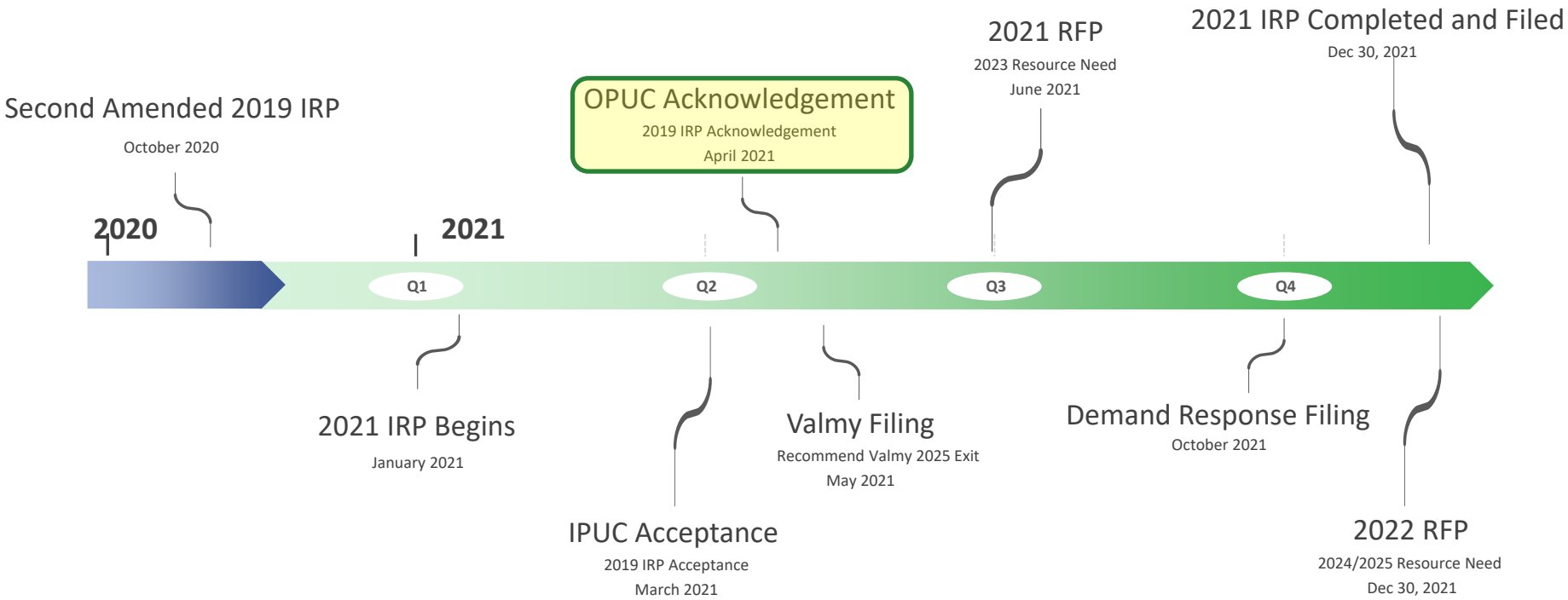
2021 IRP Overview

Jared Hansen
Jared Ellsworth

2021 IRP Milestones



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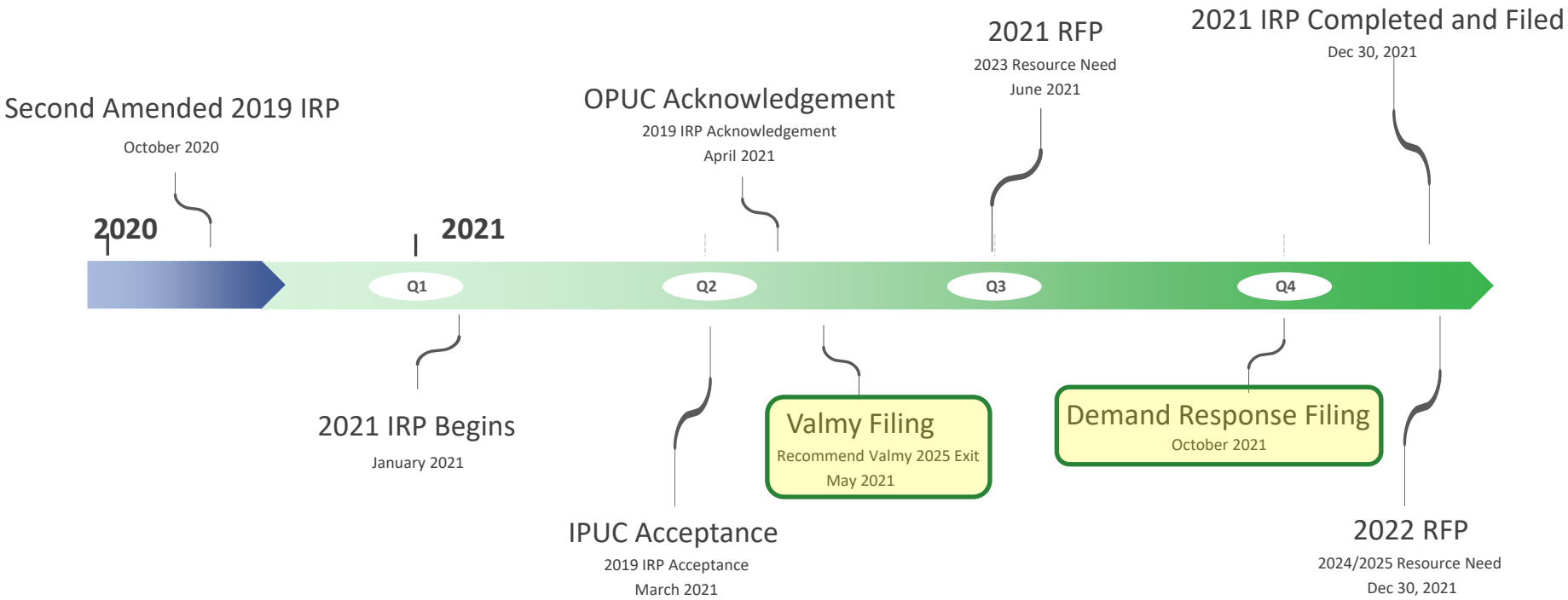

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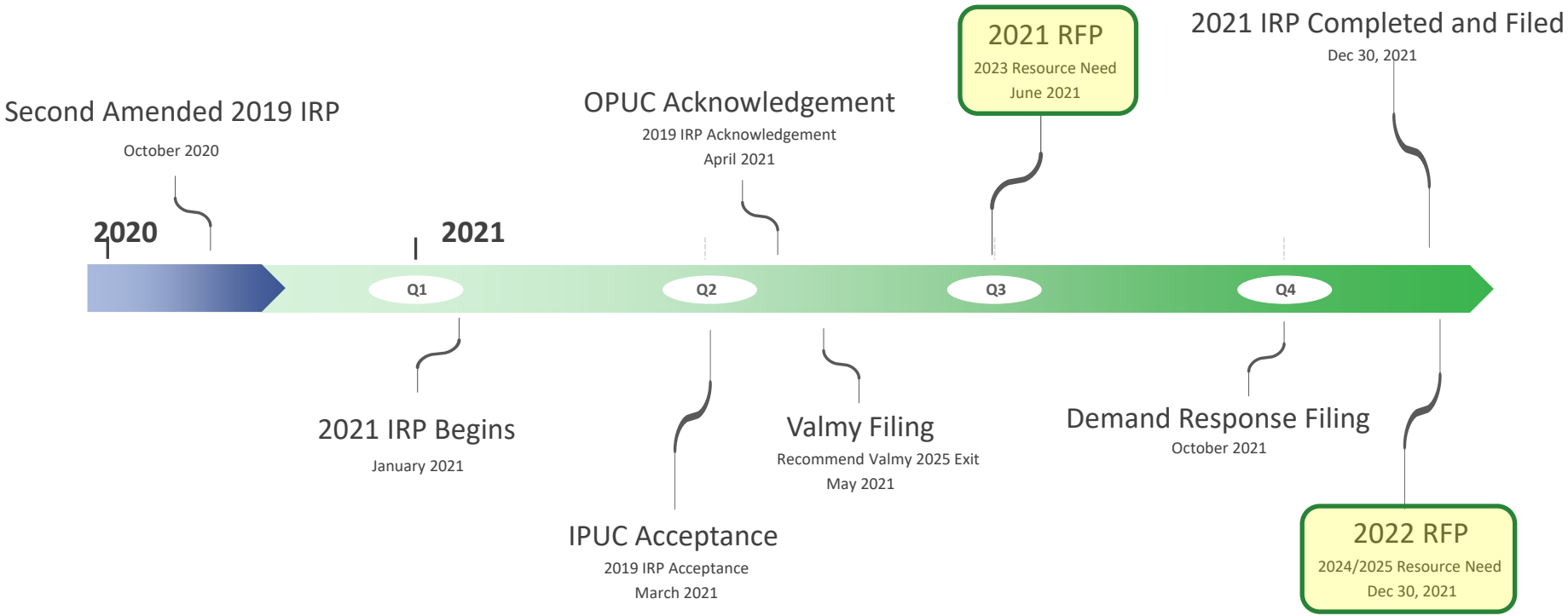

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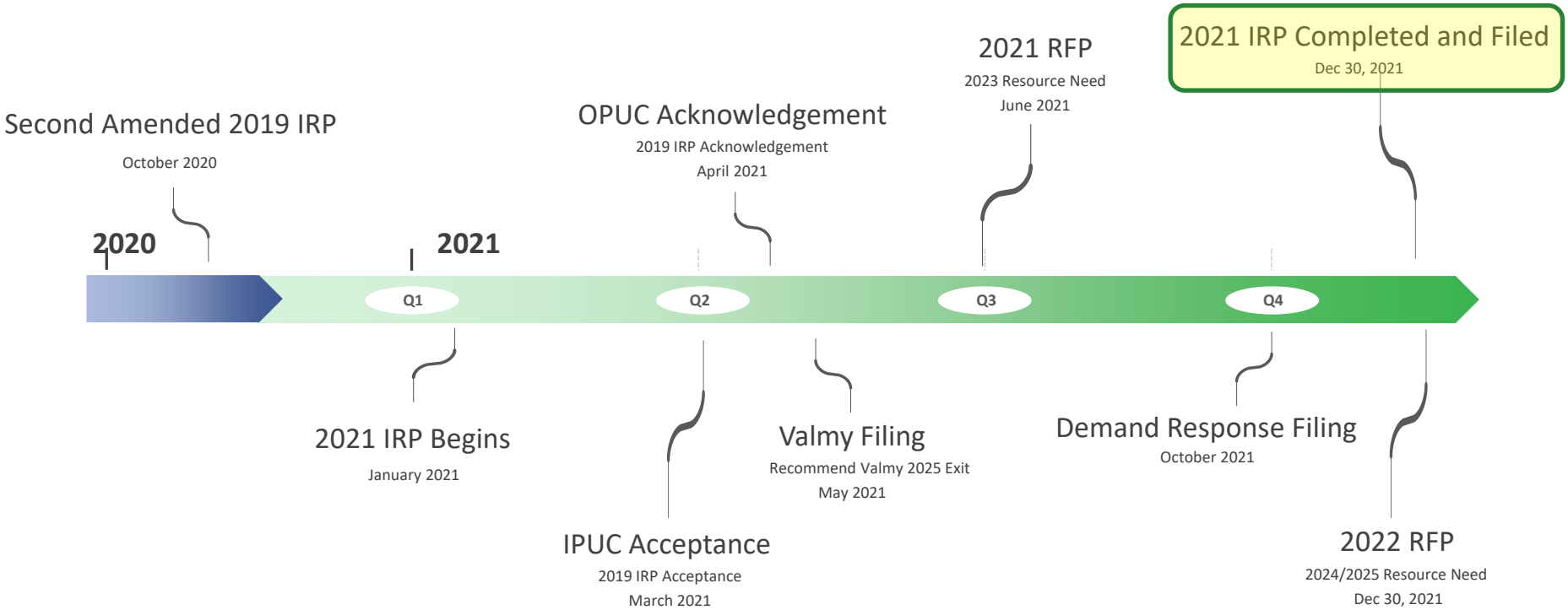

IRP Advisory Council Feedback

IRPAC/IRP Process	Keep it Up!	Take a Look
Idaho Power's IRP process was inclusive of different perspectives.	1	
IP made complex concepts easy to understand.	3	
The IRPAC meetings are too long and/or spend too much time in the weeds on the analysis.		3
IRPAC members liked the ideation breakout session.	3	
Idaho Power clearly asks for feedback from the IRPAC members for specific questions/scenarios.		1
Idaho Power is well organized and facilitates the IRPAC meetings well.	5	
Representation		
IRPAC members are diverse in industry, expertise, and demographics.	1	2
Environmental special interest groups on the IRPAC seem to have too much influence on the IRP process.		3
Analysis Review and Costs		
It would be helpful to have more breakout groups on the more technical aspects of the IRP.		4
IRPAC members are concerned about increasing costs to customers.		3
Website		
The IRP information is easy to find on the Idaho Power website.		1

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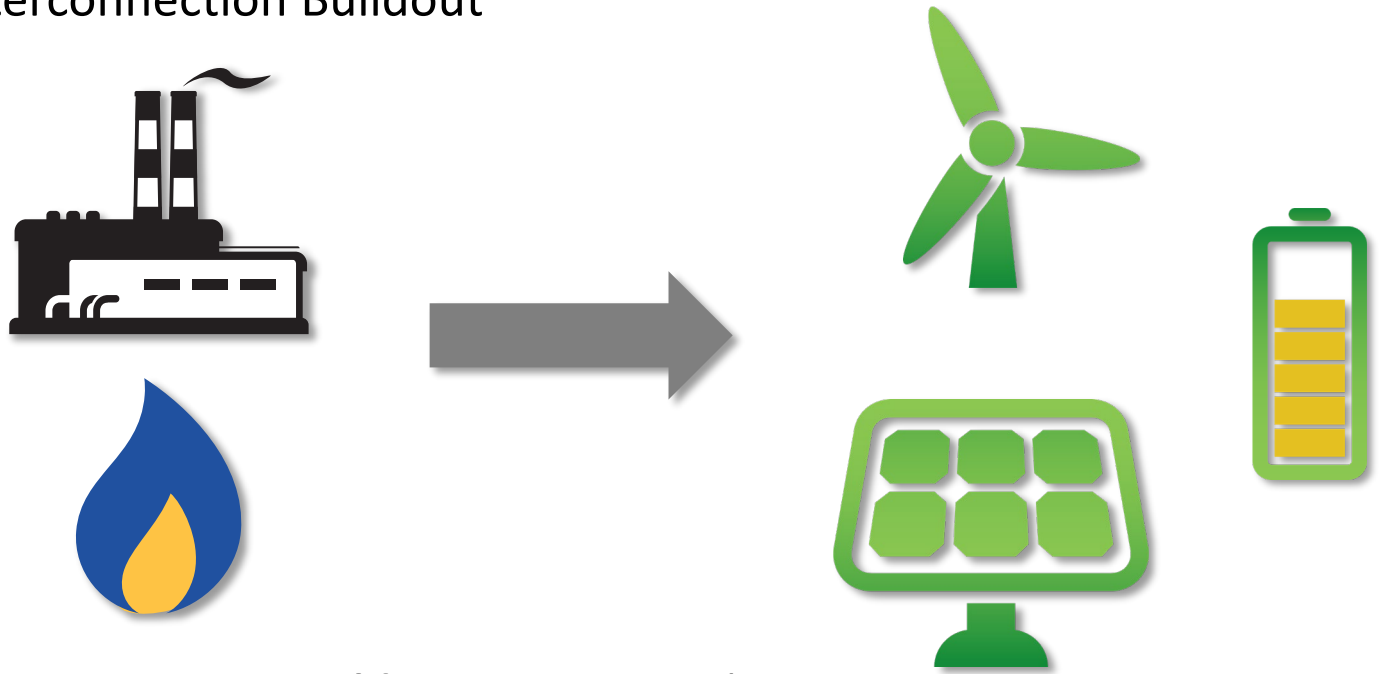
OPUC Feedback – 2019 IRP

1. Share Valmy Analysis results
2. Analyze additional exit dates for Bridger Units 1 & 2 without SCR investments
3. Explain and support B2H cost contingency
4. Model expanded demand response programs
5. Improve model optimization techniques
6. No cap on battery storage
7. Better portfolio naming conventions

Modeling Improvements

Western Interconnection Buildout



Western Interconnection Buildout: Incremental Western Interconnection resources better reflect the direction identified in others' long-term plans

Modeling Improvements

Zonal Optimization

VS

Modeling Improvements

Zonal Optimization

AND

Process Improvement

We applied learnings from the 2019 IRP Review to thoroughly review inputs and outputs in the 2021 IRP

Load & Resource Balance

Year 2023

Resource	2019 IRP	2021 IRP
Demand + Planning Margin	(4,229)	(**4,301**)
Internal Resources	3,354	**3,314**
Demand Response	390	**176**
Market Access	593	**380**
Emergency Transmission	330	**330**
Surplus / (Deficit)	438	**(101)**

Load & Resource Balance

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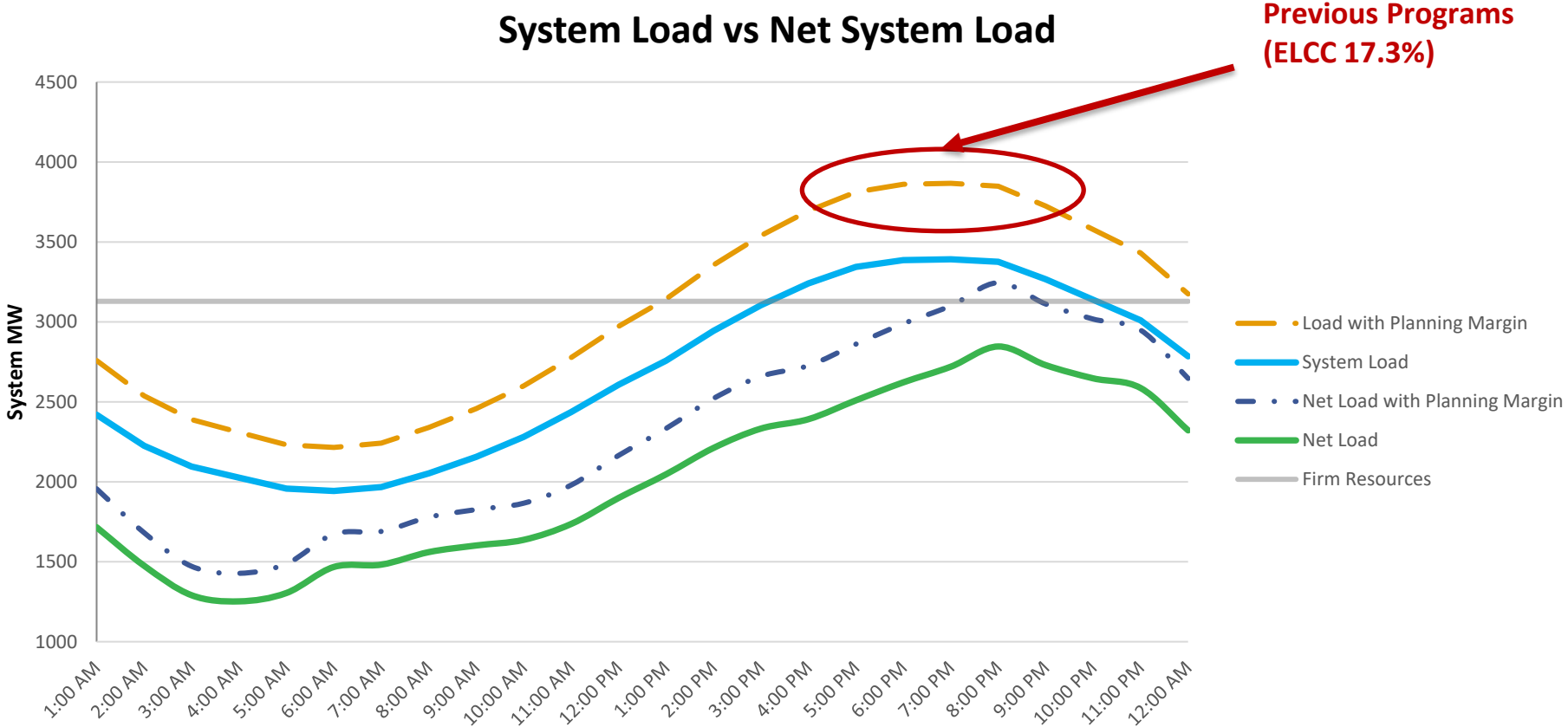

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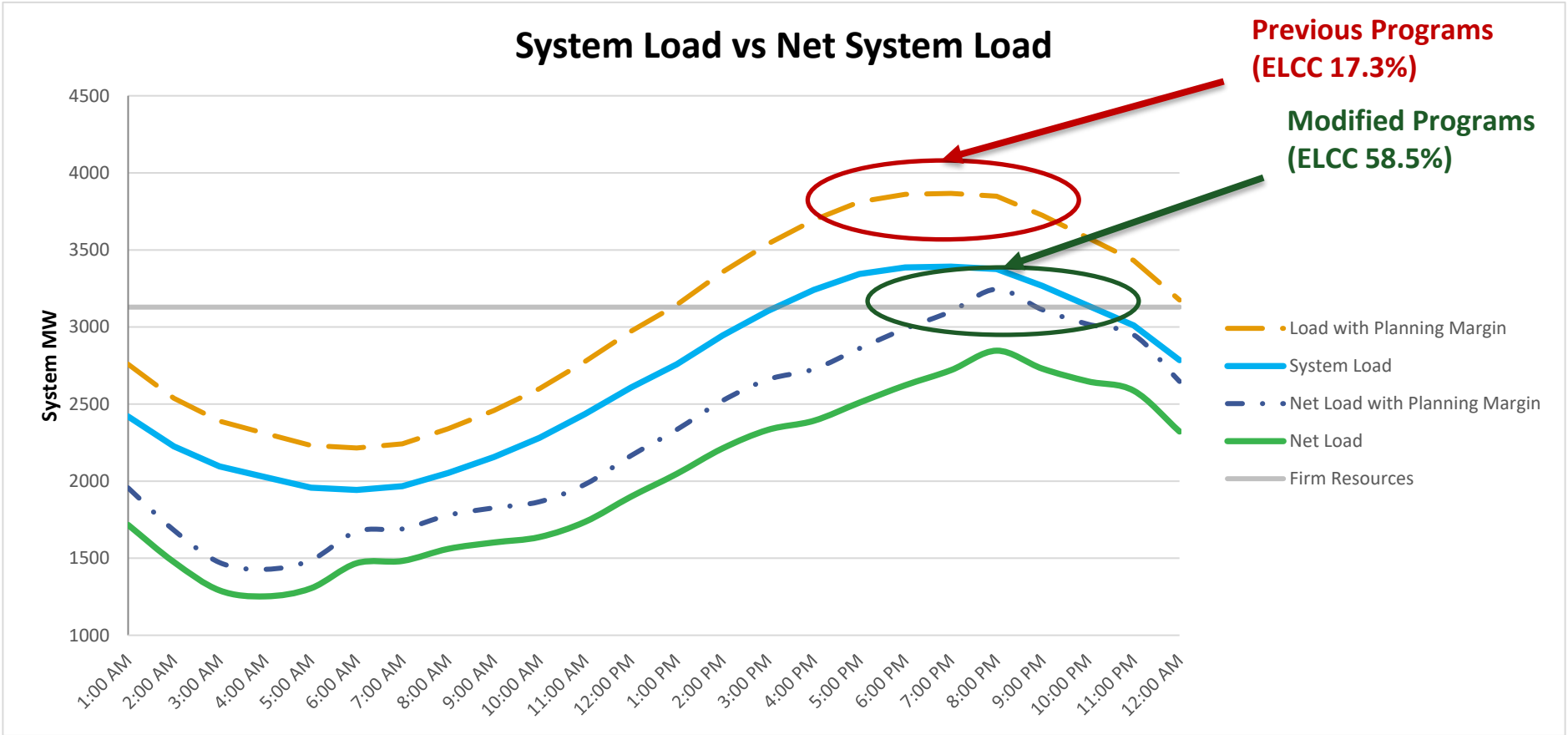

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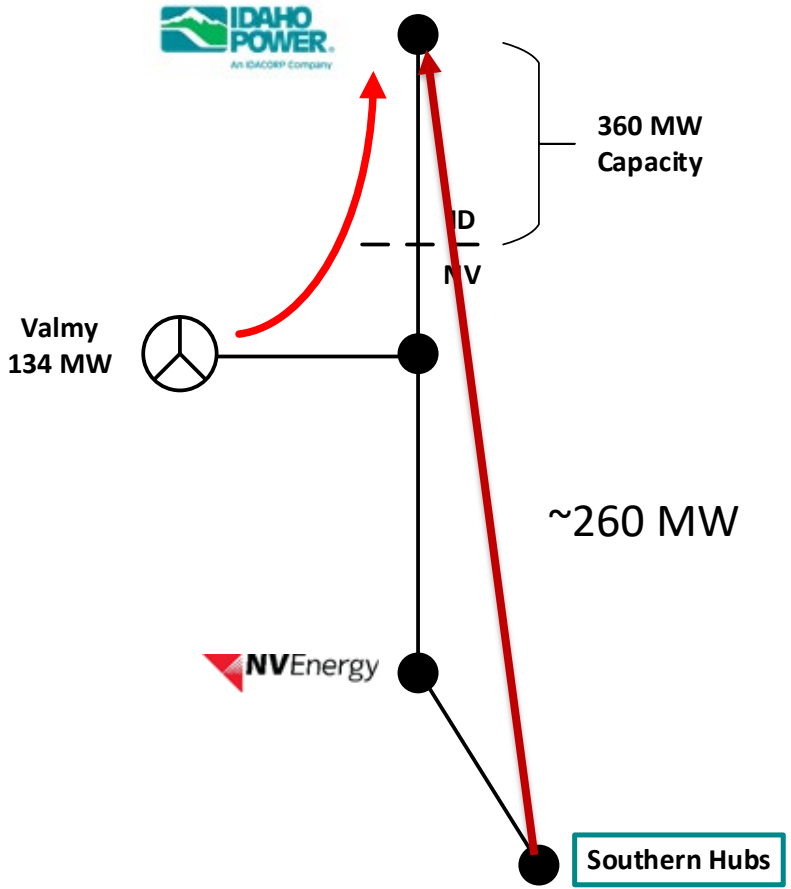
Market Access – 2019 IRP



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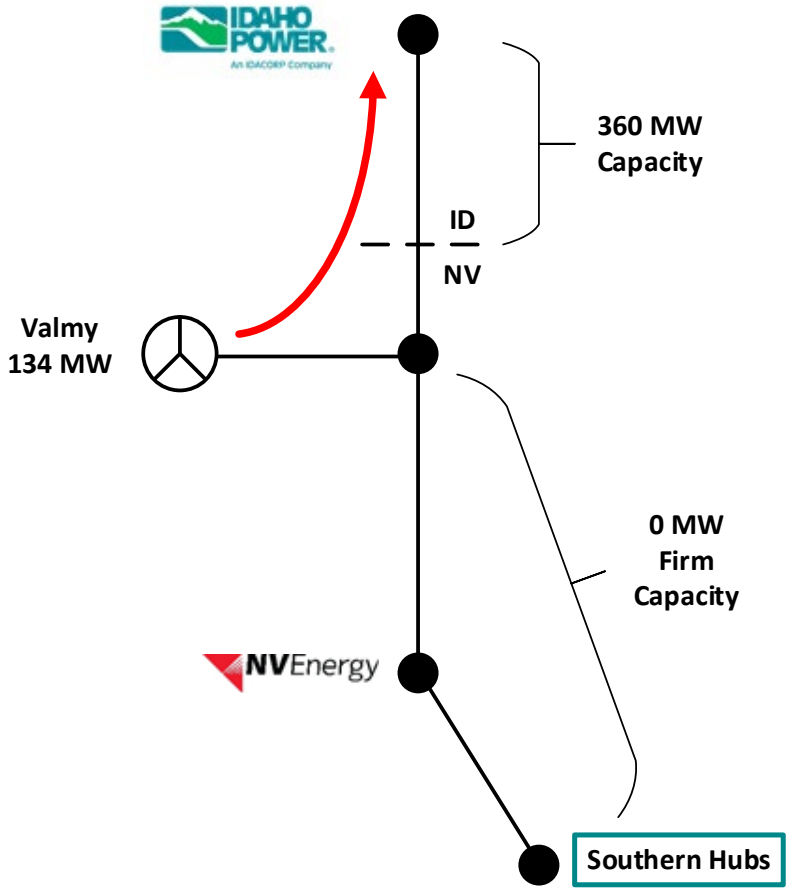

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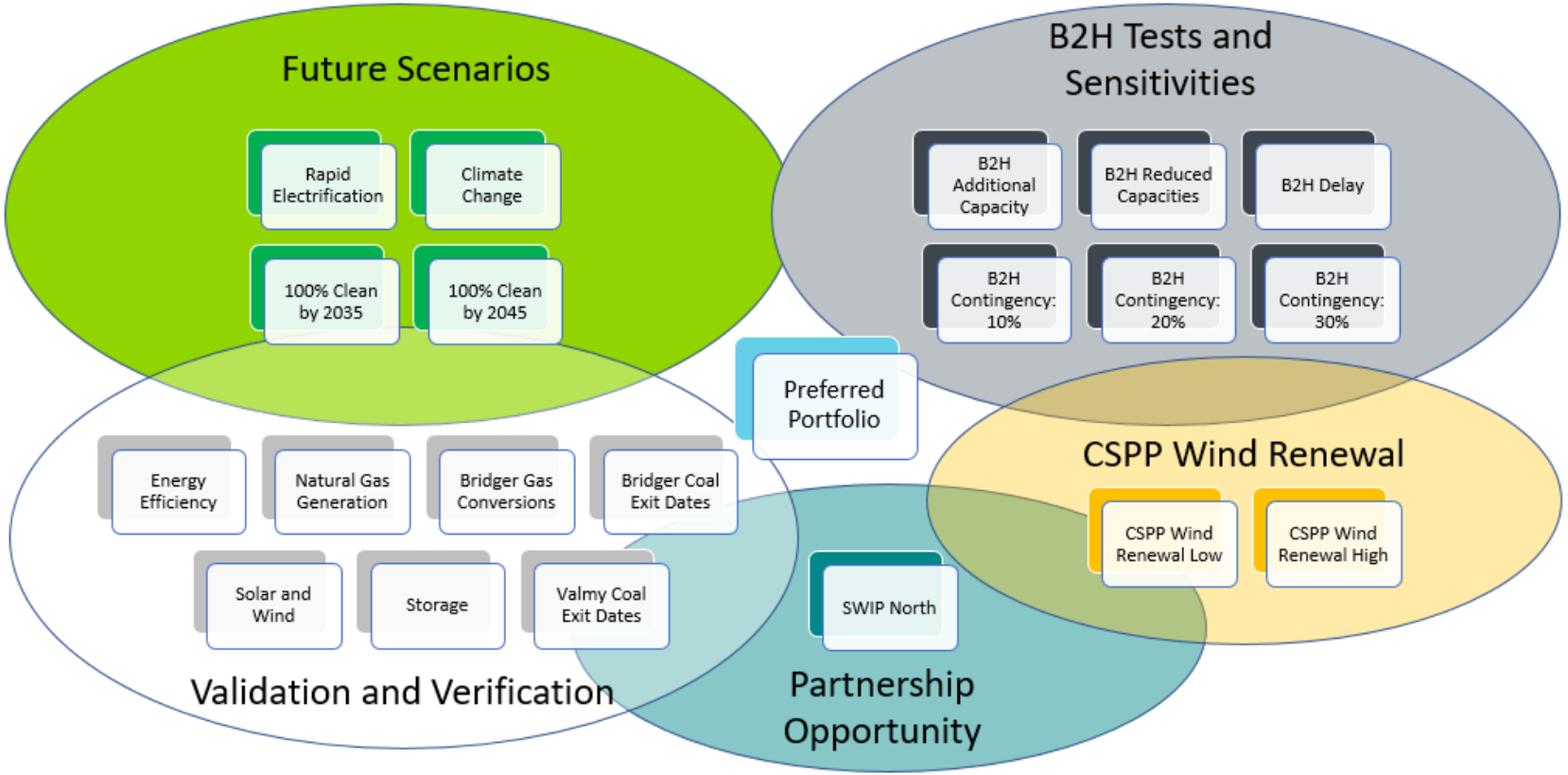
2021 IRP: Analysis and Sensitivities



Branching Scenario Analysis

- Base with B2H
- Base with B2H without Gateway West
- Base with B2H PAC Bridger Alignment
- Base without B2H
- Base without B2H without Gateway West
- Base without B2H PAC Bridger Alignment

Resource Comparison

2019 IRP

	Gas	Solar	Battery	Demand Response	Coal Exit
2019					-127 (Valmy)
2020					-58 (Boardman)
2021					
2022		120			-177 -133 (Bridger, Valmy*)
2023					
2024					
2025					
2026					-180 (Bridger)
2027					
2028					-174 (Bridger)
2029					
2030		40	30	5	-177 (Bridger)
2031	300			5	
2032				5	
2033				5	
2034		40	20	5	
2035		80	20	5	
2036		120	10	5	
2037	55.5			5	
2038	55.5			5	
Nameplate Total	**411**	**400**	**80**	**45**	**-1,026**
B2H (2026)	500				

2021 IRP

Base B2H (MW)

Year	Gas	Wind	Solar	Storage	Trans.	DR	Coal Exits	EE Forecast	EE Bundles
2021	0	0	0	0	0	0	0	23	0
2022	0	0	0	0	0	300	0	24	0
2023	0	0	120	115	0	20	-357	24	0
2024	357	700	0	5	0	0	0	25	0
2025	0	0	300	105	0	20	-308	27	0
2026	0	0	215	0	500	0	0	28	0
2027	0	0	250	5	0	0	0	27	0
2028	0	0	120	55	0	0	-175	27	0
2029	0	0	100	255	0	0	0	26	0
2030	0	0	0	55	0	0	0	24	0
2031	0	0	0	55	0	0	0	24	0
2032	0	0	0	55	0	0	0	23	0
2033	0	0	0	100	0	0	0	22	0
2034	-357	0	100	150	0	0	0	21	0
2035	0	0	100	305	0	0	0	20	0
2036	0	0	0	55	0	0	0	16	0
2037	0	0	0	105	0	0	0	14	0
2038	0	0	100	155	0	20	0	12	0
2039	0	0	0	55	0	20	0	11	3
2040	0	0	0	55	0	20	0	10	9
Subtotal	0	700	1,405	1,685	500	400	-841	428	12
Total	**4,289**								

Resource Comparison

2019 IRP Preferred Portfolio	2021 IRP Preferred Portfolio
The last coal generation unit exit was planned in 2030	The last coal generation unit exit is planned in 2028 (two years earlier).
The B2H transmission line was identified as a least-cost resource.	B2H continues to be a least-cost resource.
411 MW of new natural-gas generation was identified in the plan.	The plan includes a conversion of Bridger coal units 1 and 2 to natural gas operation with a 2034 exit date.
400 MW of solar was included.	700 MW of wind plus 1,405 MW of solar are included.
80 MW of battery storage was identified.	1,685 MW of battery storage is included.
45 MW of additional Demand Response (DR) was selected.	In addition to updating existing DR programs to be more effective during high-risk hours, an additional 100 MW of DR is included.
No energy efficiency bundles were included beyond the measures determined to be cost-effective in the Potential Assessment.	In addition to the measures identified in the Potential Assessment, 12 MW of additional energy efficiency measures was selected, for a total of 440 MW of planned energy efficiency.

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Resource Comparison

Resource	2019 IRP	2021 IRP	Difference (2021 IRP – 2019 IRP)
Gas	411	**0**	(411)
Solar	400	**1,405**	1,005
Battery	80	**1,685**	1,605
Demand Response Expansion	45	**100**	55
Final Bridger Coal Exit	2030	**2028**	(2 years)

B2H Term Sheet w/ BPA & PAC

Idaho Power & BPA

- Idaho Power Receives
  - B2H Permitting Interest
  - Transmission Wheeling Revenue
  - BPA Transmission Service
- BPA Receives
  - SE Idaho Load Trans. Service
  - Transmission Wheeling Revenue

Idaho Power & PacifiCorp

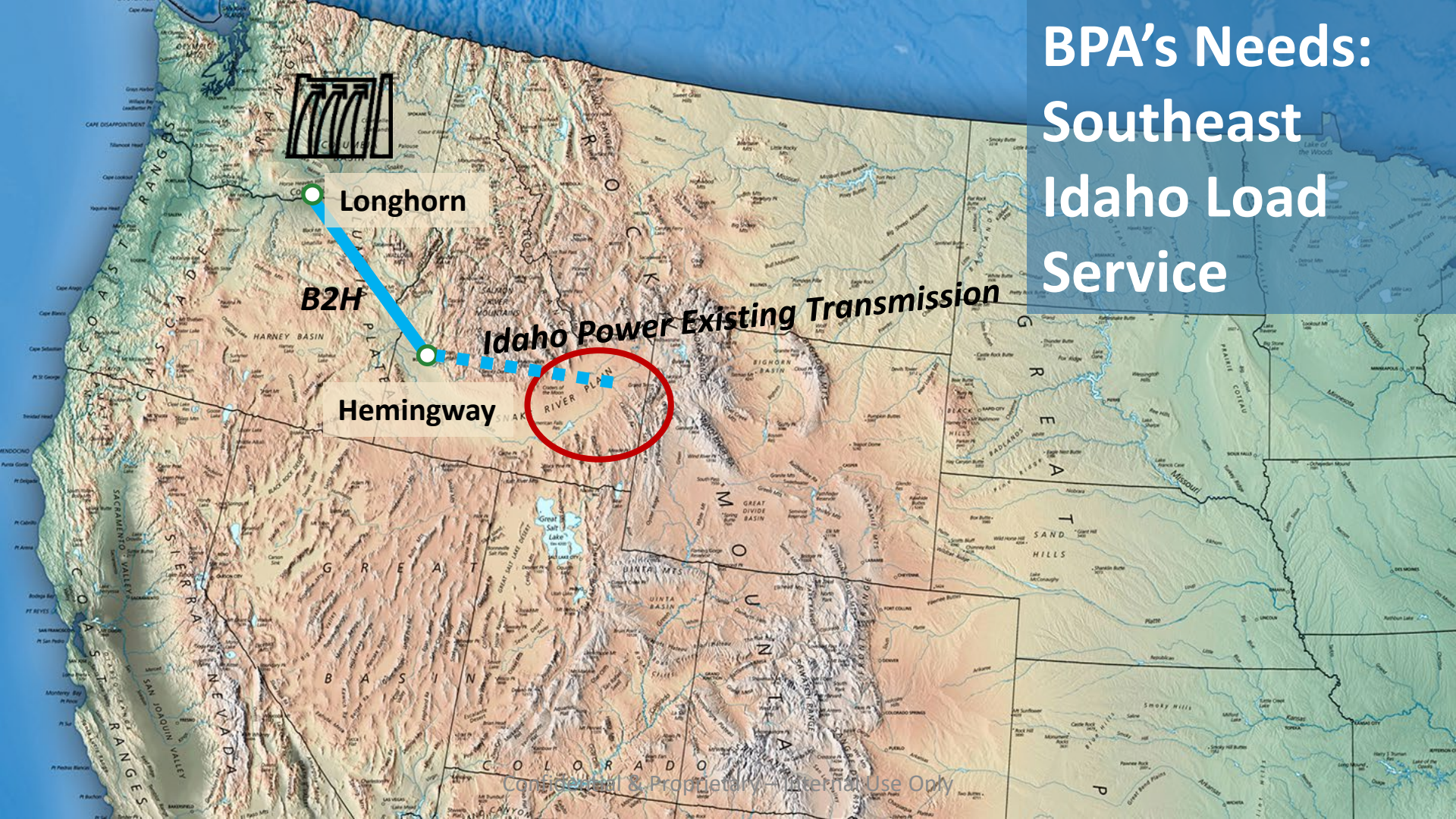
- Idaho Power Receives
  - Transmissions Assets
    - 200 MW Bidirectional Capacity to a Southern Power Hub
    - SE Idaho load service assets (via BPA)
- PacifiCorp Receives
  - S. Idaho Transmission Assets
    - 600 MW east-to-west
    - 300 MW west-to-east

B2H Ownership – 2019 IRP

	W-E Capacity	E-W Capacity
IDAHO POWER An IDACORP Company (21%)	500 MW Summer 200 MW Winter	84 MW
BONNEVILLE POWER ADMINISTRATION (24%)	250 MW Summer 550 MW Winter	96 MW
PACIFICORP (55%)	300 MW	820 MW

* Permitting interests only, these do not represent construction percentages

BPA's Needs: Southeast Idaho Load Service

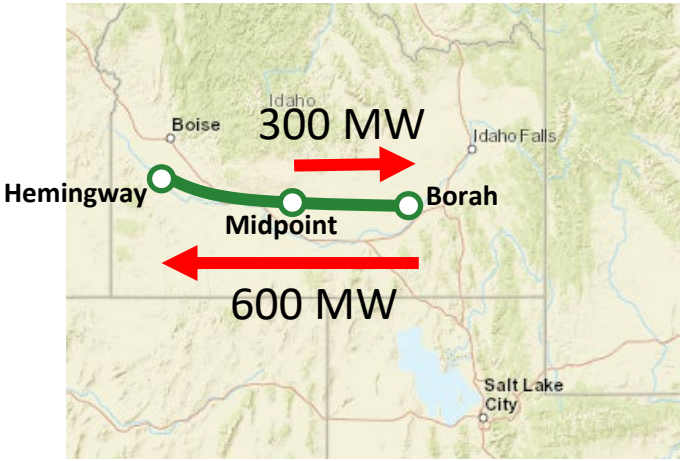


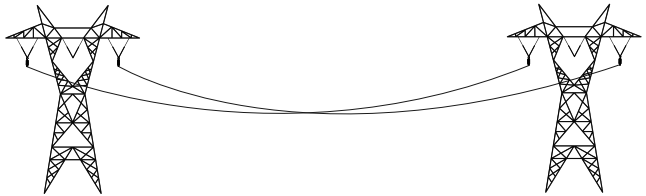
B2H Ownership – 2021 IRP

	W-E Capacity	E-W Capacity
IDAHO POWER An IDACORP Company (45%)	750 MW	180 MW
BONNEVILLE POWER ADMINISTRATION (0%)	0 MW	0 MW
PACIFICORP (55%)	300 MW	820 MW

Idaho Power – PacifiCorp Transaction

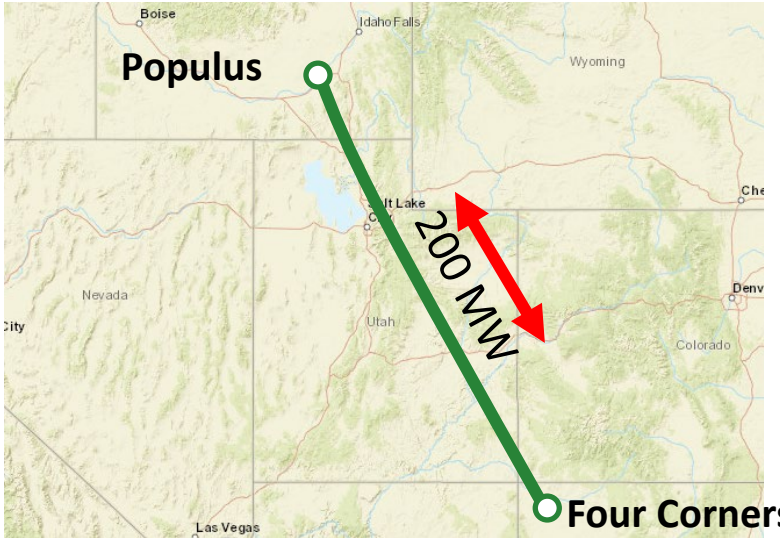
Idaho Power to PacifiCorp (Assets)





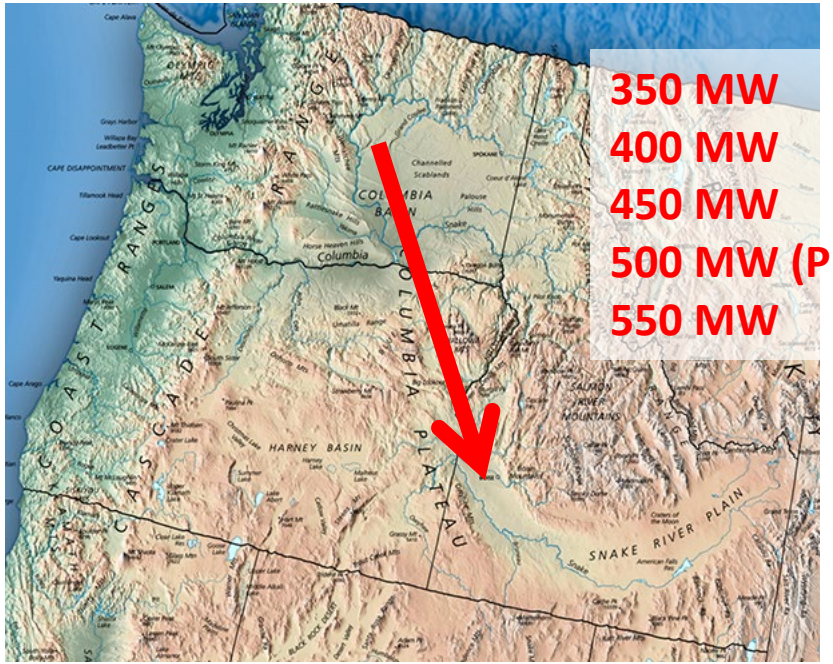
510 MW OATT → 300 MW OATT

PacifiCorp to Idaho Power (Assets)



B2H Robustness Testing

1) Various Capacities



2) Various Costs

0% Contingency
10% Contingency
20% Contingency
30% Contingency

3) In-Service Dates

2026 (Planned)
2027 (Tested)

B2H Robustness Test – Capacity

B2H capacity sensitivities

	Portfolio NPV	Potential Offsetting Costs Not Included (NPV)
Base B2H Portfolio—350 MW Planning Contribution	$8,042 million	$51 million
Base B2H Portfolio—400 MW Planning Contribution	$7,992 million	$34 million
Base B2H Portfolio—450 MW Planning Contribution	$7,953 million	$17 million
Base B2H Portfolio (500 MW)	$7,916 million	$0
Base B2H Portfolio—550 MW Planning Contribution	$7,884 million	$0
Base without B2H PAC Bridger Alignment Portfolio (for comparison)	$8,185 million	N/A

B2H Robustness Test – Cost

B2H cost sensitivities

	B2H Cost Idaho Power Share TOTAL	B2H Cost 2021 IRP NPV
B2H 0% Contingency	$485 million	$159.6 million
B2H 10% Contingency	$526 million	$178.4 million
B2H 20% Contingency	$566 million	$197.2 million
B2H 30% Contingency	$607 million	$216.1 million

B2H Robustness Test – In-Service

B2H 2027 portfolio costs, cost sensitivities ($ x 1,000)

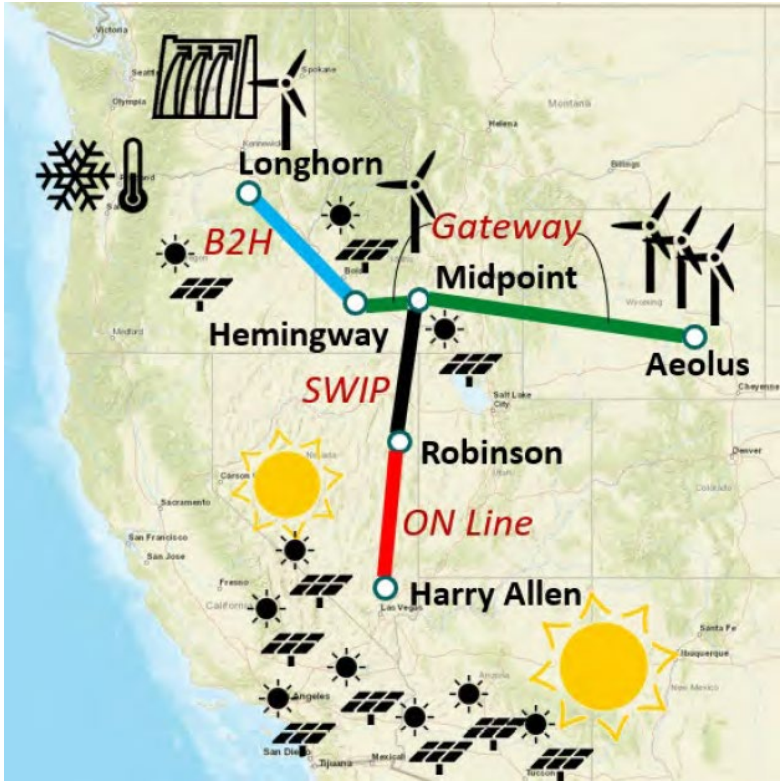
	Portfolio Costs	Portfolio Cost Compared to B2H 2027 Portfolio
Preferred Portfolio (Base with B2H)	$7,915,702	-$69,062
Base with B2H in 2027	$7,984,764	-
Base without B2H PAC Alignment	$8,185,334	$200,570

B2H Summary

- Three-Party Term Sheet provides increased certainty
- $265 million difference between the Base with B2H Portfolio and the best non-B2H Portfolio
- Robust performance in Capacity, Cost, and In-Service date testing

Interregional Connectivity

- Interregional Connectivity
- Load Diversity
- Resource Diversity
- Partnerships to Meet Clean Energy Goals



Action Plan

Year	Action
2022	Conduct ongoing B2H permitting activities. Negotiate and execute B2H partner construction agreements. Once the agreements are in place, file for a certificate of public convenience and necessity with state commissions.
2022	Discuss partnership opportunities related to SWIP-North with the project developer for more detailed evaluation in future IRPs.
2022–2023	Jackpot Solar is contracted to provide 120 MW starting December 2022. Work with the developer to determine, if necessary, mitigating measures if the project cannot meet the negotiated timeline.
2022–2024	Plan and coordinate with PacifiCorp and regulators for conversion to natural gas operation with a 2034 exit date for Bridger units 1 and 2. The conversion is targeted before the summer peak of 2024.
2022–2025	Issue a Request for Proposal (RFP) to procure resources to meet identified deficits in 2024 and 2025.
2022–2025	Plan and coordinate with PacifiCorp and regulators for the exit/closure of Bridger Unit 3 by year-end 2025 with Bridger Unit 4 following the Action Plan window in 2028.
2022–2025	Redesign existing DR programs then determine the amount of additional DR necessary to meet the identified need.
2022–2026	Conduct preliminary construction activities, acquire long-lead materials, and construct the B2H project.
2022–2027	Implement cost-effective energy efficiency measures each year as identified in the energy efficiency potential assessment.
2022–2027	Work with large-load customers to support their energy needs with solar resources.
2022–2027	Finalize candidate locations for distributed storage projects and implement where possible to defer T&D investments as identified in the Action Plan.
2025	Exit Valmy Unit 2 by December 31, 2025.
2025–2026	Subject to coordination with PacifiCorp, and B2H in-service prior to summer 2026, exit Bridger Unit 3 by December 31, 2025.