulf Power Company*, Docket No. 20110138-EI Testimony of Margaret D. Neyman (July 8, 2011) at 25.
[6] Gulf Power, Energy Select, https://www.gulfpower.com/save/programs/energy-select/support-and-faqs.html (last visited June 18, 2021).

Q. What have the Companies done to realize potential customer energy management benefits from AMI deployment?

A. To facilitate AMI deployment to its 4 million residential customers, FPL accepted a $200 million grant from the U.S. Department of Energy ("U.S. DOE"). As described in an FPL report to the Commission, among other items this grant funded FPL's "In-Home-Technology Project which is designed to test emerging in-home technologies and dynamic pricing associated with smart meters."[7] FPL's report stated that "[t]his program will help FPL to better understand its customers' needs and some of the potential products and services that could be offered to customers to better manage their energy usage."[8] FPL subsequently summarized the results of this project, carried out in 2012, to the Commission in Docket No. 2011031-EG. The report found no significant customer response to information about energy usage in terms of actual energy or demand savings.[9]

Gulf Power has leveraged AMI deployment as it proposed to the Commission to achieve customer benefits through its Energy Select program. According to a case study by the Smart Energy Consumer Collaborative, this program had enrolled over 10,000 customers as of 2013 and produced significant average peak load demand reduction and energy savings per household, with an average annual electricity bill reduction of 12-15%.[10] As of December 2019, there were over 20,000 participants who experienced average summer kW savings of 1.8 kw, average winter kW savings of 1.07 kW, and

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[7] Docket No. 20110002-EG, FPL Smart Meter Progress Report (Mar. 21, 2011) at 3.
[8] *Id.*
[9] *Petition for approval of residential service dynamic price response pilot rate*, Docket No. 20110031-EG; FPL's Annual Report on Residential Service Dynamic Price Response Pilot Rate (Apr. 25, 2013).
[10] Smart Energy Consumer Collaborative, Gulf Power – Case Study (2014), *available at* https://smartenergycc.org/2014-gulf-power-case-study.

average annual energy savings of 735 kWh.[11] However, in the pending Petition the Companies propose to phase out existing Gulf Power tariffs and to "migrate all Gulf Power customers onto the applicable best-fit FPL rate schedule."[12] Schedule E-13C of the Petition reflects that the Companies plan to transition Gulf Power RSVP customers participating in the Energy Select program to FPL's standard RS-1 residential tariff, which does not offer a time-varying rate.[13]

Q. Do you believe the Companies' rate offerings as proposed in the Petition should be updated to account for current information about potential benefits of pairing smart thermostats with time-varying rates?

A. Yes. Numerous studies have shown that pairing smart thermostats with time-varying rates materially increases peak demand savings and customer bill savings. I am familiar with a range of studies and analyses supporting this conclusion:

- Florida: FPL's own pilot study of time-varying rates as a standalone option demonstrated that price signals and information alone are not enough to spur a significant customer response.[14] By contrast, a 2019 third-party evaluation of STC member ecobee's national pilot of a new software platform for customer rate optimization found a 10% savings on cooling costs for customers on FPL's RTR-1 TOU rate through this application of smart thermostat technology.[15] Meanwhile, Gulf Power's Energy Select program has successfully leveraged advanced thermostat technology alongside TOU rates to produce customer bill savings and demand reductions.

- Oklahoma: An Oklahoma Gas & Electric ("OG&E") Consumer Behavior Study, which measured customer response to dynamic pricing utilizing in-home

[11] Docket No. 20210000-OT, Florida Power & Light Company and Gulf Power Company 2020 DSM Annual Report (Mar. 1, 2021) at 17.
[12] Direct Testimony of Tiffany C. Cohen (Mar. 12, 2021) at 11.
[13] MFR Vol. 5, Schedule E-13C at 85.
[14] *Petition for approval of residential service dynamic price response pilot rate*, Docket No. 20110031-EG; FPL's Annual Report on Residential Service Dynamic Price Response Pilot Rate (Apr. 25, 2013).
[15] Demand Side Analytics, Eco+ Thermostat Optimization Pilot Report (Nov. 2020), p. 11 Tbl. 2, *available at* https://www.ecobee.com/en-us/ecoplusemv.

equipment. OG&E, Final Evaluation Report (Aug. 2012), *available at* https://www.smartgrid.gov/project/oklahoma_gas_electric_positive_energy_smart_grid_integration_program.html. OG&E found that customers with advanced thermostats realized a 58% kW demand reduction on variable peak pricing compared to a control group, and attributed this result to the automated response of the thermostat versus treatments that merely provided pricing and usage information while requiring an active customer response.

- Michigan: A "SmartCurrents" pilot conducted by Detroit Edison Company ("DTE") in 2012 and 2013 evaluated energy consumption and behavior of customers enrolled in time-varying rates and provided with either informational feedback or an advanced thermostat. DTE's final report on the pilot concluded that "[t]he best way to achieve energy conservation through a TOU rate is to provide the technology needed to accommodate a 'set it and forget it' mentality."[16] The results of this pilot formed the basis for DTE's decision to move forward with a long-term SmartCurrents program design that provides customers with a free smart thermostat when they enroll in a time-varying rate, and DTE has highlighted that "**[t]he inclusion of a smart thermostat is a key learning** leveraged from the original effort."[17]

- National:

    - U.S. DOE conducted a meta-analysis regarding the results of these and other utility smart grid studies – a total of more than 70 – examining the response of AMI customers to time-varying rates coupled with either informational displays or advanced thermostat technology to automatically control heating and cooling. U.S. DOE concluded that advanced thermostats "enabled greater peak demand reductions than manual responses" while "[i]n-home displays (IHDs) were less helpful, and in many cases, participating customers declined to use them or used them for a short period of time."[18]

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[16] DTE Energy, SmartCurrents Dynamic Peak Pricing Pilot – Final Report (Aug. 15, 2014) at 121, *available at* https://www.energy.gov/sites/prod/files/2017/08/f35/DTE-SmartCurrents_FINAL_Report_08152014.pdf.
[17] DTE , SmartCurrents - Dynamic Peak Pricing Pilot (May 14, 2020) at 9), *available at* https://www.michigan.gov/documents/mpsc_old/MPG_Pilots_May_14_Presentation_Slides_691441_7.pdf (pdf page 88; emphasis in original).
[18] U.S. DOE, Results from The Smart Grid Investment Grant Program at 6 (Sept. 2016), *available at* https://www.energy.gOv/sites/prod/files/2016/12/f34/AMI%20Summary%20Report_09-26-16.pdf.

- Similarly, analysis of a Brattle Group database of time-of-use rate studies worldwide shows that enabling technology such as smart thermostats materially increases peak demand reduction.[19]

These studies and others show that pairing TOU rates with smart thermostats is the most effective approach to achieve a consistent and significant customer response based on detailed energy usage data, far exceeding benefits from simple informational tools like web portals, apps and in-home displays. Smart thermostats are particularly well-suited to facilitate this type of automated customer response since, according to U.S. Energy Information Administration, on average more than half of an average household's annual energy consumption is for space heating and air-conditioning.[20] Accordingly, any customer with a smart thermostat will be better equipped to automatically respond to a time-varying rate, which translates to significant bill savings for the customer.[21]

Moreover, smart thermostats can effectively promote customer enrollment in TOU rates by serving as an enabling technology that increases customer ability to automatically respond to such rates. A 2019 research study by the Smart Energy Consumer Collaborative found that automation technologies (such as smart thermostats – versus web portals or apps that do not provide automation capability) significantly

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[19] Ahmad Faruqui, The Transformative Power of Time-Varying Rates (Mar. 8, 2019), https://energycentral.com/c/em/transformative-power-time-varying-rates.

[20] U.S. Energy Information Administration, Use of energy explained: Energy use in homes, https://www.eia.gov/energyexplained/use-of-energy/homes.php (last visited January 11, 2021) (analysis of 2015 Residential Energy Consumption Survey data).

[21] Smart thermostats can even facilitate the implementation of monthly "subscription" rates that offer lower and/or fixed prices in conjunction with the use of load management technology, which may be a more attractive option for some customers. *See, e.g.*, The Brattle Group & Energy Impact Partners, FixedBill+: Making Rate Design Innovation Work for Consumers, Electricity Providers, and the Environment (June 2020), *available at* https://brattlefiles.blob.core.windows.net/files/19251_fixedbill_working_paper_brattle_june_2020.pdf; Lon Huber & Richard Bachmeier, What Netflix and Amazon Pricing Tell Us About Rate Design's Future, *Public Utilities Fortnightly* (Sept. 2018), *available at* https://guidehouse.com/-/media/www/site/insights/energy/2018/what-netflix-and-amazon-pricing-tell-us-about-rate.pdf.

increase residential customers' willingness to participate in time-based pricing programs that are a primary basis for successful capacity benefits and bill savings from AMI. Nearly half of residential respondents indicated that they would be willing to participate in a time-based pricing program if automation technologies were deployed in their home, versus only 5-7% that indicated that they would do so without such devices:[22]

Effect of Automation Technology on Residential Customer Willingness to Participate in Time-Based Pricing Programs, by State Type

Willingness to Participate	Traditional Rate States (n=546)	Alternative Rate States (n=592)	All States (n=1138)
Yes	44%	42%	44%
Maybe or not sure	44%	46%	44%
No	5%	7%	5%
Not applicable - Would be willing to participate without automation technology	7%	6%	7%

Smart Energy Consumer Collaborative, Rate Design: What Do Consumers Want and Need?

III. THE SMART THERMOSTAT COALITION PROPOSAL

Q. Please explain STC's proposal in this proceeding.

A. STC believes that there is significant potential to expand benefits for ratepayers and the grid by building on the Companies' prior investment in AMI technology. That investment paved the way for grid modernization by laying the groundwork for any residential customer to enroll in a TOU rate, receive more accurate price signals, and respond to

[22] Smart Energy Consumers Collaborative, Rate Design: What Do Consumers Want and Need? (Sept. 19, 2019) at 17, *available at* https://smartenergycc.org/rate-design-what-do-consumers-want-and-need.

those signals to lower grid costs. Further investment in smart thermostats as a technology to realize additional grid benefits is the logical next step.

STC proposes two specific steps to achieve these goals:

1) Utilize smart thermostats as an enrollment incentive in tariff RTR-1 or any other residential time-varying tariff.

2) Create load management agreements between the Companies and vendors of distributed demand side technologies pursuant to which vendors can automate residential customer response to opt-in time-of-use ("TOU") tariff RTR-1 or other price signals, provide data regarding the magnitude and location of that response to the Companies, and receive compensation for the grid value of the response.

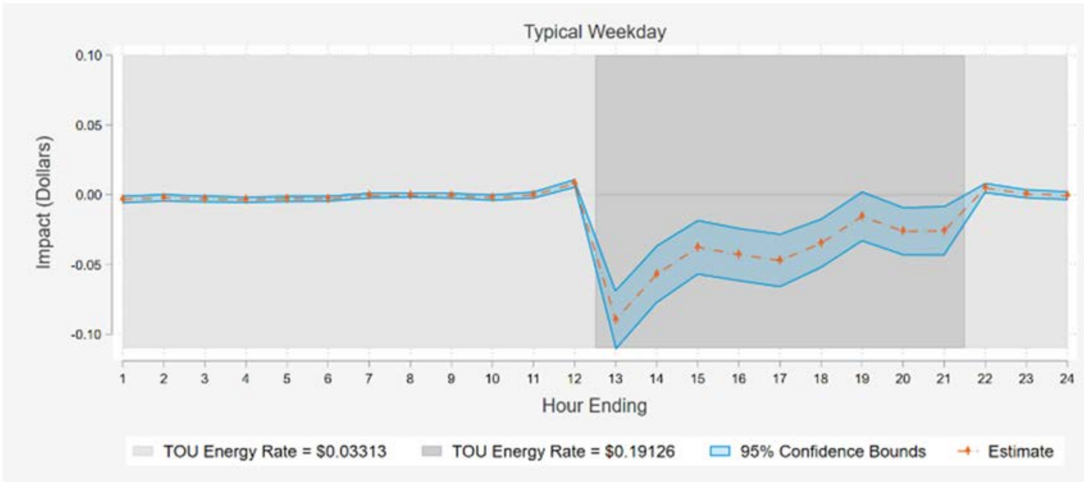
Q. Why are these two steps important to achieve grid modernization benefits for the Companies' customers?

A. The approach proposed by STC can help the Companies achieve grid modernization benefits in multiple ways:

Leveraging Existing Resources. First, establishing load management agreements with vendors of smart thermostats and other automated load management technologies will enable the Companies to leverage existing resources in their service territory. The third party report on ecobee's price optimization software pilot cited above shows specifically that smart thermostats could be utilized in response to FPL's existing RTR-1 rate to produce significant demand reductions consistent with time-varying price signals.[23] When ecobee utilizes its software algorithm to shift the cooling load of FPL RTR-1 customers, it results in significant demand reduction and bill savings which were evaluated by a third party evaluation firm in summer 2019. Below is a depiction of how

[23] Demand Side Analytics, Eco+ Thermostat Optimization Pilot Report (Nov. 2020), p. 11 Tbl. 2, *available at* https://www.ecobee.com/en-us/ecoplusemv.

thermostat optimization works to implement pre-cooling before the peak period and thermostat setbacks during the peak period:



Demand Side Analytics

This optimization produced the following impact results for FPL RTR-1 customers:

Rate	Climate Region	Peak Duration (hours)	Price Ratio (Peak: Off-Peak)	Average kW Savings During Peak Period	On-Peak Percent Savings	Overall Percent Energy Savings	Percent Savings On Cooling Costs
FPL RTR-1	Hot Humid	9	5.8	0.22	13%	5%	10%

Demand Side Analytics

These results demonstrate the demand reductions and customer savings that could be achieved through a program that allows for load agreements to leverage existing customer demand-side technologies.

Visibility and Predictability of Impact: Utility programs that provide for automated customer response to time-varying rates should also enable communication between the utility and thermostat vendors about the magnitude of that response under the purview of load management agreements. This type of arrangement allows for real-time insight into customer reactions to price signals that can be used to ensure accurate and efficient distribution and generation procurement planning, especially with increasing penetration of intermittent renewables as discussed further below.

Greater residential time-of-use rate adoption: The Companies' investment in AMI provides the basis for rates that more accurately reflect grid costs and can provide price signals to drive grid benefits, as recognized by the Commission in its original orders approving AMI deployment. However, the Companies have not seen widespread adoption of residential TOU rates. The 2019 Smart Energy Consumer Collaborative research study discussed above found that enabling technologies providing automated load flexibility, like smart thermostats, significantly increase residential customers' willingness to participate in time-based pricing programs that are a primary basis for successful capacity benefits and bill savings from AMI. Residential respondents' willingness to participate in a time-based pricing program went from just 5-7% up to over 40% if the rate were to be paired with automation technology.[24] Accordingly, a residential TOU tariff using smart thermostat enabling technology as an enrollment incentive could significantly expand the number of customers who are able to tap into energy management benefits available from the Companies' AMI investments.

Integration of Intermittent Solar Resources. FPL is on the path toward a significant buildout of solar generation over the next decade.[25] This increasing reliance on intermittent renewables means that it is essential for the Companies to develop robust

[24] Smart Energy Consumers Collaborative, Rate Design: What Do Consumers Want and Need? (Sept. 19, 2019) at 17, *available at* https://smartenergycc.org/rate-design-what-do-consumers-want-and-need.

[25] FPL Newsroom, FPL announces groundbreaking '30-by-30' plan to install more than 30 million solar panels by 2030, make Florida a world leader in solar energy (Jan. 16, 2019), http://newsroom.fpl.com/2019-01-16-FPL-announces-groundbreaking-30-by-30-plan-to-install-more-than-30-million-solar-panels-by-2030-make-Florida-a-world-leader-in-solar-energy.

load flexibility mechanisms to safeguard reliability while avoiding significant grid costs. The State of California has already faced challenges in this respect, and the California Energy Commission has identified flexible load resources as key to successfully integrating renewable energy supply:

> Steep upward and downward ramps in load—in the morning and particularly in the afternoon and evening—present a daily challenge to electric system operators. . . . Flexibility on the load side can help address these ramps and promote the use of renewable energy when it is available . . . . With the right automation, grid-level signals can allow devices to minimize the associated impact on the distribution grid while maintaining or improving the ability to meet customer needs throughout the day.[26]

Similarly, encouraging a broad customer shift to TOU rates and smart thermostats that can automatically respond to those rates, along with a mechanism that provides visibility regarding the magnitude and location of load shifts, could serve an important role in allowing the Companies to cost-effectively match load to supply as their energy mix shifts over time.

At the same time, the Companies are witnessing a significant increase in customer adoption of distributed solar. According to their reports on Consumer Renewable Energy Systems, FPL and Gulf Power went from 19,180 to 29,541 net metered solar systems between 2019 and 2020 – an increase of over 50% in just one year.[27] In the Commission's recent proceeding addressing policies around Customer-Owned Renewable Generation, Docket No. 20200000, the Companies articulated concerns about

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[26] CEC, Final 2019 Integrated Energy Policy Report at 50-51 (Feb. 20, 2020), *available at* https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report.

[27] Florida PSC, 2020 Net Metering Report, https://www.floridapsc.com/Files/PDF/Utilities/Electricgas/CustomerRenewable/2020/2020%20Net%20Metering%20Summary%20Spreadsheet/2020%20Net%20Metering%20Report.pdf.

the rate impacts of this rapid growth.[28] Smart thermostats can reduce the system impacts and potential cross-subsidies attendant with integrating such intermittent generation by shifting customer load consistent with available supply, for example by pre-cooling a home when solar energy is available midday to reduce cooling load in the early evening. Duke Energy is implementing a tariff in South Carolina, recently approved by the South Carolina Public Service Commission in Docket No. 2020-264-E, that leverages this capability for net metering customers by offering a combined solar-TOU rate-smart thermostat option that is designed to "eliminate cost shifts from solar to non-solar customers" and "encourage efficient use of the Companies' generation, transmission and distribution assets."[29] A similar approach can be applied for net metering customers in this case to manage their impacts on the grid.

Q. Are there existing precedents for STC's smart thermostat program proposal?

A. STC believes there are multiple potential effective program designs currently being considered or implemented in other jurisdictions that the Companies and the Commission can look to as templates for investing in smart thermostats alongside AMI as part of a grid modernization package. These include:

Arizona's Distributed Energy Resource Aggregation Tariff. The Arizona Corporation Commission has directed the Arizona Public Service Company ("APS"), the state's largest utility, to establish a tariff providing for the aggregation of distributed storage and demand-side resources based on their provision of capacity, demand reduction, load shifting, locational value, voltage support, and ancillary and grid services,

[28] *In re: Customer-Owned Renewable Generation*, Dkt. No. 20200000, FPL and Gulf Power Post-Workshop Comments (Oct. 8, 2020).
[29] Faruqui testimony and order

and also directing that the tariff should provide compensation to the suppliers of these services.[30] This type of tariff can provide a platform for utility programs to enter into contracts with third-party vendors of flexible load management technologies that allow for communication regarding the timing, location, and amount of customer load shifting. In May 2021, APS issued a request for proposals ("RFP") for provision of the specified Distributed Demand-Side Resources ("DDSRs") in order to inform its tariff design, including generic energy and capacity resources and locational resources to relieve peak-season capacity constraints on specific distribution feeders.[31] This RFP is aimed at leveraging such "clean energy resources and flexible capacity resources to maintain system reliability, particularly during summer system peak load times, in an environment of . . . increased customer adoption of DDSRs."[32] APS seeks to procure these demand-side resources through a load management agreement with participating vendors that sets forth key contract terms, an approach that is well-suited to ensure it has visibility into the size, timing, and characteristics of flexible load resources.

DTE's SmartCurrents Program. As noted above, Michigan utility DTE's SmartCurrents program represents a robust effort to leverage smart thermostats in conjunction with TOU rates to achieve benefits from AMI deployment. Customers who chose to enroll are placed on a dynamic peak pricing rate and receive a free smart

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[30] Arizona Public Service Commission, Docket No. E-01345A-19-0148, Decision No. 77762 (Oct. 2, 2020) at 8; Decision No. 77855 (Dec. 31, 2020) at 3.
[31] ACC Docket No. E-01345A-19-0148, APS, 2021 Distributed Demand-Side Resources Request for Proposals – Draft (May 20, 2021), *available at* https://docket.images.azcc.gov/E000013623.pdf?i=1621588041667.
[32] *Id.* at 4.

thermostat.[33] The Michigan Public Service Commission approved this thermostat deployment as part of DTE's capital investment, building on its prior AMI deployment to achieve customer benefits.[34]

Oklahoma Power Hours Program. The Public Service Company of Oklahoma provides a free smart thermostat to customers enrolling in a time-of-day rate through its "Power Hours" program.[35] Participants receive a free smart thermostat upon enrolling in the utility's Time-of-Day rate.

AES Ohio Grid Modernization Investment. In Ohio, STC is a signatory to a stipulation with Dayton Power & Light Company (now doing business as AES Ohio) that paves the way for a utility proposal to deploy smart thermostats to an additional 20% of the utility's customers in conjunction with installation of AMI "with a goal of maximizing residential customer benefits from managing peak demand in conjunction with time-varying rates."[36] The Ohio Commission approved this Stipulation on June 18, 2021.[37]

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[33] https://newlook.dteenergy.com/wps/wcm/connect/dte-web/home/service-request/residential/pricing/residential-pricing-options; https://newlook.dteenergy.com/wps/wcm/connect/3c58b0b8-9cf1-4ee2-9cc4-9495bdd5b0cf/SmartCurrentsFAQs.pdf?MOD=AJPERES.

[34] *In re DTE Electric Co.*, Michigan Public Service Commission Case No. U-18014, Order (Jan. 31, 2017) at 21-25.

[35] See https://psopowerhours.com/programs.

[36] Public Utilities Commission of Ohio ("PUCO") Case Nos. 18-1875 *et al.*, Stipulation and Recommendation (Oct. 23, 2020) at 19-20.

[37] Public Utilities Commission of Ohio ("PUCO") Case Nos. 18-1875 *et al.*, Opinion and Order (June 16, 2021) at 19-20.

Q. What goals should the Companies set for enrollment in a TOU tariff in conjunction with smart thermostat deployment?

A. STC believes the Companies could realistically target 30% residential customer enrollment in a smart thermostat-enabled TOU tariff. This figure is grounded in the information above showing that close to half of residential customers are willing to consider enrolling in a TOU rate when provided with smart thermostats.[38] Furthermore, other utilities have already achieved or committed to significant opt-in TOU enrollment targets using smart thermostat incentives. Oklahoma Gas & Electric, after performing a study that showed the benefits of using advanced thermostats in conjunction with TOU rates, launched a program that successfully enrolled 20% of customers in a time-based rate with a free direct installed thermostat.[39] This program resulted in customers saving an average of 20% on their electricity bills and average peak load dropped by 40%.[40] More recently, the AES Ohio stipulation discussed above, and as approved by the Public Utilities Commission of Ohio in June 2021, commits the utility to targeting 20% adoption of smart thermostats paired with TOU rates.

[38] *Supra* at 9, 11.
[39] *In re: Oklahoma Gas and Electri*c, Oklahoma Corporation Commission Cause No. PUD 201200134, Order No. 605737, (Dec. 20, 2012), Attachment 1 to Stipulation.
[40] Ahmad Faruqui, The Brattle Group, Rate Design 3.0 and The Efficient Pricing Frontier (May 15, 2018) at 6, *available at* https://brattlefiles.blob.core.windows.net/files/13846_rate_design_3_0_and_the_pricing_frontier_05-11-2018.pdf.

IV. CONCLUSION

Q. Please summarize your recommendations.

A. I recommend that the Companies take the next step to realize customer and grid benefits from their existing grid modernization investment in AMI. AMI enables granular time-varying rates to send price signals to customers that can be used to drive behaviors that benefit the grid while lowering customer bills. The multiple studies discussed above show that smart thermostat deployment in conjunction is key to achieving customer enrollment in TOU rates and customer response to time-varying price signals, while load management agreements with smart thermostat vendors will provide the Companies visibility into that response and the ability to rely on it for grid management and planning.

Q. Does this conclude your direct testimony?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been furnished by electronic mail to the following parties on June 21, 2021.

/s/ Madeline Fleisher
Madeline Fleisher

R. Wade Litchfield John T. Burnett Russell Badders Maria Jose Moncada Ken Rubin Joel T. Baker Florida Power & Light Co. 700 Universe Blvd. Juno Beach, FL 33408-0420 wade.litchfield@fpl.com john.t.burnett@fpl.com russell.badders@nexteraenergy.com maria.moncada@fpl.com ken.rubin@fpl.com joel.baker@fpl.com	Thomas A. Jernigan Holly L. Buchanan Robert J. Friedman Arnold Braxton Ebony M. Payton 139 Barnes Drive, Suite 1 Tyndall Air Force Base thomas.jernigan.3@us.af.mil holly.buchanan.1@us.af.mil robert.friedman.5@us.af.mil arnold.braxton@us.af.mil ebony.payton.ctr@us.af.mil ULFSC.Tyndall@us.af.mil
Biana Lherisson Jennifer Crawford Shaw Stiller Suzanne Brownless Florida Public Service Commission Office of the General Counsel 2540 Shumard Oak Boulevard Tallahassee, Florida 32399-0850 blheriss@psc.state.fl.us jcrawfor@psc.state.fl.us sstiller@psc.state.fl.us sbrownle@psc.state.fl.us	Jon C. Moyle, Jr. Karen A. Putnal Moyle Law Firm, P.A. 118 North Gadsden St. Tallahassee, FL 32301 jmoyle@moylelaw.com kputnal@moylelaw.com mqualls@moylelaw.com
Richard Gentry Parry A. Christensen Charles Rehwinkel Anastacia Pirrello Office of Public Counsel c/o The Florida Legislature 111 W. Madison Street, Room 812	James W. Brew Laura Wynn Baker Joseph R. Briscar Stone Mattheis Xenopoulos & Brew, PC 1025 Thomas Jefferson St., NW Suite 800 West Washington, D.C. 20007

Tallahassee, FL 32399-1400 gentry.richard@leg.state.fl.us christensen.patty@leg.state.fl.us rehwinkel.charles@leg.state.fl.us pirrello.anastacia@leg.state.fl.us	jbrew@smxblaw.com lwb@smxblaw.com jrb@smxblaw.com
Kenneth Hoffman 134 West Jefferson St. Tallahassee, FL 32301-1713 ken.hoffman@fpl.com George Cavros 120 E. Oakland Park Blvd., Suite 105 Fort Lauderdale, FL 33334 george@cavros-law.com	William C. Garner Law Office of William C. Garner, PLLC The Cleo Institute Inc. 3425 Bannerman Road Unit 105, #414 Tallahassee, FL 32312 Email: bgarner@wcglawoffice.com
Katie Chiles Ottenweller Southeast Director Vote Solar 838 Barton Woods Road Atlanta, GA 30307 Email: katie@votesolar.org	Stephanie U. Eaton Spilman Thomas & Battle, PLLC 111 Oakwood Dr., Suite 500 Winston-Salem, NC 27103 seaton@spilmanlaw.com Barry A. Naum Spilman Thomas & Battle, PLLC 110 Bent Creek Blvd., Suite 101 Mechanicsburg, PA 17050 bnaum@spilmanlaw.com
Nathan A. Skop, Esq. 420 NW 50th Blvd. Gainesville, FL 32607 Phone: (561) 222-7455 E-mail: n_skop@hotmail.com	Robert Scheffel Wright John T. LaVia, III 1300 Thomaswood Dr. Tallahassee, FL 32308 schef@gbwlegal.com jlavia@gbwlegal.com
Bradley Marshall Jordan Luebkemann Earthjustice 111 S. Martin Luther King Jr. Blvd. Tallahassee, Florida 32301 bmarshall@earthjustice.org jluebkemann@earthjustice.org	Christina I. Reichert Earthjustice 4500 Biscayne Blvd., Ste. 201 Miami, FL 33137 creichert@earthjustice.org flcaseupdates@earthjustice.org