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



April 4, 2017

**MEMORANDUM**

**TO:** **Power Committee**

**FROM:** **Ben Kujala**

**SUBJECT:** **Updates to the Bonneville Power Administration Resource Program**

## BACKGROUND:

Presenter: Rob Petty

Summary: Bonneville will present on its upcoming enhancements to its Resource Program.

Relevance: The Resource Program has in the past had some overlapping analysis with the Power Plan. It is more narrowly focused on Bonneville's position compared to the broader regional scope of the Power Plan. Bonneville is looking to expand the analysis in the Resource Program to better inform future decisions. Balancing this expanded analysis with the 7th Power Plan resource strategy will take coordination between the Council and Bonneville. Monthly meetings between BPA and Council staff have been scheduled and are ongoing.

Workplan: A. Implement Seventh Power Plan and related Council priorities

Background: The Resource Program is used to assess Bonneville's need for power and reserves and then to examine strategies for meeting those needs. The Resource Program is not a decision about resource acquisition but is anticipated to inform future decisions that Bonneville will face.

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# Resource Program Enhancement Project

Power Committee
April 11, 2017



## Background

- BPA began doing its Resource Program after the Act was passed in 1980
- The purpose of RP is to assess BPA's need for power and reserves and then develop a resource strategy for meeting those needs
- BPA did the RP until 1992 after which it relied on its 1995 business plan
- In 2008, after BPA signed 20 year contracts, it restarted the RP process
- Over the past couple of years, BPA has been reviewing its methods for planning and has identified some areas of change which will be discussed today
- The proposed changes should enhance many of BPA's long-term planning activities through augmented information and analysis

# Project Scope

- An update to the Resource Program includes the following efforts
  - End use based load forecasting
  - BPA conservation potential assessment and distributed energy resources potential assessment
  - Needs Assessment
  - Economic evaluation methodology & optimization model
- Decisions about resource acquisitions are beyond the scope of the Resource Program as it is not a decision-making process or document. The Resource Program provides information BPA can use to make informed resource acquisition decisions in the future.

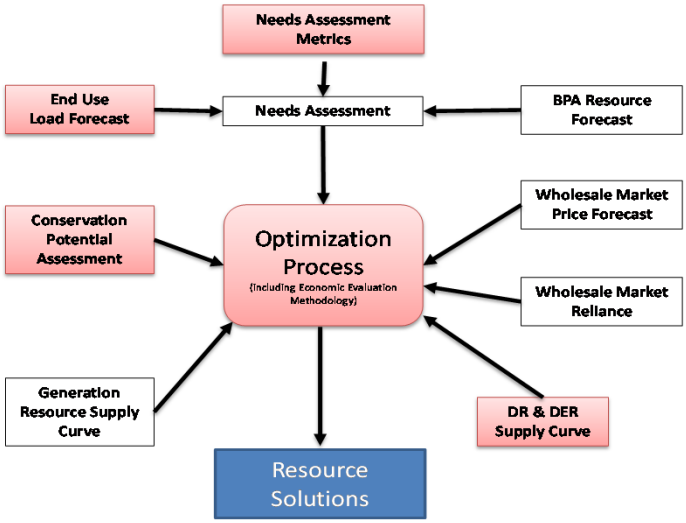




# Project Goals

- Long Term Goal
  - Develop a sustainable and repeatable process that enhances the analysis of the BPA Resource Program including informing other processes such as
    - Integrated Planning
    - Transmission Planning
    - Power Planning
    - Non-wires Planning

# Resource Program Planning Process




* Indicates a new process



B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

# End Use Load Forecast

# BPA Load Forecast – Current State

The BPA Load Forecasting and Analysis group is the organization responsible for producing agency load forecasts and analysis.

- Provides over 1000 energy/peak forecasts (annually)
- Provides a single set of forecasts that are the backbone for consistent transmission and power infrastructure planning and rate cases.
- Forecasts lack transparency to effectively communicate energy efficiency(EE) impacts included in the forecasts. Models are based on historical meter reads already including impacts in trends.





# End Use Load Forecast

- An update to the load forecasting process and systems to allow BPA to be transparent and identify the amount of EE and other DSM activities that are in the load forecast
- This would then allow BPA to determine how much additional EE could be used to meet the BPA needs identified in the Needs Assessment
- This process update is consistent with an Action Plan item from the 7th Power Plan

# BPA Conservation Potential Assessment





# CPA Current State

- BPA relies on the Council's Power Plan for its assessment of conservation potential
- Council's CPA is region-wide and savings potential is only reported in total
- BPA uses a proxy of 42% of the total regional potential roughly based on BPA share of regional sales
- BPA is able to leverage the Council's expertise
- However, does not provide location specific information on conservation potential

# CPA Future State

- Goal:
  - Calculate the energy efficiency savings potential and costs in BPA service territory
  - Provide locational information on EE potential within the region
- Results of assessment
  - Will be provided to the Resource Program optimization model
  - Can be used for integrated demand side management efforts, transmission planning and non-wires planning
  - Can support program initiatives and market strategies





# CPA Plan

- Determine the amount of technical and achievable savings potential for BPA served load
  - Economic potential will be assessed in the Optimization Model process
- Calculate total savings, not utility specific
- Leverage available data and information (e.g Council supply curves, Residential and Commercial Building Stock Assessment)
- Apply same considerations used in Seventh Power Plan:
  - Alignment of baselines, treatment of codes and standards
  - Technologies and costs

# Distributed Energy Resources Potential Assessment





# DER Potential Assessment – Current State

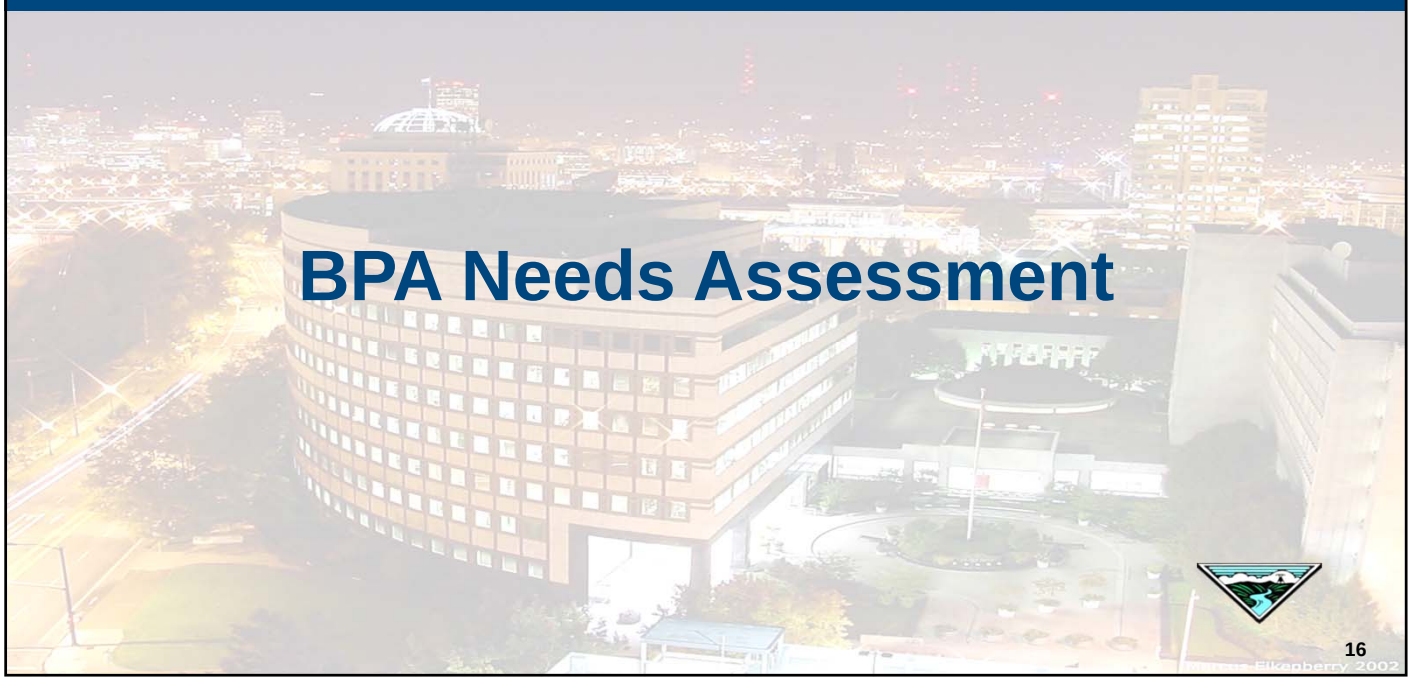
- BPA currently has limited information regarding Demand Response (DR) or Distributed Energy Resource (DER) potential
- Useful for BPA Power and Transmission Planning to have information on the types of potential, development ramps, and location.
- Council Recommendations
  - BPA complete a DR potential assessment in 2017, to be used in the Council's mid-term review of the 7th Plan during 2018
  - BPA assess the barriers to developing DR in the loads served with BPA power
- This second assessment would also inform the mid-term Council Plan review during 2018

# DER Potential Assessment – Future State

- Goal:
  - BPA has a set of utility-vetted DR/DER supply and cost curves for different DR/DER products and an improved locational understanding of where DR/DER might be available
- This improved information is being routinely and regularly used for near-term and long-term BPA Power and Transmission Planning
- Addresses multiple Action Items in the Seventh Power Plan







# BPA Needs Assessment

# BPA Needs Assessment – Current State

- Produce forecasts for two years within a 10 year planning horizon
- Use five metrics to measure the ability of BPA to meet obligations
  - Annual energy
  - Monthly 10$^{th}$ percentile (P10) heavy load hour energy
  - Monthly P10 superpeak energy
  - 18-hour capacity
  - Balancing reserves
- Analyze each metric under an “expected case” forecast, while the annual energy metric is also analyzed under high and low load growth scenarios
- Also produce ad hoc scenarios as needed (e.g. product switching)



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# BPA Needs Assessment – Future State

- Goal: Meet the capacity and energy forecast requirements of the Resource Program using an efficient process that maintains reasonable run times
- Produce forecasts to meet a 20 year planning horizon
- Expanding the study years under the current process creates workload and run time issues, particularly regarding the 18-hour capacity metric
- Consequently, it is possible that changes will need to be made to one or more of the current metrics

# Economic Evaluation Methodology & Optimization Model





## Current & Future State

- BPA does not currently use a resource optimization tool for evaluating different resource portfolios in its Resource Program
- Goal: Develop a transparent and well understood methodology and tool that can be used to compare and evaluate different resource portfolios for meeting Bonneville needs
  - To achieve this, BPA intends to develop or acquire a resource optimization model
  - BPA will also need to develop the criteria to use in its evaluation process

# Optimization Model Options

- Options include
  - AURORA
  - Navigant's Portfolio Model
  - Hiring a consultant
- BPA is proceeding down the path of exploring the use of AURORA for evaluating resource portfolios
  - BPA has extensive experience with AURORA and uses it in its rate cases and its Long-term Reference Case
  - BPA plans to test AURORA during the spring and summer of 2017
- In conjunction with the model development, BPA will also develop the economic criteria to be used





# Project Timeline

# Best Case Project Timeline

| BPA Fiscal Year | Q2 2017 | Q3 2017 | Q4 2017 | Q1 2018 | Q2 2018 | Q3 2018 | Q4 2018 | Q1 2019 | Q2 2019 | Q3 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| End Use Load Forecast | | | | | | | | | | |
| Conservation Potential Assessment | | | | | | | | | | |
| DR Potential Assessment | | | | | | | | | | |
| Needs Assessment | | | | | | | | | | |
| Optimization Model | | | | | | | | | | |
| Economic Evaluation | | | | | | | | | | |

- Timeline is optimistic and still contingent on progress with load forecast development





# Public Engagement

# Public Engagement Process

- Workshops on project initiatives
  - Share progress and draft results
  - Technical discussions
  - Collect feedback and answer questions
- Current workshops:
  - End Use Load Forecast workshop – May 10th
  - CPA Workshop – May 18th
  - Needs Assessment and Optimization Model – Fall 2017
- Will engage in 2nd round of workshops when draft results are developed
- Updates through communications and on website throughout process





# Thank You