

INTEGRATED RESOURCES PLAN (IRP)

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Presented by:

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WATER AND
POWER



Agenda

- IRP background
- Public outreach
- Assumptions from Spring 2023
- Scenario discussion/overview
- Scorecard
- Preferred scenario(s) overview
- Timeline



IRP Background

SB 350 Requirements

- Mandates an IRP for utilities with load > 700 giga-watt hours
- There are 16 publicly owned utilities in CA that need to develop an IRP
- IRP is due before 1/1/24 to the California Energy Commission (CEC)
 - IRP written document/report
 - 4 required tables
 - Supplemental information



Senate Bill 100 Renewable Portfolio Standard

	Compliance Period 3		Compliance Period 4	Compliance Period 5	Compliance Period 6	Compliance Period 7+
California RPS mandatory procurement requirement (% of net retail sales)	YEAR	%	Calendar year (CY): 2021-2024 44% by 12/31/2024	CY: 2025-2027 52% by 12/31/2027	CY: 2028-2030 60% by 12/31/2030	CY: 2031+ (3-year blocks) 60% post 2030
	2017	27.0%				
	2018	29.0%				
	2019	31.0%				
	2020	33.0%				
Portfolio content category (PCC) 1 minimum:	75% or more of net procurement requirement					
PCC 2 maximum:	25% or less of net procurement requirement (note in order to maximize PCC 3 use, BWP would use a maximum of 15% PCC 2.)					
PCC 3 maximum:	10% or less of net procurement requirement					
Long-term contract requirement:	N/A		At least 65% of contracts must be long-term contracts (at least 10 years or more in duration).			



Senate Bill 100 and SB 1020

- SB 100 (signed in 2018)
 - RPS of 60% by 2030
 - 100% zero-carbon resources by 2045
- SB 1020 (signed in 2022)
 - 90% zero-carbon resources by 2035
 - 95% zero-carbon resources 2040 (however, BWP's aspirational goal is 100% zero-carbon resources by 2040)



Stakeholder Technical Advisory Group (STAG)

#	Date	Discussion
1	12/15/22	IRP 101, IRP Survey and Role of the STAG
2	1/26/23	Power Plant 101, Resource Planning 101, Energy Control Center 101 and Burbank Solar and Storage Projects update
3	2/23/23	Natural Gas and Energy Price update, Renewable Portfolio Standard 101 and IPP 101
4	3/23/23	Black and Veatch Update and Power Supply Update
5	4/27/23	Magnolia Power Project (MPP) Tour, Survey Update and Power Supply Update
6	6/21/23	Black and Veatch Base case, Survey Update and Power Supply Update



Stakeholder Technical Advisory Group (STAG)

#	Date	Discussion
7	8/7/23	IRP Update and Scenario Discussion
8	8/17/23	Scenario Discussion, Scorecard Development and Survey Update
9	10/12/23	Final Survey Results, Scorecard Results, Scenario Overview and Preferred Scenario Selection



Community Stakeholder Meetings

#	Date	Discussion
1	4/20/23	IRP 101, Resource Planning 101, IRP Survey Discussion and Base Case and Scenario Discussion
2	7/13/23	Resource Planning Update, IRP Survey Results and Black and Veatch Assumptions Update and Base Case Discussion
3	8/10/23	IRP 101 Discussion, Survey Discussion and Base Case and Scenario Update
4	10/26/23	Scorecard Results, Scenario Overview and Preferred Scenario Selection



IRP Survey

- 943 responses
 - Reliability and Affordability were the most important aspects to the community
- Posted on the IRP website
- Sent out via billing inserts
- Advertised through monthly newsletter, Currents



**2024 INTEGRATED
RESOURCE PLAN**

Help plan Burbank's clean energy future!
Take this 10 minute survey and share your ideas.

BWP and City Council Updates

- BWP Board
 - Provided a monthly update on the IRP, since December 2022
- City Council
 - Provided an IRP update on April 25, 2023
 - Provided an IRP update on July 25, 2023



Break for Questions



Data Assumptions (April-May 2023)

ITEM	April-May 2023 Assumptions	Current Update
Load	Did not include data centers or other load additions and was based on planned projects as of May 2023	Potential 40-60 MW of 24/7 load coming online by 2025-2026.
Natural Gas Prices	\$6.07 forecast for October 2023 in model	\$7.06 as of 9/30/23 (spot market prices)
Energy Prices	Correlated with gas prices	Correlated with gas prices



Data Assumptions (April-May 2023)

ITEM	April-May 2023 Assumptions	Current Update
Renewable Energy Credits (REC)	\$44/REC, with downward pressure on prices	\$75/REC, with upward pressure for next 3-5 years
Intermountain Power Project (IPP)	Total costs of the project was estimated at \$4.286 billion	As of 10/2/23, project costs are >\$4.686 billion (increases debt service for BWP by \$587k a year)



Technology Assumptions

ITEM	April-May 2023 Assumptions	Current Update
Hydrogen	Assume technology would be available for Magnolia, Lake and Intermountain	No change
Renewable Natural Gas (RNG)	RNG contracts would be in the amount needed	No available RNG contracts in the amount needed
Carbon Capture and Sequestration (CCS)	Requires at least 4 acres, does not get emissions to zero	No change
Small Modular Reactor (SMR)	\$89/MWh (not including transmission), online 2030	No change



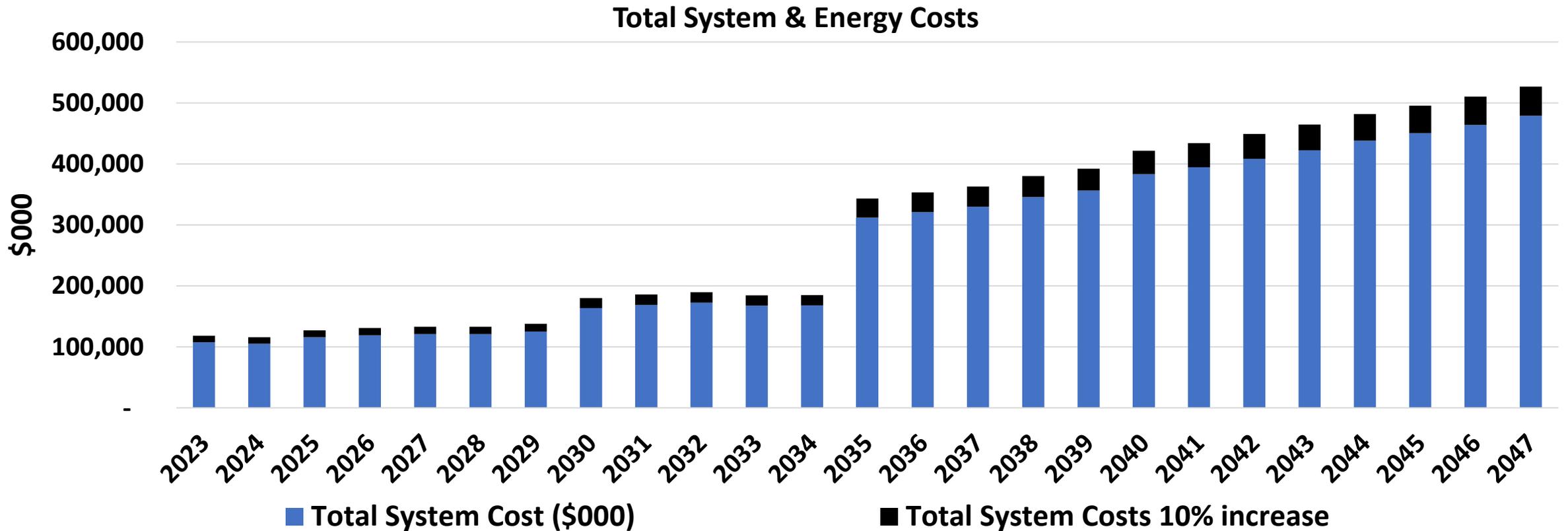
Natural Gas and Energy Price Update

Calendar Year	Gas (\$/MMBTU)	Energy (\$/MWh)
2017	\$3.41	\$32.77
2018	\$5.14	\$41.93
2019	\$4.08	\$32.50
2020	\$3.01	\$47.61
2021	\$6.99	\$61.81
2022	\$9.27	\$96.28
2023 (AS OF 10/2/23)	\$7.06	\$61.66
GROWTH 2020 TO 2023	2.3X	1.3X



Impact of Assumptions

- All of the scenario total costs are under-forecasted by at least 10% (this is for Scenario SB1020+SMR)



Break for Questions



Scenarios

#	Scenario Name	Details
1	Base case	Meet Senate Bill (SB) 100 requirements of 60% renewables by 2030 and the BWP goal of 100% zero-carbon resources by 2040
2	Net Zero by 2030	Meet the SB 100 requirement of 60% renewables by 2030 and 100% zero-carbon resources by 2030 (secure renewable natural gas for MPP, Lake and have IPP at full hydrogen by 2030)
3	SB1020 +SMR	Meet SB 100 requirements of 60% renewables by 2030, contracting for 25 MW of small modular reactor (SMR) by 2030 outside CA, meet the SB 1020 goal of 90% zero-carbon resources by 2035 and 100% zero-carbon resources by 2040



Scenarios

#	Scenario Name	Details
4	SB 1020+SMR w/ 50% DEV & EV Demand	Meet SB 100 requirements of 60% renewables by 2030, contracting for 25 MW of small modular reactor (SMR) by 2030 outside CA, meet the SB 1020 goal of 90% zero-carbon resources by 2035 and 100% zero-carbon resources by 2040, 50% reduction in load from new development(DEV) projects + 50% reduction in load for electric vehicle (EV) load [note, reduction is attributed to demand response (DR) and conservation]



Scenarios

#	Scenario Name	Details
5	10% Higher EV&DEV Demand	Meet SB 100 requirements of 60% renewables by 2030 and the BWP requirement of 100% zero-carbon by 2040 and 10% higher load
6	10% Lower EV&DEV Demand	Meet SB 100 requirements of 60% renewables by 2030 and the BWP requirement of 100% zero-carbon by 2040 and 10% lower load
7	New Transmission & PPAs	Meet SB 100 requirements of 60% renewables by 2030, the BWP requirement of 100% zero-carbon by 2040 and working with LADWP to secure additional transmission services contracts to bring in renewables from Arizona, New Mexico, Barren Ridge of California and Imperial Irrigation District, for a total of 125 MW of renewables, via Power Purchase Agreements (PPAs)



Scenarios

Scenario	BWP Request	STAG Request
Base Case	X	
Net Zero by 2030	X	
SB 1020+ SMR	X	
SB 1020+SMR w/ 50% DEV & EV Demand	X	
10% Higher EV&DEV Demand		X
10% Lower EV&DEV Demand		X
New Transmission & PPAs		X



Scorecard (driven by STAG and survey results)

Item	Details	Weight
Cost/Ratepayer Impacts	The total overall cost of the portfolio	40%
Reliability	Lower transmission losses and lower market purchases	40%
Environmental Stewardship	Total greenhouse gas (GHG) emissions (the lower the emissions, the higher the score)	10%
Diversity	Type of resource, length/contract term of resources, type of technologies, location of resources, etc. A diverse resource portfolio is required per SB 350.	10%
Total		100%



Scorecard

Item	Weight	Based on results	BWP staff (manually done)
Cost/Ratepayer Impacts	40%	X	
Reliability	40%	X	
Environmental Stewardship	10%	X	
Diversity	10%		X



Scorecard Results

Metric	Weight	Base case	Net Zero by 2030	SB1020+SMR	SB1020+SMR w/ 50% DEV & EV Demand	10% Higher EC & DEV Demand	10% Lower EV&DEV Demand	New Transmission & PPAs
MODEL FOR EACH SCENARIO		PLEXOS	PLEXOS	PLEXOS	PLEXOS	PLEXOS	PLEXOS	PLEXOS
Cost/Ratepayer Impacts	40%	● 39%	● 0%	● 35%	● 37%	● 39%	● 40%	● 39%
Reliability	40%	● 24%	● 8%	● 27%	● 40%	● 21%	● 25%	● 24%
Environmental Stewardship	10%	● 0%	● 10%	● 3%	● 4%	● 0%	● 0%	● 1%
Diversity	10%	● 0%	● 5%	● 8%	● 8%	● 0%	● 0%	● 10%
Total	100%	● 63%	● 23%	● 72%	● 89%	● 60%	● 66%	● 75%
Rank		5	7	3	1	6	4	2



Preferred Scenario(s)

Metric	Weight	Base case	SB1020+SMR	10% Higher EC & DEV Demand	New Transmission & PPAs
MODEL FOR EACH SCENARIO		PLEXOS	PLEXOS	PLEXOS	PLEXOS
Cost/Ratepayer Impacts	40%	● 39%	● 35%	● 39%	● 39%
Reliability	40%	● 24%	● 27%	● 21%	● 24%
Environmental Stewardship	10%	● 0%	● 3%	● 0%	● 1%
Diversity	10%	● 0%	● 8%	● 0%	● 10%
Total	100%	● 63%	● 72%	● 60%	● 75%
Rank		5	3	6	2



Break for Questions



Estimated Rate Impacts

Scenario	Annual Rate Increase	Bill Increase 2047 vs. Current
Base Case	4.03%	158%
Net Zero by 2030	9.49%	694%
SB 1020+ SMR	4.96%	213%
SB 1020+SMR w/ 50% DEV & EV Demand	4.43%	180%
10% Higher EV&DEV Demand	4.15%	164%
10% Lower EV&DEV Demand	3.19%	151%
New Transmission & PPAs	4.03%	158%

NOTE: These rate impacts DO NOT include updates to the assumptions. The IRP is a compliance document used to provide guidance for the long-term energy planning process. These rate increases are representative of the data used in the model and are dependent on if BWP is able to secure resources/transmission. The rate impacts will vary based on what resources we can contract



Estimated Residential Bill Impacts

Scenario: SB 1020 + SMR

Average Apartment/Condo

Average Across All Residential

Average Single-Family Home

Current

Scenario Projections



\$113.31

2030

+\$41.31
vs. current

\$181.41

2040

+\$109.41
vs. current

\$215.14

2045

+\$143.14
vs. current

Average Apartment/Condo

Estimated bill for 345 kwh

Current

Scenario Projections



\$179.56

2030

+\$65.46
vs. current

\$287.48

2040

+\$173.38
vs. current

\$340.94

2045

+\$226.84
vs. current

Average Across All Residential

Estimated bill for 520 kwh

Current

Scenario Projections



\$260.29

2030

+\$94.89
vs. current

\$416.73

2040

+\$251.33
vs. current

\$494.23

2045

+\$328.83
vs. current

Average Single-Family Home

Estimated bill for 744 kwh

Estimated Residential Bill Impacts

New Transmission and PPAs

Average Apartment/Condo

Average Across All Residential

Average Single-Family Home

Current

Scenario Projections



\$108.10

2030

+\$36.10
vs. current

\$141.05

2040

+\$69.05
vs. current

\$174.69

2045

+\$102.69
vs. current

Average Apartment/Condo

Estimated bill for 345 kwh

Current

Scenario Projections



\$171.30

2030

+\$57.20
vs. current

\$223.53

2040

+\$109.43
vs. current

\$276.84

2045

+\$162.74
vs. current

Average Across All Residential

Estimated bill for 520 kwh

Current

Scenario Projections



\$248.32

2030

+\$82.92
vs. current

\$324.03

2040

+\$158.63
vs. current

\$401.31

2045

+\$235.91
vs. current

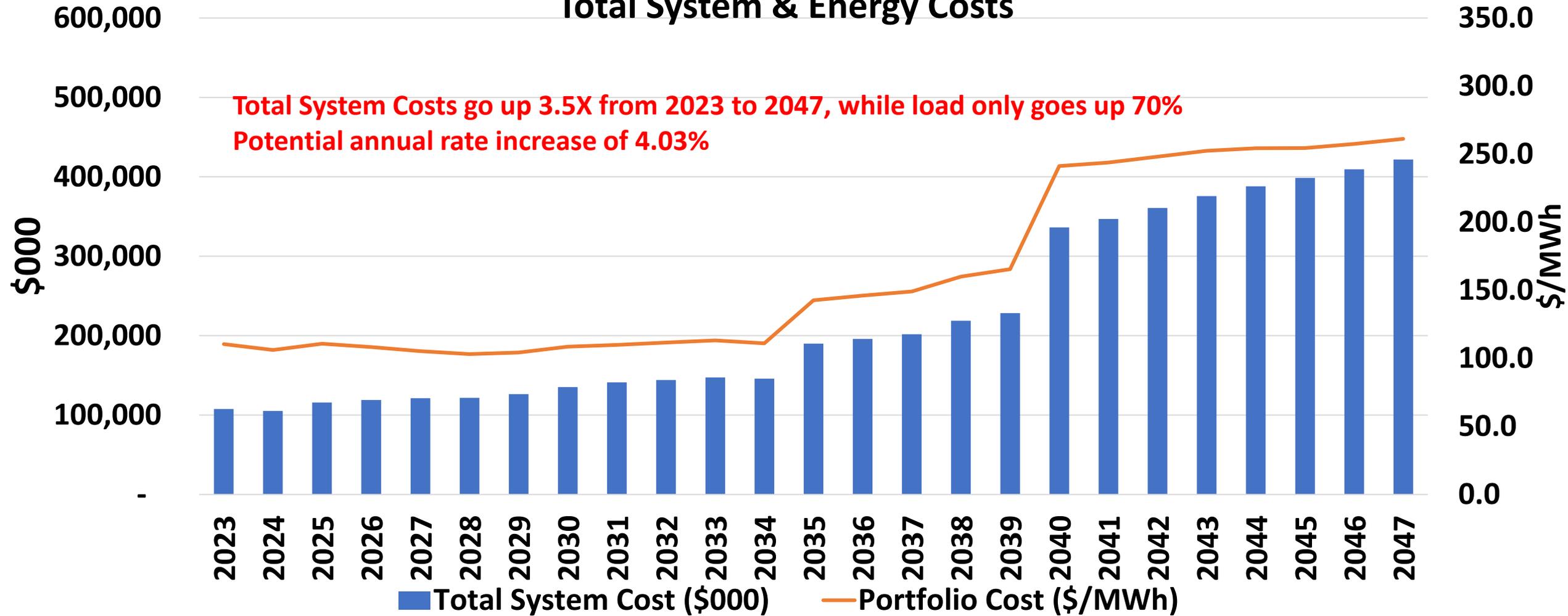
Average Single-Family Home

Estimated bill for 744 kwh



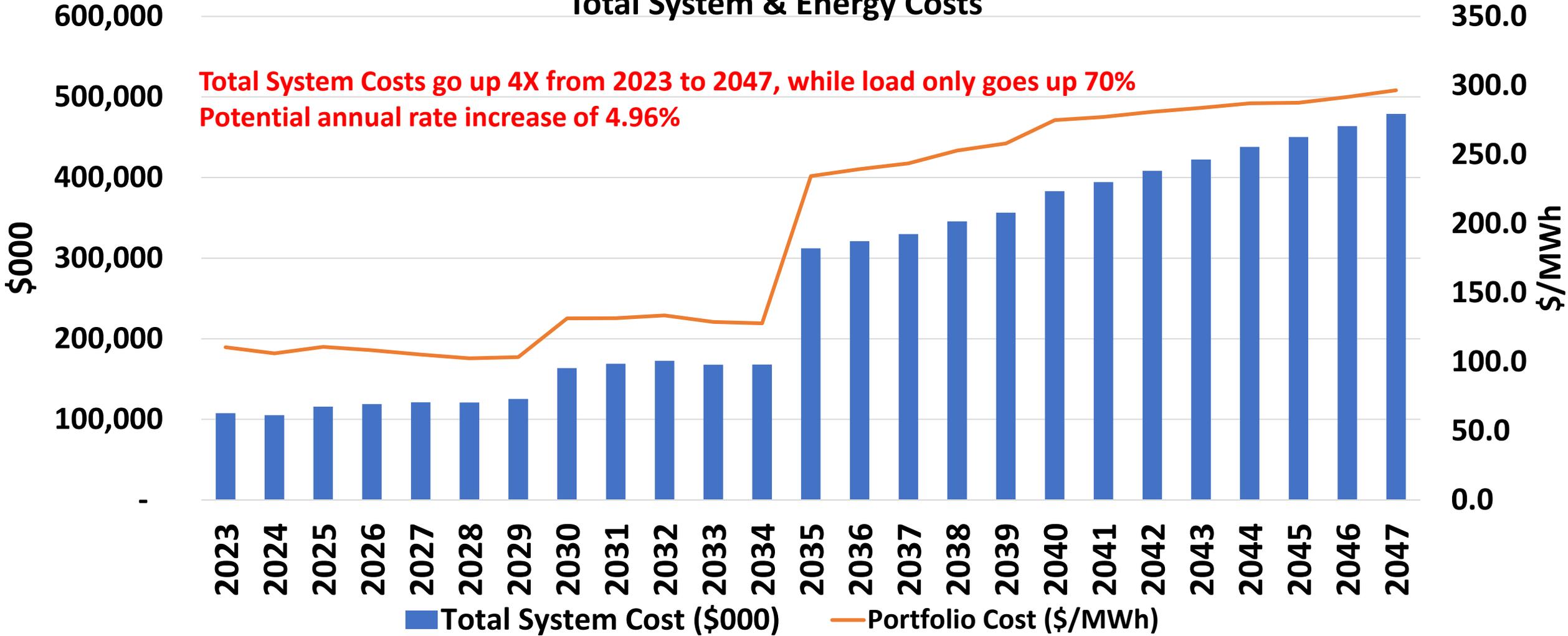
New Transmission+PPAs

Total System & Energy Costs



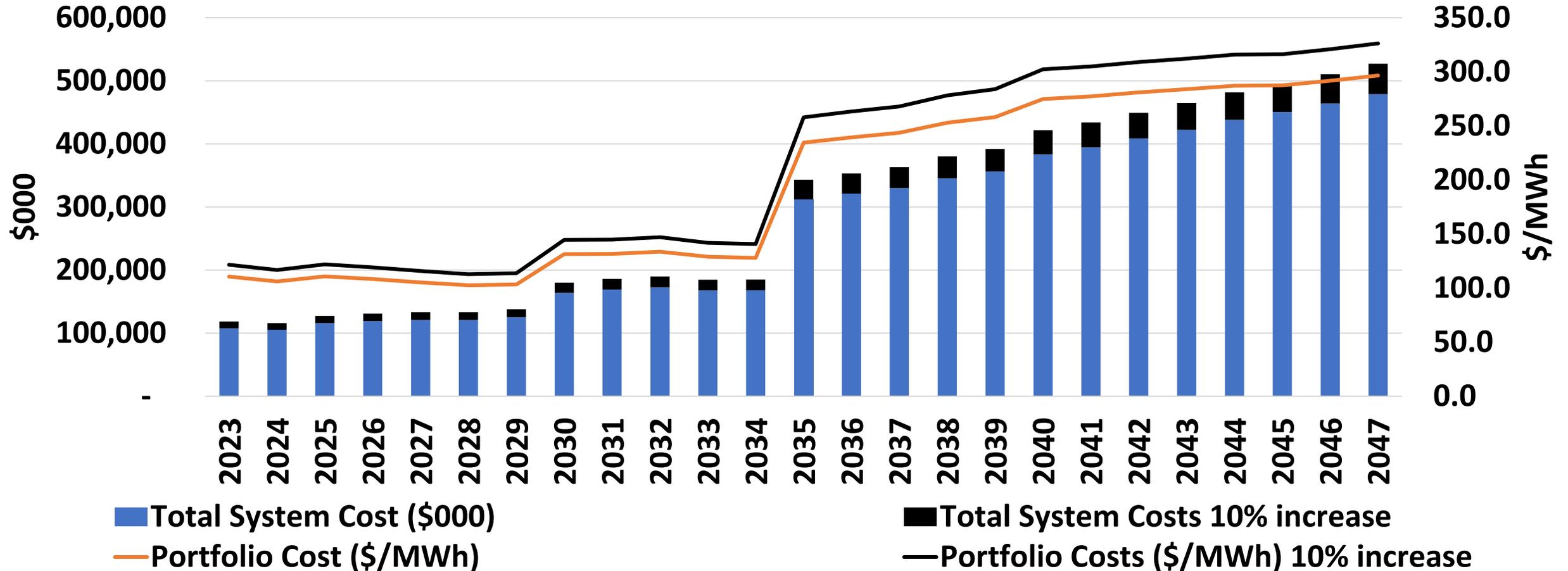
SB1020+SMR

Total System & Energy Costs



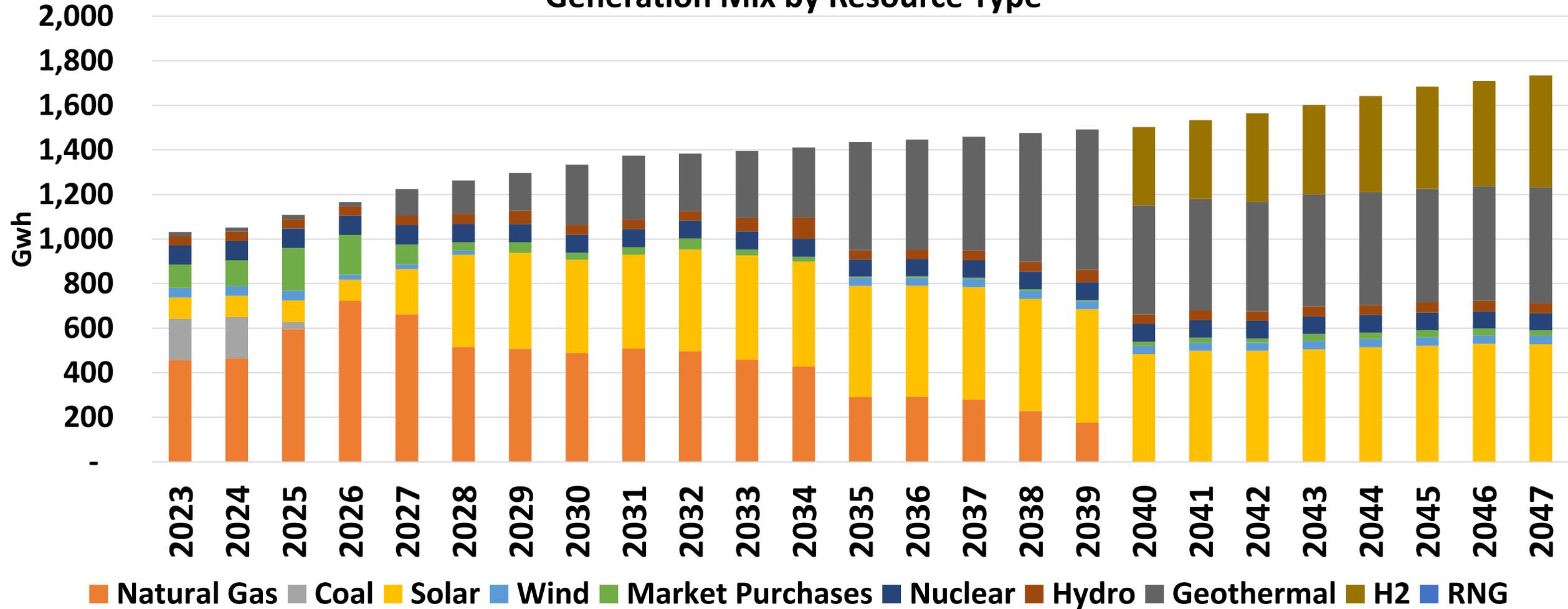
Impact of Assumptions (SB 1020+SMR)

Total System & Energy Costs



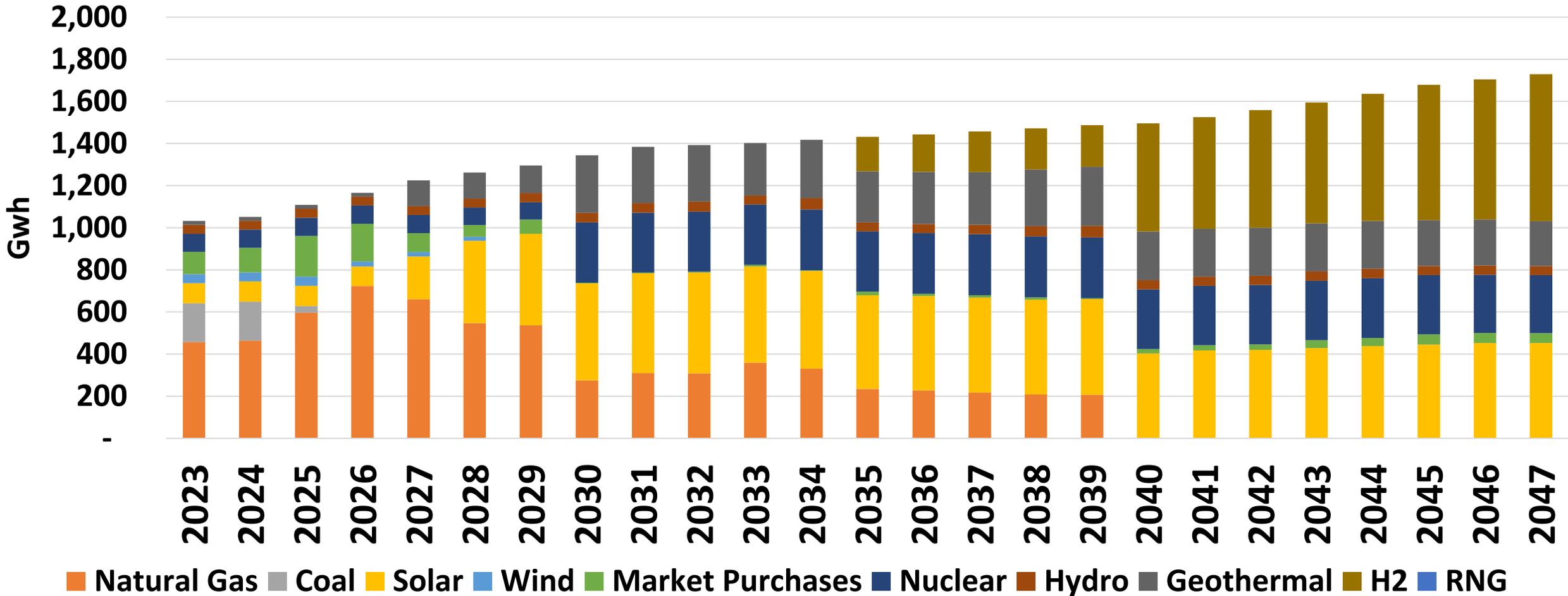
New Transmission+PPAs

Generation Mix by Resource Type



SB 100+SB1020+SMR

Generation Mix by Resource Type



Preferred Scenario Recommendation(s)

- Recommendation
 - Basecase+New Transmission+PPAs
 - SB 100+SB1020+SMR
- This provides BWP with two paths to meet state compliance mandates.
 - We can pursue the SMR, while also working with LADWP on securing additional transmission



Break for Questions



Timeline



• Seek BWP Board Guidance

• Seek City Council approval

• Submit IRP to the CEC

• CEC approval



Next Steps

- Finish Final IRP report
 - Highlight preferred scenario recommendation
 - Provide rate impacts for each scenario
- Complete the CEC tables for compliance
- 12/5/23 City Council approval
- 12/31/23 Submit IRP to the CEC



Thank you

- Thank you for being patient as quality assurance checks were conducted on all scenarios
- Thank you for caring about the community
- Thank you to the power supply team, GM Dawn Roth-Lindell, STAG, community stakeholders and Black and Veatch for the long hours, thoughtful analysis and great feedback



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