STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DE 19-064

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
Distribution Service Rate Case

DIRECT TESTIMONY

OF

DANE WATSON

April 30, 2019

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ATTACHMENTS

Attachment	Title
DAW-1	Dane Watson Resume
DAW-2	Liberty Utilities Depreciation Study
DAW-3	Dane Watson – Prior Testimony Appearances

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I. POSITION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Dane A. Watson. My business address is 101 E. Park Blvd, Suite 220, Plano, Texas. I am a Partner in Alliance Consulting Group ("Alliance"). Alliance provides consulting and expert services to the utility industry.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Liberty Utilities (Granite State Electric) Corp. ("Granite State" or "the Company").

Q. What is your educational background?

A. I hold a Bachelor of Science degree in Electrical Engineering from the University of Arkansas at Fayetteville and a Master's Degree in Business Administration from Amberton University in Garland, Texas.

Q. Do you hold any special certification as a depreciation expert?

A. Yes. The Society of Depreciation Professionals ("the Society") has established national standards for depreciation professionals. The Society administers an examination and has certain required qualifications to become certified in this field. I have met all requirements and am a Certified Depreciation Professional.

Q. Please describe your involvement with any professional societies or committees.

A. I have twice been Chair of the Edison Electric Institute ("EEI") Property Accounting and Valuation Committee and have been Chairman of EEI's Depreciation and Economic Issues Subcommittee. I was the Industry Project Manager for the EEI/AGA effort around

the electric and gas industry adoption of FAS 143 and testified before FERC in the hearings leading up to the release of FERC Order 631. I am a Registered Professional Engineer in the State of Texas and a Certified Depreciation Professional. I am a Senior Member of the Institute of Electrical and Electronics Engineers ("IEEE") and served for several years as an officer of the Executive Board of the Dallas Section of IEEE as well as national and worldwide offices. I have twice served as President of the Society of Depreciation Professionals.

Q. Please outline your experience in the field of depreciation.

A. Since graduation from college in 1985, I have worked in the area of depreciation and valuation. I founded Alliance Consulting Group in 2004 and am responsible for conducting depreciation, valuation, and certain other accounting-related studies for utilities in various regulated industries. My duties related to depreciation studies include the assembly and analysis of historical and simulated data, conducting field reviews, determining service life and net salvage estimates, calculating annual depreciation, presenting recommended depreciation rates to utility management for its consideration, and supporting such rates before regulatory bodies.

My prior employment from 1985 to 2004 was with Texas Utilities ("TXU"). During my tenure with TXU, I was responsible for, among other things, conducting valuation and depreciation studies for the domestic TXU companies. During that time, I also served as Manager of Property Accounting Services and Records Management in addition to my depreciation responsibilities.

Q. Have you previously testified before other regulatory agencies?

A. Yes. I have conducted depreciation studies, filed written testimony, and testified in more than 175 proceedings before at least 35 regulatory bodies across the United States over the past 26 years for various regulated utilities. A listing of those appearances is found in Attachment DAW-3.

II. PURPOSE AND SUMMARY OF DIRECT TESTIMONY

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

A. The purpose of my testimony is to:

- Discuss the recent Granite State Book Depreciation Accrual Rate Study at December 31, 2018 ("Depreciation Study"); and
- Support and justify the recommended depreciation rate changes for Granite State's assets for the period between January 1, 2018, and December 31, 2018 ("Test Year"), based on the results of the Depreciation Study.

Q. Do you sponsor any attachments?

A. Yes. I sponsor Attachment DAW-1, my resume, Attachment DAW-2, the Depreciation Study, and Attachment DAW-3, which is a list of my prior testimony experience.

Q. Were the attachments you are sponsoring prepared by you or under your direct supervision?

A. Yes, they were.

Q. Please describe the depreciation study on which Granite State has based its requested depreciation rates in this case.

A. The Depreciation Study and analysis performed under my supervision fully support Granite State's proposed depreciation rates. The Depreciation Study shows Granite State's proposed rates applied to year-end 2018 depreciable plant balances. The Depreciation Study follows the New Hampshire Public Utilities Commission's ("Commission") long-standing precedent of straight line, average life, whole life depreciation rates with an amortization period of to recover any difference between book depreciation reserve and the theoretical depreciation reserve by account. In this way, all customers are charged for their appropriate share of the capital expended for their benefit. In order to ensure intergenerational equities, the Commission should adopt the life and net salvage parameters proposed in this study. Granite State's depreciation rates should be set at the levels supported in the Depreciation Study in order to recover Granite State's total investment in property.

Q. Please summarize the results of your analysis.

A. I have performed a depreciation study of Granite State's assets based on the depreciable plant in service at December 31, 2018. The results of my depreciation study support an annualized depreciation expense for Granite State of approximately $9.9 million. This represents an increase of approximately $160,000 over the annualized depreciation expense calculated on year-end 2018 plant investment using the current depreciation rates which were approved approximately five years ago. Specifically, compared to the depreciation rates currently in effect, my proposed depreciation rates will result in a

decrease in annual depreciation expense of approximately $492,000 in Intangible assets, an increase in annual depreciation expense of approximately $279,000 in Distribution assets, an increase of $140,000 in General assets, and an increase of approximately $233,000 to recover the difference between book and theoretical depreciation reserves.

Detailed information regarding the service life and net salvage characteristics that support my proposed depreciation rates can be found in the depreciation study accompanying my testimony, as well as my workpapers.

Q. What annual depreciation provision is reflected in your depreciation study for Liberty's assets?

A. The Depreciation Study recommends an annual accrual of $9.89 million based on plant in service at December 31, 2018. This includes $233,000 necessary to amortize the difference between the book and theoretical reserves.

Q. Are the results of your depreciation study reflected in the test year ending December 31, 2018, Cost of Service Calculation?

A. Yes.

Q. What depreciation rates are being used to calculate depreciation expense in this case?

A. The proposed depreciation rates are shown in Appendix A of Attachment DAW-2.

III. OVERVIEW OF DEPRECIATION STUDY METHODOLOGY

Q. What definition of depreciation have you used for the purposes of conducting the depreciation study and preparing your testimony?

A. In this testimony, I use the term "depreciation" in the accounting sense; that is, a system of accounting that distributes the cost of assets, less net salvage (if any), over the estimated useful life of the assets in a systematic and rational manner. Depreciation is a process of allocation, not valuation. Depreciation expense is systematically allocated to accounting periods over the life of the properties. The amount allocated to any one accounting period does not necessarily represent the loss or decrease in value that will occur during that particular period. Thus, depreciation is considered an expense or cost, rather than a loss or decrease in value. Granite State accrues depreciation based on the original cost of all property included in each depreciable plant account. Upon retirement of any particular piece of property, the full cost of depreciable property, less the net salvage amount, if any, is charged to the depreciation reserve.

Q. Please describe your depreciation study approach.

A. I conduct a depreciation study in four phases as shown in Attachment DAW-2. The four phases are: Data Collection, Analysis, Evaluation, and Calculation. During the initial phase of the study, I collect historical data to be used in the analysis. After the data is assembled, I perform analyses to determine the life and net salvage percentage for the different property groups being studied. The information obtained from field personnel, engineers, and/or managerial personnel, combined with the study results, are then evaluated to determine how the results of the historical asset activity analysis, in

conjunction with the Company's expected future plans, should be applied. Using all of these resources, I then calculate the depreciation rate for plant account.

Q. What process have you undertaken to give effect to both historical data and to the company-specific expectations in developing your service life recommendations?

A. In order to achieve a reasonable balance between these critical components of the life analysis, I evaluated the statistical historical data and then applied informed judgment to make the most appropriate service life selections. The objective in any depreciation study is to project the remaining cost (installation, material, and removal cost) to be recovered and the remaining periods in which to recover the costs. This necessarily requires that the service life selections reflect both the Company's historic experience and its current expectations of asset lives. In order to understand the Company's expectations regarding asset lives, I interviewed Company engineers working in both operations and maintenance to confirm the historical activity and indications, current and future plans, expectations, and the applicability to the future surviving assets. The interview process provides important information regarding changes in materials, operation and maintenance, as well as the Company's current expectation regarding the service life of the assets currently in use. This information is then considered along with the historical statistical data to develop the most reasonable and representative expected service lives for the Company's assets. The result of all of this analysis is reflected in the service life recommendations set forth in the depreciation study.

Q. Can you provide an example of the important information you gleaned from the Company personnel?

A. Yes. Account 364, distribution poles, has experienced many changes as the Company moved from old growth to new growth trees and pole treatment changed from creosote to Penta. Items causing retirements include relocations (DOT, growth, etc.), third party contracts, and higher population density. Additionally, the Company uses FIFO (first in first out) pricing for retirements. This is a standard methodology used in the industry but can reflect a longer life for the capitalized investment, all else being equal. Company personnel report that replacement poles will be a heavier class than the poles being replaced. Moderating the account average life is the shorter life of cross arms that is around 20 years for southern pine and a little longer for other wood types. The Company is moving to composite cross arms which personnel expect will have a longer life than wood cross arms (but still shorter than the life of the poles). Company personnel expect a slightly longer life than the current 40 years, but caution that the changes that would move lives longer are mainly not yet affecting the majority of assets in this account at this point. SPR analysis shows uniformly poor conformance indices and none of the band results meet the criteria advocated by authoritative texts to be relied upon strongly in making life selections. Company operational input indicated the expectation was for the life of the pole account would begin to increase over time based on many of the above factors. I selected a 44-year life (an increase of four years or 10 percent for the existing life) for this account based on input from Company personnel and a limited use of the SPR results.

Q. What depreciation system did you use?

A. The straight-line method, average life group ("ALG ") procedure, whole-life technique comprises the depreciation system that was employed to calculate the annual accrual for depreciation expense in the study.

Q. Has this Commission repeatedly approved the use of ALG- whole life derived depreciation rates?

A. Yes.

Q. How are depreciation rates developed under the ALG, whole life system?

A. In the ALG Whole Life system, the annual depreciation rate for each group is computed by dividing (1 – Net Salvage Percentage) by the Average Service Life of the group. The resulting annual accrual amounts of all depreciable property were computed by multiplying the original cost of all account level depreciable property by each account-level depreciation rate. The computations of the annual depreciation rates are shown in my Attachments DAW-2 Appendix A.

Q. What other adjustment is necessary for the ALG whole life depreciation system?

A. Under a whole life approach, since unlike the remaining life approach there is no embedded "true-up" provision for the depreciation reserve in the formula, it is necessary to compare the book depreciation reserve to the theoretical depreciation reserve and determine if assets are over-accrued or under-accrued. To bring the reserve position into parity with the theoretical model, an amortization period for the reserve difference is necessary to normalize the asset's cost and spread it ratably over future periods. The

Commission precedent is to use a fixed period to handle such differences. The Company recommended and I implemented an amortization period of six years to bring the reserve positions into alignment. The comparison of the annual depreciation rates along with the amortization adjustment is shown in Attachments DAW-2 Appendix B. The comparison of plant, book reserve, and theoretical reserve is shown in Attachment DAW-2, Appendix E.

Q. How did you determine the average service lives for each account?

A. I established appropriate average service lives for each account within a functional group by using a semi-actuarial analysis method. Graphs and tables supporting the semi-actuarial analysis and the chosen Iowa Curves used to determine the average service lives for analyzed accounts are found in the life analysis section and in Appendix C of Attachment DAW-2.

Q. What is net salvage?

A. While discussed more fully in the study itself, net salvage is the difference between the gross salvage (what is received in scrap value for the asset when retired) and the removal cost (cost to remove and dispose of the asset). Salvage and removal cost percentages are calculated by dividing the current cost of salvage or removal by the original installed cost of the asset.

Q. How did you determine the net salvage percentages for each asset group?

A. I examined the experience realized by the Company by observing the actual net salvage for various bands (or combinations) of years. Using averages (such as the three-year and

five-year bands) allows the smoothing of the timing differences between when retirements, removal cost, and salvage are booked. By looking at successive average bands ("rolling bands"), an analyst can see trends in the data that would indicate the future net salvage in the account. This examination, in combination with the feedback of Company engineers related to any changes in operations or maintenance that would affect the future net salvage of the asset, allowed the selection of the best estimate of future net salvage for each account. The net salvage as a percent of retirements for various bands (i.e., groupings of years such as the five-year average) for each account are shown in Attachment DAW-2, Appendix D. As with any analysis of this type, expert judgment was applied in order to select a net salvage percentage reflective of the future expectations for each account.

Q. Is this a reasonable method for determining net salvage rates?

A. Yes. The method used to establish appropriate net salvage percentages for each account was determined by using the same methodology that was approved in the recent cases before the Commission.[1] It is also the methodology commonly employed throughout the industry and is the method recommended in authoritative texts. [2]

[1] See Docket Nos. DG 08-009 (EnergyNorth Natural Gas, Inc.), DG 09-035 (Public Service Company of New Hampshire), DG 10-055 (Unitil Energy System, Inc.), and DG 11-069 (Northern Utilities).

[2] Public Utility Depreciation Practice, published by the National Association of Regulatory Commissioners, 1996, pages 157-161.Depreciation Systems, by Drs. F.K. Fitch and W.C. Fitch, 1994, Iowa State Press, p. 51-55.

Q. What factors can cause plant assets to experience significant levels of negative net salvage?

A. Some plant assets can experience significant negative removal cost percentages due to the timing of the addition versus the retirement. For example, a distribution asset in FERC Account 365 with a current installed cost of $500 (2018) would have had an installed cost of $12.86 in 1968[3] (which is the proposed average life of the account). A removal cost of $50 for the asset calculated (incorrectly) on current installed cost would only have a negative 10 percent removal cost ($50/$500). However, a correct removal cost calculation would show a negative 138 percent removal cost for that asset ($50/$36.32). Inflation from the time of installation of the asset until the time of its removal must be taken into account in the calculation of the removal cost percentage because the depreciation rate, which includes the removal cost percentage, will be applied to the original installed cost of assets. Other factors such as the synchronization of net salvage data can also affect the level of net salvage.

IV. GRANITE STATE DEPRECIATION STUDY

Q. When were Granite State's depreciation rates last changed?

A. The last change in the Company's depreciation rates occurred in 2014 as part of Granite State's distribution rate case, Docket No. DE 13-063. The use of those depreciation rates was continued in Granite State's most recent rate case, Docket No. DE 16-383.

[3] Using the Handy-Whitman Bulletin No. 188, E-1, line 45, $36.32 = $500 x 68/936.

Q. What type of property is included in the depreciation study?

A. The study includes electric distribution and general property used by Granite State to serve its customers.

Q. What are the primary forces affecting the depreciation expense recommended in the study?

A. Generally, depreciation expense under the whole life approach is affected by two separate factors – changes in average service life and changes in net salvage.

Q. Do you have any general observations regarding the life parameters you are recommending in the study?

A. The life parameters recommended in this study incorporate the understanding of the operation of the system with the available accounting information analyzed using the simulated plant record ("SPR") Balances method. Using those resources as well as my professional judgment, the depreciation study recommends service lives based on a combination of statistical analyses and also on how well future retirement patterns will match past retirements for Granite State. Out of twenty-six accounts, seven accounts have a longer life, ten accounts have lives that are unchanged, four accounts have a shorter life, and for four accounts no comparison is possible as they were not included in the prior study. In addition, one account is related to a water heater rental program that was terminated. The largest increase in life is Account 367 Underground Conductor and Devices, which increased from 41 to 46 years. The largest decrease in life is Account 391.1 and 391.2, Software and Desktop Computers and Laptop Computer Equipment,

respectively, which decreased from 25 years to five years. Previously these assets were combined in Account 391 Office and Furniture and Equipment. Since these subgroups have distinctly different life characteristics than office furniture this study proposes to separate these sub-accounts. In addition, software that had been included in these accounts was reclassified to Account 303, Intangible Assets.

Q. Do you have any general observations regarding the net salvage parameters you are recommending in the study?

A. The Company experienced process difficulties after the exit from National Grid ownership and its accounting system. Removal cost for 2012 and 2013 was not available at a detailed account level. Data from January to May 2012 was used to allocate removal cost by plant account for years 2012 and 2013. Removal cost was not recorded to the accounting system from 2014–2015. The Company provided data for removal cost from 2016–2018 at the plant account level. Gross salvage was not allocated to plant accounts in years 2016–2018. Based on information from Company personnel, the small amount of gross salvage received (approximately $66 thousand over three years) was allocated based on retirements over that period in account likely to produce gross salvage. The net salvage parameters recommended in this study incorporate the understanding of the operation of the system with the available accounting information analyzed using by moving averages, as well as my professional judgment.

Q. What accounts were most impacted by changes in the net salvage percentages?

A. Nearly all Granite State's property accounts were impacted by an increase in negative net salvage. Out of twenty-six plant accounts, five accounts had a higher negative net salvage, thirteen accounts were unchanged, three had a lower negative net salvage, and four accounts were not included in the last depreciation study. In the last depreciation study, there was no investment in account 392 and no life or net salvage recommendations were made for that account.

Q. Please describe the results reflected in your study for intangible plant.

A. As shown in Appendix B of Attachment DAW-2, there is a decrease in depreciation expense for intangible property. Based on plant balances at December 31, 2018, there is a decrease of $492 thousand in annual depreciation expense. Currently the life of all software is 5 years. This study is dividing the software into lives of 3, 5, and 10 years.

Q. Please describe the results reflected in your study for distribution plant.

A. As shown in Appendix B of Attachment DAW-2, there is a small decrease in depreciation expense for distribution property. Based on plant balances at December 31, 2018, there is an increase of $279 thousand in annual depreciation expense.

Q. Please describe the results reflected in your study for general plant.

A. As shown in Appendix B of Attachment DAW-2, there is a small increase in depreciation expense for general property. Based on plant balances at December 31, 2018, there will be an increase of $140 thousand in annual depreciation expense.

Q. What other item is included in your depreciation recommendation?

A. In keeping with the Commission's use of whole life depreciation with a period to amortize the difference between book and theoretical depreciation reserves, the Company is recommending a six-year accrual to recover the variance between the book and theoretical depreciation reserves. This results in an additional accrual of $233 thousand per year.

V. CONCLUSION

Q. Mr. Watson, do you have any concluding remarks?

A. Yes. I recommend the Commission set the depreciation accrual rates at the levels shown in Attachment DAW-2.

Q. Does this conclude your prefiled direct testimony?

A. Yes, it does.

DANE A. WATSON, PE, MBA, CDP

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Profile

- 34 years of experience in utility depreciation, valuation and property accounting.
- Industry wide reputation with significant experience as Expert Witness, in depreciation, valuation, and rate base areas.
- Proven experience in effectively managing property systems and reengineering processes/ systems to achieve significant cost savings.
- Goal-Oriented, "outside the box" thinker with demonstrated strong leadership and communication capabilities.
- Organized, highly-motivated, and focused problem solver.

Relevant Experience and Accomplishments

- Depreciation and Asset Accounting
  - Conducted over 200 depreciation studies for electric (generation, transmission, and distribution), gas (transmission, distribution, LNG and storage), water/wastewater, telecom and mining companies (regulated and non-regulated) and supported over 35 state regulatory bodies and FERC.
  - Ongoing teaching of depreciation (basic and advanced) in many industry venues (EEI/AGA, SDP, Michigan State, State Commissions).
  - Lead or served in numerous national industry roles related to depreciation and property accounting including twice chairing the Plant Accounting and Valuation Committee of the Edison Electric Institute and twice chairing the Society of Depreciation Professionals.
  - Served as gas and electric industry Project Manager for the implementation of SFAS 143.
  - Served as general editor for "Introduction to Depreciation and Net Salvage".
  - Managed fixed asset accounting, depreciation accounting and analysis, lease accounting, inventory accounting, transportation accounting and records management for one of the largest electric and gas utilities in the US.
- System/Process Reengineering
  - Reengineered fixed asset process and managed redesign of a Fixed Asset system to create a $1.5-$2.0 million savings per year.
  - Designed and implemented a new leased asset tracking and payment system that enabled reduction of errors in lease payments by $3-$4 million per year.
  - Designed and implemented an internal shared asset tracking and allocation system to meet stringent affiliate transaction rules.
  - Championed, designed and implemented imaging system to replace paper and microfilm document storage system saving over $1 million per year.

Employment History:

- 2004-present
  - 0 Partner Alliance Consulting Group, Plano, TX
- 1996-2004
  - 0 Manager of Property Accounting Services TXU Business Services, Dallas, TX
    Testified in 15 rate or restructuring proceedings before various Commissions including the Texas Railroad Commission, the Texas Public Utilities Commission and the FERC. Lead Sarbanes-Oxley implementation for property processes. During tenure, increased scope to managing all fixed asset and construction accounting, inventory accounting, transportation accounting, and fixed asset accounting systems. Lead efforts to convert 14 companies to a new fixed asset system. Restructured valuation system to provide a 90% faster response time. Implemented new construction/fixed asset systems that facilitated a 12 FTE reduction in staff. Built state-of-the-art lease accounting system to handle reporting and payment of all TXU leases. Built highly automated imaging system to replace microfilm and paper document storage and retrieval system reducing costs and shortening response time.
- 1992-1996
  - 0 Technical Support Manager Texas Utilities Generating Company, Dallas, TX
    Managed group responsible for depreciation and valuation analysis for TXU as well as special projects. Responsible for teaching and running engineering economics analysis for large capital projects. Managed nuclear plant decommissioning studies and electrical line loss allocation studies.
- 1985-1992
  - 0 Associate Engineer to Senior Engineer Texas Utilities Generating Company, Dallas, TX
    Given increasing responsibility related to depreciation and valuation program creation, valuation analysis, depreciation analysis, training TXU employees in engineering economics, report preparation, writing and supporting depreciation testimony before the Texas Public Utilities Commission.

Education:

- M.B.A., General Business, Amberton University, Garland, TX
- B.S., Electrical Engineering, University of Arkansas

Honors and Awards

- Professional Engineer (TX)
- Certified Depreciation Professional (“CDP”)
- Senior Member of the Institute of Electronics and Electrical Engineers (“IEEE”)
- IEEE 3rd Millennium Medal
- IEEE Region 5 Treasurer, Audit Committee Chair, IEEE-USA Secretary Treasurer, IEEE MGA Treasurer, IEEE Finance Committee Member
- American Association of Engineering Societies (AESS) Treasurer
- Twice Chair of the Edison Electric Institute (“EEI”) Property Accounting and Valuation Committee
- Former Board member and twice President of the Society of Depreciation Professionals

LIBERTY UTILITIES (GRANITE STATE ELECTRIC) CORP.

D/B/A LIBERTY UTILITIES

ELECTRIC DISTRIBUTION AND GENERAL UTILITY PLANT

DEPRECIATION RATE STUDY

AT DECEMBER 31, 2018

http://www.utilityalliance.com

LIBERTY UTILITIES (GRANITE STATE ELECTRIC) CORP.
D/B/A LIBERTY UTILITIES
ELECTRIC DISTRIBUTION AND GENERAL UTILITY PLANT
DEPRECIATION RATE STUDY
EXECUTIVE SUMMARY

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities ("Granite State" or the "Company") engaged Alliance Consulting Group to conduct a depreciation study of the Company's Electric Distribution and General utility plant depreciable assets as of December 31, 2018.

This study was conducted under the traditional depreciation study approach. The net salvage analysis in this study parallels the approach previously used by Granite State in DR 13-063.

For Distribution and General Accounts, the lives of some of the accounts have changed. There are seven accounts that have increasing lives, ten accounts that are unchanged, and four accounts that have decreasing lives. There are four accounts where no comparison is possible. Net salvage has also changed from the Company's last case. Five accounts show an increase (*i.e.*, more negative) in their negative net salvage, three accounts show a decrease (*i.e.*, less negative) in their negative net salvage, and thirteen accounts have no change in net salvage. There are four accounts where no comparison is possible. The account with the largest increase in negative net salvage is Account 369 Services where the net salvage moved from negative 42.5 percent to negative 75 percent.

This study recommends an overall increase of $160 thousand in annual depreciation expense for all accounts. The true-up of the depreciation reserve position between book and theoretical reserve is responsible for the increase as it more than offsets a net decrease applicable to the individual plant accounts. Appendix B demonstrates the change in depreciation expense for the various accounts.

LIBERTY UTILITIES (GRANITE STATE ELECTRIC) CORP.

ELECTRIC DISTRIBUTION AND GENERAL UTILITY PLANT

DEPRECIATION RATE STUDY

AT DECEMBER 31, 2018

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PURPOSE

The purpose of this study is to develop depreciation rates for the depreciable property as recorded on Granite State's books at December 31, 2018. The account-based depreciation rates were designed to recover the total remaining undepreciated investment, adjusted for net salvage, over a period to be approved by the New Hampshire Public Utilities Commission. Granite State's property is depreciated on a straight-line basis. Non-depreciable property and property which is amortized, such as intangible software, were excluded from this study.

Granite State has approximately 43 thousand electric distribution customers in 21 communities. The Company has two functions (Distribution and General) and utilizes various other plant assets to serve its customers.

STUDY RESULTS

Overall depreciation rates for all Granite State's depreciable property are shown in Appendix A. These rates translate into an annual depreciation accrual of $9.9 million based on Granite State's depreciable investment at December 31, 2018. The annual equivalent depreciation expense calculated by the same method using the approved rates is $9.7 million. These rates translate into an annual depreciation accrual for Intangible of $1.8 million, Distribution of $7.2 million and for General Plant of $0.7 million, and $233 thousand for the amortization of book and theoretical reserve differences. The overall increase in depreciation expense is driven by the changes in estimated life and net salvage estimates for Granite State' depreciable accounts.

Appendix A demonstrates the development of the annual depreciation rates and accruals. Appendix B presents a comparison of approved rates versus proposed rates by account. Appendix C presents a summary of mortality and net salvage estimates by account. Appendix D shows a comparison of plant, book reserve, and theoretical reserve for each account. Appendix E presents the net salvage analysis for all accounts.

GENERAL DISCUSSION

Definition

The term "depreciation" as used in this study is considered in the accounting sense, that is, as a system of accounting that distributes the cost of assets, less net salvage (if any), over the estimated useful life of the assets in a systematic and rational manner. It is a process of allocation, not valuation. This expense is systematically allocated to accounting periods over the life of the properties. The amount allocated to any one accounting period does not necessarily represent the loss or decrease in value that will occur during that particular period. The Company accrues depreciation on the basis of the original cost of all depreciable property included in each functional property group. On retirement the full cost of depreciable property, less the net salvage value, is charged to the depreciation reserve.

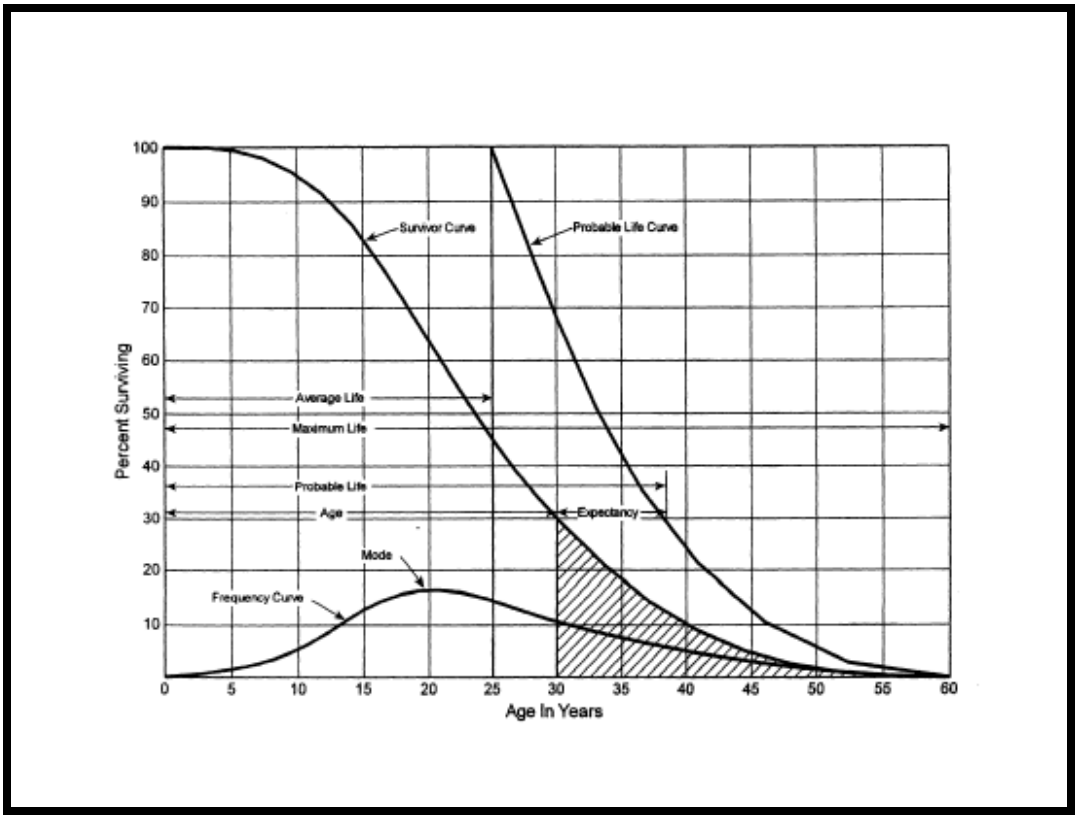
Basis of Depreciation Estimates

The straight-line, broad (average) life group, whole life depreciation system was employed to calculate annual and accrued depreciation in this study. In this system, the annual depreciation expense for each group is computed by dividing the original cost of the asset less estimated net salvage by its respective average service life. The resulting annual accrual amounts of all depreciable property within a function were accumulated, and the total was divided by the original cost of all functional depreciable property to determine the depreciation rate. The computations of the annual account level depreciation rates are shown in Appendix A.

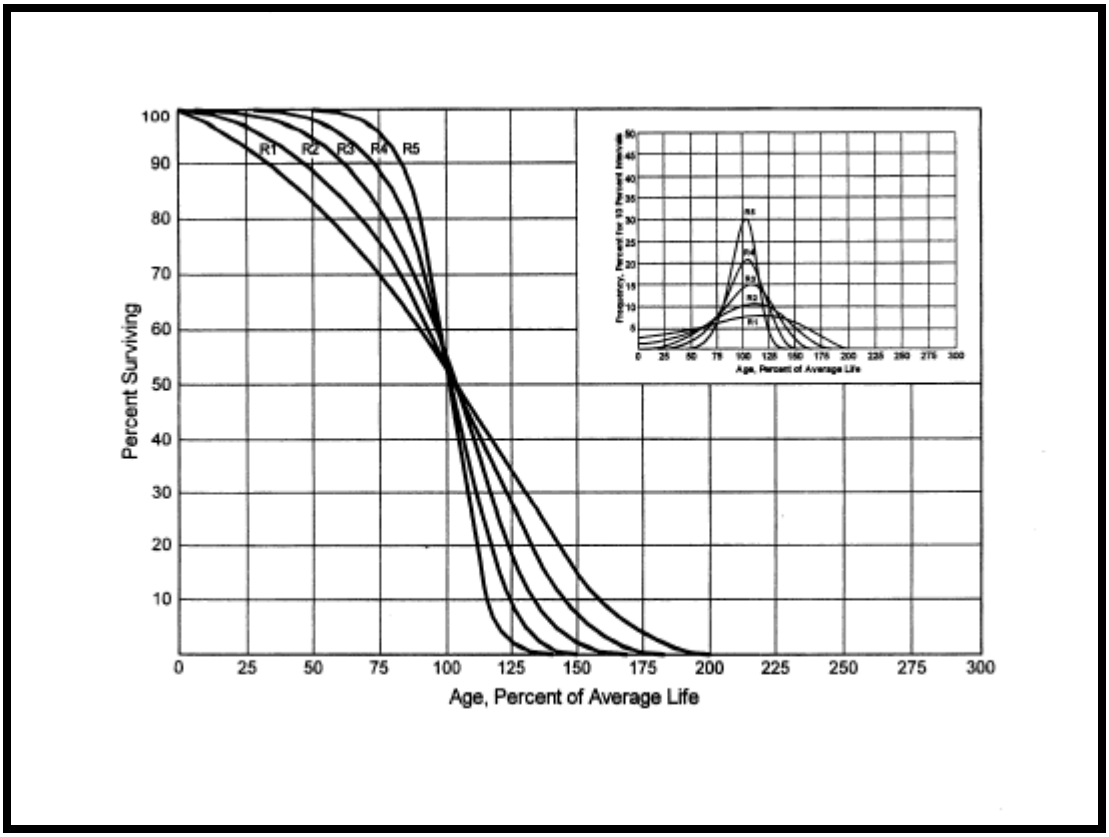
Simulated plant record (“SPR”) analysis was used with each account within a function since vintaged historical data was unavailable, and judgment was used to some degree on all accounts. As in Docket No. DE 13-063, SPR analysis was used for all accounts.

Survivor Curves

To fully understand depreciation projections in a regulated utility setting, there must be a basic understanding of survivor curves. Individual property units within a group do not normally have identical lives or investment amounts. The average life of a group can be determined by first constructing a survivor curve which is plotted as a percentage of the units surviving at each age. A survivor curve represents the percentage of property remaining in service at various age intervals. The Iowa Curves are the result of an extensive investigation of life characteristics of physical property made at Iowa State College Engineering Experiment Station in the first half of the prior century. Through common usage, revalidation, and regulatory acceptance, these curves have become a descriptive standard for the life characteristics of industrial property. An example of an Iowa Curve is shown below.



There are four families in the Iowa Curves that are distinguished by the relation of the age at the retirement mode (largest annual retirement frequency) and the average life. For distributions with the mode age greater than the average life, an "R" designation (*i.e.*, Right modal) is used. The family of “R” moded curves is shown below.



Similarly, an "S" designation (*i.e.*, Symmetric modal) is used for the family whose mode age is symmetric about the average life. An "L" designation (*i.e.*, Left modal) is used for the family whose mode age is less than the average life. A special case of left modal dispersion is the "O" or origin modal curve family. Within each curve family, numerical designations are used to describe the relative magnitude of the retirement frequencies at the mode. A "6" indicates that the retirements are not greatly dispersed from the mode (*i.e.*, high mode frequency) while a "1" indicates a large dispersion about the mode (*i.e.*, low mode frequency). For example, a curve with an average life of 30 years and an "L3" dispersion is a

moderately dispersed, left modal curve that can be designated as a 30 L3 Curve. An SQ, or square, survivor curve occurs where no dispersion is present (*i.e.*, units of common age retire simultaneously).

Most property groups can be closely fitted to one Iowa Curve with a unique average service life. The blending of judgment concerning current conditions and future trends along with the matching of historical data permits the depreciation analyst to make an informed selection of an account's average life and retirement dispersion pattern.

Simulated Plant Record Procedure

The SPR - Balances approach is one of the commonly accepted approaches used to analyze mortality characteristics of utility property. SPR was applied to all accounts in this study due to the unavailability of vintaged transactional data. In this method, an Iowa Curve and average service life are selected as a starting point of the analysis, and survivor factors are applied to the actual annual additions to give a sequence of annual balance totals. These simulated balances are compared with the actual balances by using both graphical and statistical analysis. Through multiple comparisons, the mortality characteristics (as defined by an average life and Iowa Curve) that are the best match to the property in the account can be found.

The Conformance Index (“CI”) is one measure used to evaluate various SPR analyses. CIs are also used to evaluate the "goodness of fit" between the actual data and the Iowa Curve being referenced. The sum of squares difference (“SSD”) is a summation of the difference between the calculated balances and the actual balances for the band or study year being analyzed. This difference is squared and then summed to arrive at the SSD.

$$SSD = \sum_1^n (Calculated\ Balance_i - Observed\ Balance_i)^2$$

Where n is the number of years in the test band.

This calculation can then be used to develop any other calculations that the analyst feels might give a better indication for the "goodness of fit" for the representative curve under consideration. The residual measure ("RM") is the square root of the average squared differences as developed above. The RM is calculated as follows:

$$RM = \sqrt{\left(\frac{SSD}{n}\right)}$$

The CI is developed from the residual measure and the average observed plant balances for the band or study year being analyzed. The calculation of CI is shown below:

$$CI = \frac{\sum_1^n Balances_i / n}{RM}$$

The retirement experience index ("REI") gives an indication of the maturity of the account and is the percent of the property retired from the oldest vintage in the band at the end of the study year. Retirement indices range from 0 percent to 100 percent and an REI of 100 percent indicates that a complete curve was used. A retirement index less than 100 percent indicates that the survivor curve was truncated at that point. The originator of the SPR method, Alex Bauhan, suggests ranges of value for the CI and REI. The relationship for CI proposed by Bauhan is shown below[1]:

CI	Value
Over 75	Excellent
50 to 75	Good
25 to 50	Fair
Under 25	Poor

1 Public Utility Depreciation Practices, p. 96.

The relationship for REI proposed by Bauhan[2] is shown below:

REI	Value
Over 75	Excellent
50 to 75	Good
33 to 50	Fair
17 to 33	Poor
Under 17	Valueless

Depreciation analysts have used these measures in analyzing SPR results for nearly 60 years since the SPR method was developed.

2 Public Utility Depreciation Practices, p. 97.

Judgment

Any depreciation study requires informed judgment by the analyst conducting the study. A knowledge of the property being studied, company policies and procedures, general trends in technology and industry practice, and a sound basis of understanding depreciation theory are needed to apply this informed judgment. Judgment was used in areas such as survivor curve modeling and selection, depreciation method selection, simulated plant record method analysis, and actuarial analysis.

Judgment is not defined as being used in cases where there are specific, significant pieces of information that influence the choice of a life or curve. Those cases would simply be a reflection of specific facts being entered into the analysis. Where there are multiple factors, activities, actions, property characteristics, statistical inconsistencies, implications of applying certain curves, property mix in accounts, or a multitude of other considerations that impact the analysis (potentially in various directions), judgment is used to take all of these factors and synthesize them into a general direction or understanding of the characteristics of the property. Individually, no one factor in these cases may have a substantial impact on the analysis, but overall, that factor may shed light on the utilization and characteristics of assets. Judgment may also be defined as deduction, inference, wisdom, common sense, or the ability to make sensible decisions. There is no single correct result from statistical analysis; hence, there is no answer absent judgment. At the very least, for example, any analysis requires choosing which bands to place more emphasis upon.

The establishment of appropriate average service lives and retirement dispersions for Distribution and General Plant accounts requires judgment to incorporate the understanding of the operation of the system with the available accounting information analyzed using the SPR Balances method. The appropriateness of lives and curves depends not only on statistical analyses, but also on how well future retirement patterns will match past retirements.

Current applications and trends in use of the equipment also need to be factored into life and survivor curve choices in order for appropriate mortality characteristics to be chosen.

Average Life Group Depreciation

In its last distribution rate case, Granite State was authorized to use the average life group, whole life ("ALG-WL") depreciation procedure. This study continues to use the ALG depreciation procedure to group the assets within each account.

In a whole life representation, the annual accrual rate is computed by the following equation,

$$AnnualAccrualRate = \frac{(100\% - NetSalvagePercent)}{AverageServiceLife}$$

Theoretical Depreciation Reserve

The book depreciation reserve was derived from Company records. This study used a reserve model that relied on a prospective concept relating future retirement and accrual patterns for property, given current life and salvage estimates. The theoretical reserve of a group is developed from the estimated remaining life, total life of the property group, and estimated net salvage. The theoretical reserve represents the portion of the group cost that would have been accrued if current forecasts were used throughout the life of the group for future depreciation accruals. The computation involves multiplying the vintage balances within the group by the theoretical reserve ratio for each vintage. The average life group method requires an estimate of dispersion and service life to establish how much of each vintage is expected to be retired in each year until all property within the group is retired. Estimated average service lives and dispersion determine the amount within each average life group. The straight-line remaining-life theoretical reserve ratio at any given age ("RR") is calculated as:

$$RR = 1 - \frac{(Average\ Remaining\ Life)}{(Average\ Service\ Life)} * (1 - Net\ Salvage\ Ratio)$$

DETAILED DISCUSSION

Depreciation Study Process

This depreciation study encompassed four distinct phases. The first phase involved data collection and field interviews. The second phase was where the initial data analysis occurred. The third phase was where the information and analysis was evaluated. Once the first three stages were complete, the fourth phase began. This phase involved the calculation of deprecation rates and the documenting the corresponding recommendations.

During the Phase I data collection process, historical data was compiled from continuing property records and general ledger systems. The data was validated for accuracy by extracting and comparing to multiple financial system sources. Audit of this data was validated against historical data from prior periods, historical general ledger sources, and field personnel discussions. This data was reviewed extensively to put it into the proper format for a depreciation study. Further discussion on data review and adjustment is found in the Salvage Considerations Section of this study. Also, as part of the Phase I data collection process, numerous discussions were conducted with engineers and field operations personnel to obtain information that would assist in formulating life and salvage recommendations in this study. One of the most important elements of performing a proper depreciation study is to understand how the Company utilizes assets and the environment of those assets. Interviews with engineering and operations personnel are important methods that allow the analyst to obtain information that is beneficial when evaluating the output from the life and net salvage programs in relation to the Company's actual asset utilization and environment. Information that was gleaned in these discussions is found both in the Detailed Discussion of this study in the life analysis and salvage analysis sections, and also in workpapers.

Phase 2 is where the actuarial analysis is performed. Phase 2 and 3 overlap to a significant degree. The detailed property records information is used in Phase 2 to develop observed life tables for life analysis. These tables are visually

compared to industry standard tables to determine historical life characteristics. It is possible that the analyst would cycle back to this phase based on the evaluation process performed in Phase 3. Net salvage analysis consists of compiling historical salvage and removal data by functional group to determine values and trends in gross salvage and removal cost. This information was then carried forward into Phase 3 for the evaluation process.

Phase 3 is the evaluation process which synthesizes analysis, interviews, and operational characteristics into a final selection of asset lives and net salvage parameters. The historical analysis from Phase 2 is further enhanced by the incorporation of recent or future changes in the characteristics or operations of assets that were revealed in Phase 1. Phases 2 and 3 allow the depreciation analyst to validate the asset characteristics as seen in the accounting transactions with actual Company operational experience.

Finally, Phase 4 involved the calculation of accrual rates, making recommendations, and documenting the conclusions in a final report. The calculation of accrual rates is found in Appendix A. Recommendations for the various accounts are contained within the Detailed Discussion of this report. The depreciation study flow diagram shown as Figure 1[3] documents the steps used in conducting this study. Depreciation Systems, page 289, documents the same basic processes in performing a depreciation study, which are: Statistical analysis, evaluation of statistical analysis, discussions with management, forecast assumptions, and document recommendations.

[3] INTRODUCTION TO DEPRECIATION FOR PUBLIC UTILITIES & OTHER INDUSTRIES, AGA EEI (2013).

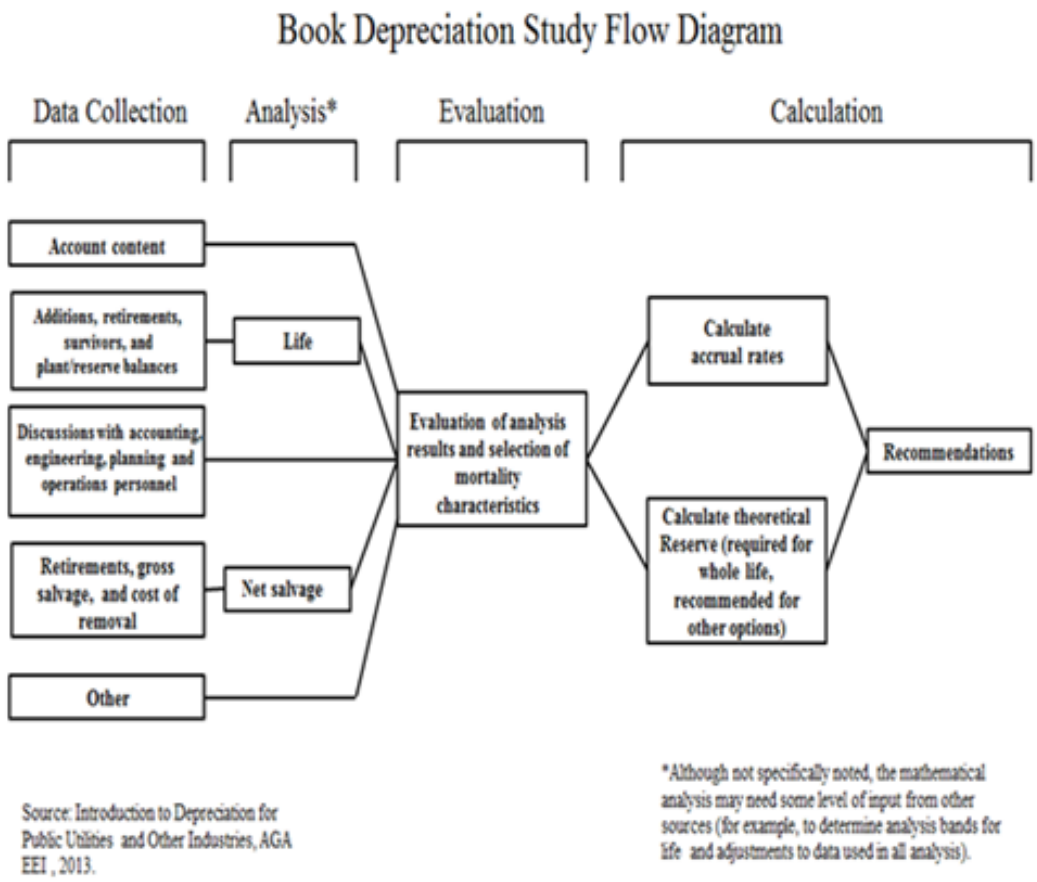


Figure 1

GRANITE STATE DEPRECIATION STUDY PROCESS

Depreciation Rate Calculation

Annual depreciation expense amounts for the depreciable accounts of Granite State were calculated by the straight-line method, average life group procedure, and whole-life technique. These calculations are shown in Appendix A.

Amortization Calculation

For each plant account, the difference between the surviving investment, adjusted for estimated net salvage, and the book depreciation reserve was computed. A six-year period was chosen to use to amortize the difference between the theoretical reserve and the book reserve. These calculations are shown in Appendix D.

The New Hampshire Public Utilities Commission uses the whole-life average service life depreciation system. In order to incorporate a self-correcting mechanism, which accounts for any differences between theoretical and book depreciation reserve over a specified period of time, the Commission has authorized recovery periods that vary.

For Granite State, the total theoretical reserve is $1.4 million higher than the book reserve given the recommended parameters. In order to achieve full recovery of the Company's investment, it is necessary to increase its annual accrual by $233 thousand per year for six years. This is shown in Appendices B and D. In many jurisdictions, the remaining life depreciation system is used to amortize the difference between book and theoretical reserves. The computation of the theoretical reserve for each account is found in the study's workpapers.

Life Analysis

The SPR Balances method was applied to all accounts for Granite State. NHPUC records and Form 1 plant reports were used to develop the history for each account. For each account, a Simulated Plant Records-Balances analysis was made with bands of varying width. The bands varied in width from 10 to 60 years, in increments of 10 years. Those analyses are found in the study workpapers. Actual balances versus simulated balances for various Iowa Curves were plotted to evaluate various fits. Those results

were combined with information from Company personnel and informed judgment to determine asset life recommendations for each account.

Account 303 Computer Software (3 year, 5 year, and 10 year)

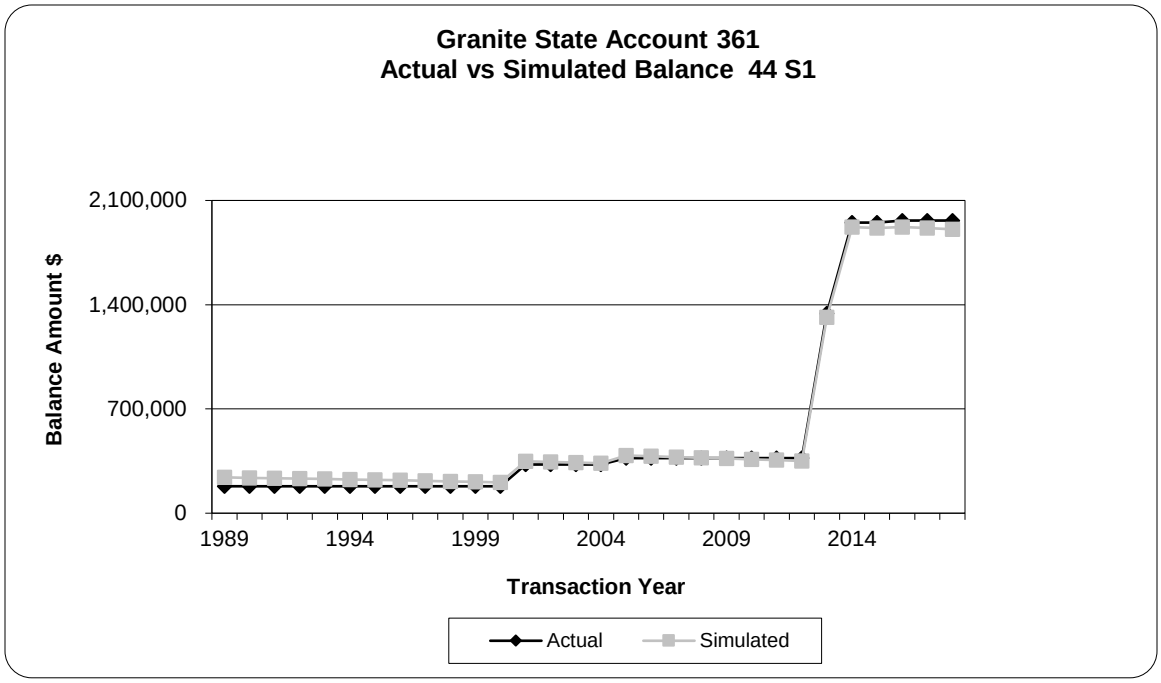
This account consists of computer software. After transfers from other accounts to appropriately classify assets, there is $11.6 million in plant in this account. Currently, assets in this account are depreciated over a five-year life. As a part of this depreciation study, we reviewed the current systems and planned future additions to that account. Company Subject Matter Experts ("SMEs") reviewed each project in service and separated the investment into groups with different lives based on the SMEs' understanding of the useful life for each individual software program: 3-year, 5-year, and 10-year.

DISTRIBUTION PLANT

Distribution Accounts, FERC Accounts 361-373.0

FERC Account 361 Structures & Improvements (44 S1)

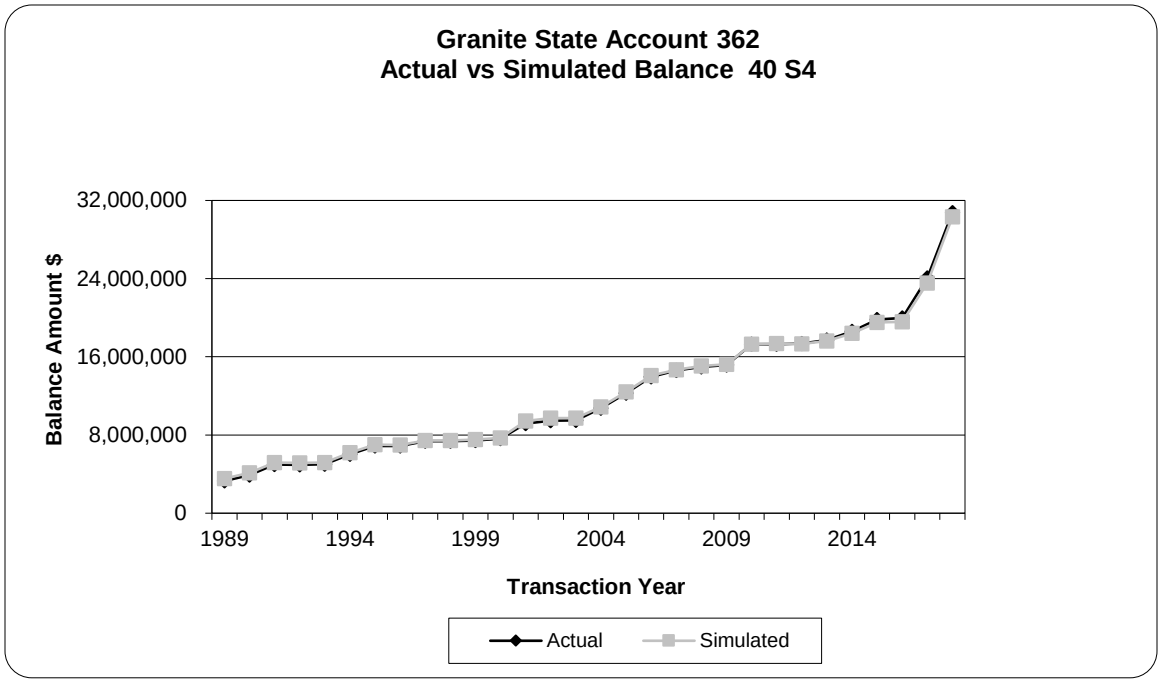
This grouping contains facilities ranging from fencing to other structures found in distribution substations. The current balance is $2.0 million for this account. The approved life for this account is 41 years. The Company is active in upgrading some substations. Company personnel report that about half the substations are “joint use” with National Grid, but there has been very little investment for joint use stations booked in Account 361. Almost all the investment is in the few (6) solely owned stations. Some stations are up to 60 years old, but a portion of the assets of those existing stations would have been replaced over that time. Because this is a long-lived account, the SPR selection process focused more on the longer bands, especially bands with widths equal to or greater than the current service life. All CI’s in the longer bands (as well as the shorter bands) fell in the poor range. In the longest bands with width at or longer than the current average service life, the highest ranked curve with a REI of 95 or greater is the 44 S1. Company personnel support a slightly longer life than the existing 41-year life for this account. Given SPR results, input from Company personnel, and judgment, this study recommends a 44 S1 for this account. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 361
Actual vs Simulated Balance 44 S1
Balance Amount $
2,100,000
1,400,000
700,000
0
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 362 Station Equipment (40 S4)

This grouping contains a wide variety of distribution substation equipment, including circuit breakers, switchgear, station wiring, transformers, and an extensive assortment of other equipment. The current balance is $30.8 million for this account, and the existing approved life is 41 years. National Grid owns the transformers that would normally be in this account. Company personnel state that when upgrading assets outside the station, there are times when some assets in the station would also need to be upgraded. The Company is moving to vacuum breakers from oil circuit breakers, with both types of breakers expected to have approximately the same life (35-40 years). Company personnel state that other components in this account would have varying lives: voltage regulators have about a 25-30 year life due to frequent operations; reclosers are expected to have a life of 25-30 years; and capacitors have a life expectation of 30 years. Company personnel report that there is a move to solid state relays as other changes occur, but no formal program is in place. About three quarters of stations have solid state relays and these are expected to have around a 20-year life. Company personnel expect that SCADA life would also be around 20 years. Company personnel state that some components in this account will have a life longer than 40 years (possibly the life of the substation) such as manually operated switches, foundations, bus supports, or grounding grids. Considering the various components in the account, Company personnel believe that 40 years would be reasonable for the average life for the account.

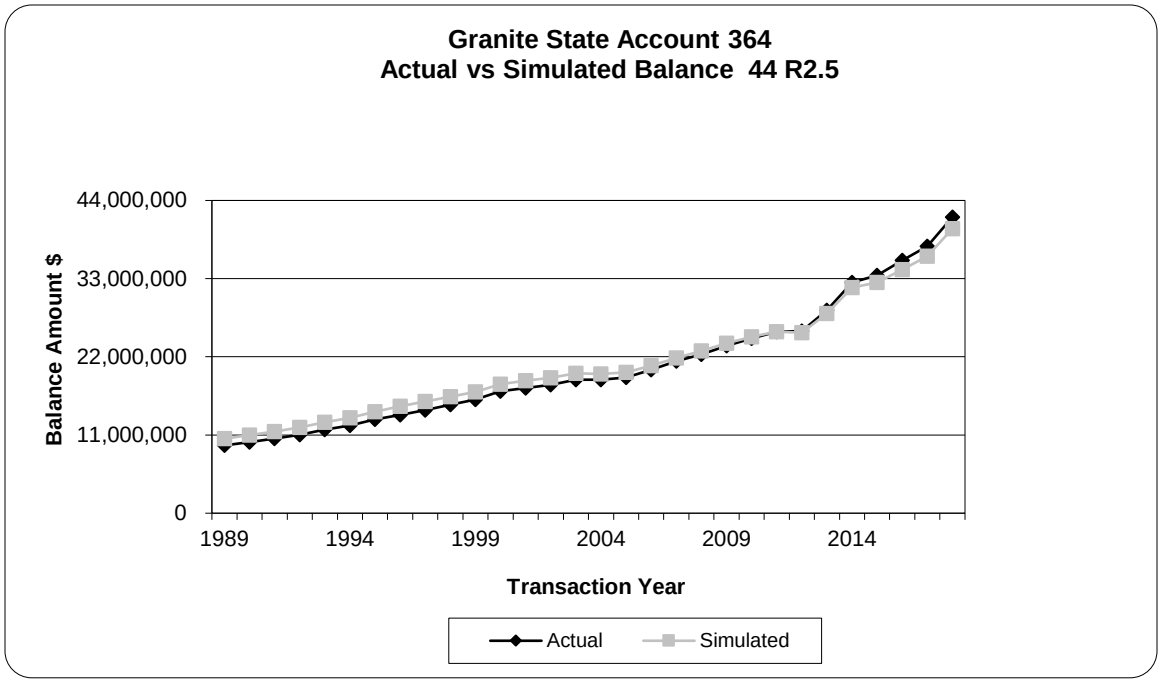
SPR analysis focused more on the wider bands with width in equal to or in excess of the current average service life. In bands of 60 years or longer, the top ranked curves did not have an excellent REI. The fourth ranked curve by CI was a 40 S4 which produced an REI of 100. The 50-year band showed the 40 S4 as the second ranked curve with an REI of 100. Based on SPR analysis and feedback from Company personnel, this study recommends moving to a 40 S4 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 362
Actual vs Simulated Balance 40 S4
32,000,000
24,000,000
16,000,000
8,000,000
0
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 364 Poles, Towers & Fixtures (44 R2.5)

This account contains poles and towers made of wood. The current balance is $41.7 million for this account. The currently approved average service life is 40 years. Over time, this account has had many changes as the Company moved from old growth to new growth trees and pole treatment changed from creosote to Penta. Items causing retirements include relocations (DOT, growth, etc.), third party contracts, and more poles being hit. The Charlestown and Lebanon areas may have more issues requiring early replacements. The Company has been using FIFO (first in first out) pricing to retire poles and all other plant, with the exception of specific plant (*e.g.*, Substations). This is a normal methodology used in the industry but can reflect a longer life, all else being equal. In the last three years, the Company began a limited internal inspection program. Company personnel report that replacement poles will be a heavier class than the poles being replaced. They anticipate that cross arm life would only be around 20 years for southern pine, but longer for other wood types. The Company is moving to composite cross arms which personnel expect will have a longer life but are moving away from cross arms altogether as they can. Company personnel expect a slightly longer life than the approved 40 years, although the changes that would move lives longer are not yet effecting the majority of the assets in the account. Overall, Company personnel support a slight move longer, but with conservatism in the change.

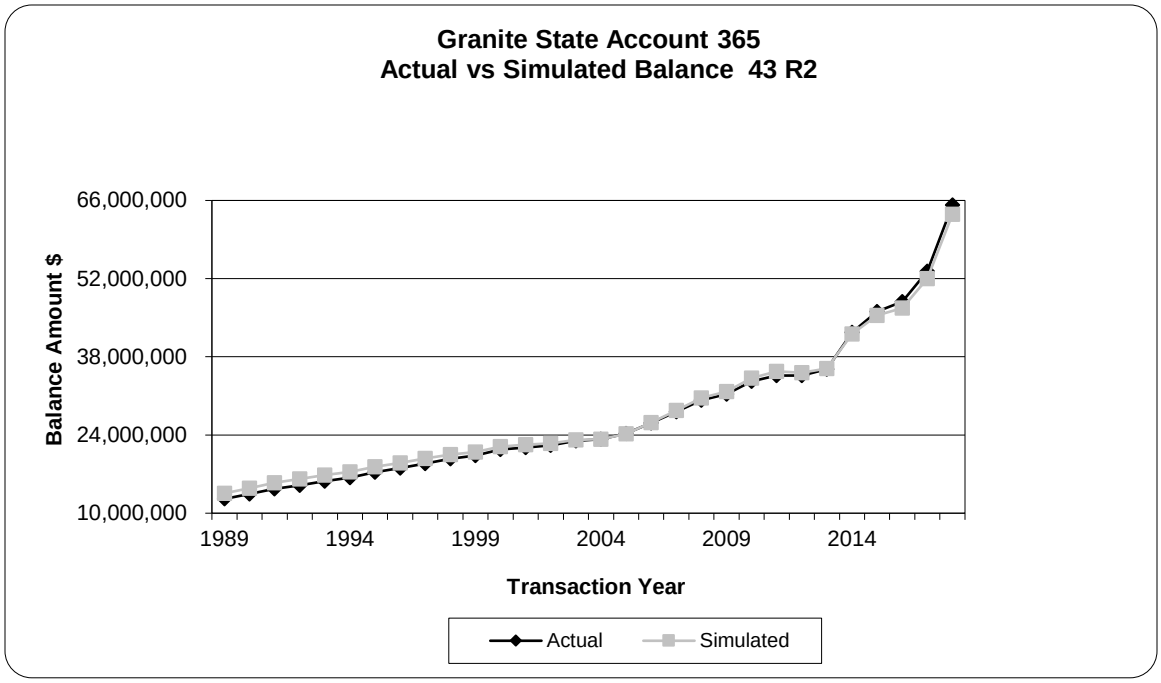
SPR analysis produced results with low conformance indices in all relevant bands. Given the poor conformance indices which limit the use of the SPR results, information from Company personnel supports a slightly longer life. Based on feedback from Company personnel, limited use of the SPR results, and judgment, this study recommends moving to a 44 R2.5 dispersion curve. This four-year increase in life (which is a ten percent increase in the life) moves in the direction indicated by Company experts. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 364
Actual vs Simulated Balance 44 R2.5
Balance Amount $
44,000,000
33,000,000
22,000,000
11,000,000
0
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 365.0 Overhead Conductor & Devices (43 R2)

This account consists of overhead conductor of various thickness, as well as various switches and reclosers. The current account balance is $65.2 million for this account. The approved rate assumes an average service life of 40 years. Company personnel state that, if installed properly, the newest conductor may last up to 60 years although there are significant amounts of older conductor with shorter expected lives. Spacer cable would have a life of about 45 years. Company personnel estimate that Cutouts have an average life of 15-20 years. The Company has moved to a polymer cutout (from porcelain) which Company experts expect to last longer than the older style. Company personnel expect that reclosers and switches would have a life similar to conductor. Electronics on reclosers would be maintained if failing under O&M. Company personnel believe a slightly longer life than the approved 40 years overall is reasonable given they have begun to introduce more robust conductor on the system.

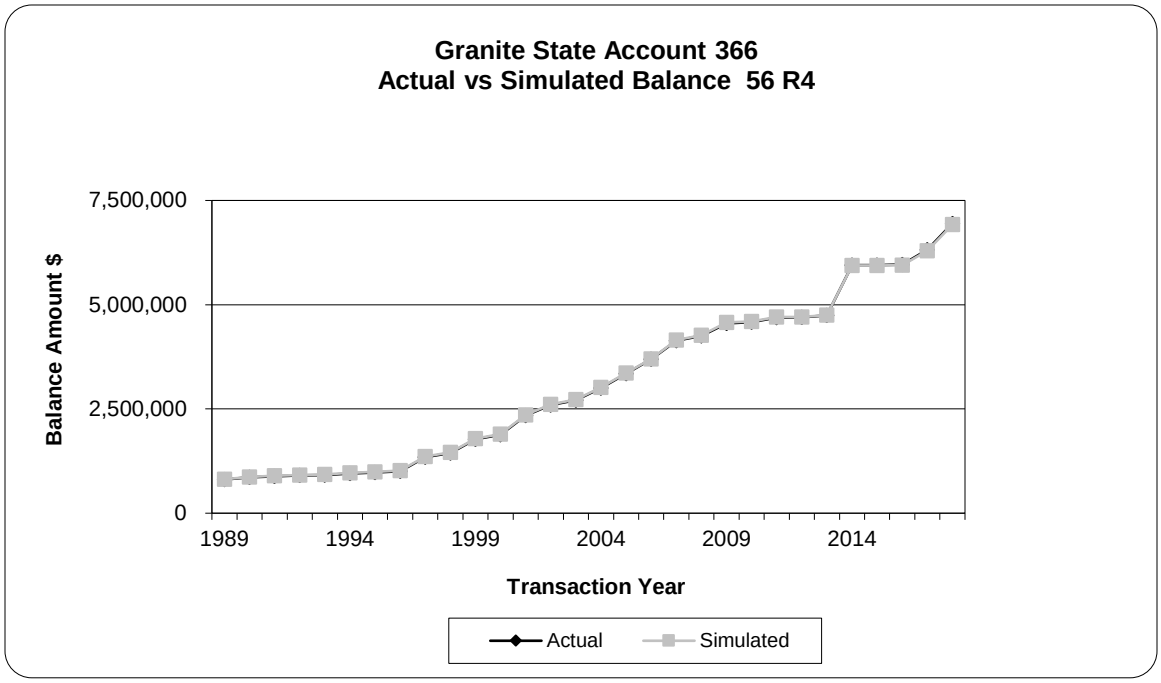
SPR analysis produced results with low conformance indices in all relevant bands. Given the poor conformance indices, information from Company personnel was more heavily relied upon to support a movement to a slightly longer life. Based on limited use of the SPR analysis and feedback from Company personnel, this study recommends moving to a 43 R2 dispersion curve. The three-year increase in life is a conservative move that is supported by the Company's subject matter experts. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 365
Actual vs Simulated Balance 43 R2
66,000,000
52,000,000
38,000,000
24,000,000
10,000,000
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 366.0 Underground Conduit (56 R4)

This account consists of conduit, duct banks, vaults, manholes, and ventilating system equipment. The account balance is $6.9 million for this account. The existing rate is based on a life estimate of 55 years. Pad to pole conduit is customer owned. Company personnel see little degradation of conduit, and most conduit is in underground residential and commercial developments and in cities. If it is a radial feed, the Company will put in a spare conduit. Risers will be replaced with relocations (which are expected to continue at around the current level). Company personnel believe a 55-year life is reasonable but could see a slightly longer life than 55 years.

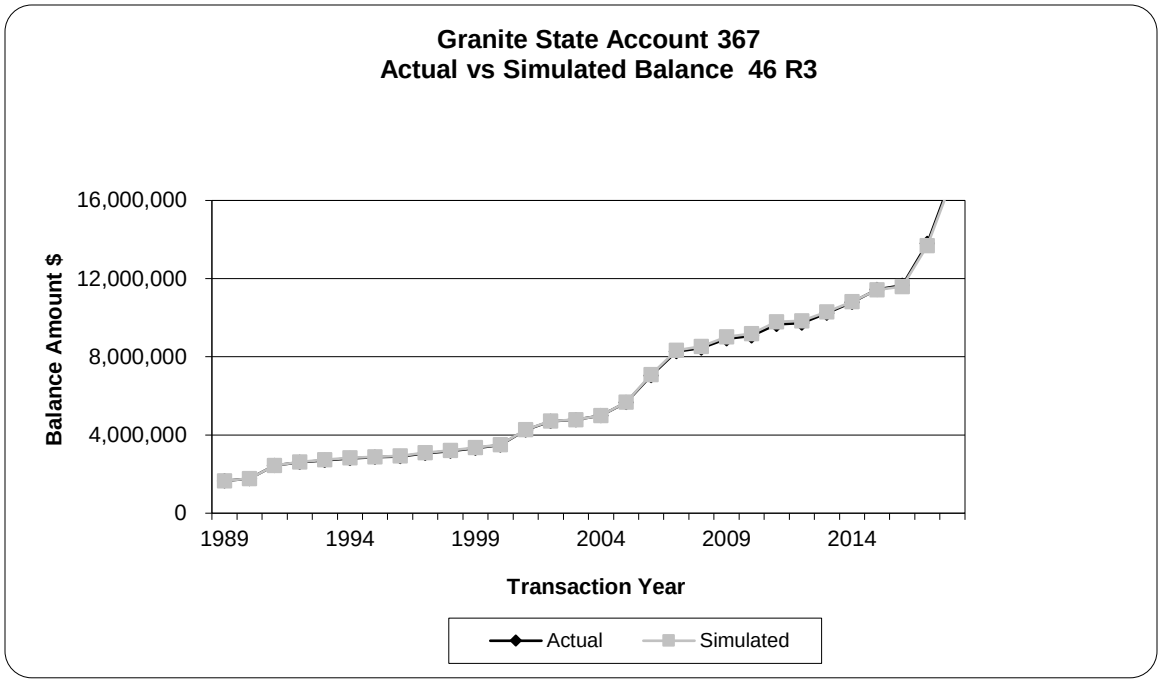
SPR analysis focused in the wider bands with widths equal to or in excess of the current average service life. In bands of 60 years or longer, the top ranked curves did not have an excellent REI and produced lives that were much longer than what would be reasonable for this equipment. The highest ranked curve (based on CI) with an REI close to the excellent rate (84.55) was the 56 R4. Other curves with excellent REIs show a shorter life than the approved 55 years, so those curve life combinations were not considered. Based on SPR analysis and feedback from Company personnel, this study recommends moving to a 56 R4 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 366
Actual vs Simulated Balance 56 R4
Balance Amount $
7,500,000
5,000,000
2,500,000
0
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

Account 367.0 Underground Conductor & Devices (46 R3)

This account consists of underground distribution conductor, switches, and switchgear. The balance is $17.3 million for this account, and the currently approved life is 41 years. Company personnel state that underground conductor has been put in conduit (underground services as well) for the last 20 years. Company personnel believe that this will have the tendency to lengthen the life of the cable. URD cable from the 1970s and 1980s was susceptible to encroachment from tree roots.. For the last 15-20 years, the Company has been installing better EPR cable instead of URD. The Company is also currently exploring the option of Cablecure. Company experts report that older URD is approaching 40 years of age with some evidence of degradation. Company personnel would expect the life of this account to be higher than 40 years, but shorter than the 56 years recommended for Account 366.

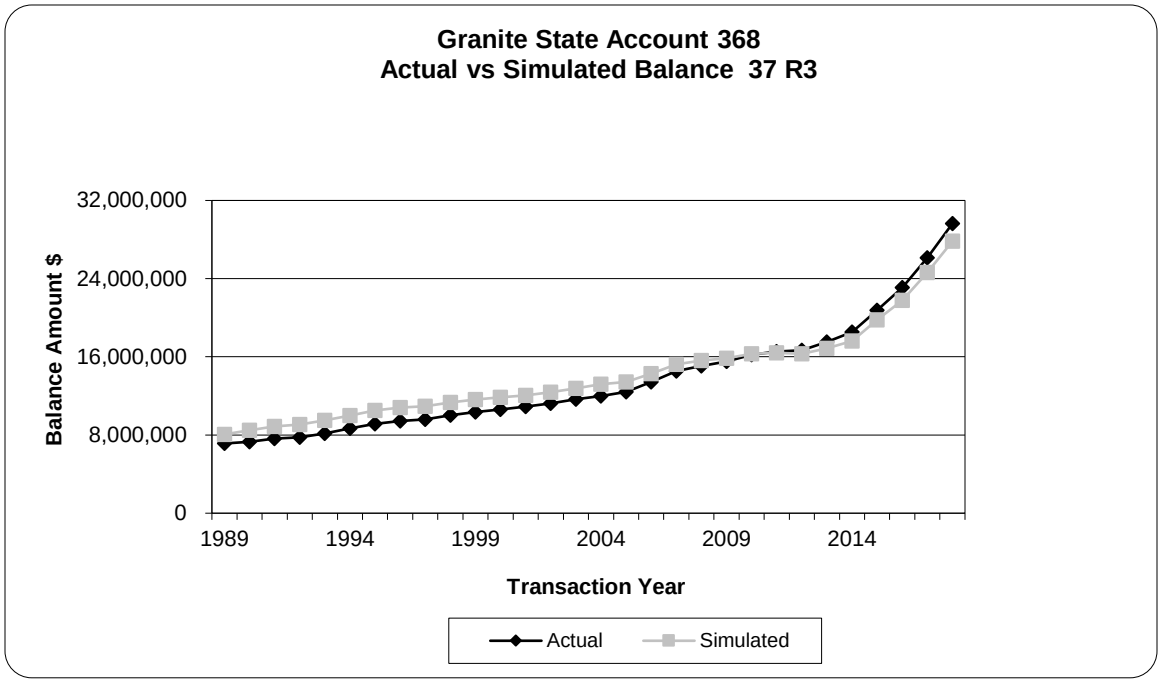
SPR analysis focused in the wider bands with width equal to or in excess of the current average service life. In bands of 60 years or longer, the top ranked curves did not have an excellent REI and produced lives that were unreasonably long for this equipment. In Alliance Consulting Group's experience, the life of this account should be shorter than Account 366. Given the input from Company personnel, the upper limit of the life we considered was approximately 45 years. The highest ranked curve with an REI that was excellent was the 54 R2.5. Because that life was much longer than could be supported by operational or industry experience, the next highest ranked curve to produce an REI of 100, which was the 46 R3, was considered. Based on SPR analysis and feedback from Company personnel, this study recommends moving to a 46 R3 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 367
Actual vs Simulated Balance 46 R3
16,000,000
12,000,000
8,000,000
4,000,000
0
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 368.0 Line Transformers (37 R3)

This account consists of line transformers, regulators, and capacitors. The account balance is $29.6 million for this account, and the currently approved life is 37 years. The Company tends to install at 100% of load expectations for pad mount transformers. Transformer replacement occurs mostly when impacted by age, rust, and defects rather than when there are increased capacity needs. The Company will refurbish transformers within a certain criterion. Where an old transformer is retired, refurbished, and recapitalized, Company personnel state that refurbished transformers would have a shorter life than the original. When reconductoring/upgrading lines, Company personnel state that they will tend to replace transformers along with the lines. Regulators and capacitors are expected to have a shorter life than the transformers. If there are issues with individual components within a capacitor bank, they will generally replace the capacitor bank as a whole. Company personnel believe the current life of 37 years is still appropriate.

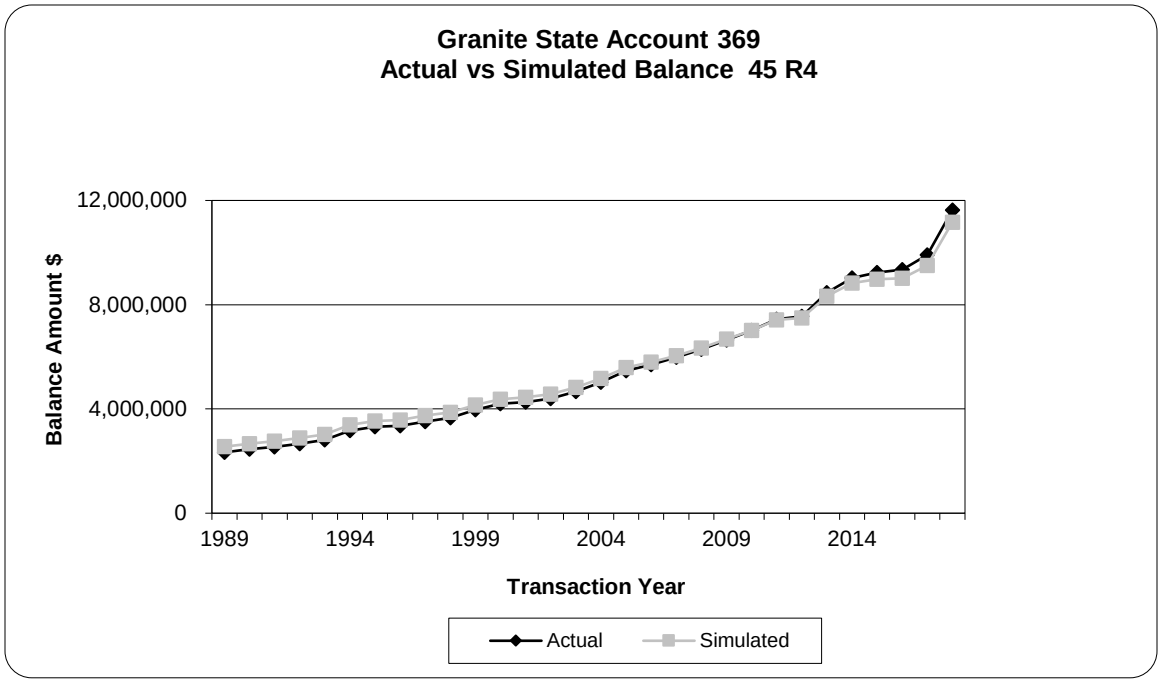
When examining the statistics from the SPR runs, the CI results are extremely poor, so relying on the SPR analysis is inappropriate. The top ranked curve is a 48 R0.5 curve. That significant a movement from the 37 year life is not reasonable based on the low CI indications in the SPR and the fact that there have been no changes in operations or equipment according to Company personnel that would warrant an increase in life. Based on feedback from Company personnel and the retirement pattern expectations for these types of assets (where a mid-mode R curve is frequently exhibited), the current depreciation study recommends retaining a 37 year life with an R3 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 368
Actual vs Simulated Balance 37 R3
32,000,000
24,000,000
16,000,000
8,000,000
0
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 369 Services (45 R4)

This account includes services, both overhead and underground, and has a balance of $11.6 million. The currently approved life for this account is 45 years. Company personnel believe that the existing approved life is reasonable for this account, given that operations and equipment have not changed from the last depreciation study. The Company just began to own underground services in 2019. About 20 years ago, the Company went from installing a #4 service to a #2 service. Company personnel stated that assets in this account should last as long as the distribution conductor in account 364.

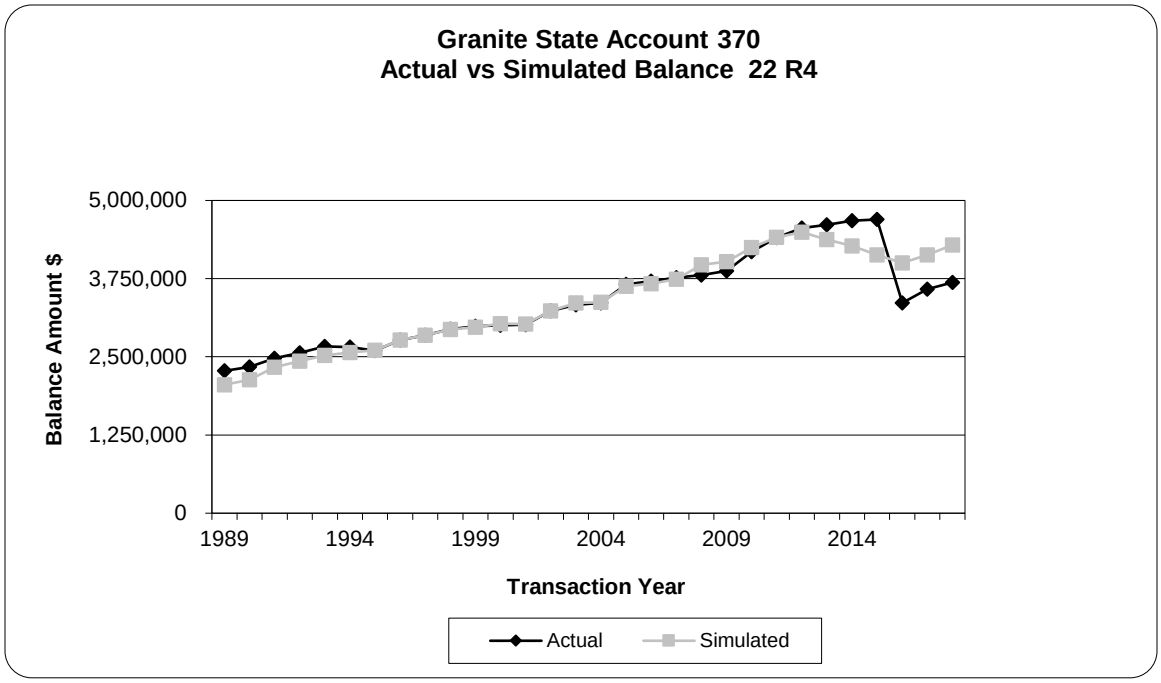
SPR analysis produced results with low conformance indices in the wider bands with widths at or in excess of the current average service life. Given the poor conformance indices, information from Company personnel supports a life similar to the current life. While SPR runs of 50 years or longer in width show the highest ranked curve with an REI of 100 is the 51 R2.5, the lives indicated by SPR analysis have poor CIs (suggesting that the results should be used with caution) and are longer than recommendations based on experience of Company personnel. Based on feedback from Company personnel and judgment, this study recommends retaining the current life of 45 years with a R4 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 369
Actual vs Simulated Balance 45 R4
12,000,000
8,000,000
4,000,000
0
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 370.0 Meters (22 R4)

This account includes all distribution meters and has a current balance of $3.7 million. The currently approved life is 22 years. The Company implemented an AMR project in the early 2000s. The investment in this account is mixed, consisting in part with electromechanical meters with a communications module and in part with electronic meters. Company personnel estimate that electronic meters will last 15-20 years. Given the overall mix of assets in this account, Company personnel suggest a life of 20 years or slightly longer.

SPR results in bands of 20 years or longer show that the top ranked curve is a 22 R4 with an REI of 100. Even though all CIs fall into the poor range, the consistent life indication across bands show lives clustering in the low 20-year range. The 22 R4 a reasonable choice supported by SPR analysis and Company expectations. Based on SPR analysis and feedback from Company personnel, this study recommends retaining the current 22-year life with a R4 dispersion curve. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 370
Actual vs Simulated Balance 22 R4
Balance Amount $
5,000,000
3,750,000
2,500,000
1,250,000
0
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 371 Installations on Customer Premises (10 SQ)

This account includes UPS batteries installed on customer premises. This is a new account without any approved depreciation parameter. The assets in this account will be used in a pilot project beginning in 2019. Information from the manufacturer indicates the life of the batteries will be 10 years. Based on input from Company experts, this study recommends a 10-year life with a SQ dispersion.

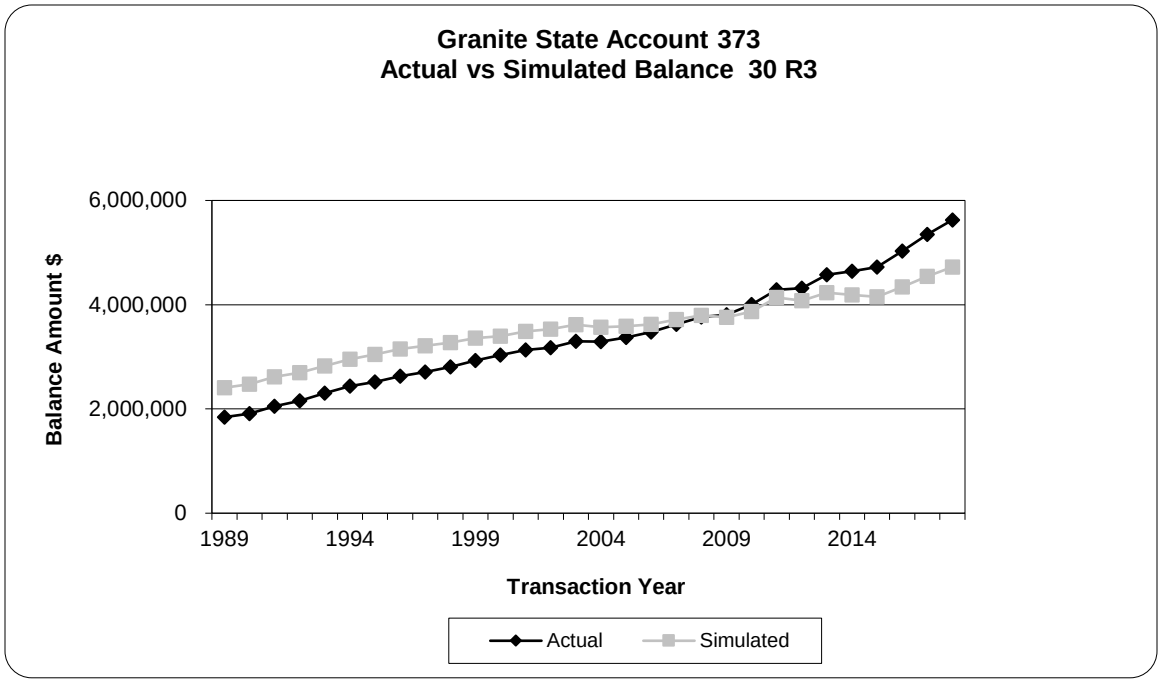
FERC Account 372.0 Leased Property on Customer Premises (NA)

This account consists of items rented to customers, such as water heaters. The current account balance is $1.2 million, and the currently approved life is 24 years. Company personnel report that the water heater program has been terminated. Accordingly, the Company does not request a depreciation rate for this account in this proceeding.

FERC Account 373.0 Street Lighting (30 R3)

This account includes all distribution streetlights, conductor, conduit, luminaire, and standards. The current account balance is $5.6 million for this account. The currently approved life for this account is 30 years. Company personnel state that relocations and the failure of the head or the pole are the primary causes of retirements. In 2006-2007, the Company began replacing Mercury vapor lights with High Pressure Sodium lights. In 2017, the Company was granted a tariff for LED lighting. Company personnel report that they are in the process of converting to LED in one town out of their 18 towns. The lights being replaced are 20+ years old and a 20-year life is expected for the light component. Another town is considering buying out the street lights. Company personnel report that the majority of street-lighting is on wood poles (booked in Account 364) and street light standards are booked in Account 373. Underground conductor and conduit are also included in this account when they are part of the lighting infrastructure and would generally have a longer life than the lights themselves. A few of the lights are approaching 30 years old. Given the LED tariff and uncertainty regarding the number of towns that will convert in the future, Company personnel recommend leaving the life at 30 years.

SPR results, which showed a life in the mid-30 year range, were not given weight due to the changing circumstances impacting the life of this account in the future as well as due to the consistently poor CI's shown in the SPR analysis and lives longer than expectations of Company subject matter experts. This study recommends retaining a 30-year life and using a R3 dispersion. A plot of actual balances versus simulated balances for this account is shown below.

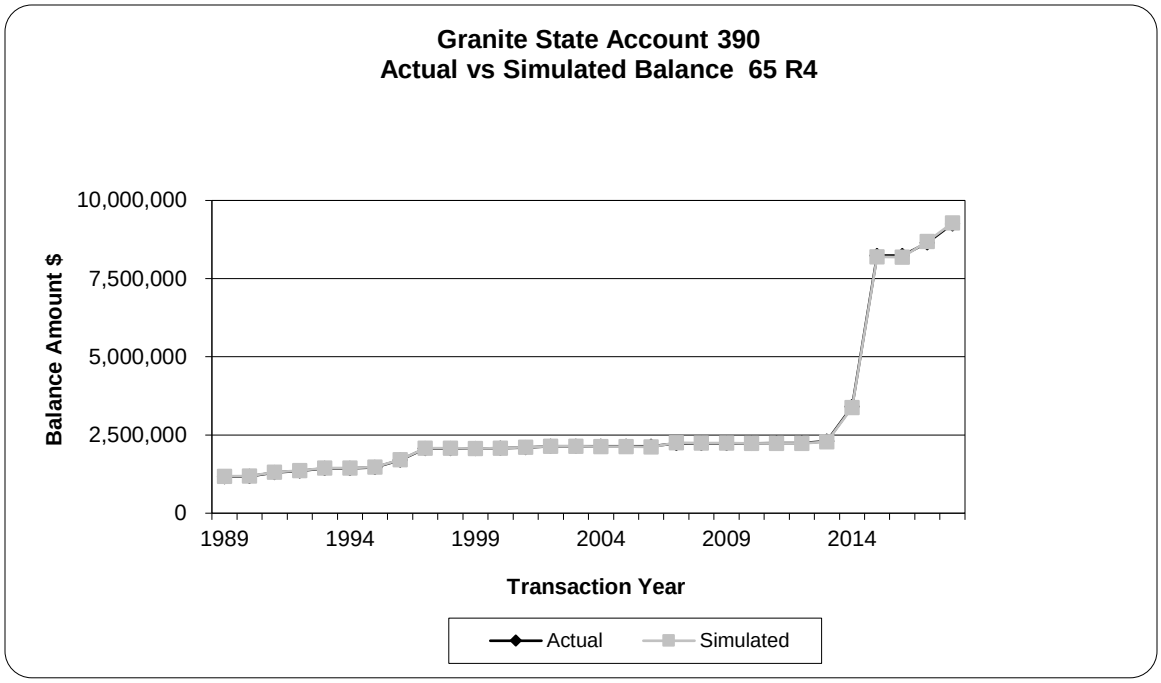

Granite State Account 373
Actual vs Simulated Balance 30 R3
6,000,000
4,000,000
2,000,000
0
Balance Amount $
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

GENERAL PLANT

General Accounts, FERC Accounts 390-398

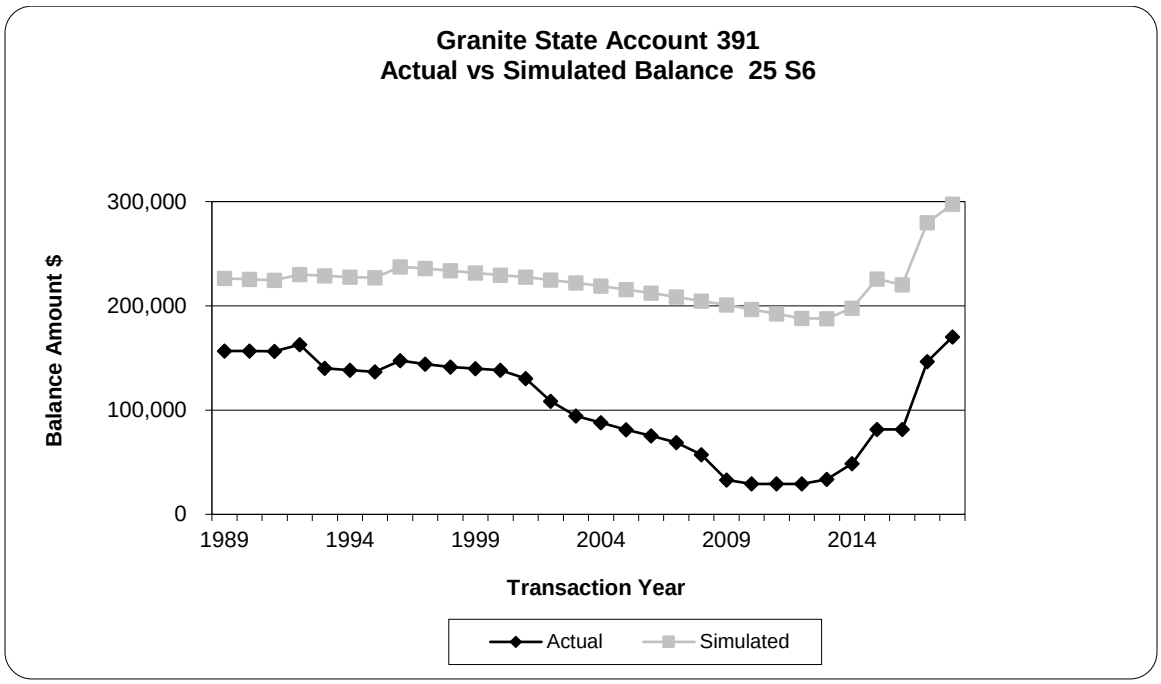
FERC Account 390.0 Structures & Improvements (65 R4)

This account includes the cost of general structures and improvements used for utility service. There is approximately $9.3 million in this account. The approved life for this account is 64 years. The Company has two main buildings: Salem (9 Lowell Road), built in the early 1960s, and Lebanon, built around the same time, with a shell added in the 1980s. There is also a small building in Charlestown, which was purchased in the 1990s. There have been a number of replacements at sites, such as walk-in center updates, security updates, HVAC replacements, lighting updates, parking lot replacements, etc. Company subject matter experts believe that an average life of around the 65 years is reasonable. In the longer bands (which were as wide as or wider than the existing service life), the 65 R4 curve produces an excellent REI of 90.5 and an excellent CI. Other curves produced a much longer life with a lower REI. Based on the mix of these assets, input from Company personnel, SPR results, and judgment, this study recommends moving to a 65 year life with an R4 dispersion. A plot of actual balances versus simulated balances for this account is shown below.


Granite State Account 390
Actual vs Simulated Balance 65 R4
Balance Amount $
10,000,000
7,500,000
5,000,000
2,500,000
0
1989
1994
1999
2004
2009
2014
Transaction Year
Actual
Simulated

FERC Account 391.0 Office Furniture and Equipment (25 S6)

This account consists of miscellaneous office furniture such as desks, chairs, filing cabinets, and tables used for general utility service. There is approximately $170 thousand in this account. This account currently has a life of 25 years. Previous studies have combined all 391 subaccounts into one group. As investment in two other subaccounts, software/desktop computers and laptop computers, has increased, the Company requested that the investment in this account be separated into subaccounts. Based on the type of assets in this account, this study recommends retention of the current 25 year life with an S6 dispersion. A plot of actual balances versus simulated balances for this account is shown below.



FERC Account 391.1 Software and Desktop Computer Equipment (5 SQ)

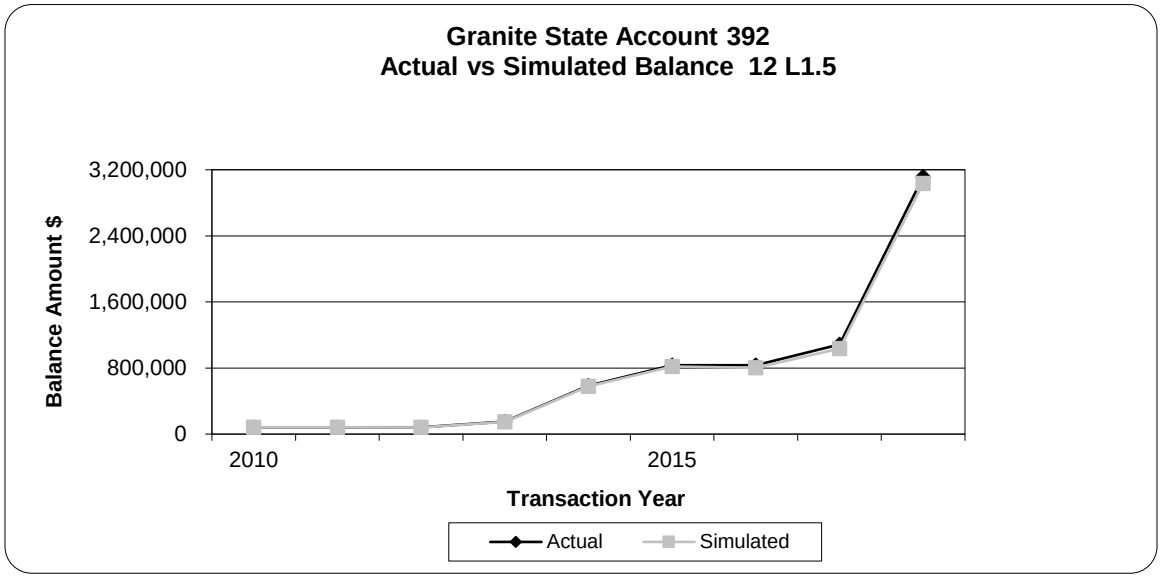
This account consists of desktop computer equipment used for general utility service. There is approximately $44 thousand in this account after the transfer to appropriately classify computer software to account 303. This account currently has a life of 25 years. Desktop computer equipment has a much shorter life when segregated into a separate category from office furniture and equipment. Company subject matter experts recommend a 5-year life for these assets. Based on recommendations from Company experts and judgment, this study recommends a 5-year life with an SQ dispersion.

FERC Account 391.2 Laptop Computer Equipment (5 SQ)

This account consists of laptop computer equipment used for general utility service. There is approximately $279 thousand in this account. This account currently has a life of 25 years. Laptop computer equipment has a much shorter life when segregated into a separate category from office furniture and equipment. Company subject matter experts recommend a 5-year life for these assets. Based on recommendations from Company experts and judgment, this study recommends a 5-year life with an SQ dispersion.

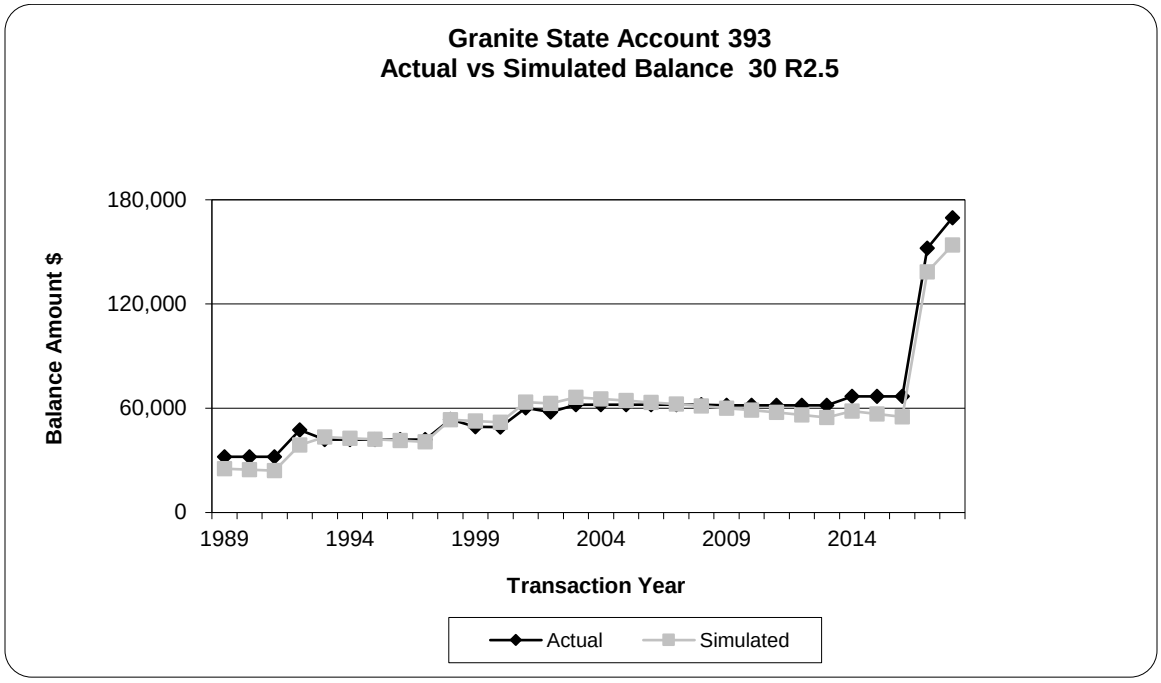
FERC Account 392.0 Transportation Equipment (12 L1.5)

This account consists of transportation equipment such as cars, vans, and trucks. There is approximately $3.1 million in this account. This account currently has a life of 12 years. Historically, Granite State has leased most of its transportation assets, and as a result, there is limited history to analyze. Based on judgment, this study recommends a 12 L1.5 dispersion for this account. A plot of actual balances versus simulated balances for this account is shown below.



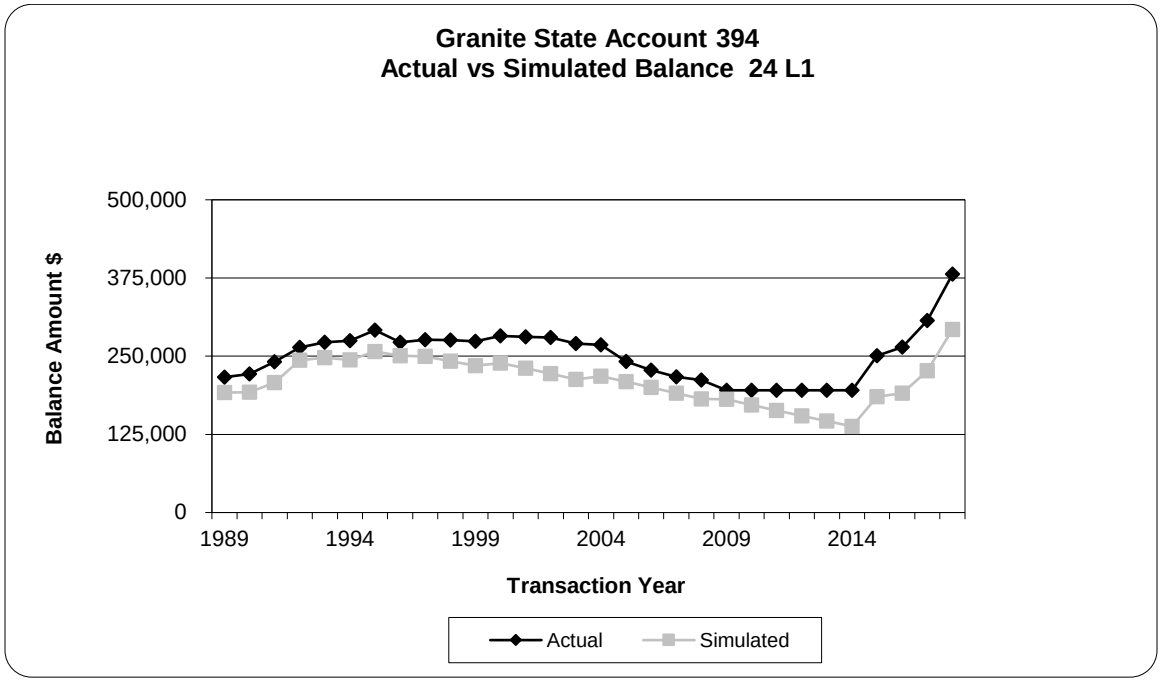
FERC Account 393.0 Stores Equipment (30 R2.5)

This account consists of stores equipment used for general utility service. There is approximately $170 thousand in this account. This account currently has an approved life of 30 years. SPR results in many of the longer bands greater than 30 years show a life of 40 years or slightly longer with poor CI's. Company experts feel that lengthening the life of this account by 10 years is not reasonable nor operationally supportable for assets in the account. In bands of 30 years or more, SPR results show poor CIs and many lives significantly longer than that recommended by Company experts. Based on SPR results, input from Company personnel and judgment, this study recommends retaining the current life of 30 years with an R2.5 dispersion. A plot of actual balances versus simulated balances for this account is shown below.



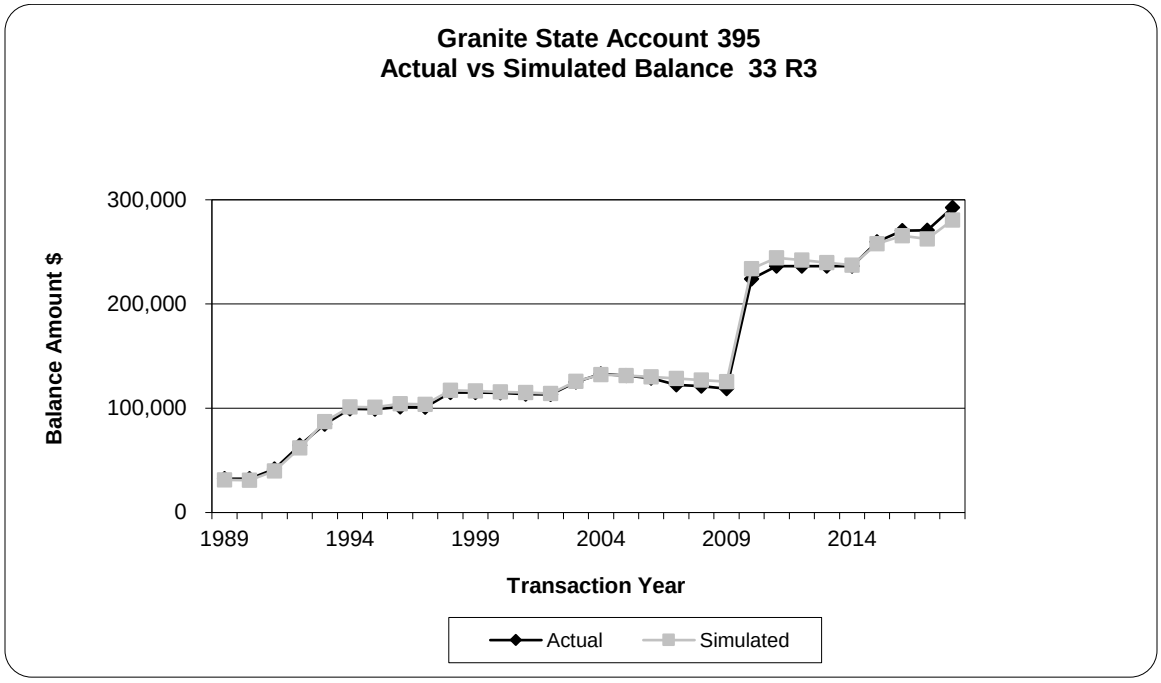
FERC Account 394.0 Tools, Shop, and Garage Equipment (24 L1)

This account consists of various items or tools used in shops and garages such as air compressors, grinders, mixers, hoists, and cranes. There is approximately $381 thousand in this account. This account has an approved life of 24 years. Company experts report that the capitalization threshold is $1,000. Company experts state that, on occasion, retirements may not be reported in a timely manner. SPR data shows a life in the low thirty-year range, which Company experts do not believe is reasonable or operationally supportable. Based on input from Company personnel and the nature of assets in the account, this study recommends retaining the current life of 24 years and moving to a L1 dispersion. A plot of actual balances versus simulated balances for this account is shown below.



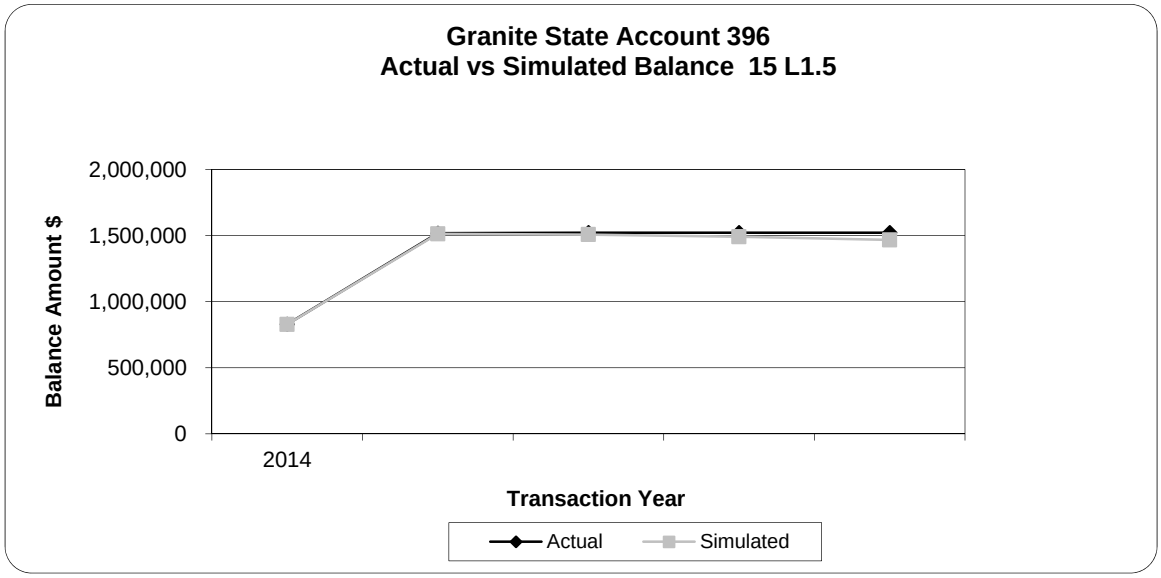
FERC Account 395.0 Laboratory Equipment (33 R3)

This account consists of laboratory equipment used in general utility service. There is approximately $292 thousand in this account. This account has an approved life of 33 years. The assets in this account include meter testing equipment and lab equipment. As more electronic metering is used by the Company, Company personnel believe that the life of the account will shorten. SPR results show a longer life (in the high 30-year range), but Company experts do not believe that it is reasonable or operationally supportable to move the life out. Based on input from Company experts and the increasingly technologically-driven nature of the assets in this account, this study recommends retaining the life of this account at 33 years with an R3 dispersion. A plot of actual balances versus simulated balances for this account is shown below.



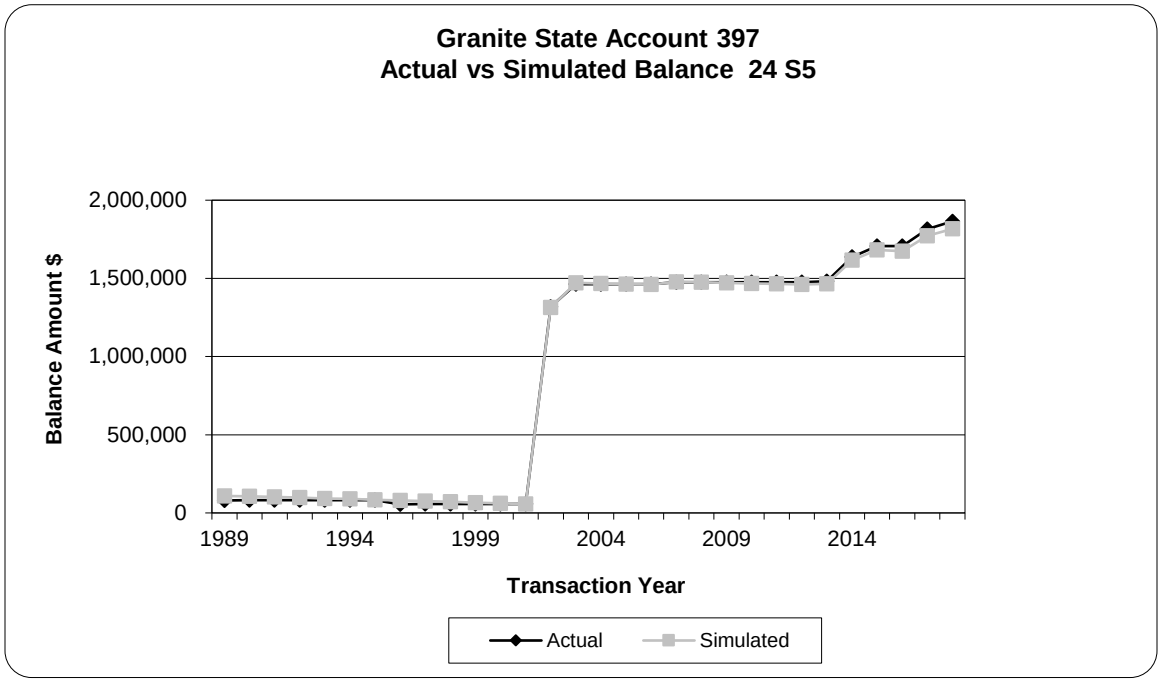
FERC Account 396.0 Power Operated Equipment (15 L1.5)

This account consists of power operated equipment and heavy equipment used in general utility service. There is approximately $1.5 million in this account. There is no approved life for this account. Company personnel report that assets such as a material lift trucks, diggers, and material handlers were moved into this account in 2014 and after. Company personnel recommend that this account would have a life similar to Account 392 Heavy Equipment, but Account 392 is not broken into subaccounts. The current recommendation for Account 392 is 12 years with a L1.5 dispersion. Based on input from Company personnel and judgment, this study recommends a life of 15 years with a L1.5 dispersion. The L1.5 dispersion is also recommended for Account 392. A plot of actual balances versus simulated balances for this account is shown below.



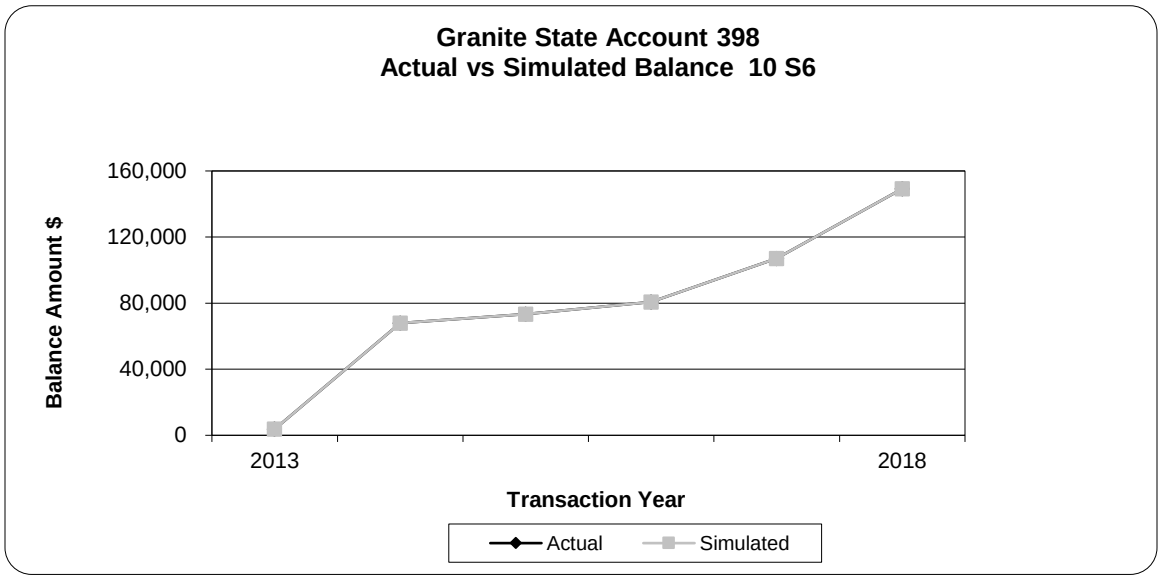
FERC Account 397.0 Communication Equipment (24 S5)

This account consists of miscellaneous communication equipment used in general utility service. There is approximately $1.9 million in this account. This account currently has a life of 22 years. This account primarily consists of ERTS equipment, but there are also smaller components such as radios, base stations, and antennas. In reviewing the SPR results, bands of 30 years and longer were examined to determine possible service lives and dispersions to consider. In the 30-year band, a 24 S5 was the highest ranked curve and for bands of 40 years or longer ranked 22 S6 as the highest pick. In those bands the REIs were 100, so each curve was a viable choice. Company personnel believe that a life of approximately 25 years is reasonable. Based on input from Company personnel, this study recommends moving to a 24-year life with an S5 dispersion for this account. A plot of actual balances versus simulated balances for this account is shown below.



FERC Account 398.0 Miscellaneous Equipment (10 S6)

This account consists of miscellaneous equipment. The plant balance in this account is currently $149 thousand, and the current approved life is 26 years. The assets in this account include cameras, ice machines, testing equipment, defibrillators, TVs, and presentation systems. Given the type of assets in the account, Company personnel recommend a shorter life. Based on judgment and input from Company personnel, this study recommends moving the life to 10 years with an S6 dispersion. A plot of actual balances versus simulated balances for this account is shown below.



Salvage Analysis

When a capital asset is retired, physically removed from service and finally disposed of, terminal retirement is said to have occurred. The residual value of a terminal retirement is called gross salvage. Net salvage is the difference between the gross salvage (what the asset was sold for) and the removal cost (cost to remove and dispose of the asset). Salvage and removal cost percentages are calculated by dividing the current cost of salvage or removal by the original installed cost of the asset. Some plant assets can experience significant negative removal cost percentages due to the timing of the original addition versus the retirement. The net salvage analysis uses the history of the individual accounts to estimate the future net salvage that Granite State can expect in its operations. As a result, the analysis not only looks at the historical experience of the Company, but also takes into account recent and expected changes in operations that could reasonably lead to different future expectations for net salvage than were experienced in the past.

Removal cost percentages are calculated by dividing the current cost of removal by the original installed cost of the asset. Some plant assets can experience significant negative removal cost percentages due to the timing of the addition versus the retirement. For example, a distribution asset in FERC Account 365 with a current installed cost of $500 (2018) would have had an installed cost of $12.86 in 1968[4] (which is the proposed average life of the account). A removal cost of $50 for the asset calculated (incorrectly) on current installed cost would only have a negative 10 percent removal cost ($50/$500). However, a correct removal cost calculation would show a negative 138 percent removal cost for that asset ($50/$36.32). Inflation from the time of installation of the asset until the time of its removal must be taken into account in the calculation of the removal cost percentage because the depreciation rate, which includes the removal cost percentage, will be applied to the original installed cost of assets.

4 Using the Handy-Whitman Bulletin No. 188, E-1, line 45, $36.32 = $500 x 68/936.

Salvage Characteristics

For each account, data for retirements, gross salvage, and cost of removal were derived from 2004-2018. Moving averages, which remove timing differences between retirement and salvage and removal cost, were analyzed over periods varying from one to fifteen years.

During the years of National Grid ownership, Granite State recorded gross salvage on removal cost. After the departure from National Grid, the Company's accounting systems were not able to process those transactions to an account level. A report from through May 2012 was used to allocate removal cost to the plant account level for 2012 and 2013. No net salvage data for years 2014-2015 is available. For transaction years 2016-2018, the Company was not able to provide gross salvage at the plant account level. Retirement activity for accounts 365, 368, 369, and 373 was used as the basis to allocate gross salvage to the plant account level. The Company was able to provide removal cost for 2016-2018 at the plant account level. Results incorporating this data are found in Appendix E.

Account 303 Computer Software (0% Net Salvage)

This account consists of computer software. This account has zero net salvage as the current net salvage parameter. Intangible assets do not generate removal cost or gross salvage. Based on history and judgment, this study recommends retention of zero percent net salvage for all software.

Distribution and General Plant

The accounts contained in Distribution and General Plant were statistically analyzed using the historical cost for salvaging and removing assets with rolling and shrinking bands from 2004-2018. Currently approved depreciation rates and net salvage parameters were established in DR 13-063. A brief discussion of the existing net salvage and current study recommendations for each account in those functions follow below.

DISTRIBUTION

FERC Account 361.0 Structures & Improvements (Negative 5% Net Salvage)

This grouping contains facilities ranging from fencing to other structures found in distribution substations. The currently approved net salvage percent for this account is negative 5 percent. Normally, there is a small amount of removal cost experience for these assets. This study recommends retention of 5 percent net salvage for this account.

FERC Account 362.0 Station Equipment (Negative 20% Net Salvage)

This grouping contains a wide variety of distribution substation equipment, from circuit breakers to switchgear. The currently approved net salvage percentage is negative 15 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 191.67 and negative 115.66 percent, respectively. With the modest level of retirements but moving in the direction of this trend, this study recommends moving to a negative 20 percent net salvage for this account.

FERC Account 364.0 Poles, Towers, & Fixtures (Negative 60% Net Salvage)

This account contains poles and towers of various material types: wood, concrete, and steel. The currently approved net salvage percentage is negative 30 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 52.45 and negative 183.16 percent, respectively.

With the modest level of retirements but moving in the direction of this trend, this study recommends moving to a negative 60 percent net salvage for this account.

FERC Account 365.0 Overhead Conductor & Devices (Negative 40% Net Salvage)

This account consists of overhead conductor of various thickness, as well as various switches and reclosers. The currently approved net salvage is negative 27.5 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 64.07 and negative 53.44 percent, respectively. Given the consistent longer band averages and moving in the direction of the recent results, this study recommends moving to a negative 40 percent net salvage for this account.

FERC Account 366.0 Underground Conduit (Negative 10% Net Salvage)

This account consists of Distribution conduit, duct banks, vaults, manholes, and ventilating system equipment. The currently approved net salvage percentage is negative 30 percent for this account. The 10-year net salvage percentage in the most recent year is negative 12.45 percent. Since there is limited retirement and net salvage data between 2010 and 2017, longer bands are used to estimate net salvage for this account. This study recommends moving to negative 10 percent net salvage for this account.

FERC Account 367.0 Underground Conductor (Negative 40% Net Salvage)

This account consists of Distribution conductor, switches, and switchgear. The currently approved net salvage percentage is negative 30 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 2400.45 and negative 153.73 percent, respectively. Longer bands and throughout time, the indications are consistently negative 40 percent or more. This study recommends moving to a negative 40 percent net salvage based on the net salvage activity in this account.

FERC Account 368.0 Line Transformer (Negative 30% Net Salvage)

This account consists of line transformers, regulators, and capacitors. The currently approved net salvage percentage is negative 30 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 29.76 and negative 61.26 percent, respectively. The wider band indications are more negative than is typical for this account within the industry. Based on the shorter 5-year average, this study recommends retention of 30 percent net salvage for this account.

FERC Account 369 Services (Negative 75% Net Salvage)

This account includes overhead and underground services. The currently approved net salvage percentage is negative 42.5 percent for this account. The 5- and 10-year net salvage percentages in the most recent year are negative 50.17 and negative 210.44 percent, respectively. Much of the historical activity is more negative than the approved negative 50 percent. Moving in the direction of this trend, this study recommends moving to a negative 75 percent net salvage for this account.

FERC Account 370.0 Meters (Negative 10% Net Salvage)

This account includes all Distribution meters. The currently approved net salvage percentage is negative 15 percent for this account. The 10-year net salvage percentage in the most recent year is negative 9.64 percent. This study recommends reducing the negative net salvage to a negative 10 percent net salvage for this account.

FERC Account 371 Installations on Customer Premises (0% Net Salvage)

This account will include gross salvage or removal cost for a pilot project of UPS batteries to be installed on customer premises, which will begin in 2019. This is a new account without any approved depreciation parameter. Information from the manufacturer indicates there will be no net salvage for this account. Based on

input from industry experts, this depreciation study recommends 0 percent net salvage for this account.

FERC Account 372.0 Leased Installation on Customer Premises (NA)

This account consists of rented equipment to customers. The currently approved net salvage percentage is 0 percent net salvage. The program that generated this account has been discontinued. Accordingly, the Company does not request any depreciation rate or net salvage for this account in this study.

FERC Account 373.0 Street Lighting (Negative 10% Net Salvage)

This account includes all Distribution streetlights, conductor, conduit, luminaire, and standards. The currently approved net salvage percentage is negative 30 percent for this account. The 5-and 10-year net salvage percentages in the most recent year are negative 7.41 and negative 80.54 percent, respectively. Although there are limited retirements in recent years, this study recommends moving to a negative 10 percent net salvage for this account.

GENERAL PLANT

FERC Account 390.0 Structures & Improvements (Negative 5% Net Salvage)

This account includes any salvage and removal cost related to structures and improvements used for general utility operations. The currently authorized net salvage rate for this account is negative 8 percent. There is limited retirement data in recent years. With the expectation that some removal cost will be incurred with the replacement of assets within this account, this study recommends moving from the approved negative 8 percent net salvage rate to negative 5 percent net salvage for this account.

FERC Account 391.0 Office Furniture and Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to miscellaneous office furniture such as desks, chairs, filing cabinets, and tables.

The currently authorized net salvage rate for this account is 0 percent. The Company has experienced no gross salvage or cost of removal based on recent experience. Therefore, this study recommends retention of 0 percent net salvage rate for this account.

FERC Account 391.1 Software and Desktop Computer Equipment (0% net salvage)

This account consists of any gross salvage or removal cost associated with desktop computer equipment used for general utility service. Currently the combined account 391 has 0 percent net salvage. These items generally have no salvage value. Based on judgment, this study recommends 0 percent net salvage for this account.

FERC Account 391.2 Laptop Computer Equipment (0% net salvage)

This account consists of any gross salvage or removal cost associated with laptop computer equipment used for general utility service. Currently the combined account 391 has 0 percent net salvage. These items generally have no salvage value. Based on judgment, this study recommends 0 percent net salvage for this account.

FERC Account 392 Transportation Equipment (10% Net Salvage)

This account includes any salvage and removal cost related to transportation equipment. The currently authorized net salvage rate for this account is positive 10 percent. There is no history for net salvage in this account. Based on judgment, this study recommends retention of positive 10 percent net salvage for this account.

FERC Account 393.0 Stores Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to stores equipment. The currently authorized net salvage rate for this account is 0 percent.

The Company has experienced no gross salvage or cost of removal based on recent experience. Therefore, this study recommends 0 percent net salvage rate for this account.

FERC Account 394.0 Tools, Shop, & Garage Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to various items or tools used in shop and garages such as air compressors, grinders, mixers, hoists, and cranes. The currently authorized net salvage rate for this account is 0 percent. For most years, the Company has been experiencing a 0 percent net salvage, with the exception of 2006, which shows a large cost of removal. Based on overall experience, this study recommends retention of 0 percent net salvage for this account.

FERC Account 395.0 Laboratory Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to laboratory equipment. The currently authorized net salvage rate for this account is 0 percent. Over the available period of data, the Company has experienced no gross salvage or removal cost for laboratory equipment. Typically, lab equipment at the end of its useful life will have little, if any, value. Therefore, this study recommends retention of 0 percent net salvage for this account.

FERC Account 396.0 Power Operated Equipment (10% Net Salvage)

This account consists of any gross salvage and removal cost associated with power operated equipment and heavy equipment used in general utility service. There is no net salvage parameter for this account. Company personnel report that assets such as a material lift truck, diggers, and material handlers were moved into this account in 2014 and after. Company personnel recommend that this account would have a net salvage parameter similar to Account 392 Heavy Equipment, but Account 392 is not broken into subaccounts. The current recommendation for Account 392 is 10 percent net salvage. Based on input from

Company personnel and judgment, this study recommends 10 percent net salvage for this account.

FERC Account 397.0 Communication Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to miscellaneous communication equipment such as the 800 MHz radio system. The currently authorized net salvage rate for this account is 0 percent. Over the available period of data, the Company has experienced no gross salvage or removal cost for communication equipment. Typically, communication equipment at the end of its useful life will have little, if any, value. Therefore, this study recommends retention of 0 percent net salvage for this account.

FERC Account 398.0 Miscellaneous Equipment (0% Net Salvage)

This account includes any salvage and removal cost related to miscellaneous equipment. The currently authorized net salvage rate for this account is 0 percent. No gross salvage or removal cost is expected for these assets, as is shown in the moving average analysis. Thus, this study recommends retention of 0 percent net salvage for this account.

APPENDIX A

Depreciation Rate Calculations

LIBERTY UTILITIES
GRANITE STATE ELECTRIC
PROPOSED DEPRECIATION EXPENSE
AT DECEMBER 31, 2018

Acct	Description	Plant	Life	Curve	Proposed Net Salvage	Accrual Rate	Proposed Depreciation Expense
Intangible Plant							
303	Software 3 yr life	320,288.25	3	SQ	0.00%	33.33%	106,752.07
	Software 5 yr life	5,927,606.48	5	SQ	0.00%	20.00%	1,185,521.30
	Software 10 yr life	5,346,169.65	10	SQ	0.00%	10.00%	534,616.96
		11,594,064.38					1,826,890.33
Distribution Plant							
361	Structures and Improvements	1,965,159.97	44	S1	-5.00%	2.39%	46,967.32
362	Station Equipment	30,756,049.20	40	S4	-20.00%	3.00%	922,681.48
364	Poles Towers and Fixtures	41,667,045.63	44	R2.5	-60.00%	3.64%	1,516,680.46
365	Overhead Conductor and Devices	65,174,235.67	43	R2	-40.00%	3.26%	2,124,680.08
366	Underground Conduit	6,948,377.83	56	R4	-10.00%	1.96%	136,188.21
367	Underground Conductor & Dev	17,274,059.39	46	R3	-40.00%	3.04%	525,131.41
368	Line Transformers	29,638,555.29	37	R3	-30.00%	3.51%	1,040,313.29
369	Services	11,634,212.03	45	R4	-75.00%	3.89%	452,570.85
370	Meters	3,688,487.44	22	R4	-10.00%	5.00%	184,424.37
371	Installations on customer premises	0.00	10	SQ	0.00%	10.00%	0.00
373	Street Lighting and Signal Sys	5,626,781.73	30	R3	-10.00%	3.67%	206,502.89
	Subtotal Distribution	214,372,964.18					7,156,140.35
General Plant							
390	Structures and Improvements	9,250,178.07	65	R4	-5.00%	1.62%	149,852.88
391	Office Furniture and Equipment	170,160.95	25	S6	0.00%	4.00%	6,806.44
391.1	Software and Desktop Computer Equip	44,312.35	5	SQ	0.00%	20.00%	8,862.47
391.2	Laptop Computer Equipment	279,318.24	5	SQ	0.00%	20.00%	55,863.65
392	Transportation Equipment	3,114,733.93	12	L1.5	10.00%	7.50%	233,605.05
393	Stores Equipment	169,656.30	30	R2.5	0.00%	3.33%	5,649.55
394	Tools Shop and Garage Equipment	380,905.12	24	L1	0.00%	4.17%	15,883.74
395	Laboratory Equipment	292,491.43	33	R3	0.00%	3.03%	8,862.49
396	Power Operated Equipment	1,522,432.06	15	L1.5	10.00%	6.00%	91,345.92
397	Communication Equipment	1,864,961.86	24	S5	0.00%	4.17%	77,768.91
398	Miscellaneous Equipment	149,205.17	10	S6	0.00%	10.00%	14,920.52
	Subtotal General	17,238,355.50					669,421.63
	Reserve Deficiency Amortization						233,299.97
	Total Depreciable Plant	243,205,384.06					9,885,752.29
	Accounts Excluded from Study						
	Account 301 Organization	24,808.42					
	Account 360 Distribution Fee Land	1,672,947.00					
	Account 372 Leased Prop on Custome	1,207,583.60					
	Account 389 General Fee Land	1,620,371.60					
	Excluded Accounts Total	4,525,710.62					
	Total Plant	247,731,094.68					
	GL	247,731,094.67					
	Difference	0.01					

APPENDIX B

Depreciation Expense Comparison

LIBERTY UTILITIES
COMPARISION OF APPROVED VS PROPOSED DEPRECIATION ACCRUAL AMOUNTS
AT DECEMBER 31, 2018

Acct	Description	As Adjusted Plant Balance	Approved Accrual Rate	Accrual at Approved Rates	Proposed Accrual Rate	Accrual at Proposed Rates	Difference
Intangible Plant							
303	Software 3 Yr Life	320,288.25	20.00%	64,057.65	33.33%	106,752.07	42,694.42
303	Software 5 Yr Life	5,927,606.48	20.00%	1,185,521.30	20.00%	1,185,521.30	0.00
303	Software 10 Yr Life	5,346,169.65	20.00%	1,069,233.93	10.00%	534,616.96	(534,616.96)
	Total Intangible	11,594,064.38		2,318,812.88		1,826,890.33	(491,922.54)
Distribution Plant							
361	Structures and Improvements	1,965,159.97	2.56%	50,308.10	2.39%	46,967.32	(3,340.77)
362	Station Equipment	30,756,049.20	2.80%	861,169.38	3.00%	922,681.48	61,512.10
364	Poles Towers and Fixtures	41,667,045.63	3.25%	1,354,178.98	3.64%	1,516,680.46	162,501.48
365	Overhead Conductor and Devic	65,174,235.67	3.19%	2,079,058.12	3.26%	2,124,680.08	45,621.96
366	Underground Conduit	6,948,377.83	2.00%	138,967.56	1.96%	136,188.21	(2,779.35)
367	Underground Conductor & Dev	17,274,059.39	3.17%	547,587.68	3.04%	525,131.41	(22,456.28)
368	Line Transformers	29,638,555.29	3.51%	1,040,313.29	3.51%	1,040,313.29	0.00
369	Services	11,634,212.03	3.17%	368,804.52	3.89%	452,570.85	83,766.33
370	Meters	3,688,487.44	5.23%	192,907.89	5.00%	184,424.37	(8,483.52)
371	Installations on Customer Prem	0.00	NA	0.00	10.00%	0.00	0.00
373	Street Lighting and Signal Sys	5,626,781.73	4.33%	243,639.65	3.67%	206,502.89	(37,136.76)
	Total Distribution	214,372,964.18		6,876,935.17		7,156,140.35	279,205.19
General Plant							
390	Structures and Improvements	9,250,178.07	1.68%	155,402.99	1.62%	149,852.88	(5,550.11)
391	Office Furniture and Equipment	170,160.95	4.00%	6,806.44	4.00%	6,806.44	0.00
391.1	Software and Desktop Compute	44,312.35	4.00%	1,772.49	20.00%	8,862.47	7,089.98
391.2	Laptop Computer Equipment	279,318.24	4.00%	11,172.73	20.00%	55,863.65	44,690.92
392	Transportation Equipment	3,114,733.93	7.50%	233,605.05	7.50%	233,605.05	0.00
393	Stores Equipment	169,656.30	3.33%	5,649.55	3.33%	5,649.55	0.00
394	Tools Shop and Garage Equipm	380,905.12	4.17%	15,883.74	4.17%	15,883.74	0.00
395	Laboratory Equipment	292,491.43	3.03%	8,862.49	3.03%	8,862.49	0.00
396	Power Operated Equipment	1,522,432.06	NA	0.00	6.00%	91,345.92	91,345.92
397	Communication Equipment	1,864,961.86	4.55%	84,855.76	4.17%	77,768.91	(7,086.86)
398	Miscellaneous Equipment	149,205.17	3.85%	5,744.40	10.00%	14,920.52	9,176.12
	Total General	17,238,355.50		529,755.65		669,421.63	139,665.97
	Total Depreciable Plant	243,205,384.06		9,725,503.69		9,652,452.31	(73,051.38)
	Reserve Deficiency Amortization Period in 6 Yrs			0		233,299.97	233,299.97
	Total Accrual	243,205,384.06		9,725,503.69		9,885,752.29	160,248.59

APPENDIX C

Depreciation Parameter Comparison

LIBERTY UTILITIES
COMPARISION OF APPROVED VS PROPOSED
DEPRECIATION PARAMETERS AND ACCRUAL RATES
AT DECEMBER 31, 2018

		Approved				Proposed				Difference	
Acct	Description	Life	Curve	Net Salvage	Accrual Rate	Life	Curve	Net Salvage	Whole Life Accrual Rate	Life	Net Salvage
303	Software 3 yr life	NA	SQ	NA	NA	3	SQ	0%	33.33%	NA	NA
	Software 5 yr life	5	SQ	0.0%	20.00%	5	SQ	0%	20.00%	0	0.00%
	Software 10 yr life	NA	SQ	NA	NA	10	SQ	0%	10.00%	NA	NA
Distribution Plant											
361	Structures and Improvements	41	S0.5	-5.0%	2.56%	44	S1	-5%	2.39%	3	0.00%
362	Station Equipment	41	L2.5	-15.0%	2.80%	40	S4	-20%	3.00%	-1	-5.00%
364	Poles Towers and Fixtures	40	R2	-30.0%	3.25%	44	R2.5	-60%	3.64%	4	-30.00%
365	Overhead Conductor and Devices	40	R1.5	-27.5%	3.19%	43	R2	-40%	3.26%	3	-12.50%
366	Underground Conduit	55		-10.0%	2.00%	56	R4	-10%	1.96%	1	0.00%
367	Underground Conductor & Dev	41	R3	-30.0%	3.17%	46	R3	-40%	3.04%	5	-10.00%
368	Line Transformers	37	R1	-30.0%	3.51%	37	R3	-30%	3.51%	0	0.00%
369	Services	45	R2.5	-42.5%	3.17%	45	R4	-75%	3.89%	0	-32.50%
370	Meters	22	S4	-15.0%	5.23%	22	R4	-10%	5.00%	0	5.00%
371	Installations on customer premises	NA		NA	NA	10	SQ	0%	10.00%	NA	NA
372	Leased Prop on Customers' Prem	24		0.0%	4.17%	NA	NA	NA	NA	NA	NA
373	Street Lighting and Signal Sys	30	R0.5	-30.0%	4.33%	30	R3	-10%	3.67%	0	20.00%
General Plant											
390	Structures and Improvements	64	R4	-7.5%	1.68%	65	R4	-5%	1.62%	1	2.50%
391	Office Furniture and Equipment	25	S6	0%	4.00%	25	S6	0%	4.00%	0	0.00%
391.1	Software and Desktop Computer Equipmen	25	S6	0%	4.00%	5	SQ	0%	20.00%	-20	0.00%
391.2	Laptop Computer Equipment	25	S6	0%	4.00%	5	SQ	0%	20.00%	-20	0.00%
392	Transportation Equipment	12	L2	10%	7.50%	12	L1.5	10%	7.50%	0	0.00%
393	Stores Equipment	30	R2.5	0%	3.33%	30	R2.5	0%	3.33%	0	0.00%
394	Tools Shop and Garage Equipment	24	R5	0%	4.17%	24	L1	0%	4.17%	0	0.00%
395	Laboratory Equipment	33		0%	3.03%	33	R3	0%	3.03%	0	0.00%
396	Power Operated Equipment	NA		NA	NA	15	L1.5	10%	6.00%	NA	NA
397	Communication Equipment	22	L4	0%	4.55%	24	S5	0%	4.17%	2	0.00%
398	Miscellaneous Equipment	26	S6	0%	3.85%	10	S6	0%	10.00%	-16	0.00%

APPENDIX D

Comparison of Plant, Book Reserve, and Theoretical Reserve

LIBERTY UTILITIES
COMPARISION OF BOOK VS THEORETICAL RESERVE
AT DECEMBER 31, 2018

Acct	Description	Adjusted Plant	Adjusted Book Reserve	Theoretical Depreciation Reserve	Difference Book- Theoretical Reserve
Intangible Plant					
303	Software 3 Yr Life	320,288.25	79,258.86	86,988.06	(7,729.20)
303	Software 5 Yr Life	5,927,606.48	4,533,278.82	4,678,118.74	(144,839.92)
303	Software 10 Yr Life	5,346,169.65	4,053,483.77	1,950,525.04	2,102,958.73
	Total Intangible	11,594,064.38	8,666,021.45	6,715,631.84	1,950,389.61
Distribution Plant					
361	Structures and Improvements	1,965,159.97	475,234.21	421,027.72	54,206.49
362	Station Equipment	30,756,049.20	9,111,937.29	10,537,772.06	(1,425,834.77)
364	Poles Towers and Fixtures	41,667,045.63	22,329,767.27	16,770,873.82	5,558,893.45
365	Overhead Conductor and Devices	65,174,235.67	17,890,043.22	21,664,065.59	(3,774,022.37)
366	Underground Conduit	6,948,377.83	1,215,087.62	1,828,134.26	(613,046.64)
367	Underground Conductor & Dev	17,274,059.39	3,933,592.45	5,435,902.89	(1,502,310.44)
368	Line Transformers	29,638,555.29	13,732,855.95	16,138,519.92	(2,405,663.97)
369	Services	11,634,212.03	5,539,398.68	6,378,137.45	(838,738.77)
370	Meters	3,688,487.44	1,249,434.67	1,687,727.77	(438,293.10)
373	Street Lighting and Signal Sys	5,626,781.73	4,389,202.41	2,490,070.76	1,899,131.65
	Total Distribution	214,372,964.18	79,866,553.77	83,352,232.22	(3,485,678.45)
General Plant					
390	Structures and Improvements	9,250,178.07	1,316,816.19	1,558,126.99	(241,310.80)
391	Office Furniture and Equipment	170,160.95	45,038.70	43,893.84	1,144.86
391.1	Software and Desktop Computer Equipment	44,312.35	16,537.47	24,365.58	(7,828.11)
391.2	Laptop Computer Equipment	279,318.24	23,761.40	100,743.45	(76,982.05)
392	Transportation Equipment	3,114,733.93	458,629.43	727,364.18	(268,734.75)
393	Stores Equipment	169,656.30	62,324.28	47,834.60	14,489.68
394	Tools Shop and Garage Equipment	380,905.12	141,949.48	118,115.43	23,834.05
395	Laboratory Equipment	292,491.43	135,610.40	107,324.09	28,286.31
396	Power Operated Equipment	1,522,432.06	1,091,423.42	329,911.37	761,512.05
397	Communication Equipment	1,864,961.86	944,435.24	1,014,306.19	(69,870.95)
398	Miscellaneous Equipment	149,205.17	16,011.25	45,062.55	(29,051.30)
	Total General	17,238,355.50	4,252,537.26	4,117,048.26	135,489.00
	Total Depreciable	243,205,384.06	92,785,112.48	94,184,912.32	(1,399,799.84)
Amounts Excluded from Study					
301	Organization	24,808.42			
360	Distribution Plant Land	1,672,947.00			
372	Leased Prop on Customers' Prem	1,207,583.60	838,841.33		
389	General Plant Land	1,620,371.60			
	Total	247,731,094.68	93,623,953.81		
	GL Total	247,731,094.67	93,623,953.81		
	Difference	(0.01)	0.00		

APPENDIX E

Net Salvage Analysis by Account

GRANITE STATE ELECTRIC
RETIREMENTS, GROSS SALVAGE, AND REMOVAL COST
AS ADJUSTED 2004-2018

Transaction Year	Account Number	Retirements	Gross Salvage	Cost of Removal	Net Salvage	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2004	301	0	0	0	0	NA									
2005	301	0	0	0	0	NA	NA								
2006	301	0	0	0	0	NA	NA	NA							
2007	301	0	0	0	0	NA	NA	NA	NA						
2008	301	0	0	0	0	NA	NA	NA	NA	NA					
2009	301	0	0	0	0	NA	NA	NA	NA	NA	NA				
2010	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA			
2011	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA		
2012	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2013	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2016	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018	301	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2004	360	0	0	0	0	NA									
2005	360	0	0	0	0	NA	NA								
2006	360	0	0	0	0	NA	NA	NA							
2007	360	0	0	0	0	NA	NA	NA	NA						
2008	360	0	0	0	0	NA	NA	NA	NA	NA					
2009	360	0	0	0	0	NA	NA	NA	NA	NA	NA				
2010	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA			
2011	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA		
2012	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2013	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2016	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018	360	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2004	361	0	0	0	0	NA									
2005	361	11,250	0	0	0	0.00%	0.00%								
2006	361	0	0	0	0	NA	0.00%	0.00%							
2007	361	0	0	0	0	NA	NA	0.00%	0.00%						
2008	361	0	0	0	0	NA	NA	NA	0.00%	0.00%					
2009	361	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%				
2010	361	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%			
2011	361	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%		
2012	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	
2013	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%
2014	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00%
2015	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2016	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018	361	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2004	362	8,755	0	0	0	0.00%									
2005	362	17,756	0	0	0	0.00%	0.00%								

GRANITE STATE ELECTRIC
RETIREMENTS, GROSS SALVAGE, AND REMOVAL COST
AS ADJUSTED 2004-2018

Transaction Year	Account Number	Retirements	Gross Salvage	Cost of Removal	Net Salvage	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2006	362	90,414	0	(2,829)	2,829	3.13%	2.62%	2.42%							
2007	362	15,384	0	277	(277)	-1.80%	2.41%	2.07%	1.93%						
2008	362	89,873	0	1,978	(1,978)	-2.20%	-2.14%	0.29%	0.27%	0.26%					
2009	362	61,319	0	22,221	(22,221)	-36.24%	-16.01%	-14.69%	-8.42%	-7.88%	-7.64%				
2010	362	21	0	13,428	(13,428)	-63672.26%	-58.12%	-24.88%	-22.75%	-13.65%	-12.77%	-12.37%			
2011	362	139,821	0	42,380	(42,380)	-30.31%	-39.91%	-38.79%	-27.49%	-26.20%	-19.52%	-18.68%	-18.30%		
2012	362	0	0	0	0	NA	-30.31%	-39.91%	-38.79%	-27.49%	-26.20%	-19.52%	-18.68%	-18.30%	
2013	362	0	0	0	0	NA	NA	-30.31%	-39.91%	-38.79%	-27.49%	-26.20%	-19.52%	-18.68%	-18.30%
2014	362	0	0	0	0	NA	NA	NA	-30.31%	-39.91%	-38.79%	-27.49%	-26.20%	-19.52%	-18.68%
2015	362	3,526	0	0	0	0.00%	0.00%	0.00%	0.00%	-29.56%	-38.93%	-38.12%	-27.16%	-25.90%	-19.35%
2016	362	0	0	36,109	(36,109)	NA	-1024.02%	-1024.02%	-1024.02%	-1024.02%	-54.76%	-64.11%	-55.76%	-39.42%	-37.55%
2017	362	958	0	47,856	(47,856)	-4996.34%	-8766.26%	-1872.53%	-1872.53%	-1872.53%	-1872.53%	-87.55%	-96.85%	-78.77%	-55.49%
2018	362	198,974	0	306,004	(306,004)	-153.79%	-176.99%	-195.05%	-191.67%	-191.67%	-191.67%	-191.67%	-125.95%	-129.85%	-115.66%
2004	364	60,983	0	54,036	(54,036)	-88.61%									
2005	364	55,015	0	96,660	(96,660)	-175.70%	-129.91%								
2006	364	65,041	0	(449,500)	449,500	691.10%	293.89%	165.05%							
2007	364	79,598	0	162,475	(162,475)	-204.12%	198.44%	95.35%	52.31%						
2008	364	193,013	0	319,773	(319,773)	-165.67%	-176.90%	-9.70%	-32.96%	-40.44%					
2009	364	97,875	0	174,026	(174,026)	-177.80%	-169.76%	-177.14%	-47.48%	-61.86%	-64.81%				
2010	364	72,771	0	209,099	(209,099)	-287.34%	-224.51%	-193.28%	-195.23%	-81.82%	-90.99%	-90.75%			
2011	364	0	0	429,670	(429,670)	NA	-877.78%	-476.30%	-311.44%	-292.17%	-166.35%	-167.26%	-159.58%		
2012	364	16,096	0	0	0	0.00%	-2669.42%	-718.79%	-435.25%	-298.24%	-281.93%	-161.24%	-162.61%	-155.57%	
2013	364	0	0	0	0	NA	0.00%	-2669.42%	-718.79%	-435.25%	-298.24%	-281.93%	-161.24%	-162.61%	-155.57%
2014	364	0	0	0	0	NA	NA	0.00%	-2669.42%	-718.79%	-435.25%	-298.24%	-281.93%	-161.24%	-162.61%
2015	364	17,277	0	0	0	0.00%	0.00%	0.00%	0.00%	-1287.48%	-601.79%	-398.39%	-285.26%	-271.71%	-156.10%
2016	364	0	0	17,490	(17,490)	NA	-101.23%	-101.23%	-101.23%	-52.41%	-1339.88%	-618.27%	-406.96%	-289.66%	-275.38%
2017	364	224,338	0	23,179	(23,179)	-10.33%	-18.13%	-16.83%	-16.83%	-16.83%	-15.78%	-182.51%	-205.59%	-199.24%	-188.81%
2018	364	118,538	0	148,214	(148,214)	-125.03%	-49.99%	-55.09%	-52.45%	-52.45%	-52.45%	-50.20%	-164.40%	-184.32%	-183.16%
2004	365	82,881	0	52,271	(52,271)	-63.07%									
2005	365	154,910	0	83,925	(83,925)	-54.18%	-57.28%								
2006	365	372,719	0	83,176	(83,176)	-22.32%	-31.67%	-35.93%							
2007	365	437,597	0	226,965	(226,965)	-51.87%	-38.27%	-40.83%	-42.59%						
2008	365	486,167	0	303,738	(303,738)	-62.48%	-57.45%	-47.35%	-48.08%	-48.89%					
2009	365	407,375	0	184,968	(184,968)	-45.40%	-54.69%	-53.76%	-46.88%	-47.49%	-48.16%				
2010	365	412,329	0	166,192	(166,192)	-40.31%	-42.84%	-50.15%	-50.58%	-45.60%	-46.19%	-46.78%			
2011	365	464,673	0	239,425	(239,425)	-51.53%	-46.25%	-45.98%	-50.51%	-50.78%	-46.67%	-47.09%	-47.56%		
2012	365	169,233	0	86,226	(86,226)	-50.95%	-51.37%	-47.01%	-46.56%	-50.55%	-50.79%	-46.93%	-47.32%	-47.76%	
2013	365	0	0	43,417	(43,417)	NA	-76.61%	-58.22%	-51.16%	-49.55%	-52.79%	-52.62%	-48.51%	-48.81%	-49.21%
2014	365	0	0	0	0	NA	NA	-76.61%	-58.22%	-51.16%	-49.55%	-52.79%	-52.62%	-48.51%	-48.81%
2015	365	37,966	0	0	0	0.00%	0.00%	-114.36%	-62.57%	-54.93%	-49.37%	-48.29%	-51.77%	-51.79%	-47.85%
2016	365	0	0	31,587	(31,587)	NA	-83.20%	-83.20%	-197.56%	-77.81%	-59.63%	-52.28%	-50.40%	-53.37%	-53.10%
2017	365	303,427	0	41,863	(41,863)	-13.80%	-24.21%	-21.52%	-21.52%	-34.23%	-39.77%	-45.37%	-43.87%	-44.22%	-48.11%
2018	365	191,029	0	267,683	(267,683)	-140.13%	-62.60%	-68.99%	-64.07%	-64.07%	-72.23%	-67.10%	-60.89%	-55.52%	-53.44%
2004	366	1,131	0	(2,369)	2,369	209.49%									
2005	366	837	0	(10,540)	10,540	1258.70%	655.87%								
2006	366	1,124	0	5,006	(5,006)	-445.39%	282.19%	255.60%							
2007	366	481	0	127,459	(127,459)	-26474.44%	-8251.63%	-4991.39%	-3345.54%						

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2008	366	7,203	0	231	(231)	-3.21%	-1661.77%	-1506.56%	-1266.49%	-1111.59%					
2009	366	8,978	0	984	(984)	-10.96%	-7.51%	-772.26%	-751.61%	-661.22%	-611.37%				
2010	366	0	0	756	(756)	NA	-19.38%	-12.18%	-776.80%	-755.86%	-665.28%	-615.20%			
2011	366	0	0	0	0	NA	NA	-19.38%	-12.18%	-776.80%	-755.86%	-665.28%	-615.20%		
2012	366	160	0	0	0	0.00%	0.00%	-472.40%	-19.04%	-12.06%	-769.41%	-749.12%	-659.61%	-610.25%	
2013	366	0	0	0	0	NA	0.00%	0.00%	-472.40%	-19.04%	-12.06%	-769.41%	-749.12%	-659.61%	-610.25%
2014	366	0	0	0	0	NA	NA	0.00%	0.00%	-472.40%	-19.04%	-12.06%	-769.41%	-749.12%	-659.61%
2015	366	0	0	0	0	NA	NA	NA	0.00%	0.00%	-472.40%	-19.04%	-12.06%	-769.41%	-749.12%
2016	366	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	-472.40%	-19.04%	-12.06%	-769.41%
2017	366	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	-472.40%	-19.04%	-12.06%
2018	366	4,835	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-15.13%	-12.45%
2004	367	6,331	0	11,104	(11,104)	-175.40%									
2005	367	29,731	0	10,995	(10,995)	-36.98%	-61.28%								
2006	367	59,483	0	21,583	(21,583)	-36.28%	-36.52%	-45.72%							
2007	367	42,980	0	13,610	(13,610)	-31.67%	-34.35%	-34.94%	-41.36%						
2008	367	23,973	0	15,439	(15,439)	-64.40%	-43.39%	-40.05%	-39.46%	-44.76%					
2009	367	34,190	0	17,426	(17,426)	-50.97%	-56.51%	-45.95%	-42.37%	-41.53%	-45.84%				
2010	367	58,855	0	20,096	(20,096)	-34.14%	-40.33%	-45.26%	-41.61%	-40.17%	-39.79%	-43.14%			
2011	367	31,521	0	25,945	(25,945)	-82.31%	-50.94%	-50.95%	-53.12%	-48.31%	-45.46%	-44.56%	-47.45%		
2012	367	20,144	0	0	0	0.00%	-50.22%	-41.66%	-43.86%	-46.78%	-43.71%	-42.08%	-41.58%	-44.33%	
2013	367	0	0	0	0	NA	0.00%	-50.22%	-41.66%	-43.86%	-46.78%	-43.71%	-42.08%	-41.58%	-44.33%
2014	367	0	0	0	0	NA	NA	0.00%	-50.22%	-41.66%	-43.86%	-46.78%	-43.71%	-42.08%	-41.58%
2015	367	0	0	0	0	NA	NA	NA	0.00%	-50.22%	-41.66%	-43.86%	-46.78%	-43.71%	-42.08%
2016	367	0	0	15,729	(15,729)	NA	NA	NA	NA	-78.08%	-80.66%	-55.89%	-54.73%	-56.10%	-51.14%
2017	367	6,249	0	20,846	(20,846)	-333.60%	-585.32%	-585.32%	-585.32%	-585.32%	-138.58%	-107.95%	-70.75%	-66.27%	-66.01%
2018	367	828	0	133,292	(133,292)	-16101.80%	-2178.18%	-2400.45%	-2400.45%	-2400.45%	-2400.45%	-624.04%	-333.34%	-183.60%	-153.73%
2004	368	249,254	0	89,134	(89,134)	-35.76%									
2005	368	17,551	0	26,932	(26,932)	-153.45%	-43.50%								
2006	368	33,782	0	24,592	(24,592)	-72.80%	-100.37%	-46.79%							
2007	368	46,347	0	69,163	(69,163)	-149.23%	-117.01%	-123.55%	-60.48%						
2008	368	59,780	0	105,363	(105,363)	-176.25%	-164.45%	-142.32%	-143.56%	-77.50%					
2009	368	7,194	0	23,379	(23,379)	-324.97%	-192.23%	-174.64%	-151.25%	-151.49%	-81.80%				
2010	368	18,079	0	50,468	(50,468)	-279.14%	-292.19%	-210.70%	-189.02%	-165.25%	-164.12%	-90.06%			
2011	368	13,967	0	44,315	(44,315)	-317.28%	-295.77%	-301.12%	-225.74%	-201.34%	-177.10%	-174.99%	-97.17%		
2012	368	21,328	0	32,575	(32,575)	-152.73%	-217.85%	-238.61%	-248.87%	-212.80%	-195.12%	-174.51%	-172.82%	-99.71%	
2013	368	0	0	16,402	(16,402)	NA	-229.64%	-264.32%	-269.34%	-275.95%	-226.43%	-204.96%	-182.69%	-180.34%	-103.22%
2014	368	0	0	0	0	NA	NA	-229.64%	-264.32%	-269.34%	-275.95%	-226.43%	-204.96%	-182.69%	-180.34%
2015	368	261,749	0	0	0	0.00%	0.00%	-6.27%	-17.30%	-31.41%	-45.62%	-51.86%	-71.32%	-79.75%	-79.24%
2016	368	0	204	12,500	(12,296)	NA	-4.70%	-4.70%	-10.96%	-21.65%	-35.55%	-49.52%	-55.67%	-74.54%	-82.62%
2017	368	109,194	4,321	16,567	(12,246)	-11.22%	-22.48%	-6.62%	-6.62%	-11.04%	-18.74%	-29.01%	-39.66%	-44.42%	-60.46%
2018	368	41,780	7,666	105,933	(98,267)	-235.20%	-73.20%	-81.34%	-29.76%	-29.76%	-33.73%	-39.58%	-48.24%	-57.19%	-61.26%
2004	369	30,387	0	40,814	(40,814)	-134.31%									
2005	369	10,984	0	64,361	(64,361)	-585.93%	-254.22%								
2006	369	10,169	0	32,579	(32,579)	-320.39%	-458.28%	-267.28%							
2007	369	11,536	0	45,737	(45,737)	-396.48%	-360.83%	-436.47%	-290.91%						
2008	369	32,040	0	70,393	(70,393)	-219.70%	-266.50%	-276.69%	-329.17%	-266.92%					
2009	369	30,395	0	76,537	(76,537)	-251.81%	-235.33%	-260.46%	-267.71%	-304.45%	-263.26%				

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2010	369	29,530	0	71,996	(71,996)	-243.81%	-247.87%	-238.05%	-255.71%	-261.50%	-290.09%	-259.56%			
2011	369	26,931	0	96,277	(96,277)	-357.50%	-298.04%	-281.86%	-265.11%	-276.73%	-279.89%	-302.06%	-274.05%		
2012	369	15,493	0	10,671	(10,671)	-68.88%	-252.10%	-248.69%	-249.62%	-242.49%	-254.66%	-258.94%	-280.44%	-257.95%	
2013	369	0	0	5,373	(5,373)	NA	-103.56%	-264.76%	-256.16%	-254.87%	-246.48%	-258.34%	-262.38%	-283.66%	-260.67%
2014	369	0	0	0	0	NA	NA	-103.56%	-264.76%	-256.16%	-254.87%	-246.48%	-258.34%	-262.38%	-283.66%
2015	369	3,786	0	0	0	0.00%	0.00%	-141.91%	-83.22%	-243.07%	-243.36%	-245.78%	-239.73%	-251.81%	-256.17%
2016	369	0	33	1,502	(1,469)	NA	-38.79%	-38.79%	-180.70%	-90.84%	-246.25%	-245.29%	-247.16%	-240.79%	-252.79%
2017	369	15,251	704	1,991	(1,287)	-8.44%	-18.07%	-14.47%	-14.47%	-42.70%	-54.44%	-187.24%	-205.60%	-217.17%	-217.70%
2018	369	9,338	1,248	12,728	(11,480)	-122.93%	-51.92%	-57.89%	-50.17%	-50.17%	-69.10%	-69.02%	-178.76%	-197.90%	-210.44%
2004	370	87,374	0	2,292	(2,292)	-2.62%									
2005	370	75,204	0	49,496	(49,496)	-65.82%	-31.85%								
2006	370	117,667	0	39,672	(39,672)	-33.72%	-46.23%	-32.64%							
2007	370	148,987	0	33,045	(33,045)	-22.18%	-27.27%	-35.75%	-29.01%						
2008	370	333,558	0	26,078	(26,078)	-7.82%	-12.25%	-16.46%	-21.96%	-19.74%					
2009	370	138,850	0	34,888	(34,888)	-25.13%	-12.91%	-15.13%	-18.09%	-22.50%	-20.57%				
2010	370	79,466	0	37,633	(37,633)	-47.36%	-33.22%	-17.87%	-18.78%	-20.93%	-24.71%	-22.74%			
2011	370	102,161	0	44,820	(44,820)	-43.87%	-45.40%	-36.61%	-21.93%	-21.98%	-23.48%	-26.67%	-24.73%		
2012	370	98,081	0	49,959	(49,959)	-50.94%	-47.33%	-47.34%	-39.97%	-25.71%	-25.13%	-26.12%	-28.85%	-26.91%	
2013	370	0	0	25,155	(25,155)	NA	-76.58%	-59.89%	-56.33%	-45.98%	-29.06%	-27.92%	-28.59%	-31.15%	-29.04%
2014	370	0	0	0	0	NA	NA	-76.58%	-59.89%	-56.33%	-45.98%	-29.06%	-27.92%	-28.59%	-31.15%
2015	370	0	0	0	0	NA	NA	NA	-76.58%	-59.89%	-56.33%	-45.98%	-29.06%	-27.92%	-28.59%
2016	370	1,363,662	0	558	(558)	-0.04%	-0.04%	-0.04%	-1.89%	-5.18%	-7.70%	-9.62%	-10.83%	-10.36%	-11.13%
2017	370	72,030	0	740	(740)	-1.03%	-0.09%	-0.09%	-0.09%	-1.84%	-4.98%	-7.41%	-9.26%	-10.45%	-10.05%
2018	370	205,627	0	4,730	(4,730)	-2.30%	-1.97%	-0.37%	-0.37%	-0.37%	-1.90%	-4.66%	-6.84%	-8.52%	-9.64%
2004	372	0	0	0	0	NA									
2005	372	565	0	0	0	0.00%	0.00%								
2006	372	0	0	(287)	287	NA	50.73%	50.73%							
2007	372	0	0	0	0	NA	NA	50.73%	50.73%						
2008	372	0	0	0	0	NA	NA	NA	50.73%	50.73%					
2009	372	0	0	0	0	NA	NA	NA	NA	50.73%	50.73%				
2010	372	619	0	(911)	911	147.06%	147.06%	147.06%	147.06%	193.33%	101.11%	101.11%			
2011	372	0	0	0	0	NA	147.06%	147.06%	147.06%	147.06%	193.33%	101.11%	101.11%		
2012	372	0	0	95,968	(95,968)	NA	NA	-15348.64%	-15348.64%	-15348.64%	-15348.64%	-15302.37%	-8003.06%	-8003.06%	
2013	372	7,337	0	48,322	(48,322)	-658.58%	-1966.53%	-1966.53%	-1802.01%	-1802.01%	-1802.01%	-1802.01%	-1798.41%	-1679.20%	-1679.20%
2014	372	0	0	0	0	NA	-658.58%	-1966.53%	-1966.53%	-1802.01%	-1802.01%	-1802.01%	-1802.01%	-1798.41%	-1679.20%
2015	372	0	0	0	0	NA	NA	-658.58%	-1966.53%	-1966.53%	-1802.01%	-1802.01%	-1802.01%	-1802.01%	-1798.41%
2016	372	0	0	0	0	NA	NA	NA	-658.58%	-1966.53%	-1966.53%	-1802.01%	-1802.01%	-1802.01%	-1802.01%
2017	372	1,238	0	0	0	0.00%	0.00%	0.00%	0.00%	-563.51%	-1682.65%	-1682.65%	-1559.41%	-1559.41%	-1559.41%
2018	372	147,788	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	-30.90%	-92.28%	-92.28%	-91.33%	-91.33%
2004	373	46,069	0	6,598	(6,598)	-14.32%									
2005	373	20,835	0	5,709	(5,709)	-27.40%	-18.40%								
2006	373	26,483	0	10,248	(10,248)	-38.70%	-33.72%	-24.15%							
2007	373	36,687	0	32,332	(32,332)	-88.13%	-67.41%	-57.48%	-42.20%						
2008	373	37,252	0	14,438	(14,438)	-38.76%	-63.26%	-56.78%	-51.73%	-41.43%					
2009	373	15,291	0	15,253	(15,253)	-99.75%	-56.51%	-69.51%	-62.46%	-57.11%	-46.32%				
2010	373	14,263	0	11,646	(11,646)	-81.65%	-91.02%	-61.88%	-71.18%	-64.56%	-59.43%	-48.88%			
2011	373	90,536	0	98,481	(98,481)	-108.78%	-105.08%	-104.41%	-88.86%	-88.72%	-82.72%	-77.94%	-67.74%		
2012	373	14,792	0	0	0	0.00%	-93.50%	-92.09%	-92.96%	-81.23%	-82.44%	-77.52%	-73.44%	-64.43%	

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2013	373	0	0	0	0	NA	0.00%	-93.50%	-92.09%	-92.96%	-81.23%	-82.44%	-77.52%	-73.44%	-64.43%
2014	373	0	0	0	0	NA	NA	0.00%	-93.50%	-92.09%	-92.96%	-81.23%	-82.44%	-77.52%	-73.44%
2015	373	327	0	0	0	0.00%	0.00%	0.00%	0.00%	-93.21%	-91.84%	-92.73%	-81.07%	-82.31%	-77.41%
2016	373	0	202	1,271	(1,069)	NA	-327.26%	-327.26%	-327.26%	-7.07%	-94.22%	-92.73%	-93.52%	-81.69%	-82.82%
2017	373	0	4,265	1,685	2,580	NA	NA	462.30%	462.30%	462.30%	9.99%	-91.78%	-90.58%	-91.61%	-80.20%
2018	373	22,564	7,567	10,773	(3,207)	-14.21%	-2.78%	-7.52%	-7.41%	-7.41%	-7.41%	-4.50%	-78.13%	-78.48%	-80.54%
2004	389	0	0	0	0	NA									
2005	389	0	0	0	0	NA	NA								
2006	389	0	0	0	0	NA	NA	NA							
2007	389	0	0	0	0	NA	NA	NA	NA						
2008	389	0	0	0	0	NA	NA	NA	NA	NA					
2009	389	0	0	0	0	NA	NA	NA	NA	NA	NA				
2010	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA			
2011	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA		
2012	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2013	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2014	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2015	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2016	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2017	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018	389	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2004	390	0	0	0	0	NA									
2005	390	0	0	0	0	NA	NA								
2006	390	0	0	0	0	NA	NA	NA							
2007	390	38,790	0	25,000	(25,000)	-64.45%	-64.45%	-64.45%	-64.45%						
2008	390	0	0	0	0	NA	-64.45%	-64.45%	-64.45%	-64.45%					
2009	390	0	0	0	0	NA	NA	-64.45%	-64.45%	-64.45%	-64.45%				
2010	390	0	0	0	0	NA	NA	NA	-64.45%	-64.45%	-64.45%	-64.45%			
2011	390	0	0	0	0	NA	NA	NA	NA	-64.45%	-64.45%	-64.45%	-64.45%		
2012	390	0	0	0	0	NA	NA	NA	NA	NA	-64.45%	-64.45%	-64.45%	-64.45%	
2013	390	0	0	0	0	NA	NA	NA	NA	NA	NA	-64.45%	-64.45%	-64.45%	-64.45%
2014	390	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	-64.45%	-64.45%	-64.45%
2015	390	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	-64.45%	-64.45%
2016	390	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	-64.45%
2017	390	103,528	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2018	390	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	391	6,512	0	0	0	0.00%									
2005	391	6,720	0	0	0	0.00%	0.00%								
2006	391	5,630	0	0	0	0.00%	0.00%	0.00%							
2007	391	6,545	0	0	0	0.00%	0.00%	0.00%	0.00%						
2008	391	11,566	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%					
2009	391	24,532	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2010	391	3,697	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
2011	391	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2012	391	0	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2013	391	0	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	391	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	391	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%

GRANITE STATE ELECTRIC
RETIREMENTS, GROSS SALVAGE, AND REMOVAL COST
AS ADJUSTED 2004-2018

Transaction Year	Account Number	Retirements	Gross Salvage	Cost of Removal	Net Salvage	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2016	391	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2017	391	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2018	391	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%
2014	391.1	0	0	0	0	NA									
2015	391.1	0	0	0	0	NA	NA								
2016	391.1	0	0	0	0	NA	NA	NA							
2017	391.1	0	0	0	0	NA	NA	NA	NA						
2018	391.1	0	0	0	0	NA	NA	NA	NA	NA					
2014	391.2	0	0	0	0	NA									
2015	391.2	0	0	0	0	NA	NA								
2016	391.2	0	0	0	0	NA	NA	NA							
2017	391.2	0	0	0	0	NA	NA	NA	NA						
2018	391.2	39,768	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%					
2010	392.1	0	0	0	0	NA									
2011	392.1	0	0	0	0	NA	NA								
2012	392.1	0	0	0	0	NA	NA	NA							
2013	392.1	0	0	0	0	NA	NA	NA	NA						
2014	392.1	0	0	0	0	NA	NA	NA	NA	NA					
2015	392.1	0	0	0	0	NA	NA	NA	NA	NA	NA				
2016	392.1	0	0	0	0	NA	NA	NA	NA	NA	NA	NA			
2017	392.1	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA		
2018	392.1	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2004	393	104	0	0	0	0.00%									
2005	393	0	0	0	0	NA	0.00%								
2006	393	0	0	0	0	NA	NA	0.00%							
2007	393	0	0	0	0	NA	NA	NA	0.00%						
2008	393	0	0	0	0	NA	NA	NA	NA	0.00%					
2009	393	373	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2010	393	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
2011	393	0	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2012	393	0	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2013	393	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	393	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%
2015	393	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2016	393	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2017	393	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%
2018	393	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00%
2004	394	9,563	0	0	0	0.00%									
2005	394	15,974	0	0	0	0.00%	0.00%								
2006	394	26,901	0	0	0	0.00%	0.00%	0.00%							
2007	394	13,933	0	0	0	0.00%	0.00%	0.00%	0.00%						
2008	394	10,769	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%					
2009	394	5,060	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2010	394	24,196	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			

GRANITE STATE ELECTRIC
RETIREMENTS, GROSS SALVAGE, AND REMOVAL COST
AS ADJUSTED 2004-2018

Transaction Year	Account Number	Retirements	Gross Salvage	Cost of Removal	Net Salvage	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2011	394	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2012	394	0	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2013	394	0	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	394	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	394	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%
2016	394	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2017	394	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2018	394	1,907	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	395	0	0	0	0	NA									
2005	395	1,653	0	0	0	0.00%	0.00%								
2006	395	2,289	0	0	0	0.00%	0.00%	0.00%							
2007	395	6,456	0	0	0	0.00%	0.00%	0.00%	0.00%						
2008	395	1,159	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%					
2009	395	2,468	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2010	395	4,990	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
2011	395	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2012	395	0	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2013	395	0	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	395	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	395	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%
2016	395	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2017	395	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2018	395	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%
2013	396	0	0	0	0	NA									
2014	396	0	0	0	0	NA	NA								
2015	396	0	0	0	0	NA	NA	NA							
2016	396	0	0	0	0	NA	NA	NA	NA						
2017	396	0	0	0	0	NA	NA	NA	NA	NA					
2018	396	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2004	397	0	0	0	0	NA									
2005	397	0	0	0	0	0.00%	0.00%								
2006	397	0	0	0	0	0.00%	0.00%	0.00%							
2007	397	7,751	0	0	0	0.00%	0.00%	0.00%	0.00%						
2008	397	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%					
2009	397	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2010	397	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
2011	397	0	0	0	0	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2012	397	0	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
2013	397	0	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	397	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	397	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%
2016	397	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2017	397	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2018	397	10,458	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	398	0	0	0	0	NA									
2005	398	10,679	0	0	0	NA	NA								

GRANITE STATE ELECTRIC
RETIREMENTS, GROSS SALVAGE, AND REMOVAL COST
AS ADJUSTED 2004-2018

Transaction Year	Account Number	Retirements	Gross Salvage	Cost of Removal	Net Salvage	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2006	398	724	0	0	0	NA	NA	NA							
2007	398	0	0	0	0	0.00%	0.00%	0.00%	0.00%						
2008	398	2,422	0	0	0	NA	0.00%	0.00%	0.00%	0.00%					
2009	398	6,749	0	0	0	NA	NA	0.00%	0.00%	0.00%	0.00%				
2010	398	4,193	0	0	0	NA	NA	NA	0.00%	0.00%	0.00%	0.00%			
2011	398	0	0	0	0	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%		
2012	398	0	0	0	0	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%	
2013	398	0	0	0	0	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%	0.00%
2014	398	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%	0.00%
2015	398	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%
2016	398	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00%
2017	398	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2018	398	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.00%	0.00%

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
New Hampshire	New Hampshire Public Service Commission	DE 19-064	Liberty Utilities	2019	Electric Distribution and General
New Jersey	New Jersey Board of Public Utilities	GR19040486	Elizabethtown Natural Gas	2019	Gas Depreciation Study
Texas	Public Utility Commission of Texas	49421	CenterPoint Houston Electric LLC	2019	Electric Depreciation Study
North Carolina	North Carolina Utilities Commission	Docket No. G-9, Sub 743	Piedmont Natural Gas	2019	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-18-121	Municipal Power and Light City of Anchorage	2018	Electric Depreciation Study
Various	FERC	RP19-352-000	Sea Robin	2018	Gas Depreciation Study
Texas New Mexico	Federal Energy Regulatory Commission	ER19-404-000	Southwestern Public Service Company	2018	Electric Transmission Depreciation Study
California	Federal Energy Regulatory Commission	ER19-221-000	San Diego Gas and Electric	2018	Electric Transmission Depreciation Study
Kentucky	Kentucky Public Service Commission	2018-00281	Atmos Kentucky	2018	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-18-054	Matanuska Electric Coop	2018	Electric Generation Depreciation Study
California	California Public Utilities Commission	A17-10-007	San Diego Gas and Electric	2018	Electric and Gas Depreciation Study
Texas	Public Utility Commission of Texas	48401	Texas New Mexico Power	2018	Electric Depreciation Study
Nevada	Public Utility Commission of Nevada	18-05031	Southwest Gas	2018	Gas Depreciation Study
Texas	Public Utility Commission of Texas	48231	Oncor Electric Delivery	2018	Depreciation Rates
Texas	Public Utility Commission of Texas	48371	Entergy Texas	2018	Electric Depreciation Study
Kansas	Kansas Corporation Commission	18-KCPE-480-RTS	Kansas City Power and Light	2018	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	18-027-U	Liberty Pine Bluff Water	2018	Water Depreciation Study
Kentucky	Kentucky Public Service Commission	2017-00349	Atmos KY	2018	Gas Depreciation Rates

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Tennessee	Tennessee Public Utility Commission	18-00017	Chattanooga Gas	2018	Gas Depreciation Study
Texas	Railroad Commission of Texas	10679	Si Energy	2018	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-17-104	Anchorage Water and Wastewater	2017	Water and Waste Water Depreciation Study
Michigan	Michigan Public Service Commission	U-18488	Michigan Gas Utilities Corporation	2017	Gas Depreciation Study
Texas	Railroad Commission of Texas	10669	CenterPoint South Texas	2017	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	17-061-U	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Kansas	Kansas Corporation Commission	18-EPDE-184-PRE	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Oklahoma	Oklahoma Corporation Commission	PUD 201700471	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Missouri	Missouri Public Service Commission	EO-2018-0092	Empire District Electric Company	2017	Depreciation Rates for New Wind Generation
Michigan	Michigan Public Service Commission	U-18457	Upper Peninsula Power Company	2017	Electric Depreciation Study
Florida	Florida Public Service Commission	20170179-GU	Florida City Gas	2017	Gas Depreciation Study
Michigan	FERC	ER18-56-000	Consumers Energy	2017	Electric Depreciation Study
Missouri	Missouri Public Service Commission	GR-2018-0013	Liberty Utilities	2017	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-18452	SEMCO	2017	Gas Depreciation Study
Texas	Public Utility Commission of Texas	47527	Southwestern Public Service Company	2017	Electric Production Depreciation Study
MultiState	FERC	ER17-1664	American Transmission Company	2017	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-17-008	Municipal Power and Light City of Anchorage	2017	Generating Unit Depreciation Study
Mississippi	Mississippi Public Service Commission	2017-UN-041	Atmos Energy	2017	Gas Depreciation Study

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Public Utility Commission of Texas	46957	Oncor Electric Delivery	2017	Electric Depreciation Study
Oklahoma	Oklahoma Corporation Commission	PUD 201700078	CenterPoint Oklahoma	2017	Gas Depreciation Study
New York	FERC	ER17-1010-000	New York Power Authority	2017	Electric Depreciation Study
Texas	Railroad Commission of Texas	GUD 10580	Atmos Pipeline Texas	2017	Gas Depreciation Study
Texas	Railroad Commission of Texas	GUD 10567	CenterPoint Texas	2016	Gas Depreciation Study
MultiState	FERC	ER17-191-000	American Transmission Company	2016	Electric Depreciation Study
New Jersey	New Jersey Board of Public Utilities	GR16090826	Elizabethtown Natural Gas	2016	Gas Depreciation Study
North Carolina	North Carolina Utilities Commission	Docket G-9 Sub 77H	Piedmont Natural Gas	2016	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-18195	Consumers Energy/DTE Electric	2016	Ludington Pumped Storage Depreciation Study
Alabama	FERC	ER16-2313-000	SEGCO	2016	Electric Depreciation Study
Alabama	FERC	ER16-2312-000	Alabama Power Company	2016	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-18127	Consumers Energy	2016	Natural Gas Depreciation Study
Mississippi	Mississippi Public Service Commission	2016 UN 267	Willmut Natural Gas	2016	Natural Gas Depreciation Study
Iowa	Iowa Utilities Board	RPU-2016-0003	Liberty-Iowa	2016	Natural Gas Depreciation Study
Illinois	Illinois Commerce Commission	GRM #16-208	Liberty-Illinois	2016	Natural Gas Depreciation Study
Kentucky	FERC	RP16-097-000	KOT	2016	Natural Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-16-067	Alaska Electric Light and Power	2016	Generating Unit Depreciation Study
Florida	Florida Public Service Commission	160170-EI	Gulf Power	2016	Electric Depreciation Study
California	California Public Utilities Commission	A 16-07-002	California American Water	2016	Water and Waste Water Depreciation Study
Arizona	Arizona Corporation Commission	G-01551A-16-0107	Southwest Gas	2016	Gas Depreciation Study

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Public Utility Commission of Texas	45414	Sharyland	2016	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	16A-0231E	Public Service Company of Colorado	2016	Electric Depreciation Study
Multi-State NE US	FERC	16-453-000	Northeast Transmission Development, LLC	2015	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	15-098-U	CenterPoint Arkansas	2015	Gas Depreciation Study and Cost of Removal Study
New Mexico	New Mexico Public Regulation Commission	15-00296-UT	Southwestern Public Service Company	2015	Electric Depreciation Study
Atmos Energy Corporation	Tennessee Regulatory Authority	14-00146	Atmos Tennessee	2015	Natural Gas Depreciation Study
New Mexico	New Mexico Public Regulation Commission	15-00261-UT	Public Service Company of New Mexico	2015	Electric Depreciation Study
Hawaii	NA	NA	Hawaii American Water	2015	Water/Wastewater Depreciation Study
Kansas	Kansas Corporation Commission	16-ATMG-079-RTS	Atmos Kansas	2015	Gas Depreciation Study
Texas	Public Utility Commission of Texas	44704	Entergy Texas	2015	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-15-089	Fairbanks Water and Wastewater	2015	Water and Waste Water Depreciation Study
Arkansas	Arkansas Public Service Commission	15-031-U	Source Gas Arkansas	2015	Underground Storage Gas Depreciation Study
New Mexico	New Mexico Public Regulation Commission	15-00139-UT	Southwestern Public Service Company	2015	Electric Depreciation Study
Texas	Public Utility Commission of Texas	44746	Wind Energy Transmission Texas	2015	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	15-AL-0299G	Atmos Colorado	2015	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	15-011-U	Source Gas Arkansas	2015	Gas Depreciation Study
Texas	Railroad Commission of Texas	GUD 10432	CenterPoint- Texas Coast Division	2015	Gas Depreciation Study
Kansas	Kansas Corporation Commission	15-KCPE-116-RTS	Kansas City Power and Light	2015	Electric Depreciation Study

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Alaska	Regulatory Commission of Alaska	U-14-120	Alaska Electric Light and Power	2014-2015	Electric Depreciation Study
Texas	Public Utility Commission of Texas	43950	Cross Texas Transmission	2014	Electric Depreciation Study
New Mexico	New Mexico Public Regulation Commission	14-00332-UT	Public Service of New Mexico	2014	Electric Depreciation Study
Texas	Public Utility Commission of Texas	43695	Xcel Energy	2014	Electric Depreciation Study
Multi State – SE US	FERC	RP15-101	Florida Gas Transmission	2014	Gas Transmission Depreciation Study
California	California Public Utilities Commission	A.14-07-006	Golden State Water	2014	Water and Waste Water Depreciation Study
Michigan	Michigan Public Service Commission	U-17653	Consumers Energy Company	2014	Electric and Common Depreciation Study
Colorado	Public Utilities Commission of Colorado	14AL-0660E	Public Service of Colorado	2014	Electric Depreciation Study
Wisconsin	Wisconsin	05-DU-102	WE Energies	2014	Electric, Gas, Steam and Common Depreciation Studies
Texas	Public Utility Commission of Texas	42469	Lone Star Transmission	2014	Electric Depreciation Study
Nebraska	Nebraska Public Service Commission	NG-0079	Source Gas Nebraska	2014	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-055	TDX North Slope Generating	2014	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-054	Sand Point Generating LLC	2014	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-14-045	Matanuska Electric Coop	2014	Electric Generation Depreciation Study
Texas, New Mexico	Public Utility Commission of Texas	42004	Southwestern Public Service Company	2013-2014	Electric Production, Transmission, Distribution and General Plant Depreciation Study
New Jersey	New Jersey Board of Public Utilities	GR13111137	South Jersey Gas	2013	Gas Depreciation Study
Various	FERC	RP14-247-000	Sea Robin	2013	Gas Depreciation Study

Dane Watson Testimony Appearances

Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Arkansas	Arkansas Public Service Commission	13-078-U	Arkansas Oklahoma Gas	2013	Gas Depreciation Study
Arkansas	Arkansas Public Service Commission	13-079-U	Source Gas Arkansas	2013	Gas Depreciation Study
California	California Public Utilities Commission	Proceeding No.: A.13-11-003	Southern California Edison	2013	Electric Depreciation Study
North Carolina/South Carolina	FERC	ER13-1313	Progress Energy Carolina	2013	Electric Depreciation Study
Wisconsin	Public Service Commission of Wisconsin	4220-DU-108	Northern States Power Company - Wisconsin	2013	Electric, Gas and Common Transmission, Distribution and General
Texas	Public Utility Commission of Texas	41474	Sharyland	2013	Electric Depreciation Study
Kentucky	Kentucky Public Service Commission	2013-00148	Atmos Energy Corporation	2013	Gas Depreciation Study
Minnesota	Minnesota Public Utilities Commission	13-252	Allete Minnesota Power	2013	Electric Depreciation Study
New Hampshire	New Hampshire Public Service Commission	DE 13-063	Liberty Utilities	2013	Electric Distribution and General
Texas	Railroad Commission of Texas	10235	West Texas Gas	2013	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-12-154	Alaska Telephone Company	2012	Telecommunications Utility
New Mexico	New Mexico Public Regulation Commission	12-00350-UT	Southwestern Public Service Company	2012	Electric Depreciation Study
Colorado	Colorado Public Utilities Commission	12AL-1269ST	Public Service Company of Colorado	2012	Gas and Steam Depreciation Study
Colorado	Colorado Public Utilities Commission	12AL-1268G	Public Service Company of Colorado	2012	Gas and Steam Depreciation Study
Alaska	Regulatory Commission of Alaska	U-12-149	Municipal Power and Light City of Anchorage	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40824	Xcel Energy	2012	Electric Depreciation Study
South Carolina	Public Service Commission of South Carolina	Docket 2012-384-E	Progress Energy Carolina	2012	Electric Depreciation Study

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Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Alaska	Regulatory Commission of Alaska	U-12-141	Interior Telephone Company	2012	Telecommunications Utility
Michigan	Michigan Public Service Commission	U-17104	Michigan Gas Utilities Corporation	2012	Gas Depreciation Study
North Carolina	North Carolina Utilities Commission	E-2 Sub 1025	Progress Energy Carolina	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40606	Wind Energy Transmission Texas	2012	Electric Depreciation Study
Texas	Texas Public Utility Commission	40604	Cross Texas Transmission	2012	Electric Depreciation Study
Minnesota	Minnesota Public Utilities Commission	12-858	Northern States Power Company - Minnesota	2012	Electric, Gas and Common Transmission, Distribution and General
Texas	Railroad Commission of Texas	10170	Atmos Mid-Tex	2012	Gas Depreciation Study
Texas	Railroad Commission of Texas	10174	Atmos West Texas	2012	Gas Depreciation Study
Texas	Railroad Commission of Texas	10182	CenterPoint Beaumont/ East Texas	2012	Gas Depreciation Study
Kansas	Kansas Corporation Commission	12-KCPE-764-RTS	Kansas City Power and Light	2012	Electric Depreciation Study
Nevada	Public Utility Commission of Nevada	12-04005	Southwest Gas	2012	Gas Depreciation Study
Texas	Railroad Commission of Texas	10147, 10170	Atmos Mid-Tex	2012	Gas Depreciation Study
Kansas	Kansas Corporation Commission	12-ATMG-564-RTS	Atmos Kansas	2012	Gas Depreciation Study
Texas	Texas Public Utility Commission	40020	Lone Star Transmission	2012	Electric Depreciation Study
Michigan	Michigan Public Service Commission	U-16938	Consumers Energy Company	2011	Gas Depreciation Study
Colorado	Public Utilities Commission of Colorado	11AL-947E	Public Service of Colorado	2011	Electric Depreciation Study
Texas	Texas Public Utility Commission	39896	Entergy Texas	2011	Electric Depreciation Study
MultiState	FERC	ER12-212	American Transmission Company	2011	Electric Depreciation Study
California	California Public Utilities Commission	A1011015	Southern California Edison	2011	Electric Depreciation Study

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Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Mississippi	Mississippi Public Service Commission	2011-UN-184	Atmos Energy	2011	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-16536	Consumers Energy Company	2011	Wind Depreciation Rate Study
Texas	Public Utility Commission of Texas	38929	Oncor	2011	Electric Depreciation Study
Texas	Railroad Commission of Texas	10038	CenterPoint South TX	2010	Gas Depreciation Study
Alaska	Regulatory Commission of Alaska	U-10-070	Inside Passage Electric Cooperative	2010	Electric Depreciation Study
Texas	Public Utility Commission of Texas	36633	City Public Service of San Antonio	2010	Electric Depreciation Study
Texas	Texas Railroad Commission	10000	Atmos Pipeline Texas	2010	Gas Depreciation Study
Multi State – SE US	FERC	RP10-21-000	Florida Gas Transmission	2010	Gas Depreciation Study
Maine/ New Hampshire	FERC	10-896	Granite State Gas Transmission	2010	Gas Depreciation Study
Texas	Public Utility Commission of Texas	38480	Texas New Mexico Power	2010	Electric Depreciation Study
Texas	Public Utility Commission of Texas	38339	CenterPoint Electric	2010	Electric Depreciation Study
Texas	Texas Railroad Commission	10041	Atmos Amarillo	2010	Gas Depreciation Study
Georgia	Georgia Public Service Commission	31647	Atlanta Gas Light	2010	Gas Depreciation Study
Texas	Public Utility Commission of Texas	38147	Southwestern Public Service	2010	Electric Technical Update
Alaska	Regulatory Commission of Alaska	U-09-015	Alaska Electric Light and Power	2009-2010	Electric Depreciation Study
Alaska	Regulatory Commission of Alaska	U-10-043	Utility Services of Alaska	2009-2010	Water Depreciation Study
Michigan	Michigan Public Service Commission	U-16055	Consumers Energy/DTE Energy	2009-2010	Ludington Pumped Storage Depreciation Study
Michigan	Michigan Public Service Commission	U-16054	Consumers Energy	2009-2010	Electric Depreciation Study

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Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Michigan	Michigan Public Service Commission	U-15963	Michigan Gas Utilities Corporation	2009	Gas Depreciation Study
Michigan	Michigan Public Service Commission	U-15989	Upper Peninsula Power Company	2009	Electric Depreciation Study
Texas	Railroad Commission of Texas	9869	Atmos Energy	2009	Shared Services Depreciation Study
Mississippi	Mississippi Public Service Commission	09-UN-334	CenterPoint Energy Mississippi	2009	Gas Depreciation Study
Texas	Railroad Commission of Texas	9902	CenterPoint Energy Houston	2009	Gas Depreciation Study
Colorado	Colorado Public Utilities Commission	09AL-299E	Public Service Company of Colorado	2009	Electric Depreciation Study
Tennessee	Tennessee Regulatory Authority	11-00144	Piedmont Natural Gas	2009	Gas Depreciation Study
Louisiana	Louisiana Public Service Commission	U-30689	Cleco	2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	35763	Southwestern Public Service Company	2008	Electric Production, Transmission, Distribution and General Plant Depreciation Study
Wisconsin	Wisconsin	05-DU-101	WE Energies	2008	Electric, Gas, Steam and Common Depreciation Studies
North Dakota	North Dakota Public Service Commission	PU-07-776	Northern States Power Company - Minnesota	2008	Net Salvage
New Mexico	New Mexico Public Regulation Commission	07-00319-UT	Southwestern Public Service Company	2008	Testimony – Depreciation
Multiple States	Railroad Commission of Texas	9762	Atmos Energy	2007-2008	Shared Services Depreciation Study
Minnesota	Minnesota Public Utilities Commission	E015/D-08-422	Minnesota Power	2007-2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	35717	Oncor	2008	Electric Depreciation Study
Texas	Public Utility Commission of Texas	34040	Oncor	2007	Electric Depreciation Study

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Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Michigan	Michigan Public Service Commission	U-15629	Consumers Energy	2006-2009	Gas Depreciation Study
Colorado	Colorado Public Utilities Commission	06-234-EG	Public Service Company of Colorado	2006	Electric Depreciation Study
Arkansas	Arkansas Public Service Commission	06-161-U	CenterPoint Energy – Arkla Gas	2006	Gas Distribution Depreciation Study and Removal Cost Study
Texas, New Mexico	Public Utility Commission of Texas	32766	Southwestern Public Service Company	2005-2006	Electric Production, Transmission, Distribution and General Plant Depreciation Study
Texas	Railroad Commission of Texas	9670/9676	Atmos Energy Corp	2005-2006	Gas Distribution Depreciation Study
Texas	Railroad Commission of Texas	9400	TXU Gas	2003-2004	Gas Distribution Depreciation Study
Texas	Railroad Commission of Texas	9313	TXU Gas	2002	Gas Distribution Depreciation Study
Texas	Railroad Commission of Texas	9225	TXU Gas	2002	Gas Distribution Depreciation Study
Texas	Public Utility Commission of Texas	24060	TXU	2001	Line Losses
Texas	Public Utility Commission of Texas	23640	TXU	2001	Line Losses
Texas	Railroad Commission of Texas	9145-9148	TXU Gas	2000-2001	Gas Distribution Depreciation Study
Texas	Public Utility Commission of Texas	22350	TXU	2000-2001	Electric Depreciation Study, Unbundling
Texas	Railroad Commission of Texas	8976	TXU Pipeline	1999	Pipeline Depreciation Study
Texas	Public Utility Commission of Texas	20285	TXU	1999	Fuel Company Depreciation Study
Texas	Public Utility Commission of Texas	18490	TXU	1998	Transition to Competition
Texas	Public Utility Commission of Texas	16650	TXU	1997	Customer Complaint

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Asset Location	Commission	Docket (If Applicable	Company	Year	Description
Texas	Public Utility Commission of Texas	15195	TXU	1996	Mining Company Depreciation Study
Texas	Public Utility Commission of Texas	12160	TXU	1993	Fuel Company Depreciation Study
Texas	Public Utility Commission of Texas	11735	TXU	1993	Electric Depreciation Study