Northwest **Power** and **Conservation** Council

March 31, 2015

MEMORANDUM

TO: **Council members**

FROM: **Ben Kujala**

SUBJECT: **Discussion of Scenario 1B and Related Scenario Analysis Updates**

BACKGROUND:

Presenter: Tom Eckman and Ben Kujala

Summary At the March Council Meeting, staff presented a list of proposed scenarios to the Power Committee Members and the full Council. The first scenarios to be run will establish much of the structure of the model for all subsequent scenarios. This presentation will examine four different resource strategies using the draft inputs for scenario 1B to discuss the type of results being produced by the RPM and how what insights might be gained from analysis of those results.

The resource strategies selected for presentation will examine four different conservation purchase strategies in combination with difference generation resource options. These resource strategies are:

- No Conservation, generation or demand response resources available
- Low Conservation without generation or demand response resources available
- Medium Conservation with only low cost demand response and natural gas-fired peaking generators available
- Medium Conservation with all generation resource options available
- High Conservation with all generation resource options available

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Using these resource strategies staff will discuss the outputs from RPM and look at methods for comparing them. Staff will be seeking Council guidance on how best to communicate the results of future scenario analysis to be presented at Power Committee webinars and meetings.

Relevance One of the primary tools used to inform the development of the Council's Seventh Power Plan are the results of its scenario analysis. Selection of the scenarios to be tested during the development process is a critical step in this process, since it establishes scope of the constraints and "stresses" to which potential resource strategies to which will be subjected.

Workplan: 1. B. Develop Seventh Power Plan and maintain analytical capability

- Define resource portfolio

Background: The RPM was recently redeveloped by Navigant for the Council. The draft inputs for the starting scenarios have been finalized. This presentation is to examine outputs from RPM with the initial data and discuss methods for comparison of resource strategies.

More Info: The RPM or Regional Portfolio Model was recently redeveloped by Navigant for the Council. The RPM estimates the regional costs and risks associated with pursuing resource development strategies and it uses optimization to look for strategies that minimize the estimated cost and risk. The draft inputs for the starting scenarios have been finalized. This presentation is to examine outputs from RPM with the initial data and discuss methods for comparison of resource strategies.

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MEMORANDUM

TO: Power Committee

FROM: Tom Eckman, Charles Grist, Kevin Smit, Tina Jayaweera, Gillian Charles, Steve Simmons and John Ollis

SUBJECT: Updated Resource Characteristics Assumptions for use in the Regional Portfolio Model

BACKGROUND:

Presenter: Tom Eckman

Summary: Staff will present a brief summary of changes in input assumptions for conservation, generation resource and demand response resources to the Regional Portfolio Model (RPM). Staff views these as minor adjustments to the data presented at the March Council meeting in Eugene. The most significant of these changes are:

- Extending the earliest date new combined cycle combustion turbines could be brought on line by one to two years, depending on technology.
- Reducing the near-term (2020) availability of conservation by 150 aMW
- Reducing the lowest-cost block of demand response resources by 205 MW
- Finalizing the draft Renewable Portfolio Standards assumptions

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Relevance: Resource characteristics such cost, construction lead times, amount available and load shape are major drivers in the selection of resource strategies.

Workplan: 1. B. Develop Seventh Power Plan and maintain analytical capability.

- Update conservation, demand response supply curves
- Update generation resource database

Background: Staff presented the “near final” input assumptions for conservation, generation and demand response resources to the RPM at the March Council meeting in Eugene. Since that meeting staff review and response to stakeholder comments resulted in revisions and corrections to those inputs. While staff views these as minor revisions we believe the Council should be aware of the changes.

More Info: See Attached Summary

Summary of Changes to Resource Assessment Data for Use in RPM

Generating Resource Characteristics

Adjusted earliest availability dates for three generating resources

- Combined Cycle Combustion Turbines were moved out slightly to more accurately reflect planning and construction time frames
  - CCCT Adv 1 (Wet Cool) was moved out 2 years from 2018 to 2020
  - CCCT Adv 2 (Dry Cool) was moved out 1 year from 2020 to 2021
- Utility Scale Solar PV in Idaho was moved out from 2016 to 2018.
- A portion of the potential new solar PV development was reclassified as an existing resource to reflect current activity

Finalized Draft Renewable Portfolio Standards (RPS) Assumptions

- Committed resources as of 2016 allocated to OR/WA/MT based on known renewable energy credit (REC) agreements
  - Assumed 50% of Idaho's unassigned wind and solar PV RECs are available to Washington, Oregon and Montana
- REC banking allowed based on each state's banking provisions – banked RECs used for RPS compliance first, then new RECs generated
- Assumed 100% achievement with state targets (percentage of obligated load required to be renewable) - as opposed to 95% in the Sixth Plan, based on the recent passage of RPS at the time and uncertainty over compliance
  - Assumed 13.9%[1] "target" for WA in 2020 for modeling purposes, rather than the statutory 15%, in order to capture alternative compliance methods that are already being utilized in WA.
    - 4% cost cap – the point at which utilities spend at least 4% of their retail revenue requirement on the incremental cost (the difference between the cost of the renewable resource and a comparable non-renewable resource) of renewable energy/RECs
    - No load growth – when a utility experiences no load growth, they are not required to spend above 1% of retail revenue requirement on renewable energy/RECs

Conservation Resource Characteristics

- Five measures were added to the commercial sector potential
  - Ductless Heat Pump in small buildings
  - Demand Control Kitchen Vent Hoods
  - Web Enabled Programmable Thermostats for small commercial buildings
  - HVAC Economizer Control
  - Exit Signs (Light Emitting Capacitor)
- Revised maximum program ramp rates on several measures
- Revised mix of industrial sales by sub-industry
- Revised measure-level inputs based on external comments and internal review
- Incorporated new data for residential sales of LED lighting

Summary of Net Impacts on Cumulative Savings Potential by 2035

[1] Based on analysis by the Washington Department of Commerce, Energy Office

- Residential: Down -350 aMW
- Commercial: Up 300 aMW
- Industrial: Up 36 aMW
- Ag: Down -7 aMW
- Utility: Down -18 aMW
- **Total: Down -40 aMW (less than 1%)**

Summary of Net Impacts on Cumulative Savings Potential by 2020

- Total: **Down (150) aMW (about 10%)**
- Due to:
    - Changes to ramp rates
    - Error correction
    - New residential lamp sales data showing higher penetration of LED

Impact on Cost Profile

- Minor shifts in cost bins – mostly compensating changes

Demand Response Resource Characteristics

- Reduced the number of refrigerated warehouses in the NW region to reflect better data on the number of facilities in the region and to maintain internal consistency with conservation assessment and load forecast.
- This reduced the potential DR resource available in the lowest cost block by 205 MW. This also slightly increased the cost, reduced the maximum acquisition rate and altered the seasonal shape of this block.