Demand Response Modeling Methodology in the Regional Portfolio Model

PNDRP Meeting

February 25, 2015
Council’s Analytical Process Flow

- Load Forecast Model
- Baseline Load Forecast (without efficiency)
- Regional
- “Supply Side” Resource Cost & Availability
- Generating Resource Potential Assessment
- Units & Baseline Unit Use
- Energy Efficiency Resource Potential Assessment
- How do we integrate Demand Response??

Resource Portfolio Strategy:
- Resource option & build schedule, including annual amount of energy efficiency

Northwest Power and Conservation Council

SEVENTH NORTHWEST POWER PLAN
Some Demand Side Management Categorizations

**Supply Sources**
- Residential
- Commercial
- Agricultural/Industrial

**Dispatch Method**
- Basic
- Automatic (*Smart*)

**Firm or Non-Firm**
Distinguishing New DR Resources

Main Drivers in RPM for New DR Acquisition

- Summer and Winter Peaking Capability
- Cost
Developing Demand Response Inputs in RPM

- Leverage Navigant Demand Response Potential study and stakeholder responses to the study for cost and potential.

- Generate DR Supply Curves/Resources that address *peak demand* uses of DR for selection in RPM.
  - *Demand response used for other purposes not easy to model without further RPM enhancement.*
Acquisition Methodology in RPM

How will the RPM acquire DR?

- New DR resources will be acquired similarly to a new supply-side resource in the RPM.
- One or more DR resources can be designated as new resource types.

*Each new resource adds to model solution time.*
Situations to Acquire DR in RPM

When will the RPM likely acquire DR?
- When it is economic and least cost

But more likely...
- When there is insufficient peak capacity to meet system peak demand
Resource Adequacy as a Guide

Loss of Load Probability (LOLP)

LOLP

Oct  Nov  Dec  Jan  Feb  Mar  Ap1  Ap2  May  Jun  Jul  Au1  Au2  Sep
Seasonality Matters

Reliability Assessment tells us...

- More of a need for additional winter peak capacity will address a majority of the resource adequacy issues in 2019.

Should new DR resources delineated by seasonality?
But in the RPM, Cost Matters More…

1. In new resource selection in the RPM, cost will likely matter more than summer and winter shape.

2. Less cost variation in bins makes new resource selection more representative.

3. More even depth in bins makes new resource selection more representative.
Is What Comes Out of the RPM the Plan?

- The RPM results *will* guide parts of the narrative in the Plan.

- The RPM results *are NOT necessarily* the same as the resource strategy recommendations for the Plan.
Questions?