**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

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| In the Matter of the Petition of | |
| PACIFIC POWER & LIGHT COMPANY | Docket UE-180778 |
| For an Order Approving a Change in Depreciation Rates Applicable to Electric Property. | |

**PACIFIC POWER & LIGHT COMPANY**

**DIRECT TESTIMONY OF JOHN J. SPANOS**

**September 2018**

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**ATTACHED EXHIBITS**

Exhibit No. JJS-2—Qualifications of John J. Spanos

Exhibit No. JJS-3—Depreciation Study

Exhibit No. JJS-4—California and Washington Steam Production Plant

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

2 A. My name is John J. Spanos. My business address is 207 Senate Avenue, Camp Hill,

3 Pennsylvania 17011.

4 **Q.** **Are you associated with any firm?**

5 A. Yes. I am associated with the firm of Gannett Fleming Valuation and Rate

6 Consultants, LLC (Gannett Fleming).

7 **Q.** **How long have you been associated with Gannett Fleming?**

8 A. I have been associated with the firm since college graduation in June 1986.

9 **Q.** **What is your position with the firm?**

10 A. I am a Senior Vice President.

11 **Q.** **On whose behalf are you testifying in this case?**

12 A. I am testifying on behalf of Pacific Power & Light Company (Pacific Power), a

13 division of PacifiCorp.

14 <center>**QUALIFICATIONS**</center>

15 **Q.** **Please state your qualifications.**

16 A. Please refer to Exhibit No. JJS-2 for my qualifications.

17 <center>**PURPOSE OF TESTIMONY**</center>

18 **Q.** **What is the purpose of your testimony?**

19 A. I sponsor the depreciation study performed for PacifiCorp attached as Exhibit No.

20 JJS-3 (Depreciation Study). The Depreciation Study sets forth the calculated annual

21 depreciation accrual rates by account as of December 31, 2017. Based on the

22 Depreciation Study, I recommend depreciation rates using the projected

23 December 31, 2020 plant and reserve balances for approval. The proposed rates

1    appropriately reflect the rates at which PacifiCorp's assets should be depreciated over

2    their useful lives and are based on the most commonly used methods and procedures

3    for determining depreciation rates.

4  **Q.    Can you summarize the results of your Depreciation Study?**

5  A.    Yes.  The depreciation rates as of December 31, 2017, appropriately reflect the rates

6        at which the values of PacifiCorp's assets have been consumed over their useful lives

7        to date.  These rates are based on the most commonly used methods and procedures

8        for determining depreciation rates.  The life and salvage parameters are based on

9        widely used techniques and the depreciation rates are based on the average service

10       life procedure and remaining life method.  Therefore, the depreciation rates set forth

11       on pages VI-4 through VI-21 of Exhibit No. JJS-3 represent the calculated rates as of

12       December 31, 2017.

13                               **DEPRECIATION STUDY**

14  **Q.    Please define the concept of depreciation.**

15  A.    Depreciation refers to the loss in service value not restored by current maintenance,

16       incurred in connection with the consumption or prospective retirement of utility plant

17       in the course of service from causes which are known to be in current operation,

18       against which the company is not protected by insurance.  Among the causes to be

19       given consideration are wear and tear, decay, action of the elements, inadequacy,

20       obsolescence, changes in the art, changes in demand, and the requirements of public

21       authorities.

22  **Q.    Did you prepare the Depreciation Study filed by PacifiCorp in this proceeding?**

23  A.    Yes.  I prepared the Depreciation Study submitted by PacifiCorp with its filing in this

| 1 | | proceeding.  The Depreciation Study is entitled:  Depreciation Study – Calculated |
|---|---|---|
| 2 | | Annual Depreciation Accruals Related to Electric Plant as of December 31, 2017. |
| 3 | | This report sets forth the results of my Depreciation Study for PacifiCorp. |
| 4 | **Q.** | **In preparing the Depreciation Study, did you follow generally accepted practices** |
| 5 | | **in the field of depreciation valuation?** |
| 6 | A. | Yes. |
| 7 | **Q.** | **Are the methods and procedures of this Depreciation Study consistent with past** |
| 8 | | **practices?** |
| 9 | A. | The methods and procedures of this study are the same as those utilized in past |
| 10 | | studies of this company as well as others before the Washington Utilities and |
| 11 | | Transportation Commission (Commission).  Depreciation rates are determined based |
| 12 | | on the average service life procedure and the remaining life method. |
| 13 | **Q.** | **Please describe the contents of the Depreciation Study.** |
| 14 | A. | The Depreciation Study is presented in nine parts:  Part I, Introduction, presents the |
| 15 | | scope and basis for the Depreciation Study. Part II, Estimation of Survivor Curves, |
| 16 | | includes descriptions of the methodology of estimating survivor curves.  Parts III and |
| 17 | | IV set forth the analysis for determining service life and net salvage estimates. |
| 18 | | Part V, Calculation of Annual and Accrued Depreciation, includes the concepts of |
| 19 | | depreciation and amortization using the remaining life.  Part VI, Results of Study, |
| 20 | | presents a description of the results of my analysis and a summary of the depreciation |
| 21 | | calculations.  Parts VII, VIII, and IX include graphs and tables that relate to the |
| 22 | | service life and net salvage analyses, and the detailed depreciation calculations by |
| 23 | | account. |

1          The table on pages VI-4 through VI-21 of the Depreciation Study presents the

2          estimated survivor curve, the net salvage percent, the original cost as of December 31,

3          2017, the book depreciation reserve and the calculated annual depreciation accrual

4          and rate for each account or subaccount.  The section beginning on page VII-2

5          presents the results of the retirement rate and simulated plant analyses prepared as the

6          historical bases for the service life estimates.  The section beginning on page VIII-2

7          presents the results of the salvage analysis.  The section beginning on page IX-2

8          presents the depreciation calculations related to surviving original cost as of

9          December 31, 2017.  Finally, the section in the Appendix presents the recommended

10         depreciation rates and parameters as of December 31, 2020.

11   **Q.    Please explain how you performed your Depreciation Study.**

12   A.    I used the straight line remaining life method of depreciation, with the average service

13         life procedure.  The annual depreciation is based on a method of depreciation

14         accounting that seeks to distribute the unrecovered cost of fixed capital assets over

15         the estimated remaining useful life of each unit, or group of assets, in a systematic

16         and reasonable manner.

17   **Q.    How did you determine the recommended annual depreciation accrual rates?**

18   A.    I did this in two phases.  In the first phase, I estimated the service life and net salvage

19         characteristics for each depreciable group, that is, each plant account or subaccount

20         identified as having similar characteristics.  In the second phase, I calculated the

21         composite remaining lives and annual depreciation accrual rates based on the service

22         life and net salvage estimates determined in the first phase.

| 1 | Q. | Please describe the first phase of the Depreciation Study, in which you estimated |
| | | the service life and net salvage characteristics for each depreciable group. |

2     the service life and net salvage characteristics for each depreciable group.

3  A.  The service life and net salvage study consisted of compiling historical data from

4     records related to PacifiCorp's plant; analyzing these data to obtain historical trends

5     of survivor characteristics; obtaining supplementary information from management

6     and operating personnel concerning practices and plans as they relate to plant

7     operations; and interpreting the above data and the estimates used by other electric

8     utilities to form judgments of average service life and net salvage characteristics.

9  Q.  **What historical data did you analyze for the purpose of estimating service life**

10    **characteristics?**

11 A.  I analyzed the company's accounting entries that record plant transactions during the

12    1937 through 2017 period, however, the earliest year of data varied by account.  The

13    transactions included additions, retirements, transfers, sales, and the related balances.

14 Q.  **What method did you use to analyze this service life data?**

15 A.  I used the retirement rate method for most plant accounts.  This is the most

16    appropriate method when retirement data covering a long period of time is available

17    because this method determines the average rates of retirement actually experienced

18    by the company during the period of time covered by the Depreciation Study.

19 Q.  **Please describe how you used the retirement rate method to analyze PacifiCorp's**

20    **service life data.**

21 A.  I applied the retirement rate analysis to each different group of property in the study.

22    For each property group, I used the retirement rate data to form a life table which,

23    when plotted, shows an original survivor curve for that property group.  Each original

1    survivor curve represents the average survivor pattern experienced by the several

2    vintage groups during the experience band studied.  The survivor patterns do not

3    necessarily describe the life characteristics of the property group; therefore,

4    interpretation of the original survivor curves is required in order to use them as valid

5    considerations in estimating service life.  The Iowa-type survivor curves were used to

6    perform these interpretations.

7  **Q.    Did you use any other methods to analyze service life data?**

8  A.    Yes.  For most distribution assets in Idaho and Utah, the company accounting records

9    have not maintained the vintage of each transaction.  Therefore, the simulated plant

10    record method was utilized to determine life characteristics.

11  **Q.    What is an "Iowa-type Survivor Curve" and how did you use such curves to**

12    **estimate the service life characteristics for each property group?**

13  A.    Iowa-type curves are a widely-used group of survivor curves that contain the range of

14    survivor characteristics usually experienced by utilities and other industrial

15    companies.  The Iowa curves were developed at the Iowa State College Engineering

16    Experiment Station through an extensive process of observing and classifying the

17    ages at which various types of property used by utilities and other industrial

18    companies had been retired.

19    Iowa-type curves are used to smooth and extrapolate original survivor curves

20    determined by the retirement rate method.  The Iowa curves and truncated Iowa-type

21    curves were used in this study to describe the forecasted rates of retirement based on

22    the observed rates of retirement and the outlook for future retirements.

1          The estimated survivor curve designations for each depreciable property

2          group indicate the average service life, the family within the Iowa system to which

3          the property group belongs, and the relative height of the mode.  For example, the

4          Iowa 60-R2 indicates an average service life of sixty years; a right-moded, or R-type

5          curve (the mode occurs after average life for right-moded curves); and a relatively

6          low height, 2, for the mode (possible modes for R-type curves range from 1 to 5).

7    **Q.   What approach did you use to estimate the lives of significant facilities**

8         **structures such as production plants?**

9    A.    I used the life span technique to estimate the lives of significant facilities for which

10         concurrent retirement of the entire facility is anticipated.  In this technique, the

11         survivor characteristics of such facilities are described by the use of interim survivor

12         curves and estimated probable retirement dates.

13         The interim survivor curves describe the rate of retirement related to the

14         replacement of elements of the facility, such as, for a building, the retirements of

15         plumbing, heating, doors, windows, roofs, etc., that occurs during the life of the

16         facility.  The probable retirement date provides the rate of final retirement for each

17         year of installation for the facility by truncating the interim survivor curve for each

18         installation year at its attained age at the date of probable retirement.  The use of

19         interim survivor curves truncated at the date of probable retirement provides a

20         consistent method for estimating the lives of the several years of installation for a

21         particular facility inasmuch as a single concurrent retirement for all years of

22         installation will occur when it is retired.

1   Q.   **Has Gannett Fleming used this approach in other proceedings?**

2   A.   Yes, we have used the life span technique in performing depreciation studies

3        presented to and accepted by many public utility commissions across the United

4        States and Canada.  This technique is currently being utilized by PacifiCorp in the

5        same manner recommended in this case.

6   Q.   **What are the bases for the probable retirement years that you have estimated for**

7        **each facility?**

8   A.   The bases for the probable retirement years are life spans for each facility that are

9        based on judgment, the life assessment study and incorporate consideration of the

10       age, use, size, nature of construction, management outlook and typical life spans

11       experienced and used by other electric utilities for similar facilities.  Most of the life

12       spans result in probable retirement years that are many years in the future.  As a

13       result, the retirements of these facilities are not yet subject to specific management

14       plans.  Such plans would be premature.  At the appropriate time, detailed studies of

15       the economics of rehabilitation and continued use or retirement of the structure will

16       be performed and the results incorporated in the estimation of the facility's life span.

17  Q.   **Have you physically observed PacifiCorp's plant and equipment during your**

18       **past depreciation studies?**

19  A.   Yes.  I made field reviews of PacifiCorp's property as part of a past study in May and

20       June 2012 to observe representative portions of plant.  Field reviews are conducted to

21       become familiar with company operations and obtain an understanding of the

22       function of the plant and information with respect to the reasons for past retirements

23       and the expected future causes of retirements.  This knowledge as well as information

1       from other discussions with management was incorporated in the interpretation and

2       extrapolation of the statistical analyses.

3   **Q.   Please describe how you estimated net salvage percentages.**

4   A.   I estimated the net salvage percentages by incorporating the historical data for the

5       period 1992 through 2017 and considered estimates for other electric companies.  The

6       net salvage percentages are based on a combination of statistical analyses and

7       informed judgment.  The statistical analyses consider the cost of removal and gross

8       salvage ratios to the associated retirements during the 26-year period.  Trends of these

9       data are also measured based on three-year moving averages and the most recent five-

10      year indications.

11  **Q.   Were the net salvage percentages for generation facilities based on the same**

12      **analyses?**

13  A.   Yes, for the interim analyses.  The net salvage percentages for generation facilities

14      were based on two components, the interim net salvage percentage and the final net

15      salvage percentage.  The interim net salvage percentage is determined based on the

16      historical indications from the period, 1992–2017, of the cost of removal and gross

17      salvage amounts as a percentage of the associated plant retired.  The final net salvage

18      or dismantlement component was determined based on the assets anticipated to be

19      retired at the concurrent date of final retirement.

20  **Q.   Have you included a dismantlement component into the overall recovery of**

21      **generation facilities?**

22  A.   Yes.  A dismantlement component has been included to the net salvage percentage for

23      steam and other production facilities.  There is a separate decommissioning reserve

1     for small hydro facilities which are soon to be retired, as the dismantlement

2     component for hydro facilities in the study is zero.

3   **Q.    Can you explain how the dismantlement component is included in the**

4         **Depreciation Study?**

5   A.    Yes.  The dismantlement component is part of the overall net salvage for each

6         location within the production assets.  Based on studies for other utilities and the cost

7         estimates of PacifiCorp, it was determined that the dismantlement or

8         decommissioning costs for steam production and other production facilities is best

9         calculated on a $/KW factor based on surviving plant at final retirement.  These

10        amounts at a location basis are added to the interim net salvage percentage of the

11        assets anticipated to be retired on an interim basis to produce the weighted net salvage

12        percentage for each location.  The detailed calculation for each location is set forth on

13        pages VIII-2 through VIII-12 of Exhibit No. JJS-3.

14  **Q.    Please describe the second phase of the process that you used in the Depreciation**

15        **Study in which you calculated composite remaining lives and annual**

16        **depreciation accrual rates.**

17  A.    After I estimated the service life and net salvage characteristics for each depreciable

18        property group, I calculated the annual depreciation accrual rates for each group,

19        using the straight line remaining life method, and using remaining lives weighted

20        consistent with the average service life procedure.

21  **Q.    Please describe the straight line remaining life method of depreciation.**

22  A.    The straight line remaining life method of depreciation allocates the original cost of

23        the property, less accumulated depreciation, less future net salvage, in equal amounts

1    to each year of remaining service life.

2  **Q.  Please use an example to illustrate how the annual depreciation accrual rate for**

3  **a particular group of property is presented in your Depreciation Study.**

4  A.  I will use Account 353, Station Equipment, as an example because it is one of the

5      largest depreciable mass accounts and represents approximately nine percent of

6      depreciable plant.

7          The retirement rate method was used to analyze the survivor characteristics of

8      this property group.  Aged plant accounting data was compiled from 1924 through

9      2017 and analyzed in periods that best represent the overall service life of this

10     property.  The life tables for the 1924-2017 and 1988-2017 experience bands are

11     presented on pages VII-95 through VII-97 of the report.  The life table displays the

12     retirement and surviving ratios of the aged plant data exposed to retirement by age

13     interval.  For example, page VII-95 shows $2,133,875 retired at age 0.5 with

14     $2,347,756,170 exposed to retirement.  Consequently, the retirement ratio is 0.0009

15     and the surviving ratio is 0.9991.  These life tables, or original survivor curves, are

16     plotted along with the estimated smooth survivor curve, the 58-S0 on page VII-94.

17         The net salvage percent is presented on pages VIII-49 and VIII-50.  The

18     percentage is based on the result of annual gross salvage minus the cost to remove

19     plant assets as compared to the original cost of plant retired during the period 1992

20     through 2017.  The 26-year period experienced $20,503,595 ($8,621,261-

21     $29,124,856) in net salvage for $179,971,886 plant retired.  The result is negative net

22     salvage of eleven percent ($20,503,595/$179,971,886).  Although recent trends have

23     shown indications more negative, it was determined that based on industry ranges and

1       company expectations, that negative ten percent was the most appropriate estimate.

2               My calculation of the annual depreciation related to the original cost at

3       December 31, 2017, of electric plant is presented on pages IX-299 through IX-301.

4       The calculation is based on the 58-S0 survivor curve, ten percent negative net

5       salvage, the attained age, and the allocated book reserve.  The tabulation sets forth the

6       installation year, the original cost, calculated accrued depreciation, allocated book

7       reserve, future accruals, remaining life and annual accrual.  These totals are brought

8       forward to the table on page VI-18.

9                                       **CONCLUSION**

10   **Q.   Was the Depreciation Study filed by Pacific Power in this proceeding prepared**

11        **by you or under your direction and control?**

12   A.   Yes.

13   **Q.   Does your Depreciation Study recommend new depreciation rates based on**

14        **December 31, 2020 plant and reserve balances?**

15   A.   Yes.  The depreciation accrual rates set forth in the Appendix to Exhibit No. JJS-3

16        represent the rates most applicable in this proceeding.  These rates utilize all the same

17        methods and procedures as described in the Depreciation Study but apply the

18        parameters to the projected December 31, 2020 plant and reserve balances.  The

19        projected plant balance as of December 31, 2020, and the bring forward of the book

20        reserve from December 31, 2017, to December 31, 2020, properly established the

21        most reasonable rate base when the rates will go into effect.  Thus, the rates in the

22        Appendix are the recommended depreciation accrual rates.

1    **Q.**    **Were there alternative depreciation rates for coal-fired plant determined for**

2          **Washington as compared with the company's other jurisdictions?**

3    A.    Yes.  The company has established depreciation rates based on probable retirement

4          date for many steam generating units that are earlier than previously utilized.  These

5          results are set forth in Exhibit No. JJS-4 "California and Washington Steam

6          Production Plant."

7    **Q.**    **Does this conclude your direct testimony?**

8    A.    Yes.