



Matthew R. Bernier
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Duke Energy Florida, LLC

July 15, 2016

VIA ELECTRONIC FILING

Ms. Carlotta Stauffer, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: *Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Duke Energy Florida, LLC.; Docket No. 160107-EI*

Dear Ms. Stauffer:

Please find enclosed for electronic filing on behalf of Duke Energy Florida, LLC ("DEF"), DEF's Response to Staff's First Data Request (Nos. 1-12).

Thank you for your assistance in this matter. Please feel free to call me at (850) 521-1428 should you have any questions concerning this filing.

Respectfully,

s/Matthew R. Bernier

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MRB/mw
Enclosures
cc: Margo Leathers

Duke Energy Florida, LLC's Response to Staff's First Data Request
Re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342,
F.A.C., by Duke Energy Florida, LLC

Docket No. 160107-EI

1. Referring to page 6, Critical Infrastructure, please identify the locations where DEF is using its prioritization model for implementation purposes.

RESPONSE:

Duke Energy Florida ("DEF") utilizes its prioritization model for implementation of all of the projects that are submitted for possible construction on an annual basis.

2. Referring to page 7, Mitigation of Damage Due to Flooding and Storm Surges.
 - a. Please list the areas where DEF has identified underground equipment that should be replaced with overhead.

RESPONSE:

One area DEF has identified underground equipment that should be replaced with overhead is the Saddlebag Lakes community in Lake Wales. A significant portion of the Saddlebag Lakes subdivision was flooded in Hurricane Charley and remained under water for several months. Once the water receded and residents began to request electric service to their restored homes, DEF could not salvage the underground primary, secondary, or service cables, or approximately 20 pad mounted transformers, which were all damaged beyond repair by water intrusion. In lieu of the most cost effective option of overhead facilities to prevent repeat damage, at the request of customers, DEF installed underground facilities and mitigated future damage by adding 4 foot tall raised coastal configuration pedestals and waterproof secondary blocks on specific transformers where water intrusion had occurred.

At this time, DEF has not identified any specific areas to convert from underground to overhead facilities. DEF continues to utilize the Storm Surge Standard to elevate transformers and other equipment above water levels and utilize waterproof secondary connectors to prevent water intrusion. Due to the limited space in the majority of residential underground areas it is not practical to install overhead systems. In these cases, DEF's Storm Surge Standard provides reasonable mitigation to the risks associated with storm surges and other flooding events.

- b. Please list any areas where mitigation projects have been put into place to test flood mitigation techniques and devices.

RESPONSE:

The River Haven project addressed a low-lying area along the Homosassa River in Citrus County.

The St. George Island —East Side Underground Submersible Project entailed converting all of the UG on the east end of the island.

- i. Will each selected project site test all of the items listed on page 7?

RESPONSE:

Yes.

- ii. If no, please list the items to be tested per project site and why the items were selected for the project site.

RESPONSE:

N/A

3. Referring to page 7, Mitigation of Damage Due to Flooding and Storm Surges, has DEF learned any lessons from the St. George Island Project? If yes, please provide an explanation for the lessons learned.

RESPONSE:

There have not been any weather events of significant enough scale to test the installed equipment.

4. Referring to page 13, Prioritization Model Questions, how is the Customers Experiencing Longest Interruption Duration (CELID) calculated and used?

RESPONSE:

CELID is calculated by taking the 3 year average CI (customers interrupted) that experience an outage longer than 3 hours for the feeder of a requested project. This reduction is then used as a percentage of the potential benefit of planned projects and is a part of the ranking system within the prioritization model.

5. On page 14, Prioritization Model Questions, DEF reported that the questions used in its prioritization model are assigned a numerical value.

a. Do all of the questions have the same range of numerical values?

RESPONSE:

No.

b. Are all of the questions weighted the same?

RESPONSE:

No.

c. If no to either 5(a) or 5(b), please list the questions in order of highest or most important. Include the numerical value range and how the questions are weighted.

RESPONSE:

QUESTION	RANGE OF VALUES	% OF WHOLE
How many critical infrastructure components (lift stations, shelters, hospitals, police, etc...) does this project address?	0-1	16.00%
How many customers are served from the upstream protective device?	0-1	8.75%
What will be the impact of this project on the restoration time during a major storm?	0, 0.5 ,1	8.75%
What is the 3-year average number of CMI on this feeder?	0-1	7.50%
What is the construction Cost per foot?	0-1	7.50%
What is the construction Cost per customer?	0-1	7.50%
At what level of hurricane will the area served by this feeder flood due to storm surges?	0, 0.25, 0.5, 0.75, 1	7.00%
What is the 3-year average number of CEMI4 customers on this feeder?	0-1	6.25%
What is the 3-year average number of CELID CI on this feeder?	0-1	6.25%
What is the tree density in the area served by this feeder or section?	0, 0.33, 0.66, 1	5.25%
What level of tree damage will this project mitigate during a major storm?	0, 0.25, 0.5, 0.75, 1	5.25%
How valuable will the project be perceived by the community?	0, 0.25, 0.5, 0.75, 1	4.00%
What are the major obstacles/risks for completing the project? i.e. easements, permits, etc.	0, 0.5 ,1	4.00%
What is the change in the annual CAIDI that this project will result in (on the feeder or section)?	0-1	2.50%
Will this project reduce the number of momentary customer interruptions on this section?	0, 1	2.50%
What type of investment is required by joint users (telecoms and cable) to complete this project?	0.25, 0.5, 0.75, 1	1.00%

6. Referring to pages 15 through 16, 2016-2018 Distribution Storm Hardening Projects.

- a. Are any of the listed projects Critical Infrastructure (CIF) projects? If yes, please identify those projects.

RESPONSE: Yes.

Reddick Ph1, Ph2, and Ph3 – Feeder A35 provides a tie feeder to feeder A203, which currently feeds the Lowell Correctional Institute and Marion Correctional Institute.

K4426 on Bay Hill K74 – Feeder K74 feeds a water plant.

Feeder tie Deltona east W0124 to W0123 DL-SH-174 – Feeder W0124 feeds a water treatment plant, a shelter, and 4 lift/pump stations.

Airport Rd 2/3 and 3/3 – Feeder K542 feeds a water treatment plant.

Floral City Phase 1 and Phase 2 – Feeder A87 feeds the Floral City EMS, a shelter, and 2 fire stations.

6358879 off TS Wilson Road – Feeder K104 feeds a retail distribution center and a water plant.

K55 Reconductor – Feeder K55 feeds a water plant and a lift/pump station.

Lake Maitland Terrace Reliability- UG Conversion – Feeder W0087 feeds 2 OMS locations, 11 lift/pump stations, and 3 police/fire stations.

Apalachicola N58 - Feeder upgrade – Feeder N58 feeds a police/fire station.

Indian Pass N556 Reconductor - Phase 1 & 2 – Feeder N556 feeds 2 police/fire stations.

15th Ave S Feeder Tie between 37th St S and 49th St S – Feeder X146 feeds a nursing home and a Shelter.

Tilden to Stoneybrook Feeder Tie – Feeder K3283 feeds 2 lift/pump stations and a water treatment plant, and Feeder K1104 feeds 3 lift/pump stations.

Ingram Road Reconductor – Feeder M346 feeds 3 lift/pump stations.

b. Please provide an estimated start and completion date for the projects planned for 2016 through 2018.

RESPONSE:

Op Center	Project Name	Sub Category	Status	Region
Saint Petersburg	15th Ave S Feeder Tie between 37th St S and 49th St S	Feeder Tie	Planned 2018 Completion	South Coastal
Highlands	Lakeview Dr. Reconductor	Feeder Tie	Planned 2017 Completion	South Central
Buena Vista	K4426 on Bay Hill K74	Feeder Tie	Planned 2018 Completion	South Central
Highlands	Airport Rd 2/3	Feeder Tie	Planned 2017 Completion	South Central
Highlands	Airport Rd 3/3	Feeder Tie	Planned 2018 Completion	South Central
Lake Wales	K55 Reconductor	Feeder Tie	Planned 2018 Completion	South Central

Clermont	Suburban Terrace Small Wire Reconductor	Small Wire	Planned 2018 Completion	South Central
Winter Garden	Tilden to Stoneybrook Feeder Tie	Feeder Tie	Planned 2017 Completion	South Central
Winter Garden	Ingram Road Reconductor	Feeder Tie	Planned 2017 Completion	South Central
Longwood	Lake Maitland Terrace Reliability- UG Conversion	OH-to-UG Conversion	Planned 2017 Completion	North Central
Jamestown	Cleburne Rd	Small Wire	Planned 2017 Completion	North Central
Apopka	Feeder tie Lockhart M408- M412 to Eatonville M1137	Feeder Tie	Planned 2017 Completion	North Central
Deland	Feeder tie Deltona east W0124 to W0123	Feeder Tie	Planned 2017 Completion	North Central
Apopka	Feeder tie Zellwood M31- M32	Feeder Tie	Planned 2017 Completion	North Central
Monticello	Indian Pass N556 Reconductor - Phase 1	Feeder Tie	Planned 2017 Completion	North Coastal
Monticello	Indian Pass N556 Reconductor - Phase 2 Extreme Wind	Alternative NESC Construction Standards (Extreme Wind)	Planned 2018 Completion	North Coastal
Ocala	Reddick A35 - Phase 1	Feeder Tie	Planned 2017 Completion	North Coastal
Ocala	Reddick A35 - Phase 2	Feeder Tie	Planned 2018 Completion	North Coastal
Ocala	Reddick A35 - Phase 3 Extreme Wind	Alternative NESC Construction Standards (Extreme Wind)	Planned 2018 Completion	North Coastal
Ocala	Micanopy - Recond #4 Al along SE 199th Ave	Small Wire	Planned 2017 Completion	North Coastal

Ocala	NW 63rd St., Kendric reconductor #4 to 1/0 AAAC	Small Wire	Planned 2017 Completion	North Coastal
Ocala	Oklawaha - CR 464C reconductor	Small Wire	Planned 2017 Completion	North Coastal
Ocala	Martin - Recond #6 cu on NW 100th St.	Small Wire	Planned 2017 Completion	North Coastal
Ocala	Weirsdale - Recond SE 175th St	Small Wire	Planned 2018 Completion	North Coastal
Lake Wales	6358879 off TS Wilson Road	Small Wire	Planned 2017 Completion	South Central
Monticello	Apalachicola N58 - Feeder upgrade	Feeder Tie	Planned 2017 Completion	North Coastal
Inverness	Floral City Reconductor	Feeder Tie	Planned 2018 Completion	North Coastal
Clearwater	C4 Clearwater Beach Reconductor	Small Wire	Planned 2019 Completion	South Coastal
Clearwater	Belleair C1005 Brookhill Terrace Subdivision	Small Wire	Planned 2019 Completion	South Coastal
St Petersburg	City of St Pete Beach - Pass a Grille - Phase 1	Submersible UG	Planned July 2016 start and complete December 2016	South Coastal

*DEF generally plans to begin a project in the same year of the planned completion. Specific timelines have not yet been established for future years.

- c. Please complete the table below describing all distribution feeder hardening projects. Please provide this information for the years 2007 through 2018.

RESPONSE:

	O&M Cost	Capital Cost	Total Cost
2007	N/A	N/A	N/A
2008	\$ 119,885	\$ 4,386,705	\$ 4,506,590
2009	\$ 24,070	\$ 3,604,704	\$ 3,628,774
2010	\$ 23,901	\$ 3,757,200	\$ 3,781,101
2011	\$ 63,115	\$ 3,280,108	\$ 3,343,215
2012	\$ 236,583	\$ 4,708,598	\$ 4,944,961

2013	\$ 287,436	\$ 4,186,640	\$ 4,474,085
2014	\$ 322,097	\$ 6,317,922	\$ 6,640,019
2015	\$ 205,775	\$ 9,282,893	\$ 9,488,668
2016	\$ 255,491	\$ 4,800,000	\$ 5,055,491
2017	\$ 319,363	\$ 6,000,000	\$ 6,319,363
2018	\$ 425,818	\$ 8,000,000	\$ 8,425,818
2019	\$ 447,109	\$ 8,400,000	\$ 8,847,109
Total	\$ 2,730,642	\$ 66,724,551	\$ 69,455,193

- * DEF does not have costs for 2007.
- ** DEF does not have the cost per project available prior to 2011.
- *** Cost per project is only available on a capital basis (see below). Please note that projects from 2011 to 2015 indicate ALL of the projects that are part of the DEF Storm Hardening plan, not just the Pilot projects.
- **** Multi-year projects may have negative charges in some years of the project due to end of year accruals that are part of Generally Accepted Accounting Principles (GAAP). ***** 2016 and beyond only indicate Storm Hardening Pilot projects, as the entire work plan has not yet been established.
- ***** Orange highlight indicates year-end projections as of June 27, 2016.

2011 Projects

2011 Storm Hardening Spending - Capital Only

Storm Hardening - NCO	\$ 48,134
Storm Hardening - SCO	\$ 56,724
Storm Hardening - NCR	\$ 258,017
Storm Hardening - SCR	\$ 79,100
Sun Parkway	\$ 139,760
Eiland Blvd	\$ 90,165
Eustis 441	\$ 23,112
Millinockett	\$ 66
Marion Loop	\$ 2,131
Dinner Lake	\$ 10,019
22nd St	\$ 177,352
Conn Ave Reconductor	\$ 270,826
Madison	\$ 71,401
St. George	\$ 211,685
I4-Cross	\$ 102,337
Feeder	\$ 148,793
I4-Darth	\$ 55,866
22Nd Ave	\$ 342,797
Wekiva P	\$ 114,528
N67	\$ 392,426
Sail Dr.	\$ 100,003
Vulcan Feeder	\$ 4
Loughman	\$ 132,440
Dallas Blvd	\$ 288
Black Hammock	\$ (59)

9Th St. So	\$ 63,310
Feeder Tie SCR	\$ 63,192
Rouse Rd.	\$ 279,934
UG Crossing	\$ (271)
C140 C141	\$ 4,846
K206-K3285	\$ 1,390
Seminole Brg	\$ 4,274
Vulcan Rd	\$ 112
St George	\$ 116
All Point	\$ 28,564
SR 417@ Chapman	\$ (276)
Rouse Rd.	\$ 4,036
Pebble Beach	\$ 2,966
Total	\$3,280,108

2012 Projects

2012 Storm Hardening Spending - Capital Only

Storm Hardening - NCO	\$ 2,173
Storm Hardening - SCO	\$ 399,021
Storm Hardening - NCR	\$ 120,635
Storm Hardening - SCR	\$ 31,632
22Nd St (Carried Over From 2011)	\$ (41,137)
Conn Ave Reconductor (Carried Over From 2011)	\$ 68,632
St. George 2011 (Closed)	\$ 1
I4-Cross (Closed)	\$ 3,415
22nd Ave (Carried Over From 2011)	\$ (87,638)
N67 (Carried Over From 2011)	\$ 109,983
Sail Dr. (Carried Over From 2011)	\$ (43,460)
Vulcan Feeder (Carried Over From 2011)	\$ (1)
9th St. So (Carried Over From 2011)	\$ 184,554
Feeder Tie SCR (Carried Over From 2011)	\$ (13,892)
Rouse Rd. (Carried Over From 2011)	\$ (50,830)
UG Crossing	\$ (4)
C140 C141 (Carried Over From 2011)	\$ 63,471
K206-K3285	\$ 131,971
Vulcan Rd (Carried Over From 2011)	\$ 985,366
St George 2012 Proj	\$ 413,385
All Point (Carried Over From 2011)	\$ (28,564)
SR 417@ Chapman (Carried Over From 2011)	\$ (3)
Pebble Beach (Carried Over From 2011)	\$ 91,831
Jungle Prada	\$ (55,030)
Dallas Blvd	\$ (810)
Alligator Pt	\$ 232,571
W808 Fdr Tie	\$ 306,937
Cassadaga Rd	\$ 73,160

Econ Backlot	\$ 175,377
Fort Meade	\$ 182,494
Lake Picket	\$ (6,624)
Orla Vista	\$ (1,400)
Rouse Rd. (Carried Over From 2011)	\$ (4,711)
Dirksen Rd	\$ 252,544
Duncan Trail	\$ 231,816
Fox Valley	\$ 236,077
Dinner Lake (Carried Over From 2011)	\$ 17,506
Wekiva Cove	\$ 84,310
Madison (Carried Over From 2011)	\$ 6,565
Buck Hill	\$ 112,611
Dallas Blvd (Carried Over From 2011)	\$ 269,928
Convent Ctr/14	\$ 34,138
Chapman Rd	\$ 130,005
Monterey Blvd	\$ 9,392
Alligator Pt2	\$ 28,749
K1884 & K55	\$ 5,061
C342-C343	\$ 2,464
St. George 2013 Proj	\$ 171
Storm Hardening I4 Crossing	\$ 44,451
Black Hammock	\$ 90
22Nd St	\$ 215
Total	\$4,708,598

2013 Projects

2013 Storm Hardening Spending - Capital Only

Storm Hardening - NCO	\$ 41,755
Storm Hardening - SCO	\$ (10,874)
Storm Hardening - NCR	\$ 235,715
Storm Hardening - SCR	\$ 15,861
N67 (Carried Over From 2012)	\$ 219
22Nd Ave (Carried Over From 2012)	\$ 4,268
Sail Dr.	\$ -
Dallas Blvd (Carried Over From 2012)	\$ 100,780
C140 C141 (Carried Over From 2012)	\$ 123,024
Vulcan Rd	\$ (663,100)
Buck Hill (Carried Over From 2012)	\$ 5,373
Dirksen Rd (Carried Over From 2012)	\$ 299,252
Dinner Lake (Carried Over From 2012)	\$ 18,052
Pebble Beach (Carried Over From 2012)	\$ 79,784
Chapman Rd (Carried Over From 2012)	\$ 102,760
St George 2012 Proj (Carried Over From 2012)	\$ 31,828
34Th Ave	\$ 505,277
Fox Valley (Carried Over From 2012)	\$ 5,576

W808 Fdr Tie (Carried Over From 2012)	\$ 579
Duncan Trail (Carried Over From 2012)	\$ 1,100
Convent Ctr/14 (Carried Over From 2012)	\$ 36,370
I4 Crossing	\$ 26,278
Wekiva Cove Rd - Part 2 (Carried Over From 2012)	\$ (12,804)
Fort Meade (Carried Over From 2012)	\$ (1,982)
Alligator Point Extreme Wind - Part 2 (Carried From 2012)	\$ 471,158
Cordova Blvd. Ne	\$ 117,659
22nd St. S (Carried Over From 2012)	\$ 312,557
1St St. N	\$ 149,187
A284 - Citrus Spgs - Loop UG Fdr	\$ 101,888
K1884 & K55 Feeder Tie (Carried Over From 2012)	\$ 263,460
C342 - C343 Feeder Tie (Carried Over From 2012)	\$ 217,006
St. George Island UG Submersible	\$ 7,126
Denver St. NE	\$ 222,714
Us Hwy 19 Across Rr Tracks	\$ 4,442
St. Petersburg Beach Substation	\$ 144,978
SR 545 Feeder Tie K3283 To K205	\$ 254,903
Feeder Tie Bonnett Creek K975 To Celebration K2701	\$ 139,765
Us Hwy 90 Feeder Relocation	\$ 89,252
Seneca Blvd.	\$ 243,271
North Tanner Road Backlot Conversion	\$ 112,355
Winter Springs Blvd	\$ 160,556
I4 Crossing @ Dixon	\$ 4,568
I4 Crossing @ North St	\$ 60,879
Conn Ave Reconductor (Carried Over From 2012)	\$ 7,945
K206 - K3285	\$ 667
SCR Feeder Tie	\$ 16,972
Rouse Rd (Carried Over From 2012)	\$ 15,554
Econ Backlot (Carried Over From 2012)	\$ 12,041
Econ Trail	\$ (5,418)
CR 455 Crossing	\$ 117,213
9Th St So (Carried Over From 2012)	\$ (15,813)
Greenwood Gardens Reliability	\$ 966
Accuff Rd	\$ 1,094
Monastery I4 OH-UG	\$ 5,194
Storm Hardening Feeder Tie	\$ 7,410
Total	\$ 4,186,640

2014 Projects

2014 Storm Hardening Spending - Capital Only

Base-Storm Hardening	\$ 269,597
NCR-Base-Storm Hardening	\$ (50,062)
SCR-Base-Storm Hardening	\$ 1,783
Vulcan Rd (Carried Over From 2013)	\$ 3,893
Cr455 Xing (Carried Over From 2013)	\$ 4,717
Dirksen Rd (Carried Over From 2013)	\$ 121,783
Monterey Blvd (Carried Over From 2013)	\$ (136,375)
Alligator Point Extreme Wind - Part 2 (Carried Over From 2013)	\$ 172,171
1St St N (Carried Over From 2013)	\$ 642,395
Denver St Ne (Carried Over From 2013)	\$ 339,925
St Petersburg Beach Substation (Carried Over From 2013)	\$ 13,098
C342-C343 (Carried Over From 2013)	\$ 598,075
SR 545 Fdr Tie K3283 To K205 (Carried Over From 2013)	\$ (44,555)
Winter Springs Blvd (Carried Over From 2013)	\$ (531)
North Tanner Rd Backlot Conv (Carried Over From 2013)	\$ 30,537
Feeder Tie Btwn A68&A49	\$ 217,876
M451 To M453 Feeder Tie	\$ 402,163
Greenwood Gardens Reliability (Carried Over From 2013)	\$ 12,798
Accuff Rd (Carried Over From 2013)	\$ 30,711
Shore Acres Bridge	\$ 10,513
Minneola Feeder Tie	\$ 641,025
Mar Lisa Cove Dr	\$ 168,217
Monastery I4 OH-UG (Carried Over From 2013)	\$ 98,191
Feeder Tie (A38 & A204 In NCO)	\$ 821,711
Cordova Blvd (Carried Over From 2013)	\$ 139,718
I4 Cross No	\$ 484
Tall Oak Tri	\$ 200,657
Chapman Rd (Carried Over From 2013)	\$ (1,907)
Hickory Tree Rd Holopaw	\$ 482,781
US 19 RR Track	\$ 145,846
I4 Crossing @ Dixon (Carried Over From 2013)	\$ (297)
Apopka Blvd Feeder Tie	\$ 123,533
Feeder Tie Plymouth	\$ 323,636
Storm Hardening - Orlavista	\$ 267,638
Feeder Tie Lake Helen	\$ 89,896
Storm Hardening- Lake O'Lakes	\$ 469
Reconductor Plymouth	\$ 6,763
WO255 OH/UG Conv.	\$ 66,219
2015 SH Carabella Beach	\$ 21,211
2015 SH-Maximo X146 Reconductor	\$ 21,762
Reconductor Plymouth M707	\$ 58,003
2015 SH-Crump Rd.	\$ 668
2015 SH Fort White A20 Rebuild To 2	\$ 1,009
2015 SH - 16Th St. X43/X46 Reconductor	\$ 177
Total	\$ 6,317,922

2015 Projects

2015 Storm Hardening Spending - Capital Only

Base-Storm Hardening	\$ 840,138
1St St N (Carried Over From 2014)	\$ 6,992
Us 19 Rr Trk (Carried Over From 2014)	\$ 4,773
C342-C343 (Carried Over From 2014)	\$ 82,954
M451 To M453 Feeder Tie (Carried Over From 2014)	\$ 17,484
Greenwood Gardens Reliability (Carried Over From 2014)	\$ (734)
Hickory Tree Rd Holopaw (Carried Over From 2014)	\$ 54,343
Shore Acres Bridge (Carried Over From 2014)	\$ 184,291
Minneola Feeder Tie (Carried Over From 2014)	\$ 436,296
Tall Oak Tr (Carried Over From 2014)	\$ (12,610)
Feeder Tie Plymouth (Carried Over From 2014)	\$ (3,277)
Apopka Blvd Feeder Tie (Carried Over From 2014)	\$ 282,138
Reconductor Plymouth M707 (Carried Over From 2014)	\$ 168,434
East Ave Reconductor	\$ 95,162
Orlavista (Carried Over From 2014)	\$ 124,635
Feeder Tie	\$ 222,070
Lake O'Lakes (Carried Over From 2014)	\$ 409,531
2015 SH Tiny Rd Reconductor	\$ 653,042
2015 SH New Independence Feeder Tie	\$ 506,146
2015 SH Carabella Beach (Carried Over From 2014)	\$ 1,244,427
2015 SH - 16Th St. X43/X46 Reconduc	\$ 3,583
2015 SH-Maximo X146 Reconductor (Carried Over From 2014)	\$ 131,108
Feeder Tie Lake Helen (Carried Over From 2014)	\$ 52,695
Deltona East W0124 Feeder	\$ 163,281
2015 SH-Crump Rd. (Carried Over From 2014)	\$ 402,395
2015 SH-Ft. White A20 Rebuild	\$ 205,843
2015 SH Hickory Tree Rd Reconductor	\$ 472,496
Feeder Tie Btwn A68&A49 (Carried Over From 2014)	\$ 6,987
2015 SH - Us27 & Avon Par	\$ 199,586
2015 SH - Highland C2807 Weak Link	\$ 176,851
WO255 OH/UG Conv. (Carried Over From 2014)	\$ 20,467
2015 SH Fort White A20 Rebuild To 2 (Carried Over From 2014)	\$ 233,533
2015 SH - St Marks N336 W	\$ 520,048
2015 SH Rolling Hills	\$ 191,520
Reconductor Plymouth (Carried Over From 2014)	\$ 112,400
2015 SH - Ochlockonee N38	\$ 11,217
2015 SH - Reams Feeder Tie	\$ 162,954
2015 SH - Brooker Creek C	\$ 7,207
Accuff Rd (Carried Over From 2014)	\$ 1,376
2015 SH - Feeder Tie Eustis	\$ 189,939
2015 SH Fdr Tie Cassadaga to Lake Helen	\$ 109
2015 SH - Reconductor Plymouth	\$ 83,650
2015 SH Canter Club Trail	\$ 180,583

Storm Hardening N67 (Carried Over From 2014)	\$ (4,857)
Mar Lisa Cove Dr (Carried Over From 2014)	\$ (10,729)
2015 SH - Oakland Ave Fee	\$ 282,222
2015 SH - Maximo X149 4/0	\$ 21
2015 SH - Oviedo W0172 Lo	\$ 57,108
2016 SH - Hartwood Marsh Rd Feeder	\$ 2,179
2016 SH - Hickory Tree Rd Ph 3	\$ 24,895
2016 SH - Hickory Tree Rd Ph 4	\$ 25,487
2016 SH - Pilsbury To 32Nd St -Perm	\$ 11,555
2016 SH - Durfey Ave - DI-Sh-176	\$ 2,310
2016 SH - Ocala - SE 64th Ave Rd	\$ 11,873
2016 SH - Floral City Ph 1	\$ 3,760
2016 SH - Old Sanford Oviedo Rd	\$ 882
2016 SH - Lake Berge Dr	\$ 29,923
2016 SH - Vinoy X72 Reconstructor	\$ 201
Total	\$ 9,282,893

2016 Projects

Project Name*	Sub Category	Status	Project Cost
Reams Feeder Tie K1110 to K789	Feeder Tie	Planned 2016 completion	\$ 400,000
Land O'Lakes - Denham Feeder Tie - Phase 1 of 3	Feeder Tie	Planned 2016 completion	\$ 617,900
City of St Pete Beach - Pass a Grille - Phase 1	Submersible UG	Planned 2016 Completion	\$ 735,000

2017 Projects

Project Name	Sub Category	Status	Project Cost
6358879 off TS Wilson Road	Small Wire	Planned 2017 Completion	\$ 75,000.00
Airport Rd 2/3	Feeder Tie	Planned 2017 Completion	\$ 323,085.00
Apalachicola N58 - Feeder upgrade	Feeder Tie	Planned 2017 Completion	\$ 300,000.00
Cleburne Rd	Small Wire	Planned 2017 Completion	\$ 95,250.00

* The Reams Feeder Tie and Land O'Lakes Denham Feeder Tie projects were included in DEF's 2013-2015 Storm Hardening Plan, and therefore are not discussed in response to question 6b.

Feeder tie Deltona east W0124 to W0123	Feeder Tie	Planned 2017 Completion	\$ 296,000.00
Feeder tie Lockhart M408-M412 to Eatonville M1137	Feeder Tie	Planned 2017 Completion	\$ 225,000.00
Feeder tie Zellwood M31-M32	Feeder Tie	Planned 2017 Completion	\$ 250,000.00
Ingram Road Reconductor	Feeder Tie	Planned 2017 Completion	\$ 226,974.00
Lake Maitland Terrace Reliability-UG Conversion	OH-to-UG Conversion	Planned 2017 Completion	\$ 56,759.00
Lakeview Dr. Reconductor	Feeder Tie	Planned 2017 Completion	\$ 501,410.00
Martin - Recond #6 cu on NW 100th St.	Small Wire	Planned 2017 Completion	\$ 80,500.00
Micanopy - Recond #4 Al along SE 199th Ave	Small Wire	Planned 2017 Completion	\$ 98,000.00
NW 63rd St., Kendrick reconductor #4 to 1/0 AAAC	Small Wire	Planned 2017 Completion	\$ 101,200.00
Oklawaha - CR 464C reconductor	Small Wire	Planned 2017 Completion	\$ 81,765.00
Reddick A35 - Phase 1	Feeder Tie	Planned 2017 Completion	\$ 600,000.00
Tilden to Stoneybrook Feeder Tie	Feeder Tie	Planned 2017 Completion	\$ 466,016.20

2018 Projects

Project Name	Sub Category	Status	Project Cost
15th Ave S Feeder Tie between 37th St S and 49th St S	Feeder Tie	Planned 2018 Completion	\$ 203,000.00
Airport Rd 3/3	Feeder Tie	Planned 2018 Completion	\$ 232,336.00
Floral City Reconductor	Feeder Tie	Planned 2018 Completion	\$ 1,200,000.00

Indian Pass N556 Reconductor - Phase 1	Feeder Tie	Planned 2018 Completion	\$ 450,000.00
Indian Pass N556 Reconductor - Phase 2 Extreme Wind	Alternative NESC Construction Standards (Extreme Wind)	Planned 2018 Completion	\$ 600,000.00
K4426 on Bay Hill K74	Feeder Tie	Planned 2018 Completion	\$ 214,788.00
K55 Reconductor	Feeder Tie	Planned 2018 Completion	\$ 756,444.00
Reddick A35 - Phase 2	Feeder Tie	Planned 2018 Completion	\$ 400,000.00
Reddick A35 - Phase 3 Extreme Wind	Alternative NESC Construction Standards (Extreme Wind)	Planned 2018 Completion	\$ 400,000.00
Suburban Terrace Small Wire Reconductor	Small Wire	Planned 2018 Completion	\$ 67,870.00
Weirsdale - Recond SE 175th St	Small Wire	Planned 2018 Completion	\$ 72,250.00

2019 Projects

Project Name	Sub Category	Status	Project Cost
Belleair C1005 Brookhill Terrace Subdivision	Small Wire	Planned 2019 Completion	\$ 157,420.00
C4 Clearwater Beach Reconductor	Small Wire	Planned 2019 Completion	\$ 305,160.00

7. Referring to page 17, 2016-2018 Distribution Storm Hardening Projects, as reported in the examples of the hardening projects, will DEF always notify the town and/or communities of the proposed storm hardening projects?

RESPONSE:

In 2015 DEF implemented a communication process for all large projects. Prior to project commencement, impacted communities and/or the town are notified of the

impending project. Additional details are available upon request through the community's Government and Community Relations managers.

8. Referring to pages 17 through 27, 2016-2018 Transmission Storm Hardening Projects.

a. Please provide an estimated start and completion date for the projects planned for 2016 through 2018.

RESPONSE:

Description	Estimated CMI	Estimated SISD	Project Type
0600010_ICLW-61to63_ERNIE CALDWELL BLVD._POLK	3/8/2013	10/19/2016	Governmental
230kV PS-94 431081 Wekiva Pkwy at the Y interchange	4/8/2015	11/7/2016	Governmental
238422-1-52-01 US 27 Boggy Marsh Rd to Lake Louisa Rd	1/1/2015	10/28/2016	Governmental
416561-2-52-01; SR 54 from eo CR 577 to eo CR 579 (Morris Bridge Rd)	1/27/2014	4/20/2017	Governmental
432586-1-52-01_ANL-137 to ANL-139_LANE & INTER IMPROV_PINELLAS	11/2/2015	8/23/2016	Governmental
69kV EP 431081 Wekiva Pkwy at US441 and SR 46	6/6/2016	7/28/2017	Governmental
69kV BK 431081 Wekiva Pkwy at the Y interchange	4/8/2015	4/29/2016	Governmental
69kV TMS-89 & -90 412994; Sunrail Phase II, Meadow Woods Park and Ride Station	TBD	TBD	Governmental
BCF-353 to BCF-355, CR 468 / US301 Widening, Sumter	8/31/2015	5/17/2017	Governmental
BK (non-comp) 69kV Wekiva Pkwy_OOCEA 431081-1-32-01 OrangeCo	4/8/2015	5/2/2016	Governmental
BK Removal (non-comp) 69kV Wekiva Pkwy OOCEA (CFX)	TBD	12/31/2017	Governmental
BK Removal 69kV Wekiva Pkwy OOCEA 431081-1-32-01 Orange Cnty	TBD	12/31/2017	Governmental

CR-468 / US301 TO CR 505 WIDENING	8/31/2015	5/17/2017	Governmental
CRB & CSB- Suncoast Pkwy 2 -CR 490 Cross Over -FPID 405270-4	2/1/2016	8/25/2017	Governmental
Desoto City Sub to Desoto City Tap Permit T-316 Tractor Rd	9/2/2013	11/26/2013	Governmental
DR-36 to DR-94 238648-1 Marion SR45	TBD	12/31/2016	Governmental
DR-90 to DR-98 238720-1-52-01 Marion SR40; SR45/US41 to CR328	TBD	TBD	Governmental
DWB,410251-1-52-01, Volusia Co, SR 15/US 17	TBD	12/31/2016	Governmental
FTO FTO-141 415030-1-38-01 SEMINOLE CO. SR426/CR419 WIDENING	TBD	12/31/2018	Governmental
GH-37 to 38_61st ST. @ 20th Ave.INTER. IMPROV._ALACHUA	3/8/2013	12/21/2016	Governmental
GW- NC 230kV, HD115kV PINELLAS CO SR690 FPID#413622-2-52-01	8/24/2015	11/8/2016	Governmental
HCR-12 115kV; 405822-2-52-01; SR 55 (US 19) from N of West Green Acres St to N of West Jump Ct; Road Widening, Improvements & Drainage	5/10/2016	5/16/2016	Governmental
HT-39, -40 & -42; 405822-3-52-01 SR 55 from Jump Ct to W Fort Island Trail (SR 44)	TBD	12/31/2017	Governmental
LC ## 238395-5-52-01 Lake SR500 Lake Ella to Avenida Central	TBD	TBD	Governmental
RW-87 to RW91_ALL ABOARD FLA._ORANGE	12/7/2015	6/27/2017	Governmental
SLE 69kV relocation for Kennedy Blvd widening (Orange Cnty)	5/2/2016	3/28/2017	Governmental
SLM 69kV relocations for Kennedy Blvd widening (Orange Cnty)	4/6/2018	5/22/2018	Governmental
TZ 69KV Rel. 256339-2-52-01,SR 54-Meadowbrook to US 41,Pasco	TBD	12/31/2016	Governmental

WF- 63-77 69kV, Dean Rd Widening. 00198-31 Orange County	11/21/2016	12/30/2016	Governmental
WO 69kV relocation for Kennedy Blvd widening (Orange Cnty)	4/6/2018	5/22/2018	Governmental
WO 69kV Underground Relocation on Fairbanks Avenue	11/2/2015	4/21/2017	Governmental
WO-230 to WO-232_Galloway Dr Improvement_Seminole_PW2012-009	1/1/2015	2/2/2017	Governmental
WR 69kV Landstreet SR 528 bxout Orange Cnty FN437156-1-52-01	12/7/2015	10/11/2016	Governmental
40th Street to 16th Street (BFE-2) - 115 kV Line Rebuild	10/1/2017	5/18/2018	Rebuild
Alachua Tap to Alachua (GH-3, 2.31mi) 69kV Line Rebuild	12/14/2015	5/31/2016	Rebuild
Alachua to GE Alachua (GH-2, 4.37mi) 69kV Line Rebuild	4/18/2016	5/30/2015	Rebuild
Bayview to East Clearwater (HD-3) - 115 kV Line Rebuild	1/10/2018	5/17/2018	Rebuild
Brooksville to Tangerine - 115 kV Line Rebuilds	8/17/2015	4/1/2016	Rebuild
Central Florida to Picciola Tap - Rebuild 69 kV (OCF) Line	2/5/2018	8/2/2018	Rebuild
Davenport to West Davenport (DWD) - 69 kV Rebuild	4/12/2018	8/21/2018	Rebuild
Deleon Springs to Barberville - 115/69 kV Line Rebuild	5/24/2018	11/20/2018	Rebuild
Denham to Sunlake (DX-1.3) - 69 kV Line Rebuild	TBD	5/31/2018	Rebuild
Desoto City to Desoto City Tap 69 kV Rebuild of Last Spans	10/12/2015	7/26/2016	Rebuild
DF - Zuber - Loop in MS 69kV to Rebuilt Sub	4/28/2017	6/14/2017	Rebuild
Dunnellon Tn -Rainbow Spgs Tp 69kV Rbld Phase 2	11/17/2016	11/14/2017	Rebuild

Eustis-Dona Vista 69 kV (EU) Line Rebuild	7/19/2017	1/30/2018	Rebuild
Gateway to 32nd Street (HD-7) - 115 kV Line Rebuild	6/20/2017	1/12/2018	Rebuild
Gateway to Ulmerton (HD-6) - 115 kV Line Rebuild	12/20/2017	4/10/2018	Rebuild
GE Alachua to Hull Road (GH-1, 16.5) 69kV Line Rebuild	9/20/2016	2/14/2018	Rebuild
Ginnie - Neals Tap (IS-8B) 69 kV Line Rebuild	5/22/2018	11/2/2018	Rebuild
Havana-Oak Cty (TQ) 69kV: rbl'd as dbl ckt 115 and 69kV	4/5/2017	9/11/2018	Rebuild
Hemple to Ocoee - 69 kV Line Rebuild	6/27/2017	12/12/2017	Rebuild
Hudson Tp - New Port Richey 115kV Line Rebuild	5/11/2016	2/10/2017	Rebuild
Idylwild - Wacahoota Tap (SI) - Rebuild 11.62 mi 69 kV line	7/5/2017	10/31/2018	Rebuild
JA-4 Ochlockonee Tap to Carrabelle Sub line Rebuild	TBD	TBD	Rebuild
JQ 1.7 West Lake-Burnham Tap 115 kV rebuild; 1.53 mi	TBD	TBD	Rebuild
Keller Road to Spring Lake - 69 kV Line Rebuild	1/24/2017	4/16/2017	Rebuild
Lake Bryan to Vineland (LV) - 69 kV Line Rebuild	2/1/2017	8/17/2017	Rebuild
Largo to Taylor Ave (LTW-1) - 69 kV Line Rebuild	TBD	5/31/2018	Rebuild
Largo to Taylor Ave (LTW-1) - 69 kV Line Rebuild	2/5/2018	3/29/2018	Rebuild
Myrtle Lake to Wekiva (NLP-2) - 230 kV Line Rebuild	12/6/2016	5/9/2017	Rebuild
NLongwood to FPL Sylvan (NLSX Double-Circuit)- 230kV Rebuild	1/27/2014	1/25/2017	Rebuild

NLongwood to FPL Sylvan (NLSX Single-Circuit)- 230kV Rebuild	3/9/2015	5/5/2017	Rebuild
NLongwood to Myrtle Lake (NLP Double-Circuit)- 230kV Rebuild	1/27/2014	4/30/2016	Rebuild
Nobleton Tap - Floral City Tap (HB)69 kV line rebuild	9/21/2015	4/25/2017	Rebuild
OakCty-Tall (TQ) 69kV: rbl'd as dbl ckt 115 and 69kV	2/23/2017	6/28/2017	Rebuild
Oakhurst - Seminole - Rebuild 69kV Line	TBD	5/31/2018	Rebuild
Oviedo to Winter Springs - 69 kV Rebuild	7/17/2017	2/28/2018	Rebuild
Piedmont to Wekiva (NLP-3) - 230 kV Line Rebuild	6/9/2017	1/30/2018	Rebuild
Plymouth South Sub - Relocation of PP, WP & EP Lines	5/26/2016	10/12/2016	Rebuild
Rio Pinar to Curry Ford (RX) - 230 kV Rebuild	1/13/2017	5/23/2017	Rebuild
Rio Pinar to Econ - 230 kV Line Rebuild & Add Fiber	11/22/2017	6/1/2018	Rebuild
Rio Pinar to Fla Gas Transmission East (RW) - 69 kV Rebuild	6/30/2017	8/14/2018	Rebuild
Ross Prairie-Marion Oaks Tap (RPMX) 69 kV Rebuild	2/16/2018	10/18/2018	Rebuild
Silver Springs - Maricamp 69 kV Line Rebuild	7/6/2015	4/12/2016	Rebuild
SYS-Hexam Tap-Weeki Wachee Sw 115kV Line Rebuild (BBW-1)	1/5/2018	5/30/2018	Rebuild
West Chapman to Winter Park East - 69 kV Line Rebuild	2/13/2017	1/23/2018	Rebuild
Williston-Wacahoota Tap (SI-3B) - Rebuild 6.02 mi 69 kV line	2/12/2018	10/31/2018	Rebuild

Note 1. CMI is defined as Construction Move In Date.

Note 2. SISD is defined as Scheduled In Service Date.

- b. Please complete the table below describing all transmission hardening projects. Please provide this information for the years 2007 through 2018.

RESPONSE:

Project Type	Hardening Projects	Capital Total Cost
Customer Request	5	\$ 172,173
Governmental	55	\$ 21,015,646
Line	37	\$ 46,407,054
New	24	\$178,451,984
Purchase	1	\$ 2,729,682
Rebuild	63	\$ 326,758,405
Rebuild / new	3	\$ 80,392,101
Retire	1	\$ 5,913
Grand Total	189	\$ 655,932,958

Project Type	Hardening Projects	Estimated Capital (2016 - 2018)
Governmental	31	\$ 26,641,409
New	3	\$ 12,656,658
Rebuild	46	\$ 286,529,773
Retire	1	\$ 60,496
Grand Total	81	\$ 325,888,336

9. Referring to page 29, Soliciting Input from Third Party Attachers.

- a. Did DEF make any updates or modifications to its Storm Hardening Plan or Attachment Standards and Procedures?

RESPONSE:

No, DEF did not make any updates or modifications to its Storm Hardening plan or Attachment Standards and Procedures. There was a change in the Storm Hardening plan for the company performing the transmission analysis from Enercon to Stantec.

- b. If yes, did DEF seek input from third-party attachers as required by Rule 25-6.0342(6), Florida Administrative Code (F.A.C.), Electric Infrastructure Storm Hardening?

RESPONSE:

N/A

- i. If yes, who responded and provide a summary of their comments and/or suggestions?

RESPONSE:

N/A

- ii. If no, please explain why not.

RESPONSE:

N/A

10. Referring to Attachment A, page DWG-01.00-06, PoleForeman.

- a. When did DEF first start using the “PoleForeman” software?

RESPONSE:

Progress Energy Florida (DEF’s predecessor) began using PoleForeman in 2005.

- b. Have there been any updates to the “PoleForeman” software since DEF first started using the software?

RESPONSE:

Yes; 2007 NESC Updates
2012 NESC Updates
General software enhancements / new features and functionality / bug corrections
Updates to construction specs / pole line hardware material strength ratings / sag tables, etc. as requested by utility

- c. If yes, please provide the dates of the updates and the associated cost of the updates.

RESPONSE:

Software updates provided annually (2005-2016)

In addition to the specific updates discussed above, the software is generally updated annually. The cost of the updates is included in the annual maintenance and service fees. These fees are paid by Duke Energy Business Services and allocated to each jurisdiction according to the service company pool agreement. Therefore, DEF cannot identify the specific cost of the updates in question.

11. Please refer to Attachment B, 2015 PSC Reliability Report, pages 39 through 41 for the following questions.

- a. Referring to subsection (a), please describe each storm hardening activity undertaken in the field during 2015.

RESPONSE:

Distribution

Existing Overhead to Underground Conversion:

Major Underground Conversions are a customer driven activity encompassing removing overhead facilities within the project scope and replacing them with underground cable and padmounted and/or underground facilities.

New Construction Cable footage installed underground:

The specific span miles of new underground cable installed is driven by the level of new connect activity. New connect activity cable footage encompasses underground primary conductor only, separate from secondary and service cables.

Network Maintenance and Replacement:

Network Maintenance refers to maintenance done on DEF's network environment specifically within the manhole and vault system in Clearwater and St Petersburg. The maintenance encompasses manhole and vault inspections, and replacement work that is a result of these inspections. These include but are not limited to transformer replacements, secondary protector replacements, and cable replacements.

Switchgear Replacement:

Switchgear Replacement refers to the replacement of pad-mounted switchgear, which are used to sectionalize underground branchline cable from feeder cable in order to mitigate and minimize outages for customers.

Midfeeder Electronic Sectionalizing (Reclosers):

Midfeeder Electronic Sectionalizing (Reclosers) refers to new electronic reclosers installed at the request of Distribution Planners based on customer or grid needs in specific areas.

Wood Pole Inspection and Treatment:

DEF's wood pole inspection program's philosophy is to determine the condition of the wood pole plant and provide remediation for any wood poles that are showing signs of decay or fall below the minimum strength requirements outlined by NESC standards.

DEF is utilizing the expertise of Osmose Utilities Services, Inc., to perform the inspections on an eight year cycle. Osmose is using visual inspection, sound and boring, and full excavation down to 18 inches below ground line to determine the condition of all poles with the exception of CCA poles less than 16 years of age and poles that cannot be excavated due to obstructions. For CCA poles less than 16 years of age, Osmose is using visual inspection and sound as well as selective boring to determine the pole condition. In addition, Osmose is providing remediation of decayed poles through external and internal treatments. If the pole is below NESC standards and has the minimum remaining wood above ground line, Osmose will also reinforce the pole back to original strength.

Wood Pole Replacement:

The Wood Pole Replacement program is designed to replace distribution poles based on feedback from the inspection program as well as poles discovered outside of the inspection program by DEF field personnel.

Padmount Transformer Replacement:

The Padmount Transformer Replacement program is designed to address padmount transformers that are in need of replacement.

Storm Hardening Projects:

Storm Hardening projects encompass the 6 different types of projects listed on pages 11 and 12 of the Storm Hardening Plan:

- OH-to-UG Conversions
- Small Wire Upgrade
- Backlot to Frontlot Conversion
- Submersible UG (*none completed in 2015*)
- Alternative NESC Construction Standards (*none completed in 2015*)
- Feeder ties

Transmission

Maintenance Change outs:

Duke Energy Florida Transmission is installing either steel or concrete poles when replacing existing wood poles. This activity resulted in the replacement of 1,738 wood poles with steel or concrete during 2015.

DOT/Customer Relocations and Line Upgrades and Additions:

Duke Energy Florida Transmission will design any DOT or Customer Requested Relocations and any line upgrades or additions to meet or exceed the current NESC Code Requirements and will construct these projects with either steel or concrete poles. This activity resulted in replacement of approximately 559 poles with steel or concrete during 2015.

- b. Please provide all anticipated benefits for each of the distribution projects listed in subsection (a).

RESPONSE:

Existing Overhead to Underground Conversion:

The primary benefit of this hardening activity is to attempt to eliminate tree and debris related outages in the area of exposure. When applied to crossings on major highways, this hardening activity can also mitigate potential interference with first responders and other emergency response personnel caused by fallen lines.

New Construction Cable footage installed underground:

The primary benefit of this hardening activity is to attempt to eliminate tree and debris related outages in the area of exposure. When applied to crossings on major highways, this hardening activity can also mitigate potential interference with first responders and other emergency response personnel caused by fallen lines.

Network Maintenance and Replacement:

Network systems are extremely reliable because of a redundant secondary (N-1). Customers on these feeders rarely experience a momentary loss of voltage or outages. However, heavy maintenance with consistent funding is required to keep this system operating properly. The primary benefit of the Network Maintenance and Replacement program is the continued operations of this very specialized equipment and the customers to which it provides service.

Switchgear Replacement:

The primary benefit of Switchgears is to sectionalize single phase and three phase branchlines, and thus isolate branchline outages from affecting all of the customers on the entire feeder. The Switchgear Replacement program prioritizes replacements based on various criteria, including levels of equipment degradation and critical customers served by the equipment.

Midfeeder Electronic Sectionalizing (Reclosers):

The primary benefit of Electronic reclosers is to provide DEF with the capability of preventing an outage to approximately half of the customers along the affected feeder as a result of automatic sectionalization. This provides value in both reliability and customer satisfaction metrics. An additional benefit of electronic reclosers is remote data retrieval, allowing reliability analysis of feeder and recloser operations. A recent benefit (as of Q3 2015) is integration of Electronic Reclosers into Self-Healing Teams. In the event of a possible feeder outage, these Teams allow automatic feeder re-configuration and prevent approximately half of the customers on the affected feeder from seeing the outage.

Wood Pole Inspection and Treatment:

The primary benefit of the Wood Pole Inspection and Treatment program is to proactively locate potential problems with wood poles to insure the safety of the public and DEF employees. The inspections identify the locations and they are then treated or referred for replacement dependent upon the pole condition. Secondary benefits include outage mitigation and cost savings.

Wood Pole Replacement:

DEF maintains approximately 800,000 wood distribution poles in the highest decay zone within the United States. The primary benefit of this program is tracking and follow-through of issues identified by the Wood Pole Inspection and Treatment program. Secondary benefits include proactive outage mitigation, improved customer satisfaction, and cost savings.

Padmount Transformer Replacement:

The primary benefit to the Padmount Transformer Replacement program is proactive outage mitigation and environmental impact mitigation. Secondary benefits include increased customer satisfaction and cost savings.

Storm Hardening Projects:

- OH-to-UG Conversions
 - Taking existing overhead (OH) electric lines and facilities and placing them underground (UG) via the use of specialized UG equipment and materials. The primary benefit of this hardening activity is to attempt to eliminate tree and debris related outages in the area of exposure. When applied to crossings on major highways, this hardening activity can also mitigate potential interference with first responders and other emergency response personnel caused by fallen lines.

- Small Wire Upgrade

- The conversion of an existing overhead line currently with either #4 AL or #6 Cu conductor to a thicker gauge conductor of 1/0 or greater. The primary benefit of this hardening activity is to attempt to utilize stronger conductor that may be better able to resist breakage from falling tree branches and debris.
- Backlot to Frontlot Conversion
 - Taking an existing overhead line located in the rear of a customer's property and relocating it to the front of the customers property. This involves the removal of the existing line in the rear of the property and construction of a new line in the front of the property along with re-routing service drops to individual customer meters. The primary benefit of this hardening activity is to minimize the number of tree exposures to the line to prevent outages and to expedite the restoration process by allowing faster access in the event an outage occurs.
- Submersible UG
 - Taking an existing UG line and equipment and hardening it to withstand a storm surge via the use of the current DEF storm surge standards. This involves the use of specialized stainless steel equipment and submersible connections. The primary benefit of this hardening activity is to attempt to minimize the damage caused by a storm surge to the equipment and thus expedite the restoration after the storm surge has receded.
- Alternative NESC Construction Standards
 - Building OH line and equipment segments to the extreme wind standard as shown in the NESC extreme wind contour lines of figure 250-2(d). This will be done via the use of the current extreme wind standards which call for the use of the industry accepted Pole Foreman program to calculate the necessary changes. Typical changes include shorter span lengths and higher class (stronger) poles. The primary benefit of this hardening activity is to attempt to reduce the damage caused by elevated winds during a major storm. Locations have been chosen to provide contrasting performance data between open coastal and inland heavily treed environments.
- Feeder ties
 - Tying radial feeders together to provide switching capabilities to reduce outage duration. The primary benefit of this hardening alternative is to mitigate long outages that would have otherwise occurred as a result of the inability to transfer load/customers to an alternate source. A recent secondary benefit of feeder ties is to allow more Self-Healing Team installations. In the event of a possible feeder outage, the Teams allow automatic feeder re-configuration and prevents roughly half of the customers on the affected feeder from seeing the outage.

- c. Please provide any calculations, performed by DEF, that estimate reductions in storm costs and outages that will result from storm hardening initiatives.

RESPONSE:

The primary benefit of storm hardening initiatives is to improve the customer experience by reducing the duration of outages during severe weather events and hopefully the number of such outages (depending on the strength and frequency of severe weather events). The societal benefits of reducing these long duration outages is a significant portion of the justification. The question of estimated reduction in storm costs is extremely difficult to calculate with any accuracy due to the number of variables involved, and to date DEF has not attempted a formal analysis.

- 12. Please complete the table below:

Activity		Any change from current plan. (Y/N) *	Actual Cost									Estimated Cost								
			2013			2014			2015			2016			2017			2018		
			O&M	Capital	Total	O&M	Capital	Total	O&M	Capital	Total	O&M	Capital	Total	O&M	Capital	Total	O&M	Capital	Total
8-Year Wooden Pole Inspection Program		N	\$1,658,144		\$1,658,144	\$2,817,675		\$2,817,675	\$2,895,478		\$2,895,478	\$2,997,812		\$2,997,812	\$3,300,000		\$3,300,000	\$3,400,000		\$3,400,000
10 Storm Hardening Initiatives																				
1	A Three-Year Vegetation Management Cycle for Distribution Circuits	N	\$31.8M	\$0M	\$31.8M	\$32.9M	\$6M	\$33.4M	\$34.5M	\$8M	\$35.4M	\$29.4M	\$1.9M	\$31.2M	\$36.1M	\$1.0M	\$37.1M	\$35.4M	\$1.0M	\$36.4M
2	An Audit of Joint-Use Attachment Agreements	N	516,588		516,588	433,069		433,069	430,283		430,283	443,192		443,192	456,488		456,488	470,182		470,182
3	A Six-Year Transmission Structure Inspection program	N	20,240,334		20,240,334 (O&M)	20,847,554		20,847,554 (O&M)	21,472,971		21,472,971 (O&M)	22,117,160		22,117,160 (O&M)	22,780,674		22,780,674 (O&M)	23,464,094		23,464,094 (O&M)
4	Hardening of Existing Transmission Structures	N			93,495,002 (Capital)			96,299,852 (Capital)			99,188,848 (Capital)			102,164,513 (Capital)			105,229,448 (Capital)			108,386,332 (Capital)
5	Transmission and Distribution GIS	N	\$269,402		\$269,402 (O&M)	\$269,402		\$269,402 (O&M)	\$269,402		\$269,402 (O&M)	\$269,402		\$269,402 (O&M)	\$269,402		\$269,402 (O&M)	\$269,402		1,347,010 (O&M)
6	Post-Storm Data Collection and Forensic Analysis	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	Collection of Detailed Outage data Differentiating Between the Reliability Performance of Overhead and Underground Systems	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Increased Utility Coordination with Local Governments	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	Collaborative Research on Effects of Hurricane Winds and Storm Surge	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	A Natural Disaster Preparedness and Recovery Program	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals																				
Any Other Key Elements or Proposed Initiatives			\$434,739	\$34,201,237	\$34,635,976	\$409,517	\$41,295,066	\$41,704,583	\$331,262	\$60,781,626	\$61,112,888	\$908,422	\$47,790,674	\$48,699,096	\$770,000	\$51,910,000	\$52,680,000	\$770,000	\$47,910,000	\$48,680,000

* Please explain any changes from the current plan.

** Figures are in thousands