Stephanie A. Cuello
SENIOR COUNSEL

July 14, 2023

VIA ELECTRONIC DELIVERY

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

Re: *2023 Ten-Year Site Plan Data Request #3; Undocketed*

Dear Mr. Teitzman:

Please find enclosed for filing, Duke Energy Florida, LLC's Response to Staff's Data Request #3, questions 1 through 16, issued on June 19, 2023, regarding DEF's 2023 TYSP.

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/vr
Attachments

cc: Greg Davis, GDavis@psc.state.fl.us, Division of Engineering, FPSC
Phillip Ellis, PEllis@psc.state.fl.us , Division of Engineering, FPSC

106 East College Avenue, Suite 800, Tallahassee, FL 32301 ▪ Phone: 850.521.1425 ▪ Fax: 727.820.5041
▪ Email: stephanie.cuello@duke-energy.com

DEF's Response to Staff's Third Data Request Regarding the 2023 Ten Year Site Plan; Questions 1-16

1. Please refer to DEF's 2023 TYSP, Schedule 8 and the list of proposed solar facilities.

   a. Did DEF determine whether solar facilities may shift the hour of system peak demand post solar contribution? If so, please explain the impact. If not, explain why not.

   b. Has DEF considered constructing any solar facilities that are co-located with other uses such as parking areas, waterways, or building rooftops? If not, explain why not. If so, explain whether an analysis selected any solar facilities of this type.

   RESPONSE:

   a. Yes, DEF determined that as more solar is added to our fleet, the system peak demand hour, post solar contribution, will shift to later hours during the day. DEF estimated that the amount of solar added through year 2024 has a higher firmness (~57%) since the peak demand still remains between hours ending 17 and 20 post solar contribution. As DEF is adding a significant number of solar resources after year 2024, the peak demand hours include hour ending 21, which has near zero solar generation, and therefore reduced the firmness of that incremental solar to 25% through year 2027 and to 12.5% after year 2027. DEF continues to monitor the performance of our existing solar resources and use this information to tune up our assumptions for future solar additions.

   b. Yes, DEF has participated in the construction of solar facilities at the St. Petersburg Pier and the Clearwater Marine Aquarium as well as the long running solar and battery demonstration projects at the USF St. Petersburg parking garage. DEF is also in the finishing stages of the John Hopkins Middle School Microgrid project. Projects of these types are generally more expensive on a $/kw basis than larger utility-scale projects and require participation from the customer or additional system benefits to justify the increased unit cost. As such, they tend to be special purpose projects making up a very small portion of the overall portfolio. DEF continues to look for opportunities to add solar facilities co-located with other uses.

2. What reports or studies has DEF conducted to determine that the level of solar penetration included in their TYSP maintains system reliability and adequate firm capacity for customers?

   RESPONSE:

   DEF planning and analytics teams coordinate with DEF system operations team to monitor and validate assumptions used in modeling and planning the system. The planning and analytics teams periodically review the performance of the solar portfolio, examine solar generation variability and the consistency of the solar contribution to high load and peak load periods. DEF has monitored the contribution of the solar resources during the peak hours since

the first large solar resource, the Hamilton Solar Energy Center, was added to the system. So far, their average contribution has been consistent between 53% and 80%. DEF is constantly reviewing and improving our assumptions as we learn more about how solar units perform.

3. Refer to DEF's 2023 TYSP, Chapter 2, and the last 2 sentences on page 2-1. Please explain why DEF did not obtain an updated load forecast after the Inflation Reduction Act was passed on August 16, 2022.

RESPONSE:

The load forecast relies on many internal and external data as inputs. Similarly, many departments also rely on the load forecast as an input to their processes. The timeline to file the Ten-Year Site Plan therefore dictates strict deadlines and updating the load forecast to include new information would impact downstream processes. The load forecast used the July Economic Forecast from Moody's because waiting for the August update would delay the completion of the load forecast and impact downstream processes. Furthermore, the August update from Moody's would not include the Inflation Reduction Act (IRA) as it only includes data up to the previous month. Since the IRA was passed August 16, 2022, the impact of the IRA would not be included in Moody's analysis until their September update.

4. Refer to DEF's responses to Staff's First Data Request, No. 19. Please explain why commercial solar installation capacity are anticipated to be lower than residential installation capacity over the planning period. As part of this explanation, discuss what challenges exist with commercial installations over residential ones, and what efforts, if any, DEF has made to address them.

RESPONSE:

Several factors are in play as to why projected behind the meter solar installations are lower for the commercial segment as compared to the residential segment, with market dynamics and forecast methodologies having impacts.

From a forecasting perspective, the methodology generally involves developing regression equations to establish projected relationships between customer adoption and payback. Historical data is used to help determine this relationship, with customer adoption as the dependent variable. Given that the historical market for residential behind the meter solar has been much more robust than the commercial market, these trends are projected to continue going forward in the forecast.

Market dynamics can be a bit of a catch-all topic, but key things to consider here include market potential, customer characteristics/perspectives, and competition.

The overall size of the commercial customer segment is much smaller than the residential segment in terms of customer count. Total commercial customers within the DEF service

territory are only about 10% of residential customers, thus the market potential for customer counts within the commercial segment is correspondingly less than the residential segment. This does not preclude high levels of adoptions on the commercial side, but the targeted base is much smaller.

Commercial customers can be different than residential, with unique characteristics that need to be factored into the analysis. One key aspect of the commercial segment is related to building ownership. Many commercial customers do not own their place of business and rely on leasing arrangements rather than ownership. As a lessee, the ability to make decisions related to property modifications will be limited, so while there may be interest in solar, circumstances may not allow the commercial business to proceed.

Economic analysis is important for all customer classes and is a primary feature of the forecasting methodology as noted previously. From a commercial perspective, there may be more factors involved in the economic analysis as compared to residential customers. While many of the economic considerations will be similar, i.e., upfront costs, leasing options, insurance costs, energy prices, incentives/tax credits, etc., it is generally assumed that there can be higher hurdle rates in the commercial segment. It is important to note that the commercial segment can be very disparate, with a wide range of businesses comprising the segment. For lower margin businesses, costs and immediate cash flow may be paramount. For larger companies, perhaps there may be competition for capital within the business, with projects having to compete for limited pools of capital. Depending on priorities and capital allocations, it may add a layer of complexity to a solar installation decision.

Another factor to consider for the commercial segment is related to the suppliers, or developers/installers. While having no direct insights into any developer, anecdotal evidence based on historical installations shows a smaller number of companies having installed behind the meter commercial solar as compared to residential installations. Perhaps acquisition costs are higher, or larger projects may encounter more supply chain issues, or the developer/installers' business plans may focus more on the residential segment, each of which might limit the supply somewhat to the commercial segment.

5. Refer to DEF's responses to Staff's First Data Request, No. 77 in the 2023 TYSP. Please explain the trend of coal consumption during 2030 through 2032 as compared to earlier in the planning period.

RESPONSE:

As DEF prepares for the projected retirement of the Crystal River coal units, DEF forecasts that the utilization of these units will trend downward due to greater utilization of high efficiency natural gas units and increasing penetration of new solar generation. Within that overall trend, DEF continues to forecast the operation of all the units in the portfolio based on the reliability needs of the system and the projected dispatch cost of those units. As such, the forecast operation of the Crystal River coal units is subject to variations in the relative forecast prices of coal and natural gas. DEF's forecast price of coal begins to decline in 2028 and

declines more steeply in 2029 and into the early 2030s in comparison to a relatively stable forecast price of natural gas during that period. For this reason, the coal generation starts to increase significantly from 2029 and beyond compared to earlier in the planning period.

6. Please refer to DEF's 2023, 2022 and 2021 TYSPs, Schedules 2.2.1 and 2.3.1, for the questions below.

   a. As shown in Table 1 below, it appears that, for the forecasting horizon, DEF's 2023 TYSP projected a relatively higher growth rate of the Total Number of Customers (1.84 percent), compared with the growth rate of the Total Number of Customers (1.61 percent) projected in DEF's 2022 TYSP. This 2023 projection results in a 14.5 percent increase from what was projected in DEF's 2022 TYSP. Please explain why, and specify the major causes and drivers behind these forecasting results.

Table 1: DEF's Forecasts of the Total Number of Customers

Year	2023 TYSP Schedule 2.3.1 Column (6)	2022 TYSP Schedule 2.3.1 Column (6)	2023 vs. 2022 Forecast	2021 TYSP Schedule 2.3.1 Column (6)	2022 vs. 2021 Forecast	2023 TYSP Annual Growth Rate	2022 TYSP Annual Growth Rate
	(1)	(2)	(3) = (1) - (2)	(4)	(5) = (2) - (4)	(6)	(7)
2022		1,936,334		1,923,069	13,266		
2023	1,975,742	1,973,754	1,988	1,952,290	21,464		1.93%
2024	2,013,982	2,010,971	3,010	1,980,697	30,274	1.94%	1.89%
2025	2,051,615	2,048,074	3,542	2,008,458	39,616	1.87%	1.84%
2026	2,089,997	2,083,978	6,019	2,035,509	48,469	1.87%	1.75%
2027	2,129,060	2,117,851	11,209	2,061,747	56,104	1.87%	1.63%
2028	2,168,958	2,149,784	19,174	2,087,134	62,650	1.87%	1.51%
2029	2,209,391	2,179,734	29,657	2,111,638	68,095	1.86%	1.39%
2030	2,249,783	2,208,189	41,594	2,135,241	72,948	1.83%	1.31%
2031	2,289,479	2,235,216	54,263			1.76%	1.22%
2032	2,328,335					1.70%	
2022-2031 Growth Rate (based on 2022 TYSP data)							1.61%
2023-2032 Growth Rate (based on 2023 TYSP data)						1.84%	
Incremental Growth Rate (2023 TYSP vs. 2022 TYSP Forecasting Periods)						14.53%	

   b. As shown in Table 2 below, it appears that, for the forecasting horizon, DEF's 2023 TYSP projected a significantly lower growth rate of the Total Sales to Ultimate Consumers (GWh) (0.57 percent), compared with the growth rate of the Total Sales to Ultimate Consumers (GWh) (0.76 percent) projected in DEF's 2022 TYSP. This 2023 projection results in a 26 percent reduction from what was projected in DEF's 2022 TYSP. Please explain why, and specify the major causes and drivers behind these forecasting results.

Table 2: DEF's Forecasts of the Total Sales to Ultimate Consumers (GWh)							
Year	2023 TYSP Schedule 2.2.1 Column (8)	2022 TYSP Schedule 2.2.1 Column (8)	2023 vs. 2022 Forecast	2021 TYSP Schedule 2.2.1 Column (8)	2022 vs. 2021 Forecast	2023 TYSP Growth Rate	2022 TYSP Growth Rate
	(1)	(2)	(3) = (1) - (2)	(4)	(5) = (2) - (4)	(6)	(7)
2022		39,582		39,568	14		
2023	39,511	39,840	-329	40,123	-283		0.65%
2024	40,068	40,020	48	40,543	-523	1.41%	0.45%
2025	40,257	40,381	-123	40,913	-532	0.47%	0.90%
2026	40,096	40,393	-297	40,893	-499	-0.40%	0.03%
2027	40,272	40,867	-595	41,250	-383	0.44%	1.17%
2028	40,467	41,206	-740	41,883	-676	0.48%	0.83%
2029	40,793	41,662	-869	42,202	-540	0.81%	1.11%
2030	41,094	41,969	-875	42,501	-532	0.74%	0.74%
2031	41,511	42,391	-879			1.02%	1.00%
2032	41,567					0.14%	
2022-2031 Growth Rate							0.76%
2023-2032 Growth Rate						0.57%	
Incremental Growth Rate (2023 TYSP vs. 2022 TYSP Forecasting Periods)						-26.06%	

RESPONSE:

a. For the 2023 TYSP, DEF referred to the population projections offered by Moody's Analytics, a change from DEF's previous practice of using projections from the University of Florida's Bureau of Economic and Business Research (BEBR). Moody's projections exhibit a higher level of granularity, available at the monthly level. This level of detail allows for a more precise synchronization with the economic projections provided by Moody's that we utilize in our models. Consequently, the effects of both short- and long-term factors, such as the impact of migration to Florida resulting from the ongoing COVID crisis and the expected recovery from an impending recession, are captured with greater accuracy through Moody's monthly data. In contrast, BEBR's 5-year data, with its intervals, can potentially smooth out fluctuations that occur within those intervals, rendering it less reliable for our forecasting purposes. Furthermore, data from vendors such as Moody's Analytics are accepted as the industry standard throughout electric and gas utilities.

b. For the 2022 TYSP, the economic drivers utilized by the class sales models did not incorporate the possibility of a recession. In fact, the Moody's forecast assumed the Federal Reserve would maintain a near-zero policy rate until the first quarter of 2023, and then begin a gradual schedule of rate hikes until reaching 2.4% in 2025. This proved to be incorrect as the Federal Reserve underestimated inflation and began to raise the federal funds rate in March 2022. By July 2022 (the 2023 TYSP utilizes Moody's July 2022 Forecast), the fed funds rate was assumed to be 1.68% and 3.25% by July 2023. The actual rate as of May 2023 was 5.06%. In addition to a recession, the 2023 TYSP also incorporated higher electric prices due to increased fuel costs. These are the main drivers causing the 2023 TYSP sales growth rate to be lower than the 2022 TYSP.

7. Please refer to DEF's responses to Staff's First Data Request, No. 11(c). Staff asked "[p]lease

explain any historic and forecasted trends in Total Sales (GWh) to Ultimate Customers, identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends." DEF responded:

> "This series is defined as the aggregation of all retail, wholesale, 'company use' energy consumption. The resulting sum is grossed up to 'generation level requirements' by applying a line-loss factor which estimates transmission line-losses. Non-weather trends and variation in this series include all items listed in parts 'a.' and 'b.' above. A very significant item included in NEL is 'Sales for Resale' (SFR) MWh. SFR or Wholesale energy sales are bulk transactions to sell power through contractual obligations that typically include a maximum MW capacity."

a. The above cited response seems to imply that DEF's "Total Sales to Ultimate Customers GWh," includes wholesale and "company use" energy consumption. Is that correct? Please explain your response.

b. If your response to Question (a) is affirmative, please provide the reasons for doing so.

c. If your response to Question (a) is affirmative, please explain the discrepancy between the definition provided in the afore-cited response and the logic behind the formula used to calculate the GWh amounts presented in column (8) of Schedule 2.1, that is provided in DEF's response to Staff's First Data Request, Question 2, "DEF 2023 TYSP Schedules 1-10.xlsx."

d. If your response to Question (a) is negative, please provide an update to DEF's response to Staff's First Data Request, Question 11(c).

RESPONSE:

a. No this is not correct. The term "Total Sales to Ultimate Customers GWh" was misunderstood. Total Sales to Ultimate Customers GWh is comprised of retail sales only and does not include wholesale or company use.

b. N/A.

c. N/A.

d. Total Sales to Ultimate Customers GWh are made up of retail sales which include residential, commercial, industrial, street lighting, and other sales to public authorities. Trends impacting the customer classes that make up retail sales are typically covered in each years' assumptions section of the DEF's TYSP.

Major historical factors that impacted total retail sales include the Great Recession and the Covid Pandemic as well as drivers such as population growth, home construction, employment,

income, GDP, electric prices, energy efficiency, and demand side management programs.

Currently, along with the aforementioned drivers, the ability to self-generate has begun to make an impact. A small percentage of industrial/commercial customers have chosen to install their own natural gas generation, reducing KWh consumption from the power grid. More significantly, residential and some commercial accounts have reduced their utility requirements by installing solar panels behind their meter. Contrarily, the penetration of plug-in electric vehicles has grown, leading to an increase in residential use per customer, all else being equal. High inflation and the resulting rise of the federal funds rate is also impacting economic drivers. Each of these stated items are handled either implicitly in the economic scenario presented by Moody's Analytics or explicitly in the internal DEF projections of UEE, Solar PV and plug-in Electric Vehicles.

For the forecast period, behind the meter generation is expected to continue to increase along with a smaller near-term rate of electric vehicle adoption. There are expectations of a mild recession impacting the forecast in the short term.

8. Referring to DEF's 2023 TYSP, Schedule 2.2.1, column (8), Total Sales to Ultimate Consumers, please explain why the Utility forecasted a lower amount of total retail sales (39,511 GWh) for 2023, compared to its 2022 historical amount (40,512 GWh) and projected 2024 amount (40,068 GWh).

RESPONSE:

Major economic drivers such as real median income, employment, and GDP are projected to decline in 2023. A major contributor to this is the increased federal funds rate as a response to high inflation. Energy prices were also projected to increase in 2023 which impacted electric demand. In 2024, economic drivers are projected to increase while energy prices are expected to decrease, resulting in higher sales in 2024 compared to 2023.

9. Page 2-3 of the Company's Ten-Year Site Plan filing states, in part, "Residential use per customer continues to decline due to the main driver of higher energy prices/inflation." Please answer the following to the extent known by the Company:

   a. What portion of the drop in average KWh consumption per customer is attributable to improved appliance efficiency?

   b. What portion of the drop in average KWh consumption per customer is attributable to improved building codes?

   c. What portion of the drop in average KWh consumption per customer is attributable to rooftop solar panels or other customer-owned self-generation resources?

RESPONSE:

a. DEF relies on data provided from EIA's survey of appliances and efficiency standards that are applied in the load forecast model through ITRON's SAE methodology. This data bundles efficiency gains from these codes and standards and DEF is not able to separate appliance efficiency from building standards in the impact on the forecast.

In this forecast DEF projects that improved appliance efficiency and building codes, taken together, will reduce average use per customer by approximately 0.5% annually (CAGR) over the forecast period. For additional information, please see the table below:

Year	Rural and Residential GWh	Average # of Customers	Residential GWh EE Impacts	Average KWh Consumption Per Customer	Average KWh Consumption Per Customer Excluding Impacts from Appliance/Building Code Efficiency
2023	21,139	1,759,191	-223	12,016	12,143
2024	21,614	1,794,822	-350	12,043	12,238
2025	21,702	1,829,875	-474	11,860	12,119
2026	21,483	1,865,616	-604	11,515	11,839
2027	21,551	1,901,985	-727	11,331	11,713
2028	21,653	1,939,127	-844	11,166	11,602
2029	21,873	1,976,765	-960	11,065	11,551
2030	22,055	2,014,358	-1,052	10,949	11,471
2031	22,317	2,051,298	-1,128	10,880	11,429
2032	22,430	2,087,457	-1,187	10,745	11,314
UPC Change (CAGR)				-1.23%	-0.78%

b. See Response 9.a.

c. In this forecast DEF projects that residential solar installation will reduce average use per customer by approximately 1% annually (CAGR) over the forecast period. For additional information, please see the table below:

Year	Rural and Residential GWh	Average # of Customers	Residential Solar GWh	Average KWh Consumption Per Customer	Average KWh Consumption Per Customer excluding Solar
2023	21,139	1,759,191	-151	12,016	12,102
2024	21,614	1,794,822	-461	12,043	12,300
2025	21,702	1,829,875	-783	11,860	12,288
2026	21,483	1,865,616	-1,114	11,515	12,112
2027	21,551	1,901,985	-1,387	11,331	12,060
2028	21,653	1,939,127	-1,558	11,166	11,970
2029	21,873	1,976,765	-1,712	11,065	11,931
2030	22,055	2,014,358	-1,877	10,949	11,881
2031	22,317	2,051,298	-2,050	10,880	11,879
2032	22,430	2,087,457	-2,234	10,745	11,815
UPC Growth				-1.23%	-0.27%

10. Table 2.1, as shown on pages 2-43 of the Company's 2023 TYSP filing, shows that DEF achieved 16 MWs of residential summer peak demand reduction in 2022. Please explain how that achievement is reflected in the line entry for 2022 in Schedule 3.1.1, History and Forecast of Summer Peak Demand (MW).

RESPONSE:

Table 2.1 includes the reduction in MWs and GWHs that DSM customers added in the referenced year provide to the system. Load management customers that have left the program during the year have not been removed.

Schedule 3.1.1 includes values from Table 2.1 reduced by load management customers that have left the programs, which explains why the summer peak demand reduction does not match exactly the 16MWs for year 2022.

Another source for the difference in the summer values is that the values in Table 2.1 show a full year achievement for summer and winter, whereas the summer values included in Schedule 3.1.1 show what has been achieved through the month of August.

11. Column 6 of Schedule 3.1.1, History and Forecast of Summer Peak Demand (MW), reflects that in 2022, the cumulative Summer Peak Demand for Residential Load Management decreased by 33 MWs (calculated by subtracting the cumulative 2022 figure of 361 MWs from the cumulative 2021 figure of 394 MWs). Please explain this mathematical result (i.e., how a cumulative amount of Summer Peak Demand from one year (2021) could decline in the next successive year (2022)).

RESPONSE:

Please see response to Q10, which provides an explanation for part of the difference.
For year 2022 the Summer Peak was achieved in June, whereas in 2021 it was achieved in August. The 2022 August Peak Demand for Residential Load Management was 372MWs. There is a 20MW reduction compared to previous year because technology changes have impacted the Company's Demand Response capability. The 3G cellular network was discontinued in 2022, removing MWs from the program. As discussed in the TYSP, DEF is engaged in a program to replace these switches and recover the MW to the program.

12. Column 7 of Schedule 3.1.1, History and Forecast of Summer Peak Demand (MW), reflects that in 2022, the cumulative Summer Peak Demand for Residential Conservation decreased by 110 MWs (calculated by subtracting the cumulative 2022 figure of 513MWs from the cumulative 2021 figure of 623 MWs). Please explain this mathematical result (i.e., how a cumulative amount of Summer Peak Demand from one year (2021) could decline in the next successive year (2022)).

RESPONSE:

The calculation of historical cumulative Summer Peak Demand for Residential Conservation was revised this year to correct a formula error, but only the most recent historical value (2022) was included in Schedule 3.1, causing a mismatch with prior years. The table below shows all revisions to Column 7 of Schedule 3.1 over the full ten-year historical period. The Winter Peak Demand values were not affected by this issue. This table is populated with Peak Summer values. There are years when the DEF load peaked in months other than August, specifically 2016 (July), 2018 (June), 2020 (June), and 2022 (June). The 2022 August Peak Demand value is 538 MW. For the purpose of the forecast, the values are adjusted to use the trend as if all the peaks occurred in August. For the history, actual values matching the actual peak months are reported. The impact of these changes was already incorporated into the forecast as presented in the filed 2023 TYSP.

YEAR	RESIDENTIAL CONSERVATION
HISTORY:	
2013	382
2014	404
2015	421
2016	428
2017	461
2018	457
2019	501
2020	495
2021	529
2022	513

13. Column 9 of Schedule 3.1.1, History and Forecast of Summer Peak Demand (MW), reflects that in 2022, the cumulative Summer Peak Demand for Commercial /Industrial Conservation decreased by 10 MWs (calculated by subtracting the cumulative 2022 figure of 441 MWs from the cumulative 2021 figure of 451 MWs). Please explain this mathematical result (i.e., how a cumulative amount of Summer Peak Demand from one year (2021) could decline in the next successive year (2022)).

RESPONSE:

The calculation of historical cumulative Summer Peak Demand for Commercial/Industrial Conservation was revised this year to correct a formula error, but only the most recent historical value (2022) was included in Schedule 3.1, causing a mismatch with prior years. The table below shows all revisions to Column 7 of Schedule 3.1 over the full ten-year historical period. The Winter Peak Demand values were not affected by this issue. This table is populated with Peak Summer values. There are years when the DEF load peaked in months other than August, specifically 2016 (July), 2018 (June), 2020 (June), and 2022 (June). The 2022 August Peak Demand value is 464 MW. For the purpose of the forecast, the values are adjusted to use the trend as if all the peaks occurred in August. For the history, actual values matching the months of the peak are reported. The impact of these changes was already incorporated into the forecast as presented in the filed 2023 TYSP.

YEAR	COMM. / IND. CONSERVATION
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HISTORY:	
2013	298
2014	313
2015	324
2016	324
2017	364
2018	366
2019	413
2020	412
2021	457
2022	441

14. Column 6 of Schedule 3.2.1, History and Forecast of Winter Peak Demand (MW), reflects that in 2021/2022, the cumulative Winter Peak Demand for Residential Load Management decreased by 3 MWs (calculated by subtracting the cumulative 2021/2022 figure of 668 MWs from the cumulative 2020/2021 figure of 671 MWs). Please explain this mathematical result (i.e., how a cumulative amount of Winter Peak Demand from one year (2020/2021) could decline in the next successive year (2021/2022)).

RESPONSE:

Please see response to Q10, it provides an explanation for part of the difference. There is a 3 MW reduction compared to the previous year because technology changes have impacted the Company's Demand Response capability. The 3G cellular network was discontinued in 2022, removing MWs from the program. As discussed in the TYSP, DEF is engaged in a program to replace these switches and recover the MW to the program.

15. Column 6 of Schedule 3.2.1, History and Forecast of Winter Peak Demand (MW), reflects that for the 2022/2023 forecast, the cumulative Winter Peak Demand for Residential Load Management will fall by 27 MWs (calculated by subtracting the forecasted 2022/2023 figure of 641 MWs from the historic 2021/2022 figure of 668 MWs). Please explain this mathematical result (i.e., how a cumulative number from one year (2021/2022) is forecasted to decline in value in the next successive year (2022/2023)).

RESPONSE:

There is a 27 MW reduction compared to the historical value because recent technology

changes have impacted the Company's Demand Response capability projections. The 3G cellular network was discontinued in 2022, removing MWs from the program. DEF is going to start replacing the switches progressively with an expectation to have all of them done by year 2025.

16. Column 4 of Schedule 3.3.1, History and Forecast of Annual Net Energy for Load (GWh), reflects that in 2022, the cumulative Net Energy for Load for Commercial / Industrial Conservation decreased by 41 GW hours (calculated by subtracting the historic cumulative 2022 figure of 986 GW hours from the historic cumulative 2021 figure of 1,027 GW hours). Please explain this mathematical result (i.e., how a cumulative number from one year (2021) could decline in the next successive year (2022)).

RESPONSE:

The calculation of historical cumulative Summer Peak Demand for Commercial/Industrial Conservation was revised this year to correct some updates to the annual historical conservation savings, but only the most recent historical value (2022) was included in Schedule 3.3, causing a mismatch with prior years. The table below shows all revisions to Column 4 of Schedule 3.3 over the full ten-year historical period.

Year	COMM. / IND. CONSERVATION
2013	702
2014	756
2015	792
2016	818
2017	851
2018	889
2019	925
2020	963
2021	984
2022	986