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# BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

# DOCKET NO. 160021-EI FLORIDA POWER & LIGHT COMPANY AND SUBSIDIARIES

# IN RE: PETITION FOR RATE INCREASE BY FLORIDA POWER & LIGHT COMPANY

**FPL WITNESS NED W. ALLIS** 

**EXHIBIT NWA-1** 

**DEPRECIATION STUDY** 

VOLUME 3 OF 3

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# PART X. DETAIL OF PRODUCTION PLANT

## STEAM PRODUCTION PLANT

FPL's steam production fleet consists of two coal-fired generating stations and two oil and gas stations. FPL has retired five oil and gas stations since the previous depreciation study, and is converting a sixth, the Turkey Point station, to a synchronous condenser. Two plants, Cape Canaveral and Riviera, have been repowered as combined cycle plants, and a third, Pt. Everglades, is planned to be repowered in 2016. A summary of the Company's current steam plants is provided in the table below.

Plant	Fuel	Status
Scherer	Coal	Partial owner of Unit 4
St. Johns River Power Park	Coal	Partial owner
Manatee	Oil/Gas	Owner
Martin	Oil/Gas	Owner
Turkey Point	Oil/Gas	Converting to synchronous condenser

The service lives for each plant are based on estimated probable retirement dates for each unit, combined with interim survivor curves estimated for each plant account. Net salvage for interim retirements has been incorporated into the depreciation rates. The capital recovery of terminal net salvage is estimated in a separate dismantlement study.

Interim survivor curves and interim net salvage were estimated for each account based on judgment incorporating a number of factors, including the historical analysis of interim retirements, cost of removal and gross salvage. The probable retirement dates estimated for each unit are consistent with the ordered life spans in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. The probable retirement dates for each steam generating plant are consistent with a 50 year life span.

FPL has retired a number of steam generating plants in recent years. The table below summarizes the retirement date and life span of each of these generating units. The average life span for these retired facilities was approximately 50 years.

Retirement Date	<u>Life Span</u>
2010	45
2010	41
2012	58
2012	57
2012	52
2012	51
2013	49
2013	48
2011	49
2011	48
2012	53
2016	49
2013	45
	2010   2010   2012   2012   2012   2012   2012   2013   2011   2011   2012

A description of each generating site, as well the estimated probable retirement dates for each generating unit, is included in the pages that follow. An account by account discussion of the development of the service life and net salvage parameters for interim retirements follows the discussion of each site.

#### Manatee Steam Generating Plant

The Manatee Plant is located in Manatee County, approximately five miles east of Parrish, Florida. Approximately 3,700 acres of the 6,748-acre site is utilized as a cooling water reservoir for the units. The site has two identical steam generating units (Units 1 and 2) and one combined cycle unit (Unit 3). Oil for the steam units is transported by underground pipeline from Port Manatee. The summer peak rating for the two steam units are approximately 809 MW each. Unit Nos. 1 and 2 went into commercial operation during 1976 and 1977, respectively.

The steam generator for each steam unit is a Foster Wheeler Corporation outdoor, twin-drum, radiant, reheat, natural circulation type with a water-cooled furnace. Each unit has essentially one complete Westinghouse Electric condensing steam turbine coupled to a hydrogen-cooled electric generator.

Florida Power and Light Company's current depreciation rates for the Manatee Units 1 and 2 were originally filed in Docket No. 090130-EI, and became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2020 for both steam units including Common facilities. The Commission ordered a 2027 probable retirement date. The Company is proposing to increase the retirement date slightly to use a 2028 probable retirement date in this study. This date corresponds to ten years beyond the 2017 test year of the depreciation study.

#### Martin Steam Generating Plant

The Martin Plant is located on an 11,267 acre site in Martin County east of Lake Okeechobee and approximately 40 miles northwest of the city of West Palm Beach, Florida. The site consists of two steam generating units (Units 1 and 2), three combined cycle units (Units 3, 4 and 8) and a thermal solar facility that provides steam to Unit 8. A cooling water reservoir, cooling tower for Unit 8, switchyard, and all related facilities for a commercial generating station are located on site. Also at the site is a thermal solar facility that consists of 190,000 parabolic mirrors that provide additional power to Unit 8.

The plant uses the Martin Reservoir, a 6,500-acre (outside area) cooling water reservoir, for both intake and discharge. The cooling pond operates as a closed cycle system, however, water withdrawals can be accomplished, if necessary, through a pump station from the St. Lucie Canal. The reservoir was designed for an ultimate site generating capacity of 4,000 megawatts. The combined summer peak rating for the two steam units is 1,626 megawatts. Unit Nos. 1 and 2 went into commercial operation during 1980 and 1981, respectively.

Each outdoor-type unit consists of a Westinghouse Electric Corporation tandemcompound, double flow reheat turbine and a Foster Wheeler Corporation outdoor reheat steam generator, utilizing a regenerative reheat cycle with all necessary auxiliaries and subsystems. Although the original design, by Mid-Valley, Inc. for both units was for oilfired generation (#6 heavy oil), the units were converted in 1986 to also allow the burning of natural gas and oil/gas mixtures. Control of emissions is through mechanical collectors, flue gas recirculation, electrostatic precipitators and controlled sulfur content of the fuel. Florida Power and Light Company's current depreciation rates for the Martin Units 1 and 2 were originally filed in Docket No. 090130-EI, and became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2020 for both steam units including Common facilities. The Commission ordered a 2031 probable retirement date. The Company is proposing to continue to use the approved 2031 probable retirement date in this study.

# Scherer Steam Generating Plant

The Scherer Steam Plant is a coal fired generating station consisting of four units and all the common facilities required for generating electricity. It is located on 12,000 acres of land (the main operating area of the plant site is approximately 3,500 acres) in Monroe County near the Ocmulgee River about 17 miles north of Macon, Georgia. Although built for Georgia Power Corporation (GPC), Florida Power and Light Company (FPL) and Jacksonville Electric Authority (JEA) have purchased one generating unit, Scherer Unit 4, and related common facilities. The installment purchase of these facilities was effected in four installments over the period from 1991 to 1995. FPL owns 76.36% and JEA owns 23.64% of Unit 4. FPL owns 38.18% of the common facilities related to Units 3 and 4 and 19.09% of those common facilities related to all four units.

Scherer Unit 4 achieved initial operation on December 21, 1988 and was declared commercial on February 28, 1989. The unit consists of a boiler turbine generator, condenser, electrostatic precipitator (ESP), flue gas desulfurization (FGD) unit, selective catalytic reduction (SCR), baghouse, a 530-foot high natural draft-cooling tower, a shared smokestack (shared with Unit 3), electrical switching equipment, and water and fuel facilities. Common facilities include the power house (which houses the four generating units at the site), Lake Juliette (a man-made 3,600 acre lake), a 750 acre ash disposal pond, a 300 acre ash settling pond, a 40 acre retention pond, a 90 acre coal storage yard and a 500 kV switchyard to interconnect the 4 units at the site to Georgia Power's transmission system.

Scherer Unit 4 can produce 858 megawatts of electricity. The boiler is capable of producing 5,790,000 pounds of steam per hour at 2,400 pounds per square inch pressure at 1,000 degrees Fahrenheit. Under full-load conditions the boiler burns 322

tons of coal per hour (7,728 tons per day). The coal burned at Scherer is delivered by rail from the Powder River Basin and is unloaded by a sophisticated coal handling system which is capable of unloading an 80 car train in half an hour. The unit uses a closed loop steam cycle with a separate loop of water drawn from Lake Juliette to serve as a coolant in the condensers. The turbine generators, manufactured by General Electric, have a name plate generating capacity of 858 megawatts (FPL's share is 634 megawatts) at the summer peak rating. Electrostatic precipitators are used to remove more than 99% of the fly ash from the flue gasses that leave the boiler after the coal burning process. Emissions are monitored by an automatic opacity sensor in the 1,000-foot stack.

The companies with an ownership share in the Scherer plant have made major capital investments in the plant's Air Quality Control System (ACQS) project. These investments include the installation or upgrade of scrubbers, SCR systems and baghouses, which combined will significantly reduce the emissions of SO<sub>x</sub>, NO<sub>x</sub> and Mercury.

Florida Power and Light Company's current depreciation rates for the Scherer Unit 4 and related common facilities were originally filed in Docket No. 090130-El, and became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2029 for both steam units including Common facilities. The Commission ordered a 2039 probable retirement date. The Company is proposing to continue to use the approved 2039 probable retirement date in this study.

#### St. Johns River Power Park Steam Generating Station

The St. Johns River Power Park (SJRPP) Plant is jointly owned by the Jacksonville Electric Authority (80% ownership share) and Florida Power and Light Company (20% ownership share). The site is located in the northeast section of the City of Jacksonville in Duvall County, Florida. Both Unit Nos. 1 and No. 2 are coal fired units arranged for semi-outdoor operation. A common unloading bay is located between and joins the Unit No. 1 and Unit No. 2 turbine buildings. The control building, a five (5) story common facility is located between Unit Nos. 1 and 2. The two units have a generating capacity of 1,270 megawatts (FPL's share is 254 megawatts) at the summer peak rating. Unit Nos. 1 and 2 went into commercial operation during 1987 and 1988, respectively.

Two hyperbolic natural draft cooling towers, one for each unit, are located northeast of the Unit No. 2 turbine building. The coal handling system includes a rotary rail car dumper equipped with a static weight scale, a train positioner, a type 410 stainless steel receiving bin, four short belt feeders, a cross conveyor, two series arranged elevating conveyors, a belt scale, and two magnetic separators.

Both units were installed with FGD systems and ESPs when originally constructed. SCR systems were installed for each unit in 2009.

Florida Power and Light Company's current depreciation rates for the St. Johns River Power Park Units were originally filed in Docket No. 090130-El, and became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2028 for both steam units including Common facilities. The Commission ordered a

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2038 probable retirement date. The Company is proposing to continue to use the approved 2038 probable retirement date in this study.

### Account 311 (FERC): Structures and Improvements

This account includes the cost of structures and improvements for steam power generation.

### GENERAL INFORMATION:

The structures in this account include all structures located at the Company's steam power plants. Interim retirements for this account have averaged over \$2 million per year over the past 10 years.

### SERVICE LIFE ANALYSIS:

Discussion: The 60-R2 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0032 interim retirement rate, which corresponds to an average service life for interim retirements of approximately 156 years.

> Bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. Bands with experience and placements from 1976 through 2014 were also considered, which correspond to the year the oldest unit at Manatee was placed in service. Most of the Company's older steam plants have been or are planned to be retired. For this reason, the data points through age 39 are given the most consideration in the life analysis, as these ages represent the experience of the plants still in service.

Recommendation: The 80-R2 survivor curve represents a good fit of the data through the significant data points. The recommendation is to change currently authorized interim retirement rate to the 80-R2 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (10) percent was proposed and approved in the 2009 depreciation study. The net salvage analysis for the current study based on 29 years of historical data from 1986-2014 indicates a more negative estimate is more appropriate than the estimate from the last study. The overall average cost of removal is (25)

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percent, the average salvage is 7 percent, and the average net salvage is (18) percent. However, the gross salvage data includes a large reuse salvage amount in 1986 that is not expected to reoccur. The most recent five year average net salvage is (28) percent.

Recommendation: The data supports more negative net salvage estimate than the approved estimate. The recommendation is to increase the currently authorized negative net salvage estimate of (10) percent to (15) percent, which is somewhat less negative than the overall average net salvage. This estimate is adjusted for interim retirements to a (1) percent composite net salvage percent for both oil and gas plants and for coal fired plants.

### Account 312 (FERC): Boiler Plant Equipment

This account includes the cost installed of furnaces, boilers, coal and ash handling and coal preparing equipment, steam and feed water piping, boiler apparatus and accessories used in the production of steam, mercury, or other vapor, to be used primarily for generating electricity.

#### GENERAL INFORMATION:

Some of the assets in this account, such as stacks, are likely to be in service for the full life of the plant. Other equipment, such as pumps, motors and piping, will be retired as interim retirements. Interim retirements for this account have averaged about \$16 million per year over the past ten years.

## SERVICE LIFE ANALYSIS:

Discussion:

The 40-R2 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0094 interim retirement rate, which corresponds to an average service life of approximately 53 years.

Bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. Bands with experience and placements from 1976 through 2014 were also considered, which correspond to the year the oldest unit at Manatee was placed in service. The life indications for each band were similar. Most of the Company's older steam plants have been or are planned to be retired. For this reason, the data points through age 39 are given the most consideration in the analysis, as these ages represent the experience of the majority of plants still in service. The 50-S0 survivor curve represents a good fit of the data through these data points. This estimate produces a similar average service life as the approved interim retirement rate and forecasts about half of the original boiler plant equipment to remain in service for the 50 year life span of each facility, which is a reasonable expectation for the types of property in this account. However, the 50-S0 better matches the historical data for this account than the approved interim retirement rate and better reflects the expectation that interim retirements tend to increase over time as the assets in the account age.

Recommendation:

Change currently authorized interim retirement rate to the 50-S0 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion:

A net salvage estimate for interim retirements of (15) percent was proposed and approved in the 2009 depreciation study. Twenty-nine years of data, from 1986 through 2014 were available for the historical net salvage analysis. Most years have experienced cost of removal and gross salvage, with removal costs normally exceeding salvage. The overall average cost of removal is 30 percent, the average salvage is 5 percent, and the average net salvage is (25) percent. The most recent five year average is less negative at (8) percent. There is no definitive trend up or down over the full historical period available. Instead net salvage trended less negative from the late 1980s through the 1990s, trended higher through 2010 and has since moderated.

Given the pattern in the historical data, the overall average provides a more reasonable indication of future expectations than short term trends. The historical data supports continuing to use the approved estimate at this time. While the overall average supports a more negative estimate than the approved estimate, the more recent data supports a less negative estimate. The approved (15) percent estimate therefore is a reasonable balance between the two.

Recommendation: The recommendation is to continue to use the currently authorized negative net salvage estimate of (15) percent. This estimate is adjusted for interim retirements to a (2) percent composite net salvage percent for oil and gas plants and a (4) percent composite net salvage percent coal fired plants.

# Account 314 (FERC): Turbogenerator Units

This account includes the cost installed of main turbine-driven units and accessory equipment used in generating electricity by steam.

#### GENERAL INFORMATION:

Interim retirements have averaged over \$8 million per year for the past ten years.

#### SERVICE LIFE ANALYSIS:

- Discussion: The 40-R1 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0120 interim retirement rate, which corresponds to an average service life of approximately 42 years. In this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. Bands with experience and placements from 1976 through 2014 were also considered. which correspond to the year the oldest unit at Manatee was placed in service. Most of the Company's older steam plants have been or are planned to be retired. For this reason, the data points through age 39 were given the most consideration in the analysis, as these ages represent the experience of the majority of plants still in service. The 55-R0.5 survivor curve represents a good fit of the data through these data points.
- Recommendation: Change currently-authorized interim retirement rate to the 55-R0.5 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of 0 percent was proposed and approved in the 2009 depreciation study. Data available for the net salvage analysis encompassed Twenty-nine years of historical data, from 1986 through 2014. Most years have cost of removal and gross salvage. There are large salvage amounts in many years. Most of these transactions are the salvage for components that were refurbished and reused. Going forward, the Company will continue to refurbish components when possible, but as assets age the opportunity for refurbishment may be less frequent than in the historical data.

The overall average cost of removal is (19) percent, the average salvage is 15 percent, and the average net salvage is (4) percent. The most recent five year average and the most recent ten year average are both (6) percent.

The historical data supports a negative net salvage estimate, as cost of removal has exceeded gross salvage in most years and as reflected in long term and more recent averages.

Recommendation: Increase the currently authorized negative net salvage estimate of 0 percent to (5) percent. This estimate is adjusted for interim retirements to a (1) percent composite net salvage percent for oil and gas plants and a (1) percent composite net salvage percent coal fired plants.

# Account 315 (FERC): Accessory Electric Equipment

This account includes the cost installed of auxiliary generating apparatus, conversion equipment, and equipment used primarily in connection with the control and switching of electric energy produced by steam power, and the protection of electric circuits and equipment, except electric motors used to drive equipment included in other accounts. Such motors shall be included in the account in which the equipment with which they are associated is included.

#### GENERAL INFORMATION:

This account includes accessory electric equipment at the Company's steam power plants. Step-up transformers are not contained in the account, and are instead in Account 353.2, Step-Up Transformers. Interim retirements for this account have averaged about \$1.7 million per year over the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion:

The 45-R2.5 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0052 interim retirement rate, which corresponds to an average service life of approximately 96 years.

In this study bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. Bands with experience and placements from 1976 through 2014 were also considered, which correspond to the year the oldest unit at Manatee was placed in service. Most of the Company's older steam plants have been or are planned to be retired. For this reason, the data points through age 39 are given the most consideration in the analysis, as these ages represent the experience of the majority of plants still in service.

The 65-S0 survivor curve represents a good fit of the data through these data points.

Recommendation: The recommendation is to change currently-authorized interim retirement rate to the 65-S0 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion:

A net salvage estimate for interim retirements of (20) percent was proposed and approved in the 2009 depreciation study.

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Historical data available for the net salvage analysis encompassed a twenty-nine year period, from 1986 through 2014. Cost of removal has exceeded gross salvage in most years. The overall average cost of removal is 23 percent, the average gross salvage is 5 percent, and the average net salvage is (19) percent. Almost half of the gross salvage occurred in a single year in 1990, which was given less consideration in the net salvage analysis.

Recommendation: The recommendation is to continue to use the currently authorized negative net salvage estimate of (20) percent, which is still supported by the historical data. This estimate is adjusted for interim retirements to a (2) percent composite net salvage percent for oil and gas plants and a (3) percent composite net salvage percent coal fired plants.

# Account 316 (FERC): Miscellaneous Power Plant Equipment

This account includes the cost installed of miscellaneous equipment in and about the steam generating plant devoted to general station use, and which is not properly includible in any of the foregoing steam-power production accounts.

### GENERAL INFORMATION

Interim retirements for this account have averaged a little less than \$200,000 per year over the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion:	The 40-R2 interim survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0071 interim retirement rate, which corresponds to an average service life of approximately 70 years.
	In this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. Bands with experience and placements from 1976 through 2014 were also considered, which correspond to the year the oldest unit at Manatee was placed in service. Most of the Company's older steam plants have been or are planned to be retired. For this reason, the data points through age 39 are given the most consideration in the analysis, as these ages represent the experience of the majority of plants still in service. The 65-R0.5 survivor curve represents a good fit of the data through these data points.
Recommendation:	The recommendation is to change currently-authorized

Recommendation: The recommendation is to change currently-authorized interim retirement rate to the 65-R0.5 survivor curve.

## NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (5) percent was proposed in the 2009 depreciation study, and an estimate of 0 percent was approved. Twenty-nine years of historical data, ranging from 196 through 2014, was available for the net salvage analysis. There has been cost of removal and gross salvage in most years, and cost of removal has normally exceeded gross salvage. The overall average cost of removal is 9 percent, the average gross salvage is 4 percent, and the average net salvage is (5) percent. The data supports that cost of removal normally exceeds gross salvage, and that the approved estimate of 0 percent should be modified.

Recommendation: Increase the negative net salvage from the approved 0 percent to (5) percent. This estimate is adjusted for interim retirements to a 0 percent composite net salvage percent for oil and gas plants and a (1) percent composite net salvage percent coal fired plants.

#### NUCLEAR PRODUCTION PLANT

FPL's nuclear production fleet consists of two generating stations, Turkey Point and St. Lucie. There are two units located at each site. The Company's current plans also include adding two new nuclear units at Turkey Point in the future. Both sites have undergone major extended power uprate (EPU) projects. The EPU projects have added 522 MW of combined generating capacity to the four nuclear units.

The service lives for each plant are based on estimated probable retirement dates for each unit, combined with interim survivor curves estimated for each plant account. Net salvage for interim retirements has been incorporated into the depreciation rates.

Interim survivor curves and interim net salvage were estimated for each account based on judgment incorporating a number of factors, including the historical analysis of interim retirements, cost of removal and gross salvage. The probable retirement dates estimated are based on the Nuclear Regulatory Commission (NRC) licenses for each unit and are consistent with the ordered life spans in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. A description of each generating site, including the estimated probable retirement dates, as well as an account by account discussion of the development of interim life and net salvage parameters, is included in the pages that follow.

#### St. Lucie Nuclear Generating Plant

The St. Lucie site is located on Hutchinson Island in St. Lucie County approximately halfway between Stuart and Fort Pierce on the East Coast of Florida. The site consists of two nuclear electric power units with pressurized water type reactors. Both units utilize a conventional electric power generating system along with the associated nuclear steam supply and auxiliary systems, a switchyard and all related facilities for a commercial generating station. The Atlantic Ocean provides the primary source of circulating water for the site. The two units have a combined output of approximately 2,000 megawatts (including the output added by the EPUs). Units 1 and 2 went into commercial operation during 1976 and 1983, respectively. FPL's ownership share for Units 1 and 2 represents approximately 1,800 megawatts.

FPL has undergone EPUs for Units 1 and 2. The EPUs involved replacing components of the plant, including piping, valves, heat exchangers and generators to improve the efficiency and output of the plant. The uprates resulted in an increased output of approximately 280 MW for the two units.

Florida Power and Light Company's current depreciation rates for the St. Lucie Plant are based on a depreciation study that was originally filed in Docket No. 090130-El, and became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. The approved probable retirement dates are 2036 for Unit 1 and 2043 for Unit 2 based on the current license life of these units. For this study, the Company is proposing to continue to use the same approved probable retirement dates.

### **Turkey Point Nuclear Generating Site**

The Turkey Point site is located on the shore of Biscayne Bay in Dade County approximately 25 miles south of Miami, Florida. The site consists of two nuclear, two oilfired units, and a combined cycle plant. The reactors in the nuclear units, Unit Nos. 3 and 4, are pressurized light water moderated and cooled systems. The nuclear units incorporate a closed-cycle pressurized water steam supply system, a conventional electric power generating system, a switchyard and all related facilities for a commercial generating station. A closed cooling canal system provides the primary source of circulating water for the site. The two units have a combined output of approximately 1,600 megawatts (including the output added by the EPUs). Unit Nos. 3 and 4 went into commercial operation during 1972 and 1973, respectively.

In 2012, FPL completed EPUs for Units 3 and 4. The EPUs involved replacing components of the plant, including piping, valves, heat exchangers and generators to improve the efficiency and output of the plant. The uprates resulted in an increased output of 242 MW for the two units.

Florida Power and Light Company's current depreciation rates for the Turkey Point Nuclear Plant are based on a depreciation study filed in Docket No. 090130-El, and became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. The approved probable retirement dates are 2032 for Unit 3 and 2033 for Unit 4. These are based on the current license life of these units. For this study, the Company is proposing to continue to use the same approved probable retirement dates.

# Account 321 (FERC): Structures and Improvements

This account includes the cost of structures and improvements for nuclear power generation.

#### GENERAL INFORMATION:

The structures in this account include all structures located at the Company's nuclear power plants. Certain retirements have been coded as outliers and are not expected to reoccur. These include retirements for steam generators and vessel head replacements, as well as retirements related to the Company's uprate projects. Interim retirements for this account have averaged about \$5.6 million per year over the past ten years.

#### SERVICE LIFE ANALYSIS:

- Discussion: The 40-R3 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0028 interim retirement rate, which corresponds to an average service life of approximately 179 years. In the analysis for this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. The historical data indicates that the Company has experienced a higher rate of retirement in recent years than indicated by the approved estimate. The 100-R1.5 survivor curve represents a good fit of the data through the most representative data points.
- Recommendation: The recommendation is to change currently-authorized interim retirement rate to the 100-R1.5 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of 0 percent was proposed and approved in the 2009 depreciation study. Twenty-nine years of data were available for the historical net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal for this period was 26 percent, the average salvage was 16 percent, and the average net salvage was (9) percent. More recent years indicate higher cost of removal, and some years also indicate higher gross salvage. Overall, more recent years indicate more negative net salvage than the overall average. The most recent ten year average is (23) percent and the most recent five year average is (18) percent.

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The data supports more negative net salvage than the approved estimate. An estimate of (10) percent is supported by the overall average for the historical data, and more recent activity indicates an even more negative estimate.

Recommendation: Change the currently authorized negative net salvage rate of 0 percent to (10) percent based on the recent analysis. This estimate is adjusted for interim retirements to a (1) percent composite net salvage percent.

# Account 322 (FERC): Reactor Plant Equipment

This account includes the installed cost of reactors, reactor fuel handling and storage equipment, pressurizing equipment, coolant charging equipment, purification and discharging equipment, radioactive waste treatment and disposal equipment, boilers, steam and feed water piping, reactor and boiler apparatus and accessories and other reactor plant equipment used in the production of steam to be used primarily for generating electricity, including auxiliary superheat boilers and associated equipment in systems which change temperatures or pressure of steam from the reactor system.

### GENERAL INFORMATION:

Certain retirements have been coded as outliers and are not expected to reoccur. These include retirements for steam generators and vessel head replacements, as well as retirements related to the Company's uprate projects. Interim retirements for this account have averaged about \$17 million per year over the past ten years.

### SERVICE LIFE ANALYSIS:

- Discussion: The 45-R2.5 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0056 interim retirement rate, which corresponds to an average service life of approximately 89 years. In this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands. The historical data indicates a higher rate of interim retirements than the approved estimate. The 60-R1 survivor curve represents a good fit of the historical data.
- Recommendation: The recommendation is to change currently-authorized interim retirement rate to the 60-R1 survivor curve based on the current life analysis.

# NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study a net salvage estimate for interim retirements of (5) percent was proposed, and an estimate of (2) percent was approved. The data available for the historical net salvage analysis ranged from 1986 through 2014. Most years have cost of removal and gross salvage, with removal costs normally exceeding salvage. The overall average cost of removal is 33 percent, the average gross salvage is 15 percent, and the average net salvage is (18)

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percent. Both cost of removal and gross salvage have increased since 2005, but cost of removal has increased more for most years. The most recent ten year average is (27) percent. The most recent five year average is (17) percent, but is influenced by a large gross salvage amount recorded in 2014.

The overall trend in the historical data is to more negative net salvage, as years since 2005 have experienced more negative net salvage than in prior years.

Recommendation: The recommendation is to increase the currently authorized negative net salvage estimate of (2) percent to (15) percent. This estimate is adjusted for interim retirements to a (2) percent composite net salvage percent based on the more recent analysis.

# Account 323 (FERC): Turbogenerator Units

This account includes the cost installed of main turbine-driven units and accessory equipment used in generating electricity by steam.

#### GENERAL INFORMATION:

Certain retirements have been coded as outliers and are not expected to reoccur. These include retirements related to the Company's uprate projects. Interim retirements for this account have averaged about \$13 million per year over the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion: The 35-R1 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0014 interim retirement rate, which corresponds to an average service life of approximately 362 years. In the life analysis for this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands.

> The historical data indicates that the rate of interim retirements is higher than that of the approved estimate. Based on an interim retirement rate of 0.0014 and the balances from the last study, the approved estimate forecasted that the Company would retire less than \$1 million per year for this account. However, the Company has made an average of over \$17 million in regular interim retirements per year over the past five years and an average of over \$13 million in interim retirements over the past ten years. These amounts do not include additional interim retirements related to the uprate projects that have been excluded from the historical analysis.

> The 45-R0.5 survivor curve represents a good fit of the historical data.

Recommendation: The recommendation is to change currently-authorized interim survivor curve to the 45-R0.5 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion:

A net salvage estimate for interim retirements of 0 percent was proposed and approved in the 2009 depreciation study. Twenty-nine years of historical data were available for the net salvage analysis, ranging from 1986 through 2014. Most years have recorded cost of removal and gross salvage. There are large salvage amounts in many years. Most of these are the salvage for components that were refurbished and reused. Some of these transactions have been coded as outliers and are not expected to reoccur. While other transactions related to refurbished components remain in the analysis there may be the same potential for refurbishment going forward as has been recorded in the historical data.

The overall average cost of removal is 25 percent, the average salvage is 24 percent, and the average net salvage is (2) percent. The most recent ten and five year averages are (2) and positive 3 percent, respectively.

Due to the age of the nuclear plants (each is over thirty years old) there is the possibility that there will be less reuse of refurbished components in the future than is reflected in the historical data. However, the data supports an estimate of 0 percent at this time, as gross salvage has on average offset most cost of removal.

Recommendation: Continue to use 0 percent net salvage for this account. This estimate is adjusted for interim retirements to a 0 percent composite net salvage percent.

🖉 Gannett Fleming

# Account 324 (FERC): Accessory Electric Equipment

This account includes the cost installed of auxiliary generating apparatus, conversion equipment, and equipment used primarily in connection with the control and switching of electric energy produced by nuclear power, and the protection of electric circuits and equipment, except electric motors used to drive equipment included in other accounts. Such motors shall be included in the account in which the equipment with which they are associated is included.

### GENERAL INFORMATION:

The Company's step-up transformers are not contained in the account, and are instead in Account 353.2, Step-Up Transformers. Certain retirements have been coded as outliers and are not expected to reoccur. These include retirements related to the Company's uprate projects. Interim retirements for this account have averaged about \$1.7 million per year over the past ten years.

### SERVICE LIFE ANALYSIS:

Discussion: The 45-R3 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0012 interim retirement rate, which corresponds to an average service life of approximately 417 years. In this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands.

The 75-R2.5 survivor curve represents a good fit of the historical data.

Recommendation: The recommendation is to change currently-authorized interim survivor curve to the 75-R2.5 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (20) percent was proposed and approved in the 2009 depreciation study. An estimate of (2) percent was approved. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 through 2014. Cost of removal exceeds gross salvage in most years, and removal costs have been higher in recent years than in earlier years. The overall average cost of removal is 46 percent, the average gross salvage is 2 percent, and the average net salvage is (44) percent. The most recent ten year average is (62) percent and the most recent five year average is (58) percent, which both reflect that cost of removal has increased in recent years.

The data supports a more negative net salvage estimated than the approved (2) percent estimate. A move beyond the 2009 estimate of (20) percent could be supported by the data, although higher cost of removal in 2008 through 2012 influences the overall and recent averages. Net salvage has been less negative in the most recent two years. For this reason, a more gradual increase is appropriate at this time.

Recommendation: Change the approved estimate of (2) percent to a net salvage estimate of (10) percent. The (10) percent estimate is adjusted for interim retirements to a (1) percent composite net salvage percent.

# Account 325 (FERC): Miscellaneous Power Plant Equipment

This account includes the cost installed of miscellaneous equipment in and about the nuclear generating plant devoted to general station use, and which is not properly includible in any of the foregoing nuclear-power production accounts.

### GENERAL INFORMATION

Interim retirements for this account have averaged about \$1.8 million over the past ten years.

## SERVICE LIFE ANALYSIS:

Discussion: The 55-R2.5 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0032 interim retirement rate, which corresponds to an average service life of approximately 156 years. In this study, bands analyzed for this account include the overall band, as well as the most recent ten, twenty and thirty year experience bands.

The 50-R1.5 survivor curve represents a good fit of the historical data, although it gives less consideration to the higher level of retirements recorded at age 21.

Recommendation: Change currently-authorized interim survivor curve to the 50-R1.5 survivor curve based on the recent life analysis.

# NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of 0 percent was proposed and approved in the 2009 depreciation study. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 through 2014. There is cost of removal and gross salvage in most years, with cost of removal typically exceeding gross salvage. The overall average cost of removal 19 percent, the average gross salvage is 4 percent, and the average net salvage is (14) percent. Most of the gross salvage occurred in a single year, 1993. More recent years have shown more negative net salvage, with the ten year average of (23) percent and the most recent five year average of (36) percent.

The data supports that cost of removal normally exceeds gross salvage, and that the approved estimate of 0 percent should be modified.

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Recommendation:

Change the negative net salvage estimate from the approved 0 percent to (10) percent. This estimate is adjusted for interim retirements to a (3) percent composite net salvage percent.

# OTHER PRODUCTION PLANT

FPL's Other Production generating stations include eight combined cycle plants, two simple cycle combustion turbines (CTs) at Ft. Myers, two gas turbine peaking plants, and three solar generating stations. The Company additionally has plans to construct a new combined cycle power plant, two new combustion turbine peaker plants (that will replace existing gas turbine peaker plants), and three new solar generating facilities by 2016. The table below shows FPL's Other Production fleet by type of plant.

<u>Plant</u>	Type
Ft. Myers	Combined cycle and simple cycle
Sanford	Combined cycle
Lauderdale	Combined cycle
Manatee	Combined cycle
Martin	Combined cycle with thermal solar
Turkey Point	Combined cycle
West County	Combined cycle
Cape Canaveral	Combined cycle
Riviera	Combined cycle
Pt. Everglades (in service in 2016)	Combined cycle
Lauderdale GTs	Peaker gas turbines
Ft. Myers GTs	Peaker gas turbines
Lauderdale Peakers (in service in 2016)	Peaker combustion turbines
Ft. Myers Peakers (in service in 2016)	Peaker combustion turbines
Desoto	Photovoltaic solar
Space Coast	Photovoltaic solar
Babcock Ranch Solar (in service in 2016)	Photovoltaic solar
Manatee Solar (in service in 2016)	Photovoltaic solar
Citrus Solar (in service in 2016)	Photovoltaic solar

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#### GENERAL INFORMATION:

#### **Combined Cycle**

The Company's combined cycle plants include two distinct types of construction. Ft. Myers, Sanford and Lauderdale were repowered as combined cycles from retired steam plants using the existing steam turbine and generator with new gas fired turbines and heat recovery boilers. Manatee, Martin, Turkey Point, West County, Cape Canaveral and Riviera were constructed as new combined cycle plants. The new Pt. Everglades plant will also be a new combined cycle plant.

The plants in FPL's combined cycle fleet range in age and efficiency. As an example, the Lauderdale combined cycle facility was placed in service in 1993 and operates with an average net operating heat rate (ANOHR) of approximately 8,400 Btu/kwh, while the Riviera plant was placed in service in 2014 and operates with an ANOHR of less than 6,700 Btu/kWh.

FPL's customer load results in operating characteristics for its combined cycle plants that differ from most other companies in the industry. A high percentage of the Company's customer base is residential and commercial, which results in high peak loads during the day and low loads at night. Due to this load profile, FPL needs to frequently cycle the combustion turbines within its combined cycle plants off at night and on during the day. The result of the constant cycling of these plants is more wear and tear on FPL's combined cycle fleet. The combination of this cycling, as well as other factors including higher average temperatures and higher chloride levels in the water and air in Florida, could result in FPL's combined cycle fleet having lives at the shorter end of the experience of others in the electric industry.
However, FPL has made and plans to make significant investments in recent years to upgrade many of the components at its combined cycle facilities. These investments include upgrading components referred to as capital spare parts, which include assets such as turbine blades and rotors, compressor blades and combustor components. FPL had experienced corrosion issues with compressor components in the past. However, the Company has made investments in these components in part to mitigate corrosion issues. For example, most of the General Electric (GE) plants were constructed with combustion turbine components referred to as 7FA.03. To resolve durability concerns and reduce fuel consumption, the Company has and continues to replace these parts with improved capital spare parts components (referred to as 7FA.04 and 7FA.05). FPL's expectation is that the significant investments in these plants will improve the heat rates for these facilities and as a result a longer life span for combined cycle plants than the current approved life span is attainable.

Combined cycle plants typically have life span estimates of 30 to 40 years. Due in part to concerns with equipment durability and corrosion, FPL had proposed 25 year life spans in Docket No. 090130-EI, which became part of Docket No. 080677-EI. The Commission ordered 30 year life spans in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. The recommendation in the current study is to increase the life span from 30 to 40 years. The expectation of a longer service life is due to the significant investments and planned investments in improved equipment at these plants.

FPL recently retired its Putnam combined cycle plant. The table below summarizes the retirement date and life spans for each unit at this facility. The life spans of the Putnam units further support that a life span in the 35 to 40 year range is reasonable.

Generating Unit	Retirement Date	<u>Life Span</u>
Putnam Unit 1	2014	36
Putnam Unit 2	2014	37

Modern combined cycle plants are highly efficient machines that require capital investments at scheduled intervals in order to ensure optimal operating conditions. Each unit is on a schedule that requires inspection, refurbishment and/or replacement of major gas turbine components. As a result, many assets in each combined cycle plant have significantly shorter lives than the plants themselves. These assets have been categorized as capital spare parts for this study. The recommendation in the study is that a subaccount be created for capital spare parts, which will be studied as a separate depreciable group. Capital spare parts are expected to have shorter service lives and more positive net salvage than most of the other assets at each plant.

#### Peaker Plants

The simple cycle combustion turbines at Ft. Myers are similar to the combustion turbines found at the Company's combined cycle plants. However, they do not have a steam cycle. The new combustion turbine peakers at Lauderdale and Ft. Myers are planned to be completed in 2016. These units will be similar to the existing Ft. Myers simple cycle turbines, although the Lauderdale and Ft. Myers units will be newer GE 7FA.05 units. The life spans for the combustion turbine peaker and simple cycle plants are estimated to be the same 40 years as used for combined cycles. However, the capital spare parts for combustion turbine peakers are expected to have longer service lives than those at combined cycle plants, due to fewer run hours (which extends the time capital spare parts remain in the engine between scheduled maintenance).

The Company has existing peaker gas turbines located at the Ft. Myers, Lauderdale and Pt. Everglades sites. These plants are smaller simple cycle gas turbines that were constructed in the 1970s. The Company plans to retire all of the gas turbines at the Pt. Everglades site, and most of the gas turbines at the Ft. Myers and Lauderdale sites. Two gas turbines each will remain at the Ft. Myers and Lauderdale sites, which will be used for black start capability. The estimated retirement dates for the remaining gas turbine units is 2028.

With the exception of the life analysis for capital spare parts, the peaker plants have been combined with the combined cycle plants for the analyses of interim survivor curves and interim net salvage. For most assets, the expected lives and net salvage costs are considered similar enough that the benefit of a larger sample size for the combined analysis results in the most appropriate results for each account. However, the interim survivor curve life analysis for capital spare parts for the peaker units was performed separately, due to different life expectations for each type of unit.

#### Solar

The Company's current solar facilities consist of two photovoltaic solar plants, DeSoto and Space Coast, and a solar thermal plant at Martin (which adds steam to the existing steam cycle for the Martin Unit 8 combined cycle plant). The Company also plans to install three new photovoltaic solar plants in 2016.

The service lives for each plant are based on estimated probable retirement dates for each unit. A 30 year life span is used for each solar facility, with the exception of Martin. The Martin solar plant has the same estimated retirement date as Martin Unit 8. There have been minimal interim retirements for the Company's solar plants, and so there are currently no estimated interim retirements and no interim net salvage estimates incorporated with the proposed depreciation rates for solar production.

### LIFE AND NET SALVAGE ESTIMATES

The probable retirement dates estimated for the combined cycle and new peaker facilities are based on a 40 year life span. This is an increase over the ordered life spans in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. The life span estimates for the solar facilities are 30 years, which is consistent with those approved in Order No. 10-153-FOF-EI. A description of each generating site, as well as the estimated probable retirement dates, is included in the pages that follow.

Interim survivor curves and interim net salvage were estimated for each account based on judgment incorporating a number of factors, including the historical analysis of interim retirements, cost of removal and gross salvage. An account by account discussion of the development of the life and net salvage parameters for interim retirements is included in the pages that follow the general information on each facility.

### Lauderdale Combined Cycle Plant

The Lauderdale Plant is located in Broward County near Dania, Florida. Unit Nos. 4 and 5 have been repowered by changing the main steam source from a conventional boiler to a combined cycle unit that employs a pair of combustion turbines with mechanically connected electric generators and heat recovery steam generators to produce steam for the existing turbine generators. The existing steam turbines, electric generators, and associated condenser cooling system remained in service as part of the repowered units. The existing condenser cooling water system draws brackish cooling water from the Dania Cut-off Canal through intake structures. The water is cooled in a man-made canal/pond system and is discharged to the South Fork New River.

The repowered units burn natural gas or light oil. The site is served by the existing natural gas and light oil pipelines, as well as an additional gas pipeline lateral. The two units have a combined generating capacity of 884 megawatts at the summer peak rating. The commercial operation dates were May 24, 1993 and June 9, 1993 for Unit Nos. 4 and 5, respectively.

Florida Power and Light Company's current depreciation rates for the Lauderdale Plant were originally filed in Docket No. 090130-El, and became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2020 for both combined cycle units including Common facilities. The Commission ordered a 2023 probable retirement date. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2033 probable retirement date in this study.

#### Ft. Myers Combined Cycle and Simple Cycle Plant

The Fort Myers Plant is located between the Caloosahatchee and Orange rivers, seven miles east of Fort Myers on 460 acres of wetlands, wooded areas, and palmetto thickets. Eighty acres are dedicated to the power plant, Tice substation, switchyard and various support structures. Remaining land is primarily virgin, except for areas used for parks and nature conservation programs.

The site consists of a natural gas fired Combined Cycle unit, dual fuel Peaking Combustion Turbines and gas turbine peakers. Unit 2 is a 6 on 2 combined cycle unit consisting of 6 GE 7FA combustion turbines, 6 Foster Wheeler Heat Recovery Steam Generators (HRSG), and two steam turbines. Unit 2 is a repowered unit which began commercial operation May 31, 2002. It was constructed utilizing the previous Unit 1 steam turbine, which began commercial operation December 2, 1958 and Unit 2 steam turbine which began commercial operation July 15, 1969. The generation capacity at the summer peak rating of Unit 2 is 1,470 MW.

The two dual fuel simple cycle units, Unit 3A and Unit 3B, began commercial operation June 1, 2003. They are GE 7FA combustion turbines similar to the Unit 2 CTs. The combined generating capacity for the two combustion turbines is 314 megawatts at the summer peak rating.

Florida Power and Light Company's current depreciation rates for the Fort Myers Units 2 and 3 and Common were originally filed in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2028 for both combined cycle units including Common facilities. The Commission ordered a 2033 probable retirement date. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2043 probable retirement date in this study.

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#### Manatee Combined Cycle Plant

The Manatee Plant is located in Manatee County, approximately five miles east of Parrish, Florida. Approximately 3,700 acres of the 6,748-acre site is utilized as a cooling water reservoir for the units. The site has two identical steam generating units and a combined cycle plant.

The combined cycle Manatee Unit 3 is located on the same site as the steam generating units. The combined cycle technology maximizes the beneficial use of the site while minimizing environmental, land use and cost impacts. Manatee Unit 3's generating capacity is 1,141 megawatts at the summer peak rating. Unit 3 consists of four GE "F" Class Combustion Turbines and four HRSG's which utilize waste heat from the CT to produce steam for the steam turbine generator.

Florida Power and Light Company's last requested and received approval from the Florida Public Service Commission for a change in depreciation rates for the Manatee Plant in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2030 for Manatee Unit 3. The Commission ordered a 2035 probable retirement date. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2045 probable retirement date in this study.

## Martin Combined Cycle Units 3, 4 and 8

The Martin Combined Cycle units are located at the 11,360-acre Martin Power Plant site. The site is located in Martin County, 40 miles northwest of West Palm Beach, and five miles east of Lake Okeechobee and presently consists of two steam units (Units 1 and 2), three combined cycle generating units (Units 3, 4 and 8), and a thermal solar facility consisting of 190,000 parabolic mirrors that provide additional power to Unit 8.

Unit 3 began commercial operation in February 1994 while Unit 4 was placed in service in April 1994. Martin Units 3 and 4 have a combined generating capacity of 938 megawatts at the summer peak rating. The plant uses the Martin Reservoir, a 6,800-acre cooling water reservoir, for both intake and discharge. The cooling pond operates as a closed cycle system; however, water withdrawals can be accomplished, if necessary, through a pump station from the St. Lucie Canal. This reservoir was designed for an ultimate site generating capacity of 4,000 megawatts.

Each Unit 3 and 4 combined cycle unit consists of two combustion turbines (CTs) fired on natural gas, plus two heat recovery steam generators (HRSGs) and a related steam turbine (ST). The higher operating temperatures of the combustion turbines allow the use of a more efficient reheat steam cycle. Operating costs were lowered through the use of advanced "dry Low-NO" burners on the CTs.

The combustion turbines and the steam turbine generators were supplied by General Electric, while the HRSG's and the stacks were fabricated and installed by the Henry Vogt Machine Company.

Martin Unit 8 began commercial operation on June 14, 2001 with two combustion turbines operating in a simple cycle mode. These two combustion turbines were then integrated with two new GE 7FAs (Units 8C and 8D), four new duct fired heat recovery steam generators (HRSG's) and one steam turbine (STG). A mechanical draft cooling tower and all necessary balance of plant items were also installed. This combined cycle unit went commercial in June, 2005. Unit 8 has a generating capacity of 1,135 megawatts at the summer peak rating.

Florida Power and Light Company's current depreciation rates for the Martin Combined Cycle Plant Units 3, 4 and 8 were originally filed in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2020 for Units 3 and 4, including Common facilities. A probable retirement date of 2030 was proposed for Martin Unit 8. The Commission ordered a 2024 probable retirement date for Units 3 and 4 and a 2035 probable retirement date for unit 8. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2034 probable retirement date for unit 8 in this study.

### Sanford Combined Cycle Plant

The Sanford plant is located on the 1,718 acre FPL property just west of Lake Monroe on the north bank of the St. Johns River in Volusia County. The current facilities are two repowered natural gas-fired units. Sanford Units 1 and 2 were removed from service in 1964. Sanford Unit 3 (a steam unit) was placed into service May, 1959 and removed from service in 2012. Units 4 and 5 were originally placed into service July, 1972 and June 1973 as steam units. Units 4 and 5 were removed from service in October 2001 and July 2002 respectively. Both Units 4 and 5 were repowered and placed in service as combined cycle units in 2003 and 2002 respectively.

Units 4 and 5 are both 4 on 1 combined cycle units consisting of 8 GE 7FA combustion turbines, 2 Foster Wheeler Heat Recovery Steam Generators (HRSG), and two Foster Wheeler steam turbines. The combined generating capacity of Units 4 and 5 is 2,010 megawatts at the summer peak rating.

Florida Power and Light Company's current depreciation rates for the Sanford Common and Combined Cycle Units 4 and 5 originally filed in Docket No. 050188-EI, and became part of Docket No. 090130-EI, which became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2028 for both combined cycle units including Common facilities. The Commission ordered a 2033 probable retirement date for Unit 4 and a 2032 probable retirement date for Unit 5. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2043 probable retirement date for Unit 4 and a 2042 probable retirement date for Unit 5 in this study.

#### Turkey Point Combined Cycle Plant

The Turkey Point Plant is located on a 12,700-acre site on Biscayne Bay in Dade County, south of Miami, Florida. There are two fossil generating units (Units 1 and 2) which have been or will be converted to synchronous condensers, two nuclear generating units (Units 3 and 4), a combined cycle plant, and a large network of cooling canals at the site. The cooling canals are excluded from this depreciation study.

Combined Cycle Unit 5 went into commercial operation May 2007. The combined cycle's technology maximizes the beneficial use of the site while minimizing environmental, land use and cost impacts otherwise associated with the development of the plant. Unit 5 utilizes a number of common facilities. It increases the generating capacity of the site without increasing overall size of the site.

Unit 5 consists of four (4) nominal 170 MW GE "F" class combustion turbines and four (4) Heat Recovery Steam Generators, which utilize waste heat from the CTs to produce steam t for one (1) steam turbine generator. The generating capacity of Unit 5 is 1,187 megawatts at the summer peak rating.

Florida Power and Light Company received approval from the FPSC for a change in depreciation rates for the Turkey Point Combined Cycle Plant in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2032. The Commission ordered a 2037 probable retirement date. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2047 probable retirement date in this study.

### West County Energy Center

The West County Energy Center is located in Palm Beach County, west of Seminole Pratt-Whitney Road and north of State Road 80 (also known as State Road 441 and US Highway 98). Units 1 and 2 were placed in service in 2009 and Unit 3 was placed in service in 2011.

The three units are configured as 3-on-1, i.e., three combustion turbines to one steam generator. The combined generating capacity of the three units is 3,657 megawatts at the summer peak rating. Each unit produces approximately 1,250 megawatts. The combustion turbines are Mitsubishi 501G1's. The Steam Turbines are Toshiba. The Heat recovery Steam Generators (HRSG's) were supplied by Nooter Eriksen.

Initial primary cooling water was drawn from the Floridan Aquifer, which has transitioned to Reclaimed Water from Palm Beach County by January 2011. The Aquifer wells are maintained as a back-up water source. Combustion controls and selective catalytic reduction (SCR) minimize emissions. Emergency/back-up fuel is ultra-low sulfur light oil. The site is served by an extension of Gulfstream's natural gas pipeline.

The Company originally filed depreciation parameters for the West County Energy Center in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a probable retirement date of 2034 for Units 1 and 2 and a probable retirement date of 2036 for Unit 3. The Commission ordered a 2039 probable retirement date for Units 1 and 2 and a 2041 probable retirement date for Unit 3. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2049 probable retirement date for Units 1 and 2 and a 2051 probable retirement date for Unit 3 in this study.

The approved depreciation rates for the West County Units did not incorporate any estimates for interim retirements or interim net salvage. Consistent with the other combined cycle plants and with FPL's experience in operating these types of plants, interim survivor curves and interim net salvage estimates have been incorporated into the depreciation rates for each plant account for each generating unit.

### Cape Canaveral Combined Cycle

The Cape Canaveral Next Generation Clean Energy Center is located in Brevard County, on North U.S. Highway 1 between Cocoa and Titusvlle. The plant was placed in service in 2013. The plant is configured as a 3-on-1, i.e., three combustion turbines to one steam turbine generator, with a generating capacity of 1,210 megawatts at the summer peak rating. The combustion turbines are Siemens 8000H gas turbines. Combustion controls and selective catalytic reduction (SCR) minimize emissions. Emergency/back-up fuel is ultra-low sulfur light oil. The site is located adjacent to a transmission substation and major transmission lines needed to deliver power to the grid.

Consistent with the life spans for combined cycle plants in ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI, the Company has been using the approved 30 year life span for the Cape Canaveral combined cycle plant. This life span results in a probable retirement date of 2043. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2053 probable retirement date in this study.

The current depreciation rates for Cape Canaveral, which are the same as those approved for West County, do not incorporate any estimates for interim retirements or interim net salvage. Consistent with the other combined cycle plants and with FPL's experience in operating these types of plants, interim survivor curves and interim net salvage estimates have been incorporated into the depreciation rates for each plant account for each generating unit.

### **Riviera Combined Cycle**

The Riviera Next Generation Clean Energy Center is located on US Highway 1 in Riviera Beach, Palm Beach County. The plant was placed in service in 2014. The plant is configured as a 3-on-1, i.e., three combustion turbines to one steam turbine generator, with a generating capacity of 1,212 megawatts at the summer peak rating. The combustion turbines are Siemens 8000H gas turbines. Combustion controls and selective catalytic reduction (SCR) minimize emissions. Emergency/back-up fuel is ultra-low sulfur light oil. The site is located adjacent to a transmission substation and major transmission lines needed to deliver power to the grid.

Consistent with the life spans for combined cycle plants in ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI, the Company has been using the approved 30 year life span for the Riviera combined cycle plant. This life span results in a probable retirement date of 2044. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2054 probable retirement date in this study.

The current depreciation rates for Riviera, which are the same as those approved for West County, do not incorporate any estimates for interim retirements or interim net salvage. Consistent with the other combined cycle plants and with FPL's experience in operating these types of plants, interim survivor curves and interim net salvage estimates have been incorporated into the depreciation rates for each plant account for each generating unit.

#### Port Everglades Combined Cycle

The Port Everglades Plant is located on a 93-acre site in Broward County at the Port Everglades seaport, which is near the cities of Hollywood and Ft. Lauderdale, Florida. The combined cycle plant, which replaces the retired steam plant that had been located at the same site, is planned to be placed in service in 2016. The plant is configured as a 3-on-1, i.e., three combustion turbines to one steam generator, with a generating capacity of 1,237 megawatts at the summer peak rating used. The combustion turbines are Siemens 8000H gas turbines. Combustion controls and selective catalytic reduction (SCR) minimize emissions. The site is located adjacent to a transmission substation and major transmission lines needed to deliver power to the grid.

Consistent with the life spans for combined cycle plants in ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI, the Company would use the approved 30 year life span for the Riviera combined cycle plant. This life span results in a probable retirement date of 2046. The Company is proposing to increase the life span estimate for this plant from 30 to 40 years, which corresponds to a 2056 probable retirement date in this study.

The current depreciation rates for Pt. Everglades, which are the same as those approved for West County, do not incorporate any estimates for interim retirements or interim net salvage. Consistent with the other combined cycle plants and with FPL's experience in operating these types of plants, interim survivor curves and interim net salvage estimates have been incorporated into the depreciation rates for each plant account for each generating unit.

#### DeSoto Solar Energy Center

The site of DeSoto Solar Energy Center is near Arcadia, in West Florida. The 25 MW facility went into service in 2009, and at the time was the largest solar photovoltaic (PV) power plant in the United States.

The Company originally filed depreciation parameters for the DeSoto Solar Energy Center in Docket No. 090130-EI, which became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2039, which was approved by the Commission. The Company is proposing to continue to use the approved probable retirement date for this study.

### Space Coast Solar Energy Center

Space Coast Solar Energy Center is located at the NASA Kennedy Space Center (NASA-KSC) near Cape Canaveral, Florida. The 10 MW facility was placed in service in 2010, and is a photovoltaic (PV) power plant. The NASA Kennedy Space Center and Florida Power and Light have entered into a lease for property encompassing about 60 acres, for the purpose of developing and operating this PV facility to generate renewable energy for use and distribution by both FPL and NASA-KSC.

The Company originally filed depreciation parameters for the Space Coast Solar Energy Center in Docket No. 090130-EI, which became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2040, which was approved by the Commission. The Company is proposing to continue to use the approved probable retirement dates for this study, which is based on the end of Florida Power and Light's lease.

### Martin Solar Energy Center

Martin Solar Center was placed in service in 2010 near Indiantown. The 75 MW facility was at the time of installation the United States second largest solar power plant and the largest solar thermal facility outside of California.

The plant consists of approximately 190,000 mirrors over about 500 acres at the FPL Martin Plant site. The solar technology used at Martin site uses solar collectors with mirrored surfaces that reflect the sunlight onto a receiver that heats up a liquid. This heated liquid is used to make steam that produces electricity in the existing Martin Unit 8 combined cycle plant.

The Company originally filed depreciation parameters for the Martin Solar Energy Center in Docket No. 090130-EI, which became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a probable retirement date of 2040, which was approved by the Commission. The Company is proposing to modify the probable retirement date to 2045 in order to be consistent with the estimated retirement date for Martin Unit 8.

### Babcock Ranch Solar Energy Center

The Babcock Ranch Solar Energy Center is proposed to be built by 2016 as a photovoltaic solar power facility located near Babcock, Florida, with a proposed nameplate capacity of 74.5 MW and a facility size of approximately 440 acres. The facility is proposed to include approximately 229,000 panels in conjunction with 40 GE 2 MVA inverters and one 85 MVA step-up transformer.

The current depreciation parameters for this new solar facility are the same as those filed for the Company's existing solar facilities in Docket No. 090130-EI, which became part of Docket No. 080677-EI. The current depreciation parameters were ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. In the 2009 depreciation study, the Company proposed a 30 year life span for solar facilities, which was approved by the Commission. The Company is proposing to continue to use the approved life span for this study, which corresponds to a probable retirement date of 2046.

### Manatee Solar Energy Center

The Manatee Solar Energy Center is proposed to be built by 2016 as a photovoltaic solar power facility located in Manatee County, Florida, with a proposed nameplate capacity of 74.5 MW and a facility size of approximately 762 acres. The facility is proposed to include approximately 229,000 panels in conjunction with 40 GE 2 MVA inverters and one 85 MVA step-up transformer.

The current depreciation parameters for this new solar facility are the same as those filed for the Company's existing solar facilities in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a 30 year life span for solar facilities, which was approved by the Commission. The Company is proposing to continue to use the approved life span for this study, which corresponds to a probable retirement date of 2046.

# Citrus Solar Energy Center

The additional Citrus Solar Energy Center (Citrus) is proposed to be built by 2016 as a photovoltaic solar power facility located in DeSoto County, Florida, with a proposed nameplate capacity of 74.5 MW and a facility size of approximately 841 acres. The facility is proposed to include approximately 229,000 panels in conjunction with 40 GE 2 MVA inverters and one 85 MVA step-up transformer.

The current depreciation parameters for this new solar facility are the same as those filed for the Company's existing solar facilities in Docket No. 090130-El, which became part of Docket No. 080677-El. The current depreciation parameters were ordered in Order No. 10-153-FOF-El, which was approved in stipulation agreement, Order No. 11-0089-S-El. In the 2009 depreciation study, the Company proposed a 30 year life span for solar facilities, which was approved by the Commission. The Company is proposing to continue to use the approved life span for this study, which corresponds to a probable retirement date of 2046.

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#### Peaker Plants

The Company plans to install seven peaking gas fired combustion turbines, which will be constructed at its existing Lauderdale and Ft. Myers sites. These modern units will replace the peaking capacity of the existing Lauderdale and Ft. Myers gas turbines that will be retired. The new Lauderdale Peakers will consist of five combustion turbines, each rated for 231 MW. The new Ft. Myers Peakers will consist of two combustion turbines. Each combustion turbine will have a generating capacity of 231 megawatts at the summer peak rating.

For both facilities, the current depreciation rates are based on the life spans for combined cycle plants in ordered in Order No. 10-153-FOF-EI, which was approved in stipulation agreement, Order No. 11-0089-S-EI. This life span results in a probable retirement date of 2046 for each facility. The Company is proposing to increase the life span estimate for these plants from 30 to 40 years, which corresponds to a 2056 probable retirement date in this study.

The current depreciation rates are the same as those approved for West County, which do not incorporate any estimates for interim retirements or interim net salvage. Consistent with the combined cycle plants and with FPL's experience in operating these types of plants, interim survivor curves and interim net salvage estimates have been incorporated into the depreciation rates for each plant account for each generating unit. However, due to less frequent operation at the peaker facilities, longer service lives are recommended for capital spare parts at peaker plants than at combined cycle plants.

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#### Gas Turbines

Lauderdale has twenty-four gas turbine modules located at the plant in two groups of twelve units each. Each module consists of two Pratt and Whitney gas generators coupled to a Worthington power turbine, which drives an Electric Machinery generator. These gas turbine modules are used as peaking units only and are fueled by natural gas or #2 light oil. The combined generating capacity for the gas turbines is 824 megawatts at the summer peak rating. FPL plans to retire all but two of the gas turbine modules at this site. The remaining two units will be used for black start capability.

**Ft. Myers** has eleven gas turbine units consisting of General Electric 7B gas turbines and electric generators. The eleven units have a combined generating capacity of 594 megawatts at the summer peak rating. The gas turbine units went into commercial operation in 1974. A twelfth unit was retired in 2012, and FPL plans to retire all but two of the remaining gas turbines at this site. The remaining two units will be used for black start capability.

**Port Everglades** has twelve gas turbine modules which are used as peaking units. Each module consists of two Pratt and Whitney gas generators coupled to a Worthington power turbine, which drives an Electric Machinery generator. The combined generating capacity for the gas turbines is 412 megawatts at the summer peak rating. FPL plans to retire all of the gas turbines at this site.

Florida Power and Light Company's current depreciation rates for the gas turbines were originally filed in Docket No. 050188-El, and became part of Docket No. 050045-El which was approved in stipulation agreement, Order No. 05-0902-S-El. In this study, the Company is proposing a probable retirement date of 2028 for the remaining Ft. Lauderdale and Ft. Myers gas turbines.

### Account 341 (FERC): Structures and Improvements

This account includes the cost of structures and improvements for other power generation.

#### GENERAL INFORMATION:

The structures in this account include all structures located at the Company's other production plants Interim retirements for this account have averaged about \$1 million per year over the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion: The 25-R5 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0023 interim retirement rate, which corresponds to an average service life of approximately 217 years.

For this study, bands analyzed included the overall experience, as well as the most recent ten, twenty and thirty year experience bands. The 80-R2 survivor curve represents a good fit of the historical data. This estimate forecasts that a little more 10% of the original installations in this account would be retired as interim retirements over a 40 year life span, which is a reasonable expectation for this type of property.

Recommendation: The recommendation is to change currently-authorized interim retirement rate to the 80-R2 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (25) percent was proposed in the 2009 depreciation study. An estimate of (2) percent was ordered. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986-2014. The overall average cost of removal is 50 percent, the average gross salvage is 3 percent, and the average net salvage is (47) percent. More recent years show more negative net salvage. The most recent ten year average is (55) percent and the most recent five year average is (60). More recent years are also more representative of the current fleet of combined cycle plants.

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The data supports more negative net salvage than the approved estimate. More recent data supports that an estimate in excess of (50) percent could be appropriate. However, the three-year moving averages have varied over the most recent 10 years and a definitive trend cannot be established from the data. A more gradual change, which is more consistent with typical estimates for structures and improvements, is recommended at this time.

Recommendation: The recommendation is to change the currently authorized negative net salvage rate of (2) percent to (25) percent. This estimate is adjusted for interim retirements to a (2) percent composite net salvage percent for both combined cycle and peaker plants.

# Account 342 (FERC): Fuel Holders, Producers and Accessories

This account includes the cost installed of fuel handling and storage equipment used between the point of fuel delivery to the station and the intake pipe through which fuel is directly drawn to the engine, also the cost of gas producers and accessories devoted to the production of gas for use in prime movers driving main electric generators.

### GENERAL INFORMATION

Interim retirements have averaged less than \$800,000 per year for this account.

### SERVICE LIFE ANALYSIS:

Discussion: The 22-R3 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0095 interim retirement rate, which corresponds to an average service life of approximately 53 years.

For this study, bands analyzed included the overall experience, as well as the most recent ten, twenty and thirty year experience bands. The 50-R1.5 survivor curve represents a good fit of the historical data.

Recommendation: Change currently-authorized interim retirement rate to the 50-R1.5 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study, a net salvage estimate for interim retirements of (5) percent was proposed, and an estimate of 0 percent was approved. In the historical net salvage analysis, which consists of data from 1987 through 2014, most years have experienced cost of removal, while fewer have experienced gross salvage. The overall average cost of removal was 15 percent, the average gross salvage was 2 percent, and the average net salvage was (14) percent. More recent years have shown higher removal costs. The most recent ten year average is (27) percent and the most recent five year average is (34) percent. More recent years are also more representative of the current fleet of combined cycle plants.

> The data indicates that there is typically negative net salvage for this account. The trend in the historical data is to more

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negative net salvage. While more recent years show more negative net salvage, an estimate of (10) percent is an increase from the previous depreciation study of (5) percent and represents a reasonable, if conservative, indication of future expectations for this account.

Recommendation: An increase in negative net salvage is appropriate. The recommendation is to increase the currently authorized negative net salvage rate of 0 percent to (10) percent. This estimate is adjusted for interim retirements to a (3) percent composite net salvage percent for both combined cycle plants and peaker plants.

### Account 343 (FERC): Prime Movers - General

This account includes the cost installed of Diesel or other prime movers devoted to the generation of electric energy, together with their auxiliaries.

#### GENERAL INFORMATION:

For this depreciation study, this account has been subdivided between Capital Spare Parts and the remaining assets in Account 343, referred to as Prime Movers – General. Capital spare parts include components of the gas cycle of the Company's combined cycle and peaker plants such as hot gas path and combustor components that are inspected and refurbished at regular intervals. The Prime Movers – General depreciable group includes the other components included in Account 343. The assets in Prime Movers – General are expected to have longer service lives than capital spare parts, and also are expected to experience lower levels of gross salvage.

For Prime Movers – General, interim retirements have averaged approximately \$21 million per year for the past 10 years.

#### SERVICE LIFE ANALYSIS:

Discussion:

For Prime Movers – General, the 50-R1 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0057 interim retirement rate, which corresponds to an average service life of approximately 88 years.

For this study, bands analyzed included the overall experience, as well as the most recent ten, twenty and thirty year experience bands. More recent experience and placement bands, including those since 2002, were also analyzed as these bands provided indications for the newer combined cycle plants. The service life indications for the various bands were relatively similar, and the life analysis of the historical data provides a good indication of the interim survivor characteristics for this account.

The 50-R1 survivor curve recommended in the previous study continues to represent a reasonable fit of the historical data. While the best fitting curves may indicate a somewhat shorter service life than the 50-R1, the 50-R1 reflects that a portion of the recent activity has been associated with upgrades to the Company's combined cycle plants. The expectation going forward is that there may be a somewhat lower rate of interim retirements than in the most recent years for this account.

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Recommendation: Change currently-authorized interim retirement rate to the 50-R1 interim survivor curve. This is the same estimate as was recommended in the previous depreciation study.

### NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (10) percent was proposed in the 2009 depreciation study, and an estimate of 0 percent was approved. For the historical net salvage analysis, twenty-nine years of data were available, ranging from 1986 through 2014. Most years have cost of removal and gross salvage, with removal costs generally exceeding gross salvage. The overall average cost of removal was 16 percent, the average gross salvage was 4 percent, and the average net salvage was (13) percent. The most recent ten and five year averages were (13) percent and (16) percent, respectively. More recent years are also more representative of the current fleet of combined cycle plants.

> The historical data supports a more negative net salvage estimate than the approved 0 percent. The overall and more recent averages support an estimate of at least (10) percent.

Recommendation: The recommendation is to increase the currently authorized negative net salvage estimate of 0 percent to (10) percent. This estimate is adjusted for interim retirements to a (3) percent composite net salvage percent for both combined cycle and peaker plants.

# Account 343 (FERC): Prime Movers – Capital Spare Parts

FERC Account 343 includes the cost installed of Diesel or other prime movers devoted to the generation of electric energy, together with their auxiliaries.

### GENERAL INFORMATION:

For the Depreciation Study, this account has been subdivided between capital spare parts and the remaining assets in Account 343, referred to as Prime Movers – General. Capital spare parts includes components such as compressor rotors and blades, turbine rotors and blades, fuel and transition nozzles, and turbine and compressor casings that are both in the units and are emergency spares.

Capital spare parts include components of the gas cycle of the Company's combined cycle and gas turbine plants that have shorter service lives than the plants themselves. These components include hot gas path and combustor components that are inspected and refurbished at regular intervals. For most of the components, these intervals have historically been 24,000 operating hours, although the interval length varies depending on the type of asset. Some assets have shorter outage intervals and others are replaced at longer intervals. At the time of inspections, many components are removed and refurbished. FPL retires each asset when refurbished, and records a salvage value for the retired component. This amount, plus the refurbishment cost is then recapitalized when returned to service. After three replacement cycles, the assets are retired. Most of the Company's combined cycle plants operate approximately 6,000 to 8,000 hours per year, and as a result a typical inspection cycle is approximately 3 to 4 years. Peaker plants operate for fewer hours each year, and therefore the inspection cycle occurs less frequently.

The Company has made and continues to make significant investment in capital spare parts, which for many plants will increase the inspection intervals and therefore the service lives for capital spare parts. The Company's GE plants are being upgraded from older generation 7FA.03 components to newer, more robust 7FA.04 and 7FA.05 components. These components both mitigate issues with corrosion and have longer inspection intervals (32,000 hours for many components compared to 24,000 hours for 7FA.03 components).

### SERVICE LIFE ANALYSIS:

Discussion:

The 5-O3 survivor curve was proposed for interim retirements for Capital Spare Parts in the 2009 depreciation study. The Commission ordered a 0.1565 interim retirement rate, which corresponds to an average service life of approximately 3.2 years. For the current study, separate life analyses were performed for combined cycle and peaker plants.

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Bands studied for combined cycle capital spare parts include the overall experience and the most recent 10 and 20 year experience bands. Experience and placement bands spanning 2002-2014 and 2007-2014 were also analyzed, as these ranges of years included the experience for newer plants.

Generally, the different bands had fairly similar life characteristics. The service life indications from the statistical analysis were for lower mode L curves with average service lives of 6 to 7 years representing the best fits of the historical data. However, the expectation is that upgrades to the components at many of the Company's plants, combined with reduced operating hours for some of the plants, will increase to time between inspections by on average about 30 percent. Additionally, some of the retirements in recent years were due to corrosion issues at certain plants. This activity is not expected to reoccur going forward (these transactions were excluded from the life analysis).

Given these considerations, an average service life of 8 or 9 years best represents the future expectations for this account. A low-mode L type curve is also representative of the assets in this account.

For peaker plants, bands studied in the analysis for this study include the overall band, as well as the most recent ten and twenty year experience bands. While there is less data available for peaker plants than for combined cycles, the analysis of the historical data produced reasonable results. The service lives for these types of plants were longer than those of combined cycles, due to both differences in components as well as to fewer operating hours. The 25-R1 survivor curve represents a good fit of the historical data for gas turbines and reflects that the peaker plants will have longer periods of time between inspection intervals.

Recommendation: Change currently-authorized interim retirement rate to the 9-L0 survivor curve for combined cycle and to the 25-R1 survivor curve for peaker plants. These estimates incorporate the statistical analysis of historical data as well as the future expectations for capital spare parts.

### NET SALVAGE ANALYSIS:

Discussion:

The net salvage analysis is combined for combined cycle and peaker plants. A net salvage estimate for interim retirements of 40 percent was proposed for Capital Spare Parts in the 2009 depreciation study, and an estimate of 0 percent was approved for all of FERC Account 343.

Data was available for the net salvage analysis from 1987 through 2014, although retirement experience has been much higher since 1999 and especially since 2003. The Company has experienced high levels of both cost of removal and gross salvage for retirements related to capital spare parts, although gross salvage typically exceeds cost of removal. While certain transactions related to corrosion issues were excluded from the life analysis, they have been included in the net salvage analysis because these transactions are not expected to have materially different net salvage than for other retirements.

In the net salvage analysis for this study, gross salvage exceeds cost of removal, with most of the salvage related to the refurbishment of components in this account. The overall average gross salvage is 37 percent, the average cost of removal is 4 percent, and the overall average net salvage is a positive 33 percent. More recent years have experienced similar levels of net salvage. The most recent ten year average net salvage is 35 percent, and the most recent five year average net salvage is also 35 percent.

When capital spare parts are removed from a plant in order to be refurbished, FPL records gross salvage based on the operating hours remaining before the component is scrapped (i.e. the time when it can no longer be refurbished). Most components can be in service for three cycles before being scrapped, meaning that they can be refurbished twice. For example, for components that have 24,000 hour inspection intervals and can be refurbished twice (i.e. will be scrapped after 72,000 operating hours), the first refurbishment results in 67 percent gross salvage, the second 33 percent gross salvage and the third will result in the scrap value of the component. Thus, this process will result on average in gross salvage in the 35 to 40 percent range, depending on scrap value, and net salvage of 30 to 35 percent based on cost of removal that has historically been around 5 percent. These expectations are consistent with the historical data.

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The historical data and the Company's practices for recording salvage for these assets support a positive gross salvage estimate. The overall and more recent averages support a 30 to 35 percent net salvage estimate.

Recommendation: Change the currently authorized net salvage rate of 0 percent to 35 percent. This estimate is adjusted for interim retirements to 29 percent composite net salvage percent for peakers. Based on the 9-L0 survivor curve estimate for combined cycle, the majority of the retirements of plant in service will be interim retirements, and so the 35 percent net salvage estimate applies to all combined cycle capital spare parts.

### Account 344 (FERC): Generators

This account includes the cost installed of diesel or other power driven main generators.

### **GENERAL INFORMATION**

Interim retirements for this account have averaged about \$2.6 million per year for the past ten years.

### SERVICE LIFE ANALYSIS:

Discussion:	The 30-R5 survivor curve was proposed for interim
	retirements in the 2009 depreciation study. The Commission
	ordered a 0.0016 interim retirement rate, which corresponds
	to an average service life of approximately 312 years.

In the analysis for this study, bands studied include the overall band, as well as the most recent ten and twenty year experience bands. More recent bands show somewhat shorter average service lives than the overall band.

The 60-R2 survivor curve represents a good fit of the historical data.

Recommendation: Change currently-authorized interim retirement rate to the 60-R2 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of (100) percent was proposed in the 2009 depreciation study. An estimate of (1) percent was approved. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 through 2014. Cost of removal has exceeded gross salvage in most years. The overall average cost of removal was 57 percent, the average gross salvage was 18 percent, and the average net salvage was (40) percent. Most of the gross salvage was recorded in the most recent two years. The most recent ten year net salvage average is (30) percent and the most recent five year net salvage average is (23) percent.
The data supports a more negative net salvage estimate than the approved (1) percent estimate.

Recommendation: Increase the approved estimate of (1) percent to a net salvage estimate of (20) percent. While a more negative estimate is supported by the overall average net salvage, the (20) estimate is more reflective of the more recent data. This estimate is adjusted for interim retirements to a (3) percent composite net salvage percent for both combined cycle and peaker plants.

# Account 345 (FERC): Accessory Electric Equipment

This account includes cost installed of auxiliary generating apparatus, conversion equipment, and equipment used primarily in connection with the control and switching of electric energy produced in other power generating stations, and the protection of electric circuits and equipment, except electric motors used to drive equipment included in other accounts. Such motors shall be included in the account in which the equipment with which it is associated is included.

### GENERAL INFORMATION:

The Company's step-up transformers are not contained in the account, and are instead in Account 353.2, Step-Up Transformers. Interim retirements have averaged \$1.8 million per year for the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion: The 28-R4 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0013 interim retirement rate, which corresponds to an average service life of approximately 385 years.

> Bands studied in the life analysis for this study include the overall experience, as well as the most recent ten and twenty year bands. The historical data provide good indications of the service life for interim retirements.

> The 50-R2.5 survivor curve represents a good fit of the historical data.

Recommendation: Change currently-authorized interim survivor curve to the 50-R2.5 survivor curve.

#### NET SALVAGE ANALYSIS:

Discussion:

A net salvage estimate for interim retirements of (10) percent was proposed in the 2009 depreciation study. An estimate of (1) percent was approved. The historical data available for the net salvage analysis ranged from 1986 through 2014. Both have trended slightly higher in recent years. The overall average cost of removal was 15 percent, the average gross salvage was 2 percent, and the average net salvage was (13) percent. The most recent ten year net salvage averages was (15) percent and the most recent five year average was (17) percent. The data supports a higher negative net salvage estimated than the approved (1) percent estimate.

Recommendation: Increase the approved net salvage estimate of (1) percent to a net salvage estimate of (10) percent. This estimate is adjusted for interim retirements to a (2) percent composite net salvage percent for both combined cycle and peaker plants.

# Account 346 (FERC): Miscellaneous Power Plant Equipment

This account includes the cost installed of miscellaneous equipment in and about the other power generating plant, devoted to general station use, and which is not properly includible in any of the foregoing other power production accounts.

### GENERAL INFORMATION

Interim retirements for this account have averaged a little under \$200,000 per year for the past ten years.

#### SERVICE LIFE ANALYSIS:

Discussion: The 22-R4 survivor curve was proposed for interim retirements in the 2009 depreciation study. The Commission ordered a 0.0026 interim retirement rate, which corresponds to an average service life of approximately 192 years. Bands studied in the life analysis for this study include the overall band, as well as the most recent ten and twenty year experience bands.

The 50-S0.5 survivor curve represents a good fit of the data through the representative data points.

Recommendation: Change currently-authorized interim survivor curve to the 50-S0.5 survivor curve.

## NET SALVAGE ANALYSIS:

Discussion: A net salvage estimate for interim retirements of 0 percent was proposed and approved in the 2009 depreciation study. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 through 2014. Most recent years with retirements show some cost of removal and limited gross salvage. The overall average cost of removal is 4 percent, the average gross salvage is 2 percent, and the average net salvage is (3) percent. Cost of removal has been somewhat higher in more recent years, but is offset by gross salvage recorded in 2012 that was higher than has been recorded in other years. The most recent ten year average was (3) percent. Recommendation: The historical data supports that a negative net salvage estimate is appropriate. The recommendation is for a (5) percent estimate, which is the same estimate as used for steam and nuclear miscellaneous equipment. This estimate is adjusted for interim retirements to a (2) percent estimate for both combined cycle and peaker plants.

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XI. DETAIL OF TRANSMISSION, DISTRIBUTION AND GENERAL PLANT

# Account 350.2 (FERC): Easements

This account includes the cost of land and land rights for electric transmission.

### GENERAL INFORMATION

This account includes easements used for transmission plant, both for substations and for transmission lines.

### SERVICE LIFE ANALYSIS:

Discussion: For land rights accounts it is not uncommon to have a limited level of retirements in the historical data, and therefore the results of the life analyses do not provide definite results for this account. Typical average lives in the industry for this account are in the 60 to 80 year range. The life and curve used for this account prior to the 2009 Depreciation Study was 50-S4. In the 2009 Study the existing life and curve were proposed, as there was no new information based on the life analysis that would result in a change in service life estimate.

account to be increased to 75 years while continuing to use an S4 curve. The historical data does not provide support for modifying the 75-S4 estimate that the Commission ordered.

Recommendation: Continue to use the approved 75-S4 survivor curve.

### NET SALVAGE ANALYSIS:

Discussion: There has been limited historical activity in this account. Typically estimates of 0 percent are used for land rights, as there is generally neither cost of removal nor gross salvage when land rights are retired.

Recommendation: Retain currently authorized net salvage rate of 0 percent.

## Account 352 (FERC): Structures and Improvements

This account includes the cost of structures and improvements for electric transmission. This includes the cost of all buildings and fixtures permanently attached to the structures and improvements.

### GENERAL INFORMATION

Structures in this account are transmission buildings that usually house controls for substations. There are also other types of property associated with transmission included fencing, walkways, lighting, etc. The buildings are constructed of brick, block and metal. Retirements are generally the result of deterioration or inadequacy. Structures are also retired when an entire substation is removed from service.

## SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study a 60-R3 survivor curve was recommended for this account and this estimate was adopted by the Commission. Bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis indicates an average service life in the 60 to 70 year range and mid to high mode type curves, and the data indicates an increase in service life from the approved estimate. The 65-R3 represents a better fit of the historical data for the representative data points than the existing 60-R3 survivor curve and is within the range of typical estimates for this type of property.
- Recommendation: The recommendation is to increase the average service life and retain the existing curve type. The 65-R3 survivor curve is recommended for this account.

# NET SALVAGE ANALYSIS:

Discussion: The net salvage recommended and approved in the 2009 depreciation study was (15) percent. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. In recent years, cost of removal has decreased from higher amounts recorded in the 1980s and 1990s, but continues to exceed gross salvage in most years.

The overall average for the net salvage is (33) percent. However, this average is influenced by higher cost of removal amounts in earlier years. The most recent ten year average net salvage is (7) percent and the most recent five year average is also (7) percent. More recent years are influenced by relatively large gross salvage recorded in 2014. Overall, the long term and more recent average net salvage support that negative net salvage is still appropriate and that the approved estimate continues to be reasonable for this account.

Recommendation: Continue to use the (15) percent net salvage for this account based on the more recent data from the analysis.

# Account 353 (FERC): Station Equipment

This account includes the cost of station equipment for electric transmission, specifically transforming, conversion and switching equipment.

### GENERAL INFORMATION

This account is made up of all transmission substation equipment and is the largest transmission account. The two main components that make up the largest portion of the investment in this account are transformers and circuit breakers. Transformers and circuit breakers are typically retired due to failure, proactive replacement and due to capacity needs or upgrades. Predictive replacements (i.e. the replacement of assets predicted to fail due to the results of analyses such as dissolved gas analysis) have become more common, and FPL has installed real-time dissolved gas analysis devices on many of its larger transformers. FPL has a program to replace older oil-filled breakers. Additionally, the expectation is that newer transformers and breakers may not last as long as those installed thirty or forty years ago due to the fact that newer transformers have tighter design tolerances. There is also a program to replace relays. Solid state relays are being replaced with microprocessor based relays, which typically have shorter lives than the older style relays.

Retirement, cost of removal and gross salvage transactions related to events not expected to reoccur, such as the early failure of a transformer, were excluded from the life and net salvage analyses.

### SERVICE LIFE ANALYSIS:

Discussion:

According to FPL personnel, breakers and transformers have a design life of 30 to 35 years. However, if these assets are operated at a lower capacity the equipment can last as long as 50 years. Newer transformers may not last as long as the older ones due to tighter design tolerances. Environmental and climate conditions in FPL's service territory, such as heat, rain, wind, lightening, and salt spray all have an impact on the service life of substation equipment. For these reasons, FPL experiences shorter service lives for this type of equipment than many others in the industry.

A 38-R1.5 survivor curve was recommended in the 2009 depreciation study. The Commission adopted the 40-R1.5 survivor curve. Bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. Each of the bands produced fairly similar results, with the

best fitting curves having average service lives close to the approved 40 years and low to mid mode R and S type curves.

The statistical analysis is considered to be indicative of the future experience for this account. While some factors, such as tighter design tolerances, could lead to shorter service lives in the future these may be offset by predictive maintenance and other programs. The historical data indicates a similar service life to the approved estimate, but a slightly lower mode curve.

The existing 40-R1.5 survivor curve is a good fit of the data, but the 39-R1.5 and 40-R1 curves are a better match the historical data points. The 39-R1.5 fits the data well, but represents a moderate decrease in average service life. However, the 40-R1 survivor curve is a better fit of the middle portion of the curve. The 40-R1 is therefore considered the better estimate, and is also the same average service life as the approved estimate. This life and curve is consistent with estimates for other utilities for this type of property, and although it is on the lower end of the range this should be expected given the reasons mentioned above.

Recommendation: The recommendation for this account is the 40-R1 survivor curve, which is a very good fit of the historical data. This estimate also takes into consideration information provided by FPL personnel and experience of the industry.

### NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study, the recommendation was for (10) percent net salvage. The Commission approved an estimate of (2) percent. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal is 12 percent, the overall average gross salvage is 11 percent and the overall average net salvage is (1) percent. Cost of removal has been relatively consistent over the full period of the net salvage analysis. The most recent 10 and 20 year averages are also 12 percent, and most three-year averages are in the 7 to 15 percent range, especially in the past 20 years.

Gross salvage has trended lower overall, although there have been some larger gross salvage amounts in recent years. Some of these gross salvage amounts, which are

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related to warranty retirements and reimbursements, are not expected to be typical of the future experience for all of the assets in the account. Gross salvage was high in the late 1980s and early 1990s, but since that time has been more moderate. The most recent 20 year gross salvage is 8 percent and the most recent 10 year average gross salvage is 7 percent.

As a result of the decrease in gross salvage from the 1980s and 1990s, net salvage has trended somewhat more negative. The most recent 20 year net salvage is (4) percent and the most recent 10 year average is (5) percent. The most recent five year average is more influenced by the gross salvage recorded in 2012, and was zero percent.

Recommendation: While the most recent 10 and 20 year average net salvage percents support an estimate of (5) percent, more recent years have seen higher gross salvage on average. For this reason, it is appropriate to retain the current approved (2) net salvage, which is consistent with the overall average net salvage. However, if gross salvage returns to a lower level, a more negative net salvage estimate may be appropriate in the future.

# Account 353.1 (FERC): Station Equipment – Step-Up Transformers

This account includes the cost of station equipment located at the Company's generating facilities, specifically step-up transformers.

## GENERAL INFORMATION

Step-up transformers were part of Account 353, Station Equipment, until 2000 when the Company moved these assets to a separate subaccount. Historical plant investment and reserve were split into a new subaccount. Historical data for the account is available from 2000 through 2014. There have been a number of retirements of step-up transformers in recent years. The Company has retired a number of power plants at the end of their useful lives, which resulted in retirements of step-up transformers.

Retirement, cost of removal and gross salvage transactions related to events not expected to reoccur, such as the early failure of a transformer, were excluded from the life and net salvage analyses.

## SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study the recommended life and curve was 33-R2. The Commission approved the 35-R2 survivor curve. Data was available for actuarial analysis from 2000 through 2014. The statistical analysis indicated shorter service lives than the existing estimate, with best fitting curves having average service lives in the high 20s and low to mid modes. The shorter service lives are the result of a higher level of retirements in recent years.
- Recommendation: The 30-R1 survivor curve is recommended for this account. This estimate is somewhat longer than the best fitting curves (for example the 27-R0.5 or 27-S0), which reflects that retirements may not occur at the same rate as in recent years.

### NET SALVAGE ANALYSIS:

- Discussion: In the 2009 depreciation study, the recommendation was for 0 percent net salvage, which was approved by the Commission. Fifteen years of data were available for the net salvage analysis, ranging from 2000 to 2014. The overall cost of removal has been 3 percent, and the overall gross salvage has also been 3 percent, and the overall net salvage was (1) percent. The historical data therefore supports the approved estimate of 0 percent.
- Recommendation: Continue to use the approved 0 percent net salvage.

## Account 354 (FERC): Towers and Fixtures

This account includes the cost of towers and fixtures used in electric transmission.

## **GENERAL INFORMATION**

Most of the assets in this account were placed in service in the 1970s and 1980s, corresponding with the construction of the Company's nuclear plants and coal plants. There were also large additions in the 1990s.

### SERVICE LIFE ANALYSIS:

Discussion:

In the 2009 depreciation study the 45-R5 survivor curve was recommended. The Commission extended the average service life, and approved the 52-R5 survivor curve. Bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. Because most of the assets have been installed in the past 40 years, there have been relatively few retirements. While the statistical results are inconclusive, they do show an increase in retirement rates in the late 20 to 30 year age ranges. Estimates for other utilities typically range from 50 to 75 years. Higher mode R curves are also the most common for survivor curve estimates for this account.

A higher mode curve is indicative of the causes of retirement for these types of assets. Towers are generally retired when the transmission line is rerouted or replaced with conductors upgraded for heavier duty. Towers also are replaced due to foundation decay. It is possible that the environmental and climate conditions in Florida could impact the service lives of towers, as is the case with other types of assets.

Because there have been relatively few retirements through age 40, an increase in the average service life is appropriate for this account. The 60-R4 fits the available data well and represents an eight year increase in average service life. The R4 survivor curve, which has a wider dispersion of retirements than the approved R5 curve, reflects that there have been some retirements in ages in the 20s and 30s.

Recommendation: The recommendation is for a change in the estimated survivor curve to the 60-R4.

# NET SALVAGE ANALYSIS:

Discussion	In the 2009 depreciation study, an estimate of (15) percent was recommended and approved by the Commission. While there has been a relatively limited level of retirement activity, there have been more retirements available in recent years than was available for the previous study. Each year since 2009 has experienced cost of removal, with the average cost of removal since 2009 averaging 72 percent of retirements for this period.
	The data therefore supports a negative net salvage estimate. It is reasonable to expect negative net salvage for towers, as large transmission towers require manpower and equipment to remove. Negative net salvage is also consistent with other transmission and distribution line structures, such as poles, which have more recorded net salvage data. The net salvage estimate for transmission poles is (55) percent and for distribution poles is (100) percent. Thus, these factors, as well as the historical data for this account, support than a more negative net salvage estimate is appropriate.
Recommendation:	A more negative estimate is supported by the historical data. However, there has not been as much activity for this account as for other overhead transmission line accounts. For this reason, a more gradual change is recommended for this study. An estimate of (25) percent net salvage is recommended. This is a conservative estimate compared to

the overall average net salvage of (50) percent.

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## Account 355 (FERC): Poles and Fixtures

This account includes cost of poles (all types) and fixtures used in electric transmission.

### GENERAL INFORMATION

As a part of FPL's storm hardening program, the Company has and continues to replace its wood poles with concrete poles. By the end of 2017, the date of the depreciation calculations in this study, most of the Company's poles will be concrete. Retirements for transmission poles typically occur due to damage, deterioration, loading, capacity and relocations. Retirements have also occurred as a result of storm hardening.

#### SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the 44-R2 survivor curve was recommended, which was approved by the Commission. For the current study, bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. The actuarial analysis indicated best fitting curves with average service lives of around 45 years. The R2 type curve continues to be a good fit of the historical data (for example, the 46-R2 is a very good fit of the historical data).

Due to the replacement of wood poles with concrete poles, the overall composition of this account has changed. Most transmission poles are now concrete instead of wood. Concrete poles are expected to have a longer average service life than wood poles. This is supported by the statistical analysis for wood and concrete distribution poles (for which data was available to study the types of poles separately). As a result, the future expectations for this account are for a longer service life than is indicated in the historical data.

Recommendation: Increase the average service life and retain the same curve type. The 50-R2 survivor curve is recommended, which is a longer service life than the best fitting survivor curves from the statistical analysis. This is also the same average service life as is recommended for distribution concrete poles.

# NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study, the recommendation was for (50) percent net salvage, which was adopted by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal is 102 percent, the average gross salvage is 47 percent, and the overall average net salvage was (55) percent. The most recent five year average net salvage was (45) percent.

The removal of concrete poles typically requires the use of a crane, which in addition to higher equipment costs can increase costs related to road closures, traffic control, safety requirements and other costs. However, concrete poles are also more expensive to install, so it is reasonable to expect a similar ratio of net salvage to original cost for concrete poles as for wood poles in the future.

A portion of the increase in cost of removal in recent years has been due to the volume of work performed, in particular for the storm hardening program. The volume of work has impacted the cost for pole replacements, primarily due to contractor costs. Once the storm hardening program is completed, FPL's expectation is that these costs will moderate. For this reason, the cost of removal may be somewhat lower in the future than in recent years. However, gross salvage should also be expected to be lower than in recent years. Many of the recorded gross salvage amounts in recent years are related to reimbursements that should not be expected to reoccur (at least at the same rate) in the future.

Given these considerations, the overall and more recent averages are considered to provide a reasonable basis for the net salvage estimates for this account. While the expectation is that cost of removal should moderate when compared for recent years, the same should be expected for gross salvage.

Recommendation: The overall average net salvage is somewhat more negative than the approved estimate, but the most recent five year average is somewhat less negative. The historical net salvage analysis therefore continues to support the currently authorized net salvage estimate of (50) percent. The recommendation is to continue to use this estimate.

## Account 356 (FERC): Overhead Conductors and Devices

This account includes the cost of overhead conductors and devices on tower lines used for electric transmission.

### **GENERAL INFORMATION**

Transmission conductor is primarily for capacity and relocations. Damage and failure can also result in the replacement of conductor, as conductors exposed to greater wind loading suffer more metal fatigue.

### SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the 47-R1.5 survivor curve was recommended. which was approved by the Commission. For the current study, bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. Most bands indicate similar service life indications, although the most recent thirty year placement band indicates a somewhat shorter service life than for the overall period of data.

> The actuarial analysis indicates average service lives of around 50 years, with low to mid mode curves resulting in the best fits. The statistical analysis therefore indicates that an increase in average service life is appropriate for this account. The analysis also indicates a slightly lower mode curve type. R1 curves and S0 curves fit the historical data better than the existing R1.5 curve.

> The impact of the storm hardening program on conductor is uncertain at this time. The design of the program is to increase the strength of the structural assets on transmission and distribution lines (i.e. the poles). With stronger structures, more force from storms and wind could be transferred to the conductor, resulting in more retirements due to deterioration and damage. However, as many of the retirements for conductor occur due to capacity and relocations, the impact could be limited. For these reasons, the statistical analysis is considered to be indicative of future experience for this account.

> The 53-S0 and 51-R1 are both similar fits of the historical data. However, the 51-R1 maintains a similar curve type to

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the approved estimate (it is only half a mode lower). It is also a more moderate change in average service life. Due in part to the shorter average service lives indicated by more recent placements, a more moderate change is appropriate for this account.

Recommendation: Modify currently authorized 47-R1.5 service life and curve to the 51-R1 life and curve, which is a very good fit of the historical data in the statistical life analysis.

#### NET SALVAGE ANALYSIS:

- Discussion: In the 2009 depreciation study, the recommendation was for (50) percent net salvage, which was adopted by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal was 70 percent, the average gross salvage was 13 percent and the overall average net salvage was (57) percent. More recent averages have been fairly similar, with the most recent ten year average at (57) percent. The historical data therefore supports a more negative estimate than the approved (50) percent. More recent three year averages have also been more negative than the approved estimate.
- Recommendation: Increase the currently authorized net salvage rate from (50) percent to (55) percent. This estimate is consistent with the overall average of (57) percent.

# Account 357 (FERC): Underground Conduit

This account includes the cost of underground conduit and tunnels for housing of cables and wires for transmission conductors.

## **GENERAL INFORMATION**

Underground conduit for transmission is typically cathodically protected steel. Conduits with 230 kV and higher conductor contain cable oil, 115 kV and below have pressurized nitrogen. Most of the assets in this account have been installed since the mid-1960s, with over half of the investment in the account having been installed since 1999.

### SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study the 60-R4 survivor curve was recommended, which was approved by the Commission. For the current study, bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. Because most of the assets are 50 years old or less, there have been relatively few retirements The statistical analysis is therefore for the account. inconclusive. The historical data does indicate some retirements, but in general supports an increase in service life for the account from the approved 60-R4. Most estimates for others in the industry are in the 50 to 65 year range, and so an increase in average service life beyond 65 years is not appropriate at this time.
- Recommendation: The recommendation is for the 65-R4 survivor curve. This is the same average service life as is recommended for Account 358, Underground Conductors and Devices.

## NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study, the recommendation was for 0 percent net salvage, which was adopted by the Commission. Similar to the life analysis, the historical data is not conclusive for the net salvage analysis. The overall average cost of removal is 162 percent. The recorded cost of removal amounts in many years are much higher than the retirement amounts. The expectation is that in the future, when more conduit is retired, that cost of removal will moderate.

To the extent conduit is retired in place, there should be limited cost of removal and gross salvage, which supports the approved 0 percent net salvage. However, oil-filled conduit may have removal requirements, which could result in cost of removal for oil-filled pipe.

Recommendation: The recommendation at this time is to retain the currently authorized 0 percent net salvage rate. However, the data does indicate that cost of removal is often recorded when retirements are made. In future studies a negative net salvage estimate may be appropriate.

# Account 358 (FERC): Underground Conductors and Devices

This account includes the cost of underground conductors and devices for electric transmission.

### GENERAL INFORMATION

Similar to Account 357, most of the assets in this account have been installed since the mid-1960s. Over 60 percent of the investment has been installed since 1999.

### SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the 60-R3 survivor curve was recommended, which was approved by the Commission. For the current study, bands analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis indicated a longer service life than the approved estimate, with the better fitting curves having average service lives around 65 years.

The R3 curve is a better fit of the historical data than the approved L3 curve, and is also more reasonable for this type of property because it has a shorter tail and a more reasonable maximum life.

Recommendation: The recommendation is to use the 65-R3 survivor curve. This is a good fit of the available historical data.

### NET SALVAGE ANALYSIS:

- Discussion: In the 2009 depreciation study, the recommendation was for (10) percent net salvage, which was adopted by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal was 127 percent, the overall gross salvage was 61 percent and the overall average net salvage was (66) percent. Gross salvage has been recorded in 4 of the 29 years, and there has not been any gross salvage since 2000.
- Recommendation: The data indicates that an increase in negative net salvage is appropriate. However, because the level of historical

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retirements is somewhat limited a more gradual change is recommended at this time. A conservative net salvage estimate of (20) percent is recommended.

# Account 359 (FERC): Roads and Trails

This account includes the cost of roads and trails for access to electric transmission facilities.

### GENERAL INFORMATION

Most of the assets in this account have been installed since the 1970s, and almost 97 percent of the assets in service as of 2014 are for vintages 1974 and subsequent. As a result, the retirement experience is somewhat limited. Many of the retirements that have occurred are related to the retirements of culverts and bridges. Additionally, the state now requires soil sampling and other compliance testing when a road or trail is retired or if there are improvements to that road. Soil testing is for erosion and drainage.

### SERVICE LIFE ANALYSIS:

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In the 2009 depreciation study the 50-Square survivor curve was recommended. The Commission approved a 65-For the current study, bands Square survivor curve. analyzed in the statistical analysis include the overall experience band with activity since 1941, as well as more recent 20, 30 and 40 year bands. The most recent 30 and 40 year placement bands were also analyzed. Because most of the assets are 50 years old or less, there have been relatively few retirements for the account. The statistical analysis is therefore inconclusive. The historical data does indicate some retirements, but in general supports an increase in service life for the account from the approved 65-Sgare. The historical data also indicates that there is a dispersion of retirements, and therefore a higher mode R curve is more appropriate than the existing square curve.

Most estimates for others in the industry are in the 55 to 75 year range, and so an increase in average service life beyond 75 years is not appropriate at this time. An increase in average service life to 75 years also represents a relatively large change of 10 years for this account.

Recommendation: The 75-R4 survivor curve is recommended. This curve has the same average service life as the estimate for easements in Account 350.2.

## NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommended net salvage estimate was (10) percent, which was approved by the Commission. The net salvage analysis indicates negative net salvage is appropriate for this account. The overall average cost of removal is 89 percent, the average gross salvage is 10 percent, and the overall average net salvage is (79) percent.

Many of the retirements have been for assets such as culverts and bridges. While these retirements are indicative of future experience for culverts and bridges, the retirements of assets such as roads may experience less costs of removal than culverts and bridges. For this reason, the expectation is for a less negative net salvage than indicated by the historical data.

Recommendation: The recommendation is to continue to use the approved (10) percent net salvage.

### Account 361 (FERC): Structures and Improvements

This account includes the cost of structures and improvements used in connection with electric distribution substations. This includes the cost of all buildings and fixtures permanently attached to the structures.

### GENERAL INFORMATION:

The structures in this account are typically small control buildings with the majority being constructed of concrete or metal. Battery storage buildings are also included in this category, as are improvements such as fencing.

#### SERVICE LIFE ANALYSIS:

Discussion: The 60-R3 survivor curve was recommended in the 2009 depreciation study, which was adopted by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed.

There is relatively little data available for older ages for this account, and for this reasons the results of the life analysis are not definitive. The statistical analysis indicates that the approved curve type continues to be reasonable, but that an increase in average service life is appropriate for this account. The 65-R3 life and curve is a good fit of the most representative data points.

Recommendation: Increase the average service life from 60 to 65 years and retain the approved R3 curve type. This is the same estimate as recommended for transmission structures and improvements.

## NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study a net salvage estimate of (15) percent was recommended and was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 31 percent and the overall gross salvage is 10 percent. The overall net salvage was (22) percent. Both gross salvage and cost of removal have been somewhat lower in more recent years, but the overall net

salvage has been relatively consistent. The most recent 10 and 5 year averages of net salvage have been (20) percent and (22) percent respectively.

While the historical data could support a more negative estimate, the approved (15) percent continues to be a reasonable estimate for this account. This is the same estimate as recommended for similar property for Account 352, Structures and Improvements.

Recommendation: The recommendation is to continue to use the approved (15) percent net salvage.



# Account 362 (FERC): Station Equipment

This account includes the cost of station equipment used for the purpose of changing the characteristics of electricity in connection with its distribution.

### **GENERAL INFORMATION:**

This account includes distribution substation equipment. The two types of property that make up the largest portion of the investment in this account are circuit breakers and transformers. In discussions with FPL personnel, the Company indicated that the service lives of breakers and transformers (which makes up the largest investment in this account) have a 30 to 35 year design life, but can have longer lives if operated at a lower capacity. Transformers and circuit breakers are typically retired due to failure, proactive replacement and due to capacity needs or upgrades. Additionally, due to tighter design tolerances, the expectation is that newer transformers and breakers may not last as long as those installed thirty or forty years ago. There is also a program to replace relays. Solid state relays are being replaced with microprocessor based relays, which typically have shorter lives than the older style relays.

FPL may invest in energy storage assets, which could be used for production, transmission or distribution. The recommendation is that these assets would have a 15-S3 survivor curve and 0 net salvage.

### SERVICE LIFE ANALYSIS:

Discussion:

The service life estimate for this account in the 2009 depreciation study was 41-R1.5. The 43-R1.5 survivor curve was adopted by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The actuarial analysis indicates a trend to a somewhat longer service life than the approved 43-R1.5, as curves with longer average service lives provide better fits of the historical data. More recent bands also support a trend towards a somewhat longer average service life. The approved curve type is still a good fit of the historical data.

Newer transformers may not last as long as the older ones due to tighter design tolerances. This could mitigate the trend to a longer service life. Environmental and climate conditions in FPL's service territory, such as heat, rain, wind, lightening, and salt spray all have an impact on the life of substation equipment. For these reasons, FPL experiences shorter service lives for this type of equipment than many others in the industry.

The historical data indicate a trend to a longer service life than the approved estimate. The 45-R1.5 is a good fit of the historical data and represents the same curve type as the approved estimate. Other curves that fit the historical data well include S-type curves such as the 47-S0.5. However, the 45-R1.5 and 47-S0.5 are both similar (and very good fits) of the data, and do not provide a strong reason to modify the curve type from the existing R1.5. Additionally, it is possible that the future indications will be somewhat shorter than the historical data due to differences in design tolerances. This factor, as well as the fact that the average service life for transmission substation equipment is shorter (at 40 years), provides additional justification for the 45-R1.5 survivor curve as opposed to other similar fitting curves such as the 47-S0.5.

Recommendation: Continue to use the same curve type but increase the average service life to 45 years. The 45-R1.5 survivor curve is recommended.

# NET SALVAGE ANALYSIS:

- Discussion: In the 2009 depreciation study the net salvage estimate was (10) percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal for this period was 18 percent, the average gross salvage was 7 percent and the overall average net salvage was (10) percent. More recent averages also indicate net salvage of close to (10) percent. Thus, the historical data supports continuing to use the approved estimate for this account.
- Recommendation: Retain the current approved (10) percent net salvage for this account, which is consistent with the historical data.

# Account 364 (FERC): Poles, Towers and Fixtures

This account includes the cost of poles, towers, and appurtenant fixtures for supporting electric overhead distribution conductors and service wires.

## GENERAL INFORMATION

There are over 1.1 million distribution poles on the FPL system. Distribution poles are typically either wood or concrete. The Company's storm hardening program has led to the replacement of many wood poles (as well as older concrete poles) with new concrete poles. Poles on critical lines are designed to survive 145 mph sustained winds. FPL has a pole inspection program (PIP) in which each pole will be inspected every 8 years. This program will lead to improvements in reliability, but could increase retirements as poles found to be deficient will be replaced proactively as opposed to upon failure. The cost to replace a pole is currently approximately four to ten thousand dollars depending upon location. Concrete poles can often cost more to remove than wooden poles as crane rental are often required due to the weight of concrete poles. Wood pole replacement is mostly Douglas fir wood treated, and the most common height is 45 feet.

## SERVICE LIFE ANALYSIS:

Discussion:

The causes of pole retirements are from the pole replacement program due to deterioration, as well as loading, storms, road widening, inadequacy, reconductoring, car accidents and beautification. Concrete poles are expected to have a longer physical life than wood poles. However, deterioration can still occur with concrete poles as salt spray can get into cracks of concrete poles leading to deterioration and replacement.

In the 2009 depreciation study the 37-R2 survivor curve was recommended. The 39-R2 survivor curve was approved by the Commission.

Given the significant investment in concrete poles, this account was divided into wood and concrete poles for the purposes of the life analysis. A statistical life analysis was performed for the assets in each grouping. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed.

The statistical analysis indicated that concrete poles have experienced a longer service life than wood poles. The

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results of the statistical analysis showed average service lives in the 40 year range for wood poles, but average service lives closer to 45 years for concrete poles. The statistical indications for both types of poles were for low to mid mode curve types.

The 40-R2 survivor curve is a good fit of the historical data for wood poles. This is a slight increase in service life from the approved estimate for all pole types and represents the same curve type as approved estimate. For concrete poles, the best fitting curves were around 45 years. However, newer concrete poles are stronger than those installed 30 or 40 years ago, and as a result the expectation is that newer concrete poles could have a longer service life than is reflected in the historical data. Analysis of more recent placement bands supports that newer concrete poles could have a longer service life than older concrete poles.

Recommendation: The account should be subdivided into two subaccounts by type of pole. For wood poles, the 40-R2 survivor curve is supported by the historical data. For concrete poles, a 50-R1.5 survivor curve is recommended. This estimate is longer than the indications in the historical data but is supported by the analysis of more recent placement bands and by information provided by management.

#### NET SALVAGE ANALYSIS:

Discussion:

The net salvage analysis for poles was based on a combined analysis of both wood and concrete poles. While concrete poles are generally more expensive to install than wood poles, they are also more expensive to remove. It is therefore reasonable to expect that a consistent net salvage estimate is appropriate for both types of poles.

The storm hardening program, in which wood poles are replaced with concrete poles, tends to have higher replacement costs. Not only are the cost of concrete poles more expensive but often times require special handling and the use of large cranes due to the size and weight of concrete poles. Additionally, storm hardening work often occurs near major roadways, which typically have higher costs.

In general, distribution poles have become more costly to replace over the past 10 to 15 years. Reasons for increased costs include increases in labor and contractor costs;

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increases in permitting costs; road closures and roadblocks; work frequently lasts longer than a day, in which case the Company has to make temporary repairs for traffic increasing daily costs; increasing safety costs especially involving hazardous waste removal, special dump yards and special handling; work is often performed while lines are energized, which increases safety requirements; coordinating jobs with other utilities can cause timing problems; and environmental laws have been increasing and changing causing increases in costs.

Prior to the 2009 Depreciation Study, the net salvage estimate for this account was (40) percent. In the 2009 Study the historical data supported an increase in net salvage and a (125) percent estimate was recommended. A net salvage estimate of (60) percent was approved by the Commission.

The historical data supports that a more negative estimate than the approved (60) percent is appropriate for this account. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal was 144 percent, the overall average gross salvage was 28 percent, and the overall average net salvage was (116) percent. While removal costs have trended higher for the reasons described above, gross salvage has trended lower. Salvage for wood poles is lower due to disposal retirements, as wood poles typically can no longer be sold to third parties to use as mulch due to environmental rules. Additionally, the use of contractors could result in lower recorded gross salvage, as contractor charges are often net of any salvage.

The combination of higher removal costs and lower gross salvage results in the more recent data indicating even more negative net salvage. The historical net salvage percentages have not been as low as (60) percent since the early 2000s. While the overall net salvage is (116) percent, the most recent ten and five year averages are (181) and (179) percent, respectively. The three year moving averages have exceeded (100) percent each year since the 2001-2003 period. Most of the three year averages have exceeded (150) percent for the past decade.

As noted above, discussions with Company management support that removal costs have been increasing for a number of reasons. However, there is also the potential that the storm hardening work in recent years has resulted in

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higher costs of removal and that costs may moderate somewhat going forward. Because storm hardening work typically occurs on critical lines, it is more likely to be located near main roads. Due to permitting and other work requirements, costs can be higher for this type of work than is the case for work on lateral lines. Thus, while it should be expected that much of the increase in removal costs should continue for the future, costs may moderate somewhat once the storm hardening program is completed and be lower than the (200) percent or more that has been experienced in some years.

Recommendation: More recent data could support an estimate of (150) percent or more, and the overall average supports an estimate of at least (100) percent. The recommendation at this time is for an estimate of (100) percent, which is conservative compared to the historical data. If trends for more negative net salvage continue, a more negative estimate will be appropriate in future studies.

## Account 365 (FERC): Overhead Conductors and Devices

This account includes the cost of electric overhead conductors and devices used for distribution purposes.

### GENERAL INFORMATION:

ACR is the standard conductor used at FPL with 1.0, 3.0, 5.68 the most common type of wire. Most cable is AAC, although some ACSR is used. Overhead conductor is retired as the result of deterioration or too many splices, inadequate capacity or clearance, road widening, and storms. Older copper and small wire may also be proactively replaced.

#### SERVICE LIFE ANALYSIS:

### Discussion:

In the 2009 depreciation study the recommendation was for the 40-S0 survivor curve. The Commission ordered the 41-S0 survivor curve. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis indicated an increase in average service life for this account. The statistical indications were for average service lives in the 50 year range. The R1 curve was also a better fit of the representative data points than the approved S0 curve.

The impact of the storm hardening program on conductor is uncertain at this time. The design of the program is to increase the strength of the structural assets on transmission and distribution lines (i.e. the poles). With stronger structures, more force from storms and wind could be transferred to the conductor, resulting in more retirements for conductor due to deterioration. However, as many of the retirements for conductor occur due to capacity and relocations, the impact could be limited. The 48-R1 survivor curve is a good fit of the representative data points for this account. This estimate represents an increase over the approved estimate.

Recommendation: Change currently authorized service life and curve from the 41-S0 to the 48-R1.

# NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the net salvage estimate was (100) percent. The Commission approved an estimate of (60) percent. Twenty-nine years of historical net salvage data were available for the net salvage analysis, ranging from 1986 to 2014. The overall average cost of removal for this period was 95 percent, the overall average gross salvage was 19 percent, and the overall average net salvage was (76) percent. However, cost of removal has trended higher and gross salvage lower in recent years. The most recent ten year average (129 percent) and five year average (111 percent) cost of removal are both more negative than the overall average, while the most recent ten and five year average gross salvage are lower than the overall average. The most recent five years only experienced 1 percent gross salvage. The more recent data therefore indicates more negative net salvage than the overall average, as the ten most recent three-year average costs of removal exceed 100 percent and the eight most recent three year averages of net salvage have been (97) percent or more negative.

The reasons for increasing costs for overhead conductor are similar to those for poles, and include permitting requirements, safety requirements and traffic control requirements. However, similar to for poles there is the possibility that storm hardening work, which is more likely to be adjacent to major roads, could experience higher removal costs. It is therefore possible that costs cold moderate somewhat in the future.

Recommendation: The historical data supports a more negative net salvage estimate than the approved estimate. The recommendation is for a (80) percent net salvage estimate. This estimate is slightly more negative than the overall average but is conservative when compared to more recent averages.

# Account 366.6 (FERC): Underground Conduit – Duct System

This account includes the cost of electric underground conduit and tunnels used for housing distribution cables.

### GENERAL INFORMATION:

Underground distribution conduit is typically PVC or in underground ducts (which are typically located in downtown areas). Underground conduit is generally retired when accidentally dug up or abandoned due to relocations or upgrades. FPL separates underground conduit into duct systems and direct buried. For the conduit in the duct system subaccount, most of the assets have been installed within the past 50 years. Over 99 percent of the investment in this account is vintage 1965 or newer.

### SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study the recommendation was for the 70-S1.5 survivor curve, which was approved by the commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis indicated a higher mode curve than the approved S1.5. The 70-R3 is a better fit of the historical data than the approved estimate for the representative data points, but retains the same average service life.
- Recommendation: Retain the approved average service life of 70 years but change the curve to an R3.

### NET SALVAGE ANALYSIS:

- Discussion: In the 2009 depreciation study the net salvage estimate was (5) percent. The Commission approved an estimate of (2) percent. Twenty-nine years of historical net salvage data were available for the net salvage analysis, ranging from 1986 through 2014. The overall cost of removal has been 11 percent, the overall gross salvage 8 percent and the overall net salvage has been (2) percent. Both cost of removal and gross salvage have trended lower. The most recent five year average is positive 1 percent.
- Recommendation: More recent data indicates low levels of both cost of removal and gross salvage. The recommendation is 0 percent net
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salvage for this account. This estimate is consistent with the expectation that most assets in this account will be abandoned in place.

# Account 366.7 (FERC): Underground Conduit – Direct Buried

This account includes the cost of electric underground conduit and tunnels used for housing distribution cables.

## GENERAL INFORMATION:

All of the assets in service for this account have been installed since 1965, and almost all of the investment in service has been installed since the early 1970s. About half of the investment has been installed since the mid-2000s. River crossings for cable may be direct buried, and much of the installation in the 2000s was related to river crossings.

#### SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study the recommendation was for the 50-R4 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. Because most of the assets are relatively young, the statistical analysis was not definitive, but the approved 50-R4 continues to be a reasonable estimate for this account.
- Recommendation: Retain the currently approved life and curve of 50-R4 for this account.

# NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommendation was for a 0 percent net salvage estimate, which was approved by the Commission. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. Both cost of removal and gross salvage have varied over this period of time. The overall average cost of removal is 28 percent and the overall average gross salvage is 45. However, both have trended lower in recent years.

Underground conduit that is direct buried is typically abandoned in place and therefore typically experiences little cost of removal and gross salvage. The historical data does not provide support to deviate from the approved 0 percent net salvage.

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Recommendation:

Retain the currently approved 0 percent net salvage for this account.

# Account 367.6 (FERC): Underground Conductors and Devices – Duct System

This account includes the cost of electric underground conductors and devices used for electric distribution.

## **GENERAL INFORMATION:**

FPL separates underground conductor into duct systems and direct buried. Conductor in this account does not necessarily last longer than direct buried cable. However, it is easier to replace. Causes of retirement include failure, dig-ins and relocations. Failure for underground conductor is more common than for overhead conductor, and this may result in a shorter life for underground cable. Underground cable that is in PVC conduit or ducts is more likely to be removed when replaced than direct buried cable.

## SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for the 38-S0 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 20, 30 and 40 year placement bands were also analyzed. Each band indicated similar service life characteristics.

> The best fitting survivor curves typically had somewhat longer service lives than the approved estimate, with the best fitting curves having average service lives around 40 years. The approved S0 survivor curve continues to be a good fit of the historical data. Both the 41-S0 and the 42-S0 survivor curve are very good fits of the historical data. An increase in service life is consistent with the expectation that the quality of underground cable has improved, as newer cable has improved dielectric properties. These improvements in quality favor the 42-S0 over the 41-S0 or shorter service lives. The 42-S0 is also a very good fit of the most recent placement bands analyzed.

Recommendation: The recommendation for this account is the 42-S0 survivor curve.

## NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommendation was for a (5) percent net salvage estimate. The Commission

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approved an estimate of 0 percent. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal for this period was 13 percent and the overall gross salvage was 7 percent. The overall average net salvage was (6) percent. More recent years have experienced less gross salvage than in the 1980s and 1990s. The most recent ten and five year averages have therefore been more negative than the overall average at (9) percent and (10) percent respectively.

Conductor in the duct system is often removed when replaced, as the conductor is pulled from the duct to make room for new conductor. Costs can also be higher due to traffic control and other requirements. When conductor is abandoned in place the Company has to cut the cable at each joint and intersection below grade. There is no gross salvage when cable is abandoned in place.

The data, as well as the Company's practices, support that a negative net salvage estimate is appropriate for this account.

Recommendation: The recommendation is for an estimate of (5) percent net salvage.

# Account 367.7 (FERC): Underground Conductors and Devices – Direct Buried

This account includes the cost of electric underground conductors and devices used for electric distribution.

## GENERAL INFORMATION:

Direct buried cable has been installed much less frequently since the 1980s. Many of the more recent installations are related to river crossings. The Company is proactively replacing older direct buried cable.

#### SERVICE LIFE ANALYSIS:

- Discussion: In the 2009 depreciation study the recommendation was for the 35-R2 life and curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 20, 30 and 40 year placement bands were also analyzed. The statistical analysis was not conclusive, although more recent placement bands indicated shorter service lives than the overall band. The Company's plans to replace older direct buried cable provide further reason to not increase the service life for this account at this time.
- Recommendation: The recommendation is to continue to use the 35-R2 survivor curve for this account.

## NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for 0 percent net salvage, which was approved by the Commission. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal was 5 percent and the overall gross salvage was 13 percent. The overall net salvage was positive 8 percent. However, gross salvage has decreased over time. The more recent average net salvage is (1) percent.

> Conductor that is direct buried is often abandoned in place. Direct buried conductor is also less likely to be located in

urban areas or congested roadways, and therefore will have lower costs than for conductor in ducts.

Recommendation:

The data provides no reason to change the net salvage estimate from the approved 0 percent. The recommendation is to continue to use 0 percent net salvage.

# Account 368 (FERC): Line Transformers

This account includes the cost installed of overhead and underground distribution line transformers and poletype and underground voltage regulators owned by the utility, for use in transforming electricity to the voltage at which it is to be used by the customer, whether actually in service or held in reserve.

## GENERAL INFORMATION:

Most of the distribution transformers at FPL are overhead. About 70% of transformers are overhead and the remainder are pad mounted or underground. Pad mounted transformers can have shorter service lives due to corrosion problems, drainage problems, accidents from automobiles, heat problems and deterioration. Overhead transformers are retired due to forces such as corrosion, load changes or customer requirements. Since the 1990s transformers have been designed with tighter tolerances and FPL no longer refurbishes these transformers because the cost is prohibitive. Similar to substation transformers, this could result in shorter service lives for newer transformers than had been experienced in the past. FPL has started to invest in more stainless steel transformers, which could mitigate corrosion.

Disposal of line transformers can require special handling to remove the oil. Pad mount transformers are more subject to leaks.

## SERVICE LIFE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommendation was for the 32-L1.5 survivor curve. The Commission approved the 33-L1.5 survivor curve. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 10, 20, 30 and 40 year placement bands were also analyzed.

The statistical analysis indicated slightly longer average service lives than the approved estimate. Retirements in the past 10 years have been on average younger than those recorded in previous years. The result has been for a lower mode curve to be indicated in the data. The best fitting L type curves tend to have longer tails (i.e. an expectation that some assets will remain in service for much longer than) than is typical for this type of property. A change of curve type to the S0 curve, which represents a very good fit of the historical data for the representative data points, is recommended. The 34-S0 survivor curve represents a slight increase in average service over the approved estimate and is a good fit of the historical data.

Recommendation: The recommendation is to change the approved 33-L1.5 survivor curve to the 34-S0 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for 0 percent net salvage, which was approved by the Commission. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal for this period was 24 percent, the overall gross salvage was 3 percent and the overall average net salvage was (21) percent. Gross salvage has consistently averaged in the 0 to 3 percent range with the exception of higher gross salvage in the early 1990s. Cost of removal has trended lower in recent years, with the most recent ten and five year averages at 20 and 18 percent, respectively. The most recent five year average net salvage is (16) percent and the more recent three year averages are in the (14) to (17) percent range.

The overall trend supports a less negative net salvage estimate than in the previous study. An estimate of (15) percent is consistent with more recent averages.

Recommendation: The recommendation is to change the approved net salvage estimate from (25) percent to (15) percent.

# Account 369.1 (FERC): Services - Overhead

This account includes the cost of electric distribution overhead services.

## **GENERAL INFORMATION**

Overhead services are retired as the result of failures, often due to cracked insulation. Increases in pole heights also cause retirements of services inasmuch as a longer service is required and replacement is preferable to splicing. A change in the customer at a location or the overhead conductor results in a review of whether the service meets current standards and can result in a decision to replace. Services are often rerouted due to customer complaints.

## SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for the 48-R1 survivor curve. The Commission approved the 50-R1 survivor curve. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed.

> The statistical analysis indicated a longer service life than the approved estimate for this account. In addition to the existing R1 curve type, the S0 curve type also fits the historical data well, with the 55-S0 being a similar fit of the historical data to the 53-R1. Both are very good fits of the overall band. However, in addition to being the same curve type as the existing estimate, the 53-R1 is a better match of the mid portion of the curve than the 55-S0. The 53-R1 is therefore considered the better estimate for this account.

Recommendation: The recommendation is to increase the approved 50-R1 survivor curve to the 53-R1 survivor curve.

## NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for (125) percent net salvage. The Commission approved an estimate of (85) percent. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. The historical data continues to indicate that a more negative net salvage estimate is appropriate for this account. The overall average cost of removal was 143

percent, the average net salvage was 10 percent and the overall average net salvage was (133) percent. Gross salvage has trended lower, with the most recent ten and five year averages at 4 and 2 percent. Cost of removal increased in the late 1980s and early 1990s and has remained high since. The most recent five year average cost of removal is a bit lower than the overall average, but is influenced by the timing of lower cost of removal recorded in 2010. With the exception of the 2010-2012 moving average, each three-year moving average cost of removal since 1992 has been 125 percent or higher. The most recent ten year average net salvage is (168) percent.

In discussions with Company personnel, management indicated that one of the reasons for high removal costs is the fact that overhead services are small in quantity but are often in hard to get at places with high safety factors involved. This is especially true around residential neighborhoods. The removal is often time consuming due to safety requirements. Often distribution services are stretched across roads in high residential areas and with the spring effect of conductor more manpower is required. Factors that have influenced cost of removal for other distribution line accounts, such as permitting requirements, have also influenced the cost of removal for this account.

The historical data supports that a more negative net salvage estimate is appropriate. As noted above, almost every three year moving average has been at least (125) percent and recent gross salvage has been closer to 0 percent. The overall average supports an estimate of at least (125) percent.

Recommendation: The recommendation is for a (125) percent net salvage estimate.

## Account 369.7 (FERC): Services - Underground

This account includes the cost of electric distribution underground services.

## GENERAL INFORMATION:

Retirements of underground services typically occur due to third party damage, failure, capacity, and customer requirements. Climate conditions and soil also can have an impact on service life. The assets in the account have been installed since 1966, with almost 90 percent installed since 1985.

## SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for the 34-R2 survivor curve. The Commission approved the 38-R2 survivor curve. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis was not definitive but did indicate a longer service life than the approved estimate. More recent placement bands indicated a shorter service life than the overall band, although the indications from the more recent placement band are still longer than the approved estimate. As noted above, most of the investment in this account has been installed in the past 30 years.

> The 45-R2 survivor curve is a good fit of the most recent placement band and fits the earlier years of the overall band. This estimate reflects the indications for a longer service life than the approved estimate.

Recommendation: The recommendation is to continue to use the approved curve type and increase the average service life. The 45-R2 survivor curve is recommended.

## NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study an estimate of (10) percent net salvage was recommended. The Commission approved an estimate of (5) percent. Twenty-nine years of data were available for the net salvage analysis, with years ranging from 1986 through 2014. The overall average cost of removal for this period was 20 percent, the average gross

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salvage was 5 percent and the average net salvage was (16) percent. Cost of removal has trended higher over the past decade while gross salvage has trended lower. The most recent ten year net salvage was (27) percent and the most recent five year average was (25) percent.

The historical data supports a more negative net salvage estimate than the approved (5) percent. The more recent data could support an estimate that is even more negative than the overall average of (16) percent.

Recommendation: The recommendation is for a net salvage estimate of (15) percent. This estimate is consistent with the overall average net salvage but is conservative when compared to more recent years.

#### Account 370 (FERC): Meters

This account includes the cost of meters or devices for use in measuring the electricity delivered to customers.

#### GENERAL INFORMATION:

FPL has replaced the vast majority of its analog meters with AMI meters. The remaining analog meters, as well as other related assets such as meter boxes, represent the assets in service in this account. AMI meters are in Account 370.1. Retirements related to the AMI program have been excluded from the life and net salvage analyses.

#### SERVICE LIFE ANALYSIS:

Discussion: The recommendation in the 2009 depreciation study was for the 36-R2.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical analysis indicated a somewhat longer service life than the approved estimate. The 38-R2 survivor curve is a very good fit of the historical data for the overall band.

> Upon completion of the AMI program, the Company has identified additional analog meters that have been retired in 2015. These retirements have not been included in the life analysis as they are not considered to be reoccurring. The results of the statistical analysis are considered to be indicative of the future experience for the remaining assets in this account.

Recommendation: Increase the current approved 36-R2.5 survivor curve to the 38-R2 survivor curve.

## NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommendation was for (55) percent net salvage. The Commission approved an estimate of (30) percent. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986-2014. The overall average for this period was (20) percent. However, prior to 2002 very little cost of removal was

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recorded. Beginning in 2002 the Company improved the process for recording cost of removal for this account and higher levels of cost of removal have been recorded since 2002. There has not been significant gross salvage recorded for this account. The overall average net salvage from 2002 through 2014 was (36) percent. The most recent ten year average was (32) percent and the most recent five year average was (25) percent.

Recommendation: The approved estimate of (30) percent continues to be consistent with the historical data. While this estimate is somewhat less than the average since 2002 and more than the five year average, it is in line with the most recent ten year average. The historical data therefore does not provide reason to modify the net salvage estimate at this time. The recommendation is to continue to use the approved (30) percent estimate.

# Account 370.1 (FERC): Meters - AMI

This account includes the cost of meters or devices for use in measuring the electricity delivered to customers. This account includes all new AMI meters.

## GENERAL INFORMATION:

FPL has replaced the vast majority of its analog meters with AMI meters. This account contains the AMI meters.

# SERVICE ANALYSIS:

- Discussion: In the 2009 depreciation study the 20-R2.5 survivor curve was recommended, and was approved by the Commission. The average service life was based on manufacturers suggested life of 20 years and the curve was the same as the legacy meter Account 370. Because all of the assets in this account have been installed since 2004, and the majority since 2009, there is limited historical data for the life analysis. The approved estimate continues to be reasonable for this account. Most utilities have used 15 to 20 years for AMI meters, although at least one jurisdiction has used a shorter 10 year average service life due to concerns about technological and functional obsolescence.
- Recommendation: The recommendation is to continue to use 20-R2.5 life and curve for this account.

- Discussion: In the 2009 depreciation study an estimate of (55) percent was recommended, which was the same estimate as for Account 370. The Commission approved an estimate of (30) percent, which is the same as the approved estimate for Account 370. Because the meters are new, there is limited net salvage data available, although the most recent two years do indicate negative net salvage. Similar to the previous study, the historical experience for Account 370 should be representative of the net salvage experience for AMI meters. It continues to be reasonable to use the same net salvage estimate for both accounts.
- Recommendation: The recommendation is to continue to use the approved (30) percent net salvage, which is the same estimate as is recommended for Account 370.

#### Account 371 (FERC): Installation on Customers' Premises

This account includes the cost of equipment on the customer's side of the meter when the utility retains responsibility for same.

#### GENERAL INFORMATION:

Assets in this account include lighting on customer premises, as well as assets associated with customer lighting, such as poles and conductor.

#### SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for the 30-L0 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. Almost all of the assets in this account have been added since the 1980s, and most have been added within the past 30 years. The approved 30-L0 survivor curve is a similar fit to the historical data as in the previous study.

> Low mode L type curves are not as common for utility property as are R and S type curves due to longer tails for Ltype curves. However, because the assets in this account can vary from longer lived assets such as customer lighting poles to shorter lived assets such as energy management devices, a lower mode curve is reasonable for this account. The 30-L0 survivor curve does not forecast an unusually high percentage of assets to remain in service for a very long time, as most assets will be retired by age 80 and less than 10 percent will survive beyond age 60. The approved 30-L0 survivor curve continues to be reasonable estimate for the assets in this account at this time. However, if the service life trends to become longer, an R or S curve type will be more appropriate.

Recommendation: The recommendation is to retain the approved 30-L0 survivor curve.

#### NET SALVAGE ANALYSIS:

Discussion:

In the 2009 depreciation study the recommendation was for a (25) net salvage estimate. The Commission approved an estimate of (20) percent. Twenty-nine years of data was available for the net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal for this period was 27 percent, the overall average gross salvage was 11 percent and the overall average net salvage was (16) percent. Most gross salvage was recorded prior to 2003. The most recent 10 year average gross salvage is 3 percent. For the period of time available for the analysis, longer term average cost of removal has been fairly consistent, and the most recent ten and five year costs of removal averaged 29 percent and 25 percent, respectively.

The overall average supports an estimate of (15) percent, but more recent data supports an estimate of (20) or (25) percent. Most of the assets in this account are related to customer lighting, for which the net salvage expectations should be similar to Account 373. The estimate for Account 373 is (15), which is consistent with the overall average for this account.

Recommendation:

The recommendation is for (15) percent net salvage, which is similar to the overall average net salvage for this account.

# Account 373 (FERC): Street Lighting and Signal Systems

This account includes the cost installed of equipment used wholly for public street and highway lighting; or traffic, fire alarm, police, and other signal systems.

# GENERAL INFORMATION:

Assets in this account include street lighting, as well as assets associated with street lighting, such as poles and conductor.

# SERVICE LIFE ANALYSIS:

Discussion: The recommendation in the 2009 depreciation study was for the 30-R0.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The statistical indications for each band were similar, and the statistical analysis indicated a longer service life than the approved estimate.

The statistical analysis indicates a low-mode curve, or a wide dispersion pattern. This is not uncommon for this account, which contains a number of types of assets ranging from wiring and lamp posts to lights. The O1 type curve represents a better fit of the historical data than the approved R0.5 type curve.

Recommendation: The recommendation is for an increase in average service life and a change in curve type to the 35-O1 survivor curve.

# NET SALVAGE ANALYSIS:

Discussion: The recommendation in the 2009 depreciation study was for a net salvage estimate of (20) percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 through 2014. The overall average cost of removal for this period was 27 percent, the overall average gross salvage was 10 percent and the overall average net salvage was (17) percent. The most recent five year average indicates less negative net salvage, but is influenced by the timing of retirements and cost of removal recorded in 2010. The most recent ten year average net salvage was (16) percent, which is similar to the overall average.

The overall average and more recent averages are supportive of a somewhat less negative net salvage estimate.

Recommendation: The recommendation is for a net salvage estimate of (15) percent

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## Account 390 (FERC): Structures and Improvements

This account includes the cost of structures and improvements for general plant. This includes the cost of all buildings and fixtures permanently attached to the structures and improvements.

# GENERAL DISCUSSION:

This account includes the Company's office buildings as well as service centers and other buildings. Sales for buildings that occurred prior to the end of their useful lives have been excluded from both the life and net salvage analysis, as these transactions are not indicative of the future experience for buildings that will remain in service to the end of their useful lives.

# SERVICE LIFE ANALYSIS:

Discussion: In the 2009 depreciation study the recommendation was for the 50-R1.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The life analysis excludes the retirement in 2011 of the Company's Miami office.

The statistical analysis indicated a longer service life than the approved estimate. The R1.5 curve type remains a reasonable fit of the historical data, but the 55-R1.5 survivor curve represents a better fit than the approved estimate.

Recommendation: The recommendation is for an increase in service life and the same curve type. The 55-R1.5 survivor curve is recommended.

# NET SALVAGE ANALYSIS:

Discussion: In the 2009 depreciation study a net salvage estimate of (10) percent was recommended. The Commission approved an estimate of (5) percent. Cost of removal has continued to increase since the previous study, and provides further support for more negative net salvage. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014.

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Sales of buildings that occurred prior to the end of their useful lives have been excluded from the net salvage analysis. For example, the sale of the Miami office building occurred when the building was 36 years old and still had remaining years of service (as evidenced by the fact that the Company continues to lease a portion of the building to use for utility operations). The sales proceeds for a building prior to the end of its useful life are typically much higher than when the building reaches the end of its useful life, at which time any residual value should be expected to be much smaller.

The historical data suggests that a more negative net salvage estimate is appropriate. The overall cost of removal for the 1986 through 2014 period was 15 percent. The overall gross salvage was 4 percent, the majority of which was recorded in a single year (1997). The more recent data indicates more negative net salvage. The most recent ten and five year net salvage averages were both (15).

The more recent net salvage data indicates that an estimate of (15) percent could be appropriate. However, a (10) percent estimate reflects that there could be some value of the Company's buildings once they reach the end of their useful lives. This is the same estimate as proposed in the 2009 depreciation study.

Recommendation:

A more negative net salvage estimate is appropriate. The recommendation is for (10) percent net salvage.

# Account 392.1 (FERC): Transportation Equipment – Automobiles

This account includes the cost of automobiles used in utility operations.

#### GENERAL INFORMATION:

This account includes automobiles such as cars.

#### SERVICE LIFE ANALYSIS:

Discussion: The recommendation in the 2009 depreciation study was the 6-L2.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The more recent placement bands were given the most consideration, as these bands are more representative of the current fleet of automobiles.

The statistical analysis indicated that the 6-L2.5 survivor curve is still a good fit of the historical data.

Recommendation: Continue to use the 6-L2.5 survivor curve.

- Discussion: In the 2009 depreciation study the estimated net salvage was 15 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall average gross salvage is 15 percent. The overall net salvage was 14 percent. The historical data supports continuing to use the existing estimate of 15 percent.
- Recommendation: The recommendation is to continue to use the approved estimate of 15 percent.

# Account 392.2 (FERC): Transportation Equipment - Light Trucks

This account includes the cost of light trucks such as pick-up trucks used in utility operations.

# GENERAL INFORMATION:

This account primarily includes trucks that weigh less than 13,000 lbs.

# SERVICE LIFE ANALYSIS:

- Discussion: The recommendation in the 2009 depreciation study was the 9-L3 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1987 and the most recent 20 year experience band. The currently approved estimate continues to be a good fit of the historical data.
- Recommendation: Retain the current approved life and curve of 9-L3 based on the results of the life analysis.

- Discussion: In the 2009 depreciation study the estimated net salvage was 15 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall gross salvage is 18 percent. The overall net salvage was 18 percent. The most recent five year average net salvage is 14 percent.
- Recommendation: The recommendation is to continue to use the approved 15 percent net salvage estimate.

# Account 392.3 (FERC): Transportation Equipment – Heavy Trucks

This account includes the cost of larger trucks used in the operations of the utility.

## GENERAL INFORMATION:

This account primarily includes trucks that weigh more than 13,000 lbs.

## SERVICE LIFE ANALYSIS:

- Discussion: The recommendation in the 2009 depreciation study was the 12-S3 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1949 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The currently approved 12-S3 survivor curve continues to be a good fit of the historical data.
- Recommendation: Continue to use the currently approved 12-S3 survivor curve.

- Discussion: In the 2009 depreciation study the estimated net salvage was 15 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall gross salvage is 20 percent. The overall net salvage was 20 percent. The most recent five year average net salvage is less positive at 13 percent. The historical data supports that the approved estimate continues to be reasonable for this account.
- Recommendation: The recommendation is to continue to use the approved 15 percent net salvage estimate.

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# Account 392.4 (FERC): Transportation Equipment – Tractor Trailers

This account includes the cost of tractor trailers used in utility operations.

#### GENERAL INFORMATION:

Tractor trailers are included in this account.

## SERVICE LIFE ANALYSIS:

- Discussion: The recommendation in the 2009 depreciation study was the 9-L2.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1949 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The data indicates that the 9-L2.5 survivor curve continues to be a good fit of the historical data.
- Recommendation: Continue to use the currently approved 9-L2.5 survivor curve.

- Discussion: In the 2009 depreciation study the estimated net salvage was 0 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall gross salvage is 12 percent. The overall net salvage was 12 percent. However, most of the gross salvage for this account was recorded in the 1990s. More recent activity has experienced lower levels of gross salvage. Retirements in the 2000-2005 frame experienced no gross salvage, but the retirements recorded in more recent years (2009 and 2012) experienced an average gross salvage of 12 percent. The average gross salvage since 2000 has been 2 percent.
- Recommendation: More recent experience provides some indication of gross salvage. The recommendation is to increase the positive net salvage estimate to 5 percent, which is more positive than the average since 2000 but less positive when compared to the more recent years.

# Account 392.9 (FERC): Transportation Equipment – Trailers

This account includes the cost of trailers used in utility operations.

# **GENERAL INFORMATION:**

Trailers are included in this account.

# SERVICE LIFE ANALYSIS:

- Discussion: The recommendation in the 2009 depreciation study was the 20-L1 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1941 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The currently approved 20-L1 survivor curve continues to be a good fit of the historical data.
- Recommendation: Continue to use the currently approved 20-L1 survivor curve.

- Discussion: In the 2009 depreciation study the estimated net salvage was 0 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall gross salvage is 32 percent. The overall net salvage was 32 percent. However, the overall average is influenced by large gross salvage amounts recorded in 2004 and 2006. More recent data indicates a less positive net salvage estimate. The average net salvage since 2007 is 10 percent and the most recent five year average is 12 percent.
- Recommendation: More recent data supports a lower level of positive net salvage. The recommendation is to use positive 15 percent net salvage, which is somewhat higher than the data since 2007 and is consistent with the estimates of most of the other subaccounts in Account 392.

# Account 396.1 (FERC): Power Operated Equipment

This account includes the cost of power operated equipment used in utility operations.

## GENERAL INFORMATION:

This account includes power operated equipment such as backhoes, bulldozers, frontend loaders and cranes.

# SERVICE LIFE ANALYSIS:

- Discussion: The recommendation in the 2009 depreciation study was the 11-L1.5 survivor curve, which was approved by the Commission. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1961 and the most recent 20, 30 and 40 year experience bands. The most recent 30 and 40 year placement bands were also analyzed. The currently approved 11-L1.5 survivor curve continues to be a good fit of the historical data.
- Recommendation: Continue to use the currently approved 11-L1.5 survivor curve.

- Discussion: In the 2009 depreciation study the estimated net salvage was 20 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The overall cost of removal was 0 percent and the overall gross salvage is 23 percent. The overall net salvage was 23 percent. More recent data indicates a less positive net salvage estimate. The most recent five year average is positive 15 percent.
- Recommendation: More recent data supports a lower level of positive net salvage. The recommendation is to use positive 15 percent net salvage, which is consistent with the most recent five year average and is consistent with the estimates of most of the subaccounts in Account 392.

# Account 397.8 (FERC): Communication Equipment – Fiber Optics

This account includes the cost of fiber optic related electronic equipment used in utility operation.

# GENERAL INFORMATION:

This account includes fiber optic equipment and cables.

## SERVICE LIFE ANALYSIS:

Discussion: The recommendation in the 2009 depreciation study was the 10-L0 survivor curve, which was approved by the Commission. A statistical life analysis was performed on the assets in this account using recorded additions and aged retirements. Bands analyzed using the retirement rate method for this account include the overall experience band with activity since 1986 and the most recent 20 and 30 year experience bands.

While the historical data does not provide definitive results, the data indicates that this account should have a longer service life than the currently approved 10-L0. An increase in service life is appropriate. A change in curve type is also appropriate, as the approved L0 has a long tail and maximum life.

Recommendation: Increase the average service life to 20 years and change the curve type to the S2. The 20-S2 survivor curve is recommended.

- Discussion: In the 2009 depreciation study the estimated net salvage was 0 percent, which was approved by the Commission. Twenty-nine years of data were available for the net salvage analysis, ranging from 1986 to 2014. The historical data does not provide a definitive indication of net salvage for this account and does not support a change from the approved estimate.
- Recommendation: The recommendation is to continue to use the current approved 0 percent net salvage estimate for this account.