

Serving our customers

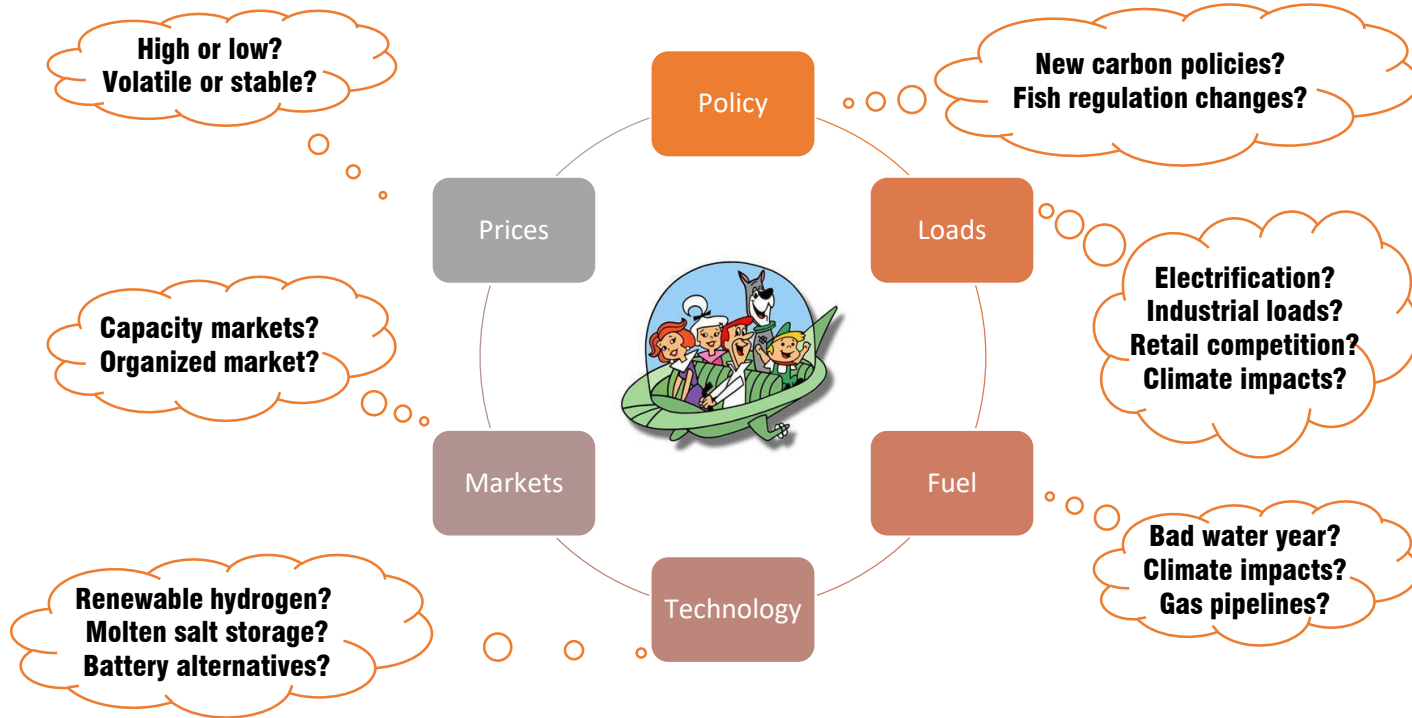
Tacoma Power 2022 IRP Findings

IRP Overview

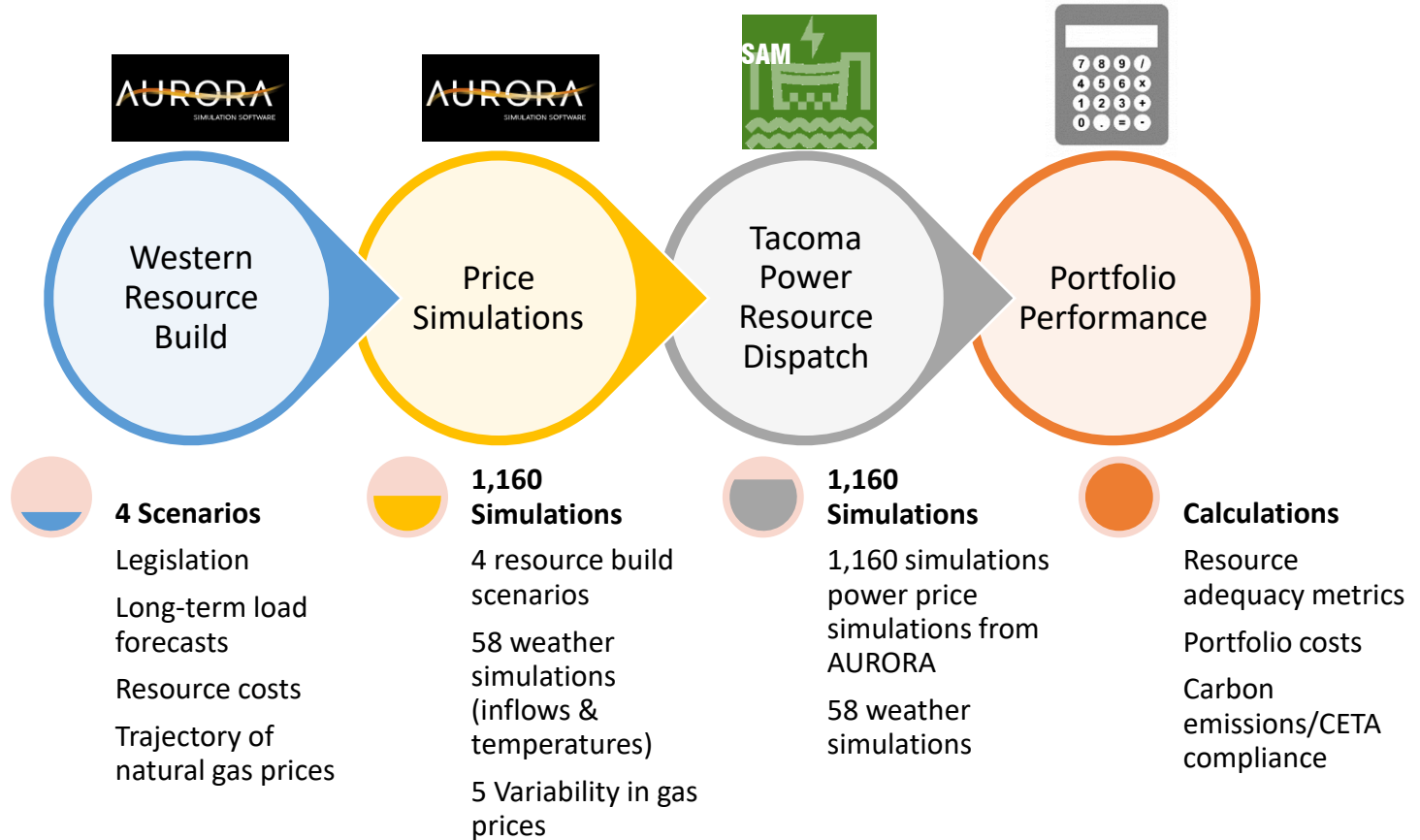


- Bonneville Power Administration (BPA) Contract Renewal
 - ✓ Should we renew?
 - ✓ Which product will best meet our needs if so?
 - ✓ What are the risks to renewal?
 - ✓ Should we diversify?
- How will we ensure we have enough resources under accelerated vehicle & building electrification?
- How will climate change impact our resource position?

Where will we be in 20 years?



Our IRP modeling framework



- What is Resource Adequacy?

- ✓ Having enough resource to serve loads under a broad range of conditions

- How do we assess whether we're adequate?

- ✓ Establish metrics to measure resource adequacy and set a quantitative standard for those metrics
- ✓ Model our power resources under many different water, temperature and market conditions
- ✓ Calculate the metrics and assess whether we have met our standard

Our Resource Adequacy Standard

Our resource adequacy metrics measure **frequency**, **duration** and **magnitude** of potential shortages. If our model finds shortages that happen too often, last too many hours or affect too much of our load, we find that our standard is not met.

Updated Results



- **We recommend renewing BPA in 2028**

Renewing BPA is our best low-carbon option to continue to meet customer needs

❖ **Caveat:** Assumes product offerings continue to resemble current products

- **We do not recommend trying to partially replace BPA with wind or solar**

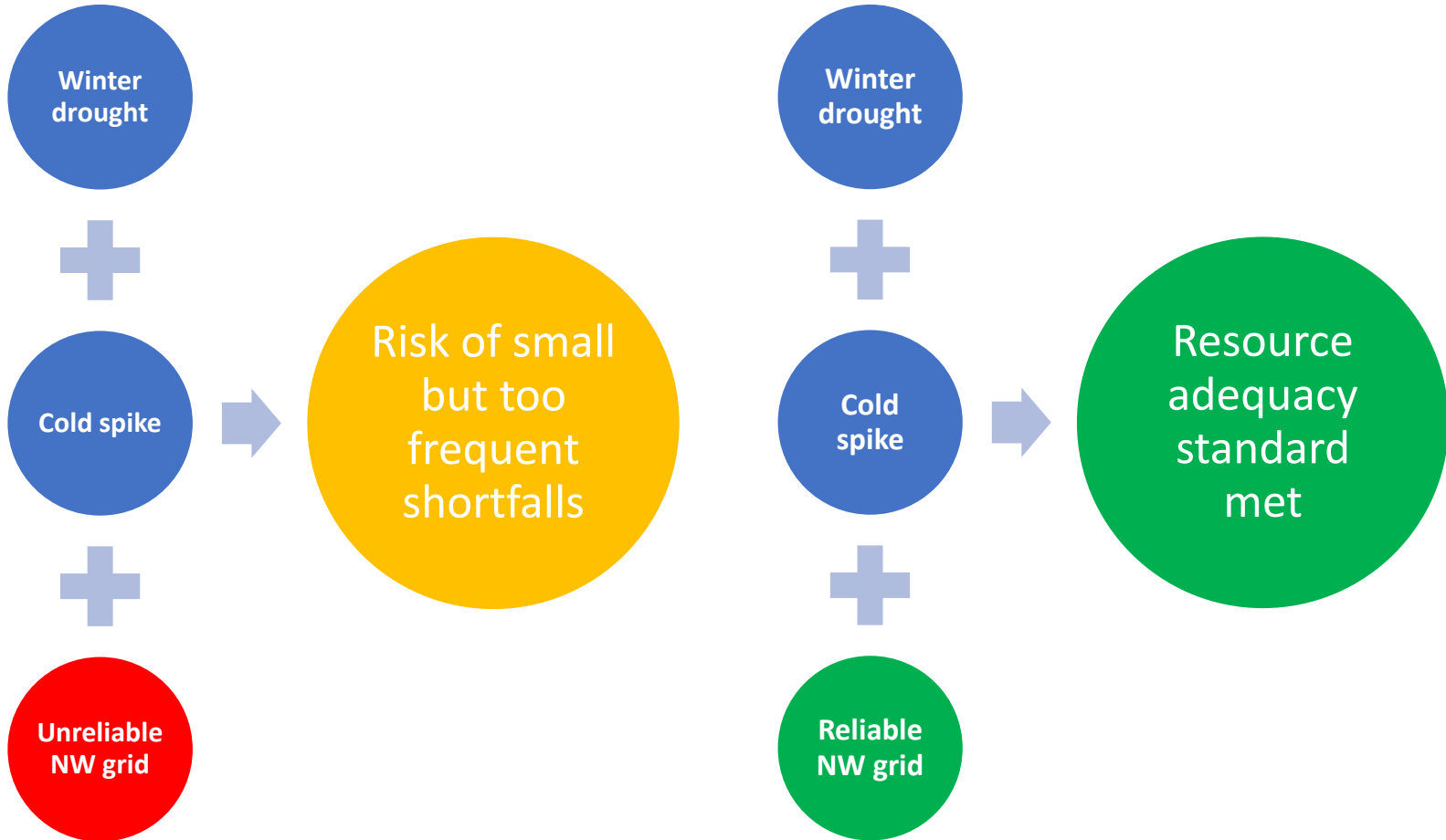
Current BPA amounts are “just right” and replacing BPA with other, less stable renewable resources will not improve our adequacy and is higher in cost

- **Slice/Block product continues to be our preferred BPA product**

Alternative BPA product we analyze would cost us ~\$8 million more per year

❖ **Caveat:** Uncertainty around Slice/Block might look like next time

What adequacy risks do we face?



How should we reduce potential adequacy risks?

Strategy	Expected Annual Cost	Advantages	Disadvantages
Add 10MW demand response <i>Preferred resource</i>	\$1.6 million	<ul style="list-style-type: none"> \$ spent in our community Lowest environmental impact Preserves optionality 	<ul style="list-style-type: none"> May not be able to get 10MW
Add 10MW of battery storage	\$1.5 million	<ul style="list-style-type: none"> Expected cost less volatile than wind Guaranteed performance 	<ul style="list-style-type: none"> Long-term commitment Potential environmental impacts Price & supply chain issues
Add 100MW of wind	-\$2 million to \$4 million	<ul style="list-style-type: none"> Adds renewable generation to the grid 	<ul style="list-style-type: none"> Long-term commitment to a large resource Net cost is volatile and depends on wholesale power prices Price & supply chain issues
Short-term contract	TBD	<ul style="list-style-type: none"> Immediate & flexible terms to meet our specific needs 	<ul style="list-style-type: none"> Availability over the long-term Price may change over time
Western Resource Adequacy Program (WRAP)	TBD	<ul style="list-style-type: none"> May alleviate need for any additional resources 	

Electrification Impacts



Higher Demand,
100% Saturation

Lower Demand,
100% Saturation

Higher Demand,
50% Saturation

Lower Demand,
50% Saturation

- **Includes**

- ✓ Light & medium-duty vehicles
- ✓ Residential buildings (heating, water heating, clothes dryers)
- ✓ Commercial buildings (heating, water heating, cooking)

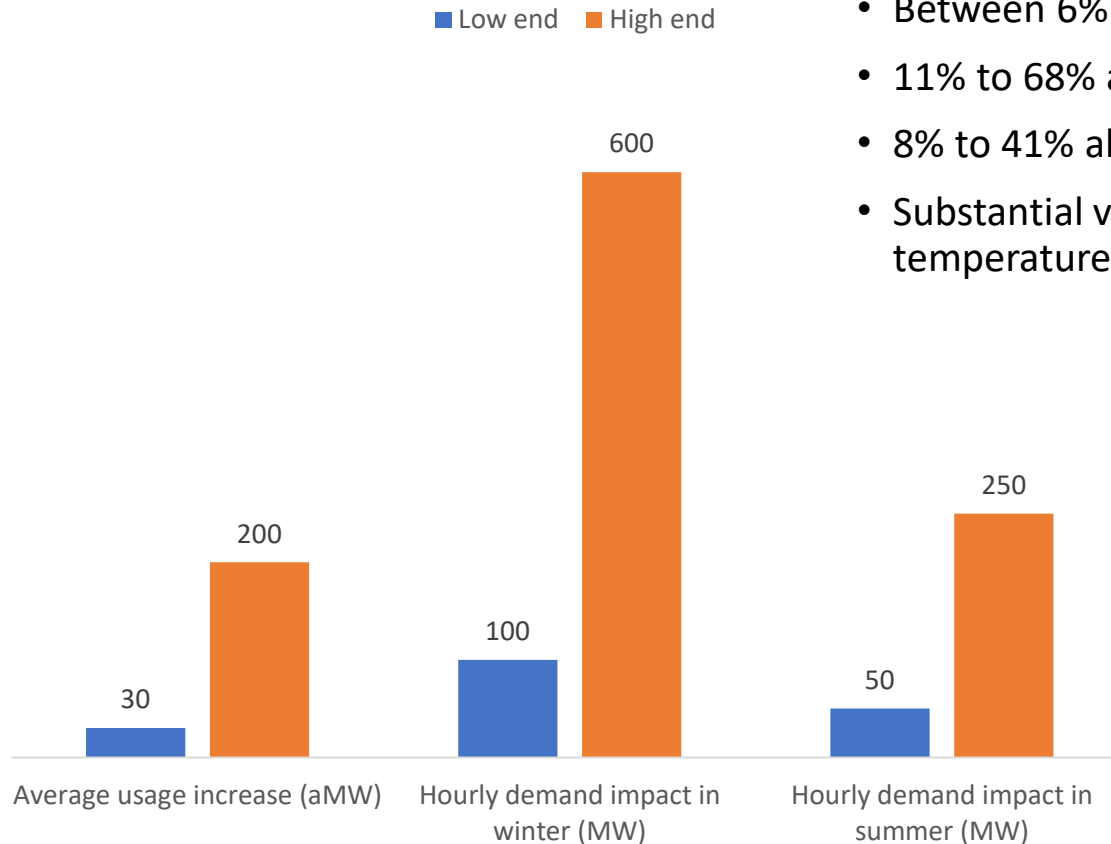
- **Excludes**

- × Heavy duty vehicles
- × Industrial buildings
- × Port electrification

- **Analysis for single year (2041)**

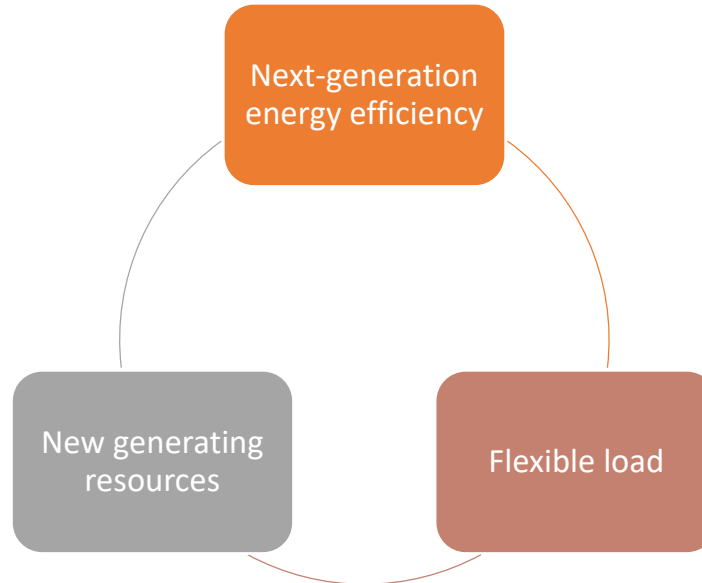
- **Weather-sensitive modeling for residential heating**

How big might the impact be in this simplified case?



- Between 6% and 36% above average load
- 11% to 68% above normal winter peak
- 8% to 41% above normal summer peak
- Substantial variability depending on temperature

- In our simplified electrification cases, our current resources would not be enough to maintain resource adequacy
- A combination of strategies will likely be needed to prepare



Electrification Futures Project

- Scenarios of electrification progress over time
- Updated data for 2024 IRP
- Study session scheduled for October

Recommendations & Action Plan



Preferred resource strategy:

- ✓ Renew Slice/Block product in 2028 if it remains similar to today's product
- ✓ Continue to acquire all cost-effective conservation identified in CPA
- ✓ Continue to develop capability to acquire DR
- ✓ Continue involvement in Western Resource Adequacy Program efforts

Electrification:

- ✓ Uncertainty as to how much and when it will show up
- ✓ Our preferred portfolio is likely not capable of handling the large-scale electrification modeled in 2022 IRP
- ✓ Continue to work to understand how we can prepare and how quickly we might need to prepare

	2-year action plan	4-year action plan	10-year action plan
Conservation	<ul style="list-style-type: none"> Acquire all cost-effective conservation identified in CPA 	<ul style="list-style-type: none"> Acquire all cost-effective conservation identified in CPA 	<ul style="list-style-type: none"> Acquire all cost-effective conservation identified in CPA
BPA	<ul style="list-style-type: none"> Continue active participation in BPA post-2028 contract discussions 	<ul style="list-style-type: none"> BPA renewal decision 	<ul style="list-style-type: none"> Renew or replace BPA contract
Other Resources	<ul style="list-style-type: none"> Pursue additional opportunities for DR Explore short-term contracts to shore up potential resource adequacy risks 	<ul style="list-style-type: none"> Acquire 10MW of DR 	<ul style="list-style-type: none"> Acquire additional DR if additional need is identified in IRP
Other	<ul style="list-style-type: none"> Final decision on joining WRAP Electrification Futures study Enhance climate change modeling 		

For reference



- **Integrated resource plan (IRP):** A plan to ensure we have enough resources to meet customer needs under a variety of different conditions for many years into the future
- **Resource adequacy:** Having enough resource to serve loads under a broad range of conditions
- **Bonneville Power Administration (BPA):** Federal agency that sells power from the Columbia River Basin to public utilities at cost. Makes up approximately 60% of our generating resources. Our current contract with BPA expires in September 2028.
- **Slice/Block:** The product that we currently purchase from BPA. It consists of two parts: (1) Slice, which is a 3% share of whatever BPA generates in a given year and varies based on water conditions and (2) Block, which is a fixed amount of energy we can count on each month
- **Demand response:** A voluntary change or shift in the timing of customer energy consumption to reduce demand on the grid, typically in exchange for some compensation (reduced rate, payment, etc.)
- **Portfolio:** A specific combination of power generation resources and demand-side resources
- **Western Resource Adequacy Program (WRAP):** Regional effort to build a voluntary program that will ensure enough resources are built throughout the West in order to maintain reliability of the Western grid.

Our resource portfolio

