



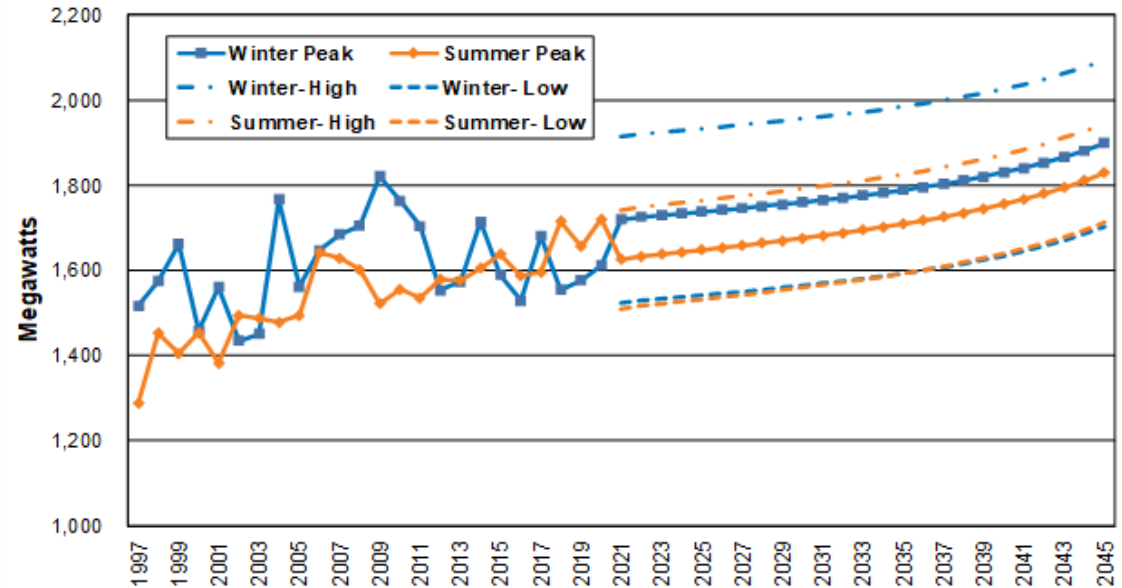
# 2021 Electric Integrated Resource Plan

James Gall, Electric IRP Manager

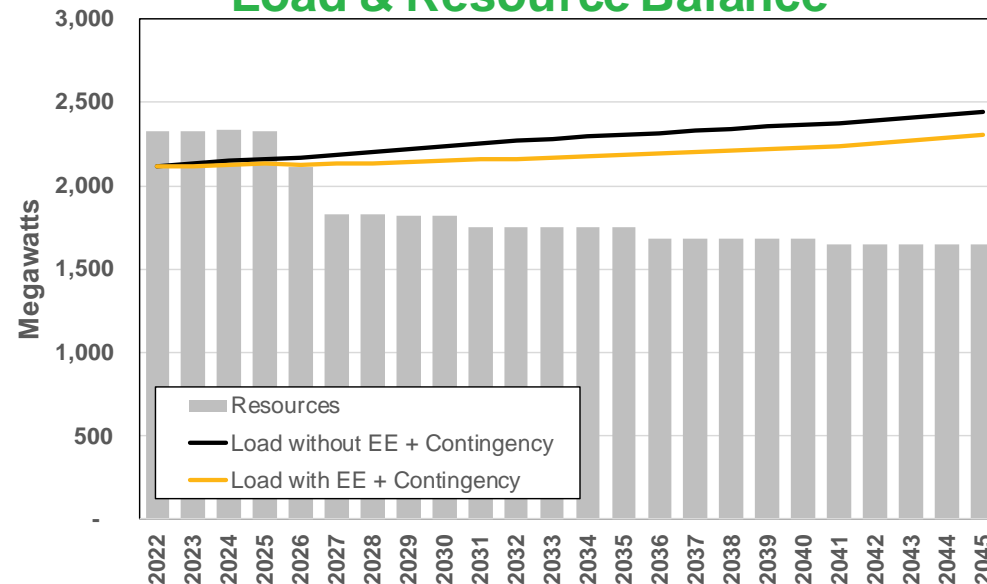
# Avista Reliability Needs

- Load growth & changes
  - 0.3% annual average growth.
  - Large potential increases with electrification.
  - Climate change might lower winter and increase summer peak growth.
- Meet average coldest day's peak hour load, required reserves, and a 16% planning margin.
  - Maintain 5 percent Loss of Load Probability.
  - Regional effort to “pool” resources with resource adequacy program may lower resource need.
- ~300 MW needed with Nov-2026 expiration of Lancaster PPA
  - Additional 200 MW by 2036
- Aging Infrastructure & state policy pressuring existing resources to close:
  - Colstrip: 2025 (WA)
  - Northeast CT: 2035
  - Boulder Park: 2040
  - Kettle Falls CT: TBD
  - Coyote Springs 2 CCCT/Rathdrum CTs ???

## Peak Load Forecast



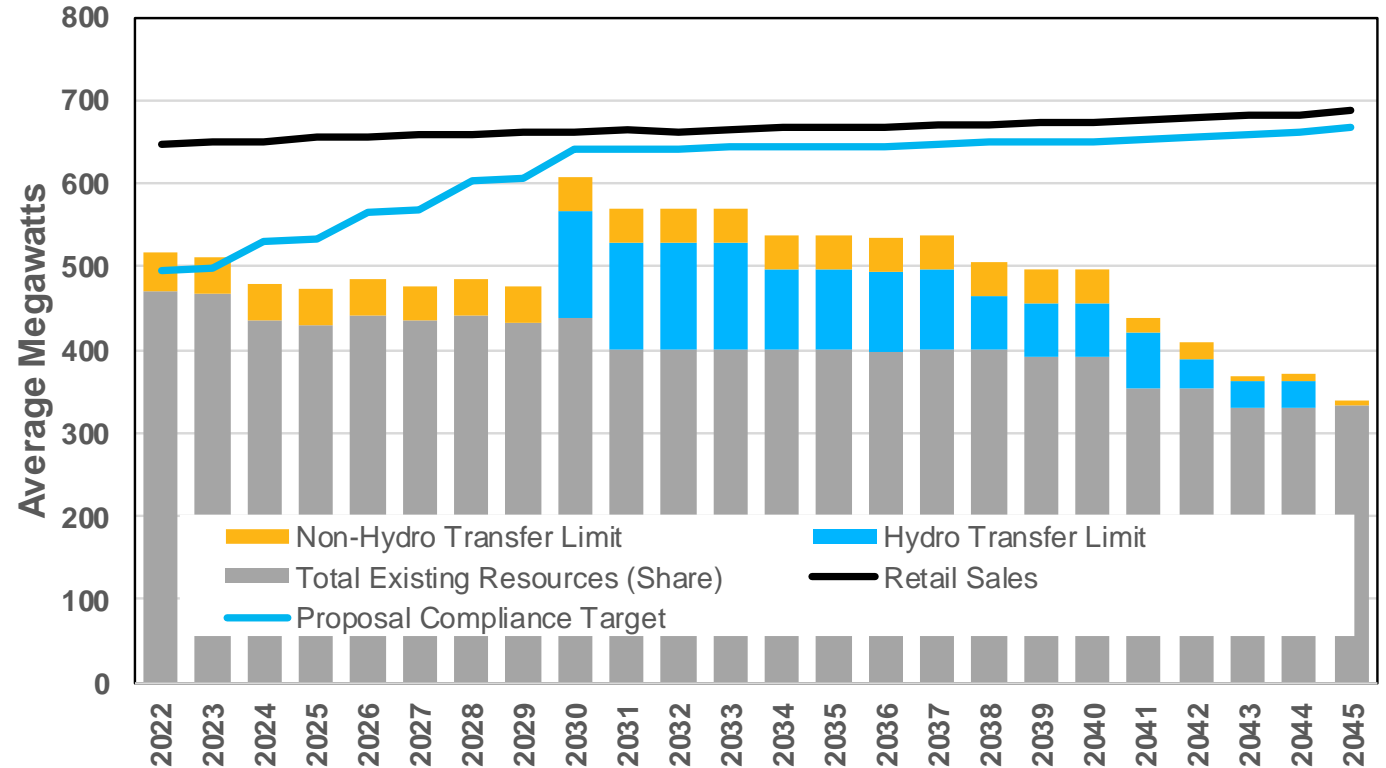
## System Winter Peak Hour Load & Resource Balance



# Washington Clean Energy Requirements

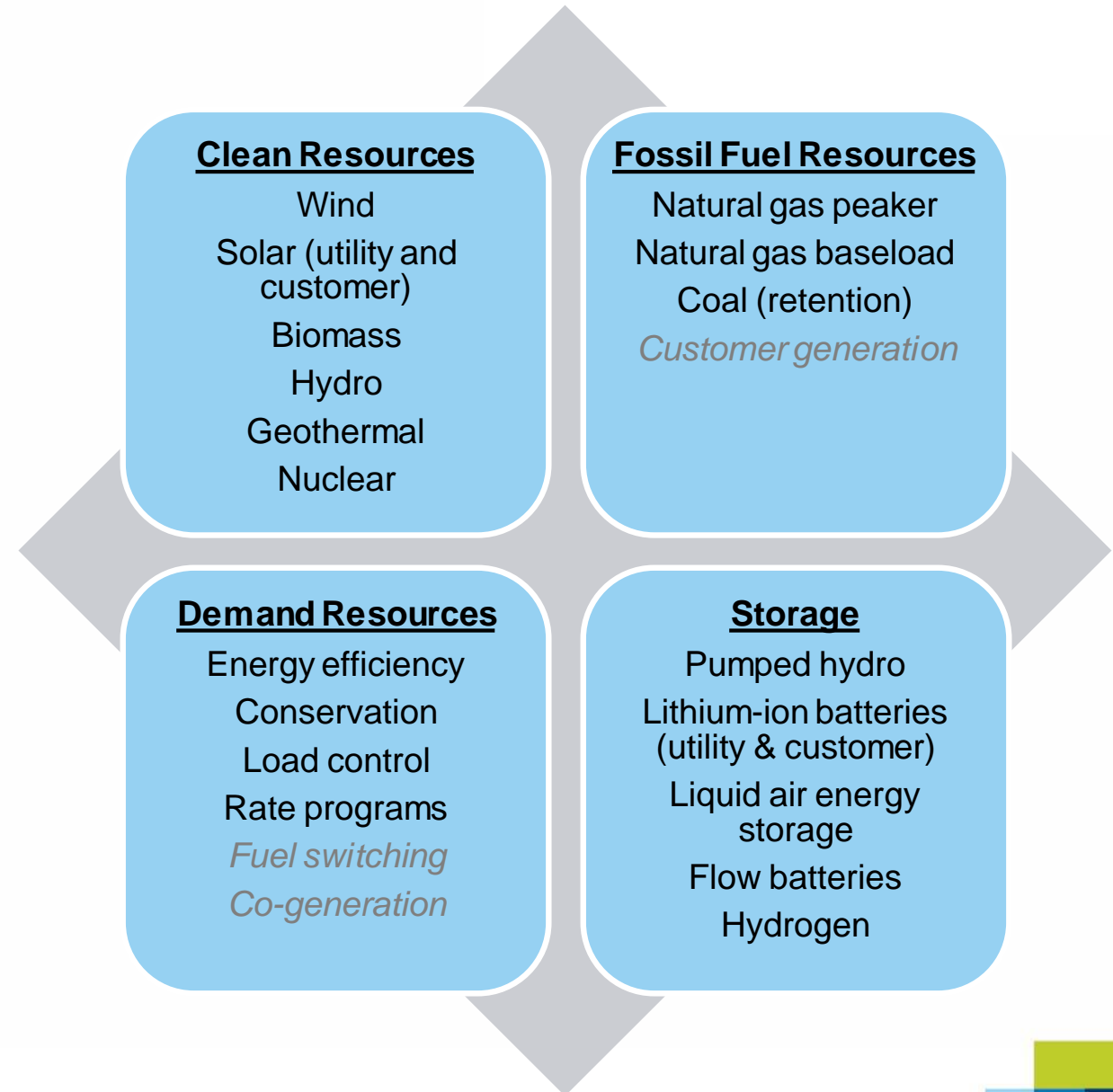
- Assumes acquisition of clean energy to equal 80% of net retail sales by 2022.
  - Between 2022 and 2030 increases by 5 percent every two years to reach 100%.
- Resource Allocation
  - Washington customers “buy” Idaho clean energy share.
    - Assumes Idaho’s wind/biomass may be sold to WA without limitation.
    - Assumes Idaho’s hydro purchases limited to 20% of sales beginning in 2030, then declining. No transfers prior to 2030 for planning purposes.
- By 2045, 100% of Washington sales must be served with clean energy.
  - Assumes clean energy generated is equal to annual retail sales.

## Washington Retail Sales & Clean Resource Balance



# Resource Options

- Multiple factors drive resource selection
  - Cost or price
  - Clean vs. fossil fuel
  - Capacity value or “peak credit”
  - Storage vs. energy production
  - Location
  - Availability (new vs. existing)
- Resource retirements
  - Future capital investment
  - Operating & maintenance cost/availability
  - Fuel availability
  - Carbon pricing risk
- Non-energy costs & benefits
  - Social cost of carbon
  - Locational siting
  - Health, economic, and other benefits (still to come)



Resources in italics were not directly modeled for this IRP

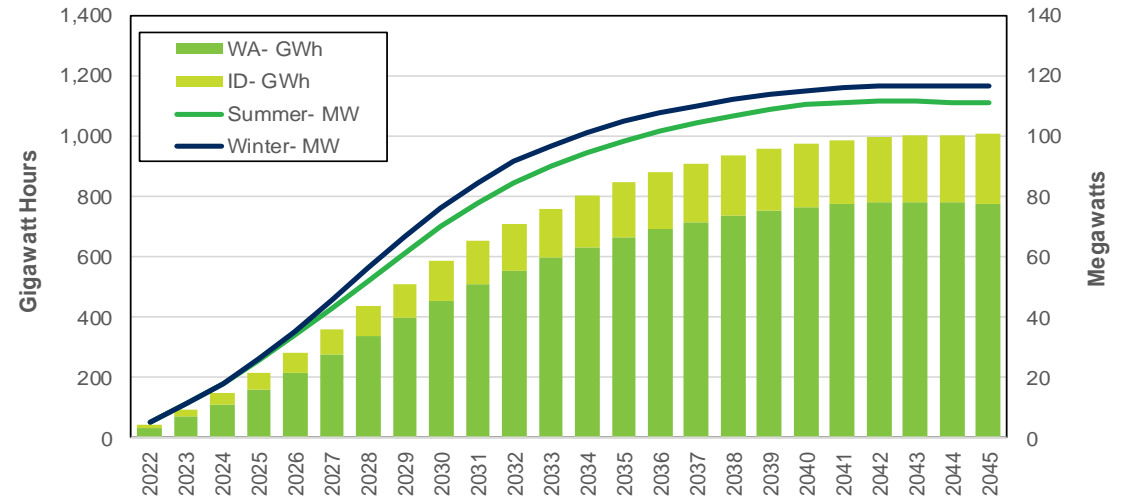
# IRP's Preferred Resource Strategy – Energy Efficiency

- AEG conducted the conservation potential study.
- Energy Efficiency (EE) meets 68% of future load growth.
- 63% of EE programs are C&I.
- 77% of EE savings are from Washington.
- Washington avoided costs are \$106/MWh plus \$151/kW-year for capacity.
  - Comprised of traditional avoided costs (energy/capacity, 35%), and non-traditional (social cost of carbon, clean energy, non-energy costs, 65%).
- EE reduces winter peak by a 101% ratio to energy savings and 97% ratio for summer.
- Washington biennium target is 50% higher than previous biennium and higher than the IRP's two year cost effective acquisition amount.

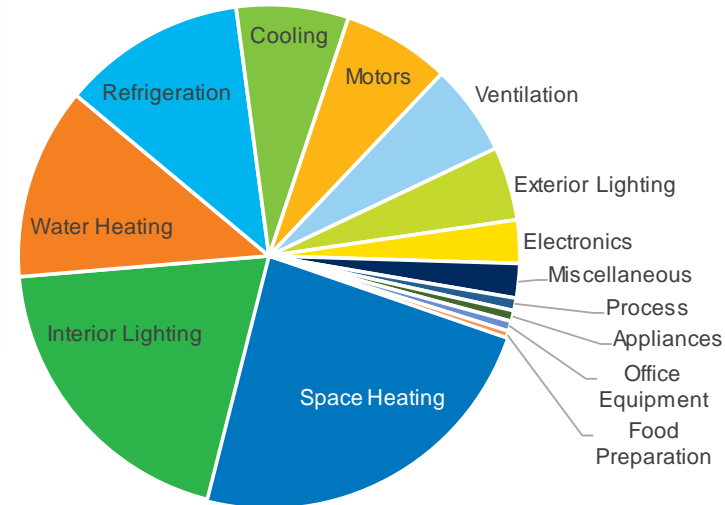
2022-2023 Biennial Conservation Target (MWh)	
CPA Pro-Rata Share	101,566
Distribution and Street Light Efficiency	219
<b>EIA Target</b>	<b>101,785</b>
Decoupling Threshold	5,119
<b>Total Utility Conservation Goal</b>	<b>106,904</b>
Excluded Programs (NEEA) <sup>1</sup>	-12,896
<b>Utility Specific Conservation Goal</b>	<b>94,008</b>
Decoupling Threshold	-5,119
<b>EIA Penalty Threshold</b>	<b>88,889</b>

1. NEEA yet to be determined for the 2022-23 Biennium

## System Energy Efficiency Selection



## Washington End Use Program Targets



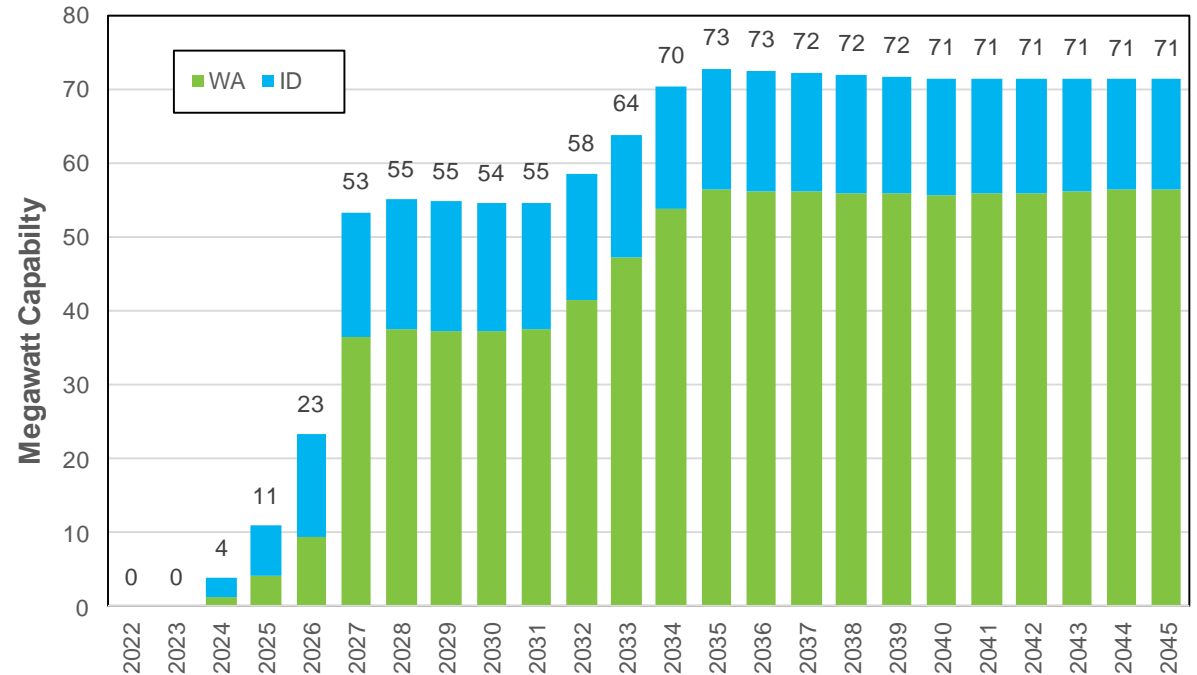
# IRP's Preferred Resource Strategy - Demand Response

- AEG conducted demand response potential study.
- IRP considered 16 demand response programs with savings in both winter and summer months.
- Programs will increase over time with enrollment.
- IRP identifies three levels of demand response:
  - Amount under contract;
  - Amount expected when called upon; and
  - Amount contributed to reliability needs – due to duration and call limitations.

## Total Demand Response

Program	Washington	Idaho
Time of Use Rates	2 MW (2024)	2 MW (2024)
Variable Peak Pricing	7 MW (2024)	6 MW (2024)
Large C&I Program	25 MW (2027)	n/a
DLC Smart Thermostats	7 MW (2031)	n/a
Third Party Contracts	14 MW (2032)	8 MW (2024)
Behavioral	1 MW (2041)	n/a
<b>Total</b>	<b>56 MW</b>	<b>15 MW</b>

## Annual Demand Response Acquisition



## IRP's Preferred Resource Strategy - Supply Resources

- IRP focuses on state goals and system reliability to find lowest reasonable cost to serve customer load.
- Develop resource needs assessment for each state.
  - State policies drive resource choices.
  - Cost allocation based on state policies.
  - Rate forecasts.
- Does not include resources in current RFP.
- Limits existing resources acquisition to 75 MW of additional regional hydro after 2031.
- Resources are selected either as system resource (65%/35%) or state resource.

## Supply-Side Resource Changes

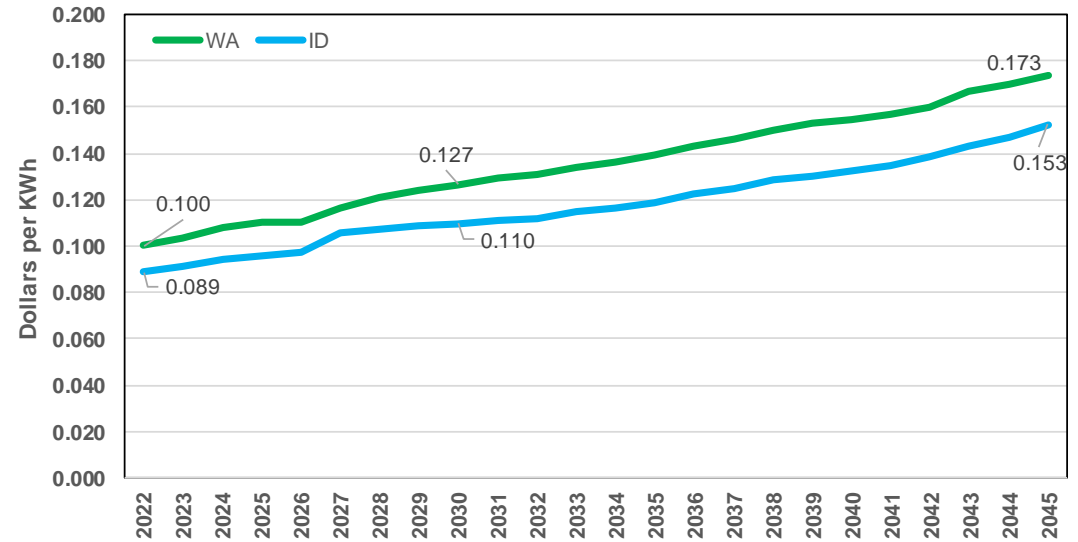
Resource Type	Year	State	Capability (MW)
Colstrip	2021	System	(222)
Montana wind	2023	WA	100
Montana wind	2024	WA	100
Lancaster	2026	System	(257)
Post Falls modernization	2026	System	8
Kettle Falls modernization	2026	System	12
Natural gas peaker	2027	ID	85
Natural gas peaker	2027	System	126
Montana wind	2028	WA	100
NW Hydro Slice	2031	WA	75
Rathdrum CT upgrade	2035	System	5
Northeast	2035	System	(54)
Natural gas peaker	2036	System	87
Solar w/ storage	2038	System	100
4-hr storage for solar	2038	System	50
Boulder Park	2040	System	(25)
Natural gas peaker	2041	ID	36
Montana wind	2041	WA	100
Solar w/ storage	2042-2043	WA	239
4-hr storage for solar	2042-2043	WA	119
Liquid air energy storage	2044	WA	12
Liquid air energy storage	2045	ID	10
Solar w/ storage	2045	WA	149
4-hr storage for solar	2045	WA	75
Supply-side resource net total (MW)			1,032
Supply-side resource total additions (MW)			1,589

# Preferred Resource Strategy Costs and Rates

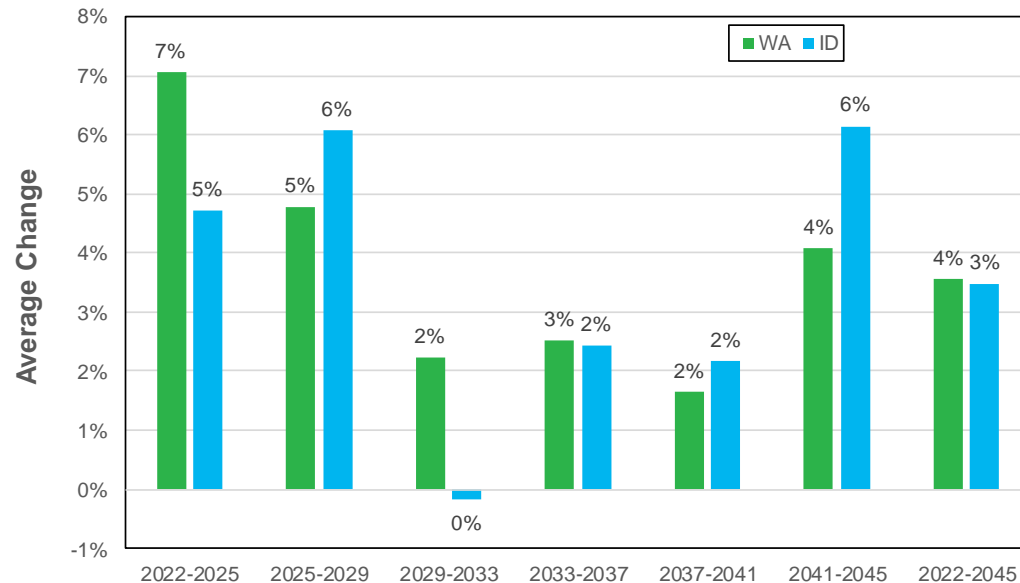
- Existing and new costs are allocated between the states Avista serves.
- Washington rates are ~1 cent (12%) higher per kWh today.
  - Spreads increase to 1.7 cents (15%) by 2030 and 2.0 cents by 2035.\*
  - Spreads increases without support of Idaho renewable resources.
- Power costs rise well above inflation over first 8 years due to clean energy and capacity additions.

\* Non-power related cost such as non-generation transmission, distribution, and administration, are not directly modeled in the IRP and assume a 2% annual growth rate.

## Overall Energy Rates



## Power Cost Rate Change

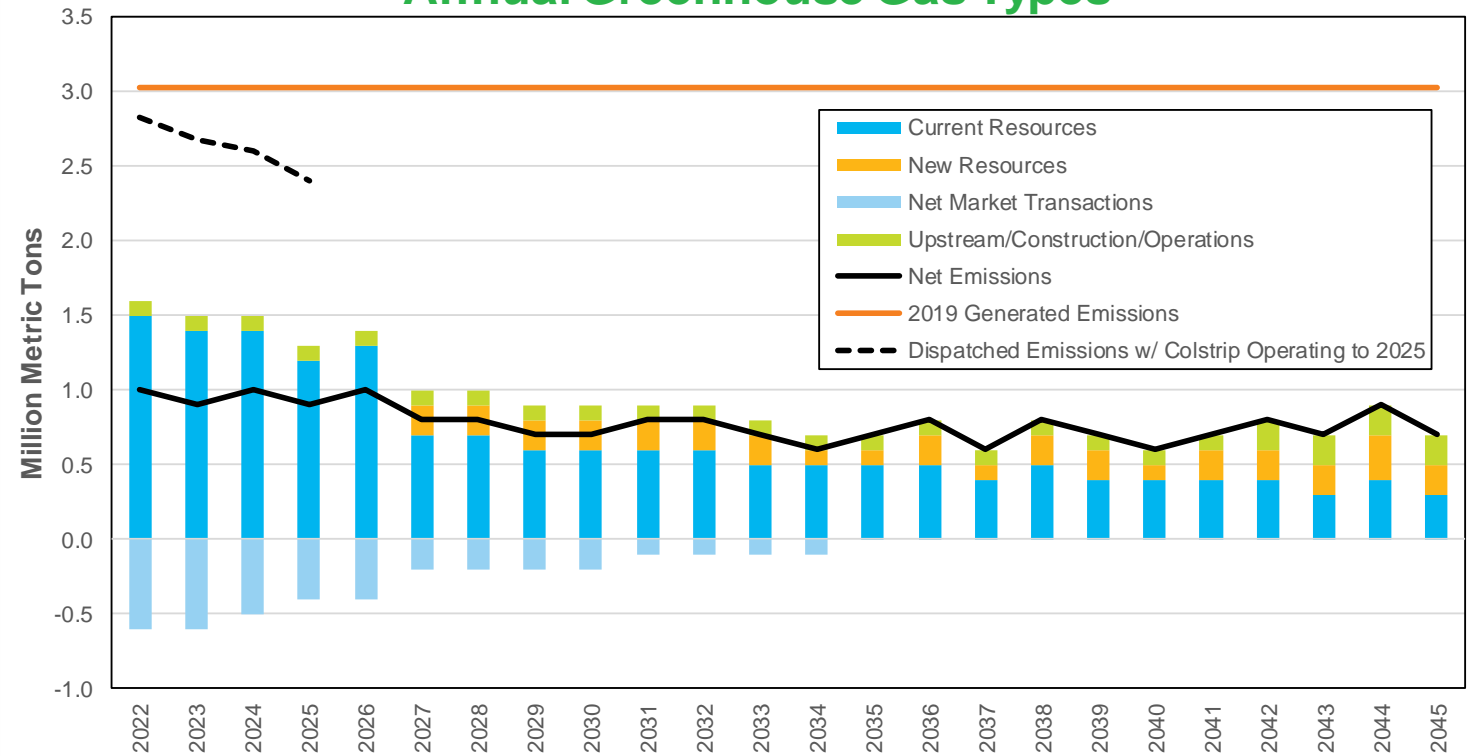




# Greenhouse Gas Emissions Forecast

- Colstrip responsible for >1 million tons.
  - Colstrip emissions would fall as the plant dispatch decreases over time.
- By 2030, emissions fall by 76 percent.
- Emissions from natural gas upstream operations and construction are included in this IRP.
  - Washington load portion includes these emissions priced at the social cost of carbon.
  - WUTC recently ruled this emissions accounting is encouraged but not required.
- Net emissions include market purchases and sales at the regional emission intensity rate.

## Annual Greenhouse Gas Types

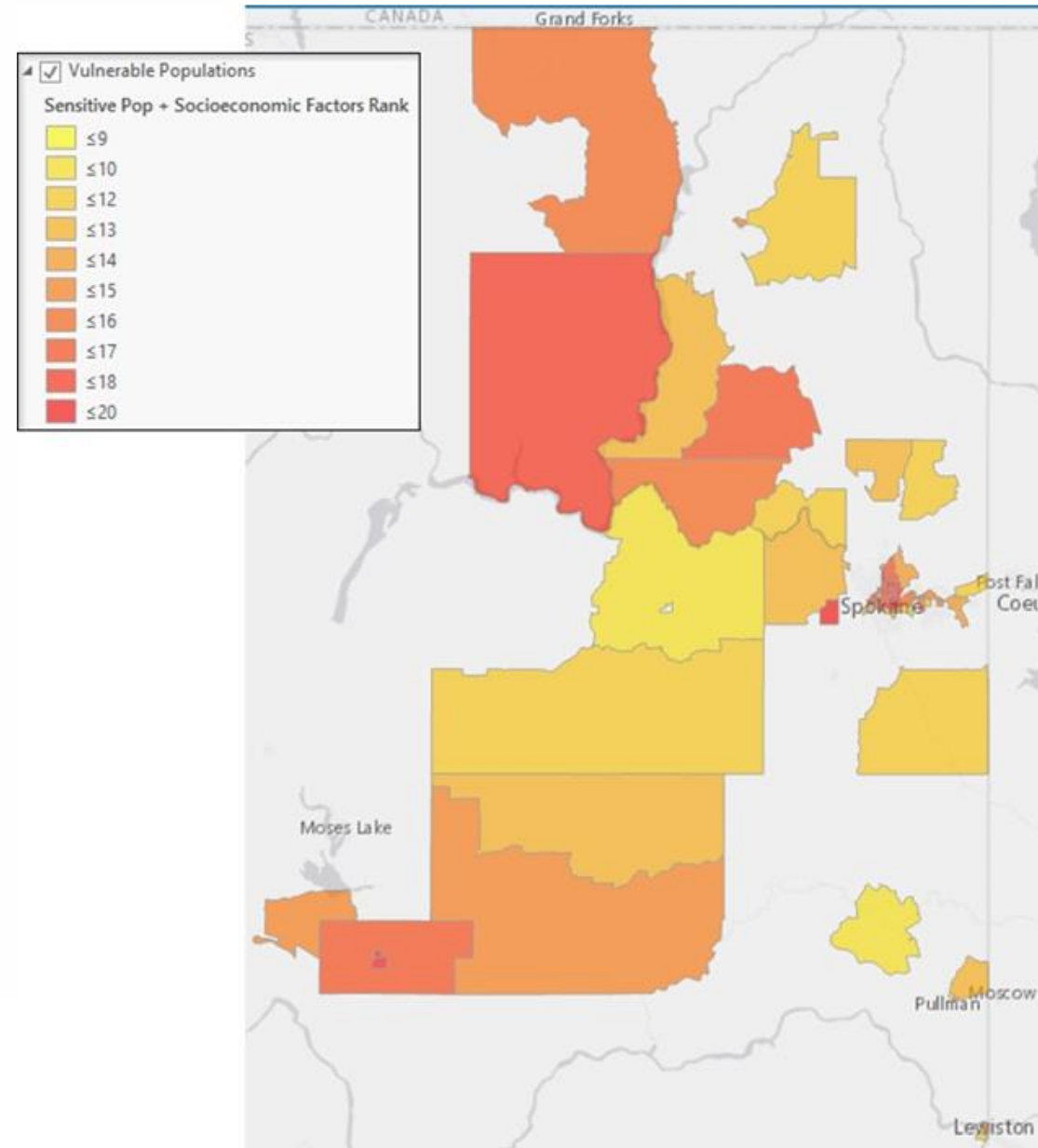


Note: 2020 emissions are estimated to be ~2.7 million metric tons.

## Equity & Non-Energy Benefits Plan

- Avista is developing an Equity Advisory Group
  - First meeting will occur prior to May 1, 2021.
- Avista conducted a preliminary assessment of vulnerable communities within the service territory.
- Conducted base-line comparisons for:
  - Energy use;
  - Energy burden;
  - Reliability and resiliency; and
  - Avista power plant emissions.
- Avista will conduct analysis for all resources to consider non-energy impacts to all communities.

## Vulnerable Communities with Avista Washington Service Area



# Washington Related Comments Summary of Key Issues & Highlights

## Next Public Meeting:

February 24<sup>th</sup> from 5 pm to 7pm will be a public IRP meeting for both natural gas and electric IRPs for all customers.

[https://us02web.zoom.us/webinar/register/WN\\_dGkqejcaRLa8epxl0rKclA](https://us02web.zoom.us/webinar/register/WN_dGkqejcaRLa8epxl0rKclA)

## Public comment themes to date

- Snake River Dam removal concerns
- Interest in microgrid/home storage
- **Energy storage**
- Move to zero carbon
- **AMI concerns**
- Cyber & physical security
- More R&D for energy storage
- EE incentives for landlords
- **Reliability (too much reliance on renewables)**
- What is equity

Commenter	Comment
WA/ID staff	Jurisdictional cost allocation of new resources.
Renewable NW	Consider lowering solar and storage capital costs.
Renewable NW, WA Staff	Enhance evaluation of ancillary services for resource options.
Rye Development	Avista should not seek to construct new natural gas facilities.
Rye Development	Advocate for capacity RFP as soon as possible.
NW Energy Coalition	Clarification of Social Cost of Carbon analysis within the plan.
NW Energy Coalition	Include 2045 Water Heaters in Demand Response acquisition.
Various Commenters	Additional detail and analysis of resource peak credit for resource adequacy.
Various Commenters	Additional analysis on Distributed Energy Resource's non energy benefits.
Various Commenters	Support for continued electrification analysis and more scenario analysis for both building and transportation electrification.
Tyre Energy	Consider Lancaster PPA extension as a resource option