

City of Burbank – 2023 IRP

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Black & Veatch Global Advisory

Today's Presentation

IRP Status Update



IRP Status Update



Load Forecast



Natural Gas Price Assumptions



Base Case Results



Sensitivities



Questions & Answer Session

IRP Status Update



FINALIZED BASE CASE
ASSUMPTIONS AND
BASE CASE MODEL



IRP REPORT WORK
UNDERWAY



SENSITIVITY
DISCUSSION
UNDERWAY

IRP Base Case Assumptions

- Assumes the renewable resources WILL be available to meet compliance
 - The resources included in the base case are from interconnection queues on transmission lines where we have rights and contracts under negotiation
 - As mentioned in previous meetings, we are actively negotiating several renewable contracts and 4 contracts in total have not moved forward



IRP Base Case Assumptions

- Assumes that technology will be available in the future
 - Assumes that Magnolia, Lake and Intermountain Power Project will be hydrogen capable by 2040
- Does NOT include transmission costs (only resource costs) and relies on existing/contracted transmission rights
- Based on information from April-June 2023



Today's Presentation

Load Forecast



IRP Status Update



Load Forecast



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Base Case Results

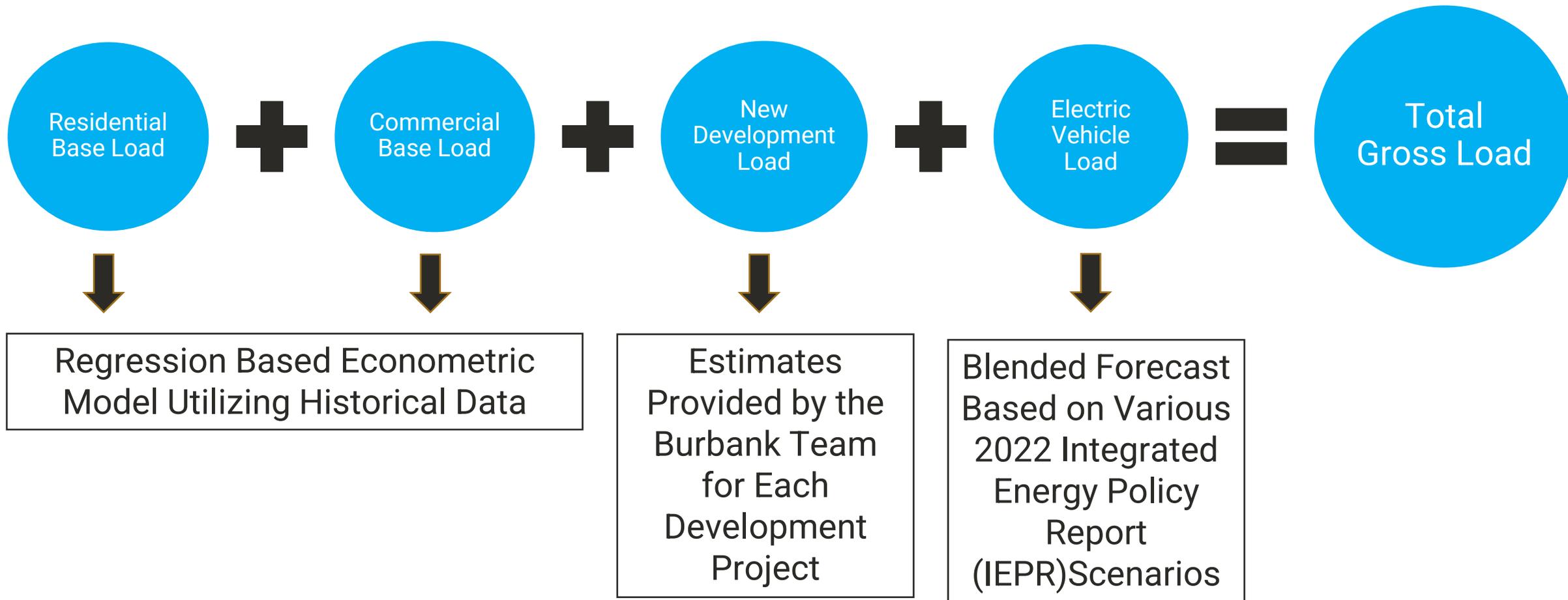


Sensitivities



Questions & Answer Session

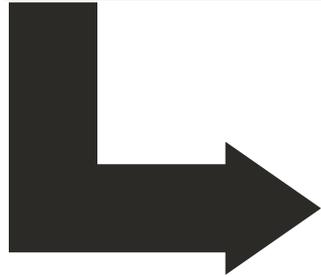
Load Forecast Methodology



Base Load Forecast – Residential and Commercial

Gather
Historical
Data

- Historical Burbank Sales, Customer Count Data by Customer Class.



Identify
Econometric
Drivers

- Burbank/State Population Data, State Gross Domestic Product, Weather



Develop Final
Econometric
Model

- Projected System Load

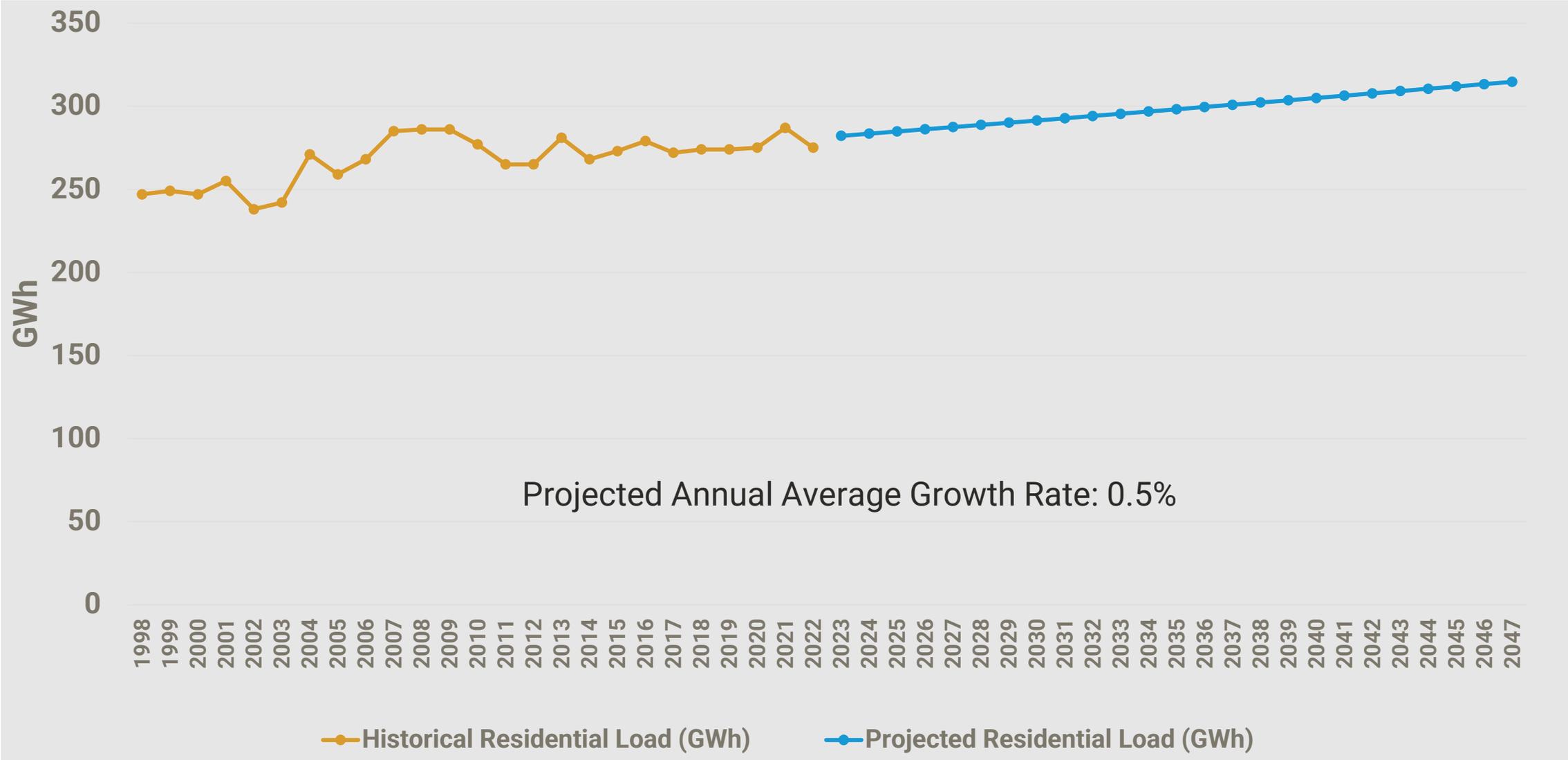
Historical Data on Residential Electric Load

Data	Period	Source	Frequency
Residential Sales	1998-2022	BWP	Annual
Residential Customers	1998-2022	BWP	Annual
Burbank Population	1998-2022	Census Bureau	Annual
Burbank Cooling Degree Days	1998-2022	Energy Velocity	Daily

Historical Data on Residential Electric Load

Data	Period	Source	Frequency
Burbank/Glendale Residential Consumption	1990-2022	Integrated Energy Policy report (IEPR)	Annual
Burbank/Glendale Personal Income	1990-2022	IEPR	Annual
Household	1990-2022	IEPR	Annual

Residential Load Projections



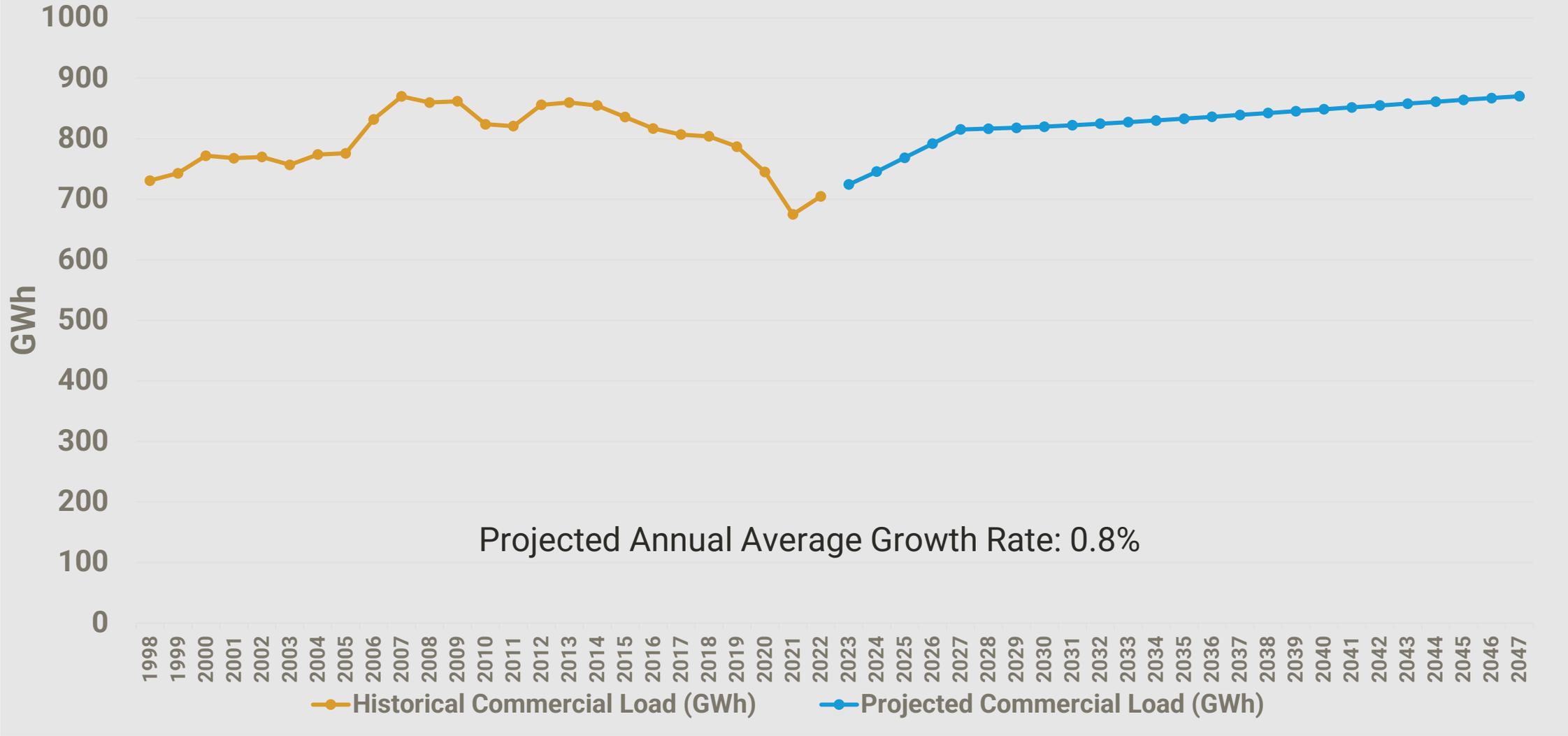
Historical Data on Commercial Electric Load

Data	Period	Source	Frequency
Commercial Sales	1998-2022	BWP	Annual
Commercial Customers	1998-2022	BWP	Annual
Large Commercial Sales	1998-2022	BWP	Annual
Large Commercial Customers	1998-2022	BWP	Daily

Historical Data on Commercial Electric Load

Data	Period	Source	Frequency
Burbank/Glendale Commercial Consumption	1990-2022	IEPR	Annual
Burbank/Glendale Personal Income	1990-2022	IEPR	Annual
Burbank/Glendale Commercial Floor Space	1990-2022	IEPR	Annual

Commercial Load Projections



Electric Vehicle (EV) Load Forecast Methodology

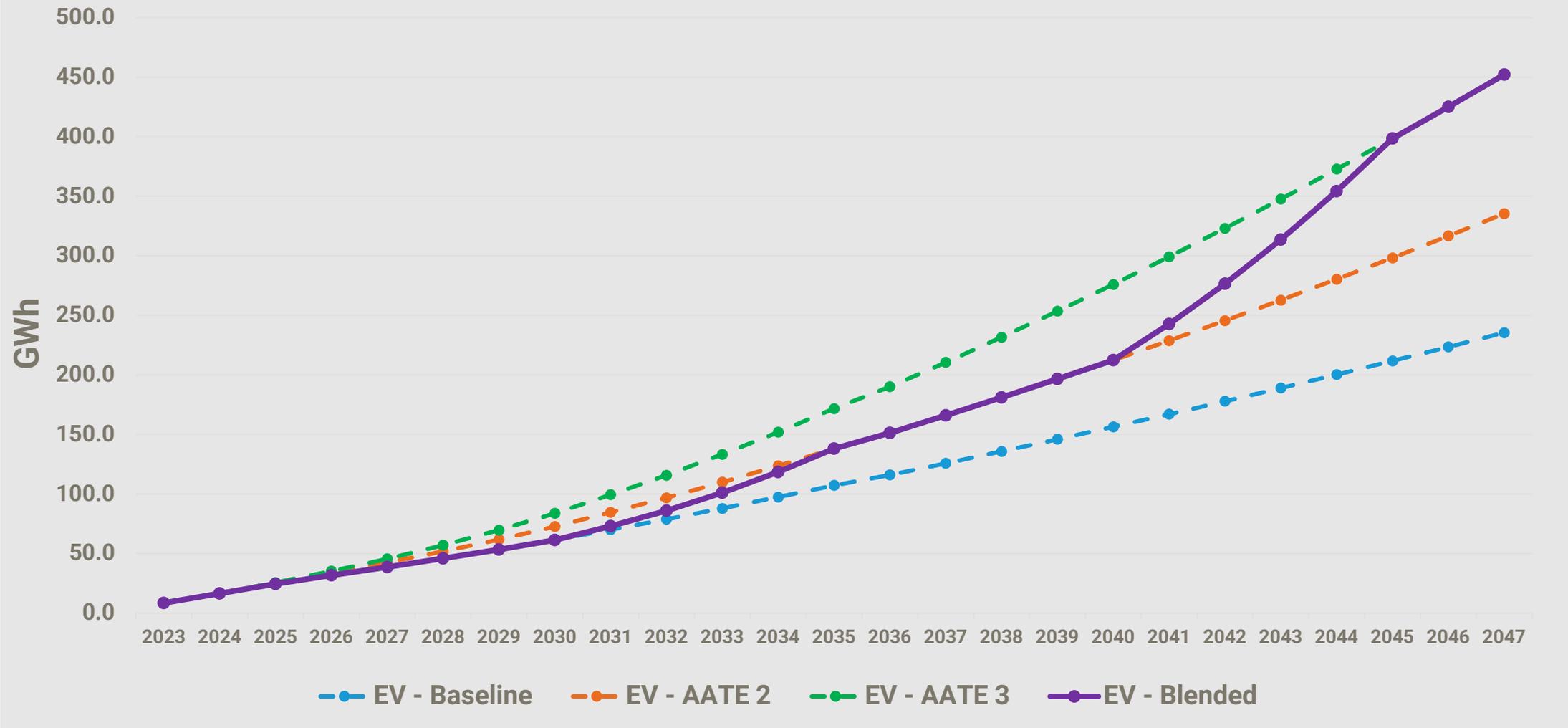
Period	Methodology
2023 – 2030	2022 IEPR Baseline EV load forecast
2031 – 2034	Linear transition from IEPR 2022 Baseline EV load forecast to IEPR 2022 Additional Achievable Transportation Electrification (AATE) Scenario 2
2035 – 2040	2022 IEPR AATE Scenario 2 load forecast
2041 – 2044	Linear transition from 2022 IEPR AATE Scenario 2 load forecast to 2022 IEPR AATE Scenario 3
2045 – 2050	2022 IEPR AATE Scenario 3 load forecast

Electric Vehicle (EV) Load Forecast Assumptions

Element	Source/Methodology
EV Annual Load	<ul style="list-style-type: none">• 2022 IEPR AATE Scenarios for BUGL scaled down to only Burbank's service territory.• 2022 IEPR – LSE and BA Planning table was used to derive Burbank's share of the BUGL load.• Blended EV load from Baseline Scenario to AATE 3 Scenario.
EV Hourly Profile	2022 IEPR EV profile for the CAISO Planning Scenario. Scaled to match Burbank's EV Annual Load.

Notes: 2022 IEPR's EV data ends in 2035. The annual EV load was extrapolated using a 2nd order polynomial regression analysis.

Electric Vehicle (EV) Load Forecast

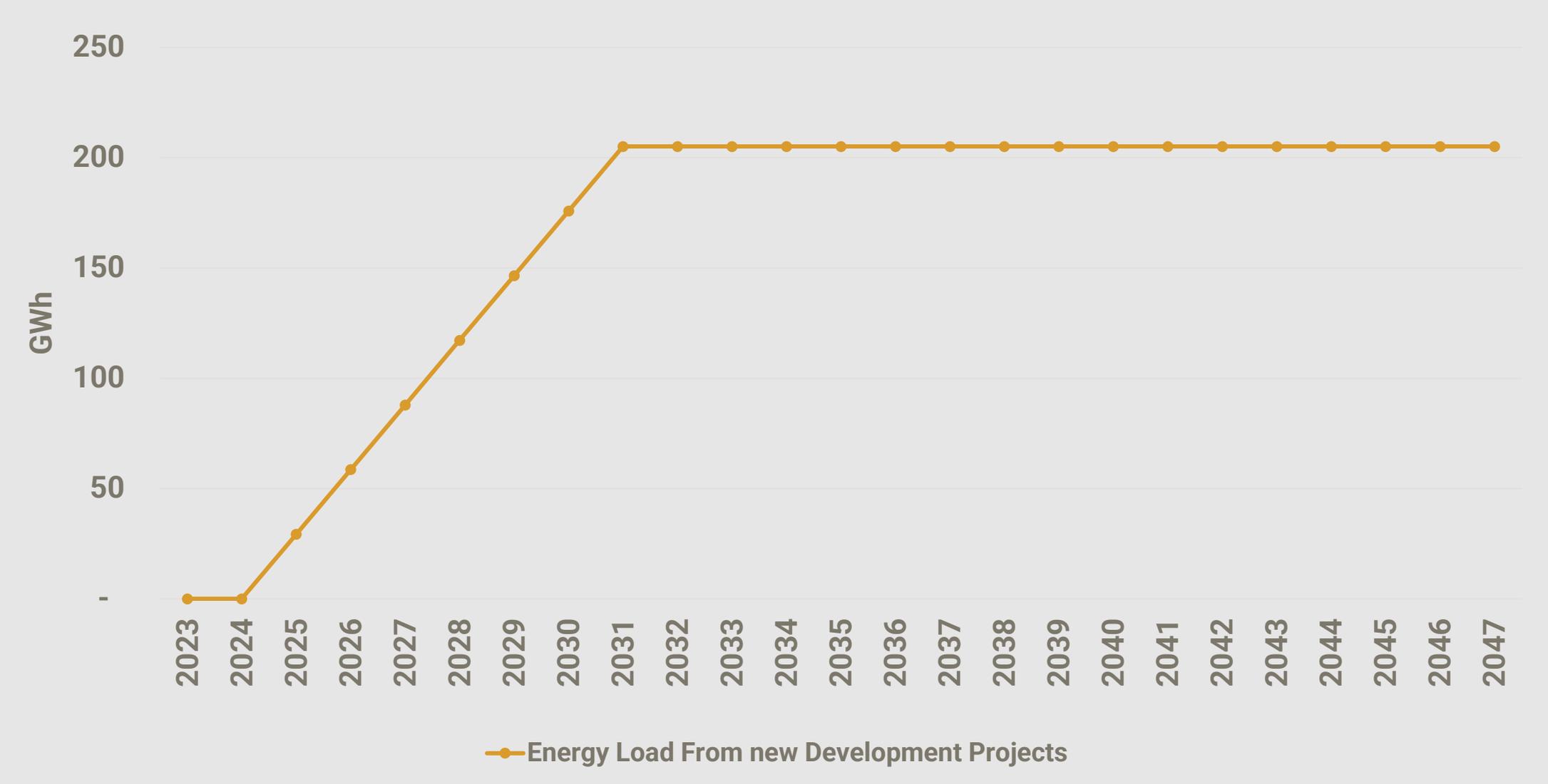


Load From New Development Projects

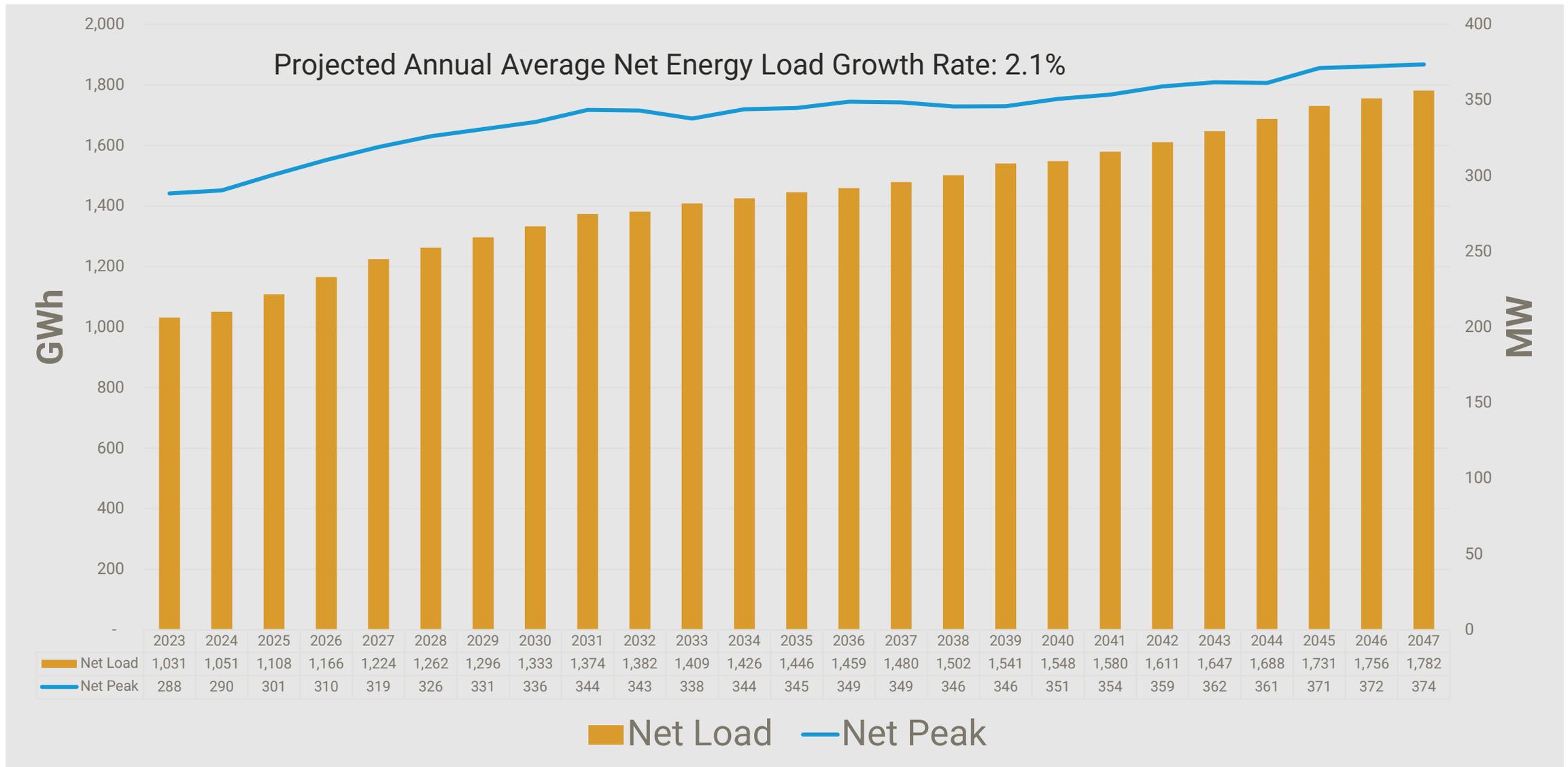
Type	Peak Load (MW)
Commercial	88.15
EV	14.3
Residential	2.6
Total	105.05

Assumptions: Peak Load data as provided by the Burbank team. BV assumes 7-year of implementation period for development projects starting in 2025 and a success rate of 60% for these projects. Assumed 43% load factor based on historical data to derive energy load from the provided peak load.

Load From New Development Projects



Total Net Load Projections



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Natural Gas Price Assumptions



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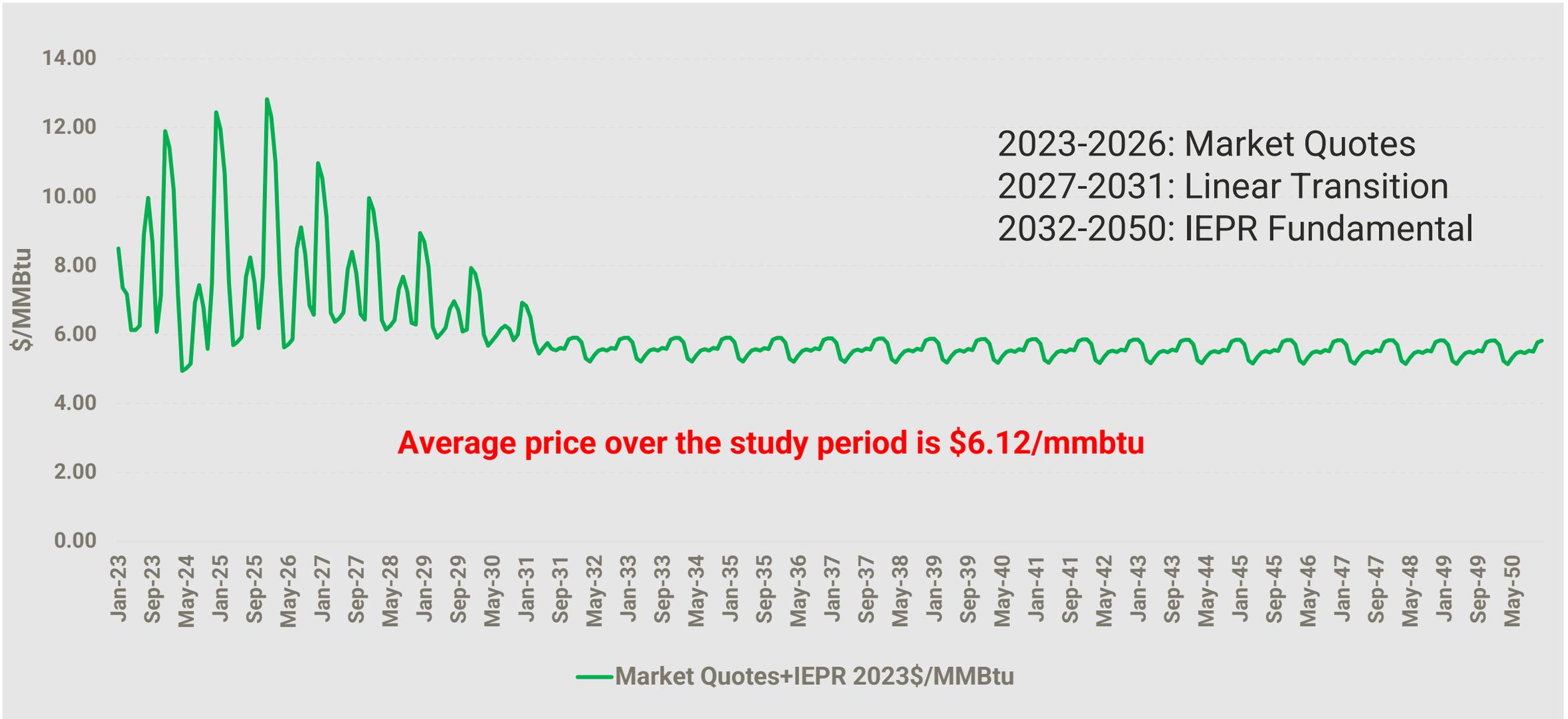


Questions & Answer Session

Natural Gas Price Methodology

Period	Methodology
Short-term: FY 2023/2024 – FY 2026/2027	Based on BWP Observed Market Quotes as of 18 th April 2023
Mid-term: FY 2027/2028 – FY 2031/2032	Linear Transition from Observe Market Quotes to Fundamental Forecast
Long-term: FY 2032/2033 onwards	Based on 2023 IEPR Preliminary Natural Gas Price Fundamental Forecast

Natural Gas Price Forecast - \$2023/MMBtu



Today's Presentation

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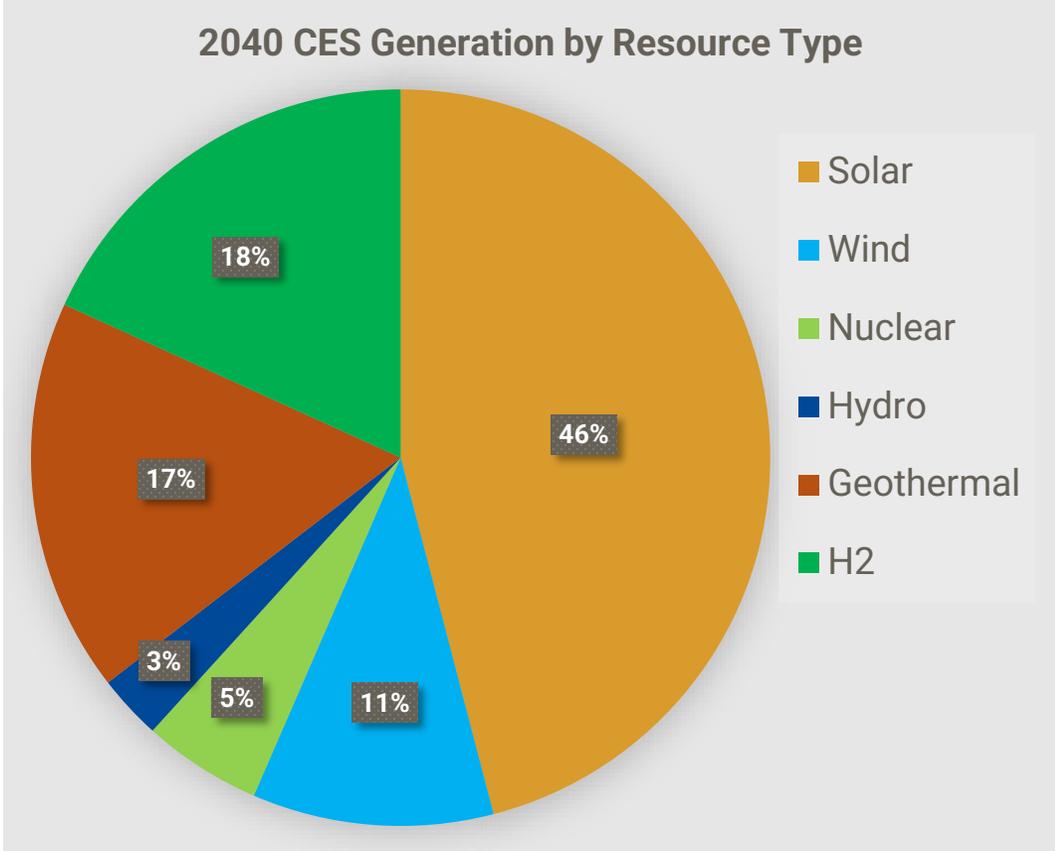
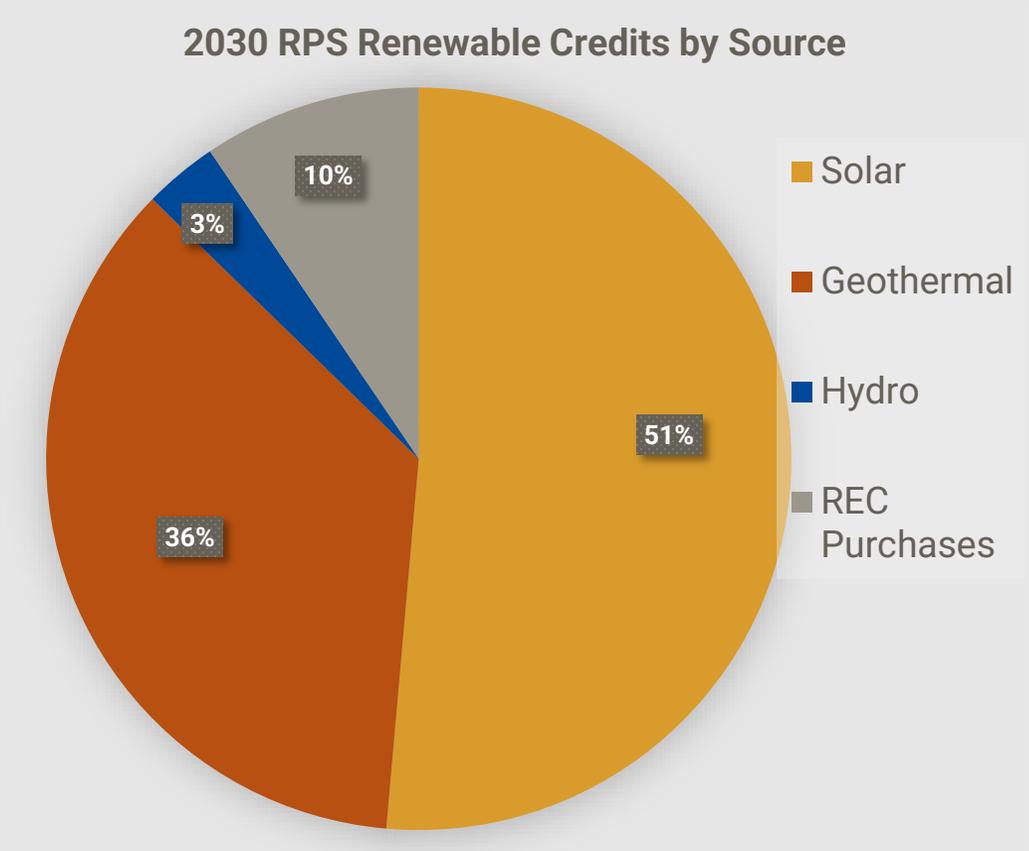


Sensitivities

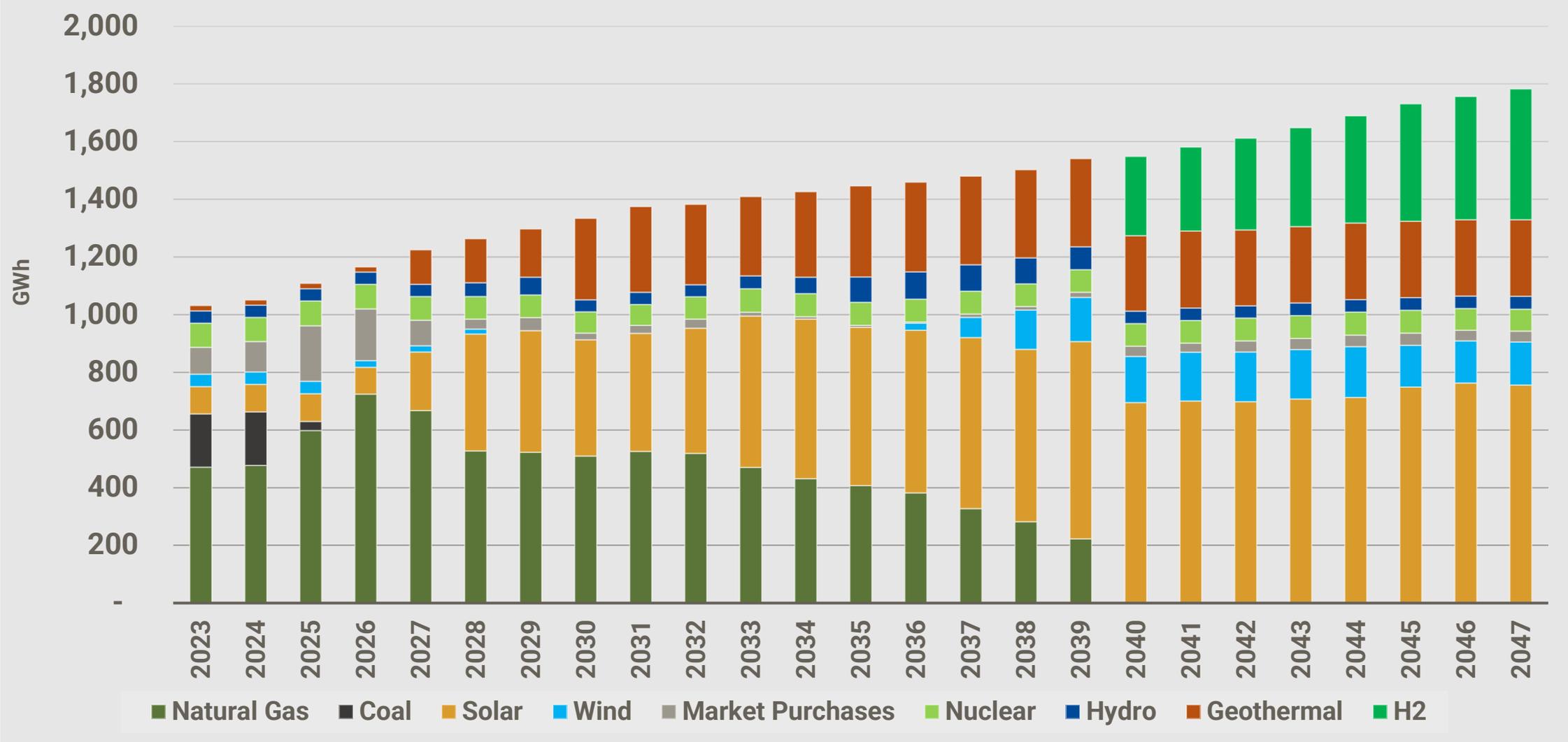


Questions & Answer Session

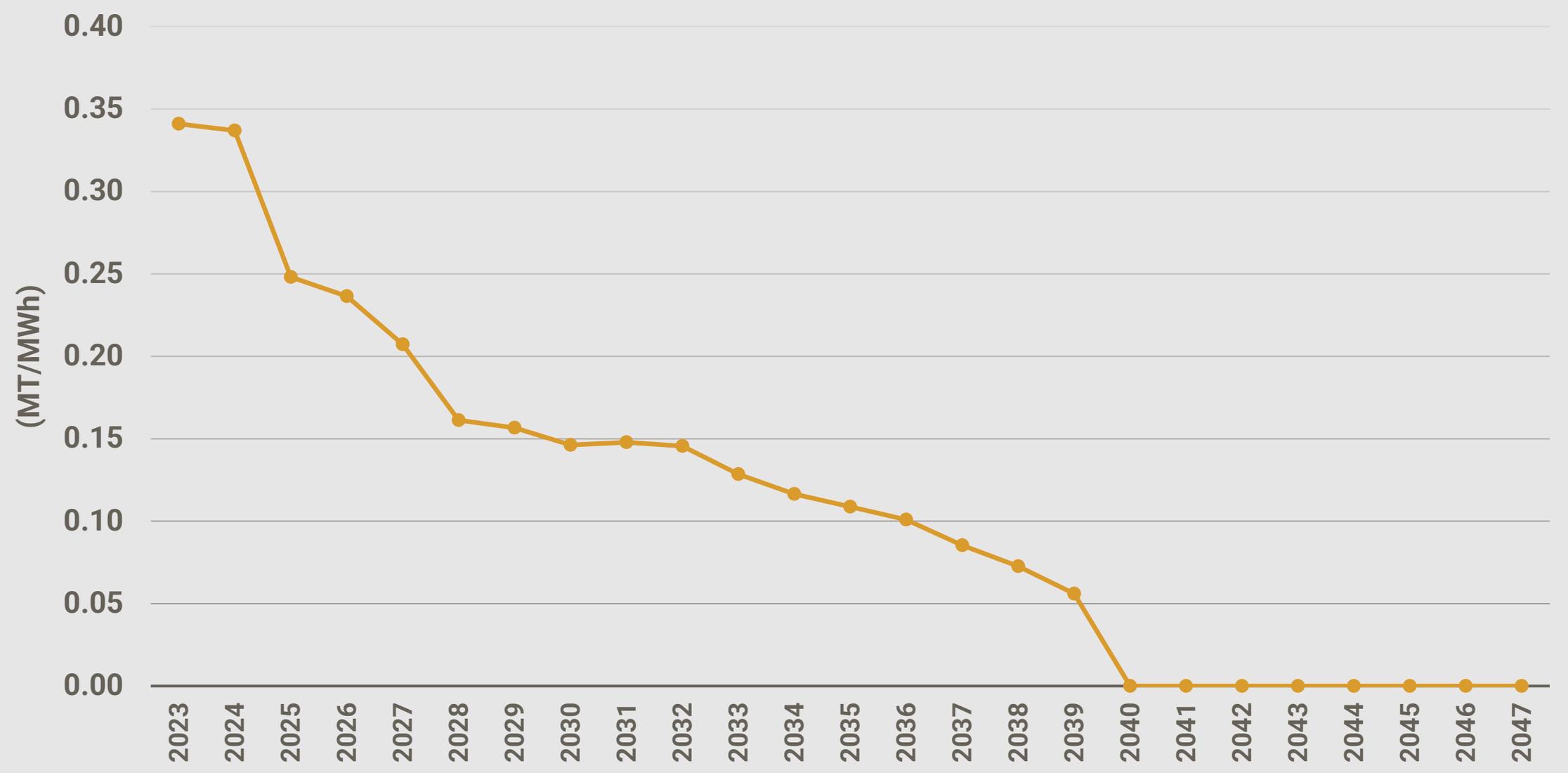
Base Case – 60% RPS by 2030 and Zero Carbon by 2040



Projected Generation Mix

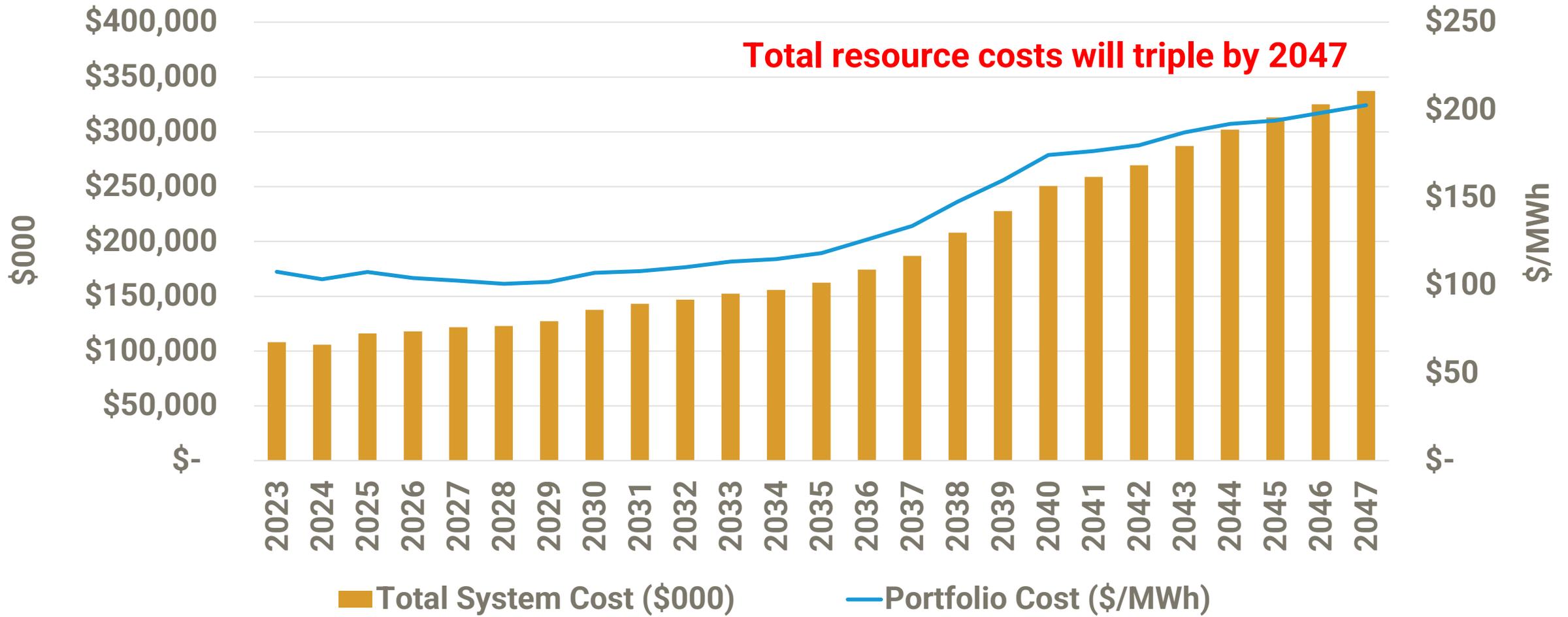


Carbon Intensity – MT/MWh



Total Energy Supply Cost – Nominal Dollars

Total System & Energy Costs



Today's Presentation

Sensitivities



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Sensitivities



Questions & Answer Session

Potential Sensitivities

- Base Case – 60% RPS by 2030 and 100% zero carbon by 2040
- Up to five additional scenarios
 - Scenario 1 – 100% zero carbon By 2030 (currently in progress)
 - Other Scenarios – as defined in conjunction with Stakeholders and Burbank



Potential Sensitivities

- Up to five additional scenarios

- Recommendations

- Technology and project delays (e.g., delay in hydrogen infrastructure)
- Load sensitivity (e.g., more aggressive or higher EV adoption, more frequent extreme weather)
- Large scale offshore wind adoption and development
- Hydrogen at IPP starting in 2025
- CCS, Renewable Natural Gas and other conversion options for MPP



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Questions & Answer Session

Questions?

