BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF

KIM SPENCE McDANIEL

ON BEHALF OF

DUKE ENERGY FLORIDA, LLC

DOCKET NO. 20210007-EI

April 1, 2021

Q. Please state your name and business address.

A. My name is Kim S. McDaniel. My business address is 299 First Avenue North, St. Petersburg, FL 33701.

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

A. I am employed by Duke Energy Florida, LLC ("DEF" or the "Company") as Manager of Environmental Services.

Q. What are your responsibilities in that position?

A. My responsibilities include managing the work of environmental professionals who are responsible for environmental, technical, and regulatory support during the development and implementation of environmental compliance strategies for regulated power generation facilities and electrical transmission and distribution facilities in Florida.

Q. Please describe your educational background and professional experience.

A. I obtained my Bachelor of Science degree in Wildlife and Fisheries Sciences from Texas A&M University, College Station, Texas. I was employed by the Arizona Department of Environmental Quality ("ADEQ") between 1996 and 2007. At the ADEQ, I managed compliance and enforcement efforts associated with water quality and waste handling activities. During my tenure there I was also responsible for managing the site investigations under state superfund program and writing new regulations governing the management of wastes. I joined Progress Energy, now DEF, in 2008 as the manager of Florida Permitting and Compliance and am currently in this role.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to explain material variances between actual and actual/estimated project expenditures for environmental compliance costs associated with FPSC-approved programs under my responsibility. These programs include the T&D Substation Environmental Investigation, Remediation and Pollution Prevention Program (Project 1 & 1a), Distribution System Environmental Investigation, Remediation and Pollution Prevention Program (Project 2), Pipeline Integrity Management ("PIM") (Project 3), Above Ground Secondary Containment (Project 4), Phase II Cooling Water Intake – 316(b) (Projects 6 & 6a), CAIR/CAMR - Peaking (Project 7.2), Best Available Retrofit Technology ("BART") (Project 7.5), Arsenic Groundwater Standard (Project 8), Sea Turtle Coastal Street Lighting Program (Project 9), Underground Storage

Tanks (Project 10), Modular Cooling Towers (Project 11), Thermal Discharge Permanent Cooling Tower (Project 11.1), Greenhouse Gas Inventory and Reporting (Project 12), Mercury Total Daily Maximum Loads Monitoring (Project 13), Hazardous Air Pollutants Information Collection Request ("ICR") Program (Project 14), Effluent Limitation Guidelines Program (Project 15.1), National Pollutant Discharge Elimination System ("NPDES") (Project 16) and Mercury and Air Toxics Standards ("MATS") – Crystal River ("CR") Units 4&5 (Project 17) for the period January 2020 through December 2020.

Q. How did actual O&M expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the Transmission & Distribution Substation Environmental Investigation, Remediation, and Pollution Prevention Projects (Projects 1 & 1a)?

A. The Substation System Program variance, transmission portion (Project 1) is $25,045 or 198% higher than forecasted. This is primarily due to unexpected expenses incurred as a result of Florida Department of Environmental Protection's ("FDEP") requests for closures of the groundwater wells associated with the Central Florida and West Lake Wales Substations.

The Distribution portion (Project 1a) is complete.

Q. How did actual O&M expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the Cooling Water Intake - 316(b) Project (Projects 6 & 6a)?

A. The Cooling Water Intake - 316(b) (Projects 6 & 6a) O&M variance is 10%, or $32,018 higher than projected.

Project 316(b) – Base (Project 6) variance is 7%, or $10,834 higher than forecasted, and Project 316(b) – Intermediate (Project 6a) is 14%, or $21,183 higher than forecasted. These variances are primarily due to editing of the 316(b) reports following peer review comments received by DEF. Additional consultant time was required to ensure the responses satisfied peer reviewer questions and confirm that calculations and evaluations were updated to address peer review comments prior to submittal of the technical reports to FDEP. Additional costs are not anticipated until FDEP has reviewed the NPDES permit renewal application and 316(b) report.

Q. How did actual Capital expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the Cooling Water Intake - 316(b) Project (Project 6)?

A. The Cooling Water Intake - 316(b) capital variance is $1,122,169 or 19% lower than projected. As stated in my July 31, 2020 testimony filed in Docket No. 20200007-EI, the computer model DEF utilized to develop the original design at Crystal River North did not accurately estimate the expected water flows. The lower than expected water flows have required additional investigation and analysis to identify a viable solution, causing delays. A final resolution has not yet been engineered, and construction was unable to resume in 2020. DEF continues to actively investigate engineering and design solutions at Crystal River

North to identify available means of addressing water flow deficiencies. Construction is expected to resume and complete in 2021 and remain within the original cost estimate.

Q. How did actual O&M expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the Arsenic Groundwater Standard – Base - Project (Project 8)?

A. The Arsenic Groundwater Standard O&M variance is $949,643 or 77% lower than projected primarily due to reduced scope of work and a competitive bid event which allowed DEF to obtain favorable pricing. Material costs and project duration were also reduced following agency authorization to use on-site soils for the soil cap in lieu of purchasing and transporting materials from an off-site source.

Q. How did actual Capital expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the Effluent Limitations Guideline Project (Project 15.1)?

A. The ELG Capital variance is $45,133, or 20% lower than originally forecasted. This is primarily due to final invoices coming in slightly lower than originally estimated. The project is complete, all expected invoices have been received, and project is currently in final reconciliation.

Q. How did actual O&M expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the National Pollutant Discharge Elimination System (NPDES) Project (Project 16)?

A. The NPDES variance is $25,793 or 86% lower than forecasted, primarily due to $20,326 in charges not being processed through ECRC accounting until January 2021. Contributing to the favorability is a credit of $7,733 in February 2020 that originated from Bartow Whole Effluent Toxicity ("WET") testing conducted in in 2019 and mistakenly charged to ECRC, as previously described in my testimony.

Q. How did actual O&M expenditures for January 2020 - December 2020 compare with DEF's actual/estimated projections for the MATS – CR 4&5 Project (Project 17)?

A. The MATS – CR 4&5 O&M variance is $90,000 or 74% lower than forecasted, primarily due to tests and inspections that did not need to be completed in Fall 2020.

Q. In Order No. PSC-2010-0683-FOF-EI issued in Docket No. 20100007-EI on November 15, 2010, the Commission directed DEF to file as part of its ECRC true-up testimony a yearly review of the efficacy of its Plan D and the cost-effectiveness of DEF's retrofit options for each generating unit in relation to expected changes in environmental regulations. Has DEF conducted such a review?

A. Yes. DEF's yearly review of the Integrated Clean Air Compliance Plan is provided as Exhibit No. __ (KSM-1).

Q. Please summarize the conclusions of DEF's review of its Integrated Clean Air Compliance Plan.

A. DEF installed emission controls contemplated in its Integrated Clean Air Compliance Plan on time and within budget. The Flue Gas Desulfurization (wet scrubbers) and Selective Catalytic Reduction systems on CR 4&5 have enabled DEF to comply with Clean Air Interstate Rule ("CAIR") requirements and will continue to be the cornerstone of DEF's integrated air quality compliance strategy. DEF is confident that the Integrated Clean Air Compliance Plan, along with compliance strategies under development, will enable it to achieve and maintain compliance with applicable regulations, including MATS, in a cost-effective manner.

Q. What is the status of the Clean Water Rule?

A. On June 29, 2015 the EPA and the Army Corps of Engineers ("Corps") published the final Clean Water Rule that significantly expanded the definition of the Waters of the United States ("WOTUS"). On October 9, 2015 the U.S. Court of Appeals for the Sixth Circuit granted a nationwide stay of the rule effective through the conclusion of the judicial review process. On February 22, 2016 the Sixth Circuit issued an opinion that it has jurisdiction and is the appropriate venue to hear the merits of legal challenges to the rule; however, that decision was contested, and

on January 13, 2017 the U.S. Supreme Court decided to review the jurisdictional question. Oral arguments in the U.S. Supreme Court case were conducted in October 2017. On January 22, 2018, the U.S. Supreme Court issued its decision stating federal district courts, instead of federal appellate courts, have jurisdiction over challenges to the rule defining waters of the United States Consistent with the U.S. Supreme Court decision, the U.S. Court of Appeals for the Sixth Circuit lifted its nationwide stay on February 28, 2018. The stay issued by the North Dakota District Court remains in effect, but only within the thirteen states within the North Dakota District. On February 28, 2017, President Trump signed an executive order laying out a new policy direction for how "Waters of the United States" should be defined and directing EPA and the Corps to initiate a rulemaking to either rescind or revise the 2015 Clean Water Rule developed by the Obama administration. Subsequently, the EPA Administrator signed a pre-publication notice reflecting the intent to move forward with rulemaking in response to this directive. In addition, the executive order seeks to have the Department of Justice determine the path forward on the Clean Water Rule litigation in light of the new policy direction.

On January 31, 2018, the EPA and Corps announced a final rule adding an applicability date to the 2015 rule defining "waters of the United States," thereby deferring implementation of the 2015 WOTUS Rule until early 2020. This rule has no immediate impact to Duke Energy, and the agencies will continue to apply the pre-existing WOTUS definition in place prior to the 2015 rule until 2020.

On February 14, 2019, EPA and Corps published in the Federal Register, the "Revised Definition of 'Waters of the United States,'" which proposed to narrow the extent of Clean Water Act jurisdiction as compared to the 2015 definition adopted by the Obama Administration (Proposed Rule). On January 23, 2020, EPA and Corps released a pre-publication version of *The Navigable Waters Protection Rule: Definition of "Waters of the United States."* On April 21, 2020, the EPA and Corps published the modified definition of the WOTUS in the Federal Register. DEF has reviewed the final rule and determined there are no impacts associated with the 2020 WOTUS Rule with respect to the operation of our existing generation facilities. DEF will continue to monitor the status of the rule and any proposed changes to ascertain any further compliance steps that may be required.

Q. Does this conclude your testimony?

A. Yes.

Duke Energy Florida, LLC

Review of Integrated Clean Air Compliance Plan

Submitted to the
Florida Public Service Commission

April 1, 2021

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Acronyms

BART – Best Available Retrofit Technology

CAIR – Clean Air Interstate Rule

CAMR – Clean Air Mercury Rule

CAVR – Clean Air Visibility Rule

CCR - Coal Combustion Residuals

CO_2 – Carbon Dioxide

CPP – Clean Power Plan

CSAPR – Cross-State Air Pollution Rule

DEF – Duke Energy Florida

ECRC – Environmental Cost Recovery Clause

EPA – Environmental Protection Agency

EGU – Electric Generating Unit

ELG - Effluent Limitation Guidelines

ESP – Electrostatic Precipitator

FDEP – Florida Department of Environmental Protection

FGD – Flue Gas Desulfurization

GHG – Greenhouse Gas

LNB – Low NO_x Burner

MATS – Mercury and Air Toxic Standards

MWh – Megawatt Hour

NAAQS – National Ambient Air Quality Standards

NO_x – Nitrogen Oxides

NPDES – National Pollutant Discharge Elimination System

NSPS - New Source Performance Standards

PAC – Powdered Activated Carbon

Plan D – DEF Integrated Clean Air Compliance Plan

PM – Particulate Matter

ppb – Parts per billion

PSC – Public Service Commission

SCR – Selective Catalytic Reduction

SIP – Site Implementation Plan

SO_2 – Sulfur Dioxide

Executive Summary

In the 2007 Environmental Cost Recovery Clause ("ECRC") Docket (No. 20070007-EI), the Commission approved Duke Energy Florida LLC's ("DEF") updated Integrated Clean Air Compliance Plan (Plan D) as a reasonable and prudent means to comply with the requirements of the Clean Air Interstate Rule ("CAIR") (subsequently replaced by the Cross-State Air Pollution Rule ("CSAPR"), Clean Air Mercury Rule ("CAMR") (subsequently replaced by the Mercury and Air Toxics Standards ("MATS") rule), Clean Air Visibility Rule ("CAVR"), and related regulatory requirements. In its 2007 final Order No. PSC-07-0922-FOF-EI, the Commission also directed DEF to file as part of its ECRC true-up testimony "a yearly review of the efficacy of its Plan D and the cost-effectiveness of DEF's retrofit options for each generating unit in relation to expected changes in environmental regulations." This report provides the required review for 2021.

The primary original components of DEF's 2006 Compliance Plan D included:

Sulfur Dioxide ("SO_2")

- Installation of flue gas desulfurization ("FGD") systems on Crystal River ("CR") Units 4 and 5
- Fuel switching at CR Units 1 and 2 to burn low sulfur coal
- Fuel switching at Anclote Units 1 and 2 to burn low sulfur oil and natural gas
- Purchases of SO_2 allowances

Nitrogen Oxides ("NO_x")

- Installation of low NO_x burners ("LNBs") and selective catalytic reduction ("SCR") systems on CR Units 4 and 5
- Installation of LNBs and separated over-fire air ("SOFA") or alternative NO_x controls at Anclote Units 1 and 2
- Purchase of annual and ozone season NO_x allowances

Mercury

- Installation of FGD and SCR systems at CR Units 4 and 5
- Installation of powdered activated carbon ("PAC") injection on CR Unit 2

As detailed in Docket No. 20070007-EI, DEF decided on Plan D based on a quantitative and qualitative evaluation of the ability of alternative plans to meet environmental requirements,

while managing risks and controlling costs. That evaluation demonstrated that Plan D is DEF's most cost-effective alternative to meet applicable regulatory requirements. The Plan was designed to strike a balance between reducing emissions, primarily through the installation of controls on DEF's largest and newest coal units (CR Units 4 and 5) and making strategic use of emission allowance markets.

In accordance with the Commission's final order in Docket No. 20070007-EI, DEF has continued to review the efficacy of Plan D and the cost-effectiveness of retrofit options in relation to expected changes in environmental regulations. With regard to efficacy, Plan D remains the cornerstone of DEF's efforts to comply with applicable air quality regulations in a cost-effective manner.

As indicated in previous ECRC filings, the U.S. Court of Appeals for the District of Columbia ("D.C. Circuit") stayed the effect of CSAPR (proposed by the U.S. Environmental Protection Agency ("EPA") to replace CAIR) leaving CAIR in effect until the court completed its review of CSAPR. In August 2012, the D.C. Circuit vacated CSAPR in its entirety, and in January 2013, the court denied EPA's petition for rehearing. On April 29, 2014, the U.S. Supreme Court reversed the D.C. Circuit's decision and upheld the CSAPR. EPA subsequently petitioned the D.C. Circuit to reinstate CSAPR, making it effective January 1, 2015. The court agreed with EPA and approved its petition.

Additionally, on February 16, 2012, EPA issued MATS to replace the vacated CAMR for emissions from coal- and oil-fired electric generating units ("EGUs"), including, potentially, DEF's Anclote Units 1 and 2, Suwannee Units 1, 2, and 3, and CR Units 1, 2, 4 and 5. The following summarizes the results of DEF's MATS compliance analyses for these units:

Anclote Units 1 & 2: DEF determined that the most cost-effective option for Anclote Units 1 and 2 was conversion to fire 100% natural gas rather than installation of emission controls to comply with MATS. The Commission approved DEF's petition for ECRC recovery of costs associated with the Anclote Conversion Project in Docket No. 20120103-EI.

Suwannee Units 1, 2 & 3: DEF determined that no further modifications were needed on Suwannee Units 1, 2 and 3 as these units were already capable of operating on 100% natural gas.

CR Units 4 & 5: DEF determined that the existing electrostatic precipitators ("ESPs"), FGDs, and SCRs at CR Units 4 and 5 would provide sufficient control for MATS compliance under typical conditions. DEF also determined that chemical injection systems would be required

to mitigate mercury re-emissions from the FGDs. On December 15, 2014, DEF requested a one-year extension to allow time for installation of additional mercury control systems. On March 12, 2015, the Florida Department of Environmental Protection ("FDEP") authorized a one-year extension (to April 16, 2016) for all mercury-related MATS requirements on CR Units 4 and 5; the units have operated in compliance with the Standards since that time.

CR Units 1 & 2: DEF determined that the use of alternative coals (along with dry sorbent injection, PAC injection, and ESP enhancements) was a feasible and cost-effective strategy to allow these units to continue running for a limited period of time in compliance with MATS and Best Available Retrofit Technology ("BART") requirements until new generation could be built. This plan was approved by the Commission in Order No. PSC-2014-0173-PAA-EI (April 17, 2014). On February 6, 2014, the FDEP granted a one-year extension (to April 16, 2016) for all MATS requirements on CR Units 1 and 2; the units were operated in compliance with the Standards since that time. CR Units 1 and 2 were retired from service on December 31, 2018.

Although EPA has begun implementation of a regulatory approach to reduce greenhouse gas ("GHG") emissions through the Clean Air Act, there currently are no GHG emission standards applicable to DEF's existing units. Moreover, there are still no retrofit options commercially available to reduce carbon dioxide ("CO_2") emissions from fossil fuel-fired EGUs. The Company will continue to monitor and update the Commission on EPA's efforts to establish emission guidelines to address GHG from existing power plants under Section 111(d) of the federal Clean Air Act and whether changes to EPA's approach occur.

DEF is confident that the emission controls installed pursuant to Plan D, along with compliance strategies discussed further in this Plan, will enable the Company to achieve and maintain compliance with all applicable environmental regulations in a cost-effective manner.

I. Introduction

In its final order in the 2007 ECRC Docket (No. 20070007-EI), the Commission approved DEF's updated Integrated Clean Air Compliance Plan (Plan D) as a reasonable and prudent means to comply with the requirements of CAIR, CAMR, CAVR and related regulatory requirements. In *In re Environmental Cost Recovery Clause*, Order No. PSC-2007-0922-FOF-EI, p. 8 (Nov. 16, 2007), the Commission specifically found that "PEF's [now DEF's] updated Integrated Clean Air Compliance Plan represents the most cost-effective alternative for achieving and maintaining compliance with CAIR, CAMR, and CAVR, and related regulatory requirements, and it is reasonable and prudent for DEF to recover prudently incurred costs to implement the plan." *Id*. The Commission also directed DEF to file as part of its ECRC true-up testimony "a yearly review of the efficacy of its Plan D and the cost-effectiveness of [DEF's] retrofit options for each generating unit in relation to expected changes in environmental regulations." *Id*. The purpose of this report is to provide the required review for 2020.

II. Regulatory Background

The CAIR and CAVR programs required DEF and other utilities to significantly reduce emissions of SO_2 and NO_x. CAIR contemplated emission reductions in incremental phases, in which Phase I began in 2009 for NO_x and in 2010 for SO_2. Phase II was scheduled to begin in 2015 for both NO_x and SO_2. As noted later in this Plan, CAIR was remanded by the courts in 2008, but remained in place through 2014 while the EPA worked on development and implementation of an acceptable replacement rule. Following resolution of litigation, the replacement rule, CSAPR, took effect on January 1, 2015, and in 2016 was revised to exclude Florida. The CAVR, designed to improve visibility in Class I areas, remains in effect and the status of the BART requirements under CAVR affecting DEF is provided in part D of this section of this Plan. The CAMR originally required reduction of mercury emissions at a system level and installation of mercury monitors. As discussed later in this Plan, CAMR was vacated in early 2008 and in lieu of CAMR, EPA published a final MATS rule on February 16, 2012.

In March 2006, the Company submitted a report and supporting Testimony presenting its integrated plan for complying with the CAIR, CAVR, and CAMR, as well as the process the Company used to evaluate alternative plans, to the Commission. The analysis included an

examination of the projected emissions associated with several alternative plans and a comparison of economic impacts, in terms of cumulative present value of revenue requirements. The Company's Integrated Clean Air Compliance Plan, designated as Plan D, was found to be the most cost-effective compliance plan for CAIR, CAMR, and CAVR from among five alternative plans.

In June 2007, the Company submitted an updated report and supporting testimony summarizing the status of the Plan and an updated economic analysis incorporating certain Plan revisions necessitated by changed circumstances. Consistent with the approach utilized in 2006, the Company performed a quantitative evaluation to compare the ability of modified alternative plans to meet environmental requirements, while managing risks and controlling costs. That evaluation demonstrated that Plan D, as revised, is the Company's most cost-effective alternative to meet applicable regulatory requirements. Based on that analysis, the Commission approved Plan D as reasonable and prudent, and held that the Company should recover prudently incurred costs of implementing the Plan. In each subsequent ECRC docket, DEF has submitted its annual review of the Integrated Clean Air Compliance Plan for Commission review.

A. Status of CAIR and CSAPR

In July 2008, the D.C. Circuit issued a decision vacating CAIR in its entirety. *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008). However, the Court subsequently decided to remand CAIR without vacatur, thereby leaving the rule and its compliance obligations in place until EPA revises or replaces CAIR. *North Carolina v. EPA*, 550 F.3d 1176 (D.C. Cir. 2008). EPA adopted the CSAPR to replace the CAIR by publication in the *Federal Register* in August 2011. *See* 76 Fed. Reg. 48,208 (Aug. 8, 2011).

In Order No. PSC-2011-0553-FOF-EI, issued in Docket No. 20110007-EI on December 7, 2011, the Commission addressed the impact of CSAPR on the Company's recovery of NO_x emission allowance costs. Because CSAPR would no longer allow the Company to use NO_x allowances previously obtained under CAIR for compliance effective January 1, 2012, the Commission established a regulatory asset to allow the Company to recover the costs of its remaining NO_x allowance inventory over a three-year amortization period. However, on December 30, 2011, the D.C. Circuit stayed CSAPR, leaving CAIR in effect until the court completed its review of the new rule. Thus, the Company continued to maintain its NO_x allowance inventory in order to comply with CAIR. Pursuant to the stipulation approved in Order No. PSC-

2011-0553-FOF-EI, the Company continued to expense NO_x allowance costs incurred to comply with CAIR based on actual usage consistent with current practice. In August 2012, the D.C. Circuit vacated CSAPR in its entirety, and in January 2013, the court denied EPA's petition for rehearing. *See EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7 (D.C. Cir. 2013). The EPA subsequently appealed the court's vacatur to the U.S. Supreme Court and on April 29, 2014, the Supreme Court overturned the D.C. Circuit's decision vacating CSAPR and remanded the case back to the lower court for further action. On June 26, 2014, the EPA requested that the court lift the stay of the CSAPR and allow it to be implemented, under a revised schedule, beginning January 1, 2015. This request was granted on October 23, 2014, and the CSAPR went into effect on January 1, 2015, replacing the CAIR. On July 28, 2015, the D.C. Circuit determined that EPA failed to cost justify a number of Phase 2 emission allowance budgets for certain states, including Florida, citing they were more stringent than necessary to achieve air compliance in downwind states, and held the Phase 2 NO_x allowance allocations invalid. Finally, on November 17, 2015, EPA proposed a revised CSAPR. EPA proposed to remove Florida from the CSAPR program, beginning with the 2017 ozone season.

On September 7, 2016, EPA finalized its CSAPR Update rule and eliminated Florida, South Carolina, and North Carolina from the CSAPR ozone season program based on modeling which shows that NO_x emissions from these states do not significantly contribute to ozone nonattainment in any downwind state. DEF sources in Florida are no longer subject to any CSAPR NO_x emission limitations, as of the beginning of 2017.

B. Vacatur of CAMR and Adoption of MATS

In February 2008, the D.C. Circuit Court vacated CAMR and rejected EPA's delisting of coal-fired EGUs from the list of emission sources that are subject to Section 112 of the Clean Air Act. *See New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008). As a result, in lieu of CAMR, EPA was required to adopt new emissions standards for control of various hazardous air pollutant emissions from coal-fired EGUs. *Id*. EPA issued its proposed rule to replace CAMR on March 16, 2011, with publication following in the *Federal Register* on May 3, 2011. *See* 76 Fed. Reg. 24976 (May 3, 2011). On February 16, 2012, EPA published the final rule which established new MATS limits for emissions of various metals and acid gases from both coal- and oil-fired EGUs. Compliance generally was required to be achieved within three years of EPA's adoption of MATS

(i.e., April 16, 2015), although the Clean Air Act authorizes permitting authorities to grant one-year compliance extensions in certain circumstances. On June 29, 2015, the U.S. Supreme Court remanded the MATS rule to the D.C. Circuit, finding that the EPA insufficiently considered costs in determining that it is "appropriate and necessary" to regulate mercury from power plants. On December 15, 2015, the D.C. Circuit remanded the MATS rule to EPA without vacatur, and EPA committed to completing its consideration of cost by April 16, 2016. On March 3, 2016, the U.S. Supreme Court denied a request for a stay of the MATS rule while the EPA completes it cost consideration, thus the MATS rule remained in effect pending the cost consideration process. On March 18, 2016, a coalition of 20 states led by Michigan petitioned the Court for a writ of certiorari asking the Court to declare whether an administrative rule promulgated without statutory authority may be left in effect by a reviewing court during the pendency of its review. *See State of Mich., et al. v. EPA*, Pet. for Writ of Cert. to U.S. Sup. Ct. (filed Mar. 18, 2016). On April 14, 2016 EPA issued a final finding that it is appropriate and necessary to set standards for emissions of air toxics from coal and oil-fired power plants. This finding responded to the decision by the U.S. Supreme Court that EPA must consider cost in the appropriate and necessary finding supporting MATS. This finding was challenged.

On February 7, 2019, the EPA proposed a revision to its response to the U.S. Supreme Court decision in *Michigan v. EPA* which held that the EPA erred by not considering cost in its determination that regulation under section 112 of the Clean Air Act of hazardous air pollutant emissions from coal- and oil-fired electric utility steam generating units is appropriate and necessary. On May 22, 2020, EPA published a reconsideration of the appropriate and necessary finding for the MATS, correcting flaws in the 2016 supplemental cost finding. However, EPA is not removing coal- and oil-fired EGUs from the list of affected source categories for regulation under section 112 of the CAA, so the MATS rule remains in effect. This proposal is currently under review.

In the 2011 ECRC docket, the Commission recognized that EPA's adoption of MATS for EGUs would require the Company to modify its Integrated Clean Air Compliance Plan. See Order No. PSC-2011-0553-FOF-EI, at 11. Accordingly, consistent with the Commission's expectation that utilities "take steps to control the level of costs that must be incurred for environmental compliance," Order No. PSC-2008-0775-FOF-EI, at 7, the Commission approved the Company's

request to recover costs incurred to assess EPA's proposed rule, prepare comments to EPA and develop compliance strategies within the aggressive regulatory timeframes proposed by EPA.

C. Greenhouse Gas Regulation

In 2007, then-Governor Crist issued Executive Order 07-127 directing the FDEP to promulgate regulations requiring reductions in utility CO_2 emissions. In addition, the 2008 Florida Legislature enacted legislation authorizing FDEP to adopt rules establishing a cap-and-trade program and requiring the FDEP to submit any such rules for legislative review and ratification. However, the FDEP did not adopt any cap-and-trade rules, and the Legislature subsequently repealed the 2008 law. Likewise, although a number of bills that would regulate GHG emissions have been introduced to Congress over the past several years, none have become law. In the meantime, the EPA began implementing a regulatory approach to reducing GHG emissions through the Clean Air Act. At this time, however, there are no GHG emission standards applicable to DEF's existing generating units. Moreover, there are still no retrofit options commercially available to reduce CO_2 emissions from fossil fuel-fired electric generating units such as CR Units 4 and 5, which are the primary focus of DEF's compliance plan. To date, there are very limited large-scale commercial carbon capture and storage technology demonstrations on electric utility units. Until numerous technological, regulatory, and liability issues are resolved, it will be impossible to determine whether carbon capture and storage would be a technically-feasible or cost-effective means of complying with a CO_2 regulatory regime. Moreover, replacing coal-fired generation from CR Units 4 and 5 with lower CO_2-emitting natural gas-fired combined cycle generation is not a viable option at this late date, particularly given the fact that DEF has placed in service Plan D components.

On June 25, 2013, then-President Obama issued a Presidential Memorandum directing the EPA to establish GHG emission guidelines for existing power plants under Section 111(d) of the Clean Air Act. The Presidential Memorandum directed the EPA to issue proposed GHG standards, regulations, or guidelines, as appropriate, for existing power plants by no later than June 1, 2014, and issue final standards, regulations or guidelines, as appropriate, by no later than June 1, 2015. In addition, the Presidential Memorandum directed the EPA to include a requirement in the new regulations that states submit State Implementation Plans ("SIPs") to implement the new guidelines by no later than June 30, 2016.

On August 3, 2015, the EPA released the final New Source Performance Standards ("NSPS") for CO_2 emissions from existing fossil fuel-fired EGUs (also known as the Clean Power Plan or "CPP"). The final CPP established state-specific emission goals; for Florida, the goals would begin a phased approach in 2022, ending with a rate goal of 919 lb. CO_2/MWh annual average for the period 2030 and beyond. Alternatively, the state was able to adopt a mass emissions approach culminating in a 2030 target of 105,094,704 tons (existing units) or 106,641,595 tons (existing plus new units). The final CPP was challenged in the D.C. Circuit by 27 states and a number of industry groups. Oral argument occurred on September 27, 2016. The D.C. Circuit subsequently issued a stay of the litigation. Previously, on February 9, 2016, the U.S. Supreme Court had placed a stay on the CPP until such time that all litigation is completed.

Also, on August 3, 2015, the EPA released the final NSPS for CO_2 emissions from new, modified and reconstructed fossil fuel-fired EGUs. The rule included emission limits of 1,400 lb. CO_2/MWh for new coal-fired units and 1,000 lb. CO_2/MWh for new natural gas combined-cycle units. This rule was also challenged in the D.C. Circuit. The D.C. Circuit issued an order suspending this litigation pending a review of the rule by EPA.

On March 28, 2017, then-President Trump signed an Executive Order ("EO") entitled "Promoting Energy Independence and Economic Growth." The EO directs federal agencies to "immediately review existing regulations that potentially burden the development or use of domestically produced energy resources and appropriately suspend, revise, or rescind those that unduly burden the development of domestic energy resources." The EO specifically directed the EPA to review the following rules and determine whether to suspend, revise, or rescind those rules:

- The final CO_2 emission standards for existing power plants ("CPP");
- The final CO_2 emission standards for new power plants ("CO_2 NSPS");
- The proposed Federal Plan and Model Trading Rules that accompanied the CPP.

In response to the EO, the Department of Justice filed motions with the D.C. Circuit Court to stay the litigation of both the CPP and the CO_2 NSPS rules while each is reviewed by EPA. The EO did not change the current status of the CPP which was under a legal hold by the U.S. Supreme Court. With regard to the CO_2 NSPS, that rule will remain in effect pending the outcome of EPA's review. On December 6, 2018, EPA proposed to revise the New Source Performance Standards (NSPS) for greenhouse gas emissions from new, modified, and reconstructed fossil

fuel-fired power plants. After further analysis and review, EPA proposes to determine that the best system of emission reduction ("BSER") for newly constructed coal-fired units, is the most efficient demonstrated steam cycle in combination with the best operating practices. EPA did not propose to amend the standards of performance for newly constructed or reconstructed stationary combustion turbines. In January 2021, EPA issued a clear framework for determining when standards are appropriate for GHG emissions from stationary source categories under Clean Air Act (CAA) section 111(b)(1)(A). EPA did not take final action to revise the BSER in the 2018 proposal.

On October 16, 2017, the EPA published a proposal to announce its intention to repeal the CPP. The proposal also requested public comment on the proposed rule. The EPA held public hearings on November 28 and 29, 2017, in Charleston, West Virginia, and extended the public comment period until January 16, 2018. In response to numerous requests for additional opportunities for the public to provide oral testimony on the proposed rule in more than one location, the EPA conducted three listening sessions, and extended the public comment period until April 26, 2018.

On December 28, 2017, EPA published an Advanced Notice of Proposed Rulemaking ("ANPR") to solicit information from the public as the agency considered proposing emission guidelines to limit GHG emissions from existing EGUs. EPA also "solicited information on the proper respective roles of the state and federal governments in the process, as well as information on systems of emission reduction that are applicable at or to an existing EGU, information on compliance measures, and information on state planning requirements under the Clean Air Act."

On June 19, 2019, EPA issued the Affordable Clean Energy rule ("ACE"), an effort to provide existing coal-fired electric utility generating units, or EGUs, with achievable and realistic standards for reducing greenhouse gas (GHG) emissions. This action was finalized in conjunction with two related, but separate and distinct rulemakings: (1) The repeal of the Clean Power Plan (CPP) and (2) Revised implementing regulations for ACE, ongoing emission guidelines, and all future emission guidelines for existing sources issued under the authority of Clean Air Act (CAA) section 111(d). On January 19, 2021, the court vacated the ACE rule and remanded it back to EPA. Vacatur means that the rule will no longer be in effect once the Mandate is issued; the Mandate is the court's directive to enforce its decision. On February 22, 2021, the court granted EPA's motion to withhold issuance of the mandate with respect to the vacatur of the Clean Power

Plan Repeal Rule until the EPA responds to the court's remand in a new rulemaking action. No party filed for Rehearing regarding the court's January 19th decision. Accordingly, on March 5, 2021, the court issued the Partial Mandate to EPA, officially vacating the ACE rule, but withholding the mandate regarding the CPP repeal. Currently, neither the ACE rule nor Clean Power Plan rule are in effect. The parties have until April 19, 2021, to ask the Supreme Court to take the case.

D. Status of BART Requirements under CAVR

In 2009, the FDEP issued a permit imposing BART requirements for particulate matter ("PM") emissions from CR Units 1 and 2. The 2009 permit did not impose BART requirements for SO_2 and NO_x emissions because, at the time, the EPA assumed that compliance with CAIR would satisfy BART requirements for SO_2 and NO_x. Following the proposed adoption of CSAPR, in early 2012, the EPA revised its previous determination to replace the "CAIR satisfies BART" assumption with "CSAPR satisfies BART." In late 2011, CSAPR was vacated (although later re-instated – see part A above), leaving CAIR in effect and resulting in confusion regarding the ability to rely on CAIR (or CSAPR) to satisfy BART requirements. As a result, in 2012, the Company worked with the FDEP to develop and finalize air construction permits to address SO_2 and NO_x emissions from CR Units 1 and 2 in support of FDEP's development of a revised Regional Haze SIP to address CAVR requirements for SO_2 and NO_x. As discussed in the Company's 2013 Integrated Clean Air Compliance Plan, the FDEP subsequently submitted to EPA a revised Regional Haze SIP containing unit-specific determinations for SO_2 and NO_x, including the new permit requirements for CR Units 1 and 2. EPA formally approved the FDEP's revised Regional Haze SIP in August 2013. *See* 78 Fed Reg. 53250 (August 29, 2013). Although third parties initially petitioned for review of EPA's approval in the U.S. Court of Appeals for the Eleventh Circuit, the Petition was subsequently withdrawn, and the SIP approval remains in place. CR Units 1 and 2 were retired from service on December 31, 2018.

The permits call for the installation of Dry FGD and SCR no later than January 1, 2018, or within 5 years of the effective date of the EPA's approval of the Florida Regional Haze SIP, whichever is later, or alternatively the discontinuation of the use of coal in CR Units 1 and 2 by December 31, 2020. DEF ultimately selected the latter of the two options. CR Units 1 and 2 were retired from service on December 31, 2018.

E. Status of National Ambient Air Quality Standards (NAAQS)

The EPA and FDEP worked to implement the 2010 one-hour NAAQS for SO_2. In mid-2013, the EPA finalized nonattainment designations for two small areas in Florida outside of DEF's service territory (one in Nassau County, one in Hillsborough County) based on existing monitoring data. The EPA deferred making any area designations (attainment, nonattainment, or unclassifiable) for the remainder of the state. On August 21, 2015, the EPA published a final rule that describes requirements for additional ambient air quality monitoring and/or modeling that will be used to determine future rounds of area designations. Under the rule, the EPA made nonattainment designations in 2017 for modeled areas, and in 2020 will make designations for monitored areas. Based on the EPA modeling protocol, the FDEP modeled the area surrounding the Crystal River facility and determined that future operation will not cause a nonattainment issue. This finding was provided to EPA on January 13, 2017, as part of the FDEP's Data Requirements Rule package submittal. On August 22, 2017, EPA issued the Intended Area Designation document, which did not concur with FDEP's recommendation, and outlined EPA's intent to identify an area in Citrus County near the Crystal River Power Plant as nonattainment with the SO2 ambient standard. FDEP provided additional updated information, and on December 21, 2017, EPA issued the final Third Round of SO2 Designations document designating the area around Crystal River as 'unclassifiable' rather than 'nonattainment.' In early 2018, this designation was upgraded to 'attainment,' based on the results of the 2017 full-year data.

In 2010, EPA also revised its NO_2 NAAQS to implement a new one-hour standard. At this time, however, DEF does not anticipate that the new standard will impact compliance measures at DEF facilities.

On October 1, 2015, the EPA issued a revised NAAQS for ambient ozone, changing the standard to 70 parts per billion (ppb) averaged over 8 hours from the previous level of 75 ppb. There are currently no nonattainment areas with respect to the revised standard in Florida; therefore, DEF does not anticipate an impact on its compliance measures.

III. DEF's Integrated Clean Air Compliance Plan

The Company's original compliance plan (Plan D) will continue to help it meet applicable environmental requirements by striking a balance between reducing emissions, primarily through

installation of controls on its largest and newest coal units (CR Units 4 and 5). While the original plan made strategic use of the allowance markets to comply with CSAPR requirements, this is no longer necessary as discussed in Section II.A of this document. The controls installed in accordance with Plan D will continue to be the cornerstone of DEF's compliance strategy with the adoption of MATS and other ongoing regulatory efforts. Specific components of the Plan are summarized below.

A. FGD Systems

The most significant component of DEF's Integrated Clean Air Compliance Plan is the installation of FGD systems, also known as wet scrubbers, on CR Units 4 and 5 to comply with CAIR, Title IV of the Clean Air Act, and other SO_2 control requirements in DEF's air permits for these units. The FGDs also reduce mercury and acid gasses and, therefore, are a key component of DEF's MATS compliance strategy. In particular, the co-benefits of the FGDs and SCRs reduce mercury emissions by 90-95% under typical conditions.

B. SCR & Other NO_x Controls

The primary component of DEF's NO_x compliance plan is the installation of LNBs and SCR systems on CR Units 4 and 5. These controls enable DEF to comply with CAIR/CSAPR and other NO_x control requirements included in its air permits for the units. As discussed above, the SCRs also help achieve MATS requirements for mercury.

DEF has taken strategic advantage of CAIR's cap-and-trade feature by purchasing some annual and ozone season NO_x allowances; however, as explained above, the court stay of the CSAPR was lifted, and the rule went into effect replacing CAIR on January 1, 2015. Under the CSAPR, the State of Florida was only affected by the ozone season requirements of the rule, which applied from May through September. Beginning in 2017, the entire state of Florida was removed from the requirements to comply with the CSAPR. Consequently, DEF has NO_x CAIR emission allowances that cannot be used to comply with the CSAPR. DEF established a regulatory asset to recover the costs of its remaining NO_x CAIR emission allowance inventory over a three-year amortization period beginning January 2015 in accordance with Order No. PSC-2011-0553-FOF-EI.

C. Additional MATS Compliance Strategies

DEF determined that the most cost-effective option for its Anclote Units 1 and 2 was conversion to fire 100% natural gas rather than installation of emission controls to comply with MATS. This was approved by the Commission in Docket 20120103-EI.

Suwannee Units 1, 2 and 3 operated exclusively on natural gas and, therefore, were not subject to MATS requirements. At the end of 2016, these units were retired.

DEF utilizes ESP, FGD, and SCR systems as the primary MATS control technologies for CR Units 4 and 5. In addition, DEF has installed chemical injection systems to mitigate mercury re-emissions from the FGDs.

For CR Units 1&2, DEF determined that the use of alternative coals (along with dry sorbent injection, PAC injection, and ESP enhancements) was a feasible and cost-effective strategy to allow these units to continue running for a limited period of time in compliance with MATS and BART requirements until new generation can be built. This plan was approved by the Commission in Order No. PSC-2014-0173-PAA-EI (April 17, 2014). CR Units 1 and 2 were retired from service on December 31, 2018.

D. Visibility Requirements

DEF operated four units that are potentially subject to BART under CAVR: Anclote Units 1 and 2 and CR Units 1 and 2. Based on modeling of air emissions from Anclote Units 1 and 2, those units are exempt from BART for PM. Because the modeling results for CR Units 1 and 2 showed visibility impacts at or above regulatory threshold levels, DEF obtained a BART permit in 2009 for PM for those units. This permit established a combined BART PM emission standard for Crystal River Units 1 and 2 that required demonstration of compliance by October 1, 2013. This deadline was met, and the units operated in compliance with the permit which was effective on January 1, 2014. As discussed above, in 2012, FDEP issued air construction permits addressing SO_2 and NO_x requirements for CR Units 1 and 2 in support of FDEP's development of a revised Regional Haze SIP. These units were also subject to the Reasonable Further Progress ("Beyond BART") requirements under CAVR. As presented in the Company's petition approved in Order PSC-2014-0173-PAA-EI, DEF determined that the use of alternative coals with installation of less expensive pollution controls would provide a cost-effective means for it to continue operating CR

Units 1 and 2 in compliance with MATS and CAVR for a limited time until replacement generation can be constructed. CR Units 1 and 2 were retired from service on December 31, 2018.

IV. Efficacy of DEF's Plan

A. Project Milestones

DEF completed installation of Plan D's controls on CR Units 4 and 5 as contemplated in prior ECRC filings. CR Units 4 and 5 FGD and SCR projects are now in-service, and targeted environmental benefits have been met. In addition to reducing SO_2 and NO_x emissions, the FGDs and SCRs have the combined effect of reducing mercury and other emissions regulated by MATS. DEF installed mercury re-emission control systems in 2015 and has demonstrated compliance with the applicable MATS requirements for CR Units 4 and 5.

The Commission approved DEF's Need Petition in Docket No. 20140110-EI to construct the Citrus County Combined Cycle Units which became commercially available in 2018 and allowed for the retirement of coal-fired CR Units 1 and 2. DEF installed pollution controls on CR Units 1 and 2 to allow for continued operation in compliance with MATS and BART until the Citrus units became operational. CR Units 1 and 2 were retired from service on December 31, 2018. Targeted environmental benefits have been met.

Anclote Units 1 and 2 were converted to fire 100% natural gas in 2013. Necessary upgrades to the forced draft fans were completed in 2014 in order to maintain unit output. Targeted environmental benefits have been met.

B. Projects

CR Units 4 and 5 FGD and SCR projects are now in-service, and the targeted environmental benefits have been met. The Anclote units have been converted to fire 100% natural gas. DEF operated CR Units 1 and 2 in compliance with BART and MATS requirements as outlined in Order No. PSC-2014-0173-PAA-EI until their retirement.

V. Conclusion

DEF has completed installation of the emission controls contemplated in its approved Plan D on time and within budget. The FGD and SCR systems at CR Units 4 and 5 have enabled DEF to comply with CAIR, and subsequently the CSAPR requirements and will continue to be the cornerstone of DEF's integrated air quality compliance strategy for years to come. DEF is confident that Plan D, along with the other compliance strategies discussed in the document, has enabled the Company to achieve and maintain compliance with applicable regulations, including MATS, in a cost-effective manner.