

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination) DOCKET NO. _____
of Cost Effective Generation Alternative)
to Meet Need Prior to 2018 for Duke) Submitted for filing: May 27, 2014
Energy Florida, Inc.)
_____)

DUKE ENERGY FLORIDA, INC.'S NOTICE OF FILING

Duke Energy Florida, Inc. ("DEF" or the "Company") hereby gives notice of filing the Direct Testimony of Ed Scott with Exhibits ES-1 through ES-3 in support of DEF's Petition for Determination of Cost Effective Generation Alternative to Meet Need Prior to 2018 for Duke Energy Florida, Inc.

Respectfully submitted this 27th day of May, 2014.

John T. Burnett
Deputy General Counsel
Dianne M. Triplett
Associate General Counsel
DUKE ENERGY FLORIDA, INC.
Post Office Box 14042
St. Petersburg, FL 33733-4042
Telephone: (727) 820-5587
Facsimile: (727) 820-5519

/s/ James Michael Walls
James Michael Walls
Florida Bar No. 0706242
Blaise N. Gamba
Florida Bar No. 0027942
CARLTON FIELDS JORDEN BURT, P.A.
Post Office Box 3239
Tampa, FL 33601-3239
Telephone: (813) 223-7000
Facsimile: (813) 229-4133

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

**In re: Petition for Determination
of Cost Effective Generation Alternative
to Meet Need Prior to 2018 for Duke
Energy Florida, Inc.**

DOCKET NO. _____
Submitted for filing:
May 27, 2014

**DIRECT TESTIMONY
OF ED SCOTT**

**ON BEHALF OF
DUKE ENERGY FLORIDA, INC.**

JOHN T. BURNETT
Deputy General Counsel
DIANNE M. TRIPLETT
Associate General Counsel
DUKE ENERGY FLORIDA, INC.
299 1st Avenue North
St. Petersburg, Florida 33733
Telephone: (727) 820-5184
Facsimile: (727) 820-5519

JAMES MICHAEL WALLS
Florida Bar No. 706272
BLAISE N. GAMBA
Florida Bar No. 027942
CARLTON FIELDS JORDEN
BURT, P.A.
4221 W. Boy Scout Blvd., Ste.1000
Tampa, Florida 33607
Telephone: (813) 223-7000
Facsimile: (813) 229-4133

**IN RE: PETITION FOR DETERMINATION OF
COST EFFECTIVE GENERATION ALTERNATIVE TO MEET NEED
PRIOR TO 2018 FOR DUKE ENERGY FLORIDA, INC.**

BY DUKE ENERGY FLORIDA, INC.

FPSC DOCKET NO. _____

DIRECT TESTIMONY OF ED SCOTT

I. INTRODUCTION AND QUALIFICATIONS.

Q. Please state your name, employer, and business address.

A. My name is Ed Scott and I am employed by Duke Energy Florida, Inc. (“DEF” or the “Company”). My business address is 6565 38th Avenue, North, St. Petersburg, Florida 33710.

Q. Please tell us your position with Duke Energy and describe your duties and responsibilities in that position.

A. I am the Director --- Transmission Planning Florida. In this role, I am responsible for all transmission planning for DEF. I am responsible for ensuring that long-range transmission plans, studies, and assessments are performed in accordance with all applicable Federal Energy Regulatory Commission (“FERC”), North American Electric Reliability Corporation (“NERC”), Florida Reliability Coordinating Council (“FRCC”), and DEF planning standards and requirements. Areas of additional focus include development of Generation and Transmission Integrated Siting Strategies and evaluation

1 of Transmission Service and Generator Interconnection Requests. I also represent DEF
2 on the FRCC Planning Committee and the NERC Planning Committee.

3
4 **Q. Please summarize your educational background and employment experience.**

5 A. I have been with the Company (and its predecessor companies Progress Energy Florida
6 and Florida Power Corp.) since 2001 in positions of increasing responsibility. In my
7 previous role as Manager of System Operations at the Florida Energy Control Center, I
8 oversaw the real time, electric system operations of the Florida utility, including
9 generation dispatch, transmission reliability, and transmission service transactions. I
10 have held prior leadership roles as Manager of Bulk Transmission Planning, and
11 Supervisor System Operations for the Company. I also held several Company
12 engineering positions with increasing responsibility in Operations Network Reliability,
13 Operations Planning, and Operations Training. Prior to joining the Company, I was a
14 staff engineer with the FRCC.

15 I earned bachelor and master of science degrees in electrical engineering from the
16 Florida Institute of Technology in 1998 and 1999. I also earned a master of science
17 degree in business administration from the University of Florida in 2007. I am a licensed
18 Professional Engineer in Florida and North Carolina.

19
20 **II. PURPOSE AND SUMMARY OF TESTIMONY.**

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

22 A. I am testifying on behalf of the Company in support of its Petition for Determination of
23 Cost Effective Alternative to Meet Need Prior to 2018 for Duke Energy Florida. I will

1 provide an overview of the transmission system impacts and costs for the generation
2 options that the Company proposes to build to meet its need prior to 2018 in the most
3 cost-effective manner for its customers. I will also address the transmission system
4 impacts associated with supply-side generation alternatives that the Company evaluated
5 to determine that the Company's self-build generation options are the most cost-effective
6 resource options to meet the Company's need prior to 2018.

7
8 **Q. Are you sponsoring any exhibits to your testimony?**

9 **A.** Yes. I am sponsoring the following exhibits to my testimony:

- 10 • Exhibit No. ____ (ES-1), a map and graphic illustration of the transmission
11 interconnections for the Suwannee Simple Cycle Project at the Suwannee power
12 plant site;
- 13 • Exhibit No. ____ (ES-2), a depiction of the existing Hines Energy Complex
14 ("HEC") combined cycle power plant blocks and the existing transmission
15 interconnections; and
- 16 • Exhibit No. ____ (ES-3), a confidential description of the potential generation
17 facility acquisitions evaluated for transmission cost impacts to the DEF
18 transmission system, including the physical location of the facilities and a
19 description of the necessary transmission network upgrades to reliably integrate
20 the facilities onto the electric grid that result from the DEF transmission analyses.

21 Each of these exhibits was prepared under my direction and control, and each is true and
22 accurate.

1 **Q. Please summarize your testimony.**

2 A. There is minimal transmission investment required to incorporate on DEF's system the
3 Company's self-build generation options to meet its need prior to 2018. The Suwannee
4 Simple Cycle Project and the Hines Chillers Power Uprate project are both located at
5 existing DEF power plant sites. The location of these projects at the existing Suwannee
6 and HEC power plant sites allows the Company to obtain substantial, additional summer
7 generation capacity with relatively little additional transmission investment. As a result,
8 there are transmission cost-savings benefits to customers resulting from the addition of
9 these generation projects at existing Company power plant sites compared to Greenfield
10 sites incorporated into the total cost of the projects.

11 The Company evaluated alternative power purchase agreement ("PPA") and
12 generation facility acquisition options to meet its need prior to 2018. The impact of all of
13 these alternative generation proposals on DEF's transmission system was evaluated. Two
14 potential generation facility acquisitions were evaluated further to determine the
15 transmission system network upgrades required to incorporate the generation facilities
16 into the DEF system. The transmission system network upgrade costs to incorporate one
17 of the potential generation facilities into DEF's system were substantial. The
18 transmission costs associated with the potential generation facility acquisitions were
19 included in the Company's economic evaluation of the most cost-effective option for the
20 Company to meet its reliability need prior to 2018.

1 **III. TRANSMISSION ANALYSIS OF COMPANY SELF-BUILD GENERATION**
2 **OPTIONS.**

3 **Q. What are the Company's self-build generation options to meet its need before 2018?**

4 A. The Company's self-build generation options are the Suwannee Simple Cycle Project in
5 the summer of 2016 and the Hines Chillers Power Uprate Project in the summer of 2017.
6 The Suwannee Simple Cycle Project involves the construction of two F class combustion
7 turbines and related equipment and facilities at the Company's existing Suwannee power
8 plant site in Suwannee County, Florida. The Suwannee Simple Cycle Project will total
9 320 MegaWatts ("MW") and it will be placed in commercial operation by June 2016.
10 The Hines Chillers Power Uprate Project involves the installation of a chiller system
11 designed to cool the gas turbine inlet air to all four existing natural-gas fired, combined
12 cycle generation power blocks at the Company's HEC in Polk County, Florida. The
13 Hines Chillers Power Uprate Project is projected to increase the summer HEC site
14 capacity by 220 MW and this project will be in commercial operation by the summer of
15 2017. These projects are described in more detail in the direct testimony of Mr.
16 Landseidel in this proceeding.

17
18 **Q. What transmission analyses were performed for the Company's self-build**
19 **generation options?**

20 A. DEF performed transmission planning analyses in accordance with all applicable Federal
21 Energy Regulatory Commission ("FERC"), NERC, FRCC, and DEF planning standards
22 and requirements, for the proposed self-build generation option in Suwannee County,
23 Florida. In addition, the same planning standards and requirements were applied to the

1 transmission analysis performed for the Hines Chillers Power Uprate Project. These
2 transmission analyses include, as necessary, thermal load flow, stability, and short-circuit
3 analyses to identify any need for additional transmission network upgrades to reliably
4 integrate the proposed additional generation to the grid. For the proposed self-build
5 generation option in Suwannee County, Florida, DEF performed an Interconnection
6 Study to determine the impact of interconnecting the queued generation to the
7 transmission system. These studies involved transmission contingency, short circuit, and
8 stability analyses. For the proposed Hines Chillers Power Uprate Project a transmission
9 evaluation was also performed which compared the original Hines Unit interconnection
10 transmission infrastructure to any potential needs due to the proposed power uprate.

11
12 **Q. What were the results of these transmission analyses?**

13 A. The Suwannee Simple Cycle Project is located at the Company's existing Suwannee
14 plant site located in Suwannee County, Florida. The two combustion turbines and two
15 generator step-up transformers will be connected to the existing transmission switchyard
16 at the site. One combustion turbine generator will be connected to the 115 kV
17 transmission switchyard and the other combustion turbine generator will be connected to
18 the 230 kV switchyard. Exhibit No. ___ (ES-1) is a map and graphic illustration of the
19 transmission interconnections for the Suwannee Simple Cycle Project at the Suwannee
20 power plant site. Our transmission analysis indicates transmission network upgrades
21 estimated at \$15.7 million are needed to reliably integrate the proposed additional
22 generation to the grid.

23 The Company plans to retire the existing Suwannee steam units located at the

1 Suwannee power plant site when the Suwannee Simple Cycle Project is complete and the
2 new combustion turbines achieve commercial operation. The existing steam units that
3 will be retired are also depicted on the map in Exhibit No. ____ (ES-1) to my direct
4 testimony. As a result, the combined net impact to the DEF system and electric grid of
5 these retirements and the addition of the Suwannee Simple Cycle combustion turbines
6 require minimal additional transmission network upgrades of the DEF transmission
7 system to accommodate the generation for the Suwannee Simple Cycle combustion
8 turbines.

9 The increase in summer capacity at the HEC site as a result of the Hines Chillers
10 Power Uprate Project will not require additional transmission network upgrades on the
11 DEF system. Likewise, because the HEC combined cycle power block units are already
12 connected to the DEF transmission system, there are no generator interconnection costs
13 associated with the Hines Chillers Power Uprate Project. The existing HEC combined
14 cycle power plant block units and the existing transmission interconnections are shown in
15 Exhibit No. ____ (ES-2) to my direct testimony.

16
17 **Q. Do the customers benefit from the location of these self-generation projects at**
18 **existing DEF generation sites?**

19 A. Yes, from a transmission perspective, there are cost-saving benefits to customers
20 resulting from the addition of these Company generation projects at existing sites. As I
21 have explained above, the location of these projects at the existing Suwannee and HEC
22 power plant sites, respectively, allows the Company to obtain substantial, additional
23 summer capacity generation with relatively little additional transmission investment. The

1 existing transmission infrastructure at both sites supports the addition of the increased
2 summer generation capacity from these projects.

3
4 **Q. In your opinion, are the results of your analysis of the transmission costs for the
5 Company's self-build generation plan projects reasonable?**

6 A. Yes. In my professional opinion, and based on my experience and evaluation of the
7 impact of adding these self-build generation plan projects to the Company's system, these
8 results are accurate and reasonable.

9
10 **IV. TRANSMISSION ANALYSIS OF THE SUPPLY-SIDE GENERATION
11 ALTERNATIVES.**

12 **Q. Did the Company evaluate any alternative supply-side generation proposals to the
13 Company's self-build generation options to meet the Company's generation needs
14 before 2018?**

15 A. Yes. The Company evaluated power purchase agreements ("PPAs") with existing
16 generators or utilities and the potential acquisition of existing generators within Florida as
17 alternatives to the Company's Suwannee Simple Cycle and Hines Chillers Power Uprate
18 projects.

19
20 **Q. Were transmission studies performed for these alternative supply-side generation
21 proposals?**

22 A. Yes. DEF performed a transmission screening study for all alternative supply-side
23 generation proposals. The proposed PPAs and generation facility acquisitions were

1 evaluated to explore existing and alternative transmission solutions to reliably integrate
2 the resources into the grid. In addition, potential impacts to third party systems were
3 identified that were consistent with the results of previously performed transmission
4 studies.

5
6 **Q. What potential generation acquisitions were evaluated?**

7 A. Two of the five proposed generation facility acquisitions passed the initial generation
8 economic screening and they were evaluated further for their cost impacts to the DEF
9 transmission system. These two proposed acquisitions are confidential and, accordingly,
10 they are identified in confidential Exhibit No. ____ (ES-3) to my direct testimony. Exhibit
11 No. ____ (ES-3) also identifies the physical location of these potential generation facility
12 acquisitions and contains a description of the necessary transmission network upgrades to
13 reliably integrate those resources onto the grid. For one potential acquisition, an
14 alternative interconnection solution was studied to provide an alternative solution that
15 potentially resolved all previously identified third party transmission impacts, and was
16 reasonable to be placed in service by summer 2017.

17
18 **Q. What transmission analyses were performed for these two alternative supply-side
19 generation acquisition proposals?**

20 A. The transmission screening studies were industry-standard studies consistent with DEF's
21 internal standards and both FRCC and NERC reliability standards. The latest available
22 FRCC peak load flow case, including the latest available information, was used as the
23 baseline to determine what transmission system network upgrade facilities or

1 modifications were needed. The cost estimates were also based on industry-standard
2 transmission facility estimation standards consistent with DEF's experience with such
3 transmission facilities. DEF employed the same industry-standard transmission facility
4 cost estimation standards to the alternative supply-side generation proposals that DEF
5 uses for all of its planned or projected transmission facility additions or upgrades on its
6 own transmission system. The results of these transmission screening studies indicated
7 either no adverse transmission impacts, or third party impacts. As a result, alternative
8 interconnection options, alternative DEF transmission network upgrades, and reasonable
9 third party network upgrades were assumed as potential solutions. All potential solutions
10 were then subsequently introduced into the appropriate case and tested in order to verify the
11 completeness of the solution.

12
13 **Q. What were the results of these transmission analyses?**

14 A. Transmission system network upgrades were required to incorporate one potential
15 generation facility acquisition into the DEF system. These transmission system network
16 upgrades are described more fully in Exhibit No. ___ (ES-3) to my direct testimony. The
17 cost of these transmission system network upgrades were estimated at \$150 million. DEF
18 further estimated that permitting and construction for the transmission system network
19 upgrades could be completed in time to meet the Company's need for additional
20 generation prior to 2018.

21 The location of the other, potential generation facility acquisition that was
22 evaluated resulted in minimal transmission system network upgrade costs, primarily on
23 third party transmission systems. Approximately \$15 million was estimated for these
24 third party transmission system network upgrades to incorporate this potential generation

1 facility into DEF's system.

2
3 **Q. Were the results of these transmission analyses incorporated into the Company's**
4 **evaluation of the alternative supply-side generation proposals?**

5 A. Yes. The transmission costs associated with the potential generation facility acquisitions,
6 as well as the potential PPAs, were included in the economic evaluation of the most cost-
7 effective option for the Company to meet its reliability need prior to 2018. The results of
8 this economic evaluation are explained in detail in the Mr. Borsch's testimony in this
9 proceeding.

10
11 **Q. Does this conclude your testimony?**

12 A. Yes, it does.

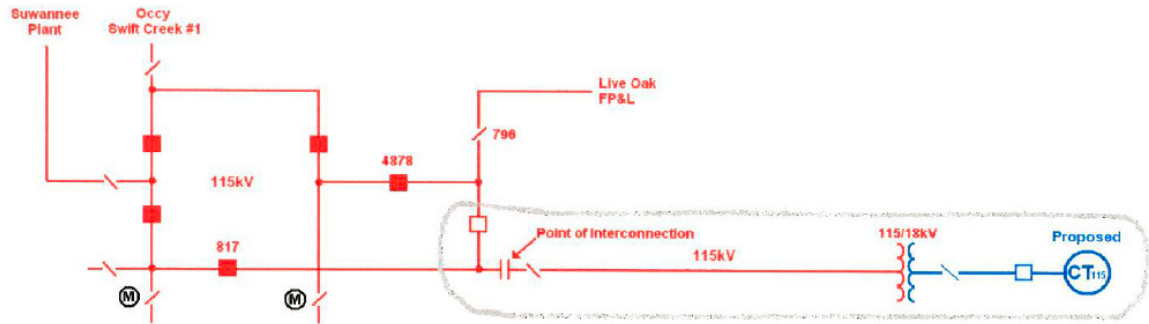
Interconnection Points Evaluated

Point of interconnection requested for study by interconnection customer for the 115kV unit:

- Connection to DEF's existing 115 kV Suwannee River Substation.

Alternative point of interconnection considered by DEF for the 115 kV unit:

- No other options were considered reasonable or necessary.

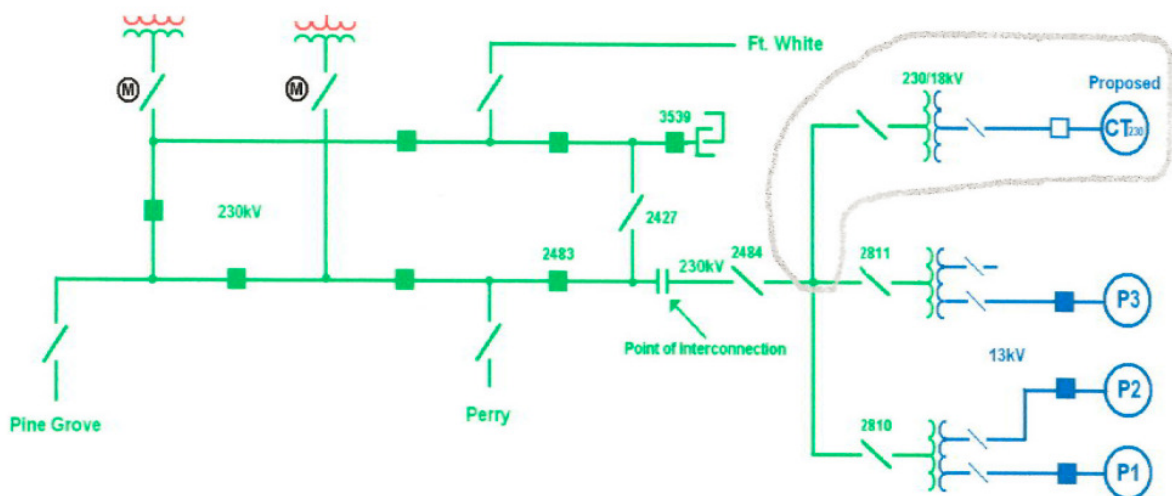


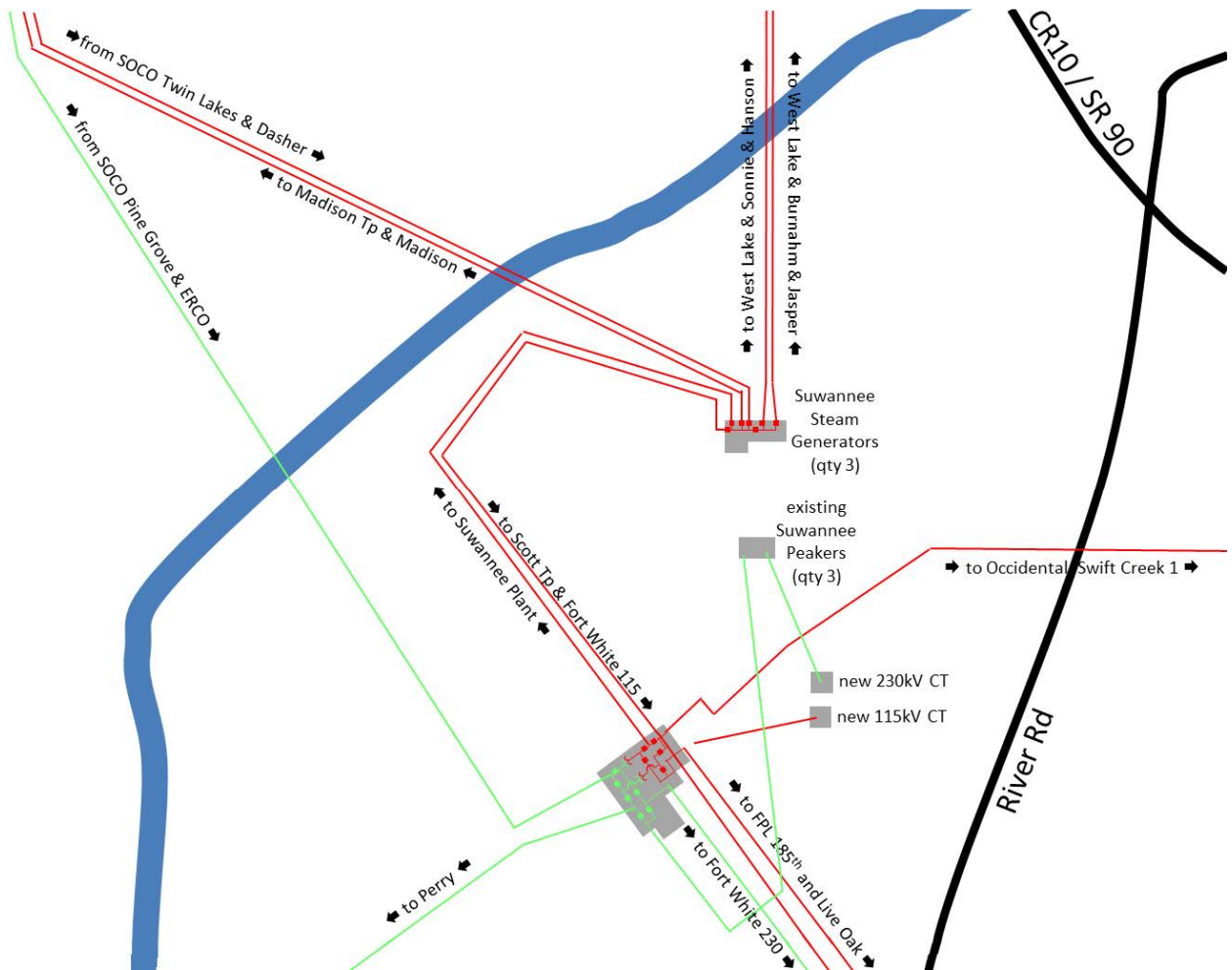
Point of interconnection requested for study by interconnection customer for the 230kV unit:

- Connection to DEF's existing Suwannee Peak's 230 kV switchyard..

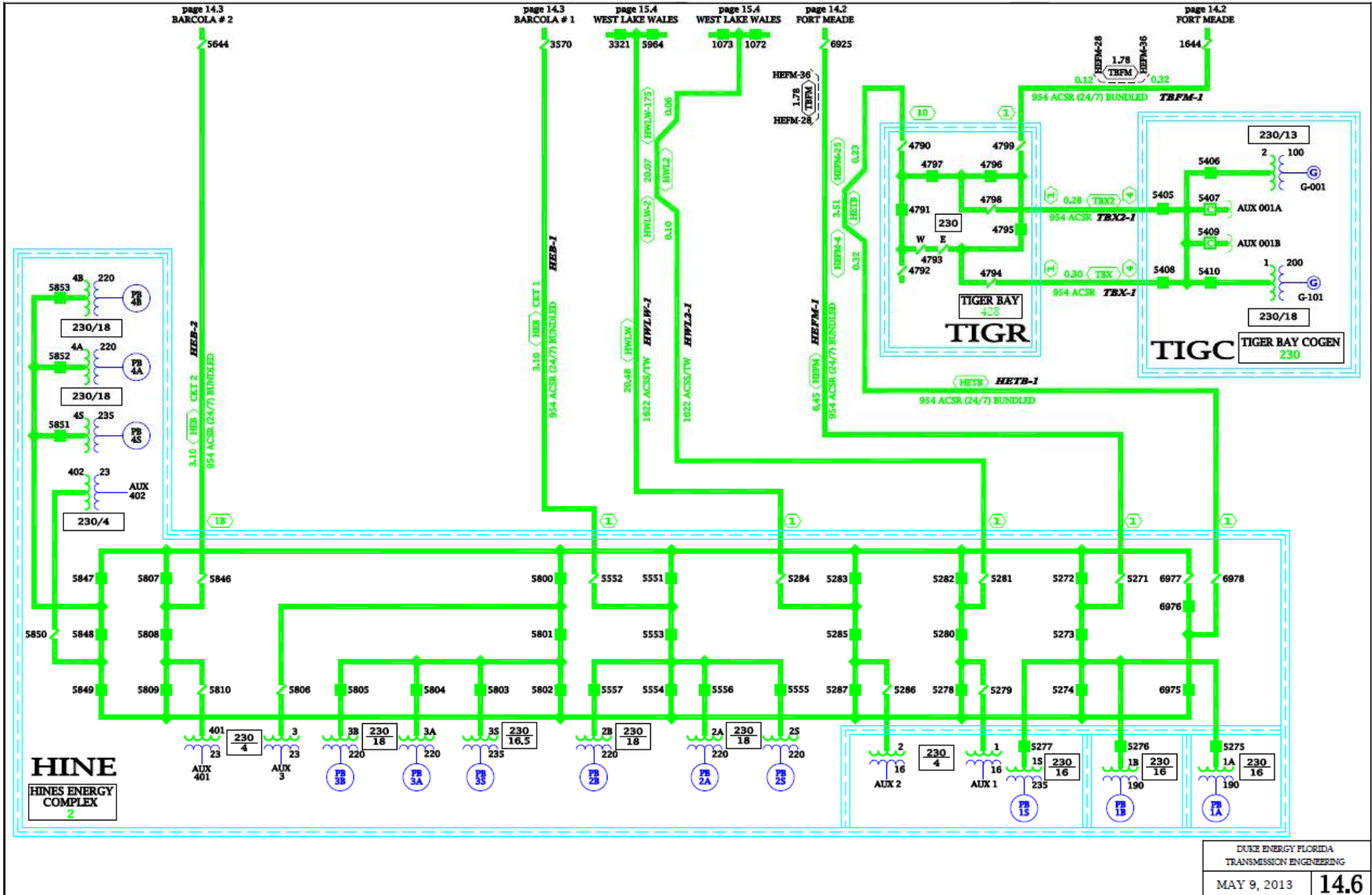
Alternative point of interconnection considered by DEF for the 230 kV unit:

- No other options were considered reasonable or necessary.





Existing HEC Combined Cycle Power Plant Blocks and the Existing Transmission Interconnections



REDACTED

**Potential Generation Facility Acquisitions Evaluated for Transmission Cost
Impacts to the DEF transmission system**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

REDACTED



[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

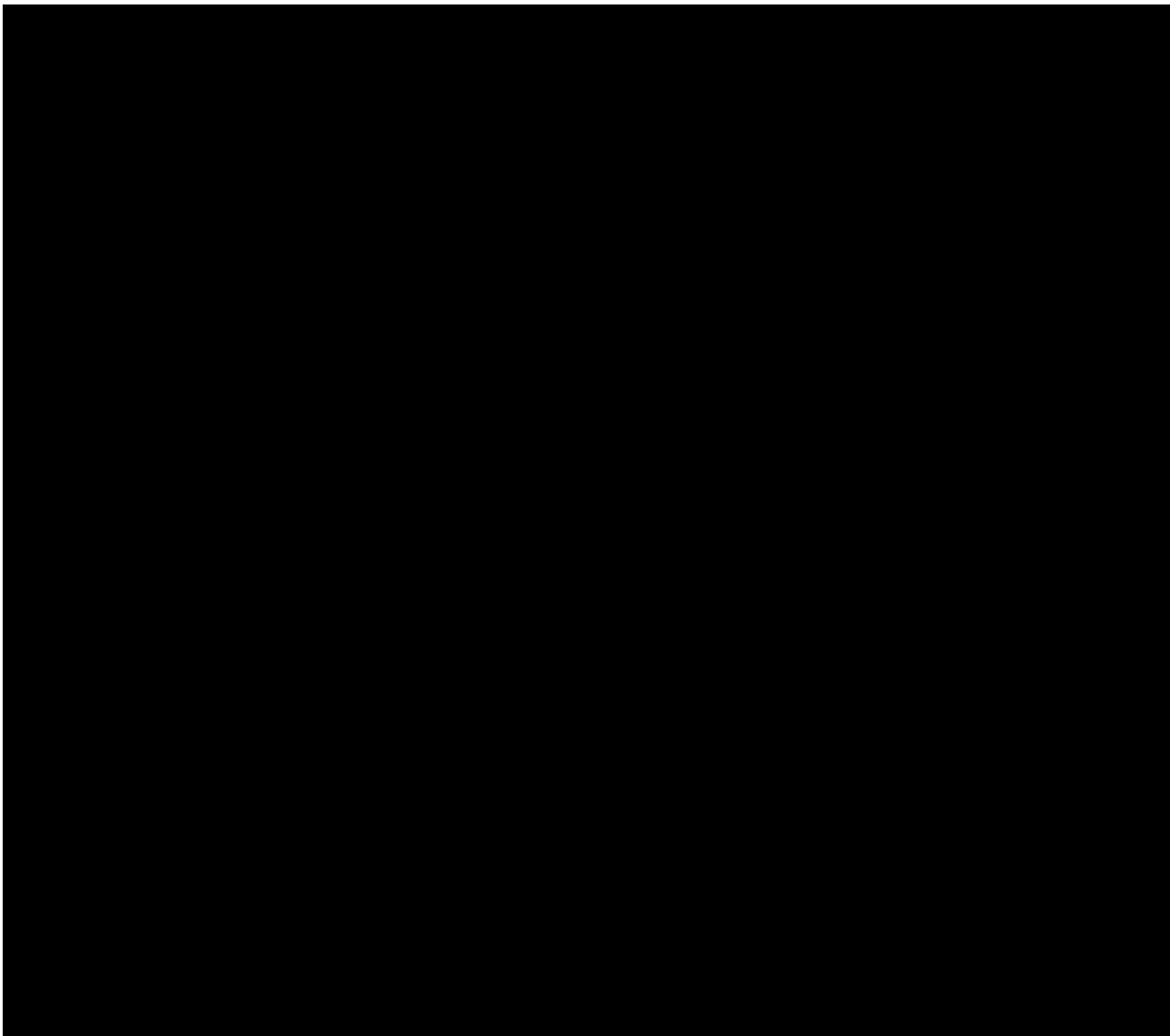
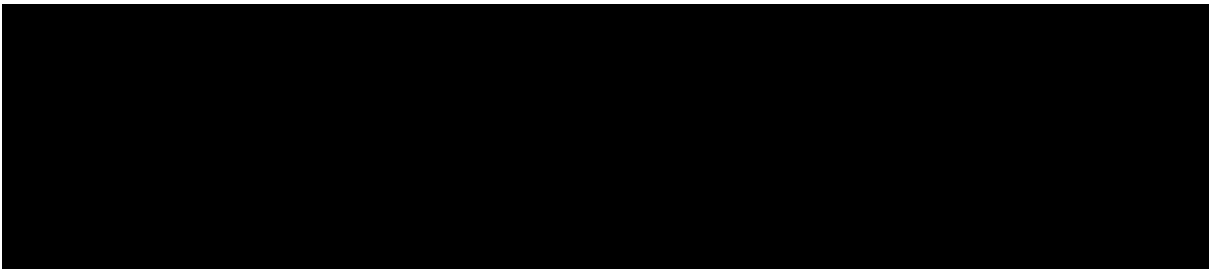
[REDACTED]

[REDACTED]

[REDACTED]

REDACTED

Docket No. _____
Duke Energy Florida
Exhibit No. _____ (ES-3)
Page 3 of 4



REDACTED

Docket No. _____
Duke Energy Florida
Exhibit No. _____ (ES-3)
Page 4 of 4

