MEMORANDUM

TO: Power Committee Members
FROM: Tina Jayaweera, Mike Starrett, John Ollis
SUBJECT: Updated Transmission & Distribution Deferral Value for the 2021 Power Plan

BACKGROUND:

Presenter: Tina Jayaweera

Summary: Energy efficiency, demand response, and certain generation resources could defer the build out of transmission and distribution (T&D) system infrastructure (e.g. transformers) by keeping loads below threshold levels. To improve the estimate of the value used, Council staff with support from PNUCC staff, convened a group of T&D planners from the regional utilities in August 2017. The goal of this workshop was to understand the methodologies used to estimate this deferral value and develop one for the Council to use for regional planning. After more discussion with various participants, staff proposed a regional methodology for the group. With their consent, Council staff then sent out a data request to collect the data to calculate the deferred T&D values. Five utilities provided data, which were then weighted by load share to estimate a regional value. These values will be used in the 2021 Power Plan (though may change slightly if additional utilities provide information).

Relevance: This work is to address Seventh Plan Action Item COUN-12 “Improve estimates of deferred transmission and distribution amounts”.

Workplan: Prepare for 2021 Power Plan

Background: For the Seventh Plan, the values for deferred transmission and distribution were $26/kW-year and $31/kW-year (levelized 2012$), respectively.
Updating Transmission & Distribution Deferral Values

Power Committee
March 12, 2019

Purpose of T&D Deferral Values

- Resources which reduce T&D load coincident with asset, branch, or system peak can help defer growth-related upgrades
  - Council’s 7th Plan used this for EE, DR, west-side gas generation valuation on system peak only
  - T: $31/kW-yr, D: $26/kW-yr
  - Data used were incomplete
- These values are currently included in EE levelized cost calculations for RTF
Example of T&D Deferral with EE

Peak Equipment Loading (MW)

MW threshold for transformer upgrade

Peak capacity reduction from EE shifts demand curve down for a given year

Today

1 2 3

Time (years)

Load growth without EE

Load growth with EE

After some amount of EE: T&D investment can be deferred by one year, creating savings through the time value of money.

Process to Update

6th Plan & 7th Plan calculated using $ invested per MW added

August 2017: Held workshop where regional utilities shared their methodologies

Winter 2017: 1:1’s deep dives with individual utilities (thank you to them!)

June 2018: Held webinar to share our going-forward methodology for the regional number

Fall 2018: Sent utilities data collection worksheet

Thanks to PNUCC for help throughout this process!
Methodology Review

- Staff reviewed many methodologies, none were perfect, all have pros and cons
- Methodology staff is moving forward with
  - is adapted from the approach PacifiCorp uses and similar to 6th & 7th Plans
- Meant to represent a planning estimate, not necessarily an implementation cost

Methodology for 2021 Plan

1. Look at historical and forecasted spend for growth
2. Divide by net capacity gained
3. Scale by utilization factor

This can be thought of as the typical value of a kW of upgraded T&D

Similar to prior Plans

For D only, “peanut butter effect”
Data Received

- Received data from Avista, PacifiCorp, BPA, Snohomish PUD, Idaho Power (thanks!)
- Weighted average values are (2016$ levelized)
  - Transmission: $3.08/kW-yr
  - Distribution: $6.85/kW-yr
- If more utilities provide data, will add them in

ADDITIONAL SLIDE
Example Calculation

- Invested $5M to gain 15 MW of capacity (10 MW -> 25 MW transformer upgrade)
  - $5M/15MW = $330/kW for new incremental T&D capacity
- T&D utilization factor of 60%
  - $330/kW * 60% = $200/kW
- Annualize based on discount rate and average asset life, or 6% per year
  - $200/kW * 6%/yr = $12/kW-yr