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April 7, 2020

MEMORANDUM

TO: Power Committee Members

FROM: Massoud Jourabchi

SUBJECT: BPA 20-year load forecast

BACKGROUND:

Presenters: Massoud Jourabchi, Manager, Economic Analysis
Reed Davis, Manager of Load Forecasting and Analysis (BPA)
Ryan Egerdahl, Manager Long Term Power Planning (BPA)

Summary: In collaboration with BPA, Council staff has created a 20-year load forecast of BPA obligations. Range of forecast of Frozen efficiency load obligations under three economic trajectories and one climate change is shown on the next page.

Relevance: The Act states the plan include a “forecast of power resources estimated by the Council to be required to meet the [Bonneville]Administrator’s obligations and the portion of such obligations the Council determines can be met by resources in each of the priority categories.”

Workplan: Create hourly load forecast for BPA obligations, consistent with regional load forecast, to be used in establishing resource requirement for BPA.

Background: Required by the ACT.

More Info: Range of frozen efficiency load obligation forecasts

Frozen Efficiency Average MW of Load Obligation	2021	2028	2029	2041	2050
Base Case	7,583	6,635	6,440	6,610	6,644
Low Regional Economic Path	7,376	6,208	5,997	5,889	5,763
High Regional Economic Path	7,748	7,050	6,868	7,376	7,621
CanESM2- Base economic Path	7,557	6,803	6,527	6,964	7,188
CanESM2- Low economic Path	7,348	6,373	6,080	6,228	6,273
CanESM2- High economic Path	7,722	7,222	6,957	7,750	8,209

Forecast of BPA Load Obligations

April 14, 2020
Ryan Egerdahl
Reed Davis
Massoud Jourabchi



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BPA Forecast in the Act

- The Act requires the plan include a “forecast of power resources estimated by the Council to be required to meet the [Bonneville] Administrator’s obligations and the portion of such obligations the Council determines can be met by resources in each of the priority categories.”
- This forecast “shall include the approximate amounts of power the Council recommends should be acquired by the [Bonneville] Administrator on a long-term basis and may include, to the extent practicable, an estimate of the types of resources from which such power should be acquired.”
- The Council’s recommendations as to the amounts of power and resource types take into account Bonneville’s statutory limits on how it offers and sells power and on using and acquiring resources to meet its obligations.



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Consistency of BPA and Council Load Forecasts

- **Goal:** create long-term load forecast for BPA obligations consistent with Council's regional load forecast

- **Analytical steps:**

- 1) Provided input data for saturation rate and energy use by enduse, sector and state to BPA load forecasting.
- 2) Provided Council's Medium (frozen efficiency) load forecast
- 3) BPA load forecasting created a regional load forecast consistent with Council's regional load forecast.
- 4) BPA then created a forecast for their obligation.
- 5) BPA obligation forecast, under (Medium economic conditions, with Frozen Efficiency, without climate change drivers) was then used to create a full set of load forecasts under different economic and climate change variations. This was done by using the relationship between monthly load (FE, Medium case, Council) and the monthly load forecasts under different climate change conditions.



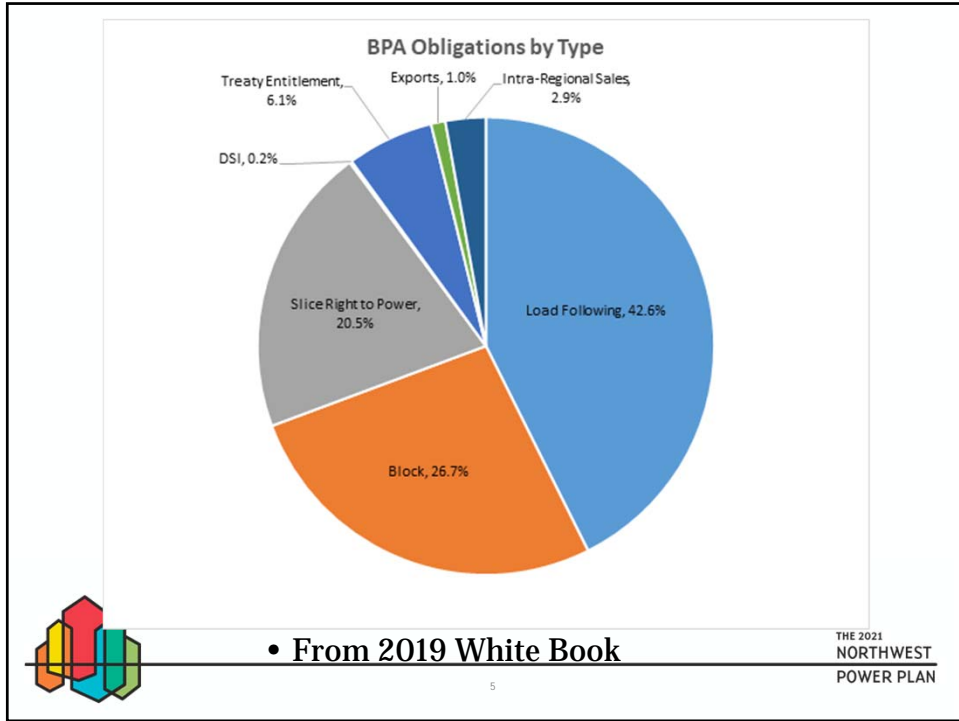
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What are BPA Obligations

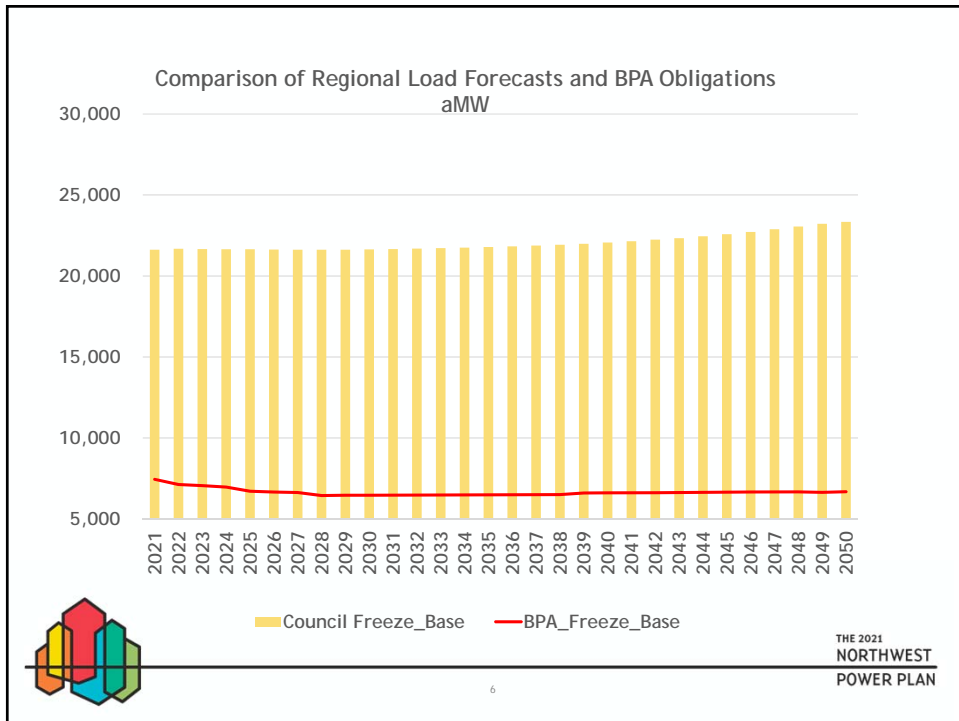
- Firm power load service under the long-term Regional Dialogue contracts represents the Administrator's current firm power sales obligations under section 5(b) of the Act. These current RD contracts, however, are not the only obligations to be considered in a twenty-year forecast.
 - Other considerations that need to be factored in include, for example:
 - what might be the firm power sales obligations after 2028 when the current RD contracts end;
 - the effects of planned savings from the implementation of conservation measures;
 - resource acquisitions the Administrator might need to take to help implement the fish and wildlife program
- For the RD contracts, the foundation of this value is the total retail load in each BPA customer utility. From that value is subtracted all of the resources customer utilities are planning to bring to their own load. The remaining load BPA has an obligation to supply.
- Other contractual arrangements have more direct commitments and the specifics of the contracts determine the amount of the BPA obligation.
- These values are added together to create the total BPA obligation.



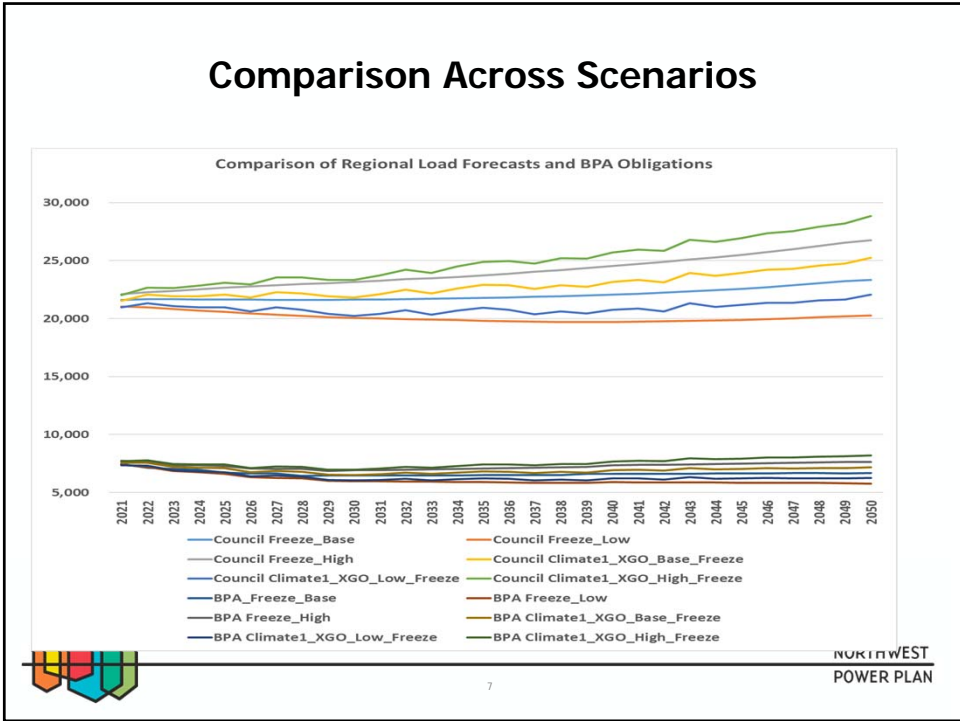
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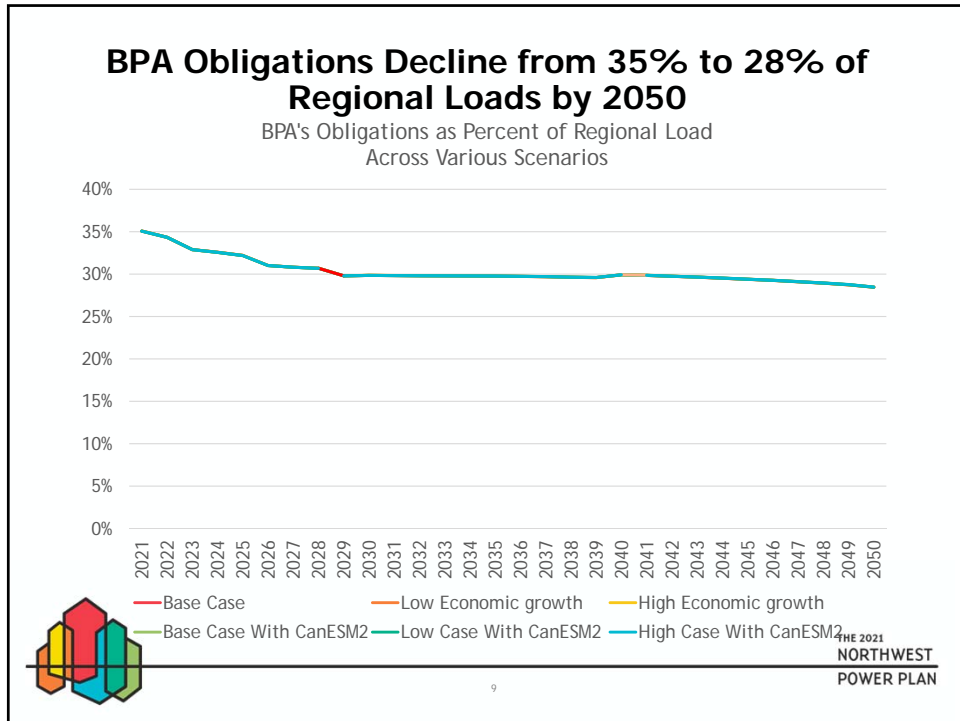
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Comparison of Growth Rates Frozen Efficiency

2021-2041 AAGR	Region	BPA Obligations
Base Case	0.13%	-0.72%
Low Economic growth	-0.33%	-1.18%
High Economic growth	0.59%	-0.26%
Base Case With CanESM2	0.42%	-0.43%
Low Case With CanESM2	-0.02%	-0.87%
High Case With CanESM2	0.87%	0.02%

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Next Steps

- Monthly weather normalized loads will be translated into hourly loads under varying temperature conditions.
- BPA and Council EE and DR team will use peak load forecasts in developing DR resource potential for BPA.
- Forecasts for 2020-2049 will be provided to Council's Resource Planning Team for estimation of BPA Resource Adequacy and Resource planning.

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