EXHIBIT NO. ___(MM-12C)
DOCKETS UE-17____/UG-17____
2017 PSE GENERAL RATE CASE
WITNESS: MICHAEL MULLALLY

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-17____** **Docket UE-17____**

ELEVENTH EXHIBIT (CONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF

MICHAEL MULLALLY

ON BEHALF OF PUGET SOUND ENERGY

REDACTED VERSION

JANUARY 13, 2017

New Douglas PUD (Wells Project) PPA

EMC Informational

April 16th, 2015

Brennan Mueller
Energy Contract Administrator

Introduction

- PSE's existing PPA with Douglas PUD expires August 31, 2018
- For the last several years PSE and three additional Wells Project Purchasers (PGE, PacifiCorp, and Avista) have been negotiating a new agreement with Douglas to take effect beginning September 1, 2018
- As of mid-March, the parties have reached agreement regarding key commercial terms for a successor PPA
- This presentation provides an overview of the proposed terms from which definitive agreements will be drafted

Background– PSE and the Wells Project

- PSE has purchased a portion of Wells Hydroelectric Project output since it first began generating power. Our original PPA was signed in 1963.
- Under the original PPA, PSE pays a proportional share of all Wells Project costs– O&M, debt payments, taxes, etc.– and receives an equivalent proportion of all Wells Project output
- Current share of cost and output is 29.9%
  - 251 MW nominal capacity
  - Over 1 million MWh of energy per year (on average)
  - Use of reservoir to store up to 2,008 MWh of energy
  - Operating reserves
  - Dynamic scheduling via AGC
    - Regulation, load following, integration of other resources
- Average cost approximately $16 per MWh

PSE PUGET SOUND ENERGY

Draft new terms vs existing PPA

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	1963 PPA	Draft term sheet
Term	>50 years, no early termination provision	10 years (2018 – 2028), early termination if Wells Project unable to deliver output
Product	Proportional share of Wells Output – includes all project capabilities and attributes	Same as under 1963 PPA
Price	Proportional share of all actual Wells Project costs (O&M, debt payments, taxes, etc.) – Approximately $16.50/MWh average.	Fixed Base Charge plus Energy Charge for each MWh delivered – Total $[redacted]/MWh levelized over term
Quantity	Fixed 29.9% (251 MW)	Calculated annually, expected to decrease over time but subject to guaranteed minimums. Varies by season. About [redacted]% ([redacted]MW) to start
"Surplus Energy" purchases	Douglas' Wells output not needed to meet load bought @ 85% of market rate – non-firm schedule	Douglas' Wells output not needed to meet load bought @ flat price equal to [redacted]% of Douglas retail rate (=$[redacted]/MWh) – firm schedule

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Draft term sheet – Price details

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- Two components to total price– a Base charge and an Energy charge
  - The **Base charge** is to be paid in level monthly payments and is equal to PSE's average allocation for the year (%) multiplied by fixed dollar amounts
    - Makes up approximately [redacted]% of expected total payments
    - Fixed value eliminates risk of rapidly escalating costs and major maintenance/repair/replacement events– much less exposure than under current PPA and other Mid C PPAs
  - The **Energy charge** is paid monthly based on actual energy received the prior month
    - Different per-MWh energy charge for each of 4 seasonal periods. Makes up approximately [redacted]% of expected total payments.
    - Reduces exposure to year-to-year hydro variability. Under current PPA and other Mid C PPAs there is no direct correlation between amounts paid and energy received.

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Draft term sheet – Quantity details

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- PSE share of output determined annually based on Douglas PUD load requirements but subject to minimum guaranteed amounts
- Different allocation for each of three intra-year periods– Winter, Spring/Summer, and Shoulder months

[redacted]

- Minimum allocation includes about [redacted] MWh per year at the start of the term and declines to about [redacted] MWh per year at the end
- Winter months include January, February, and December. PSE's capacity share will be higher during the other periods

**Douglas has indicated that they now expect long-term load growth to exceed what was predicted in their latest forecast. Accordingly, the "forecasted" volumes shown throughout this presentation should be considered the high end of likely outcomes.*

PSE PUGET SOUND ENERGY

Draft term sheet – “Surplus Energy” details

- *In addition to proportional share of Wells output*, PSE to purchase 50.5% of all Wells energy received by Douglas but surplus to Douglas’ load requirements on a day-ahead firm basis (PGE, PAC, AVA buy the other 49.5%)
- The price per MWh for all surplus is equal to Douglas’ general service retail energy rate multiplied by [redacted] (current rate [redacted] cents/kWh = surplus @ $[redacted]/MWh)
  - Expected downward pressure on Douglas retail rate during term of contract due to wholesale sales revenue greater than production cost
  - Even assuming 2% annual retail rate growth the levelized **cost** of surplus energy is [redacted] **<u>per MWh</u>**

[redacted]

- Levelized market **value** of surplus energy is [redacted] **<u>per MWh</u>**

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Price / value comparison

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[redacted]

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[redacted]

- Nominal cost of $[redacted](minimum) to $[redacted](forecasted) over the term
  (excluding cost of transmission and imputed debt)
- Nominal value of $[redacted](minimum) to $[redacted](forecasted)
- Nominal net value of **$[redacted] to $[redacted]**

**Includes energy from proportional share and surplus purchases*

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Portfolio Analysis

- Portfolio Analysis comparing PSE's projected 20 year portfolio cost with and without a new Wells PPA showed a portfolio benefit when the portfolio included a new Wells PPA.

  - A new Wells PPA with the *guaranteed minimum quantity* showed a <u>net portfolio benefit of **$31.7M**</u> ($12.3M due to delayed need for new peaking capacity)

  - A new Wells PPA with the *forecasted quantity* showed a <u>net portfolio benefit of **$77.6M**</u> ($39.6M due to delayed need for new peaking capacity)

New Wells Project (Douglas PUD) Power Purchase Agreement

September 15, 2016

EMC Decisional

Michael Mullally
Manager Business Initiatives

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WAC 480-07-160

Recommendation

Authorize PSE to enter new 10 year Power Purchase Agreement with Douglas County PUD effective upon expiration of current agreement in September 2018

- Authorized purchase volumes include the possibility of taking on [redacted]

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PSE PUGET SOUND ENERGY

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Background

- PSE and three other Purchasers (Portland General, PacifiCorp, and Avista) have purchased a portion of Wells Project output since it first began generating power. Our original PPA was signed in 1963.
- Over the last several years these four parties have worked with Douglas PUD to develop a successor PPA to the original 1963 agreement.
- The resulting multi-party agreement has been offered to the original four Purchasers collectively with each receiving a share of all benefits and obligations in proportion to participation in the original agreement as follows:
  - PSE: 50.5% , PGE: 32.8%, PAC: 11.1%, AVA: 5.6%
- In the event of default by one or more Purchasers, remaining Purchasers agree to a pro-rata increase to participation in this agreement. A separate, related agreement among Purchasers will require defaulting party to pay damages.
- Douglas County PUD is urging Purchasers to sign the offered agreement as soon as possible. Further delay could lead to a renegotiation of significant terms.
- [redacted]

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New PPA terms relative to current agreement

	Current agreement (1963 PPA)	New PPA
Term	>50 years, no early termination provision	10 years (2018 – 2028), early termination if Wells Project unable to deliver output
Product	Proportional share of Wells Output – includes all project capabilities and attributes	Same as under 1963 PPA
Price	Proportional share of all actual Wells Project costs (O&M, debt payments, taxes, etc.) – Approximately $16.50/MWh average.	Fixed Base Charge plus Energy Charge for each MWh delivered – Total ~$[redacted]MWh levelized over term
Quantity	Fixed 29.9% (251 MW)	Calculated annually, expected to decrease over time but subject to guaranteed minimums. Varies by season. About [redacted]% ([redacted] MW) to start
“Surplus Energy” purchases	Douglas’ Wells output not needed to meet load bought @ 85% of market rate – non-firm schedule	Douglas’ Wells output not needed for load bought @ fixed HLH/LLH prices with annual escalation (~$[redacted]/MWh avg.)

New PPA capacity

- PSE's share of Wells capacity (and energy) will decline over time but is subject to guaranteed minimum amounts.
- There is potential for PSE to receive up to [redacted]% more Wells output if [redacted]

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[redacted]

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Projected PSE capacity need

- PSE will have need for capacity with the expiration of the current Wells contract

Surplus/(Need)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Revised 2015 IRP - F2016	255	58	43	114	75	(220)	(226)	(245)	(342)	(703)	(742)
Less Wells		(212)	(212)	(212)	(212)	(212)	(212)	(212)	(212)	(212)	(212)
Projected Need	255	(154)	(169)	(98)	(137)	(432)	(438)	(457)	(554)	(915)	(954)

- PSE will have to go to market to fill in the need in the short term until long term solution can be addressed

- New Wells Project PPA meets a portion of the projected capacity need, reducing reliance on market purchases during the term of the agreement

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Base product cost structure

Two components to total price – a Base charge and an Energy charge

- Base charge is approximately [redacted]% of expected total payments and is proportional to actual share of Wells capacity
- Improvement over current Mid C PPAs as there is no exposure to rapid cost escalation or major maintenance/repair/replacement events
- Energy charge paid only on actual MWh received.
- Cost structure remains the same if [redacted] is acquired with proportional (up to [redacted]%) increase to total cost.

[redacted]

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"Surplus Energy" cost and volume

[redacted]

- Surplus energy will be scheduled on a day-ahead basis by PSE within parameters provided by Douglas PUD.
- Price for Surplus scheduled during light load hours is about [redacted]% lower than for Surplus scheduled during heavy load hours
- Price shown above is average based on expected 60% HLH
- If [redacted] (up to an additional [redacted]%)

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Portfolio Analysis

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- The Wells extension contract provides benefit ranging from $15M (minimum) to $38M (likely)
- With the potential addition of [redacted] portfolio benefit increases slightly to a range of between $18M and $43M.
- This benefit is the result of reduced/delayed need for PSE to build or acquire other new resources to meet projected capacity need

[redacted]

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Summary of benefits

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- Positive portfolio benefit of $15 to $38 million, potential $18M to $43M if [redacted]
- Expiration of current Wells contract (212 MW) will create a capacity deficit
- Decreasing PPA capacity over time will provide a planning period to fill in the gap
- Emission free resource which could become more important with possible environmental regulations
- Provides operational flexibility and ancillary products which are not captured in the quantified benefits (reservoir storage, spinning reserves, load following, regulation)

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Recommendation

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Authorize PSE to enter new 10 year Power Purchase Agreement with Douglas County PUD effective upon expiration of current agreement in September 2018

- Authorized purchase volumes include the possibility of taking on [redacted]

PUGET SOUND ENERGY

APPENDIX

Appendix: Background – The Wells Project

- 10-unit, 840 MW hydroelectric facility on the Columbia River approximately 8 miles downstream of Chief Joseph dam
- Owned and operated by Douglas County PUD, began commercial operation in September 1967. New 40-year FERC license issued May 2012.
- Average annual production of approximately 4 million MWh at a cost of roughly $15/MWh

Appendix: Background – PSE and the Wells Project

- PSE has purchased a portion of Wells Project output since it first began generating power. Our original PPA was signed in 1963.
- Under the original PPA, PSE pays a proportional share of all Wells Project costs – O&M, debt service, taxes, etc.– and receives an equivalent proportion of all Wells Project output
- Current share of cost and output is 29.9%
  - 251 MW nominal capacity
  - Use of reservoir to store over 3,000 MWh of energy
  - Operating reserves
  - Energy scheduled dynamically via AGC equipment
    - Regulation, load following, integration of other resources
- Annual cost of approximately $17 million

Appendix: New PPA Term and product detail

- <u>TERM</u>
  - 10 years, September 2018 through August 2028
  - [redacted]
- <u>PRODUCT</u>
  - Proportional share of Wells Project Output (PSE's share is 50.5% of the total for the purchasing group)
    - [redacted]
  - Same as under 1963 PPA, includes access to all production capabilities and attributes
    - Formal definition of "Wells Project Output" is less detailed than desired, but specific attributes are called out in scheduling procedures and will be formalized in an exhibit

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Appendix: New PPA price detail

- <u>PRICE</u>
  - Two components to total price – a <u>Base charge</u> and an <u>Energy charge</u>
    - The **Base charge** is to be paid in level monthly payments and is equal PSE's average allocation for the year (%) multiplied by fixed dollar amounts (approximately **$12M/$25M (minimum/Likely)** per year, but declines slightly over time)
      - Fixed value eliminates risk of rapidly escalating costs and major maintenance/repair/replacement events – much less exposure than under current PPA and other Mid C PPAs
    - The **Energy charge** is paid monthly based on actual energy received the prior month

	Winter	Shoulder	Spring	Summer
$/MWH	$17	$10	$7	$17

*Escalated 3% annually

- This variable component of the total price reduces exposure to year-to-year hydro variations. Under current PPA and other Mid C PPAs there is no correlation between amounts paid and energy received.

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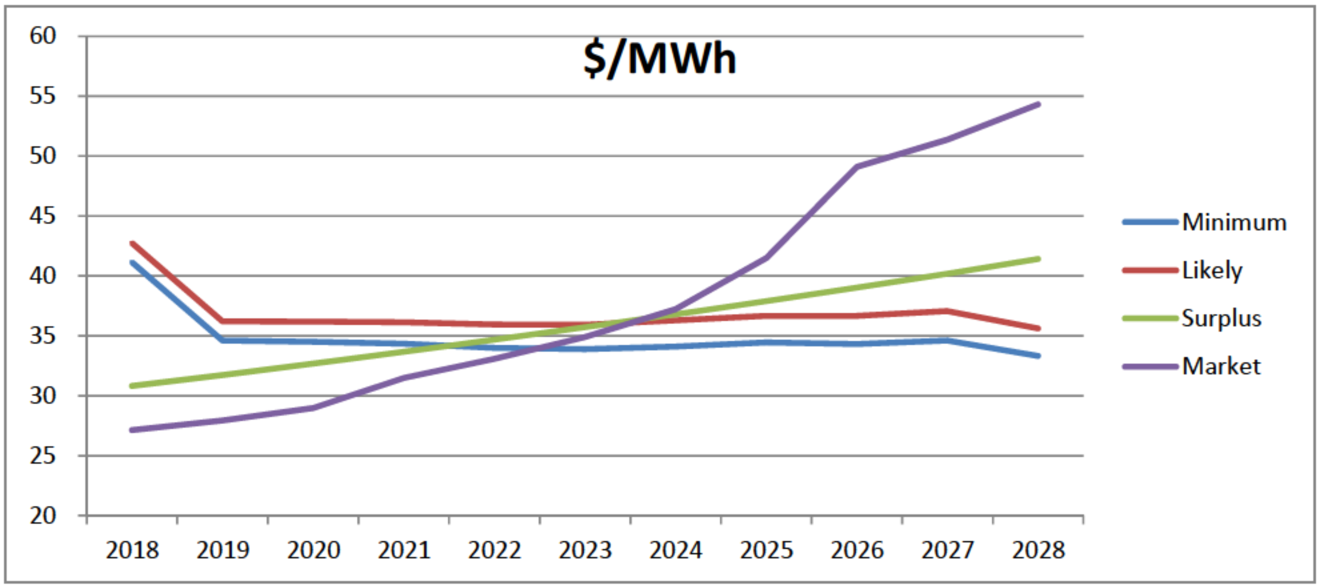
Appendix: Energy cost comparison PPA vs. Market



Market prices reflect Aurora simulation of forward curve as of November, 2015

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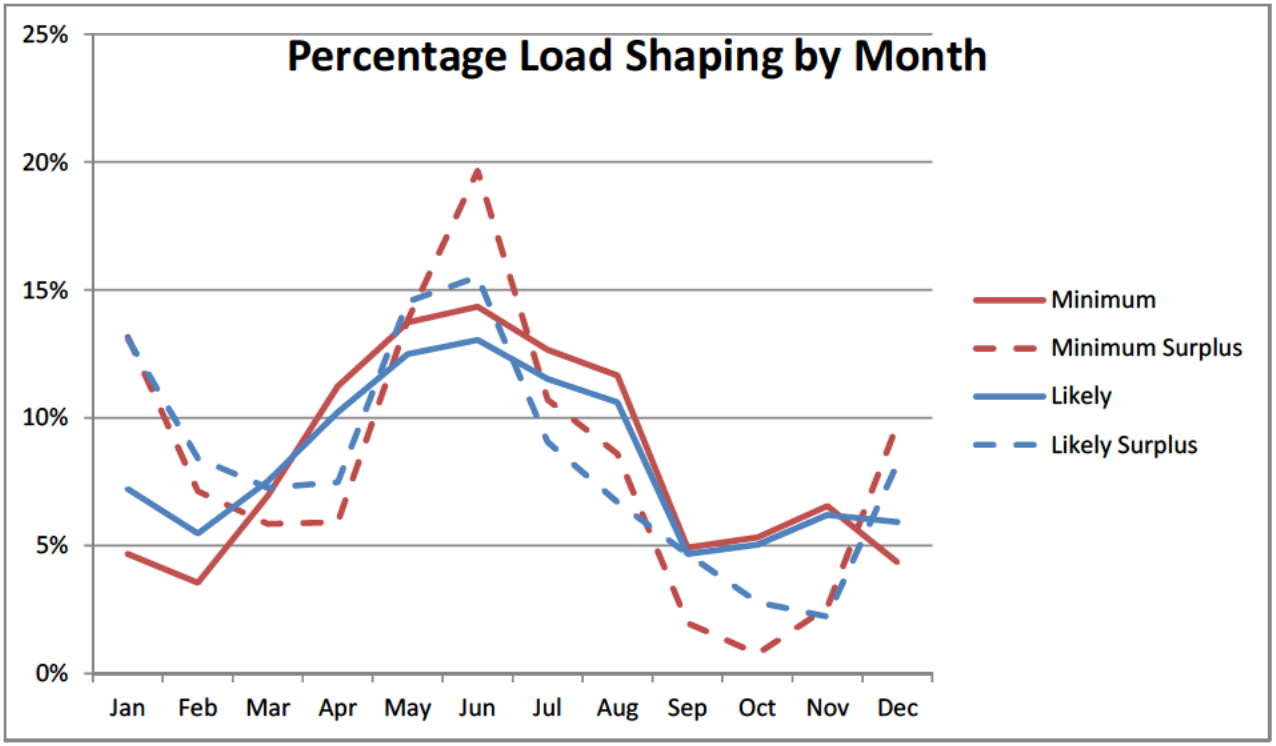
Appendix: Load shape

- <u>Monthly Shaping</u>
  - Different allocation for each of three intra-year periods – Winter, Spring/Summer, and Shoulder months



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New Wells Project (Douglas PUD) Power Purchase Agreement

Update to analysis and request for additional authorization

October 20, 2016

PUGET SOUND ENERGY

EMC Decisional

Brennan Mueller
Sr. Energy Contract Administrator

Recommendation

Confidential per WAC 480-07-160

Authorize PSE to make offer for additional share of Wells Project output [redacted] under terms of Douglas PPA

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PSE PUGET SOUND ENERGY

Background

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- In September the EMC authorized PSE to enter a new long-term PPA with Douglas PUD to take effect upon expiration of our current PPA in 2018
- We have since learned that [redacted] of Wells Project output
- Douglas PUD has proposed [redacted] the terms of the draft PPA
- [redacted]

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- This presentation also includes an update to analysis of the base PPA terms to reflect a later assumed retirement date for other PSE resources

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New PPA capacity

- PSE's share of Wells capacity (and energy) will decline over time but is subject to guaranteed minimum amounts
- The total [redacted] includes an additional [redacted] MW to [redacted] MW of winter capacity. Assuming [redacted], there will be [redacted] MW to [redacted] MW available to PSE

[redacted]

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Projected PSE capacity need

- PSE will have need for capacity with the expiration of the current Wells contract (251 MW). The 2015 IRP assumed extension with a slight reduction to 212 MW.

[redacted]

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- Addition of [redacted] would provide approximately [redacted] additional MW in 2018 (bringing the contract total to [redacted] MW)
- New PPA [redacted] meets more of the capacity need over the term of the agreement, but causes a small capacity surplus during the early years of the term.
- At the contractual minimum allocations, PSE would have a projected need in all years even with the addition of [redacted]

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Cost structure

Purchase of [redacted] would be according to the same terms as the base PSE

- For the slice allocation (about $[redacted]/MWh total) there are two components to the price – a fixed (Base) charge and an Energy charge
  - Base charge is approximately [redacted]% of expected total payments and is proportional to actual share of Wells capacity multiplied by fixed values
  - Energy charge paid only on actual MWh received (between [redacted] and $[redacted] per MWh, varies by season)
- Additional Douglas "Surplus" also included with [redacted] (scheduled energy @ fixed price, $[redacted]/MWh in 2018 with [redacted]% annual escalation)

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PSE PUGET SOUND ENERGY

Portfolio Analysis

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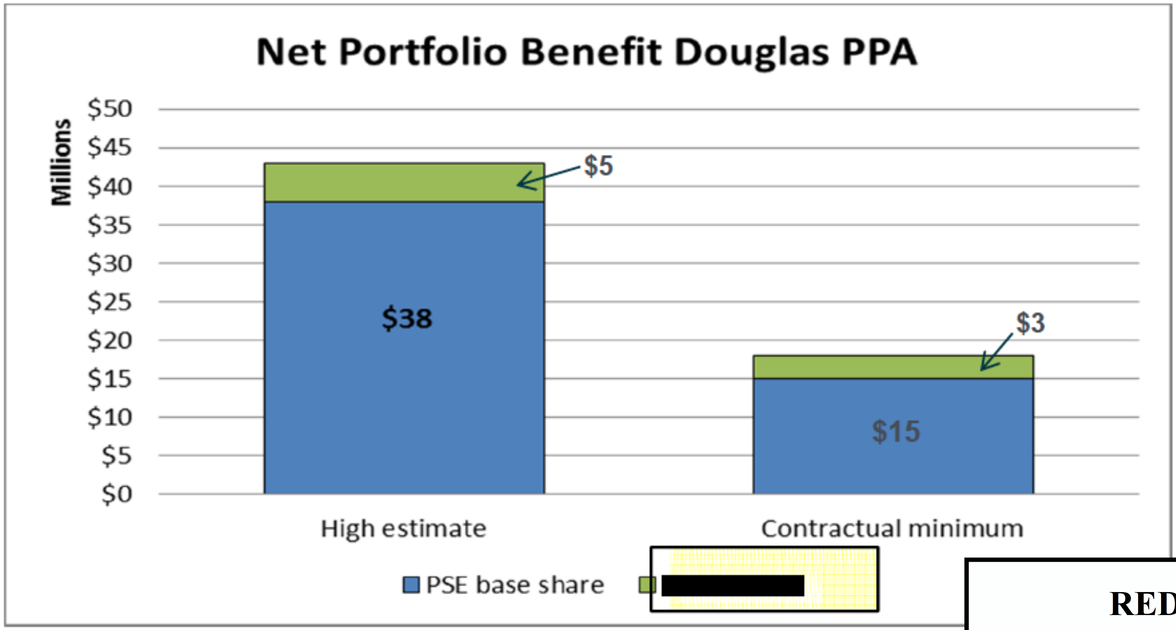
- The Wells extension contract provides benefit ranging from $15M (minimum) to $38M (high estimate)
  - *This is about a 20% reduction to the portfolio benefit presented at the 9/15/2016 meeting*
- **Addition of the [redacted] increases portfolio benefit by $3M to $5M to a range of between $18M and $43M.**
- This benefit is the result of reduced/delayed need for PSE to build or acquire other new resources to meet projected capacity need



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Summary of benefits

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- Positive portfolio benefit of $18M to $43M with [redacted] included (increase of $3M to $5M)
- Expiration of current Wells contract (251 MW) will create a capacity deficit
- Decreasing PPA capacity over time will provide a planning period to fill in the gap
- Emission free resource which should become more important with environmental regulations
- Provides operational flexibility and ancillary products which are not captured in the quantified benefits (reservoir storage, spinning reserves, load following, regulation)

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Recommendation

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Authorize PSE to make offer for additional share of Wells Project output ([redacted]) under terms of Douglas PPA

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