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June 21, 2022

*VIA ELECTRONIC FILING*

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

**Re: Docket No. 20220051-EI**  
**Florida Power & Light Company 2023-2032 Storm Protection Plan**  
**Rebuttal Testimony**

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Dear Mr. Teitzman:

Enclosed for filing in the above-referenced docket, please find the following submitted on behalf of Florida Power & Light Company:

- Rebuttal Testimony of Michael Jarro, together with Exhibits MJ-2 through MJ-4
- Rebuttal Testimony of Liz Fuentes

If you or your staff have any question regarding this filing, please contact me at (561) 691-7144.

Respectfully submitted,

  
\_\_\_\_\_  
Christopher T. Wright  
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Enclosures

cc: Ken Hoffman  
Certificate of Service

**CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by Electronic Mail to the following parties of record this 21st day of June 2022:

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*s/ Christopher T. Wright*

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1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **DOCKET NO. 20220051-EI**

3  
4 **FLORIDA POWER & LIGHT COMPANY**

5 **2023-2032 STORM PROTECTION PLAN**

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9 **REBUTTAL TESTIMONY OF**

10 **MICHAEL JARRO**

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25 **Filed: June 21, 2022**

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27 **No. 33**

28

29

30

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Michael Jarro. My business address is Florida Power & Light Company  
4 (“FPL” or the “Company”), 15430 Endeavor Drive, Jupiter, FL, 33478.

5 **Q. Did you previously submit direct testimony?**

6 A. Yes. I submitted written direct testimony on April 11, 2022, together with Exhibit MJ-  
7 1 – FPL’s Storm Protection Plan 2023-2032. On May 6, 2022, FPL filed and served a  
8 Notice of Filing a Revised Appendix E to Exhibit MJ-1 to correct the completion dates,  
9 start dates, and amounts projected for certain Distribution Feeder Hardening Program  
10 projects included in the 2023 project level detail.

11 **Q. What is the purpose of your rebuttal testimony?**

12 A. The purpose of my rebuttal testimony is to respond to certain portions of the direct  
13 testimonies of Lane Kollen and Kevin J. Mara submitted on behalf of the Office of  
14 Public Counsel (“OPC”). My rebuttal testimony will respond to the concerns,  
15 questions, and recommendations raised by these witnesses in opposition to FPL’s 2023-  
16 2032 Storm Protection Plan (“2023 SPP”) submitted as Exhibit MJ-1 and as corrected  
17 by the Notice of Filing a Revised Appendix E to Exhibit MJ-1 filed on May 6, 2022.

18  
19 First, I will provide some context and general observations regarding OPC’s concerns  
20 and criticisms of FPL’s 2023 SPP.

21  
22 Second, I will address OPC’s recommendation that the Florida Public Service  
23 Commission (the “Commission”) apply new cost-effectiveness criteria and standards  
24 to review and approve the SPP programs and projects proposed in this proceeding. In  
25 essence, OPC seeks to convert this matter into a rulemaking proceeding and asks the

1 Commission to adopt and apply new criteria and standards that are not currently  
2 required by Section 366.96, Florida Statutes (hereinafter referred to as the “SPP  
3 Statute”), or Rule 25-6.030, Florida Administrative Code (hereinafter referred to as the  
4 “SPP Rule”). As I will explain below, OPC’s attempt to amend the requirements of  
5 the SPP Statute and SPP Rule as part of this proceeding is inappropriate and  
6 unnecessary.

7  
8 Third, I will address OPC’s contention that FPL did not provide an estimate of how the  
9 programs and projects included in the 2023 SPP will reduce restoration costs and  
10 outage times as required by the SPP Rule. As explained below, OPC’s position is based  
11 on its incorrect interpretation of the SPP Statute and SPP Rule, and ignores the fact that  
12 SPP programs and projects provide both quantitative and qualitative benefits. I will  
13 further explain that FPL’s 2023 SPP complies with the requirements of the SPP Statute  
14 and SPP Rule.

15  
16 Fourth, I will address the incorrect contention of OPC witness Kollen that only new or  
17 expanded storm hardening programs are eligible to be included in the SPP. As  
18 explained below, OPC witness Kollen ignores the language of the SPP Statute and Rule  
19 25-6.031, Florida Administrative Code (hereinafter referred to as the “SPPCRC Rule”)  
20 that limits double-recovery, and misapplies the requirement for the Storm Protection  
21 Plan Cost Recovery Clause (“SPPCRC”) to the SPP. Existing programs, together with  
22 new or expanded programs, are all eligible for approval as SPP programs under the  
23 SPP Statute. The issue of whether costs are recovered in base rates or the SPPCRC is  
24 a matter to be addressed in the applicable SPPCRC proceeding.

25

1 Finally, I will address and rebut OPC witness Mara’s recommendations and  
2 adjustments to five out of the eleven programs included in FPL’s 2023 SPP.  
3 Specifically, I will address the following recommendations by OPC: modify the  
4 Substation Storm Surge/Flood Mitigation Program; reduce the budget for the  
5 Distribution Lateral Hardening Program; reject the new Transmission and Distribution  
6 (“T&D”) Winterization Programs; and reject the new Transmission Access  
7 Enhancement Program. As I explain below, each of these recommendations are  
8 inappropriate and unnecessary, and do not serve customers’ best interests.

9

10 I note that FPL witness Liz Fuentes will also respond to OPC witness Kollen’s concerns  
11 regarding FPL’s calculation of the revenue requirements submitted with the 2023 SPP.

12 **Q. Are you sponsoring any exhibits with your rebuttal testimony?**

13 A. Yes. I am sponsoring the following exhibits with my rebuttal testimony:

- 14 • Exhibit MJ-2, FPL’s Response to OPC’s Fourth Set of Interrogatories No.  
15 50;
- 16 • Exhibit MJ-3, FPL’s response to OPC’s Fourth Set of Interrogatories No. 40;  
17 and
- 18 • Exhibit MJ-4, FPL’s response to OPC’s Fifth Request for Production of  
19 Documents No. 33.

20

21 **II. GENERAL RESPONSE TO OPC’S CONCERNS**

22 **Q. Before addressing the specific issues and recommendations raised by OPC, do you**  
23 **have any general observations?**

24 A. Yes. The evaluation of FPL’s 2023 SPP must be grounded in the fact that FPL has  
25 successfully been engaging in Commission-approved storm hardening for the last 16



1 years. During this time, the Commission has reviewed and had full transparency into  
2 all aspects of FPL’s storm hardening activities, and interested parties and stakeholders  
3 had the opportunity to participate in these reviews. Indeed, in its report “Review of  
4 Florida’s Electric Utility Hurricane Preparedness and Restoration Actions 2018”, in  
5 Docket No. 20170215-EU, the Commission recognized the success of historical storm  
6 hardening efforts in Florida. Key findings by the Commission in that report included:

- 7 • Florida’s aggressive storm hardening programs are working (Section V);
- 8 • The length of outages was reduced markedly from the 2004-2005 storm  
9 season (Section IV);
- 10 • The primary cause of power outages came from outside the utilities’ rights  
11 of way including falling trees, displaced vegetation, and other debris  
12 (Section IV);
- 13 • Vegetation management outside the utilities’ rights of way is typically not  
14 performed by utilities due to lack of legal access (Section IV);
- 15 • Hardened overhead distribution facilities performed better than non-  
16 hardened facilities (Section V);
- 17 • Very few transmission structure failures were reported (Section V); and
- 18 • Underground facilities performed much better compared to overhead  
19 facilities (Section V).

20 In response to Hurricanes Matthew and Irma, the Florida Legislature passed the SPP  
21 Statute “to mitigate restoration costs and outage times to utility customers” by  
22 “strengthen[ing] electric utility infrastructure to withstand extreme weather conditions  
23 by promoting the overhead hardening of electrical transmission and distribution  
24 facilities, the undergrounding of certain electrical distribution lines, and vegetation  
25 management.” Section 366.96(1)(c)-(e), F.S. From these facts, one can logically and

1 reasonably conclude that the Legislature did not pass the SPP Statute to stop or limit  
2 storm hardening activity in Florida, nor can one assume that the passage of the SPP  
3 Statute was an indictment or criticism against storm hardening activity that has  
4 previously taken place in Florida. Rather, it is reasonable to assume that the Florida  
5 Legislature passed the SPP Statute to encourage, streamline, and advance storm  
6 hardening work in this state.

7  
8 FPL’s 2023 SPP outlines a comprehensive storm protection plan that meets the  
9 statutory objectives codified in the SPP Statute and complies with the requirements of  
10 the SPP Rule. The 2023 SPP is largely a continuation of the following programs  
11 included in the current 2020-2029 Storm Protection Plan (hereinafter, the “2020 SPP”)  
12 that were agreed to by OPC in a Joint Motion for Approval of a Stipulation and  
13 Settlement Agreement (“2020 SPP Settlement”), approved by Commission Order No.  
14 PSC-2020-0293-AS-EI:

- 15 • Distribution Inspection Program
- 16 • Transmission Inspection Program
- 17 • Distribution Feeder Hardening Program
- 18 • Distribution Lateral Hardening Program
- 19 • Transmission Hardening Program
- 20 • Distribution Vegetation Management Program
- 21 • Transmission Vegetation Management Program
- 22 • Substation Storm Surge/Flood Mitigation Program

23 The majority of the existing SPP programs have been in place since 2007 and have  
24 already demonstrated that they have provided and will continue to provide increased  
25 T&D infrastructure resiliency, reduced restoration times, and reduced restoration costs

1 when FPL is impacted by extreme weather events. For certain existing SPP programs,  
2 FPL proposed limited modifications to further improve these programs and implement  
3 best practices as further described in my direct testimony and Exhibit MJ-1. Notably,  
4 OPC has not opposed or challenged any of these modifications to the existing SPP  
5 programs.

6  
7 As part of the 2023 SPP, FPL also proposed to implement three new programs:  
8 Transmission Winterization Program, Distribution Winterization Program, and  
9 Transmission Access Enhancement Program. As detailed in my direct testimony and  
10 Exhibit MJ-1, the new T&D Winterization Programs will help mitigate the potential  
11 for power outages due to extreme cold weather events similar to the 1977, 1989, and  
12 2010 winter events in Florida. The new Transmission Access Enhancement Program  
13 will help ensure that FPL and its contractors have reasonable access to FPL's  
14 transmission facilities for repair and restoration activities following an extreme weather  
15 event.

16 **Q. Does OPC challenge all of the programs included in FPL's 2023 SPP?**

17 A. No. OPC submitted the direct testimony of OPC witness Kollen in all four SPP dockets  
18 currently pending before the Commission. The vast majority of his direct testimony  
19 (pages 6-21) is dedicated to proposing that the Commission adopt new criteria  
20 standards that do not exist in the SPP Statute or SPP Rule today and apply those to  
21 reject all of the SPPs submitted by all four investor-owned utilities ("IOU") that do not  
22 meet his proposed new cost-effectiveness threshold. Thus, OPC witness Kollen is  
23 seeking to establish new standards, outside the SPP Statute and the SPP Rule, to review  
24 the SPP and does not oppose or challenge any specific program included in FPL's 2023

1 SPP. I will respond to OPC witness Kollen’s proposed new criteria and standards later  
2 in my testimony and explain that his proposal is inappropriate and unnecessary.

3

4 On pages 13, and 17-34, OPC witness Mara proposes adjustments to two of the existing  
5 SPP programs and opposes the three new SPP programs. Based on the testimony of  
6 OPC witness Mara, it appears that OPC essentially agrees with eight out of the eleven  
7 programs included in FPL’s 2023 SPP. I will respond to OPC’s recommended  
8 adjustments to the existing SPP programs and criticisms of the new SPP programs later  
9 in my testimony.

10 **Q. Do you have any additional general observations about the testimonies of OPC**  
11 **witnesses Kollen and Mara?**

12 A. Yes. Other than the proposed adjustments to the Substation Storm Surge/Flood  
13 Mitigation Program and Distribution Lateral Hardening Program, and opposition to the  
14 three new proposed SPP programs, the OPC witnesses primarily make four general  
15 arguments in opposition to FPL’s 2023 SPP.

16

17 First, OPC argues that the Commission should adopt and apply new formulaic cost-  
18 benefit and cost-effectiveness requirements for approval of SPP programs and projects.  
19 As explained below, the Florida Legislature and this Commission, through the SPP  
20 Rule, have already addressed the issue and declined to require either cost benefit  
21 analysis or a cost-effectiveness threshold in the review and approval of a SPP. FPL’s  
22 2023 SPP has fully complied with all the requirements of what must be included in a  
23 SPP pursuant to the SPP Statute and SPP Rule as explained in my direct testimony.  
24 For the reasons explained later in my testimony, OPC’s proposal is inappropriate and  
25 unnecessary for several reasons.

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Second, and related to its first argument, OPC contends that the benefits of the SPP programs must be quantified and monetized in order to meet the requirements of the SPP Rule. OPC’s proposal again attempts to add new requirements to the SPP Statute and SPP Rule that do not exist today. As explained in my direct testimony, FPL has provided a description of how the 2023 SPP will reduce restoration costs and outage times associated with extreme weather events in compliance with express requirements of SPP Rule. As explained in greater detail below, storm hardening is not a simple cost-effective proposition and OPC’s belief that outage times should be monetized ignores the very real and simple fact that the monetary value individual customers or communities place on reduced outage times cannot be accurately or uniformly estimated. Moreover, OPC’s recommendation that FPL’s SPP programs require further cost-justification before they can be approved is directly contrary to OPC’s own testimony that requests the Commission reject only three of the eleven programs included in FPL’s 2023 SPP as further explained in my rebuttal testimony.

Third, OPC argues that projects which displace base rate costs that would have been incurred during the normal course of business and that are not incurred on an incremental basis specifically to achieve the objectives of the SPP Rule are not eligible to be included in the SPP. As explained below, OPC’s argument misconstrues the language of the SPP Statute and SPPCRC Rule, misapplies the requirement for the SPPCRC to the SPP, and disregards that the issue of whether SPP costs are recovered in base rates or the SPPCRC is a matter to be addressed in the annual SPPCRC proceedings.

1 Finally, OPC raises questions regarding FPL’s calculation of the SPP revenue  
2 requirements that were used to estimate the rate impacts of the programs included in  
3 FPL’s 2023 SPP. FPL witness Liz Fuentes will respond to these criticisms.

4

5 **III. OPC’s PROPOSED NEW COST-BENEFIT AND COST-EFFECTIVENESS**  
6 **STANDARDS ARE NOT APPROPRIATE OR NECESSARY**

7 **Q. OPC is proposing that the Commission apply new standards and criteria to review**  
8 **the IOUs’ SPPs. Are these the same standards and criteria that FPL used to**  
9 **prepare its 2023 SPP?**

10 A. No. FPL designed its SPP programs and prepared the 2023 SPP based on the  
11 requirements and standards prescribed in the SPP Statute and SPP Rule that were in  
12 effect at the time FPL filed the 2023 SPP on April 11, 2022, and which remain in effect  
13 today. OPC, on the other hand, is asking the Commission to adopt new criteria and  
14 standards that, as I further explain below, are not currently in either the SPP Statute or  
15 SPP Rule and then retroactively apply those new requirements to the IOUs’ SPPs that  
16 were filed on April 11, 2022 to determine if they should be approved.

17 **Q. Please summarize OPC’s proposal to add new criteria and standards to the review**  
18 **of the IOUs’ SPPs.**

19 A. OPC witness Kollen is proposing that the Commission adopt a new requirement for the  
20 SPP’s to include a cost-benefit analysis and establish a new cost-effectiveness test to  
21 determine if the SPP programs should be approved. OPC witness Kollen then  
22 recommends on page 9 of his testimony that the “Commission reject all proposed SPP  
23 projects that are not economic, meaning that they do not have a benefit-to-cost ratio of  
24 at least 100%.” On page 14 of his direct testimony, OPC witness Kollen goes on to  
25 conclude that “FPL’s programs and costs are not prudent and reasonable unless they

1 meet all of the requirements” proposed by OPC witness Kollen. Thus, OPC witness  
2 Kollen proposes that the Commission adopt a new cost-effectiveness threshold and  
3 apply that new standard to review and approve/reject the programs and projects  
4 included in FPL’s 2023 SPP.

5 **Q. Do you have concerns with OPC’s proposal that the Commission adopt and apply**  
6 **a new cost-effectiveness test to review the IOUs’ SPPs?**

7 A. Yes. First, the SPP Statute and SPP Rule do not prescribe or require a traditional cost-  
8 benefit analysis or cost-effectiveness test for projects or programs to be included in the  
9 SPP. The Statute makes no mention of any such analysis or test and, instead, the  
10 Florida Legislature left that determination to the discretion of the Commission by  
11 directing it to adopt rules necessary to implement the statute. In adopting the SPP Rule,  
12 the Commission could have prescribed specific metrics, standards, and formulas to  
13 require the SPP programs to meet a cost-effective threshold, but it wisely did not  
14 because each program is different and, therefore, must be evaluated on its particular  
15 facts and merits. Indeed, Rule 25-6.030(3)(d)(4), F.A.C., requires the SPP to include a  
16 “comparison” of the estimated costs and described benefits for each SPP program,  
17 which is provided in the following portions of FPL’s 2023 SPP: Section II; the  
18 “Comparison of Costs and Benefits” included in each SPP program description in  
19 Section IV; and Appendix A of Exhibit MJ-1. As such, a cost-benefit analysis or cost-  
20 effectiveness test for each major component of the SPP is not required under either the  
21 SPP Statute or SPP Rule. OPC is attempting to re-litigate the SPP Rule approved by  
22 this Commission.

23  
24 Second, in the SPP Rule, the Commission prescribed specific information and data that  
25 must be included with each SPP, including, but not limited to, estimated costs,

1 description of the benefits, criteria to prioritize and select projects, and estimated rate  
2 impacts. As explained in my direct testimony, FPL provided this information in its  
3 2023 SPP consistent with SPP Rule. The Commission can use and “compare” all of  
4 the information it specifically required FPL to provide in the SPP to determine if,  
5 pursuant to the SPP Statute, the programs and projects included in the SPP are in the  
6 public interest and should be approved, or if the SPP programs should be modified or  
7 denied. Each program is different and, therefore, the comparison of costs and benefits  
8 must be evaluated on its particular facts and merits.

9

10 Third, the analysis of whether the benefits of a SPP program or project justify the  
11 estimated costs is not a one-size-fits-all proposition as suggested by OPC. This is  
12 clearly demonstrated by the fact that, as OPC witness Kollen acknowledges on page 14  
13 of his direct testimony, each of the electric utilities took very different approaches to  
14 comparing the estimated costs and benefits of their SPP programs. Further, such  
15 analyses are necessarily dependent on several highly variable factors that, in large part,  
16 are beyond the utility’s control and cannot be accurately predicted, including, but not  
17 limited to: the number of annual extreme weather events; the path of each storm; the  
18 intensity or category of each storm; the speed or duration of each storm; the availability  
19 of resources to respond to and provide storm restoration services for each storm; and  
20 the extent to which the infrastructure has been storm hardened at the time of each  
21 projected storm. Moreover, the benefits to be included in such analyses should not be  
22 limited to only avoided utility costs as I will explain further.

23



1 **IV. FPL'S 2023 SPP WILL REDUCE RESTORATION COSTS AND OUTAGE**  
2 **TIMES AS REQUIRED BY RULE 25-6.030, F.A.C.**

3 **Q. Both OPC witnesses Kollen and Mara argue that FPL's 2023 SPP did not meet**  
4 **the requirements of the SPP Rule because it did not quantify and monetize the**  
5 **benefits of the proposed SPP Programs. Do you have a response?**

6 A. Yes. I disagree with OPC witnesses Kollen and Mara that further cost-justification of  
7 FPL's 2023 SPP programs is needed or appropriate. On pages 17-19 of his testimony,  
8 OPC witness Kollen states that FPL did not provide any quantitative benefits for the  
9 proposed SPP programs and that it is not enough under the SPP Rule to simply say  
10 there will be benefits without quantifying those benefits. OPC witness Mara likewise  
11 states on pages 10-11 of his testimony that FPL only provided written descriptions of  
12 SPP program benefits and did not quantify the estimated cost reductions or monetize  
13 the reduction of outage times for each program. OPC witness Mara goes on to suggest  
14 on page 11 of his testimony that FPL should be required to file an amended SPP that  
15 provides this data. OPC's contention that FPL failed to comply with the SPP Rule  
16 because it did not quantify the benefits of the SPP programs is misplaced for several  
17 reasons.

18  
19 First, OPC's contention that the SPP must include quantifiable and monetized benefits  
20 for each SPP program is a fallout of OPC's proposal that the Commission adopt and  
21 apply a new cost benefit analysis and new cost-effectiveness threshold for the SPP  
22 programs. As I explained above, OPC's proposed new criteria and standards to review  
23 the SPPs are contrary to the requirements of both the SPP Statute and SPP Rule and  
24 should be rejected.

25

1 Second, there is nothing in either the SPP Statute or SPP Rule that prescribes that the  
2 benefits of SPP programs must be quantified or monetized as suggested by the OPC  
3 witnesses. Rather, the SPP Rule expressly provides that the SPP must include a  
4 “description” of the benefits of the SPP programs. See Rule 25-6.030(3)(b), F.A.C.  
5 (“For each Storm Protection Plan, the following information must be included.... (b)  
6 *A description* of how the proposed Storm Protection Plan will reduce restoration costs  
7 and outage times associated with extreme weather conditions” (emphasis added)); see  
8 also Rule 25-6.030(3)(d)(1), F.A.C. (“*A description* of each proposed storm protection  
9 program that includes: (1) A description of how each proposed storm protection  
10 program is designed to enhance the utility’s existing transmission and distribution  
11 facilities including an estimate of the resulting reduction in outage times and restoration  
12 costs due to extreme weather events” (emphasis added)).

13  
14 Third, storm hardening is not a simple cost-effective proposition as suggested by OPC.  
15 OPC’s approach focuses only on program costs and savings in restoration costs  
16 associated with extreme weather conditions (*i.e.*, a strictly quantitative analysis), and  
17 completely ignores the qualitative component required by both the SPP Statute and SPP  
18 Rule. Stated differently, OPC’s proposed cost-benefit and cost-effectiveness approach  
19 ignores half of the benefits side of the equation. It cannot be reasonably disputed that  
20 customers want the extended outage times associated with extreme weather events to  
21 be reduced. Indeed, the Florida Legislature concluded that reducing outage times for  
22 utility customers, as well as restoration costs, is in the public interest. The Commission  
23 can and should compare these factors and determine whether the estimated benefits of  
24 the storm hardening programs are justified by the estimated rate impacts.

25

1 Fourth, OPC witness Mara's belief that outage times should be monetized, ignores the  
2 very real and simple fact that the monetary value individual customers or communities  
3 place on reduced outage times cannot be accurately or uniformly estimated. Indeed,  
4 some customers may be willing to pay a premium to never have a power outage, while  
5 others may be willing to tolerate a few short outages. Moreover, the SPP Rule does  
6 not require the outage times to be monetized as explained above, and there is no  
7 uniform Commission or industry method to do so. Such analyses are necessarily  
8 dependent on several highly variable factors (such as the intensity, path, and duration  
9 of the extreme weather event and extent that the system has been hardened) and could  
10 include a very wide range of subjective economic factors, including, but not limited to:  
11 individual and different customer value on reduced outage times, including comfort,  
12 health, and convenience; economic impact to individual customers due to spoilage, loss  
13 or disruption of business, and loss of equipment or supplies; and impact to the local  
14 and state economy. Thus, even if the SPP Statute and Rule did require the reduction in  
15 outage times to be monetized, which they do not, there is significant uncertainty and  
16 variability in how that should be done.

17

18 Finally, OPC's recommendation that FPL's SPP programs require further cost-benefit  
19 analysis or cost-justification before they can be approved is directly contrary to OPC  
20 witness Mara's testimony on pages 13 and 17-34 that requests the Commission only  
21 reject three of the eleven programs included in FPL's 2023 SPP. Stated differently,  
22 OPC witness Mara does not dispute that it would be reasonable for the Commission to  
23 allow FPL to implement the eight programs included in the 2023 SPP as further  
24 explained below. Either these SPP programs are in the public interest and should be  
25 approved, or they are not. The fact that OPC witness Mara has essentially agreed that

1 most of these programs should be approved without further cost-justification clearly  
2 suggests that OPC believes FPL has provided sufficient information about each of the  
3 SPP programs for the Commission to determine if they are in the public interest.

4 **Q. On page 18 of his direct testimony, OPC witness Kollen recommends that FPL**  
5 **should be directed to use its storm damage assessment model to model and**  
6 **quantify the estimated benefits and savings from the programs included in FPL’s**  
7 **2023 SPP. Please describe FPL’s Storm Damage Model.**

8 A. FPL’s Storm Damage Model is a very important proprietary tool developed by FPL to  
9 prepare for major storms that threaten FPL’s service area. The Storm Damage Model  
10 is used for major storms with a forecast track provided by the National Hurricane  
11 Center to estimate the number of construction man-hours (“CMH”) required to restore  
12 power to customers based on the forecasted intensity, speed, path of the storm, and the  
13 condition (hardened vs. non-hardened) of the infrastructure at the time of the storm.  
14 The Storm Damage Model is a planning tool used by the Company to estimate the  
15 extent of damage expected from a projected storm, and the number and location of  
16 resources that will be needed to quickly and safely restore power outages to the greatest  
17 number of customers in the shortest amount of time.

18 **Q. Do you agree with OPC witness Kollen’s recommendation that FPL should use**  
19 **the Storm Damage Model to model to quantify the benefits and savings associated**  
20 **with the programs included in FPL’s 2023 SPP?**

21 A. No, FPL’s Storm Damage Model was not intended to be used to quantify individual  
22 SPP programs or projects. As provided in Appendix A to Exhibit MJ-1, FPL used its  
23 Storm Damage Model to analyze Hurricanes Matthew and Irma and estimate the  
24 reduction in CMH, days to restore, and storm restoration costs that were attributable to  
25 the storm hardening projects that were completed and in place at the time of the

1 hurricanes. This analysis was based mainly on the feeders that FPL knew had been  
2 hardened versus non-hardened at the times Hurricanes Matthew and Irma occurred, and  
3 included the distribution inspection and vegetation management that had been  
4 completed at the times Hurricanes Matthew and Irma occurred. OPC witness Kollen  
5 proposes something different.

6

7 OPC witness Kollen proposes that FPL use the Storm Damage Model to model the  
8 future system with the proposed 2023 SPP programs in place for the entire 2023-2032  
9 SPP period to quantify the costs that could be avoided due to the SPP programs. The  
10 problem with this approach is that, beyond year one of the SPP (2023), the project level  
11 detail has not been determined; meaning FPL does not at this time know which specific  
12 projects will be completed each year or where they will be located for the entire 2023-  
13 2032 SPP period. The scope and location of the storm hardening projects used in the  
14 Storm Damage Model for each year of the SPP will have a significant impact on the  
15 results of the analysis. For example, if FPL assumes a storm hardening project in a  
16 densely populated urban area as opposed to a rural area, or vice versa, this could change  
17 the damage estimated by the Storm Damage Model. Also illustrative is the fact that  
18 the estimated length, number of poles, location, and accessibility of the laterals used in  
19 the model would change the damage estimated by the Storm Damage Model. Each of  
20 these factors, which cannot be reasonably predicted for the entire 2023-2032 SPP  
21 period, would impact the estimated CMH, days to restore, and storm restoration costs  
22 predicted by the Storm Damage Model. For these reasons, the Storm Damage Model  
23 does not readily lend itself to model future SPP programs as proposed by OPC witness  
24 Kollen.

25

1 Even assuming the Storm Damage Model was appropriate to provide an estimate of  
2 CMH, days to restore, and storm restoration costs for future SPP programs, FPL’s  
3 Storm Damage Model is only used for major storms with a forecast track provided by  
4 the National Hurricane Center. Thus, the Model would not account for any other types  
5 of extreme weather conditions, as well as any associated reductions in restoration costs  
6 and outage times. Florida remains the most hurricane-prone state in the nation and,  
7 with the significant coast-line exposure of FPL’s system and the fact that the vast  
8 majority of FPL’s customers live within 20 miles of the coast, FPL’s service area has  
9 a high probability of being impacted by multiple extreme weather events every year.  
10 Although no one is in a position to know for sure how frequently FPL’s service area  
11 will be impacted by extreme weather conditions, the Storm Damage Model estimate of  
12 cumulative reductions in restoration costs and outage times associated with the SPP  
13 programs will be directly affected by frequency, strength, speed, and path of storms  
14 that impact FPL’s service area. As required by the SPP Rule, FPL has provided a  
15 description of the benefits and estimated cost for all the programs in FPL’s 2023 SPP,  
16 in some cases these benefits are qualitative and in others they are quantitative, as  
17 provided in Sections II and IV and Appendix A to Exhibit MJ-1.

18 **Q. Has FPL provided descriptions of how the programs included in its 2023 SPP will**  
19 **reduce restoration costs and outage times associated with extreme weather**  
20 **conditions?**

21 A. Yes. In compliance with Rules 25-6.030(3)(b) and 25-6.030(3)(d)(1), F.A.C., the  
22 benefits expected from the proposed SPP programs were provided in the following  
23 portions of FPL’s 2023 SPP: Section II; the “Description of the Program and Benefits”  
24 included in each SPP program description in Section IV; and Appendix A of Exhibit  
25 MJ-1. The existing SPP programs have already demonstrated that they will both reduce

1 restoration costs and outage times associated with extreme weather conditions, and  
2 were previously approved as part of the 2020 SPP. Although FPL has proposed limited  
3 modifications to certain of these existing SPP programs, these modifications will  
4 further improve these programs and implement best practices where applicable as  
5 explained in my direct testimony and Exhibit MJ-1. And, OPC has not opposed or  
6 challenged any of these limited modifications to the existing SPP programs.

7

8 The Commission can review the benefits of the SPP programs described in my direct  
9 testimony and Exhibit MJ-1, together with the prioritization, feasibility, estimated  
10 costs, and estimated rate impacts, and determine whether the programs included in the  
11 2023 SPP are in the public interest.

12

13 **V. OPC’S CLAIM THAT ONLY NEW OR EXPANDED STORM HARDENING**  
14 **PROGRAMS QUALIFY FOR INCLUSION IN THE SPP IS INAPPROPRIATE**

15 **Q. On pages 13-15 of his direct testimony, OPC witness Kollen asserts that FPL has**  
16 **included programs and projects that are within the scope of its existing base rate**  
17 **programs and base rate recoveries in the normal course of business, and he**  
18 **recommends that these programs and projects should be excluded from the SPPs.**  
19 **Do you have a response?**

20 **A.** Yes. It appears that OPC witness Kollen is recommending that only new or expanded  
21 storm hardening programs qualify for inclusion in the SPP, and that any programs that  
22 have previously been recovered in base rates are not eligible to be included in the SPP.  
23 Indeed, on page 7 of his testimony, OPC witness Kollen states that to be included in  
24 the SPP, “the projects and the costs of the projects must be incremental, not simply  
25 displacements of base rate costs that would have been incurred during the normal

1 course of business.” OPC witness Kollen’s recommendation is misplaced for several  
2 reasons.

3  
4 First, OPC witness Kollen is again attempting to re-litigate the Commission’s approval  
5 of the SPP Rule and add a new requirement that is clearly not prescribed in either the  
6 SPP Statute or SPP Rule. The SPP Statute and SPP Rule define the type of programs  
7 eligible to be included in the SPP as programs for the overhead hardening and increased  
8 resilience of T&D facilities, undergrounding of electric distribution facilities, and  
9 vegetation management that will mitigate restoration costs and outage times due to  
10 extreme weather events. Contrary to OPC witness Kollen’s assertion, there is nothing  
11 in either the SPP Statute or SPP Rule that limit SPP programs to only new or expanded  
12 storm hardening programs.

13  
14 Second, OPC witness Kollen’s recommendation misconstrues and seeks to expand the  
15 limitation in the SPP Statute and SPPCRC Rule that SPP costs cannot be recovered in  
16 both base and clause rates. The SPP Statute provides that the “annual transmission and  
17 distribution storm protection plan costs may not include costs recovered through the  
18 public utility’s base rates.” See Section 366.96(8), F.S. Similarly, the SPPCRC Rule  
19 provides that costs recoverable through the SPPCRC “shall not include costs recovered  
20 through the utility’s base rates or any other cost recovery mechanisms.” See Rule 25-  
21 6.031(6)(b), F.A.C. Simply stated, the limitation proscribed in the SPP Statute and  
22 SPPCRC Rule ensures that there is no double recovery of SPP costs in both base and  
23 clause rates. It does not limit SPP programs to only new or expanded storm hardening  
24 programs that have not previously been recovered in base rates as suggested by OPC  
25 witness Kollen.



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Third, the issue of whether SPP costs are incremental or being recovered in base rates is irrelevant to this SPP proceeding. As stated in Commission Order No. PSC-2020-0162-PCO-EI in Docket No. 20200071-EI, this is an issue to be addressed in the SPPCRC proceedings. Relatedly, OPC witness Kollen’s recommendation overlooks the fact that SPP costs can be recovered through either the SPPCRC or base rates – just not both. See Rule 25-6.031(8), F.A.C. (“Recovery of costs under this rule does not preclude a utility from proposing inclusion of unrecovered Storm Protection Plan implementation costs in base rates in a subsequent rate proceeding”).

Fourth, OPC witness Kollen’s recommendation would lead to nonsensical results. Under OPC witness Kollen’s approach, none of the pole inspection, vegetation management, transmission pole replacement, feeder hardening, or other long-standing storm hardening programs that existed prior to the effective date of the SPP Statute would be eligible to be included in the SPP unless they are expanded and, even then, only the costs associated with the expanded portion of those programs could be included in the SPP. See Direct Testimony of OPC witness Kollen, page 15. The flaw with this approach is that these programs have largely been in place since 2007 and approved as part of the Storm Hardening Plan, which has now been replaced with the SPP. Moreover, the existing eight SPP programs were approved in FPL’s and former Gulf Power Company’s (Gulf) 2020 SPPs. The purpose and policy of the SPP Statute is to mitigate restoration costs and outage times by encouraging the IOUs to continue and accelerate their storm hardening efforts by reducing regulatory lag and allowing the IOUs to recover the associated costs through an annual clause proceeding. OPC witness Kollen’s new proposal, however, would defeat this legislative objective by

1 disallowing longstanding and proven storm hardening measures from being included  
2 in the SPP.

3  
4 Finally, although OPC witness Kollen alleges on page 13 of his testimony that FPL  
5 included programs and projects in its 2023 SPP that are base rate programs recovered  
6 in base rates in the normal course of business, neither OPC witness identifies any  
7 specific FPL program that they believe are currently in FPL's base rates. While OPC  
8 may attempt to raise this as an issue in the SPPCRC proceeding, it is important to  
9 remember that, effective January 1, 2022, all SPP operations and maintenance expenses  
10 and capital expenditures, with the exception of the cost of removal for assets existing  
11 prior to 2021, have been recovered or will be requested for recovery through the  
12 SPPCRC and, therefore, are incremental to and not being recovered in base rates. See  
13 Direct Testimony of FPL witness Liz Fuentes filed in Docket No. 20210015-EI on  
14 March 12, 2021; see Direct Testimony of FPL witnesses Liz Fuentes and Michael Jarro  
15 filed in Docket No. 20200092-EI on July 24, 2020.

16  
17 **VI. THE PROGRAMS AND PROJECTS INCLUDED IN FPL'S 2023 SPP ARE IN**  
18 **THE PUBLIC INTEREST AND SHOULD BE APPROVED**

19 **A. OPC Essentially Agrees with Eight of the Eleven Programs Included in**  
20 **FPL's SPP**

21 **Q. You have stated that OPC essentially agrees with eight of the eleven programs**  
22 **included in FPL's 2023 SPP. Can you please explain how you arrived at that**  
23 **conclusion?**

24 **A. Yes. As explained above, FPL's 2023 SPP includes a total of eleven SPP programs:**  
25 **eight existing programs included in the 2020 SPP approved by Commission Order No.**

1 PSC-2020-0293-AS-EI, and three new programs. OPC witness Mara proposes  
2 adjustments to two of the existing SPP programs: the existing Substation Storm  
3 Surge/Flood Mitigation Program and the existing Distribution Lateral Hardening  
4 Program. OPC witness Mara also opposes the three new SPP programs: Transmission  
5 Winterization Program, Distribution Winterization Program, and Transmission Access  
6 Enhancement Program. Therefore, OPC witness Mara essentially agrees that six out  
7 of the eleven programs included in FPL's 2023 SPP should be approved as submitted.

8  
9 Further, with respect to the Substation Storm Surge/Flood Mitigation Program, OPC  
10 witness Mara does not oppose the program but, rather, asserts on pages 16-17 of his  
11 direct testimony that the Storm Surge/Flood Mitigation Program should exclude  
12 substations that have alternate feeds available and do not have a history of flooding.  
13 Therefore, OPC essentially agrees with FPL's proposed Substation Storm Surge/Flood  
14 Mitigation Program but recommends additional selection criteria be considered, which  
15 I will further address later in my testimony.

16  
17 Similarly, OPC witness Mara does not oppose the Distribution Lateral Hardening  
18 Program. Rather, OPC witness Mara recommends on pages 33-34 of his direct  
19 testimony that the annual budget for the Distribution Lateral Hardening Program be  
20 capped at \$606 million for the years 2025-2032. Therefore, OPC essentially agrees  
21 with FPL's proposed Distribution Lateral Hardening Program but recommends a  
22 reduction in the number of laterals that may be completed each year, which will delay  
23 when customers will receive the direct benefits of the Distribution Lateral Hardening  
24 Program. I will respond to OPC witness Mara's recommended adjustment below.

25

1 Based on the testimony of OPC witness Mara, it appears that OPC essentially agrees  
2 with eight out of the eleven programs included in FPL's 2023 SPP. It further appears  
3 that the only truly contested programs are the three new programs proposed in FPL's  
4 2023 SPP. I will respond to OPC criticisms of these new SPP programs below.

5

6 **B. OPC's Recommended Adjustment to the Storm Surge/Flood Mitigation**  
7 **Program is not Reasonable or Appropriate**

8 **Q. OPC witness Mara recommends adjustments to the Storm Surge/Flood**  
9 **Mitigation Program. Before responding to his specific recommendations, do you**  
10 **have any general observations about his proposal?**

11 A. Yes. OPC witness Mara's recommendations regarding FPL's Storm Surge/Flood  
12 Mitigation Program are inconsistent. On page 13 of his testimony, OPC witness Mara  
13 appears to recommend that the entire budget for the Storm Surge/Flood Mitigation  
14 Program should be rejected. However, on pages 16-18 of his testimony, OPC witness  
15 Mara recommends that substations with alternate feeds or no history of flooding should  
16 be excluded from the Storm Surge/Flood Mitigation Program. Notably, OPC witness  
17 Mara does not identify any specific substation that would be excluded by his proposal,  
18 nor does he explain or demonstrate how such exclusions would result in the elimination  
19 of the entire budget for the Storm Surge/Flood Mitigation Program.

20 **Q. Do you have a response to OPC witness Mara's recommendation that the entire**  
21 **budget for the Storm Surge/Flood Mitigation Program should be rejected?**

22 A. Yes. OPC witness Mara's recommendation overlooks that the Storm Surge/Flood  
23 Mitigation Program included in FPL's 2023 SPP is the same program that was included  
24 in FPL's 2020 SPP previously approved by Commission Order No. PSC-2020-0293-  
25 AS-EI. In the 2020 SPP, FPL originally projected it would complete the Storm

1 Surge/Flood Mitigation Program by 2022. However, as explained in my direct  
2 testimony and in Exhibit MJ-1, due to field conditions and permitting delays that were  
3 largely beyond FPL's control, FPL was unable to complete the storm surge/mitigation  
4 measures at all of the identified substations by year-end 2022 as originally projected.  
5 As a result, FPL is proposing to continue the program to address the remaining four  
6 substations originally identified in the 2020 SPP, which are currently expected to be  
7 completed by year-end 2024. FPL has not added new or additional substations to the  
8 Storm Surge/Flood Mitigation Program approved as part of the 2020 SPP. The new  
9 exclusions proposed by OPC witness Mara were not part of either the 2020 SPP or the  
10 2020 SPP Settlement that OPC joined. OPC witness Mara has not offered any reason  
11 why it was in the public interest to complete the storm surge/mitigation measures at  
12 these substations as part of the 2020 SPP, but not as part of the 2023 SPP.

13 **Q. Do you agree with OPC witness Mara's recommendation that substations with**  
14 **alternate feeds should be excluded from the Storm Surge/Flood Mitigation**  
15 **Program?**

16 A. No. Rather than installing measures to mitigate the potential for storm surge and flood  
17 at these four substations, OPC witness Mara recommends that any of these substations  
18 that have an alternative feed should be de-energized and the load served by the de-  
19 energized substation should be transferred to an adjacent substation via the alternate  
20 feed. OPC witness Mara's recommendation is not practical.

21  
22 All of the four substations identified for the Storm Surge/Flood Mitigation Program  
23 have alternative feeder ties to nearby substations. However, de-energizing one  
24 substation due to storm surge or flooding does not mean an adjacently tied substation  
25 can necessarily pick up and support the entire electric load from the de-energized

1           substation. For example, the St. Augustine Substation, which has an alternate feed,  
2           was de-energized during Hurricanes Matthew and Irma and the majority of the  
3           customers served by this substation experienced outages. Similarly, the South Daytona  
4           Substation, which has an alternate feed, was de-energized during Hurricane Irma and  
5           the majority of the customers served by this substation experienced outages. Further,  
6           OPC witness Mara overlooks that the mitigation measures under the Storm  
7           Surge/Flood Mitigation Program will not only reduce outages but will reduce  
8           restoration costs associated with the need to repair and replace substation equipment  
9           that is damaged due to storm surge or flooding following an extreme weather event.

10   **Q.    Do you have a response to OPC witness Mara’s recommendation that substations**  
11   **with no history of flooding should be excluded from the Storm Surge/Flood**  
12   **Mitigation Program?**

13   A.    Yes. All four substations remaining to be completed under the Storm Surge/Flood  
14   Mitigation Program have, in fact, experienced floods or storm surges in the past. Most  
15   recently, the flood alarm monitor went off at the Dumfoundling Substation during  
16   Tropical Cyclone One that impacted South Florida on June 2, 2022. With respect to  
17   future potential flooding at these substations, FPL explained in its response to OPC’s  
18   Fourth Set of Interrogatories No. 50(d), which is attached to my rebuttal testimony as  
19   Exhibit MJ-2, that each of the four substations remaining to be completed under the  
20   program has projected flood levels that are higher than the current elevation of these  
21   substations. Therefore, all four substations included in the Substation Storm  
22   Surge/Flood Mitigation Program as part of the 2023 SPP have had a history of flooding  
23   and remain susceptible to flooding.

24

1           C.     OPC's Recommended Adjustments to the Distribution Lateral  
2                     Hardening Program are not Reasonable or Appropriate

3     **Q.     Does OPC oppose the Distribution Lateral Hardening Program included in FPL's**  
4     **2023 SPP?**

5     A.     No.    OPC witness Mara does not oppose FPL's Distribution Lateral Hardening  
6     Program.  Rather, OPC witness Mara recommends a reduction in the annual budget for  
7     the Distribution Lateral Hardening Program, which will reduce the number of laterals  
8     to be completed each year and delay when customers will receive the direct benefits of  
9     the Distribution Lateral Hardening Program.

10    **Q.     In the 2023 SPP, FPL proposed to establish protocols for determining when a**  
11    **lateral may be evaluated for overhead hardening as opposed to being placed**  
12    **underground. Does OPC oppose these new overhead hardening protocols?**

13    A.     No.    Although OPC witness Mara asserts on pages 29-30 of his testimony that the  
14    overhead program is vague and not well defined, he does not oppose any of the  
15    protocols proposed by FPL for evaluating when a lateral may be overhead hardened as  
16    opposed to being placed underground.  Rather, OPC witness Mara simply notes that  
17    the overhead hardening protocols appear similar to the standards used in FPL's Feeder  
18    Hardening Program.  Notably, OPC does not oppose, criticize, or otherwise take any  
19    issue with FPL's Feeder Hardening Program.

20    **Q.     On page 33 of his testimony, OPC witness Mara recommends that overhead**  
21    **hardened laterals and undergrounded laterals should be separated and tracked**  
22    **as two individual SPP programs. Do you agree with his recommendation?**

23    A.     I do not agree that there should be separate overhead and underground lateral SPP  
24    programs.  The overhead protocols were established and incorporated into the  
25    Distribution Lateral Hardening Program pursuant to the 2020 SPP Settlement approved

1 by Commission Order No. PSC-2020-0293-AS-EI. FPL did not commit to create  
2 separate overhead and underground lateral programs. Moreover, the underground and  
3 overhead components of the Distribution Lateral Hardening Program are symbiotic,  
4 and the work will be part of the same overall lateral project. As explained in my direct  
5 testimony and Exhibit MJ-1, the selection and prioritization criteria for the Distribution  
6 Lateral Hardening Program ranks each feeder based on actual historical experience of  
7 all the overhead laterals on the feeder in order to address the worst performing circuits  
8 first. All laterals on the feeders are then hardened according to the ranking of each  
9 feeder. As explained in Exhibit MJ-1, constructing at the feeder level significantly  
10 improves the efficiency and timing of construction because all of the work takes place  
11 in the same location (feeder) on a set of laterals as opposed to being spread out over  
12 multiple individual laterals across the entire service area. It also allows for a more  
13 efficient design to reduce overall cable footage and the number of transformers needed  
14 to serve an area by interconnecting existing laterals and using alternate cable paths to  
15 reduce the total number of laterals in the area. When FPL performs the engineering  
16 evaluation of all laterals on a feeder, it will apply the overhead protocols to evaluate  
17 whether each lateral should be overhead hardened or converted to underground based  
18 on the actual field conditions and limitations at the time. Thus, the overhead and  
19 underground work is completed as part of a single conceptual design across all laterals  
20 on an entire feeder under the Distribution Lateral Hardening Program. To treat and  
21 separately manage the overhead hardening and underground lateral work as separate  
22 programs, as suggested by OPC witness Mara, would reduce efficiencies and increase  
23 costs. For these reasons, I believe it is appropriate and reasonable that the overhead  
24 protocols should be included and part of the overall Distribution Lateral Hardening  
25 Program and should not be a standalone SPP program.



1 **Q. On page 31 of his testimony, OPC witness Mara claims that the Distribution**  
2 **Lateral Hardening Program does not meet the requirements of the SPP Rule**  
3 **because FPL did not provide any estimate of the cost reductions to be realized**  
4 **from the program. Do you have a response?**

5 A. I disagree with OPC witness Mara. First, his claim that FPL did not provide cost  
6 reductions associated with the Distribution Lateral Hardening Program is a fallout of  
7 OPC’s proposal that the Commission should adopt and apply a new cost benefit  
8 analysis requirement and new cost-effectiveness threshold for the SPP programs. As I  
9 explained above, OPC’s proposed cost benefit analysis and new cost-effectiveness  
10 threshold should be rejected.

11  
12 Second, as I explained above, there is nothing in either the SPP Statute or SPP Rule  
13 that prescribes that the benefits of SPP programs must be quantified, and storm  
14 hardening is not a simple cost-effective calculation as suggested by OPC.

15  
16 Third, in compliance with Rules 25-6.030(3)(b) and 25-6.030(3)(d)(1), F.A.C., the  
17 benefits expected from the Distribution Lateral Hardening Program were provided in  
18 the following portions of FPL’s 2023 SPP: Section II; Section IV(D)(1)(b); and  
19 Appendix A of Exhibit MJ-1. In fact, on page 31 of his testimony, OPC witness Mara  
20 relies on the 40-year net present value analysis of the reduction in storm restoration  
21 costs provided by FPL in Appendix A of Exhibit MJ-1. Further, on page 34 of his  
22 testimony, OPC witness Mara acknowledges that “[i]t is apparent from experiences in  
23 Florida that undergrounding and hardening poles will reduce outage costs and outage  
24 times.”

25

1 Finally, OPC witness Mara does not propose that the Distribution Lateral Hardening  
2 Program be rejected; rather, he proposes an adjustment to the annual budget beginning  
3 in 2025. Either the Distribution Lateral Hardening Program meets the requirements of  
4 the SPP Rule and is eligible to be included in the SPP or it does not. OPC witness Mara  
5 cannot have it both ways.

6 **Q. Does OPC agree with FPL’s prioritization and selection criteria for the**  
7 **Distribution Lateral Hardening Program?**

8 A. No. Although OPC does not take issue with any specific selection and prioritization  
9 criteria for the Distribution Lateral Hardening Program, OPC witness Mara nonetheless  
10 states on page 32 of his testimony that he does not agree with FPL’s selection and  
11 prioritization methodology. Apparently, OPC witness Mara believes that FPL needs to  
12 do more so that lateral hardening and undergrounding and their associated benefits are  
13 spread to more customers and communities:

14 My point is that the dollars are concentrated such that only a few  
15 customers will see a reduction in customer outage minutes and enjoy  
16 the aesthetics and other benefits of an undergrounded system. The  
17 remaining customers only see a benefit cost ratio that is upside down  
18 meaning more costs than benefits.

19 This is a significant investment in a small portion of the system (one  
20 feeder) and in a single community. *There needs to be a mechanism*  
21 *to help spread the undergrounding and hardening to more*  
22 *communities, which is important since all customers will be*  
23 *contributing to the cost of undergrounding.*

24 See Direct Testimony of OPC witness Mara, pp. 32-33 (emphasis added). As I address  
25 later in my testimony, this statement is at odds with his recommendation of reducing  
26 the budget for the Distribution Lateral Hardening Program.

27

1 **Q. Please describe OPC’s proposed adjustment to the Distribution Lateral**  
2 **Hardening Program.**

3 A. Despite the many pages of OPC’s testimony dedicated to recommending that the  
4 Commission adopt and apply a new cost-effectiveness test, on pages 33-34 of his  
5 testimony OPC witness Mara recommends a qualitative adjustment to the annual  
6 budget for the Distribution Lateral Hardening Program starting in 2025 and continuing  
7 through 2032. Specifically, OPC witness Mara recommends that the annual budget for  
8 the Distribution Lateral Hardening Program be capped at \$606 million per year for the  
9 years 2025 to 2032, which results in a total ten-year budget reduction of approximately  
10 \$3.4 billion.

11 **Q. Does OPC witness Mara describe how he calculated his proposed reduction to the**  
12 **Distribution Lateral Hardening Program budget?**

13 A. No. His adjustment appears to be completely qualitative and, together with his other  
14 proposed adjustments, is simply intended to reduce the ten-year capital cost per  
15 customer to remain similar to the ten-year capital cost per customer for the combined  
16 FPL and Gulf’s 2020 SPPs. See Direct Testimony of OPC witness Mara, pp. 13 and  
17 34.

18 **Q. Do you agree with OPC witness Mara’s proposed adjustment to the Distribution**  
19 **Lateral Hardening Program budget?**

20 A. No, I disagree for multiple reasons. It is important to understand OPC witness Mara’s  
21 proposed adjustment will reduce the number of laterals to be completed each year and  
22 delay when customers will receive the direct benefits of the Distribution Lateral  
23 Hardening Program. This adjustment directly contradicts his position on pages 32-33  
24 that FPL needs to expand its efforts so that lateral hardening and undergrounding, and  
25 their associated benefits, are spread to more customers and communities.

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Although OPC witness Mara apparently seeks to simply maintain the status quo, he overlooks that the Distribution Lateral Hardening Program was initially deployed as a limited pilot, which was continued through 2022 as OPC agreed in the 2020 SPP Settlement. As part of the 2023 SPP, FPL is seeking to deploy the Distribution Lateral Hardening Program as a full-scale permanent SPP program and, as such, is ramping up the program in order to provide the benefits of underground lateral hardening throughout its system, including in the former Gulf service area. I note that OPC does not object to the Distribution Lateral Hardening Program becoming a permanent SPP program.

FPL’s Distribution Lateral Hardening Program was designed to achieve the objectives and goals of the SPP Statute. Therein, the Florida Legislature expressly found that “[i]t is in the state’s interest to strengthen electric utility infrastructure to withstand extreme weather conditions by promoting the overhead hardening of electrical transmission and distribution facilities, the undergrounding of certain electrical distribution lines, and vegetation management” and “[p]rotecting and strengthening transmission and distribution electric utility infrastructure from extreme weather conditions can effectively reduce restoration costs and outage times to customers.” See Sections 366.96(1)(c), (d), F.S. FPL’s underground lateral program is an impactful and crucial tool to achieve these legislative objectives and is appropriately designed to address the worst performing circuits and areas first based on actual historical experience. Indeed,

1 as shown in FPL’s Hurricane Irma Forensic Report, underground laterals performed  
2 6.6 times (85%) better during Hurricane Irma than overhead laterals.<sup>1</sup>

3

4 The ramp up in the number of laterals to be completed each year under the Distribution  
5 Lateral Hardening Program is due primarily to the inclusion of the former Gulf service  
6 area and the significant number of laterals that remain to be hardened, the strong local  
7 support and interest in the program, as well as the addition of the Management Region  
8 selection approach in 2025 as explained in my direct testimony and Exhibit MJ-1.  
9 Notably, the OPC does not criticize or challenge the proposed addition of the  
10 Management Region selection approach.

11

12 The annual budget for the Distribution Lateral Hardening Program is a product of the  
13 number of estimated projects to be completed throughout FPL’s system as provided in  
14 Appendix C to Exhibit MJ-1. Although all customers indirectly benefit from overhead  
15 hardened and underground laterals through reduced restoration costs, the direct benefits  
16 for customers of overhead hardened and underground laterals, including both reduced  
17 outage times and aesthetics (as recognized by OPC witness Mara on page 32 of his  
18 testimony), will be facilitated and realized more quickly through the expanded number  
19 of underground projects contemplated by FPL’s SPP. How fast and how many lateral  
20 projects are completed under the Distribution Lateral Hardening Program, and how  
21 quickly customers realize the direct and indirect benefits therefrom, is ultimately a  
22 regulatory decision for the Commission to be made in the context of the policy and  
23 objectives of the SPP Statute.

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<sup>1</sup> Refer to Page 7 of FPL’s Hurricane Irma Forensic Report in Docket No. 20180049, which is available at:  
<http://www.psc.state.fl.us/library/filings/2019/05615-2019/Support/Exhibit%2036/POD%20No.%202/20180049%20-%20OPC's%201st%20POD%20No.%202%20-%20Attachment%20No.%201.pdf>

1           **D. FPL’s New Transmission Access Enhancement Program is Consistent**  
2           **with the Objectives of the SPP Statute and Should be Approved**

3   **Q. Does the OPC agree with FPL’s proposal to add the new Transmission Access**  
4   **Enhancement Program to the 2023 SPP?**

5   A. No. On pages 26-29 of his testimony, OPC witness Mara contends that maintenance  
6   of bridges, roads, and culverts are ordinary base rate activities and FPL failed to  
7   demonstrate how its proposed Transmission Access Enhancement Program will meet  
8   the objectives of the SPP statute to reduce restoration costs and outage times associated  
9   with extreme weather events.

10 **Q. Do you agree that projects to be completed under the Transmission Access**  
11 **Enhancement Program should be maintained as part of FPL’s ordinary base rate**  
12 **activities?**

13 A. No. OPC witness Mara appears to misunderstand the scope and purpose of the  
14 Transmission Access Enhancement Program. FPL is not proposing to simply maintain  
15 roads, rights of way, bridges, and culverts for purposes of accessing transmission  
16 facilities for day-to-day maintenance and vegetation management activities, which  
17 activities are typically scheduled and conducted during drier times of the year and  
18 within the existing transmission rights-of-way. Rather, as explained in my direct  
19 testimony and Exhibit MJ-1, the purpose of the Transmission Access Enhancement  
20 Program is to ensure that FPL has access to its transmission facilities following an  
21 extreme weather event by targeting and addressing areas that become inaccessible due  
22 to flooding or saturated soils. Notably, the peak of the Atlantic Hurricane Season  
23 coincides with Florida’s wet season when increased rainfall will exacerbate the  
24 inaccessibility of many of these low-lying, saturated, and wetland areas. As explained  
25 in my direct testimony and Exhibit MJ-1, and as acknowledged by OPC witness Mara

1 on page 27 of his testimony, these low-lying areas may not be accessible following an  
2 extreme weather event without specialized equipment and vehicles, which has limited  
3 availability during and immediately following storm events.

4 **Q. Do you have a response to OPC witness Mara's contention on pages 27-28 of his**  
5 **testimony that FPL did not demonstrate that the Transmission Access**  
6 **Enhancement Program will reduce restoration costs and outage times associated**  
7 **with extreme weather events?**

8 A. Yes. OPC witness Mara's argument is, again, a fallout of OPC's proposal that the  
9 Commission should adopt and apply a new cost benefit analysis requirement and new  
10 cost-effectiveness threshold for the SPP programs. As I explained above, OPC's  
11 proposed new criteria and standards to review the SPPs are contrary to the requirements  
12 of both the SPP Statute and SPP Rule and should be rejected.

13

14 My direct testimony and Section IV(K)(1) of Exhibit MJ-1 explained that the  
15 Transmission Access Enhancement Program will ensure that FPL and its contractors  
16 have access to FPL's transmission facilities following an extreme weather event, which  
17 will reduce the need and associated costs for specialized equipment and will help  
18 expedite restoration activities and thereby reduce customer outage times. Importantly,  
19 a transmission-related outage can result in an outage affecting tens of thousands of  
20 customers and may cause a cascading event that could result in loss of service for  
21 hundreds of thousands of customers. The Transmission Access Enhancement Program  
22 will allow FPL and its contractors to quickly address such outages following an extreme  
23 weather event, which would result in a reduction of outage times for tens of thousands  
24 to hundreds of thousands of customers following an extreme weather event.

1 **Q. Do you have any other observations regarding OPC’s opposition to the**  
2 **Transmission Access Enhancement Program?**

3 A. Yes. OPC witness Mara appears to overlook that the Commission’s SPP Rule defines  
4 a storm protection project to include enhancement of T&D areas and not just the T&D  
5 facilities themselves: “a specific activity within a storm protection program designed  
6 for the enhancement of an identified portion *or area of existing electric or distribution*  
7 *facilities* for the purpose of reduction restoration costs and reduction outage times  
8 associated with extreme weather conditions therefore improving overall service  
9 reliability.” See Rule 25-6.030(2)(b), F.A.C. (emphasis added). I also note that FPL’s  
10 proposed program was modeled after the Transmission Access Enhancement Program  
11 included in Tampa Electric Company’s (“TECO”) 2020-2029 SPP that was previously  
12 agreed to in a Stipulation and Settlement Agreement, which OPC joined, that was  
13 approved by Commission Order No. PSC-2020-0293-AS-EI.<sup>2</sup>

14 **Q. On page 27 of his testimony, OPC witness Mara states that, as an alternative, FPL**  
15 **should consider simply purchasing the specialized equipment necessary to access**  
16 **its transmission facilities located in low-lying and saturated areas following an**  
17 **extreme weather event. Do you have a response to his alternative proposal?**

18 A. Yes. FPL has evaluated large tire equipment used in other industries. However, FPL  
19 has not been able to locate large tire vehicles readily available for purchase that are  
20 capable of working within Florida’s unique topography, terrain, and hydrology while  
21 still meeting the necessary technical loading and reach specifications required to  
22 perform transmission line restoration work following an extreme weather event.  
23 Although floating equipment, such as barges, are utilized for construction of

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<sup>2</sup> FPL acknowledges that, despite agreeing to the program in the TECO 2020-2029 SPP, OPC witness Mara filed testimony in Docket No. 20220048-EI opposing the continuation of TECO’s previously approved Transmission Enhancement Program.



1 transmission line river crossings, this floating equipment cannot be used to access the  
2 low-lying and saturated areas to be addressed by the Transmission Access  
3 Enhancement Program.

4  
5 Even if this specialized equipment was readily available on the market for purchase,  
6 FPL would need a large fleet of specialized equipment because the Company's service  
7 area encompasses more than 35,000 square miles across 43 counties with more than  
8 9,000 miles of transmission lines. Purchasing a large fleet of specialty vehicles would  
9 also require ongoing specialized maintenance and specialized resources trained and  
10 familiar with operating and maintaining the specialized equipment. Lastly, external  
11 resources that perform restoration work following an extreme weather event may not  
12 be able to utilize the specialized equipment, resulting in potential delays to restoration  
13 of transmission structures and equipment.

14  
15 **E. FPL's New Transmission and Distribution Winterization Programs**  
16 **Would Reduce Restoration Costs and Outage Times Associated with**  
17 **Extreme Winter Events**

18 **Q. Does OPC agree with FPL's proposed new T&D Winterization Programs?**

19 A. No. On page 19 of his testimony, OPC witness Mara contends that an extreme weather  
20 event must be wind driven under the SPP Statute and, therefore, projects to address  
21 extreme cold temperatures are not eligible to be included in the SPP. On pages 20-21  
22 of his testimony, OPC witness Mara contends that changes to planning criteria and  
23 increasing capacity of the system to meet forecasted load is a standard base rate activity.  
24 Finally, on pages 20 and 21-24 of his testimony, OPC witness Mara contends that FPL  
25 has made no attempt to estimate the probability of an extreme weather event and has

1 failed to demonstrate that the T&D Winterization Programs will reduce restoration  
2 costs and outage times as required by the SPP Statute and SPP Rule.

3 **Q. Do you agree that SPP Statute and SPP Rule limit extreme weather events to only**  
4 **wind driven events as suggested by OPC witness Mara?**

5 A. No. Although the Legislature found that during extreme weather conditions high winds  
6 can cause vegetation and debris to blow into and damage electrical transmission and  
7 distribution facilities, resulting in power outages, the statutory findings do not limit  
8 SPPs only to programs designed to address damage due to high winds. Indeed, the  
9 Legislature went on to conclude that “[i]t is in the state’s interest to strengthen electric  
10 utility infrastructure to withstand extreme weather conditions by promoting the  
11 overhead hardening of electrical transmission and distribution facilities, the  
12 undergrounding of certain electrical distribution lines, and vegetation management”  
13 and that “[p]rotecting and strengthening transmission and distribution electric utility  
14 infrastructure from extreme weather conditions can effectively reduce restoration costs  
15 and outage times to customers and improve overall service reliability for customers.”  
16 See Sections 366.96(1)(c) and (d), F.S. Therefore, the intent and purpose of the SPP  
17 Statute is to protect and strengthen the existing transmission and distribution system  
18 from all extreme weather events in order to reduce restoration costs and outage times  
19 associated with extreme weather events. Consistent with this intent and purpose, FPL  
20 notes that its previously approved Substation Storm Surge/Flood Mitigation Program  
21 and its proposed Transmission Access Enhancement Program are designed to mitigate  
22 flooding and storm surge conditions that occur in conjunction with extreme weather  
23 events and are unrelated to vegetation blown by wind.

1 **Q. Do you have a response to OPC witness Mara’s contention that FPL did not**  
2 **demonstrate that the T&D Winterization Programs will reduce restoration costs**  
3 **and outage times?**

4 A. Yes. An extreme cold weather event can have significant consequences for areas  
5 typically unaccustomed to such conditions. This was clearly demonstrated by the  
6 Texas February 2021 winter event which left millions without electricity for days. The  
7 Texas February 2021 winter event was a region-wide reminder for all utilities in the  
8 Southeast more familiar with summer peaking events, such as FPL, that extreme  
9 weather is now a year-round concern and not limited only to vegetation and debris  
10 blown by the wind. My direct testimony and Sections II(B), IV(I)(1), and IV(J)(1),  
11 clearly explain that the T&D Winterization Programs will enable FPL to better serve  
12 forecasted peak loads during extreme winter events and will help mitigate restoration  
13 costs and outage times associated with extreme cold weather events similar to the 1977,  
14 1989, and 2010 winter events in Florida.

15 **Q. On pages 22-24 of his direct testimony, OPC witness Mara contends that FPL did**  
16 **not provide any evidence of outages on the distribution system due to extreme cold**  
17 **weather events. Do you agree?**

18 A. No. In response to OPC’s First Request for Production of Documents No. 1, which is  
19 provided on page 1 of Exhibit KJM-3 attached to the testimony of OPC witness Mara,  
20 FPL provided eight documents regarding the potential impact of an extreme cold  
21 weather event, including its T&D winterization analysis of a 1989 winter-type of event  
22 that was used by FPL in its evaluation and development of the proposed T&D  
23 Winterization Programs. As summarized in my direct testimony and Exhibit MJ-1,  
24 these documents project that certain T&D facilities could become overloaded and result

1 in outages due to an extreme cold weather event similar to the 1977, 1989, and 2010  
2 winter events in Florida.

3 **Q. On pages 22-25 of his testimony, OPC witness Mara is critical of FPL’s “January**  
4 **2010 Winter Analysis.” Before addressing his specific concerns, do you have a**  
5 **comment about his use of the “January 2010 Winter Analysis”?**

6 A. Yes. In support of his contention that FPL’s proposed T&D Winterization Programs  
7 are not needed, OPC witness Mara appears to rely on the information included in the  
8 “January 2010 Winter Analysis,” which is provided on pages 3-30 of his Exhibit KJM-  
9 3. The flaw with this approach is that the “January 2010 Winter Analysis” was not the  
10 final analysis for the proposed T&D Winterization Programs but, rather, the “January  
11 2010 Winter Analysis” was a report on the actual impacts and outages on FPL’s T&D  
12 system due to the 2010 winter event. As noted therein, further analysis was required  
13 to identify the potential impacts of extreme cold weather events similar to the 1977,  
14 1989, and 2010 winter events in Florida and to develop proposed mitigating measures.  
15 See page 3 of Exhibit KJM-3 attached to the testimony of OPC witness Mara. The  
16 analysis actually used by FPL to identify the potential impacts that a 1989 winter-type  
17 of event could have on FPL’s T&D system, which was used to design and support its  
18 proposed T&D Winterization Programs, was provided to OPC in response to discovery.

19 **Q. On page 22 of his testimony, OPC witness Mara asserts that 69% of the outages**  
20 **from the January 2010 winter event did not result in the need to replace the**  
21 **distribution transformer? Do you have a response?**

22 A. Yes. OPC witness Mara’s statement mischaracterizes the FPL “January 2010 Winter  
23 Analysis.” This statement is not included in the “January 2010 Winter Analysis” and  
24 FPL assumes that OPC witness Mara reached this simple conclusion by reviewing the  
25 pie chart on page 11 of the “January 2010 Winter Analysis” (see OPC witness Mara

1 Exhibit KJM-3, p. 12) that shows that 31% of the tickets were for transformers. This  
2 conclusion is inaccurate as the pie chart on page 11 of the “January 2010 Winter  
3 Analysis” refers to only over-head equipment failure. The eight segments in the pie-  
4 chart are the eight “outage codes” noted by the line crews based on their preliminary  
5 review. Any of these eight “outage codes” in the pie-chart could also have resulted in  
6 a transformer replacement. More accurately, as provided on page 3 of the “January  
7 2010 Winter Analysis” (see OPC witness Mara Exhibit KJM-3, p. 4), 62% of the total  
8 Customer Minutes Impacted (CMI) (or, 71% of the total tickets) during the 2010  
9 January winter event for FPL were due to transformer-related outages. Furthermore, a  
10 list of all transformers damaged and subsequently replaced from FPL’s January 2010  
11 winter event was provided in FPL’s response to OPC’s Fourth Set of Interrogatories  
12 No. 40, which is attached to my rebuttal testimony as Exhibit MJ-3. Additionally,  
13 FPL’s forensic analysis of the January 2010 winter event identified that overloading  
14 was the primary driver of the transformer failures during the January 2010 winter event.  
15 A copy of FPL’s forensic analysis was produced in FPL’s response to OPC’s Fifth  
16 Request for Production of Documents No. 33, which is attached as Exhibit MJ-4 to my  
17 rebuttal testimony.

18 **Q. On page 23 of his testimony, OPC witness Mara states that FPL’s use of a 1.35**  
19 **multiplier of the summer peak to predict the winter peak for the replacement of**  
20 **transformers under the Distribution Winterization Program is too simplistic for**  
21 **prudent engineering practice. Do you have a response?**

22 **A.** Yes. The 1.35 multiplier used in the “January 2010 Winter Analysis” is the system  
23 average winter/summer peak ratio that was derived based on actual feeder winter-  
24 summer peak ratios measured during the 2010 extreme cold event. While the specific  
25 ratio may vary at individual transformers, the 1.35 average multiplier offers FPL a

1 comprehensive and uniform approach to develop a company-wide standard to help  
2 mitigate overload risks that could lead to outages. OPC witness Mara suggests that  
3 FPL should research overloading on each individual transformer and only replace those  
4 distribution transformers that could become overloaded. FPL serves 5.7 million  
5 customers across 43 counties in Florida, and currently has more than one million  
6 distribution transformers. It would be inefficient and costly to evaluate each individual  
7 distribution transformer and develop and apply individual loading criteria for each  
8 transformer as suggested by OPC witness Mara. Therefore, FPL developed a  
9 standardized winter overloading criteria that could be applied consistently across its  
10 entire service area to ensure that its system can withstand the risk of an extreme weather  
11 event, reduce restoration costs, and reduce customer outage times. However, FPL did  
12 review the individual transformers on the system to ensure that they complied with both  
13 the summer and winter overload criteria. Those individual transformers that did not  
14 meet the winter overload criteria are targeted for replacement as part of the SPP  
15 Distribution Winterization Program.

16 **Q. On pages 24-25 of his testimony, OPC witness Mara cites to the “January 2010**  
17 **Winter Analysis” and states that there were only a few transmission outages**  
18 **associated with the January 2010 winter event and the proposed Transmission**  
19 **Winterization Program will not correct 70% of the customer minutes interrupted**  
20 **(CMI) that occurred during the January 2010 winter event. Do you have a**  
21 **response?**

22 A. The “January 2010 Winter Analysis” shows the impact that occurred as a result of the  
23 2010 winter event in Florida. The SPP Transmission Winterization Program is  
24 designed to mitigate any potential transmission impacts that could result from a 1989  
25 winter-type of event. FPL’s modeling of a 1989 winter-type of event identified three

1 transmission line sections that would have capacity constraints and would not meet the  
2 forecasted load during an extreme cold weather event. Under the new Transmission  
3 Winterization Program, FPL will replace these sections of existing transmission line  
4 and the associated substation equipment with higher capacity equipment to better  
5 withstand increased load during an extreme cold weather event.

6 **Q. On page 25 of his testimony, OPC witness Mara claims that the Transmission**  
7 **Winterization Program is not needed because FPL can simply isolate the**  
8 **transmission components prior to failure as they reach capacity limits during an**  
9 **extreme weather event. Do you agree?**

10 A. No. OPC witness Mara’s suggestion that FPL simply “isolate any components prior to  
11 failure” before approaching its capacity limit does not apply to the projects identified  
12 for the Transmission Winterization Program. The FPL transmission system is designed  
13 and operated to comply with NERC Reliability Standards, which includes a  
14 requirement to operate the system for an N-1 contingency without exceeding the rating  
15 of the facility under normal peak load conditions (*e.g.*, TPL-001). Although the  
16 Transmission Winterization Program modeled an extreme winter load, this does not  
17 mean that the facility can simply be removed from service without consequences such  
18 as loss of firm load. The system is required to stay within its facility ratings under an  
19 N-1 condition unless there is mitigation to address the overload of the facility (NERC  
20 Reliability Standards TPL-001 and TOP-001). It is important to understand that during  
21 an extreme winter event, the system loading will likely be at maximum across the entire  
22 transmission system. Simply isolating the transmission equipment during this time will  
23 result in additional loading to other existing facilities and could potentially overload  
24 other facilities resulting in potential equipment failures and system reliability issues. It  
25 should be noted that as a part of its FPL’s winterization analysis, FPL identified specific

1 existing transmission lines that would be overloaded under N-1 conditions as required  
2 by NERC Reliability Standard TPL – 001 during an extreme winter peak load with no  
3 mitigation other than disconnecting firm load. Only these specific facilities have been  
4 included in the SPP Transmission Winterization Program.

5 **Q. Does this conclude your rebuttal testimony?**

6 A. Yes.

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# Exhibit MJ-2

**Florida Power & Light Company  
Docket No. 20220051-EI  
OPC's Fourth Set of Interrogatories  
Interrogatory No. 50  
Page 1 of 2**

QUESTION:

For the last 10 years, for each substation slated for modification by the substation flood mitigation program, list the following:

- a. Provide the dates each of the substation had to be de-energized due to high water.
- b. For each date of de-energization, provide the duration that the substation was de-energized.
- c. Provide the number of customers served by each substation at the time of de-energization.
- d. Describe the elevation of the substation and FPL's projected elevation of the flood water

RESPONSE:

- a. Please refer to FPL's response to OPC's 4th Set of Interrogatories, No. 39.
- b. Please refer to FPL's response to OPC's 4th Set of Interrogatories, No. 39.
- c. Please refer to FPL's response to OPC's 4th Set of Interrogatories, No. 39.
- d. Please see table below.

Sites	Existing Average Grade	2022 Elevation of Flood Protection	Expected Flood Elevation
St. Augustine	4.5 ft	10.0 ft	8-9 ft
Opa Locka	Approx. 9 ft	N/A-- Drainage Improvements ~11 ft	10 ft-- post improvements
S. Daytona	5.4 ft	10 ft	7.8 ft
Lewis	6.4 ft	11.4 ft	8 ft
Aventura	4 ft	N/A--Drainage Improvements 4.4 ft	4.4 ft -- post improvements
Pine Ridge	9.2 ft	11.2 ft	11.2 ft
Dumfoundling	4.4 ft	9 ft	6.4 ft

**Florida Power & Light Company  
Docket No. 20220051-EI  
OPC's Fourth Set of Interrogatories  
Interrogatory No. 50  
Page 2 of 2**

Corkscrew	19.18 ft	22.5 ft	20 ft
Chambers	Approx. 6 ft	10.5 ft	7.9 ft
Gracewood	Approx. 5 ft	10 ft	7.1 ft

# Exhibit MJ-3

**Florida Power & Light Company**  
**Docket No. 20220051-EI**  
**OPC's Fourth Set of Interrogatories**  
**Interrogatory No. 40**  
**Page 1 of 2**

QUESTION:

Distribution Winterization Program: Field Transformers

- a. If a field transformer is projected to be overloaded in the summer, will it be included in the SPP? If not, why not?
- b. If a field transformer is projected to be overloaded during normal winter weather (i.e., electric heat operating as designed in residences and businesses), would the replacement cost of the field transformer be included in the SPP? If not, why not?
- c. If a customer adds load to a field transformer which may cause the transformer to be overloaded during extreme winter weather, who is responsible for the upgrade of the transformer, the customer or FPL? Would the budget funds for this be included in FPL's SPP?
- d. Does FPL's standard protocol for sizing field transformers include sizing for winter loads?
- e. Explain how FPL determined that 1,700 to 2,900 field transformers need to be replaced annually.
- f. Provide winter rating assumptions for field transformers proposed to be replaced for extreme winter weather.
- g. Provide the ratings of field transformers based on the winter assumptions (ambient temperature, duration of overload, etc.).
- h. List and describe the standards used to determine extreme winter rating of field transformers.
- i. Provide a list of all transformers damaged (unsalvageable) from extreme winter overloads, including size and year failed.
- j. For each size of transformer proposed to be replaced, provide the fuse size and type used to protect the transformer.
- k. For all sizes of overhead transformers on FPL's system, provide the fuse size and type used to protect the transformer.
- l. If transformers are replaced by this program, describe how any replaced transformers can be re-used on FPL's system, and how credit for re-use is included in FPL's SPP budget.

**Florida Power & Light Company**  
**Docket No. 20220051-EI**  
**OPC's Fourth Set of Interrogatories**  
**Interrogatory No. 40**  
**Page 2 of 2**

RESPONSE:

- a. No. Only transformers that could become overloaded for a 1989 winter-type event and could result in customer outages were included in the 2023-2032 SPP.
- b. No. Only transformers that could become overloaded for a 1989 winter-type event and could result in customer outages were included in the 2023-2032 SPP .
- c. Budget funds for such scenario are not included within the 2023-2032 SPP. The Distribution Winterization Program only addresses existing transformers that could become overloaded for a 1989 winter-type event and could result in customer outages; it does not address new construction, load, or service.
- d. Yes, FPL design guidelines provide criteria for sizing field transformers for summer and winter loads.
- e. FPL identified approximately 10,000 field transformers in the 2023-2032 SPP that could become overloaded for a 1989 winter-type event and could result in customer outages. These replacements were spread out over five years based on resource and equipment availability.
- f. Please see attachment “Transformer Loading Guidelines” included in FPL’s response to OPC’s Fourth Set of Production of Documents No. 22 for FPL standard loading guidelines, which include summer and winter loading guidelines. Units identified in the SPP are forecasted to exceed these guidelines for a 1989 winter-type event.
- g. Transformer loading guidelines are based on ANSI/IEEE C57.91 for transformer specifications (including ambient temperature, duration of overload, etc).
- h. Transformer loading guidelines are based on ANSI/IEEE C57.91 for transformer specifications. FPL adjusted standard loading criteria to account for a forecasted extreme winter scenario.
- i. Please see Attachment 1 which provides a list of all transformers damaged and subsequently replaced from FPL’s January 2010 extreme winter event; however, it does not include transformer size as that information is not tracked at this level of detail.
- j. Please see Attachment 2 for FPL’s Design Construction Standard (DCS I-19.2.0) included with this response for FPL’s fusing guidelines.
- k. Please see Attachment 3 for FPL’s Design Construction Standard (DCS I-19.0.0) included with this response for FPL’s fusing guidelines.
- l. FPL does not re-use field transformers that have experienced overload conditions.

Florida Power & Light Company  
Docket No. 20220051-EI  
OPC's Fourth Set of Interrogatories  
Interrogatory No. 40  
Attachment No. 1 of 3  
Tab No. 1 of 1

<b>Power Off Date</b>	<b>FPL ID</b>
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1/7/2010 6:29	45276284
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1/11/2010 8:34	122710617
1/11/2010 8:36	61127391
1/11/2010 8:41	16006535
1/11/2010 8:50	30201519
1/11/2010 8:43	14337527
1/11/2010 8:40	33798327
1/11/2010 8:44	11441309
1/11/2010 10:29	71307925
1/11/2010 8:45	8487522
1/11/2010 8:55	40179956
1/11/2010 8:48	64130791
1/11/2010 19:46	30255982
1/11/2010 19:41	15656209
1/11/2010 8:58	13929418
1/11/2010 8:57	15597134
1/11/2010 8:59	64309419
1/11/2010 11:43	17025973
1/11/2010 20:43	66642250
1/11/2010 11:32	13077813
1/11/2010 9:11	19016535
1/11/2010 9:11	66478536
1/11/2010 9:14	53971257
1/11/2010 12:51	44216640

1/11/2010 9:28	14721508
1/11/2010 9:23	65737371
1/11/2010 9:30	65496361
1/11/2010 9:31	12954910
1/11/2010 10:07	19305497
1/11/2010 10:39	68462245
1/11/2010 9:49	23958536
1/11/2010 9:41	61445100
1/11/2010 12:26	45207568
1/11/2010 9:54	62263067
1/11/2010 11:31	15646909
1/11/2010 14:07	20573389
1/11/2010 10:14	64802683
1/11/2010 10:02	62552006
1/11/2010 10:03	51322698
1/11/2010 10:17	9339511
1/11/2010 10:14	60960999
1/11/2010 10:14	64834057
1/11/2010 10:16	24761417
1/11/2010 10:35	26713004
1/11/2010 10:24	16624013
1/11/2010 20:40	61456998
1/12/2010 2:10	29394758
1/11/2010 10:41	23953065
1/11/2010 10:40	65082825
1/11/2010 10:39	15652641
1/11/2010 10:44	17091298
1/11/2010 21:22	69132417
1/11/2010 11:43	
1/11/2010 11:31	63341268
1/11/2010 11:43	60564235
1/11/2010 10:56	63628626
1/11/2010 16:51	43632847
1/11/2010 11:44	165806820
1/11/2010 11:52	8846515
1/11/2010 12:02	61141394
1/11/2010 12:00	61802520
1/11/2010 12:01	67483930
1/11/2010 12:31	268229791
1/11/2010 13:02	268625537
1/11/2010 12:36	8805108
1/11/2010 20:03	36455984
1/11/2010 19:09	
1/11/2010 19:49	30545882
1/11/2010 19:35	14710488
1/11/2010 17:34	33176666
1/11/2010 19:59	33733716

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1/11/2010 16:26	11157978
1/11/2010 13:49	8720592
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1/11/2010 17:25	41150054
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1/11/2010 16:14	65671321
1/11/2010 15:36	65265756
1/11/2010 16:14	66874934
1/11/2010 15:34	61311470
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1/11/2010 19:33	26966654
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1/11/2010 17:50	63725854
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1/12/2010 6:05	18081153
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1/12/2010 11:09	61137633
1/12/2010 16:30	63125544
1/12/2010 8:42	50367106
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1/12/2010 6:44	15645244
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1/12/2010 6:45	10250935



1/12/2010 7:10	53341447
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1/12/2010 11:34	70854050
1/12/2010 7:09	16537370
1/12/2010 9:03	64306695
1/12/2010 9:41	36664780
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1/12/2010 7:02	61597275
1/12/2010 7:13	67931206
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1/12/2010 10:38	56598598
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1/12/2010 17:16	36551345
1/12/2010 10:29	15127479
1/12/2010 10:32	
1/12/2010 8:08	153265417
1/12/2010 8:02	33802401
1/12/2010 11:51	15395687
1/12/2010 12:26	55920419
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1/13/2010 6:44	28456126
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1/13/2010 20:13	14564885
1/13/2010 6:20	33011914
1/13/2010 8:03	61535484
1/13/2010 9:16	35693212
1/13/2010 8:46	72128652
1/13/2010 10:29	40991026
1/13/2010 11:15	40860617
1/13/2010 10:20	56145119
1/13/2010 14:11	45196907
1/13/2010 12:23	20589194
1/13/2010 13:03	40033713



<b>I-19.0.0</b>	<b>TRANSFORMER FUSING TABLE AERIAL FUSE SWITCHES</b>	<b>I-19.0.0</b>
-----------------	--	-----------------

ALL FUSES ARE TYPE "KS", "MS", OR "S" EXCEPT AS NOTED  
 ("MS" AND "S" ARE EQUIVALENT TO "KS")

TRANSFORMER KVA PER PHASE (EXCEPT AS NOTED)	PRIMARY OPERATING VOLTAGE		
	2.4KV PHASE TO GROUND OR 4.16KV PHASE TO PHASE	7.62KV PHASE TO GROUND OR 13.2KV PHASE TO PHASE	13.2KV PHASE TO GROUND OR 22.86KV PHASE TO PHASE
	FUSE SIZE		
3	1-1/2"x"	3/4"x"	3/4"x"
5	2-1/2"x"	3/4"x"	3/4"x"
7-1/2	4	1-1/4"x"	3/4"x"
10	5	1-1/2"x"	3/4"x"
15	8	2-1/2"x"	1-1/2"x"
25	10	4 OR 10*	2-1/2"x" OR 10*
37-1/2	20	6 OR 10*	4 OR 10*
50	25	8 OR 10*	5 OR 10*
75	40	10	6 OR 10*
100	50 (7)	15	8 OR 10*
150	65 (7)	20	10
167	80 (7)	25	15
200	80 (7)	30	15
250	100 (7)	40	20
333	-	50 (7)	25
500	-	65 (7)	40
2000 3Ø	-	100 (7)	50 (7)
2500 3Ø	-	140 (7)(9)	65 (7)

\* SEE NOTE 1

NOTES:

1. FOR FUSE SIZES SHOWN WITH \*, USE THE SMALLER SIZE FUSE IF THERE ARE ANY BARE OPEN WIRE CONDUCTORS (SECONDARY OR SERVICE) ON LOAD SIDE OF TRANSFORMER. USE 10 AMP FUSE ONLY IF ALL SECONDARY/SERVICE CONDUCTORS ARE INSULATED. FOR ANY TRANSFORMER ON A LATERAL THAT IS FUSED AT LESS THAN 40 AMPS, USE THE SMALLER SIZE TRANSFORMER FUSE.
2. THE FUSE SIZES SHOWN IN THE ABOVE TABLE MAY BE USED AS A GUIDE IN FUSING STEP-UP OR STEP-DOWN BANKS, FOR BOTH POLE MOUNTED TRANSFORMERS AND UG RADIALS TO SINGLE TRANSFORMER (OR BANK) WHEN FUSED AT RISER POLE. UNUSUAL CIRCUMSTANCES OR COORDINATION PROBLEMS MAY REQUIRE A CHANGE FROM THE ABOVE TABLE.
3. STREET LIGHTING TRANSFORMERS (RO'S) SHALL BE FUSED ON SOURCE SIDE AS FOLLOWS WITHOUT REGARD TO THEIR KW RATING: IF INSTALLED ON 2.4KV CIRCUIT, FUSE WITH 25 AMPERE FUSES. IF INSTALLED ON 7.6KV CIRCUIT, FUSE WITH 10 AMPERE FUSES. CONSULT THE ENGINEERING DEPARTMENT FOR RO FUSE SIZE WHEN IT IS INSTALLED ON THE LOAD SIDE OF A LATERAL FUSE THAT IS THE SAME SIZE OR SMALLER THAN THE ABOVE OR THE LOAD SIDE OF AN OIL CIRCUIT RECLOSER.
4. FUSING INSTRUCTIONS FOR TRANSFORMERS LARGER THAN THOSE SHOWN IN THE ABOVE TABLE SHOULD BE OBTAINED FROM DISTRIBUTION PLANNING.
5. WHEN ONE FUSE LINK IS BLOWN ON A THREE PHASE BANK, THE FUSES IN ALL PHASES SHALL BE REPLACED.
6. NEUTRAL LEADS SHALL NOT BE FUSED.
7. RISER POLE FUSES SHALL BE TYPE "K" WHEN 50 AMP OR LARGER IS REQUIRED AND TYPE "KS", "MS", OR "S" WHEN SMALLER THAN 50 AMP.
8. THESE FUSE SIZES APPLY ONLY IN CASES WHERE THE TRANSFORMER DOES NOT HAVE INTERNAL FUSING OR IS OTHERWISE SUB-FUSED. IN CASES WITH INTERNAL OR OTHER SUB-FUSING, FUSING SHOULD BE PER NORMAL LATERAL/LOOP GUIDELINES.
9. FUSES GREATER THAN 100 AMPS SHALL BE INSTALLED USING A 200 AMP RATED CUTOUT (REFER TO DERM 3.6.2).



**OH & UG DISTRIBUTION SYSTEM STANDARDS**

3	3/25/19	UPDATE TABLE AND ADD NOTE 9	ARR	ELS	RDH	
2	7/29/16	UPDATE TABLE	JJR	ELS	RDH	ORIGINATOR: PMG
1	10/23/08	ADDED NOTE B	CEA	ELS	JJM	DRAWN BY: RAS
0	9/11/99	REVISED FUSE CHART & NOTE 1	PMG	RAS	JJM	DATE: 8/9/96
NO.	DATE	REVISION	ORIG.	DRAWN	APPR.	APPROVED: J.J McEVoy

SUPERVISOR, OH/UG PRODUCT SUPPORT SERVICES  
NO SCALE

# Exhibit MJ-4

**Florida Power & Light Company**  
**Docket No. 20220051-EI**  
**OPC's Fifth Request For Production of Documents**  
**Request No. 33**  
**Page 1 of 1**

QUESTION:

Please provide all documents identified in Late Filed Deposition Exhibit No. 8 (and the related discussion) from the May 24, 20022 deposition of FPL employee Eduard DeVarona, relating to the "2010 report".

RESPONSE:

Please see the attached responsive document.



# **Cold Weather Event Jan 9-11, 2010**

## **Transformer Analysis Summary**

### **Distribution**

**February 1, 2010**

## **Executive Summary** (slide 1 of 2)

- **During January 9 -11, 2010, the entire state faced record temperatures impacting customer usage – roughly, a once in thirty-five year event**
- **Customers affected = 171,134 (Distribution outages = 130,592)**
- **Transformers accounted for the most Customer Minutes Interrupted (CMI) and second most Customers Interrupted (CI)**
- **Analysis shows:**
  - Transformer loading was the most significant factor
  - FPL service region was the second most significant factor



## **Executive Summary** (slide 2 of 2)

### **Follow-up Actions based upon analysis results:**

- Develop risk-factored prioritization list of East Region transformers by using transformer load %, number of customers/transformer, average KVA-Demand per customer, and transformer KVA size. Expand to entire system.
- Revise Asset Management System (AMS) load calculations to incorporate available Automated Metering Infrastructure (AMI) data to improve accuracy of peak load calculations.
- Options for pursuing transformer replacements:
  - Based upon current information, up to 22,000 padmount transformer replacements may be required over time to address indicated overload conditions - estimated data limiting accuracy of plans (i.e. estimated transformer loading)
  - Incorporate AMI data as it becomes available to determine necessity for replacing overloaded transformer conditions based on risk evaluation - more accurate data insures appropriate corrective actions over time (i.e. AMI data deriving accurate transformer loading)

# Overview & Facts

## Event Summary

- **Weather – During this event, the entire state faced record temperatures impacting customer usage**
  - West Palm Beach Airport – Average 12-day temperature, 49.9 degrees, was the lowest on record for any 12-day period
  - Miami International Airport – Average 12-day temperature, 52.7 degrees, 10th lowest on record for any 12-day period and the coldest such period since 1940
- **Customers Affected – 171,134**
  - Substation Outages 40,542
  - Distribution Outages 130,592



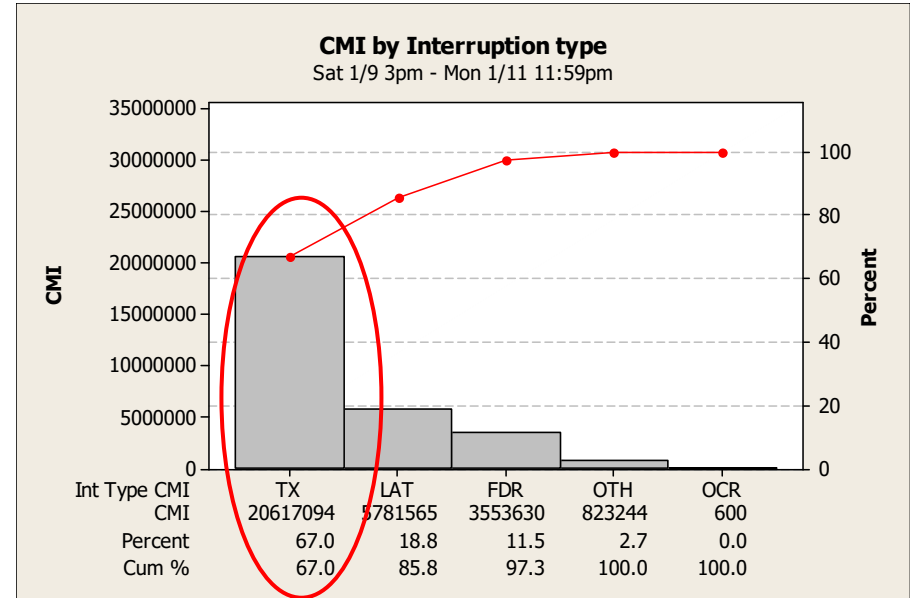
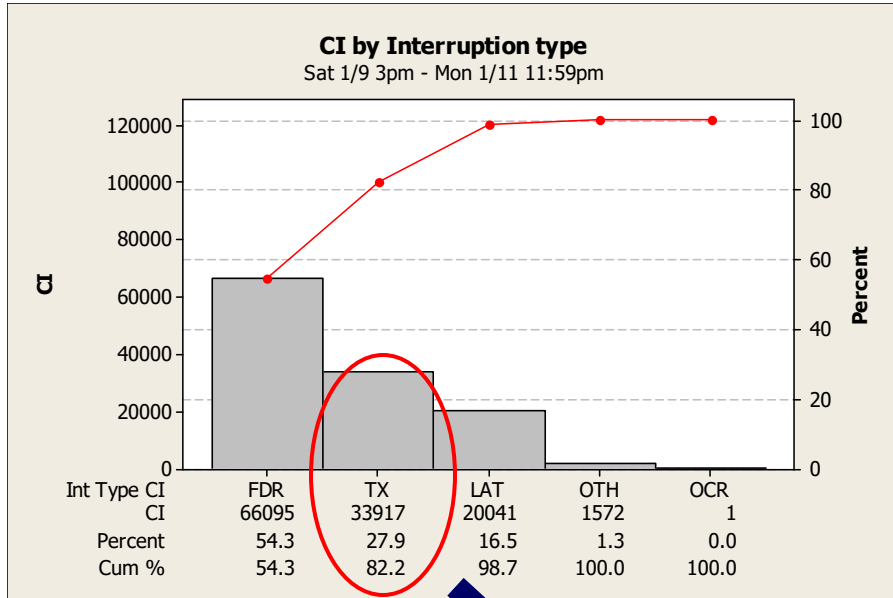
Customer Out by Day					
9-Jan	61,606	10-Jan	80,683	11-Jan	28,845
Customers Out By Region					
North	17,739	East	41,889	West	48,078
Broward	42,364	Dade	21,064	<b>Total</b>	<b>171,134</b>

**Unprecedented record temperatures forced an event that we had not previously faced.**



# What device impacted our indicators the most during the event?

Sat 1/9 3pm – Mon 1/11 11:59pm



**Two Proportions Test of TX % contribution to CI**

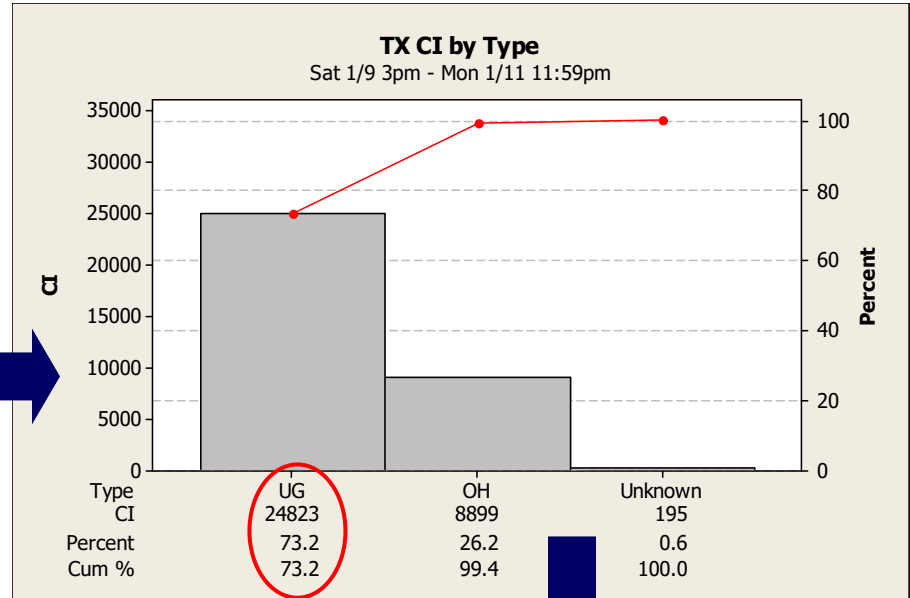
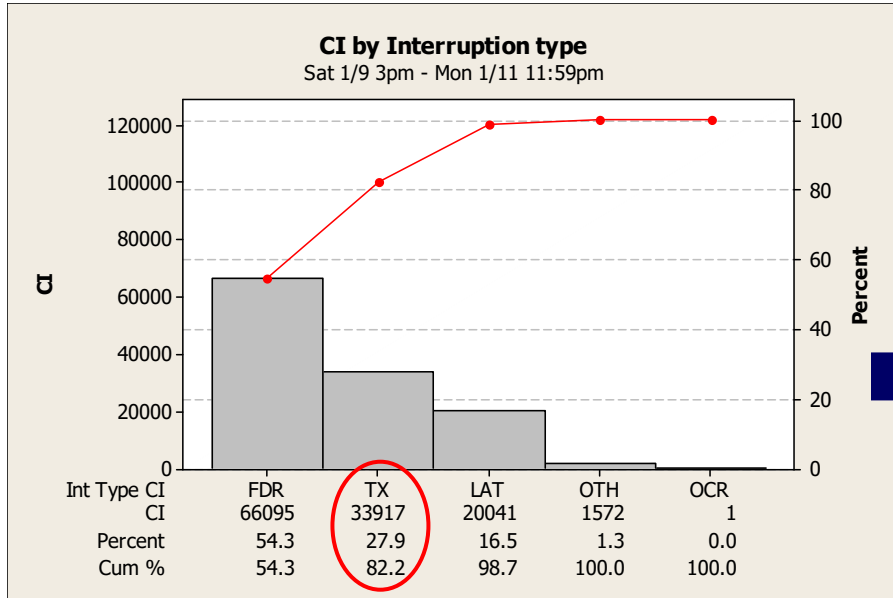
Sample	X	N	Sample p
Event	33917	121626	0.278863
Avg. Jan 08&09	83065	988761	0.084009

Difference = p (1) - p (2)  
 Estimate for difference: 0.194854  
 95% CI for difference: (0.192275, 0.197433)  
 Test for difference = 0 (vs not = 0): Z = 148.09 **P-Value = 0.000**  
 Fisher's exact test: P-Value = 0.000

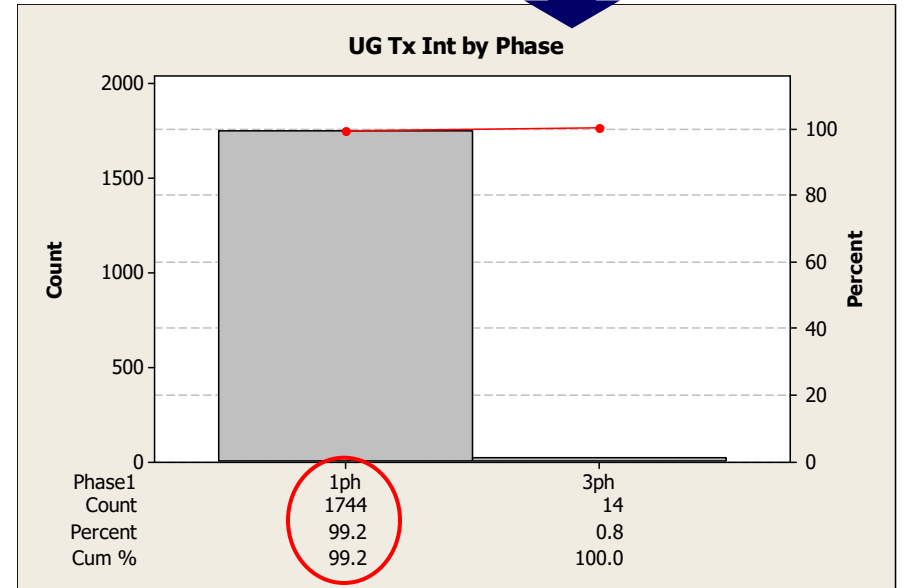
**3X greater!**

**Transformers accounted for the most CMI during the event. They also accounted for the second most CI, which is not typical compared to an average day in January.**

# What type of Transformers impacted CI the most?



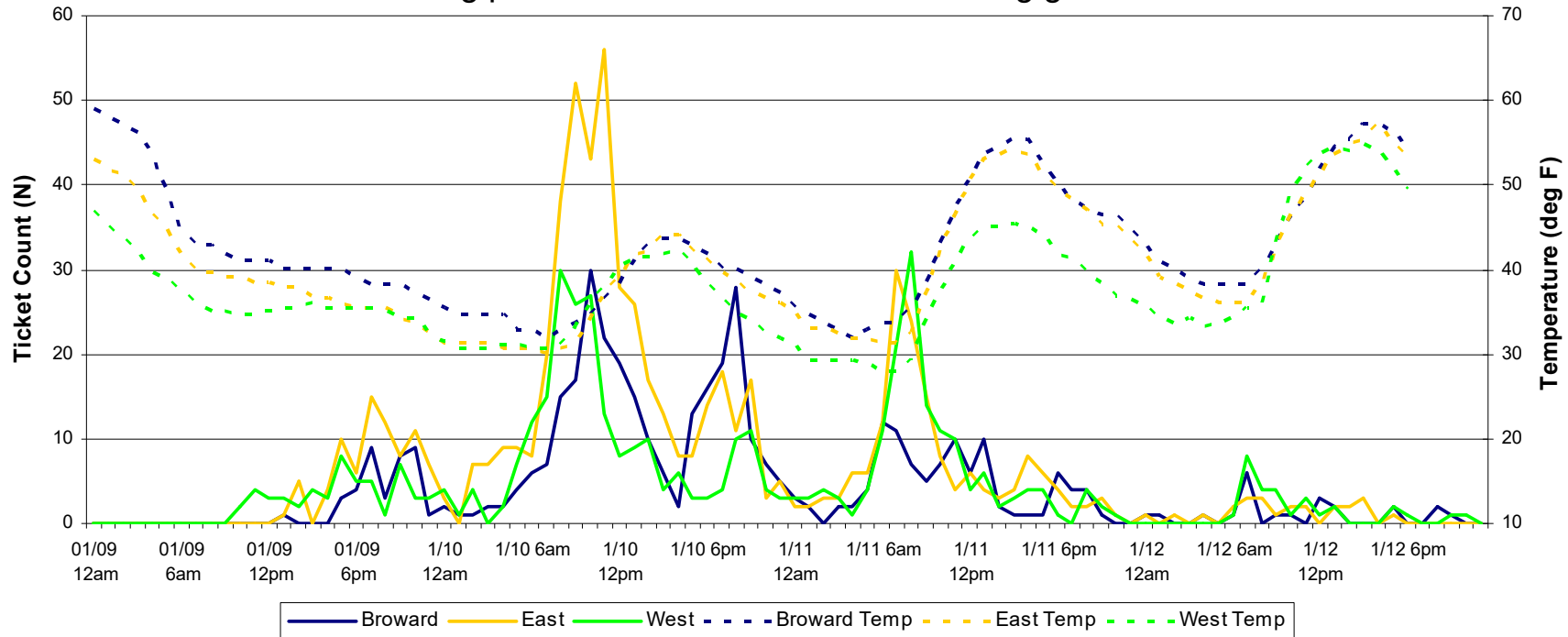
**Single-phase Underground (Padmount) Transformers accounted for the majority of the Transformer interruptions**



## Overview & Facts

# Padmount Transformer Failures Summary

Incoming padmount transformer tickets during given hour



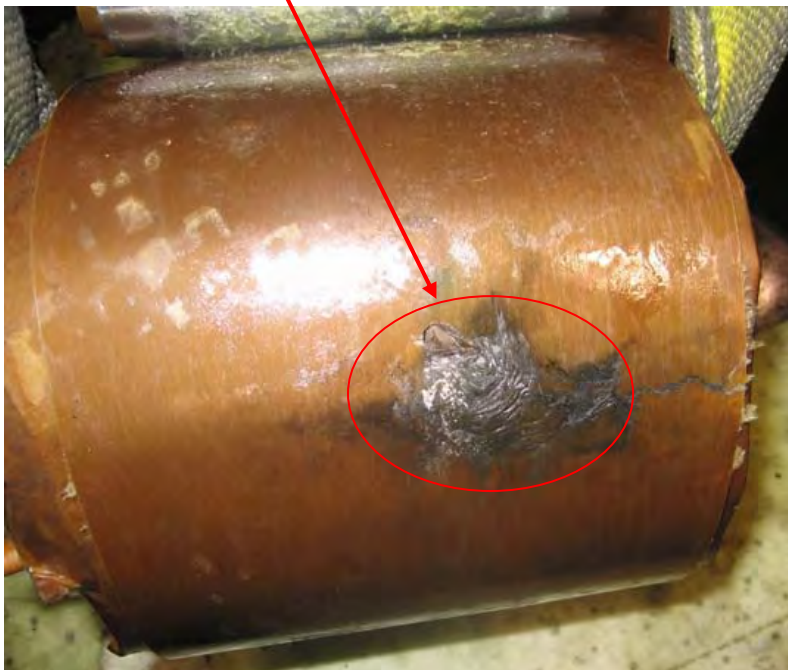
North and Dade regions were minimally impacted. Broward, East, and West regions accounted for 78% of the transformer tickets for this event.

**As temperatures dipped below 40 degrees, padmount transformer interruptions began to increase, accounting for 41% of the Customer Minutes Interrupted (CMI) and 20% of the Customers Interrupted (CI).**

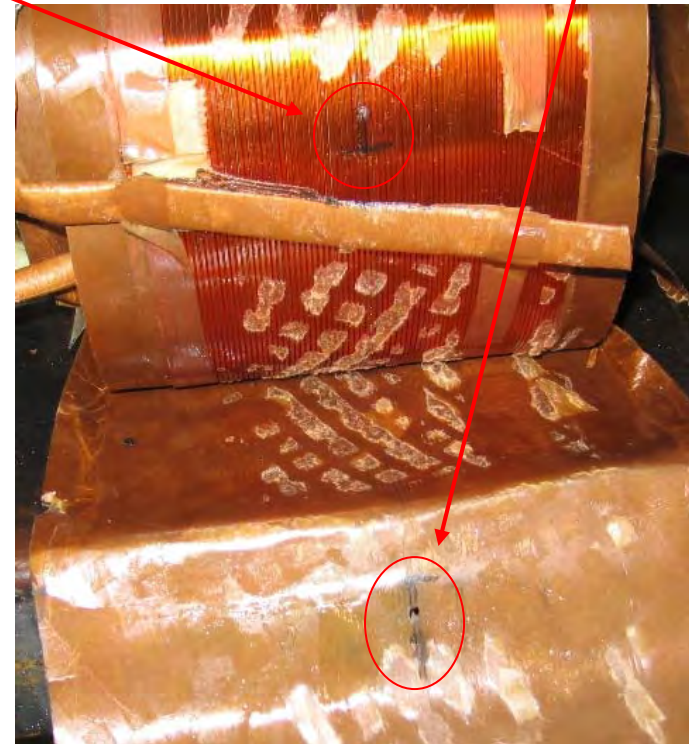
# What failed inside the transformers?

## Forensic Analysis Results

Hot spot between primary and secondary coils compromised dielectric strength of insulation



Flash point on primary winding

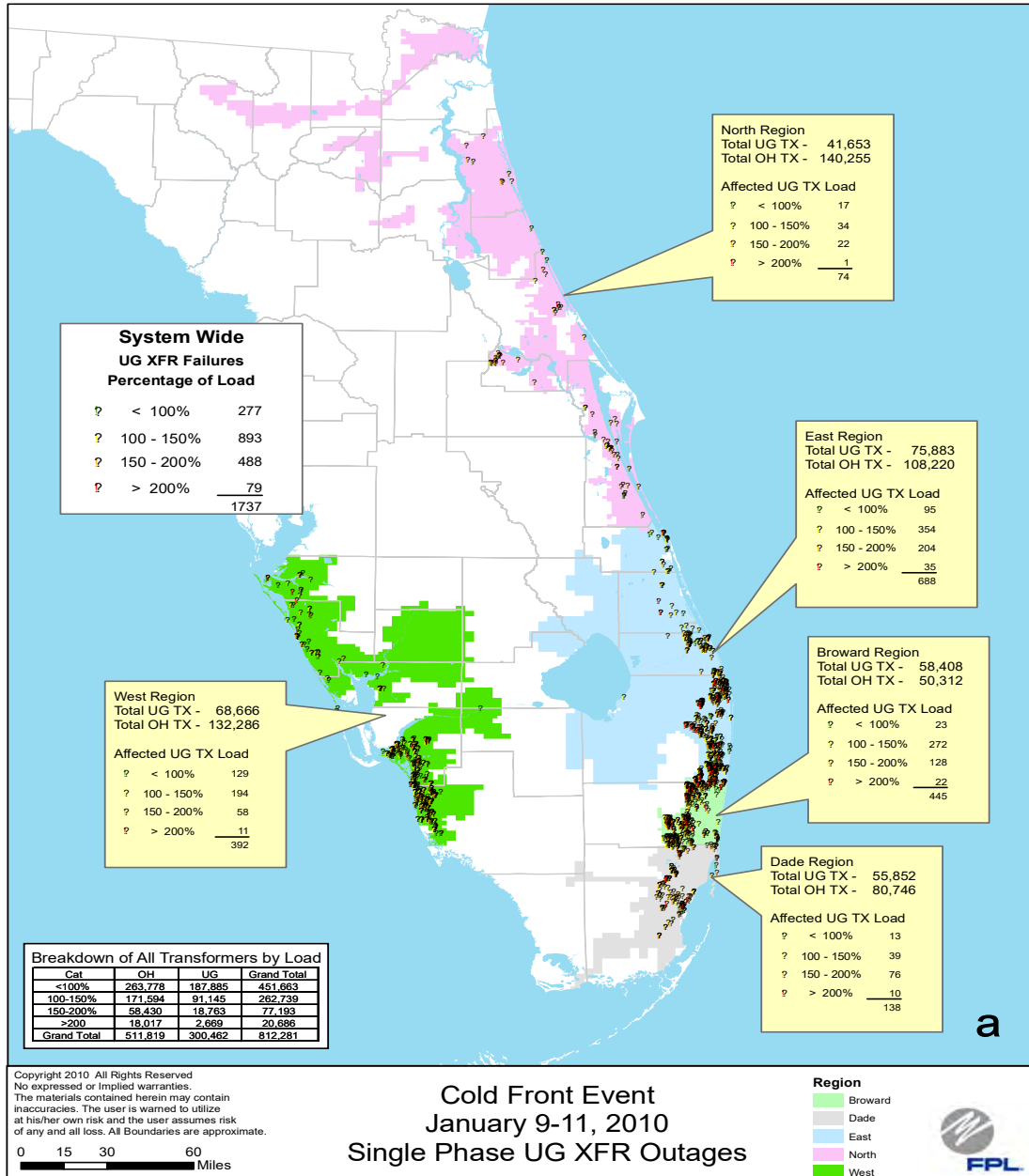


Pin hole burn caused by the dielectric breakdown



**Overloading of transformers will deteriorate, over time, the dielectric strength of the insulation. The voltage between the primary and secondary windings creates an arc perforating the insulation and shorting the two windings.**

# Impact Summary



## What was the impact of the cold weather event on transformers?

- 0.38% of all transformers were interrupted
  - Out of population size of 812,281
  - 99.6% were not affected which translates to a sigma level of 2.7
- 0.78% of all underground pad mounted transformers were interrupted
  - 1,737 affected out of population size of 222,511
  - 99.2% were not affected which translates to a sigma level of 2.4

## How often to these cold weather events occur?

- In the period from 1940 to present, extended cold event periods comparable to the recent one have occurred roughly every 35 years
  - 37 years from 1940 to 1977 and 33 years from 1977 to 2010

## What factors are the most statistically significant?

Logistic Regression Table					
Predictor	Coef	SE Coef	Z	P	Odds Ratio
Constant	-8.63753	0.192389	-44.90	0.000	
KVA size					
38	0.567977	0.176791	3.21	0.001	1.76
50	1.66192	0.168157	9.88	0.000	5.27
75	2.33022	0.176295	13.22	0.000	10.28
100	1.86547	0.201108	9.28	0.000	6.46
Phase					
B	-0.0086861	0.0584801	-0.15	0.882	0.99
C	-0.0737969	0.0599859	-1.23	0.219	0.93
Region					
DADE	-0.966837	0.0987967	-9.79	0.000	0.38
EAST	0.556199	0.0639701	8.69	0.000	1.74
NORTH	-1.03798	0.127356	-8.15	0.000	0.35
WEST	0.337818	0.0724947	4.66	0.000	1.40
Summer Load %					
100%-150%	2.00649	0.0743520	26.99	0.000	7.44
150%-200%	3.42808	0.0910336	37.66	0.000	30.82
200+	4.19360	0.146133	28.70	0.000	66.26
Type					
Live Front	-1.24346	0.227795	-5.46	0.000	0.29
Customers					
c6-8	0.185886	0.0758334	2.45	0.014	1.20
d9-15	0.538929	0.0768843	7.01	0.000	1.71
e16-50	0.135744	0.121321	1.12	0.263	1.15
f51-100	-20.6175	9051.30	-0.00	0.998	0.00
g>100	-21.7593	51351.5	-0.00	1.000	0.00
Primary Voltage					
22.9	0.416369	0.0518143	8.04	0.000	1.52
4.16	-15.7696	50345.2	-0.00	1.000	0.00
Unknown	-18.1831	28704.8	-0.00	0.999	0.00

Tests for terms with more than 1 degree			
Term	Chi-Square	DF	P
KVA size	346.18	4	0.000
Phase	1.09	2	0.581
Region	367.67	4	0.000
Summer Load %	1421.28	3	0.000
Customers	53.25	5	0.000
Primary Voltage	54.34	3	0.000
Install Year	5.62	4	0.230

- Phase & Install Year not significant
- 50-100 KVA Tx had the highest interruption rates
- East region had the highest interruption rate out of all regions followed by the West
- TX's loaded 150% or greater were 30-66 times more likely to have interruptions than those loaded below 100%

Logistic regression shows Load was the most statistically significant factor (Issue #1) followed by Region (Issue #2) and KVA size (combined with Issue #1)



# Issue #1

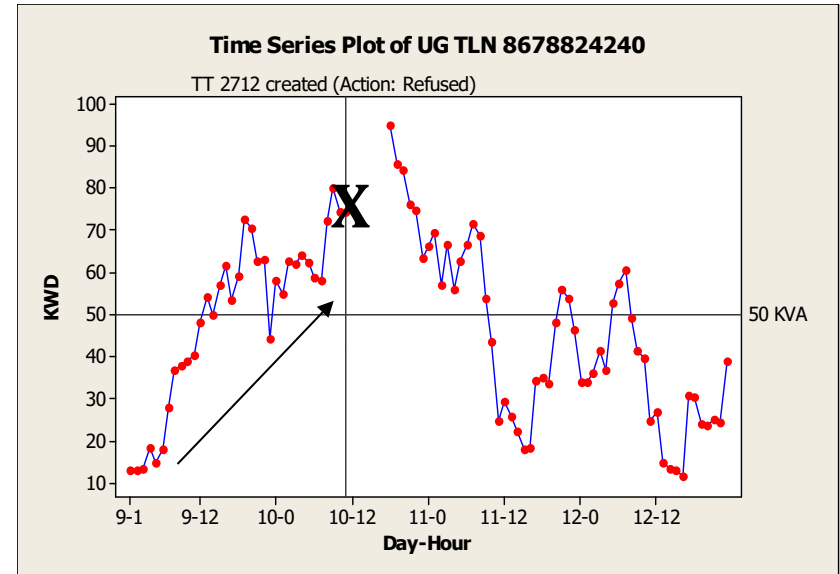
## How is transformer loading calculated?

### Meter-reading Data (*current*)

Substation Name	BUTTS	AMS Facility Status	Constructed	PPD Address	DEL PRADO CIR N. W/O SOLIMAR CIR # ENTR.						
Service Center	BRO - Boca Raton	Last Updated	07/22/2001	Ref Drawing	C02CK1						
Mgmt Area	Boca Raton	Last Updated By	sw\$admin	Original Install Date							
<b>Current Information</b>		<b>Summer Peak Information</b>		<b>Winter Peak Information</b>							
Date	01/01/2010	10/29/2008	01/01/2009								
Customers	4	4.000000	4.000000								
<b>Current Load</b>			<b>Summer Peak Load</b>			<b>Winter Peak Load</b>					
Phase	KVA	KVAD	%	KVA	KVAD	%	KVA	KVAD	%		
B	50	33.0	66.00	50	44.0	88.0	50	34.0	68.0		
Ph	Type	DV	M S Num	Mfg	Latest Install Date	Ph	Loop	Sw1	Status 1	Sw2	Status 2
B	Padmount - Dead Front	No	459481	MCE	04/01/1998	B	1928	11	Normal Closed	10	Normal Closed



### Advanced Metering Infrastructure Data (*future*)



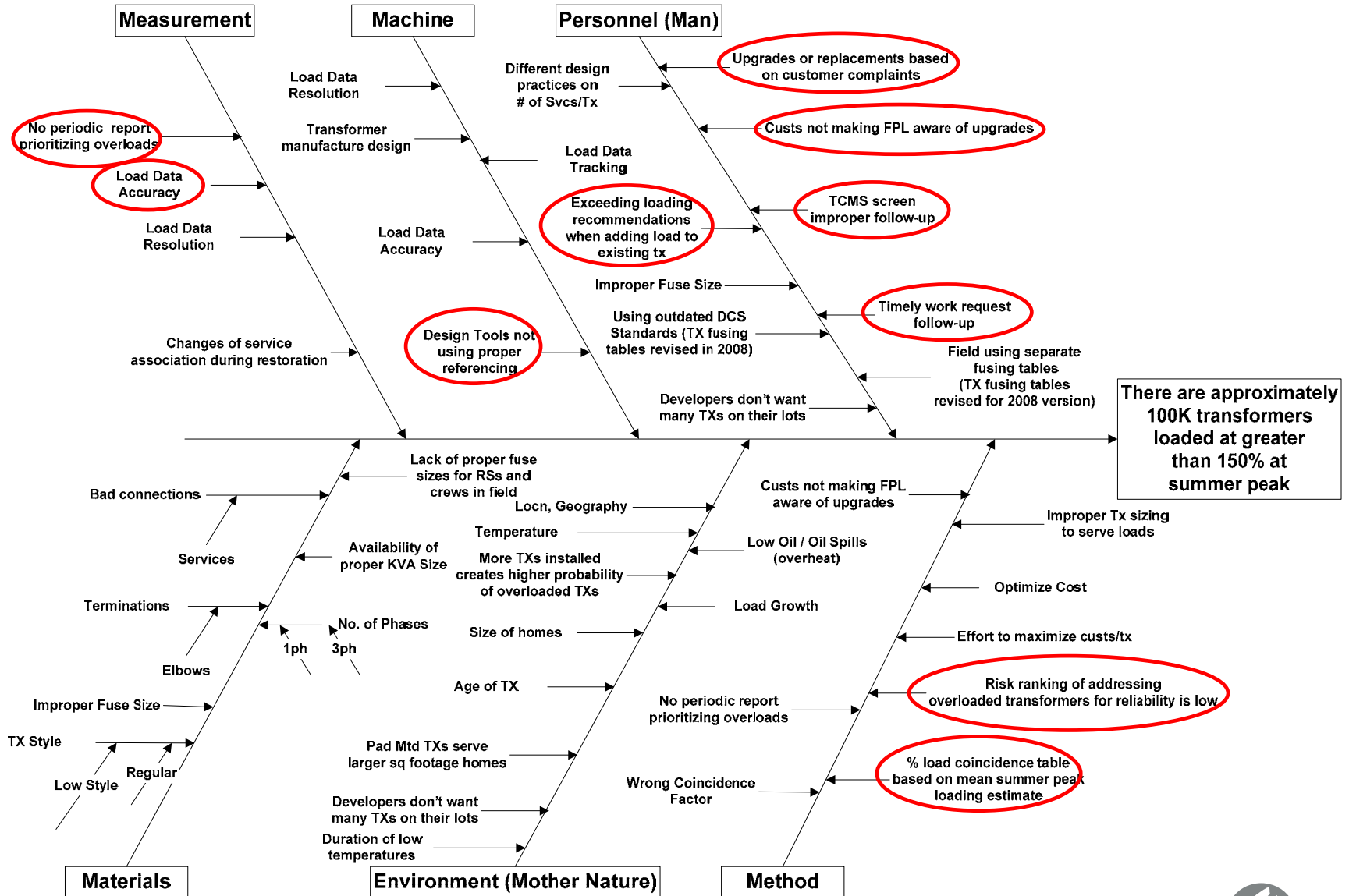
- AMS currently estimates demand based on **monthly meter department kWh readings**

- **AMI captures load information on an hourly basis.**
- Approximately 100K AMI meters in place primarily in Broward

**AMI technology will improve load data accuracy and resolution in the near future**

# Issue #1

## Why are transformers overloaded?



# Issue #1

## What causes are contributing the most to the problem?

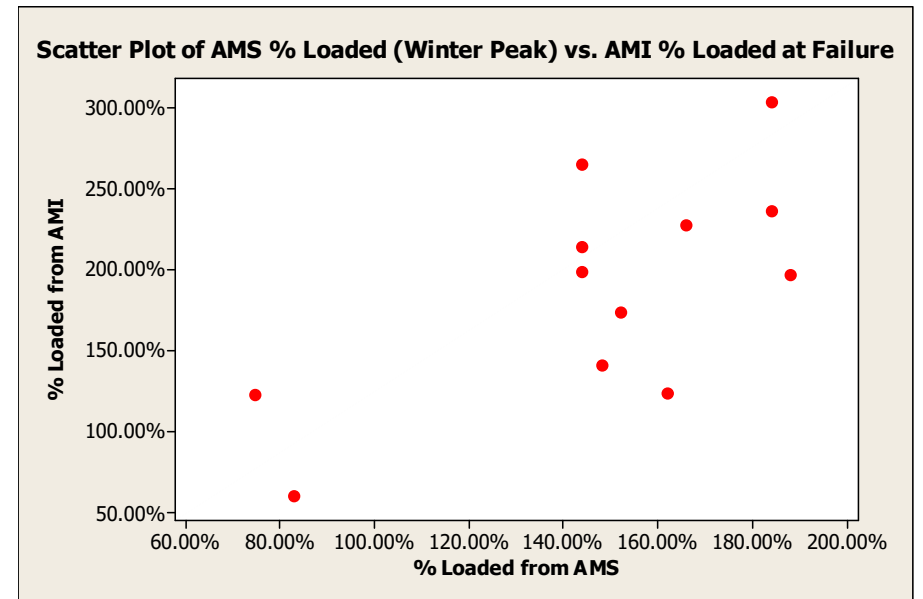
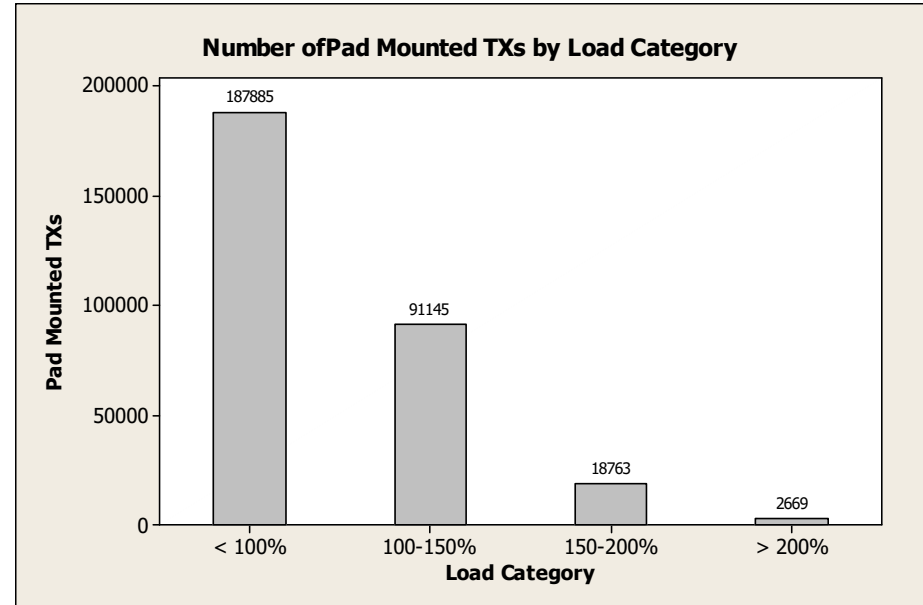
### FMEA

Process Function	Potential Failure Mode	Potential Effects of Failure	SEV	Potential Cause(s)/ Mechanism(s) of Failure	OCC	Current Process Controls	DET	RPN
AMS Reports	No periodic report prioritizing overloads	Areas are not aware of magnitude of overloaded transformer population.	8	Addressing overloaded transformers not a high priority. Overloaded transformers have low reliability impact.	8	We have Distribution Transformer Loading Guidelines in the Service Planning Quick Reference Guide for designers.	8	512
	Load Data Accuracy	Overloaded transformers not recognized or overloaded transformers incorrectly identified.	5	Customer transformer misassociation and AMS to TCMS link could be inaccurate.	5	No formal process to correct inaccurate associations or data transfer issues.	8	200
Design Reference	Design Tools not using proper referencing	Transformer size to load match is incorrect.	7	Tool references to transformer design needs to be reviewed and revised if necessary.	2	Review triggered by change in product characteristics or design.	9	126
	Risk ranking of addressing overloaded transformers is low	Overloaded transformers get neglected due to low priority and are only addressed on an individual basis.	9	Addressing overloaded transformers not a high priority. Overloaded transformers have low reliability impact.	8	We have Distribution Transformer Loading Guidelines in the Service Planning Quick Reference Guide for designers.	8	576
	% load coincidence table based on mean summer peak loading estimate.	Undersized transformer; actual peak load could be higher than estimated.	8	Coincidence table is designed to estimate the mean peak load.	8	Review triggered by change in customer demand patterns.	9	576
Existing Customer Upgrades	Exceeding loading recommendations when adding load to existing transformers.	Overloaded transformers and Power Quality issues with services.	8	Mis-application or not referring to transformer loading guidelines.	7	No process control to review all load additions to existing transformers.	9	504
	Upgrades or replacements based on customer complaints.	Not addressing all overloaded transformer cases.	5	Overloaded transformers have low reliability impact. Resources allocated to high CI projects.	2	Customer generated only. Many overloaded transformers are missed under this process.	8	80
	Custs not making FPL aware of upgrades.	Potential overloaded transformers not identified during customer upgrades.	5	Communication of cust upgrade not required in all cases.	7	No process for the "hidden" customer load increases.	8	280
Customer Complaint Process	TCMS screen improper follow-up.	Backlog of overloaded transformers that may not be replaced.	7	Volume of tickets too high to address and screen to prioritize.	3	Review of transformer related tickets by area personnel.	3	63
	Timely work request follow-up.	Backlog of overloaded transformers that may not be replaced.	7	Volume of work requests too high to address and screen to prioritize.	3	Review of transformer related work requests by area personnel.	3	63

## Issue #1

### Padmount Transformer Load

- **Load was the most statistically significant factor in transformer-related outages, followed by region and kVA size.**
  - Transformers loaded 150% or greater were 30 to 66 times more likely to have interruptions than those loaded below 100%.
- **Correction Plan**
  - Develop prioritization list for transformers based on load %, customer count, kVAD per customer, and kVA size
  - Develop ability to detect and track overloaded conditions at a transformer level
  - Incorporate AMI data to improve accuracy of peak load data



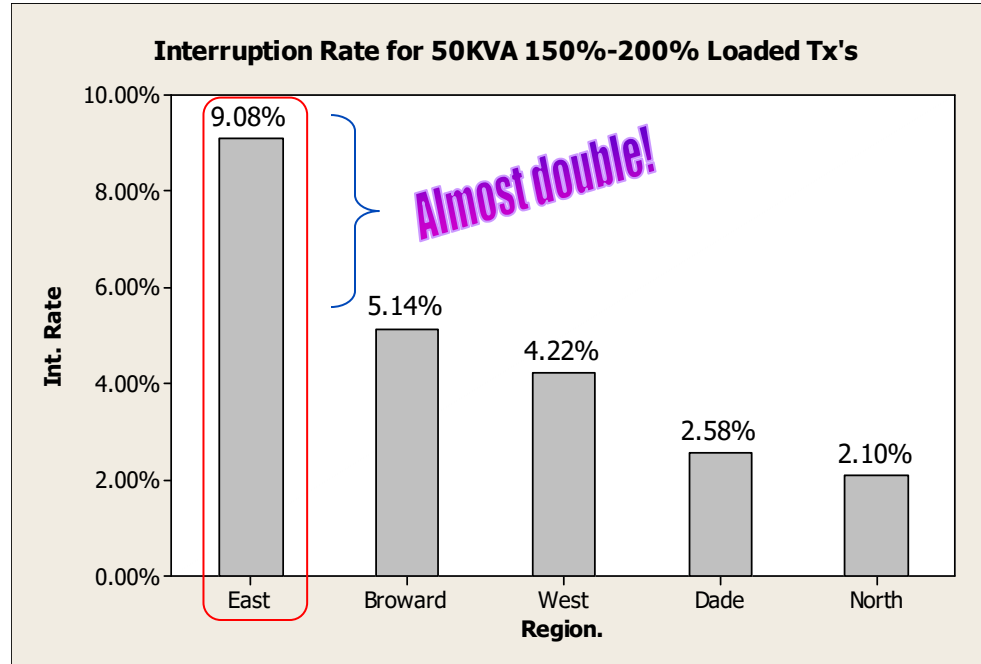
**Load accounted for the most statistically significant factor, AMI data shows that we are not predicting peaks well.**



## Issue #2

### What Regions had the most Transformer interruptions?

- 50 KVA Tx's loaded between 150% and 200% is the largest population of transformers within the high interruption-rate category highlighted in the regression model. Within this category:
  - East has 3<sup>rd</sup> lowest population of 50 KVA, 150%-200% loaded transformers but had the highest transformer interruption rate during the event



So what drove the high interruption rates in the East Region??

## Issue #2

### Do customer load characteristics differ in the East Region?

- *Non-normal data*
- *Analyzing population of 50 KVA TX's loaded 150%-200%*

**Kruskal-Wallis Test: Summer Peak versus Region**

Kruskal-Wallis Test on Summer Peak

Region	N	Median	Ave Rank	Z
BRWD	2230	81.00	3927.4	1.29
DADE	2151	80.00	3908.0	0.78
EAST	1609	80.00	3800.4	-1.52
NORTH	971	80.00	3837.2	-0.58
WEST	790	80.00	3845.3	-0.47
Overall	7751		3876.0	

H = 3.90 DF = 4 P = 0.420  
 H = 3.92 DF = 4 P = 0.417 (adjusted for ties)

*No difference*

Summer peak KVAD / TX

Customers / TX

Summer peak KVAD / Customer

**Kruskal-Wallis Test: Cust Served versus Region**

Kruskal-Wallis Test on Cust Served

Region	N	Median	Ave Rank	Z
BRWD	2230	8.000	3836.4	-0.99
DADE	2151	9.000	4121.3	5.98
EAST	1609	8.000	3188.4	-13.85
NORTH	971	10.000	4671.3	11.84
WEST	790	8.000	3742.7	-1.77
Overall	7751		3876.0	

H = 303.93 DF = 4 P = 0.000  
 H = 308.75 DF = 4 P = 0.000 (adjusted for ties)

*Fewer customers!*

**Kruskal-Wallis Test: KVAD per Cus versus Region**

Kruskal-Wallis Test on KVAD per Cus

Region	N	Median	Ave Rank	Z
BRWD	2230	9.625	3948.0	1.80
DADE	2151	9.222	3634.3	-5.89
EAST	1609	10.125	4532.6	13.22
NORTH	971	8.182	3075.5	-11.92
WEST	790	9.556	3977.5	1.35
Overall	7751		3876.0	

H = 291.84 DF = 4 P = 0.000  
 H = 291.88 DF = 4 P = 0.000 (adjusted for ties)

*Larger loads!*

**Within the high interruption-rate category, the East tends to have fewer customers per TX with larger loads per customer. This increases the probability of all customers in TX simultaneously experiencing peak demand (Coincidence Factor).**

## Issue #2

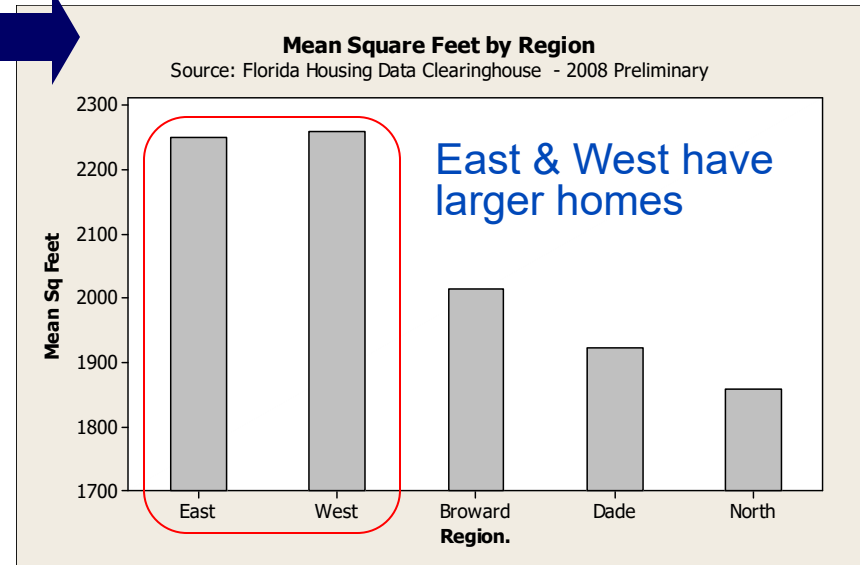
# Why do the East Region customers have larger loads?

## Mean Sq Feet by County (single-family homes)

Source: Shimberg Center - Florida Housing Data Clearinghouse 2008 Preliminary

County	Region	Single Family Mean Sq Feet	Residential Cus	PM Tx
Palm Beach	East	2,400	609,135	56,295
Broward	Broward	2,014	761,796	52,311
Miami-Dade	Dade	1,923	867,413	46,316
Lee	West	3,038	202,844	19,884
Manatee	West	2,560	148,451	13,447
Sarasota	West	1,796	220,496	18,043
Collier*	West	2,017	158,937	15,000
Brevard	North	1,717	253,131	16,460
Martin	East	1,979	83,501	8,826
Volusia	North	1,636	151,237	10,273
St. Johns	North	2,480	62,159	6,511
St. Lucie	East	1,718	99,382	6,815
Indian River	East	2,107	45,881	4,394
Charlotte	West	1,680	89,328	5,263
Seminole	North	1,945	43,079	4,136
Flagler	North	2,267	44,961	2,965
Nassau	North	2,238	15,668	1,611
Okeechobee	East	1,725	17,552	908
Columbia	North	1,921	10,653	715
DeSoto	West	1,757	12,888	762
Hendry	West	1,705	8,446	704
Putnam	North	2,042	16,840	368
Baker	North	1,807	4,182	158
Suwannee	North	1,670	4,101	145
Bradford	North	1,716	3,986	49
Union	North	1,801	1,311	37
Clay	North	2,187	703	23
Highlands	East	1,799	624	14
<b>Florida</b>	<b>FPL</b>	<b>2,017</b>	<b>3,938,685</b>	<b>292,433</b>

## Mean Sq Feet by Region



**The East & West regions tend to have larger homes which typically have larger loads.**

## Issue #2

## Coincidence Factor

- Most end use appliances are turned on and off randomly. Because of this, the probability of all customers simultaneously experiencing peak demand is small and decreases as the number of customers increases.
- Because of this, our Distribution system is designed to supply less power than the sum of individual customer peak demands.
- The ratio of peak system demand to the sum of individual customer peak demands is called Coincidence Factor.
- Significant factor during this event since the probability of all customers simultaneously experiencing peak demand is high during cold temperatures and increases as the number of customers decreases. Consequently, equipment becomes less reliable as they become more heavily loaded.

FPL DISTRIBUTION ENGINEERING REFERENCE MANUAL DATE: October 1, 2005  
 PREPARED BY: Distribution Reliability Engineering OVERHEAD LINE DESIGN TRANSFORMERS, SECONDARY, SERVICES SECTION PAGE 43.2: 14 of 25

AVERAGE CUSTOMER KWD

	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	50	66	78	87	93	97	98	98	98	99	99	99	99	99	99	99	99	99
3	47	64	74	82	87	90	93	95	97	98	98	98	98	98	98	98	98	98
4	44	60	69	75	80	84	86	88	90	91	93	95	95	95	96	97	97	97
5	40	55	64	70	74	77	80	82	83	85	86	87	88	89	89	90	90	91
6	36	50	59	65	69	72	75	76	78	79	80	81	82	83	83	84	85	85
7	32	46	55	60	64	67	70	72	73	74	75	76	77	78	79	79	80	80
8	31	43	51	56	60	63	66	68	69	70	71	72	73	74	74	75	75	76
9	28	40	48	53	57	60	62	64	65	67	68	69	69	70	71	71	72	72
10	25	37	45	50	54	57	59	61	62	63	64	65	66	67	68	68	68	69
11	23	34	42	47	51	54	56	58	59	61	62	63	64	64	65	65	66	66
12	22	32	40	45	49	51	54	55	57	58	59	60	61	61	62	62	62	63
13	21	30	38	43	46	49	51	53	55	56	57	58	58	59	59	60	60	61
14	21	28	36	41	45	47	49	51	52	54	55	55	56	57	57	58	58	59
15	20	26	34	39	43	45	48	49	51	52	53	54	54	55	56	56	56	57
16	20	25	32	37	41	44	46	48	49	50	51	52	53	53	54	54	55	55
17	20	23	31	36	40	42	44	46	47	49	50	50	51	52	52	53	53	54
18	19	22	30	35	38	41	43	45	46	47	48	49	50	50	51	51	52	52
19	19	21	28	33	37	40	42	43	45	46	47	48	48	49	49	50	50	51
20	19	20	27	32	36	38	41	42	43	45	46	46	47	48	48	49	49	50

20 CUSTOMERS WITH AN AVERAGE LOAD OF 7 KWD

COINCIDENCE FACTOR CHART  
 kWh/kWD Conversion Chart (Residential) (cont'd)

- Coincidence factor example using 80 KVAD as the baseline shown below
- Depending on # of customers and size of load, proper TX size varies

Custs	Avg. KVAD	Total KVAD	Coinc. Factor	Adj KVAD	TX Size
4	20.0	80	0.97	77.6	100
5	16.0	80	0.89	71.2	75
6	13.3	80	0.80	64.0	75
7	11.4	80	0.73	58.4	75
8	10.0	80	0.68	54.4	75
9	8.9	80	0.62	49.6	50
10	8.0	80	0.57	45.6	50
11	7.3	80	0.51	40.8	50
12	6.7	80	0.49	39.2	50
13	6.2	80	0.43	34.4	50
14	5.7	80	0.41	32.8	50
15	5.3	80	0.34	27.2	50
16	5.0	80	0.32	25.6	50
17	4.7	80	0.31	24.8	25
18	4.4	80	0.22	17.6	25
19	4.2	80	0.21	16.8	25
20	4.0	80	0.20	16.0	25

Proper application of the Coincidence Factor is very important in selecting the correct transformer size





# Issue #2

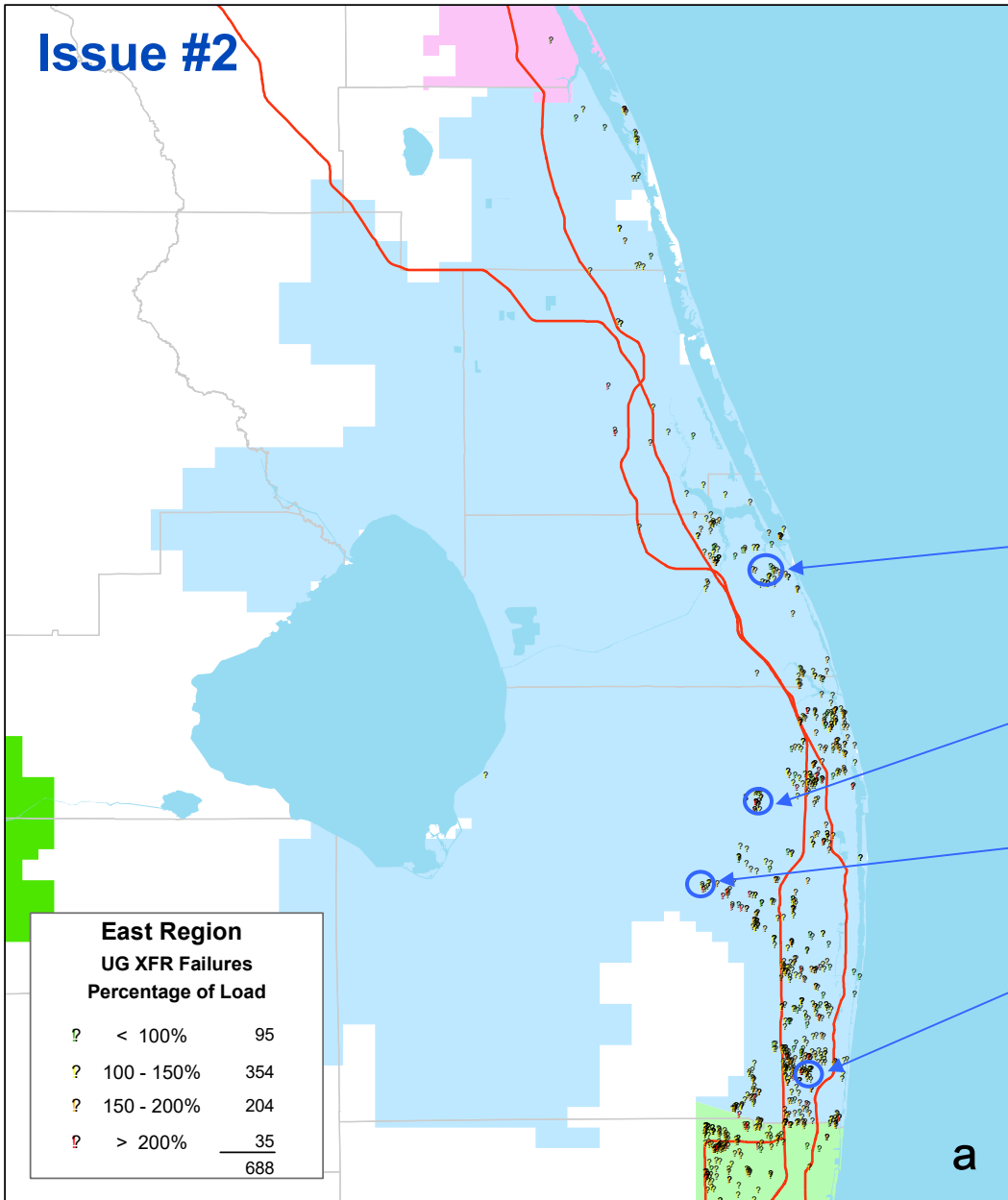
## Subdivisions with more than 1 UG Transformer Interruptions

MARINER SAND

IBIS GOLF & COUNTRY CLUB

BINKS FOREST OF THE LANDINGS

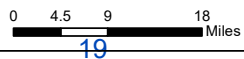
BAY POINTE OF UNIVERSITY PARK



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Cold Front Event  
 January 9-11, 2010  
 Single Phase UG XFR Outages

Interstate  
 Region  
 Broward  
 Dade  
 East  
 North  
 West



## Issue #2

### Transformer interruptions: Stuart – Martin County (East Region)



Interrupted UG transformers  
**MARINER SANDS**

## Issue #2

### Transformer interruptions: West Palm Beach – Palm Beach County (East Region)



Interrupted UG transformers  
**IBIS GOLF & COUNTRY CLUB**



## Issue #2

### Transformer interruptions: Wellington Area – Palm Beach County (East Region)



Interrupted UG transformers  
**BINKS FOREST OF THE LANDINGS**

## Issue #2

### Transformer interruptions.: Boca Raton Area – Palm Beach County (East Region)

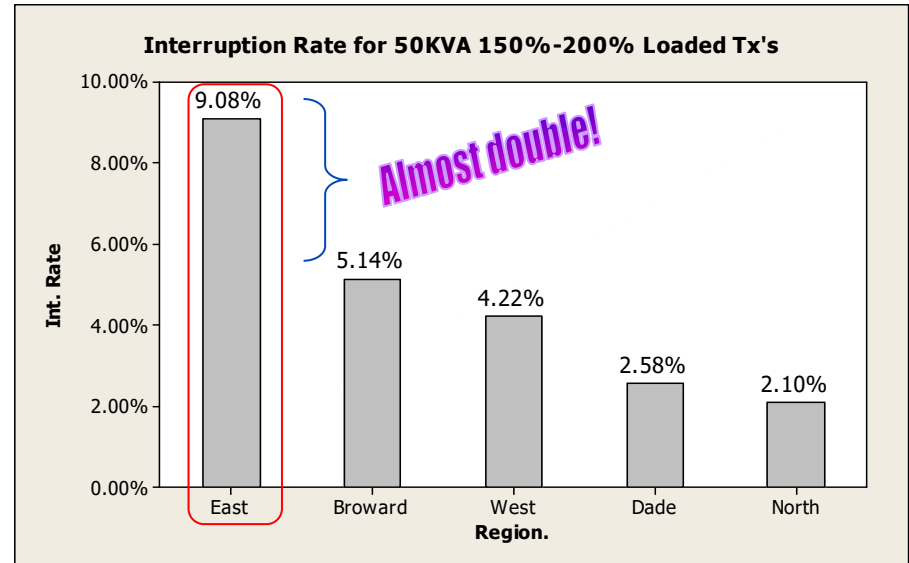


Interrupted UG transformers  
**BAY POINTE OF UNIVERSITY PARK**

# Root Cause – Padmount Transformer Failures

## Issue 2

- **East region had the highest interruption rate of all the regions.**
- Our findings show that pad mounted transformers between 50-100kva loaded at > 150% had the highest interruption rate.
  - Within this category the 50kva transformers loaded between 150-200% were the largest population.
- Analyzed population of 50kVA transformers loaded 150-200%. In the East, these transformers had:
  - An interruption rate of 9.08%; approximately double that of the remaining regions
  - Fewer customers per transformer on average than each of the other regions
  - Customers with larger loads on average than each of the other regions
  - Based on mean square footage, the East and West regions tend to have larger homes.
- Due to these factors, the probability of multiple/all customers on a transformer simultaneously experiencing peak demand increases (coincidence factor)



### Customers / TX

**Kruskal-Wallis Test: Cust Served versus Region**

Kruskal-Wallis Test on Cust Served

Region	N	Median	Ave Rank	Z
BRWD	2230	8.000	3836.4	-0.99
DADE	2151	9.000	4121.3	5.98
<b>EAST</b>	<b>1609</b>	<b>8.000</b>	<b>3188.4</b>	<b>-13.85</b>
NORTH	971	10.000	4671.3	11.84
WEST	790	8.000	3742.7	-1.77
Overall	7751		3876.0	

H = 303.93 DF = 4 P = 0.000  
 H = 308.75 DF = 4 **P = 0.000** (adjusted for ties)

*Fewer customers!*

**East Region had the highest interruption rate.**

## **Actions - Summary**

- **Developing prioritization list for East Region Transformers by using Load %, number of customers, average KVAD per customer, and KVA size and evaluate against risk. Expand to entire system.**
- **Investigate options to track and determine how long Transformers experience overloaded conditions.**
  - This characteristic can be included in the regression model to determine significance and impact to interruptions.
- **Revising AMS load calculations to incorporate available AMI data to improve accuracy of peak load calculations.**
- **Determining if Coincidence Factor is being properly applied by all Project Designers in all Regions.**
- **Confirmed auto-plat/automated engineering design applications provide correct transformer sizing in accordance to current standards.**
- **Researching comparison of original developer designs submitted versus actual homes built – determine if origination of under- or over-sizing transformers exist.**

# APPENDIX



## Replacement Cost Scenarios

### Underground transformers **Loaded >200%**

Population	Load %	Tx Size	Cost per Tx	Capital %	O&M	Capital	Total Cost
40	>200%	75 kVA	\$ 5,147	65%	\$ 72,058	\$ 133,822	<b>\$ 205,880</b>
135	>200%	75-100 KVA	\$ 5,147	65%	\$ 243,196	\$ 451,649	<b>\$ 694,845</b>
381	>200%	50 kVA	\$ 5,147	65%	\$ 686,352	\$ 1,274,655	<b>\$ 1,961,007</b>
516	>200%	50-100 KVA	\$ 5,147	65%	\$ 929,548	\$ 1,726,304	<b>\$ 2,655,852</b>
2,669	>200%	All sizes	\$ 5,147	65%	\$ 4,808,070	\$ 8,929,273	<b>\$ 13,737,343</b>

### Underground transformers **Loaded >150%**

Population	Load %	Tx Size	Cost per Tx	Capital %	O&M	Capital	Total Cost
315	>150%	75 kVA	\$ 5,147	65%	\$ 567,457	\$ 1,053,848	<b>\$ 1,621,305</b>
793	>150%	75-100 KVA	\$ 5,147	65%	\$ 1,428,550	\$ 2,653,021	<b>\$ 4,081,571</b>
8,132	>150%	50 kVA	\$ 5,147	65%	\$ 14,649,391	\$ 27,206,013	<b>\$ 41,855,404</b>
8,925	>150%	50-100 KVA	\$ 5,147	65%	\$ 16,077,941	\$ 29,859,034	<b>\$ 45,936,975</b>
21,432	>150%	All sizes	\$ 5,147	65%	\$ 38,608,676	\$ 71,701,828	<b>\$ 110,310,504</b>

*Average costs based on upgrading a 50 kVA transformer with a 75 kVA*

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **DOCKET NO. 20220051-EI**

3  
4 **FLORIDA POWER & LIGHT COMPANY**

5 **2023-2032 STORM PROTECTION PLAN**

6  
7  
8  
9 **REBUTTAL TESTIMONY OF**

10 **LIZ FUENTES**

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12  
13  
14  
15  
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24  
25 **Filed: June 21, 2022**

1 **Q. Please state your name and business address.**

2 A. My name is Liz Fuentes. My business address is Florida Power & Light Company,  
3 4200 West Flagler Street, Miami, Florida, 33134.

4 **Q. By whom are you employed and what is your position?**

5 A. I am employed by Florida Power & Light Company (“FPL” or the “Company”) as  
6 Senior Director, Regulatory Accounting.

7 **Q. Please describe your duties and responsibilities in that position.**

8 A. I am responsible for planning, guidance, and management of most regulatory  
9 accounting activities for FPL and Pivotal Utility Holdings, Inc. d/b/a Florida City Gas.  
10 In this role, I ensure that the financial books and records comply with multi-  
11 jurisdictional regulatory accounting requirements and regulations.

12 **Q. Please describe your educational background and professional experience.**

13 A. I graduated from the University of Florida in 1999 with a Bachelor of Science Degree  
14 in Accounting. That same year, I was employed by FPL. During my tenure at the  
15 Company, I have held various accounting and regulatory positions of increasing  
16 responsibility with most of my career focused in regulatory accounting and the  
17 calculation of revenue requirements. Specifically, I have filed testimony or provided  
18 accounting support in multiple FPL retail base rate filings, clause filings, and other  
19 regulatory dockets filed at the Florida Public Service Commission (“FPSC” or the  
20 “Commission”) as well as the Federal Energy Regulatory Commission (“FERC”).  
21 Most recently, I filed testimony in the Florida City Gas base rate case filing. My  
22 responsibilities have included the management of the accounting for FPL’s cost  
23 recovery clauses and the preparation, review, and filing of FPL’s monthly Earnings  
24 Surveillance Reports at the FPSC. I am a Certified Public Accountant (“CPA”)

1 licensed in the Commonwealth of Virginia and member of the American Institute of  
2 CPAs.

3 **Q. Did you previously submit direct testimony in this docket?**

4 A. No, I did not.

5 **Q. What is the purpose of your rebuttal testimony?**

6 A. The purpose of my rebuttal testimony is to respond to recommendations provided in  
7 the direct testimony of Office of Public Counsel (“OPC”) witness Lane Kollen in regard  
8 to the calculation of revenue requirements reflected in FPL’s 2023-2032 Storm  
9 Protection Plan (“2023 SPP”) submitted as Exhibit MJ-1 and as corrected by the Notice  
10 of Filing a Revised Appendix E to Exhibit MJ-1 filed on May 6, 2022. Specifically, I  
11 explain that FPL’s revenue requirement calculations reflected in its 2023 SPP are  
12 reasonable estimates consistent with the revenue requirement calculations presented in  
13 FPL’s approved 2020-2029 SPP and are not meant to be precise calculations to be  
14 relied upon to set rates. In addition, I also explain why multiple recommendations by  
15 OPC witness Kollen to modify FPL’s revenue requirement calculations should be  
16 rejected.

17 **Q. Before addressing the specific issues and recommendations raised by OPC, do you**  
18 **have any general observations regarding the revenue requirements reflected in**  
19 **FPL’s 2023 SPP?**

20 A. Yes, I do. OPC witness Kollen fails to recognize that the revenue requirement  
21 calculations required under Rule 25-6.030, Storm Protection Plan, Florida  
22 Administrative Code (“F.A.C.”) (the “SPP Rule”), are not intended to be precise  
23 calculations used to set base rates or cost recovery clause rates. Instead, the revenue  
24 requirements are estimates based on reasonable assumptions and the capital costs and  
25 operating and maintenance expenses (“O&M”) presented in FPL’s 2023 SPP. In

1 addition, the revenue requirements included in the 2023 SPP do not distinguish whether  
2 SPP costs or expenses will be requested for recovery through base rates versus the SPP  
3 cost recovery clause (“SPPCRC”) nor are they required to under the SPP Rule. The  
4 costs and expenses included in FPL’s 2023 SPP, if approved as is, are not automatically  
5 included for recovery from customers. Rather, FPL must request recovery of SPP  
6 projects in either its SPPCRC filings or as part of a base rate filing prior to their  
7 inclusion in rates.

8 **Q. Does the SPP Rule define or describe how the revenue requirements included in**  
9 **FPL’s 2023 SPP should be calculated?**

10 A. No, it does not. Unlike the Commission prescribed templates/forms for the SPPCRC  
11 and environmental cost recovery clause filings, the SPP Rule only provides that the  
12 SPP must include an “estimate of the annual jurisdictional revenue requirements for  
13 each year of the Storm Protection Plan.” See Rule 25-6.030(3)(g), F.A.C. Consistent  
14 therewith, FPL has provided revenue requirement calculations based on reasonable  
15 assumptions in order to provide an *estimate* of the total costs and expenses associated  
16 with each of its SPP programs reflected in its 2023 SPP, which are not solely based on  
17 the incremental costs for each of FPL’s SPP programs. The revenue requirement  
18 calculations reflected in FPL’s 2023 SPP are consistent with the revenue requirements  
19 reflected in FPL’s 2020-2029 SPP filing, which was approved by the Commission in  
20 Order No. PSC-2020-0293-AS-EI. In addition, OPC witness Kollen’s references to  
21 Rule 25-6.031 F.A.C., Storm Protection Plan Cost Recovery Clause (the “SPPCRC  
22 Rule”) and negotiated settlement agreements as to what should be reflected in FPL’s  
23 revenue requirement calculations are irrelevant and should be ignored.

24 **Q. OPC witness Kollen recommends on pages 21-22 of his testimony that the revenue**  
25 **requirements reflected in FPL’s 2023 SPP should reflect O&M savings and**

1           **reductions in depreciation expense from retired plant resulting from its SPP**  
2           **projects. Do you agree both items should be incorporated into the calculation of**  
3           **revenue requirements in FPL’s 2023 SPP?**

4    A.    No. First, the SPP Rule does not require FPL to incorporate any O&M savings or  
5           reduction in depreciation expense in its calculation of revenue requirements in its SPP  
6           filings. Second, as previously discussed, FPL’s revenue requirements represent  
7           reasonable estimates based on the costs and expenses for the SPP programs reflected  
8           in FPL’s 2023 SPP and are not used for ratemaking purposes. Rather, the actual SPP  
9           costs, and associated revenue requirements and rates, are reviewed and set in the  
10          applicable SPPCRC or base rate proceedings, which would include any O&M savings  
11          or reductions to depreciation expense resulting from retired plant.

12   **Q.    OPC witness Kollen states on page 22 of his testimony that FPL made an error in**  
13   **its calculation of property taxes included in its revenue requirements. Do you**  
14   **agree?**

15   A.    No, FPL did not make an error. OPC witness Kollen is correct that property taxes are  
16          typically evaluated based on property values from the prior year instead of the current  
17          year. However, as mentioned above, FPL’s calculation of revenue requirements in its  
18          2023 SPP represents reasonable estimates and are not meant to be precise calculations  
19          to be relied upon to set rates.

20   **Q.    Starting on page 21 of his testimony, OPC witness Kollen states that FPL should**  
21   **not have included a return on Construction Work in Progress (“CWIP”) in the**  
22   **calculation of its SPP revenue requirement calculations. Do you agree?**

23   A.    No, I do not. OPC witness Kollen attempts to point to Section 366.96(9), Florida  
24          Statute, and the SPPCRC Rule as a basis for what projects can and cannot earn a return,  
25          which is improper and inconsistent with traditional ratemaking. The proper reference

1 for determining how CWIP earns a return is Rule 25-6.0141, Allowance for Funds Used  
2 During Construction, F.A.C., (the “AFUDC Rule”), which recognizes that a return on  
3 CWIP balances can be achieved in either of two ways. First, CWIP projects that meet  
4 the requirements set forth in section (2)(a) of the AFUDC Rule may accrue AFUDC.  
5 Second, in the event CWIP projects do not meet the requirements to accrue AFUDC  
6 under the AFUDC Rule, they are included in rate base. Since FPL’s SPP projects do  
7 not meet the requirements to accrue AFUDC under the AFUDC Rule, FPL has included  
8 CWIP associated with these projects in its calculation of revenue requirements in the  
9 2023 SPP. This treatment is consistent with the SPP projects previously presented for  
10 recovery through FPL’s SPPCRC and approved by the Commission.

11 **Q. OPC witness Kollen recommends an alternative to a return on CWIP in rate base**  
12 **by deferring the return as a miscellaneous deferred debit and including it for**  
13 **recovery when the SPP project goes into service. Do you agree this is an**  
14 **acceptable alternative?**

15 A. No. First, this alternative is not consistent with the requirements set forth in the  
16 AFUDC Rule and is an attempt by OPC to request that the Commission add additional  
17 provisions to the SPP Rule outside of a rulemaking process. Second, from a ratemaking  
18 perspective, OPC witness Kollen is essentially recommending accrual of AFUDC for  
19 SPP projects; however, SPP projects do not qualify for accrual of AFUDC.

20 **Q. On page 25 of his testimony, OPC witness Kollen attempts to make a connection**  
21 **between a return on CWIP in rate base with prudence of SPP project costs. Do**  
22 **you agree with this connection?**

23 A. No. As I previously discussed, the basis for whether a project in CWIP should earn a  
24 return or not is based on the requirements set forth in the AFUDC Rule. It has nothing  
25 to do with whether the costs of an SPP project are prudent or not. Prudence of the costs

1 associated with FPL's SPP projects are determined by the Commission when they are  
2 presented for recovery from customers in the annual SPPCRC proceeding or in a base  
3 rate proceeding.

4 **Q. Does this conclude your rebuttal testimony?**

5 A. Yes.

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