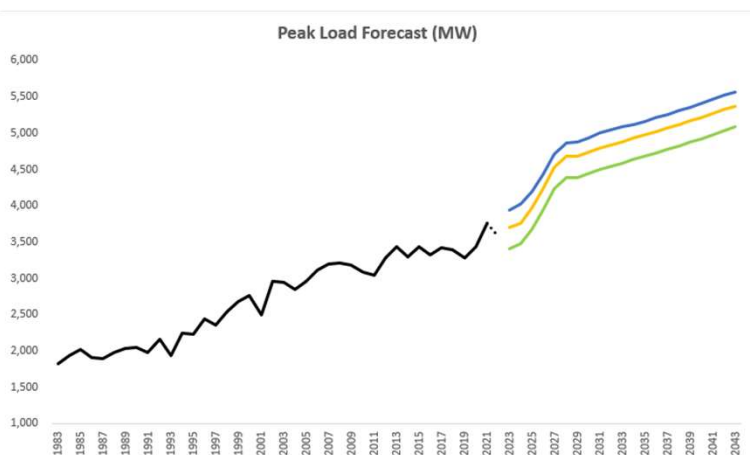




Future Supply Side Resources for 2023 IRP

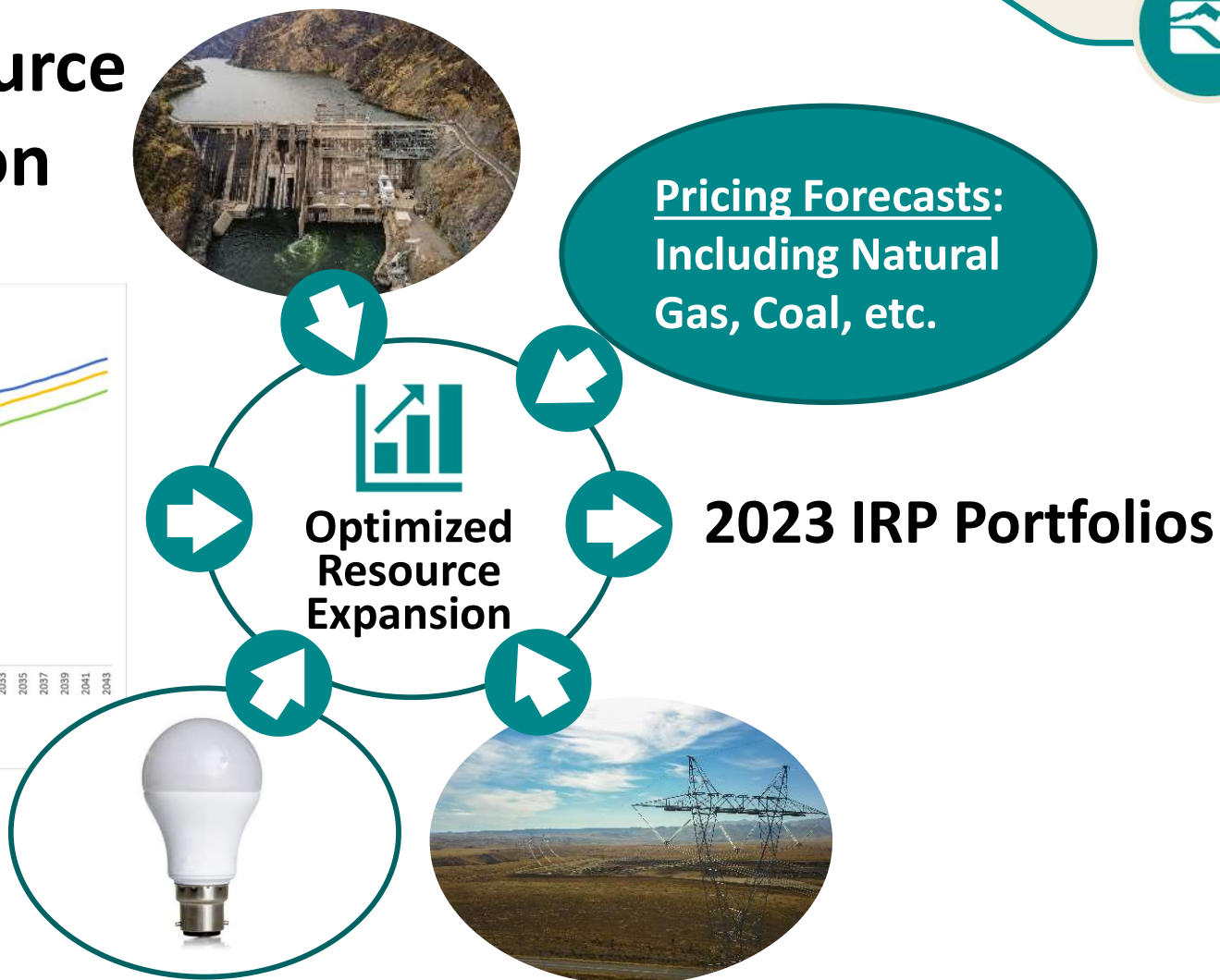
November 2022, Resource Planning

Integrated Resource Plan Construction



— Actual (DR Adjusted) — 0 Percentile — 50 Percentile — 100 Percentile

Due to availability of 2022 demand response program data the 2022 system peak has not been adjusted for outcomes of demand response programs ran in 2022.



Integrated Resource Plan Construction



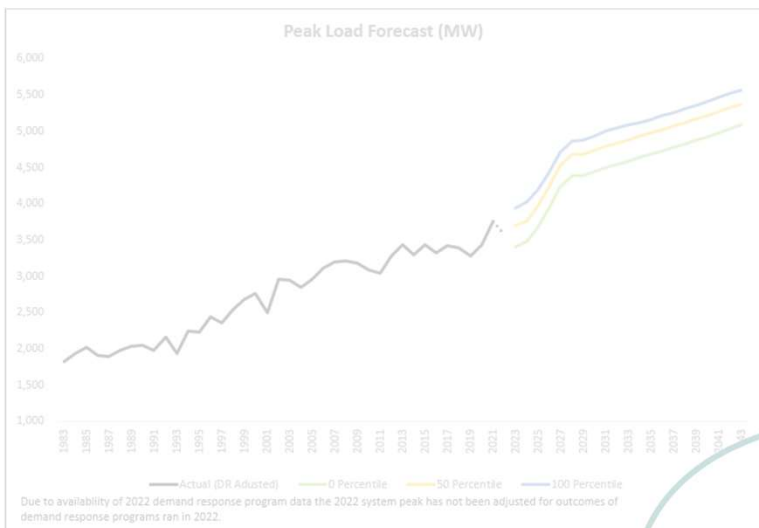
Future Supply Side Resources



Pricing Forecasts:
Including Natural Gas, Coal, etc.

Optimized Resource Expansion

2023 IRP Portfolios





Supply Side Resource Considerations

Current market adoption?

Others modeling it?

Resource characteristics?

Cost (now/future)?

Legislative/Regulatory?





Inflation Reduction Act (IRA) of 2022*

Signed August 16, 2022

Production Tax Credits (PTC)**

\$27.50/MWh, inflation adjusted

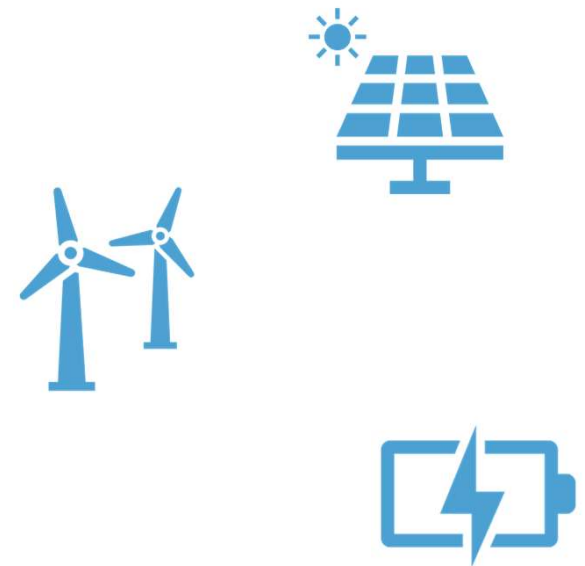
Investment Tax Credit (ITC)**

30% Tax Credit

Possible “Bonus” Credits

Additional 10% energy community credit

Additional 10% domestic production/content credit



*Clarity forthcoming from federal government on more specific IRA details

**Labor requirements must be met (prevailing wages/apprenticeship); Otherwise, 1/5 PTC or ITC



IRA Uncertainty

Clarity still forthcoming from federal government on more specific IRA details

Currently in open public comment period

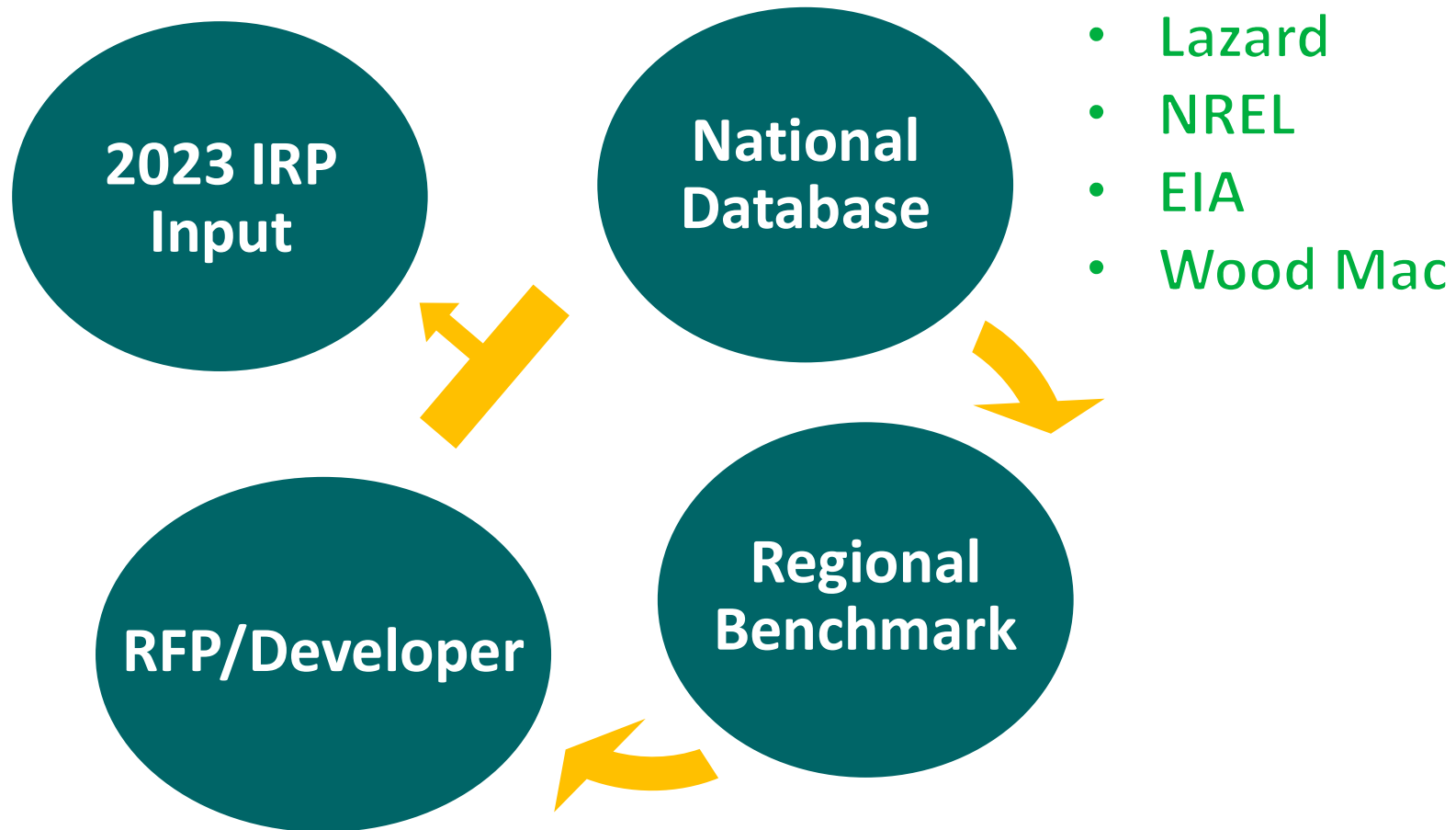
Prevailing wages/apprenticeship requirements must be met

1/5 PTC or 1/5 ITC otherwise

Supply chain constraints/congestion

Transmission not included in IRA; Needed to facilitate IRA buildout

Resource Cost Methodology





Total Resource Cost

Capital Cost

(Cost to build)

Fixed O&M

(Costs incurred
regardless of
output)

Variable O&M

(Costs incurred
dependent on
output)

Other Cost Modifiers

(Fuel Cost, Start
Cost, etc.)



Draft Supply Side Resource Costs

Resource	Capital Cost* (\$/kW)
Natural Gas – CCCT (300 MW)	1,440
Natural Gas – SCCT (170 MW)	910
Natural Gas – Recip (50 MW)	1,880
Natural Gas – Danskin 1 CCCT Retrofit (90 MW)	2,500
Hydrogen – SCCT (170 MW)	940
Small Modular Nuclear Reactor (100 MW)	7,940
Geothermal (30 MW)	5,140
Biomass (30 MW)	4,760

*Capital Cost in 2024 dollars



Draft Supply Side Resource Costs

Resource	Capital Cost* (\$/kW)
Solar (100 MW)	1,200
Wind (100 MW)	1,760
Storage: 4-Hr (5/50 MW)	1,600
Storage: 8-Hr (50 MW)	2,490
Storage: Pumped Hydro 12-Hr (250 MW)	3,690

*Capital Cost in 2024 dollars



Additional Potential Supply Side Resource Options

Natural Gas Conversion of
Bridger Units 3 & 4



Storage: Multi-Day 100-hr

