



2024 SLTRP Meeting #2

April 18, 2024

Power System Planning Division

Agenda

9:30 – 9:35 am	Welcome and Introductions
9:35 – 9:40 am	Meeting Purpose and Agenda Overview
9:40 – 9:50 am	2024 SLTRP Advisory Group and Schedule
9:50 – 10:00 am	Review of Kickoff Meeting Mentimeter
10:00 – 10:45 am	Overview of 2024 SLTRP Assumptions
10:45 – 10:50 am	<i>Coffee Break</i>
10:50 – 11:30 am	SLTRP Advisory Group Breakout Sessions
11:30 – 11:40 am	SLTRP Breakout Sessions Reporting Back
11:40 – 11:55 am	Update on Scattergood Modernization
11:55 – 12:00 pm	Wrap Up and Next Meeting

Next Meeting: May 16, 2024; 9:00 am – 12:00 pm

Location: LADWP Wall Street Building (In-person)



Advisory Group Roles

Provide input and feedback based on the expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by the Advisory Group Members

- **Provide Perspectives.** Discuss major issues that LADWP will face in the next 10-20 years. Provide input and review of strategic scenarios that are used in the resource analysis and final recommendations for near-term actions.
- **Continue the Collaborative Dialogue.** Build upon the momentum from the LA100 Equity Strategies Study and 2022 SLTRP Process.
- **Conduct Outreach to Respective Constituent Groups.** Bring diverse input into the process and keep constituents informed of the SLTRP process.
- **Consider Broader Community Input.** During Advisory Group discussions think of the various communities and considerations throughout the City of Los Angeles.
- **Provide Technical Information & Perspectives.** Add value through your areas of expertise.





Advisory Group Roles

Provide input and feedback based on the expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by the Advisory Group Members

Continued...

- **Read Pre-Meeting Materials.** Prior to each meeting materials and agendas will be distributed and you are expected to be prepared for the meeting. This includes reading and reviewing the 2022 SLTRP and LA100 Equity Strategies Study Report.
- **Participate in All Meetings.** A total of six (6) meetings are anticipated between March and December 2024. Meetings are expected to alternate between in-person and virtual. Each meeting will be conducted in 2-3 hours segments.
- **Alternate Representatives.** If you cannot attend a meeting, then please send an alternate on your behalf.
- **Balancing Perspectives.** To maintain stakeholder balance – only one representative per member organization in meeting discussions.

2024 Advisory Group Members

Stakeholder Category	Organization(s)	# of Representatives
Academia	CSUN, UCLA, USC	6
Business and Workforce	CEERT, Center for Sustainable Energy, Central City Assoc, IBEW – Local 18, LABC, LA Chamber, VICA, LABC	17
City Government	CLA, City Attorney, Council Districts, Rate Payer Advocate, Mayor’s Office, Civil & Human Rights and Equity Dept., CEMO, Housing Authority, LA City Planning, LADOT	26
Neighborhood Council	DWP Advocacy Committee, DWP MOU Oversight Committee, Neighborhood Council Sustainability Alliance, SLAANC	5
Environmental Community	CBE, EDF, Food and Water Watch, NRDC, LAANE, Sierra Club, Climate Resolve, Community Build, Enterprise Community Partners, Esperanza Community Housing, LA Cleantech Incubator, Move LA, PACE, Pacoima Beautiful, RePower, SLATE-Z, So. Cal. Association of Non-Profit Housing; SCOPE	20
Premier Accounts and Key Customers	LAUSD, LAWA, Metro, POLA, Valero Wilmington Refinery	10
Utilities	Southern California Gas, SCPPA, Water and Power Associates	6
Total		90

Note: LA100 Equity Strategies Steering Committee has been integrated into the SLTRP Advisory Group Roster

Guidelines

1

Everyone commits to all members having **equal time** to contribute input and perspectives

2

Keep input **concise** so all members have time to participate

3

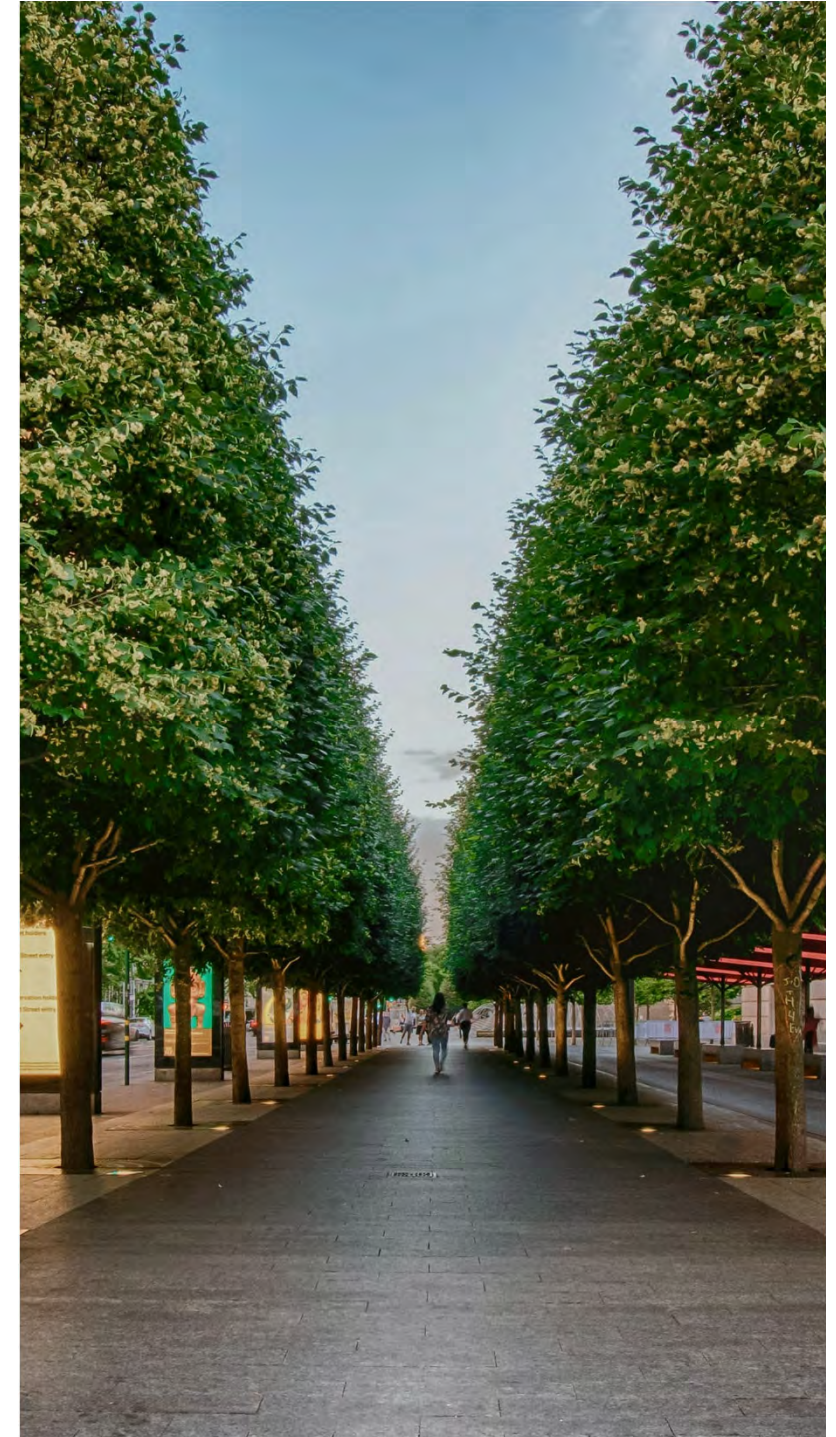
Actively listen to others, seek to understand perspectives

4

Offer ideas to address questions and concerns raised by others

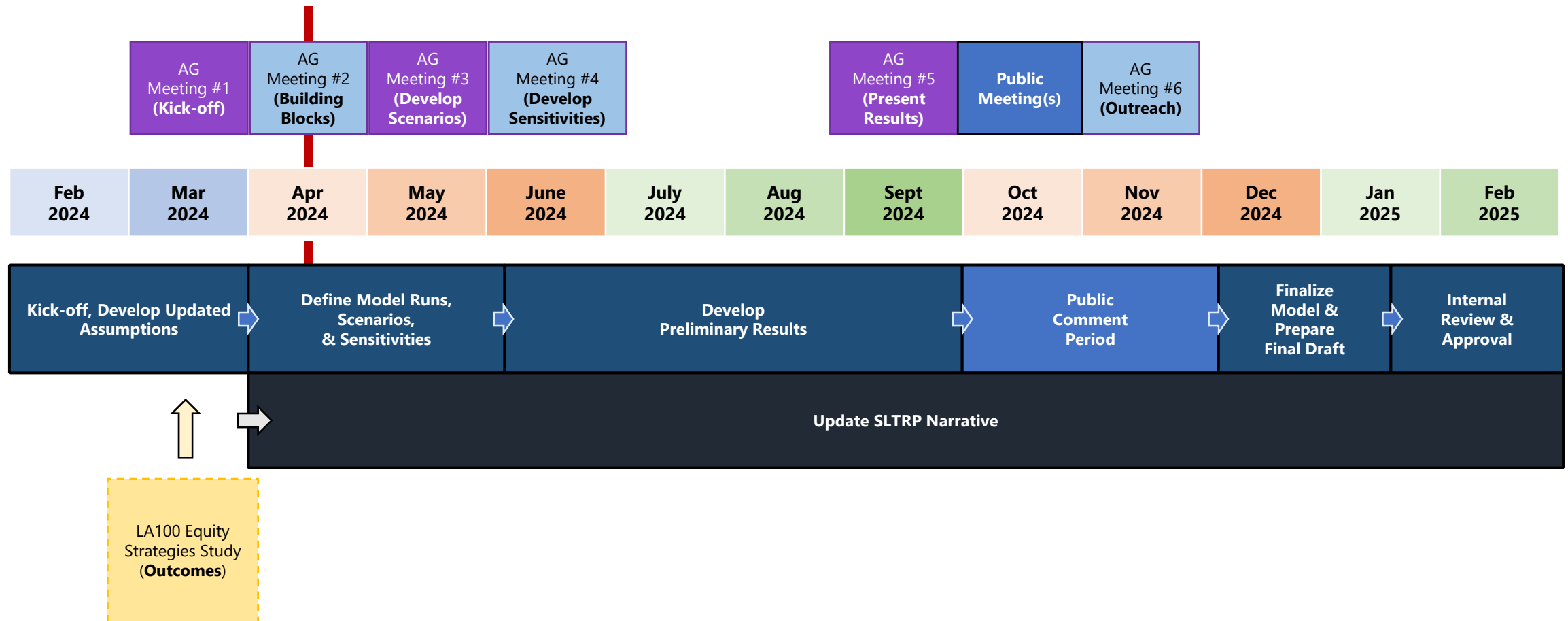
5

Participate by using the **Raised Hand** and **Chat Features**



In-person Meeting
Virtual Meeting

2024 SLTRP Schedule



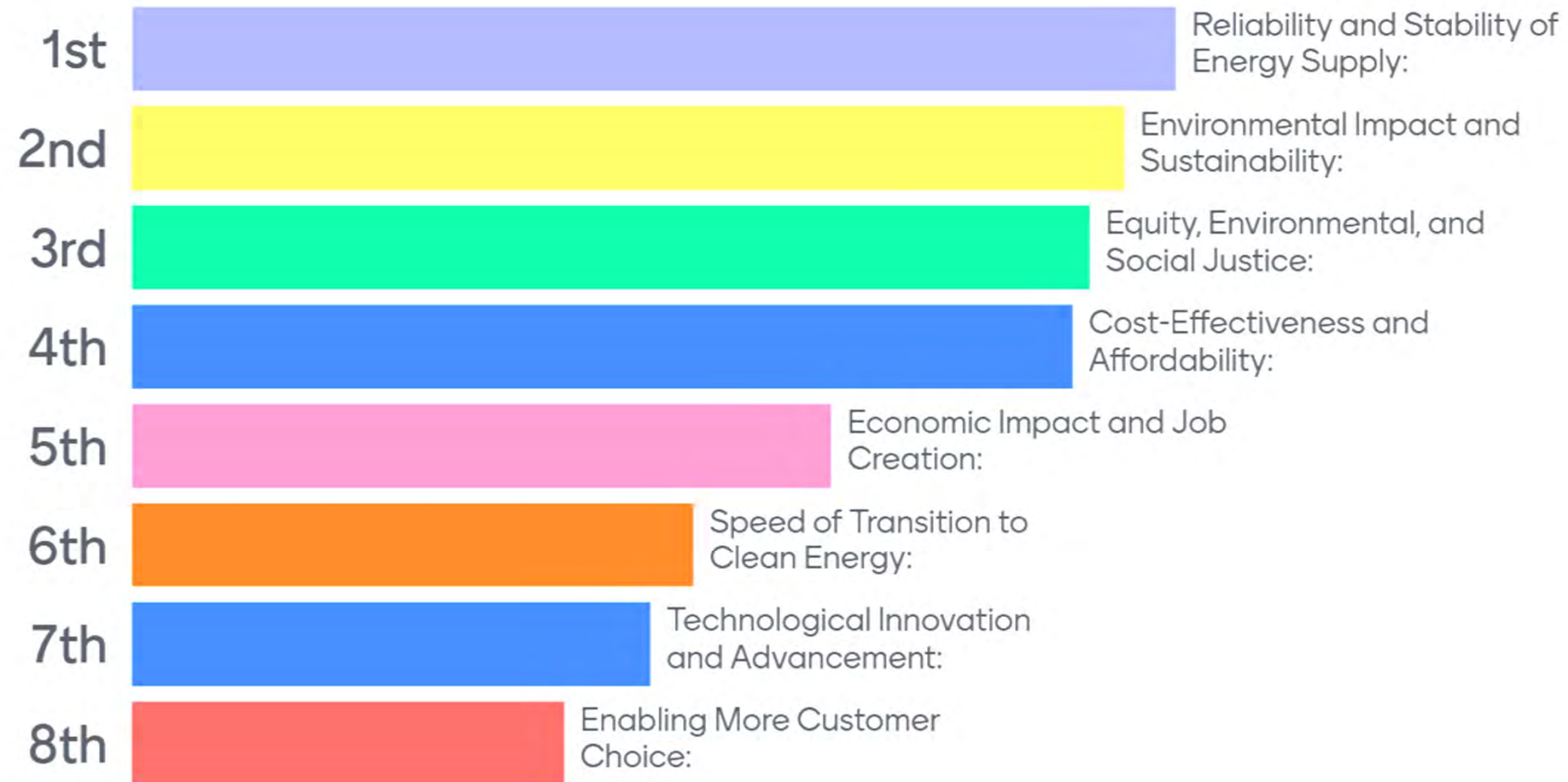
Note: Specific dates and meetings are subject to change.

2024 SLTRP

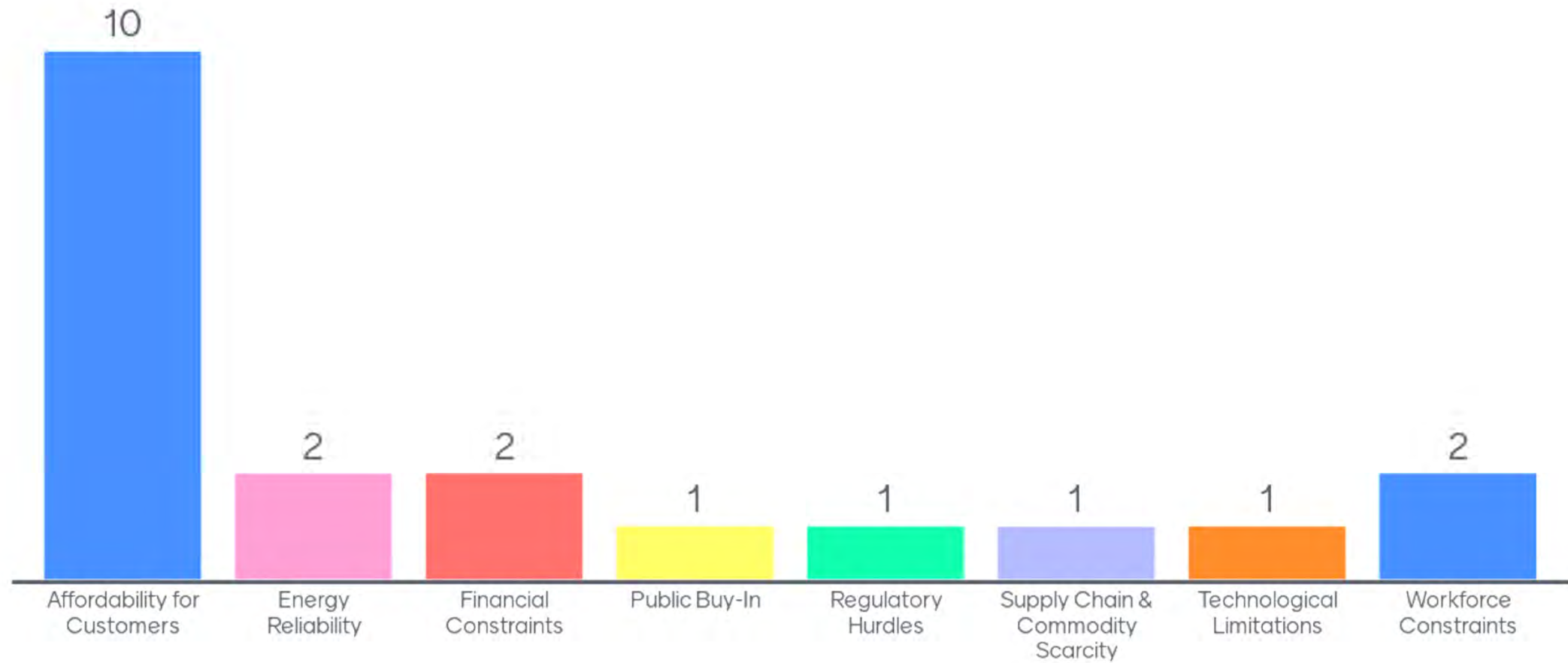
REVIEW OF KICKOFF MEETING
MENTIMETER RESULTS



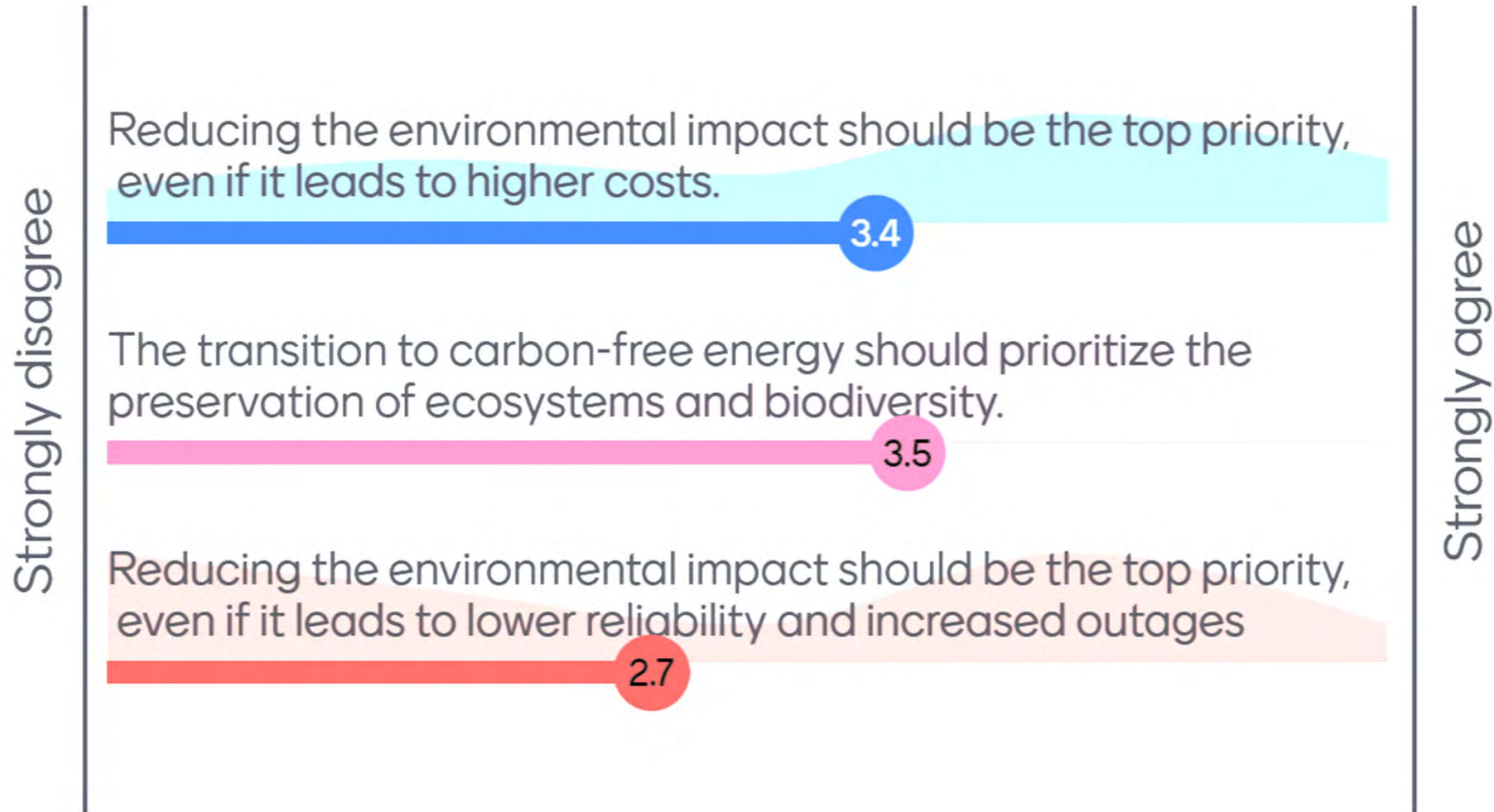
Ranking Primary Themes



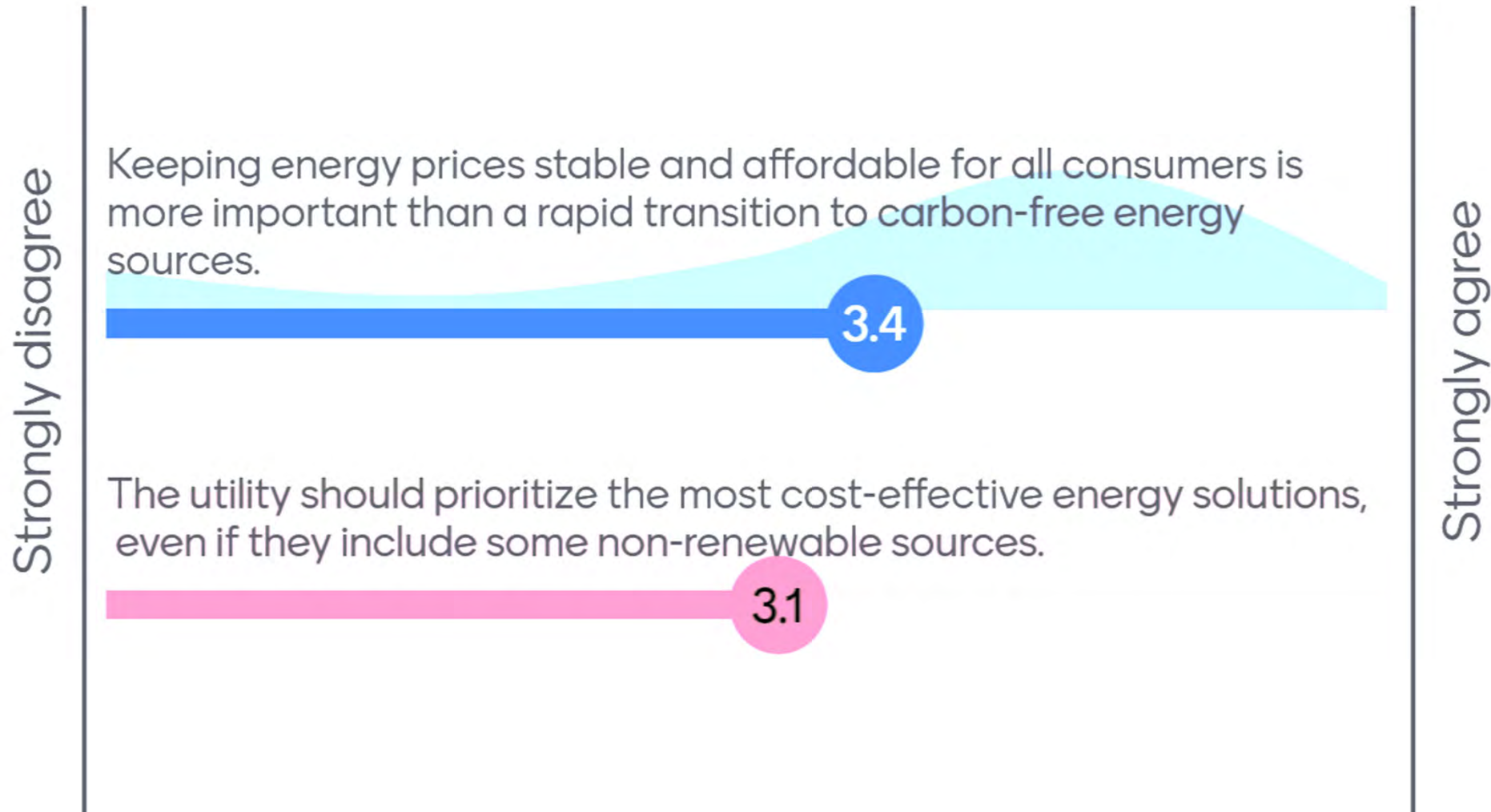
Challenges & Barriers



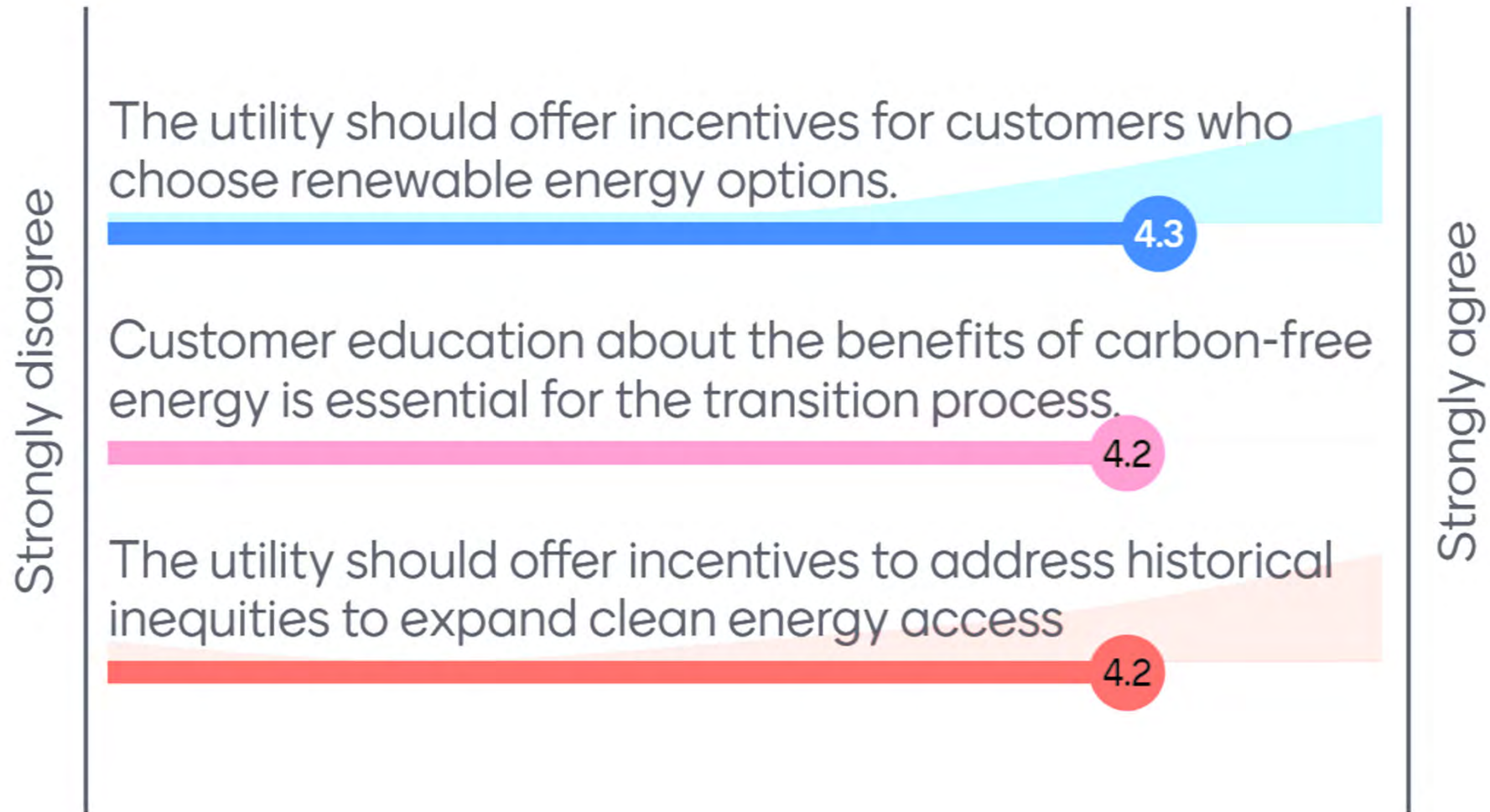
Environmental Impacts



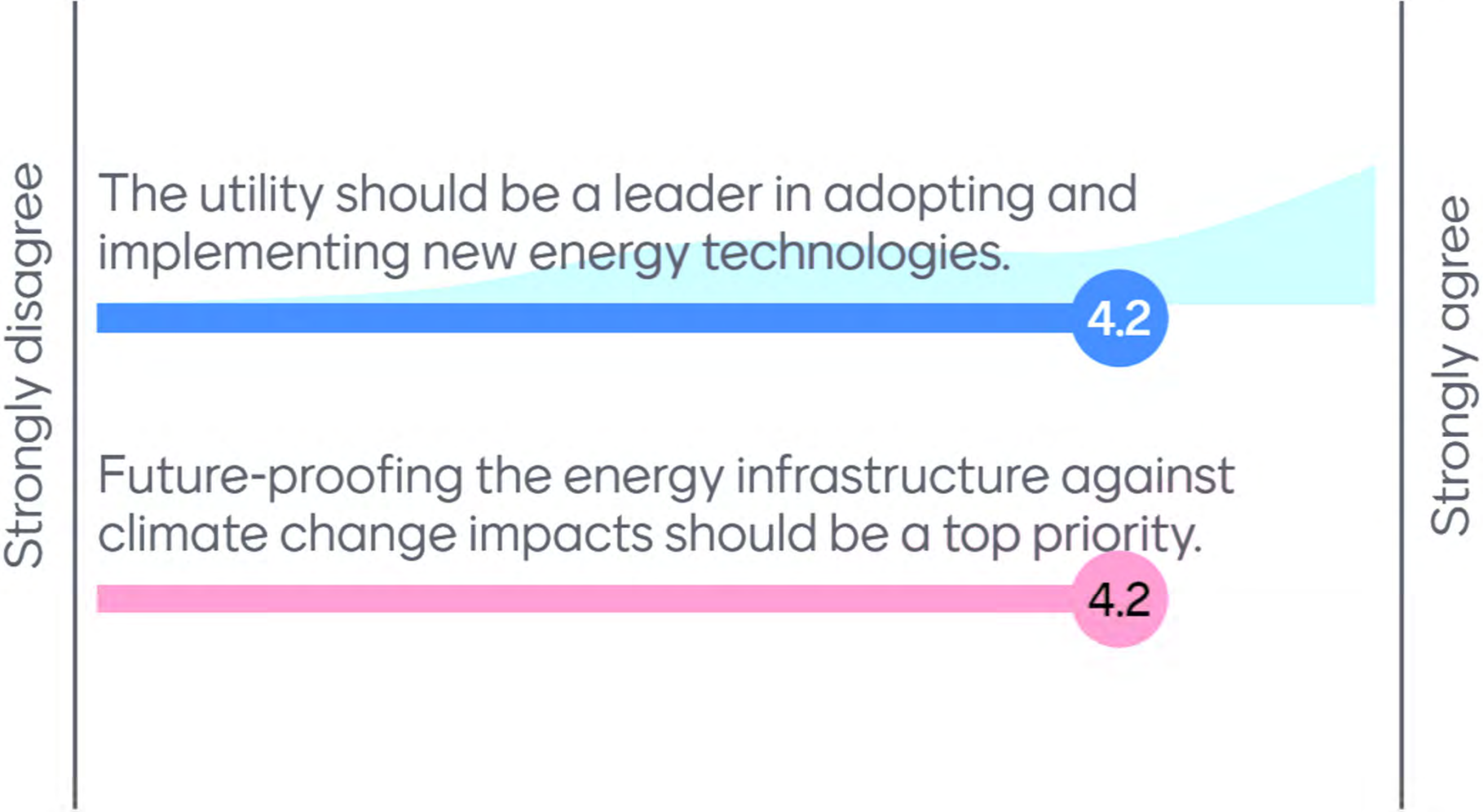
Cost & Sustainability Balance



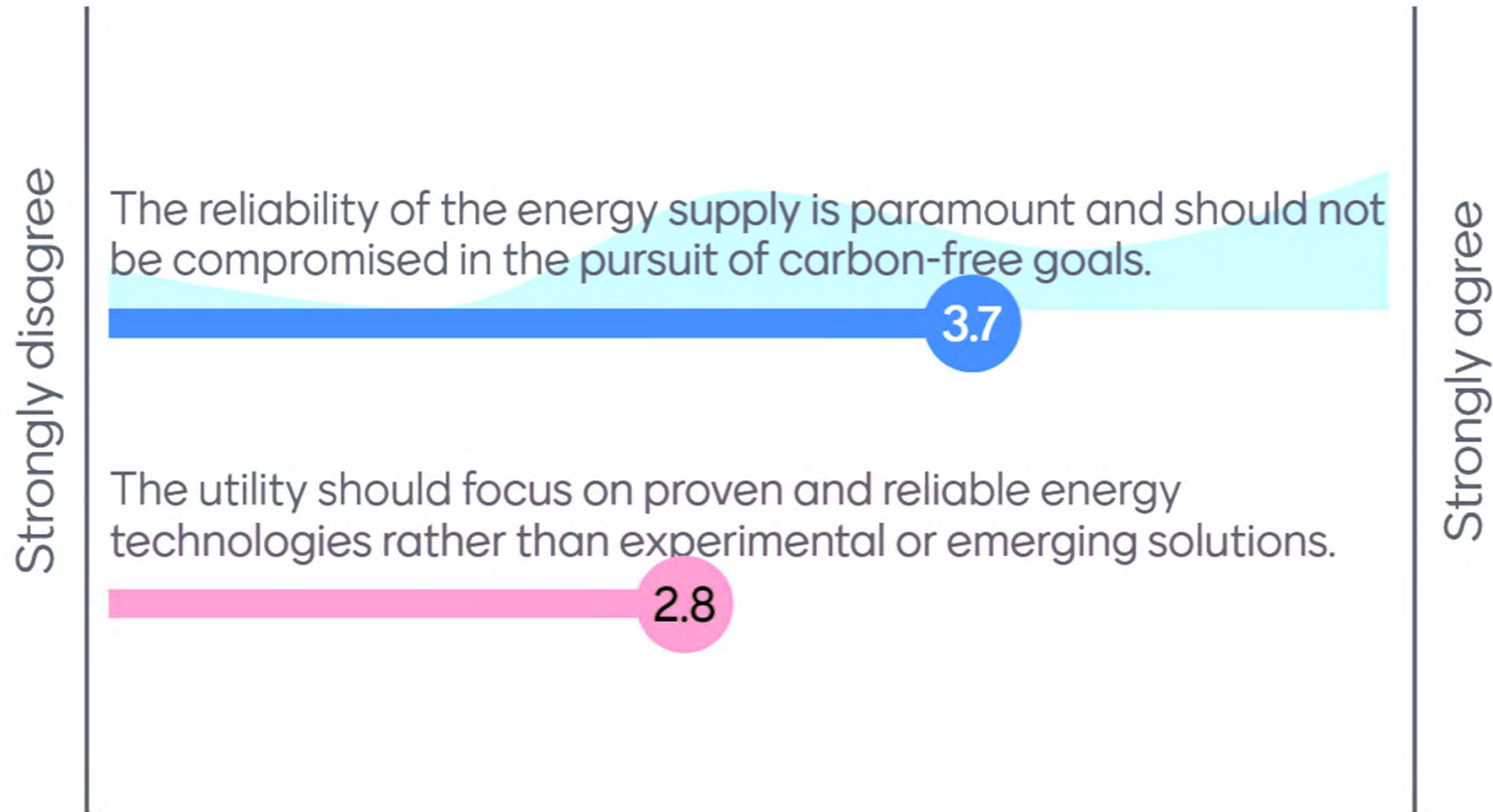
Customer Choice for Renewable Energy



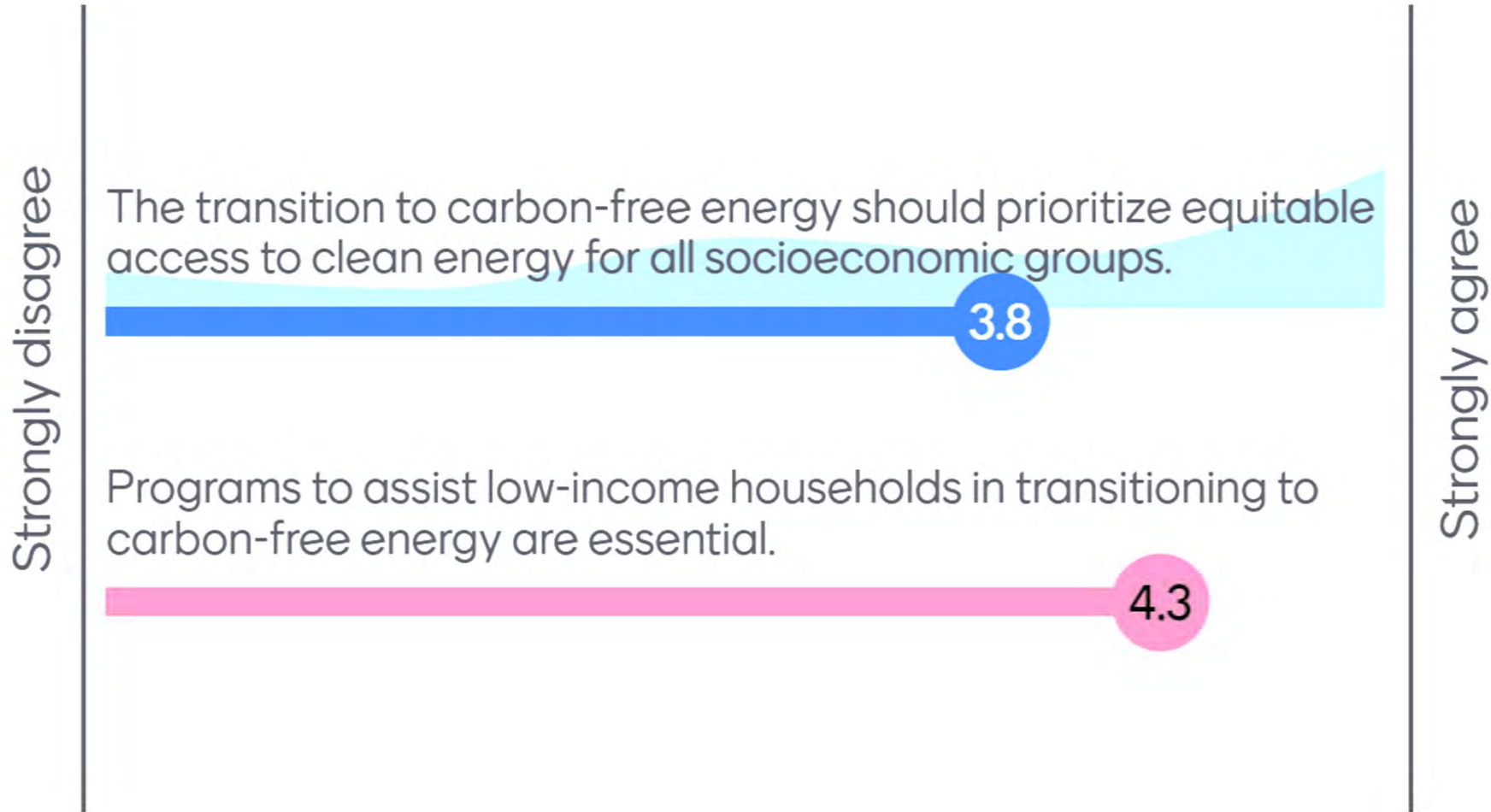
Innovation & Technology



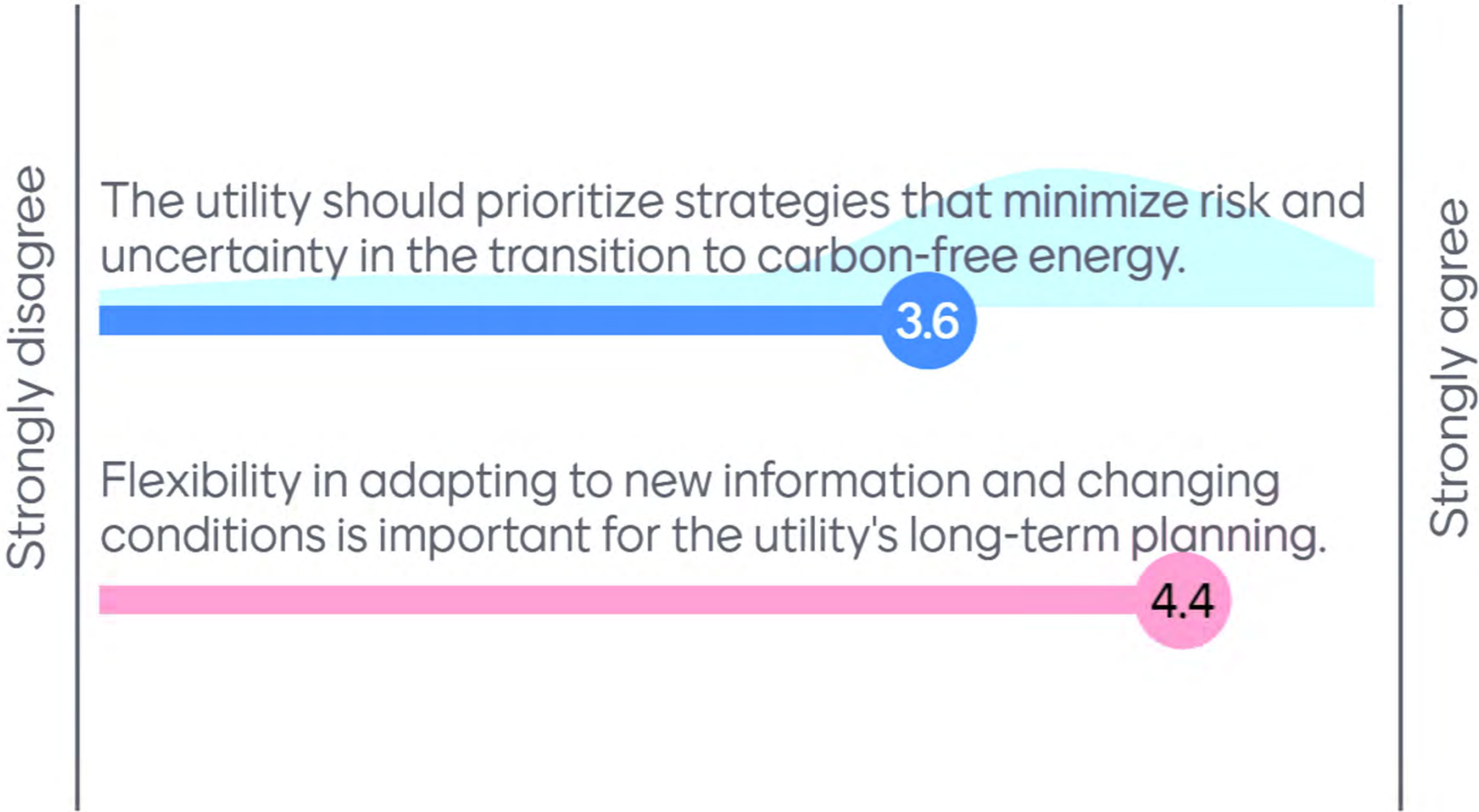
Reliability & Infrastructure



Equity & Accessibility



Risk Management & Uncertainty



Open Feedback

Topic	Actions LADWP is taking
Decommissioning of natural gas-fired power plants and alternatives to hydrogen	Continuing to monitor maturity, feasibility, and capabilities of firm and dispatchable carbon-free energy technologies that can maintain reliability and resilience
Timeline and milestone tracking	Developing dashboards and schedules for milestone and progress tracking
Running meetings more efficiently	Incorporating feedback for future meetings

10 Major Themes from Comments

- Resource Availability:
 - Questions/comments on LADWPs assessment of various technologies for meeting RPS and Resource Adequacy goals. (Battery, Geological, and Gravity Energy Storage and Biomass/biofuel)
 - **LADWP has a rolling RFP that includes various technologies for evaluation**
- Load Reduction:
 - Questions/comments on methods for reducing incident and overall load and implementation of those methods. (Energy Efficiency, Load Shedding, and Demand Response programs and policies)
 - **SLTRP will include large amounts of demand side resources to meet its clean energy goals**
- Transmission:
 - Questions/comments on DWP's work to improve Transmission network. (HVDC Right of Way, Reconductoring, Collaborative Efforts) and Grid Enhancements)
 - **Over 36 transmission projects are ongoing to assist LADWP in achieving its 2030 goal**
- Reliability:
 - Questions/comments on increasing electrification in the LA-Basin. (EV charging, Energy Analyses)
 - **SLTRP will need to consider sufficient resources and capacity to accommodate increased electrification**
- Environmental Impact:
 - Questions/comments on DWP's efforts to analyze and mitigate environmental impacts. (Emissions, Air Quality)
 - **All of LADWP's major projects will need to go through an environmental impact report**

10 Major Themes from Comments

- Water Usage:
 - Questions/comments on joint efforts between Water and Power systems in the SLTRP. (Water Direct Install, Storm Water Capture)
 - **SLTRP continues to collaborate with Water System on key initiatives, such as Operation Next**
- Meeting Format:
 - Questions/comments on format of future AG meetings. (Question Collection, Milestone Presentation)
 - **SLTRP team will take this into consideration for future meetings**
- Human Resources:
 - Questions/comments on HR Capacity for meeting SLTRP-stated goals. (Staffing Needs)
 - **IHRP will be considered in the SLTRP. Hiring is actively ongoing**
- Funding:
 - Questions/comments on the impact of Funding Opportunities on SLTRP-stated costs. (Project Implementation, Customer Rates)
 - **LADWP is currently applying for Grants and known funding will be incorporated into SLTRP**

2025 SB100 REPORT

MODELING SCENARIOS

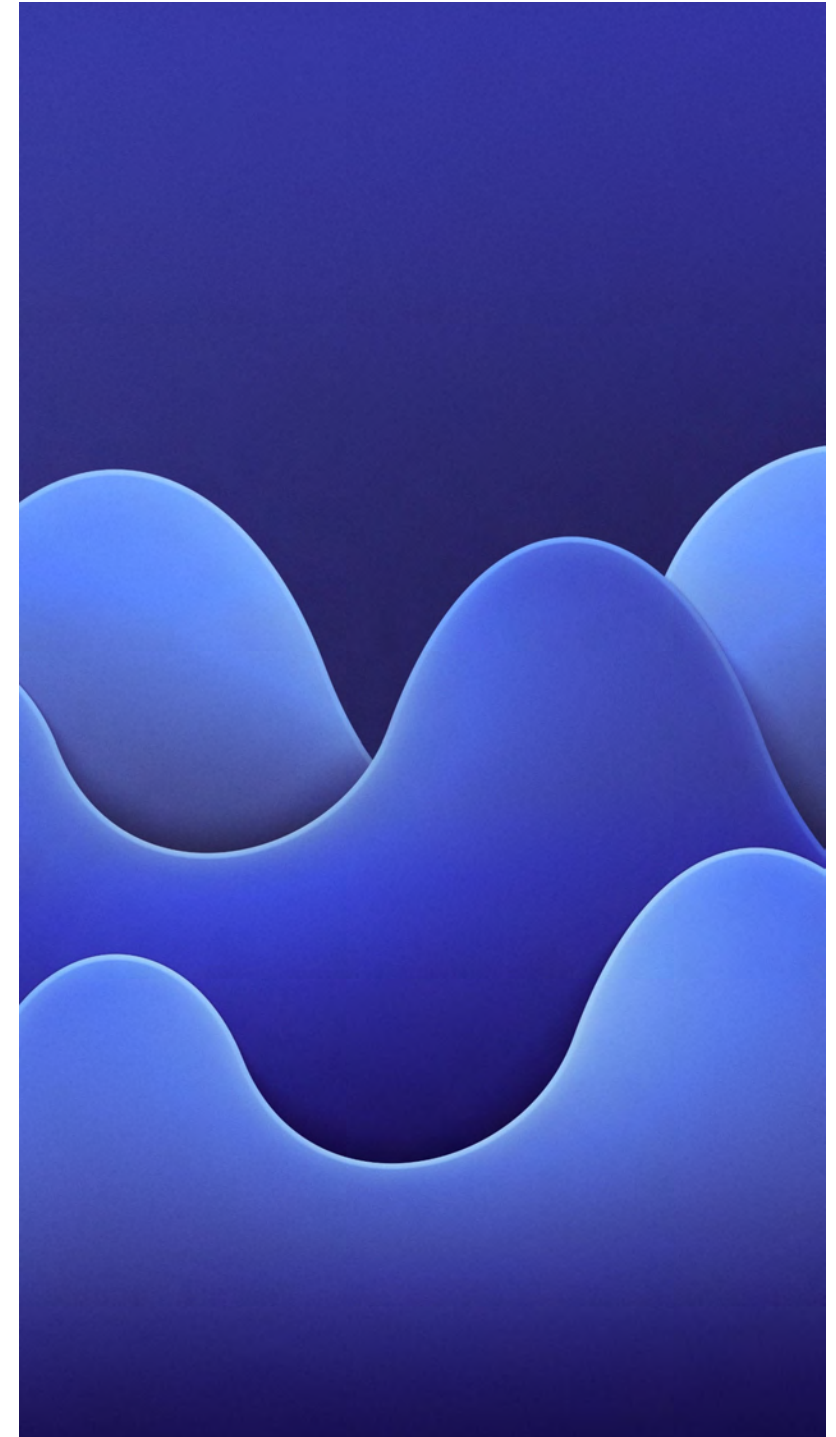


What are Assumptions?

Assumptions are critical inputs into the Resource Planning Models that will impact the outcomes of the modeling

Examples are listed below:

- Forecasted Load Growth
- Commodity Pricing and Growth Trends
- Technology Availability
- Minimum Resource Inputs



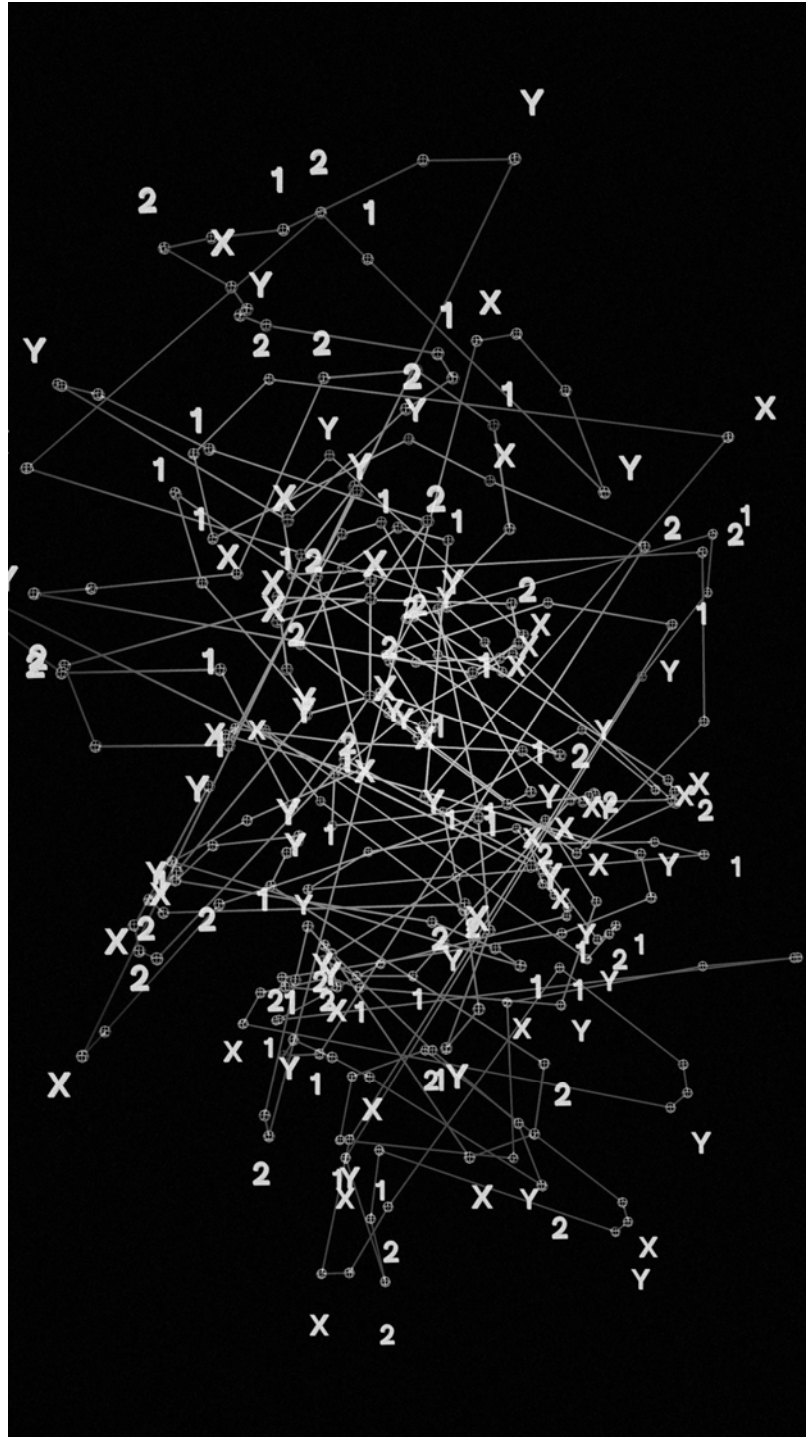
Scenario vs Sensitivity

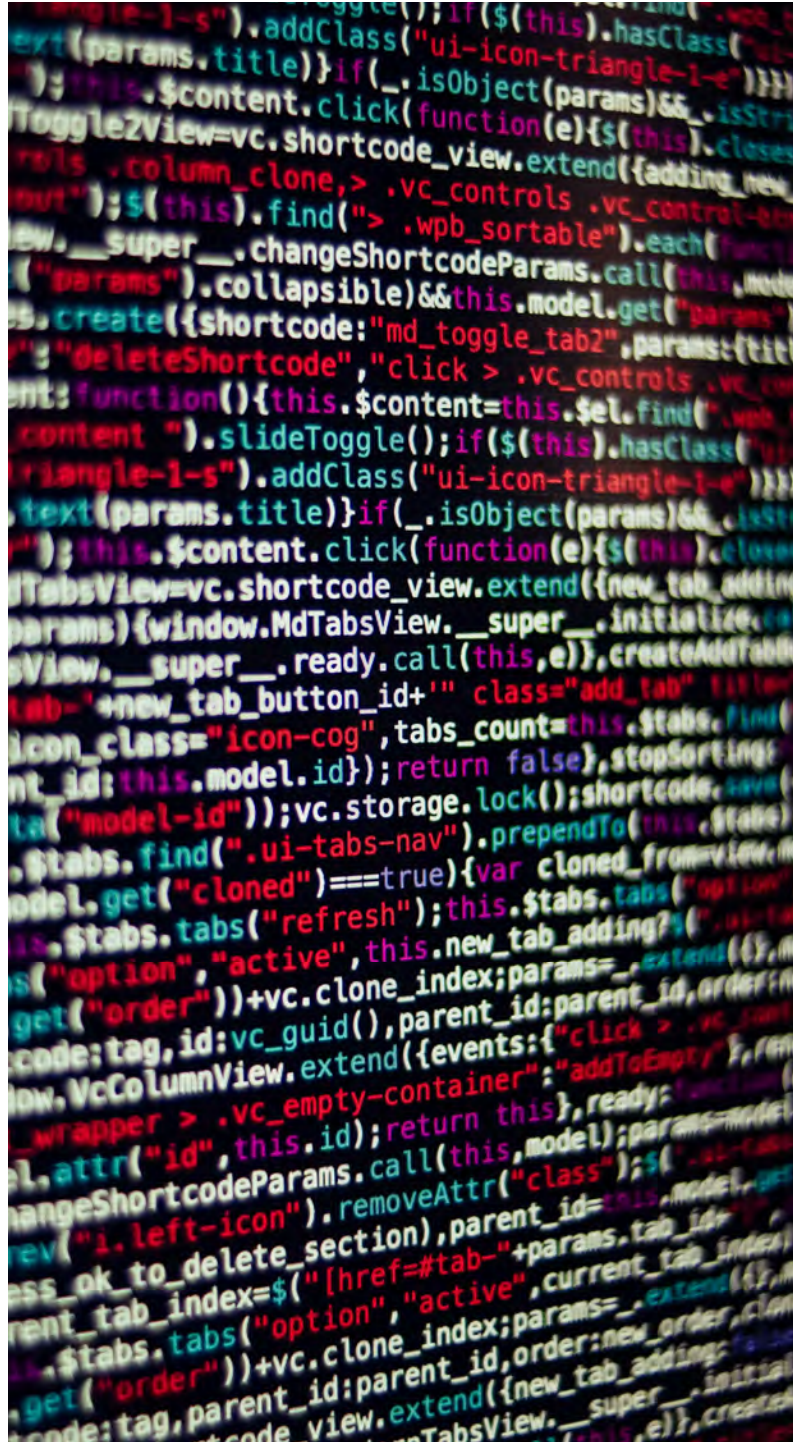
Scenarios are broad strategic plans

- A potential **roadmap** for LADWP to follow to reach its clean energy goals, while maintaining reliability and cost affordability
- There are **trade-offs** in balancing cost, reliability, and environment
- Recommended scenario will drive LADWP's **financial priorities** and support future rate actions

Sensitivities are granular components to model

- Explores **bookends** of cost or impacts of a potential risk by isolating a single assumption (e.g. load or resource)
- **Price Sensitivity:** Evaluates the range and impact of future power system cost due to low and high range commodity prices
- **What-if Sensitivity:** Evaluates impact of risks, primarily outside of LADWP's control and its impact to cost, reliability, and emissions





Model Scenarios

What value does the modeled scenarios provide?

A

Insights

Insights into a future outcome based on the input assumptions

B

Tradeoffs

Trade-offs of each scenario that provides guidance for Management to make a recommendation to the Board

C

Metrics

GHG emissions (CO₂ and NO_x), reliability metrics (loss of load hours), cost (annual and total), rate impacts (with support from FSO)

LCOE / Total Costs

GHG Emissions

Reliability Scoring

Contingency Planning

Build & Adoption Rates

Financial Forecasts

Energy Burden

Affordability

Technology Performance

Loss of Load

Peak Load Coverage

Ramp Rates

2025 SB100 Joint Agency Report

Gold indicates changes from the Reference Scenario

Assumption Category	Reference	Base	Minimum Compliance	DER Focus	Resource Diversification	Geographic Diversification	Combustion Resource Retirement
Fixed Assumptions	Base	-	-	-	-	-	-
Base Resources	Resource Plans as far as possible, CPUC PSP through 2039	Resource Plans to 2030	Resource Plans to 2030	Resource Plans to 2030	Resource Plans to 2030	Resource Plans to 2030	Resource Plans to 2030
Demand	Policy Compliance High Electrification Scenario	-	-	Policy Compliance High Electrification Scenario, augmented by high DER, DR, and Load Flexibility	-	-	Policy Compliance High Electrification Scenario, augmented by high DER, DR, and Load Flexibility
Land Use	Core Land Use Screen	-	-	-	-	-	-
Compliance	SB 100	-	-	-	-	-	Expanded Load Coverage
GHG Limits	~8 MMT	-	N/A	-	-	-	-
Combustion Retirements	Planned and Economic	-	-	-	-	-	All Combustion Retires by 2045
WECC Assumptions	Economic Transmission Assumptions	-	-	-	-	Increased Interstate Transmission, Reduced Hurdle Rates	-
Offshore Wind	Economic Additions	-	-	-	Increased Offshore Wind	-	Increased Offshore Wind
FTM Solar Resources	Economic Additions	-	-	Increased FTM DER Solar Adoption	-	-	Increased FTM DER Solar Adoption
Carbon Capture and Sequestration	Economic Additions	-	-	-	Increased CCS Adoption	-	-
Long Duration Energy Storage	Economic Additions	-	-	-	Increased Adoption	-	Increased Adoption
Hydrogen	Economic Additions	-	-	-	Increased Adoption	-	Increased Adoption

Source: California Energy Commission (CEC) 2025 SB100 Report Inputs and Assumptions Workshop

2024 SLTRP

ASSUMPTIONS PACKAGE

Komun. Strana Číny
Komun. Strana Německa

KS Německa - programy
Končeková - Veselá, L.

Končetiny
Konflikt vojenský

Konflikty
Konso

Konspekty
Konstytucja

Konstrukce stavební
Kontrapunkt

Kontrarevoluce
Kopana CSR (po r. 1968)

Kopana CSSR
Korea lid. dem.

Korea (lid. dem.) - socialismus

Korporace
Kosmologie

Kostky
Kout talerů

Kofeni
Kovy

Kovy - nauka o materiálu
Kovy - zpevnování

Kovy - zpracování
Kozuchów

Kozy
Krakow

Krakow - přívodec
Krawc. B

Krby
Kreslení stavební



Assumptions Package

Overview

1. Energy and Financial Assumptions
2. Capacity Expansion Modeling Overview
3. Retail Electricity Sales Forecast
4. Generation Resources
5. Demand-Side Resources and Loads
6. Transportation Electrification
7. Price Forecasts
8. Inflation Reduction Act

Energy Assumptions

Electricity Demand Forecast

- **Predict Demand Increases.** Used to estimate the amount of electricity that will be needed to meet customer demand over a specific time period.
- **Invest in Lowering Demand.** Behind-the-meter resources (e.g., rooftop solar, energy efficiency, demand response, etc.) tend to lower demand.
- **Determine Resource Needs.** Helps determine the required generation capacity and schedule for power plants.

Generation Technology Mix and Buildout

- **Portfolio of Resources.** Determines the types of power generation technologies (e.g., coal, natural gas, nuclear, renewables) and their capacities used to meet demand.



Financial Assumptions

Capital Costs and Financing

- **Life Cycle Planning.** Considers the capital and O&M costs for building new power plants or expanding existing ones.
- **Financial Parameters.** Considers financing terms, interest rates, and depreciation schedules for capital assets.

Environmental Regulations and Compliance Costs

- **External Impacts to LADWP.** Incorporates costs associated with complying with environmental regulations, such as emissions allowances, pollution control technologies, and carbon pricing.



Capacity Expansion Modeling

Develop strategic plans for the optimal timing and phasing of investments in new generation capacity to meet future demand and comply with regulations

Demand Forecast

Incorporate projected electricity demand over the planning horizon into the modeling framework.

RISK ASSESSMENT & SENSITIVITY ANALYSIS

Evaluate risks associated with investments and conduct sensitivity analysis to understand the impact of uncertainties.



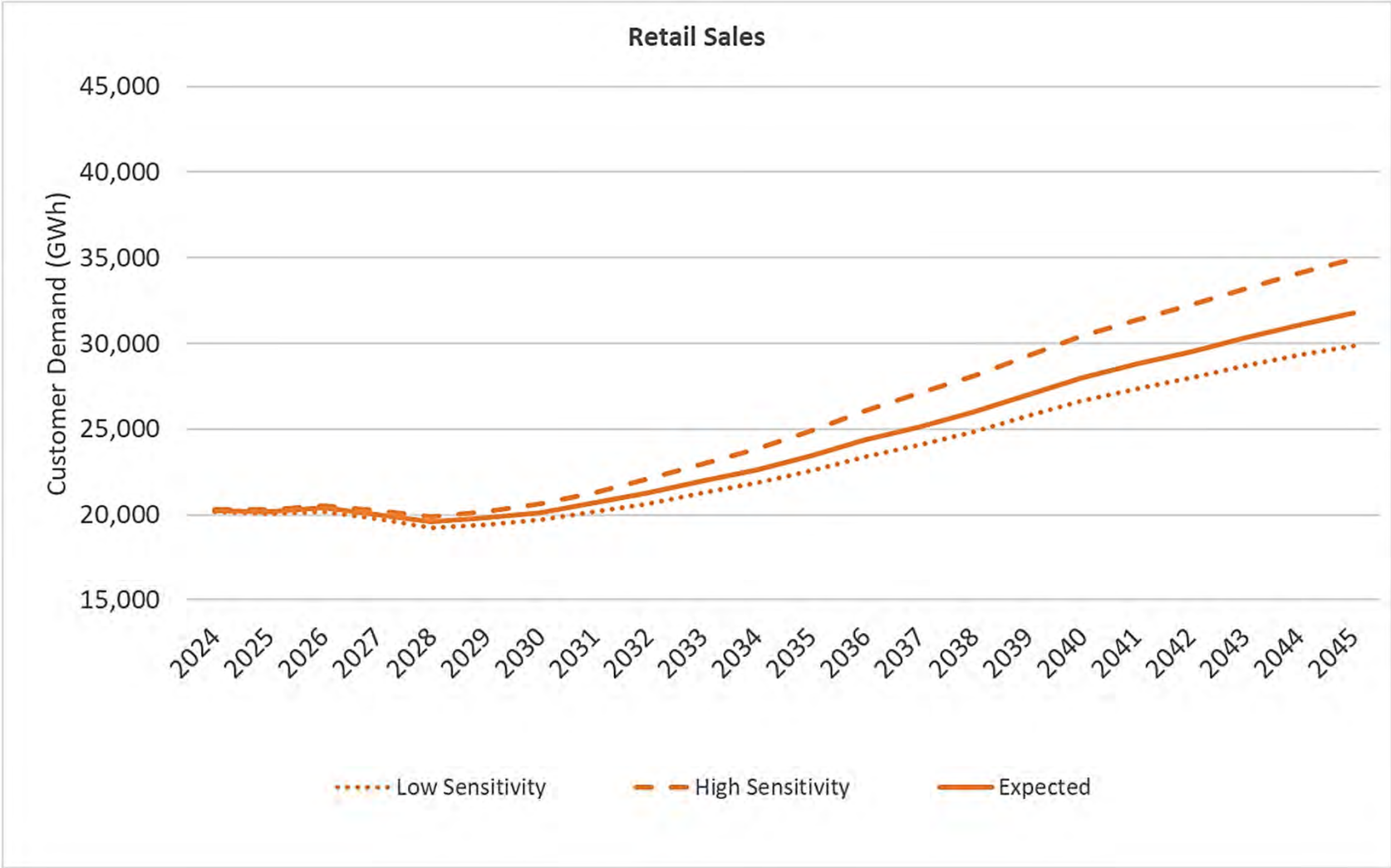
TECHNOLOGY OPTIONS & COST ASSUMPTIONS

Consider various generation technologies and associated cost, including capital, operating, and fuel costs.

CONSTRAINTS & OPTIMIZATION

Account for constraints like environmental regulations and optimize investment decisions using mathematical techniques to minimize cost.

Retail Electricity Sales Forecast



Note: The IRP Team assumes line losses of 12% , pursuant to the latest load forecast from the LADWP Load Forecasting Group.



Total Existing and Pending Capacity

12,216 MW



259 MW
Geothermal
 14 MW
Biomass



3,594 MW
Solar



1535 MW
Hydro



3,674 MW
Nat Gas



380 MW
Nuclear



1,175 MW
Coal



257 MW
Small Hydro



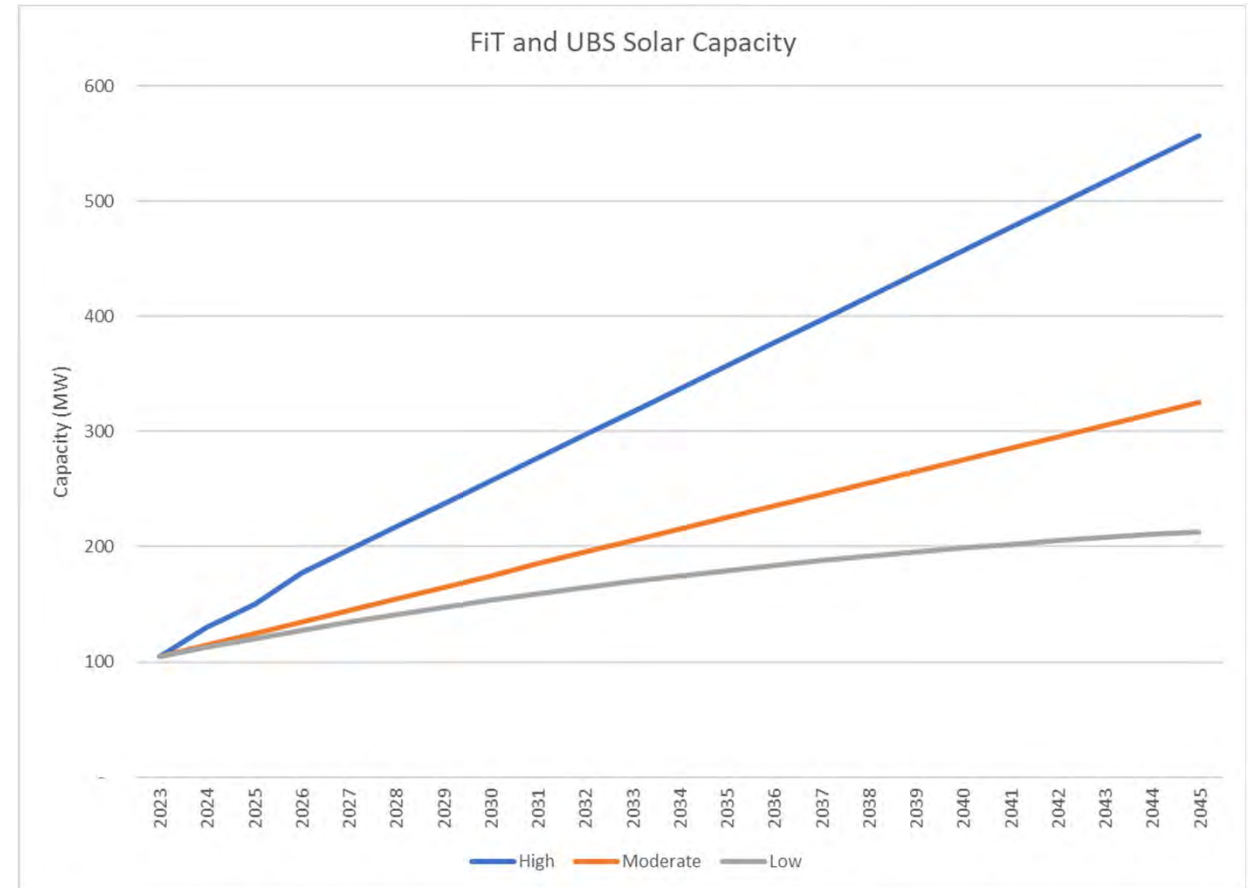
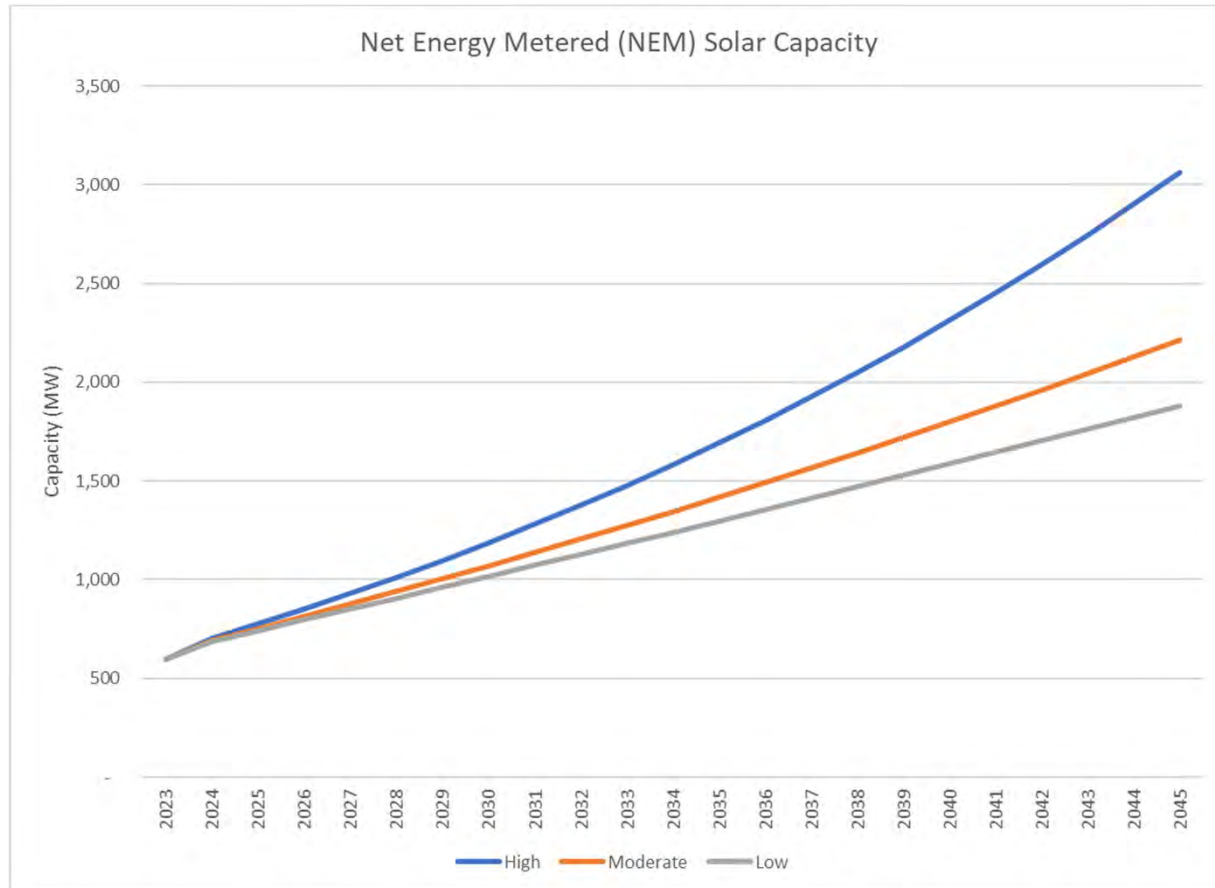
1,328 MW
Wind

Potential Pumped-Storage Projects

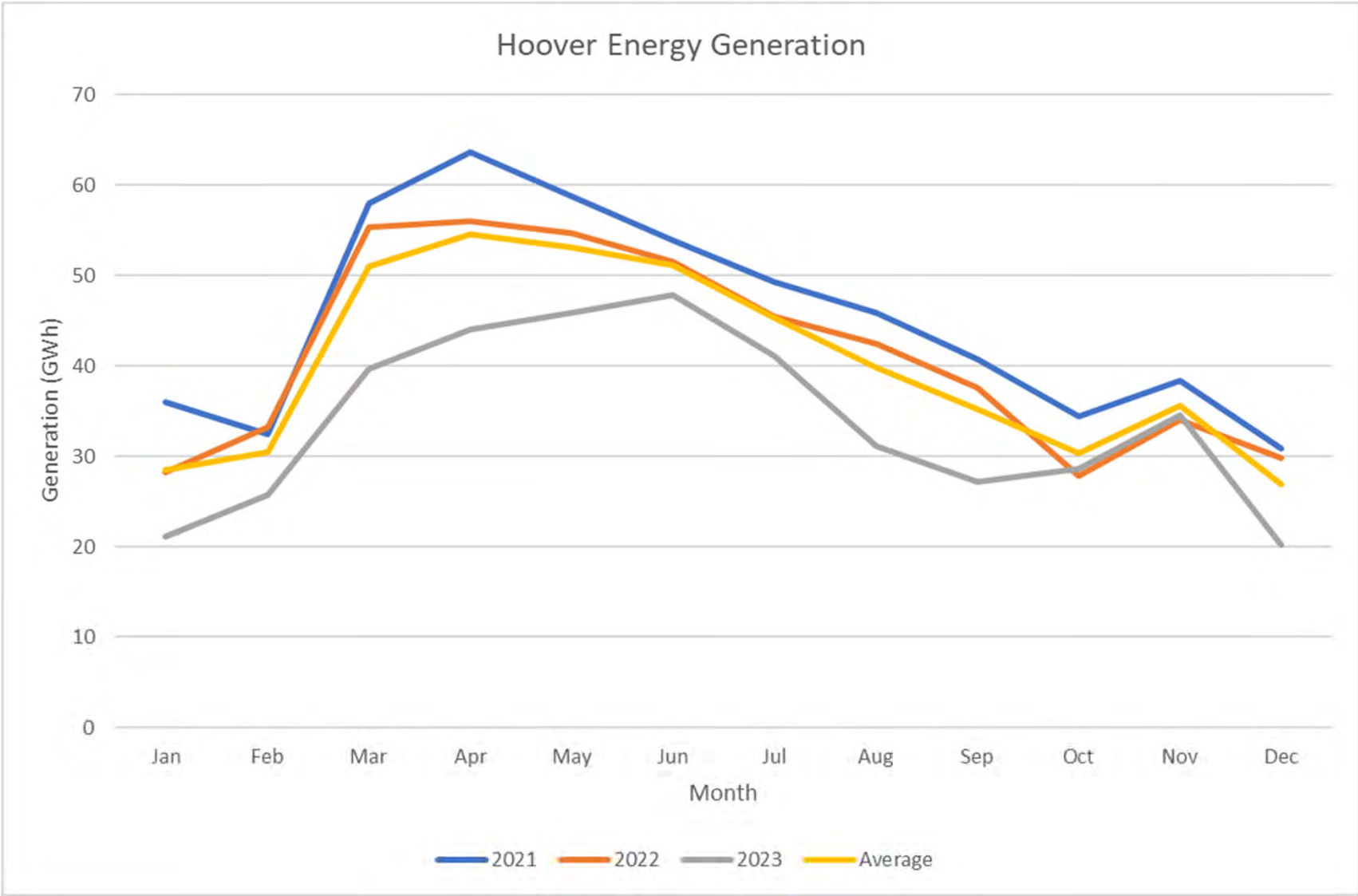
- **Pumped Storage Projects.** LADWP is consider several pumped-storage projects (aggregated in the table above due to confidentiality).
- **Capacity Expansion Model.** These projects will be presented to the capacity expansion model as potential candidate resources
- **Selection Pending Analysis.** The capacity expansion model will determine, which, if any, of these pumped-storage projects will be selected based on reducing overall portfolio costs to LADWP as well as impacts to reliability.

Locations	CA, UT, WA
Commercial Operation Dates	2028 – 2035
Capacity (MW)	500 – 2,000
Capital Costs	\$2.7 billion (average)

Local Solar



Hoover Generation Forecast



Intermountain Power Project

("IPP Renewed") Green Hydrogen

IPP Minimum "Must Run" Operation for Reliability

May-Oct.: **2 units** running at minimum*

Nov.-Apr.: **1 unit** running at minimum*

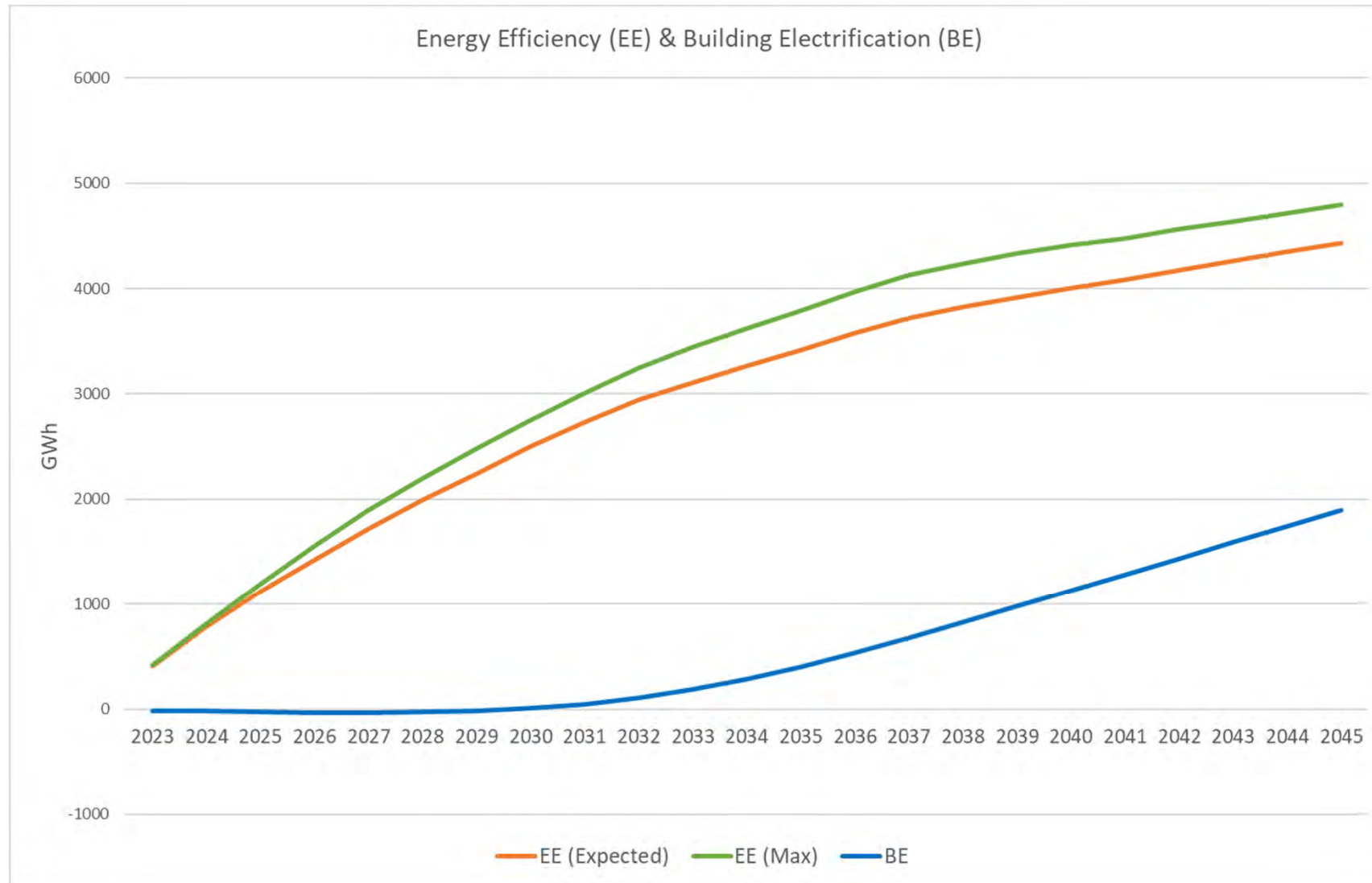
*Minimum means each unit is operating at 50% of its rated capacity

LADWP Share of Generation (Base Shares Only)

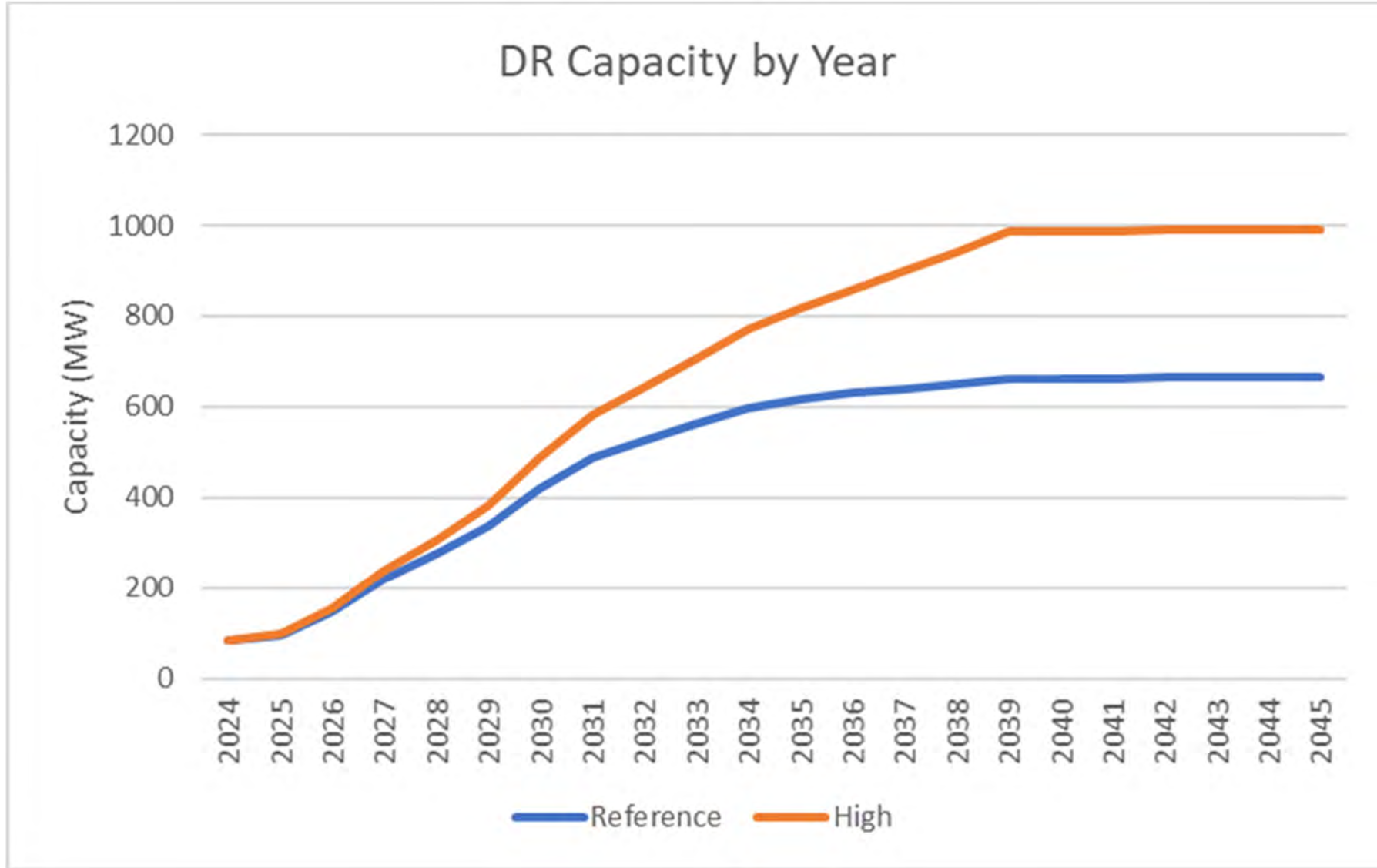
2025-Mid-2027: 48.6% of 840 MW Plant Total (**~408 MW**)

Afterwards: 70.6% of 840 MW Plant Total (**~593 MW**)

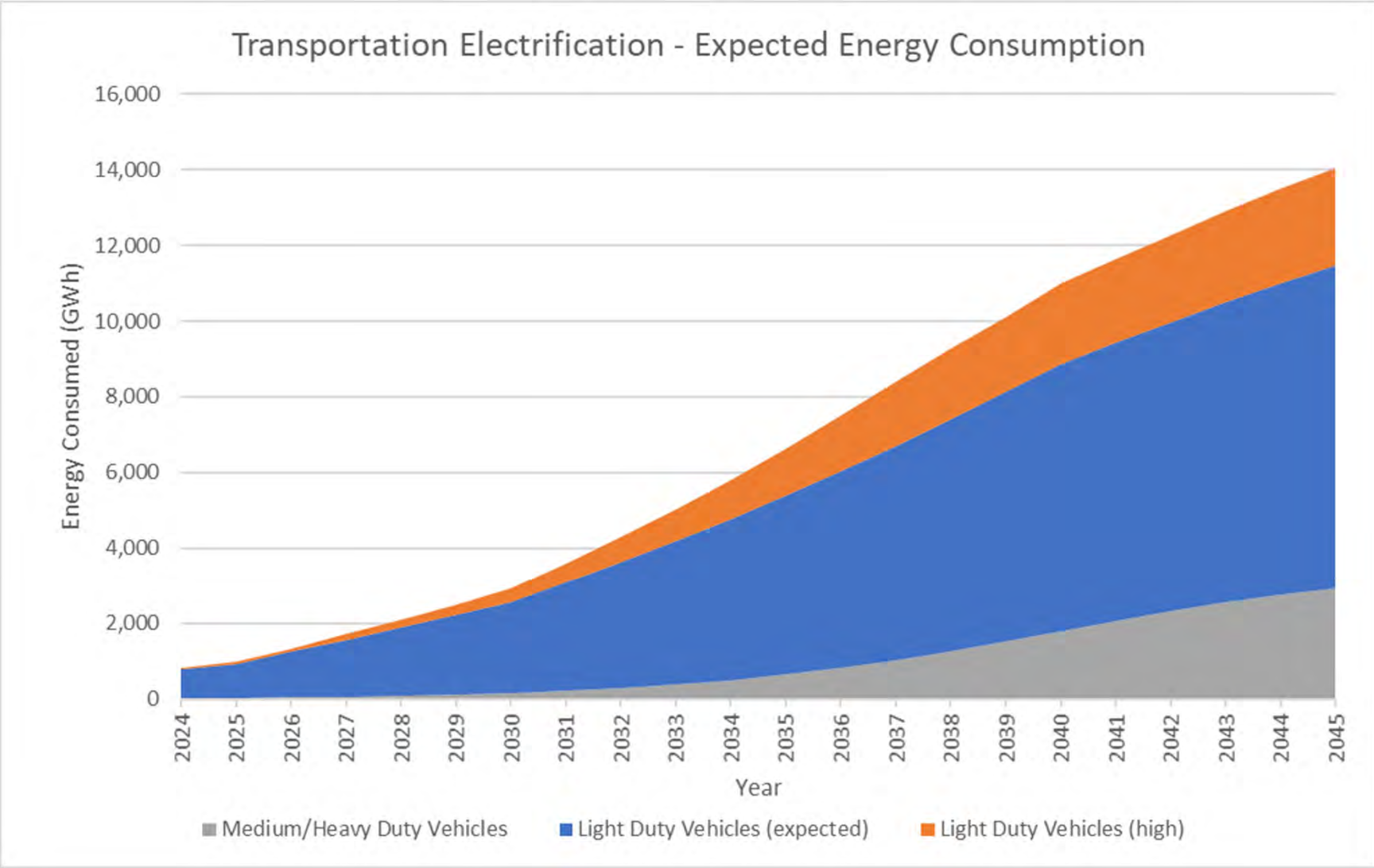
Energy Efficiency & Building Electrification



Demand Response (DR)

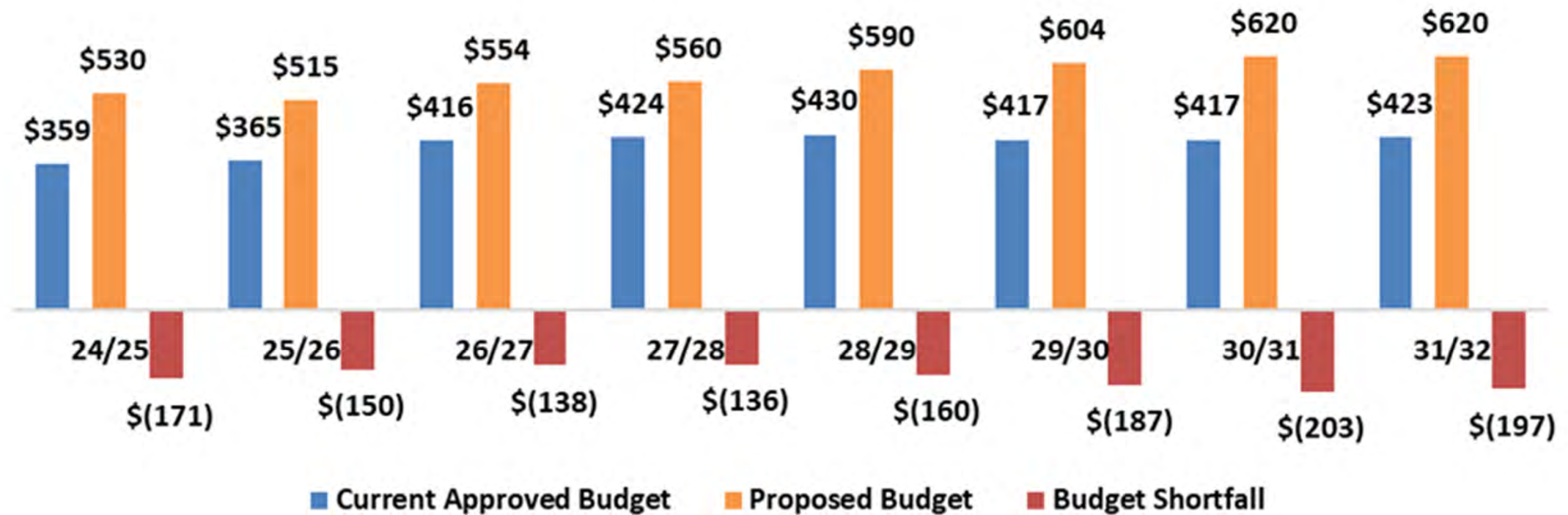


Transportation Electrification



Power System Reliability Program (PSRP)

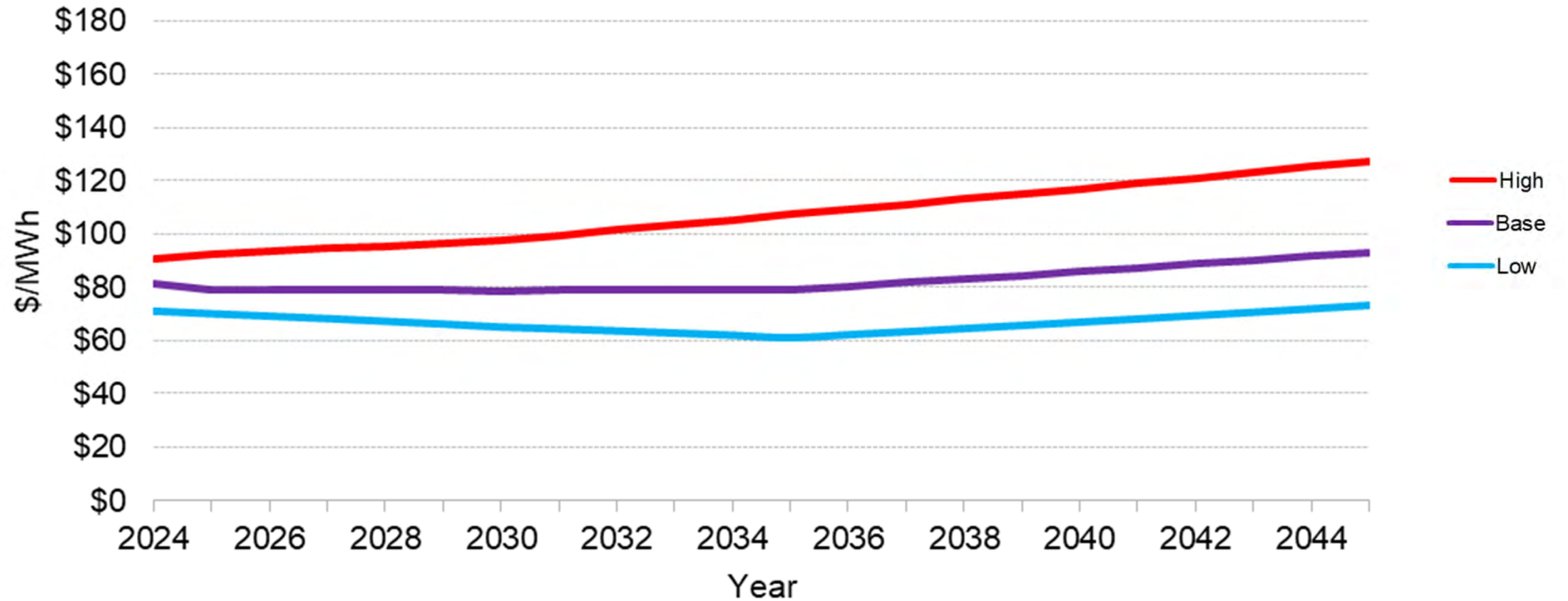
Revamp Costs (\$M)



Renewable Price Forecasts

Solar Photovoltaics + Storage

Solar + Storage (50%)

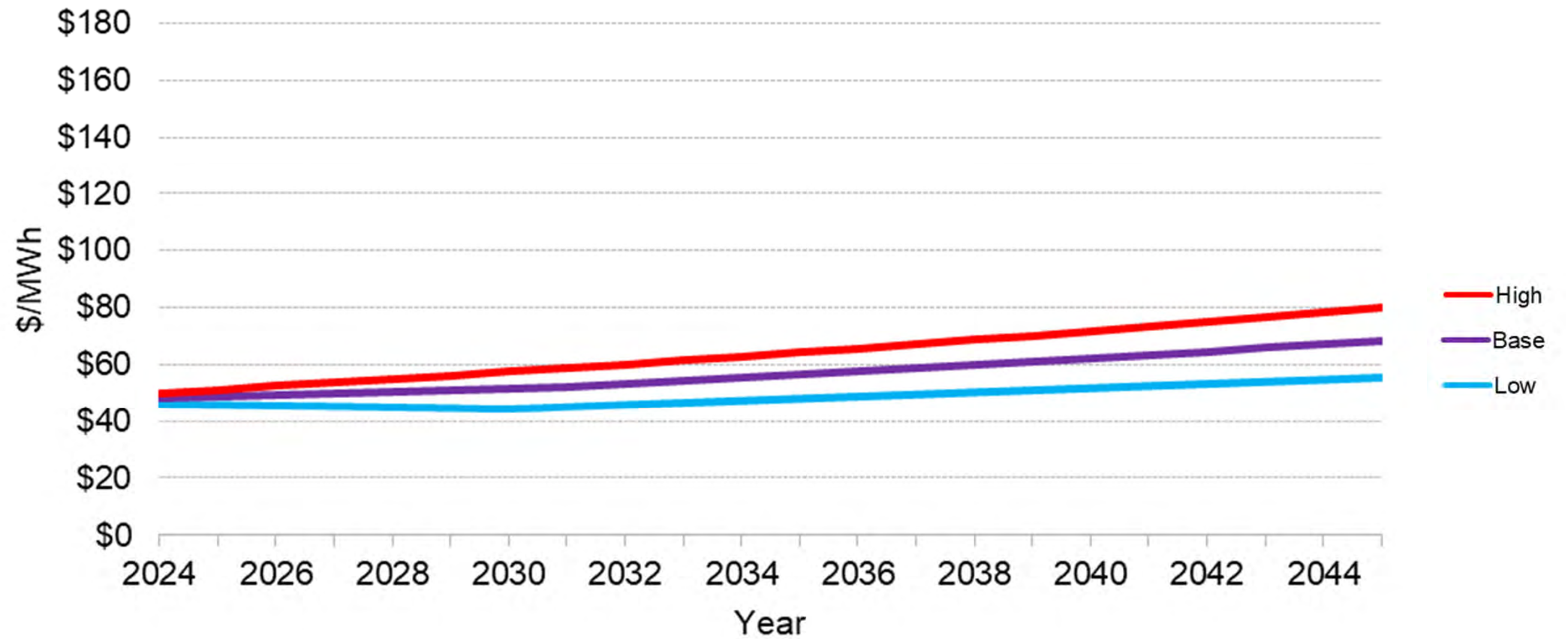


Source: 2023 NREL Annual Technology Baseline

Renewable Price Forecasts

Land-Based Wind

Land-Based Wind

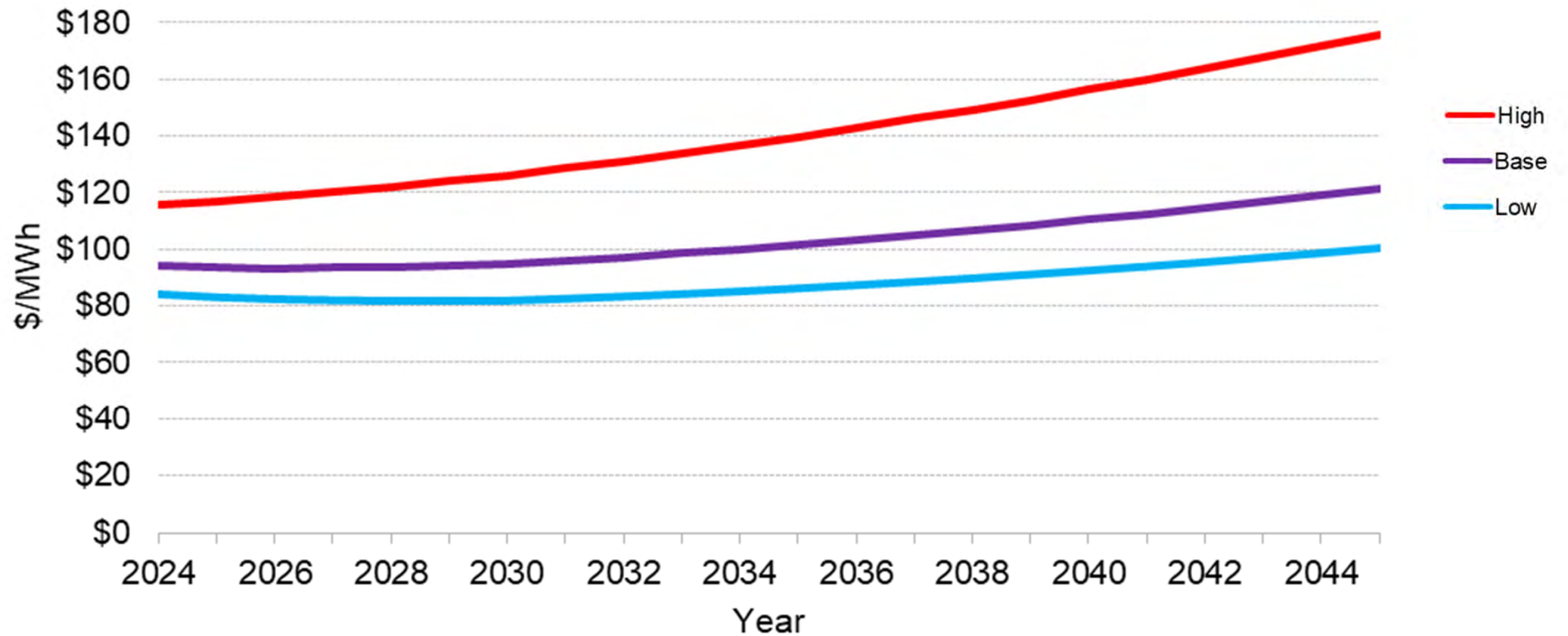


Source: 2023 NREL Annual Technology Baseline

Renewable Price Forecasts

Off-Shore Wind

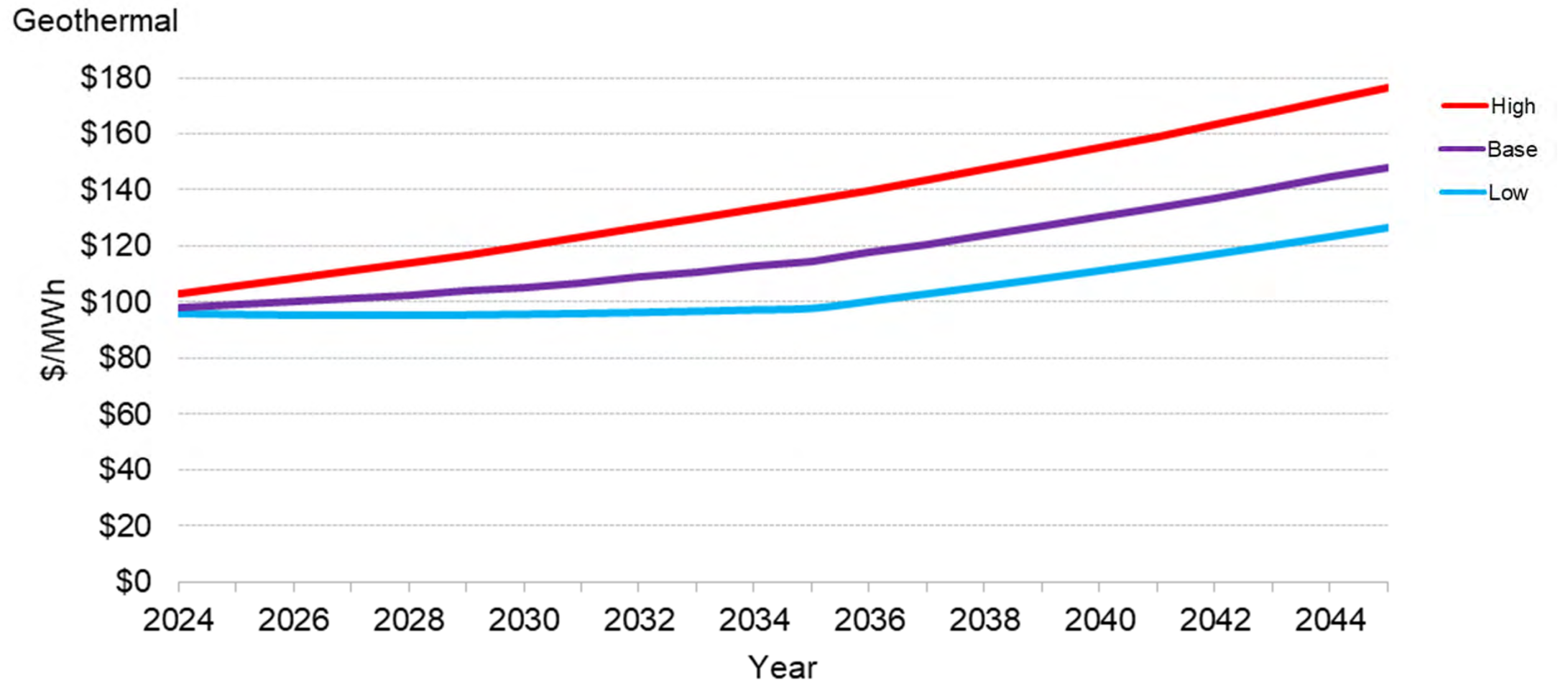
Off-Shore Wind



Source: 2023 NREL Annual Technology Baseline

Renewable Price Forecasts

Geothermal

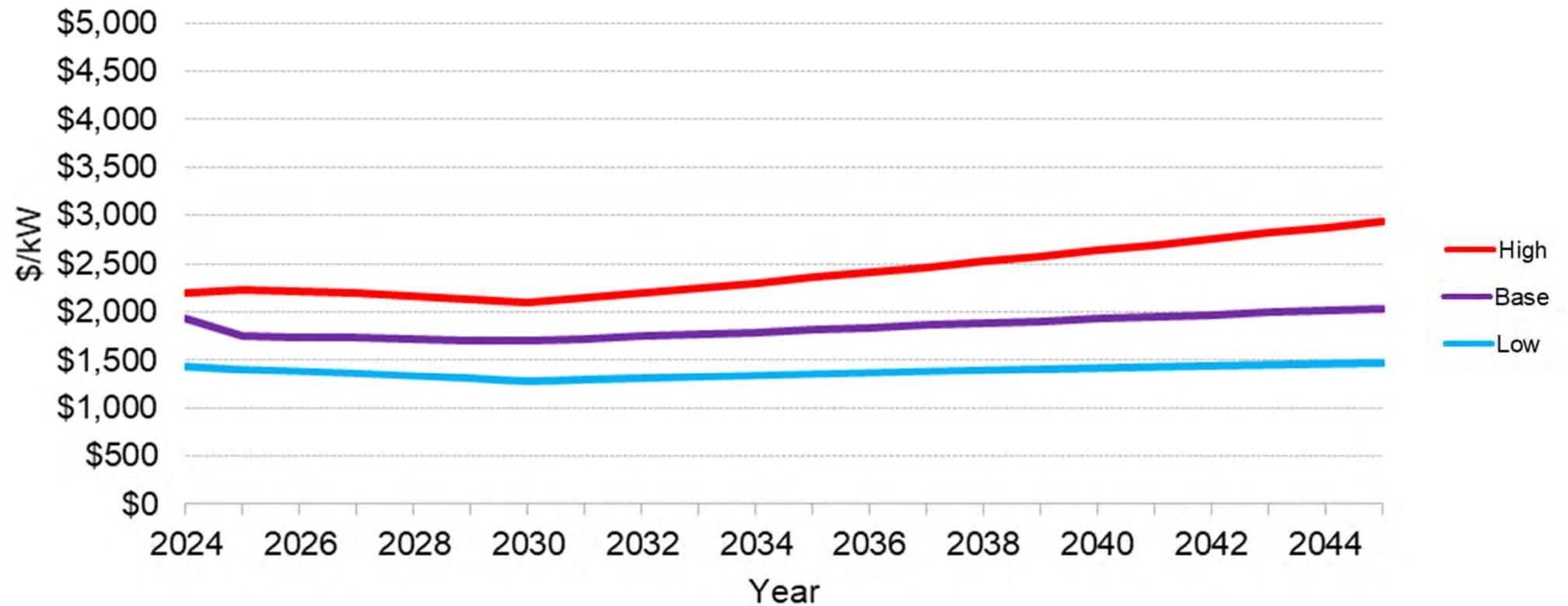


Source: 2023 NREL Annual Technology Baseline

Renewable Price Forecasts

4 Hour Battery Storage

4-Hr Batteries

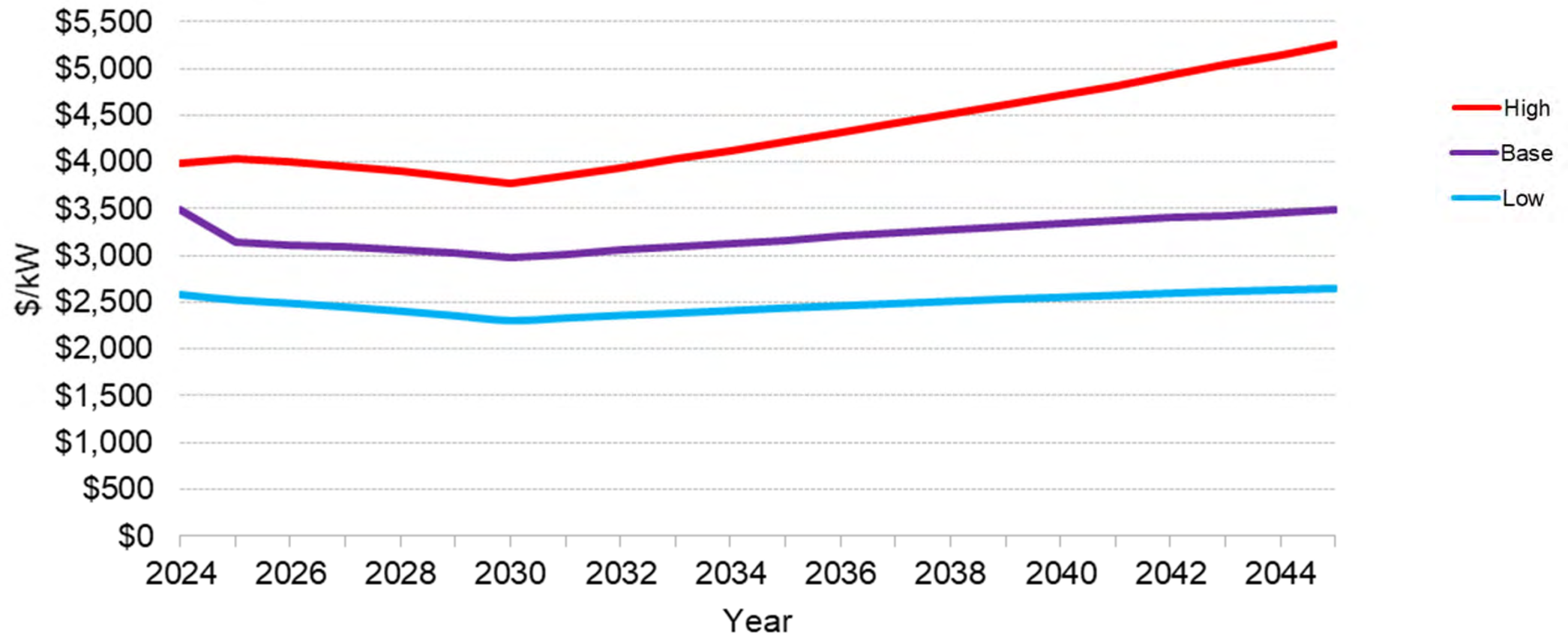


Source: 2023 NREL Annual Technology Baseline

Renewable Price Forecasts

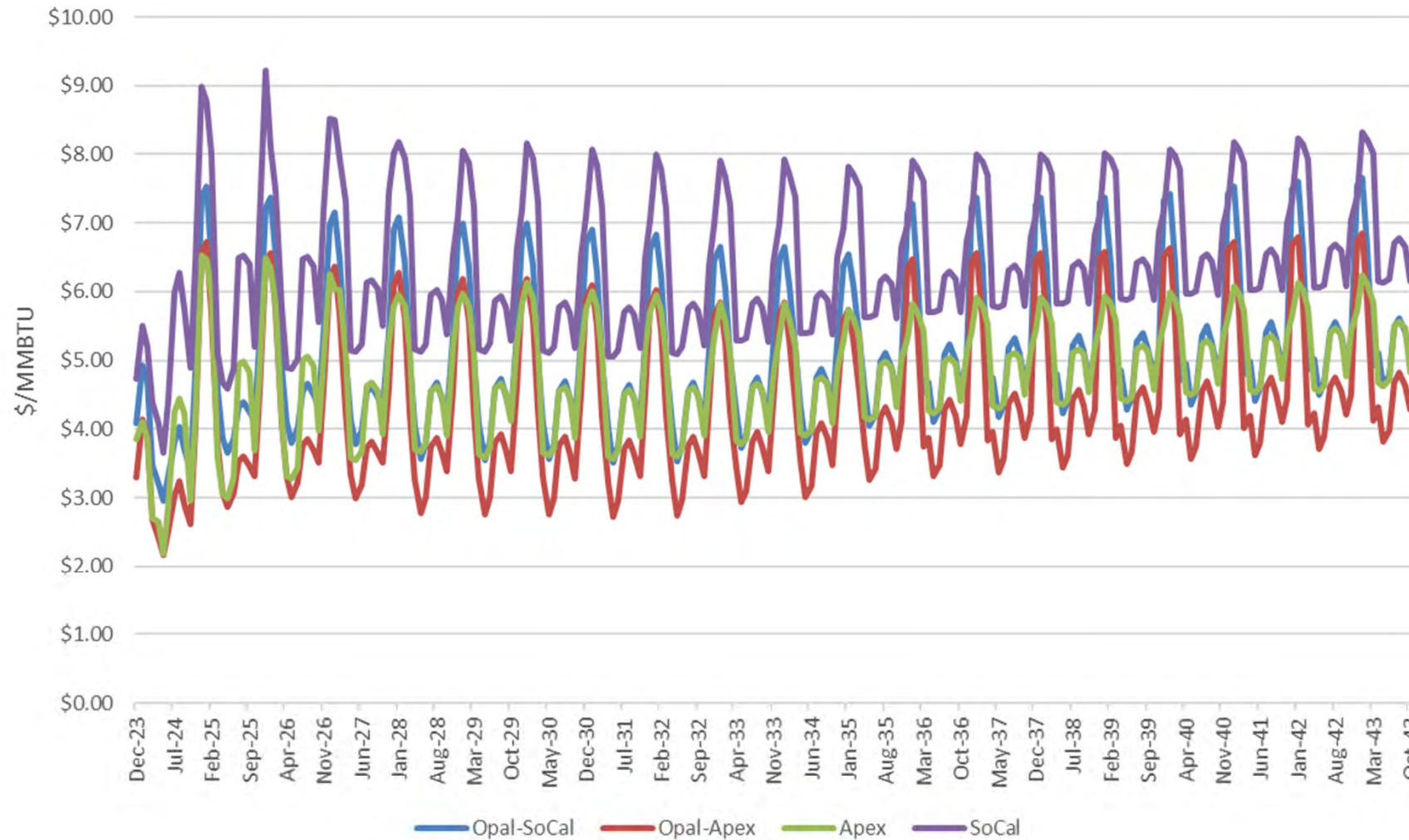
8 Hour Battery Storage

8-Hr BESS (Li-Ion)



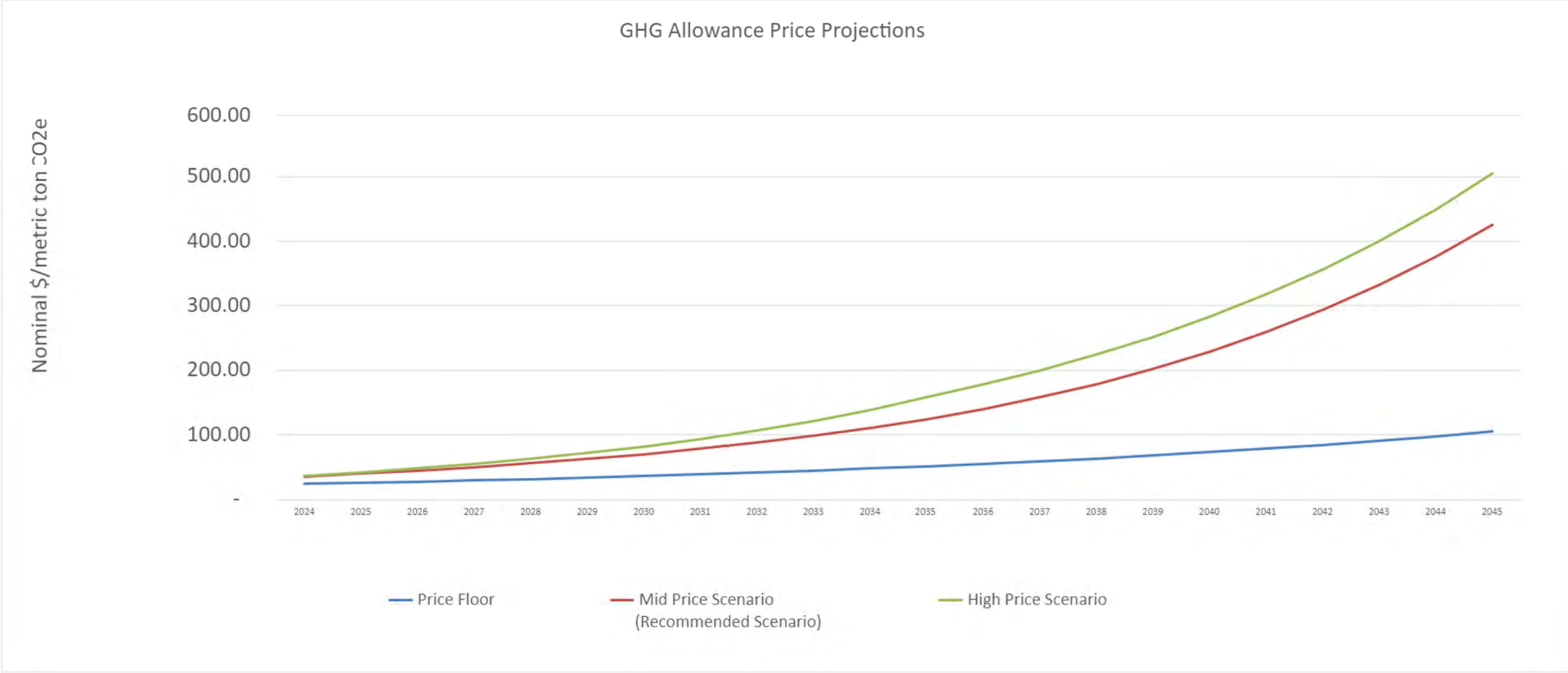
Source: 2023 NREL Annual Technology Baseline

Natural Gas Price Forecast



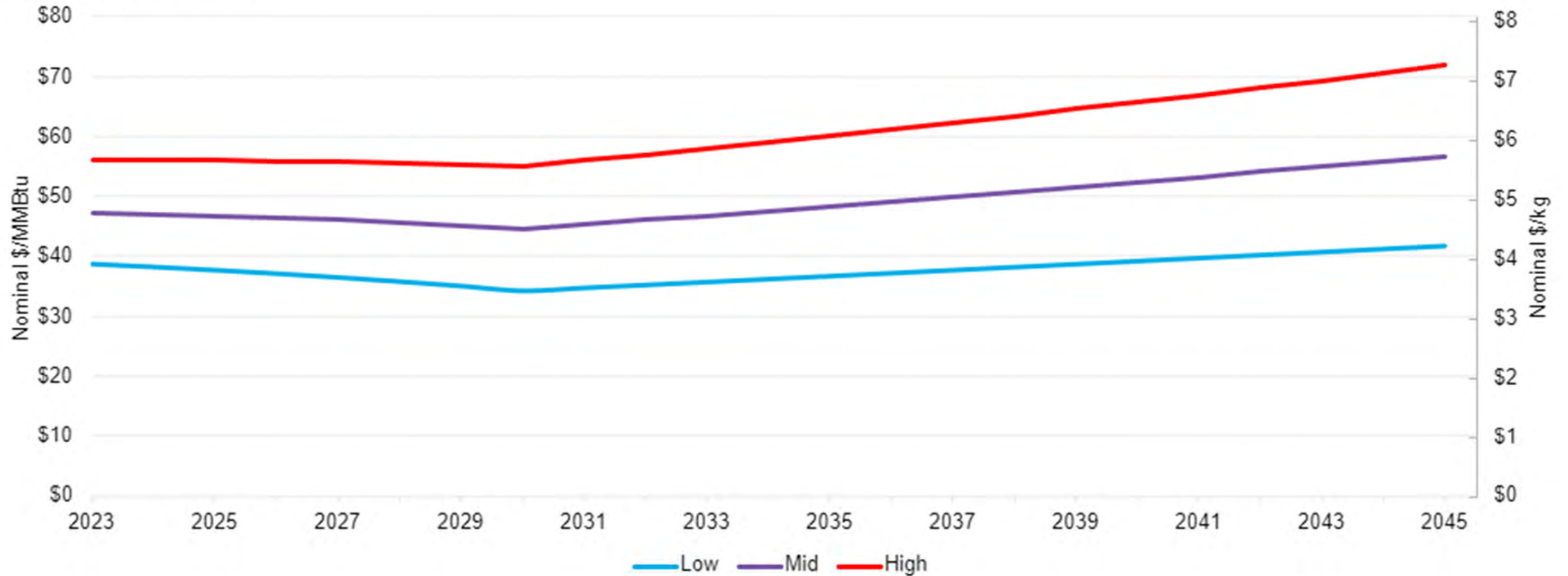
Note: Price forecast does not necessarily imply the use of natural gas-fired generation resources throughout the entire study horizon.

Greenhouse Gas (GHG) Allowance Prices



Green Hydrogen Price Forecast

Total Cost of Market -Purchased Green Hydrogen Delivered to In -Basin Generating Stations
Higher Heating Value Basis



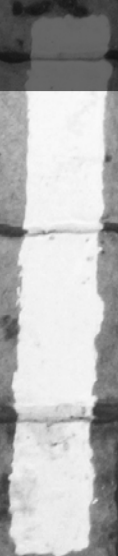
Source: Bloomberg New Energy Finance

Inflation Reduction Act

TOPIC AREA	TOPIC AREA PROJECT DESCRIPTIONS	TOTAL REQUESTED FUNDING
[1]. Grid Resilience Utility and Industry Grants	Grants would provide funds for upgrades to electrical equipment in substations, mobile home park systems, and the 34.5kV sub-transmission networks in congested areas of Los Angeles, as well as for field investigations and replacement of deteriorated cables and equipment to improve reliability and efficiency.	\$230.8M
[2]. Smart Grid Grants	Grants would provide funds to modernize electrical substations by replacing obsolete automation equipment with reliable devices and communication systems, as well as providing remote operable capability for distribution equipment. Additionally, we're collaborating with Clean Energy Partnership members to develop a Regional Resiliency Scorecard to prioritize innovation deployments and utility-led Virtual Power Plant investments.	\$103M
[3]. Grid Innovation Program	Grants would provide funds for various projects including implementing the Beacon Long-Duration Energy Storage project to enhance renewable energy dispatchability and assess utility-scale energy storage performance. Additionally, we're pursuing funding for initiatives like the Kern-Southland Energy Link project, converting existing transmission lines, implementing energy audits and building management systems, and constructing a city-wide network of Electric Vehicle stations to coincide with the 2028 Olympic and Paralympic games.	\$2550M

2024 SLTRP

Q&A



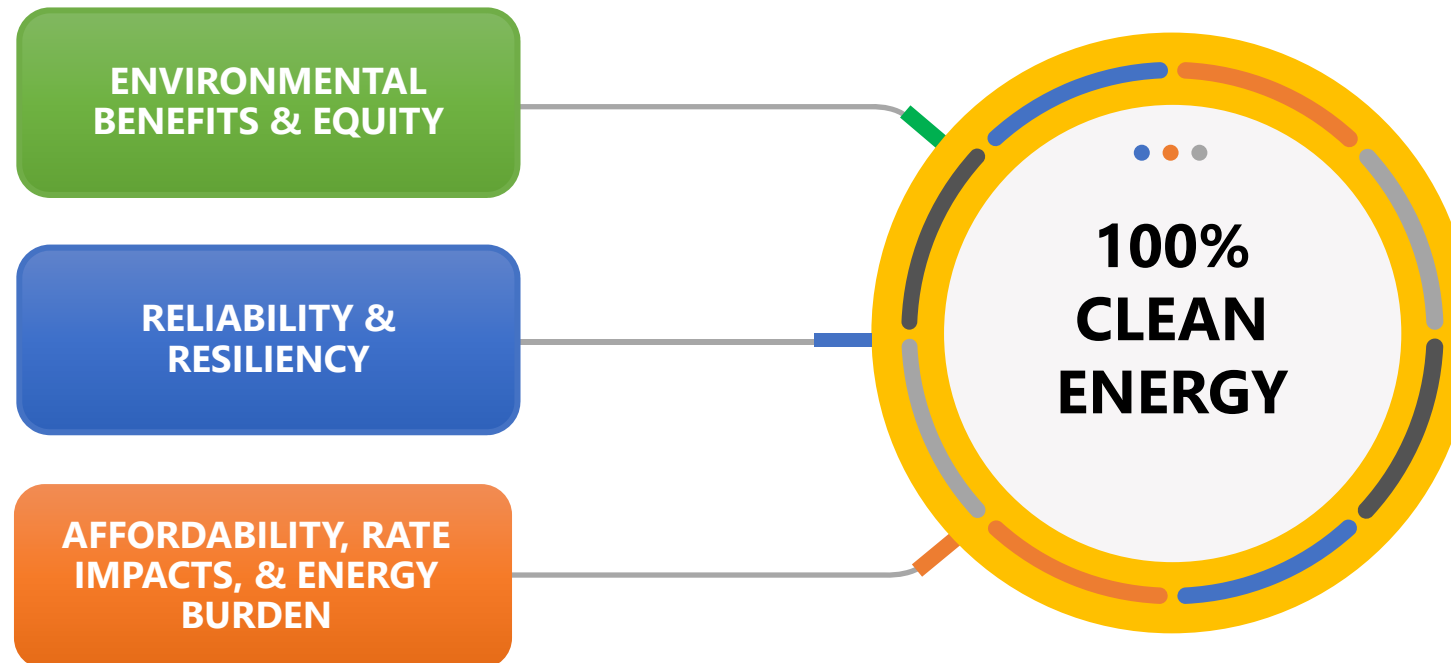
2024 SLTRP

**ASSUMPTIONS PACKAGE
BREAKOUT CONSIDERATIONS**



GUIDING PRINCIPLES

The SLTRP is a **Roadmap** to Meet Our Future Energy Needs



OUTCOME:

Develop a Recommended Scenario That Guides Our Near-term Actions and Future Energy Planning

CAVEATS & CHALLENGES

There is a critical need to review internal and external constraints & optimize future resource plans.



System Reliability

- Firm, dispatchable capacity in-basin needs to be retained even in a decarbonized future Power System for reliability and resiliency.
- Address climate change impacts to reliability



Affordability and Equity

- Additional flexibility in planning to optimize resources is needed to improve cost affordability and minimize energy burden.
- Incorporate LA100 Equity Strategies



Availability of Technology



- Monitor emerging technologies for readiness and feasibility.
- Availability of certain resources (e.g. geothermal)

Implementation Feasibility



- Human Resources, outage constraints, buildout schedule, real estate, and supply chain must be vetted and ramped up to support the buildout of clean energy resources.

SLTRP Modeling Process

Balancing Future Demand with Future Resources.

Develop Core Scenarios



Price Sensitivities

Match low, high commodity prices to establish bookends



Implementation Sensitivities

Identify risk factors, resource constraints, and potential outcomes of "what-if" sensitivities

A

Production Cost Modeling (PCM)

Is a comprehensive process used to forecast future costs and performance of different energy sources. The primary goal is to evaluate the total costs associated with generating electricity over a long-term horizon

B

Capacity Expansion Modeling (CEM)

The primary goal of CEM is to identify the most cost-effective investments in new energy generation and storage capacities over a long-term planning horizon. This includes determining what types of power plants to build, when to build them, and where they should be located.

C

Resource Adequacy Analysis

Focuses on ensuring that there is sufficient capacity to always meet the electric power demand. This analysis is essential for maintaining the reliability and stability of the power grid.

LCOE / Total Costs

GHG Emissions

Reliability Scoring

Contingency Planning

Build & Adoption Rates

Financial Forecasts

Energy Burden

Affordability

Technology Performance

Loss of Load

Peak Load Coverage

Ramp Rates

Scenario vs Sensitivity

Scenarios are broad strategic plans

- A potential **roadmap** for LADWP to follow to reach its clean energy goals, while maintaining reliability and cost affordability
- There are **trade-offs** in balancing cost, reliability, and environment
- Recommended scenario will drive LADWP's **financial priorities** and support future rate actions

Sensitivities are granular components to model

- Explores **bookends** of cost or impacts of a potential risk by isolating a single assumption (e.g. load or resource)
- **Price Sensitivity:** Evaluates the range and impact of future power system cost due to low and high range commodity prices
- **What-if Sensitivity:** Evaluates impact of risks, primarily outside of LADWP's control and its impact to cost, reliability, and emissions

2024 SLTRP Bookends (Simplified)



SCENARIOS (100% Carbon Free by 2035)

**Note: SB100 achieves 100% clean energy by 2045 based on retail sales; however, figures are shown in terms of generation for benchmarking purposes*

SB 100 Reference Case

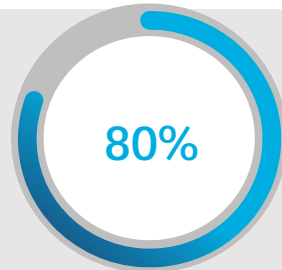
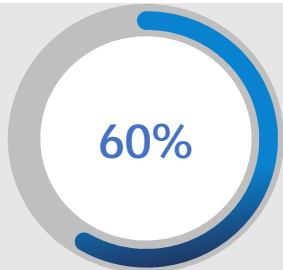
Case #1

C
L
E
A
N

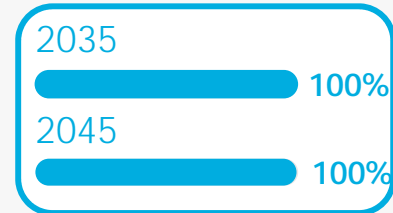
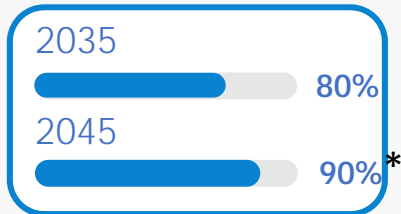
E
N
E
R
G
Y

T
A
R
G
E
T
S

Total Renewable Portfolio Standard 2030



Total Clean Energy (Renewable, Hydro and Nuclear) Penetration Achieved 2035 vs. 2045



Distributed Energy Resource Deployments



Reference Levels



High Levels

2024 SLTRP Bookends

		2024 SLTRP Draft Scenarios	
		State Policy (SB 100)	Local Policy (100% carbon-free by 2035)
	2030 RPS Target	At least 60%	80%
	Compliance Year for 100% zero carbon/Carbon-Free	2045 (100% zero carbon by sales)	2035
Eligible Technologies	Solid Biomass	Yes*	Yes*
	Biogas/Biofuels	Yes*	Yes*
	Fuel Cells	Yes*	Yes*
	Hydro - Existing	Yes*	Yes*
	Hydro - New	Yes*	Yes*
	Hydro - Upgrades	Yes*	Yes*
	Natural Gas	Yes*	Yes*
	Green H2 Turbines	Yes*	Yes*
	Nuclear - Existing	Yes*	Yes*
	Nuclear - New	Yes*	Yes*
	Wind, Solar, Geo, Small Hydro	Yes*	Yes*
	Energy Storage	Yes*	Yes*
Maintain existing in-basin gas capacity (non-OTC units)	Haynes, Scattergood, Harbor, Valley	Yes	Yes, until H2 technology and market are sufficiently mature
DERs	Local Solar, Local Storage, etc.	Most realistic and likely	Optimistic
RECS	Financial Mechanisms (RECs/Allowances)	Yes	Yes
Load	Customer Demand	High/low sensitivities	High/low sensitivities
	Energy Efficiency	Most realistic and likely	Optimistic
	Demand Response	Most realistic and likely	Optimistic
	Electrification	Most realistic and likely	Optimistic
Transmission	New or Upgraded Transmission Allowed	Both new and upgraded transmission allowed	Both new and upgraded transmission allowed
Fuel Prices	Natural Gas, H2, etc.	High/low sensitivities	High/low sensitivities
GHG Prices	GHG Allowance Prices	High/low sensitivities	High/low sensitivities
Storage Prices	Li-Ion, flow, etc.	High/low sensitivities	High/low sensitivities

*Note: Optimal portfolio will be determined through the capacity expansion model
 **Note: Zero carbon includes RPS + nuclear + large hydro

2024 SLTRP

BREAKOUT SESSIONS



Breakout Session

Introductions & Ice Breakers



1. Name and Organization
2. How long have you lived in Los Angeles?
3. Fun Fact about Yourself

How can this year's 2024 SLTRP build on the 2022 SLTRP to balance LADWP's Guiding Principles and minimize risk?



1. What is your organization's #1 discussion topic around energy?
2. What are some ways LADWP could leverage lessons learned from the 2022 SLTRP process?
3. What would you like to see out of this year's SLTRP scenarios?
4. What additional scenarios would be important to your organization, besides the SB100 and 100% carbon free by 2035 bookends?

2024 SLTRP

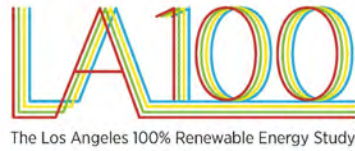
BREAKOUT SESSIONS
REPORTING & DISCUSSION



2024 SLTRP

**COUNCIL MOTION RELATED TO SCATTERGOOD UNITS 1 AND 2
GREEN HYDROGEN-READY MODERNIZATION PROJECT**





LA100: THE LOS ANGELES 100% RENEWABLE ENERGY STUDY EXECUTIVE SUMMARY

The Project is based on the findings of LA100, which concluded that LADWP will continue to need firm, or dispatchable, capacity in the Los Angeles Basin

“ New in-basin, renewable firm capacity—resources that use renewably produced and storable fuels, can come online within minutes, and can run for hours to days—will become a key element of maintaining reliability. ”

—National Renewable Energy Laboratory
The Los Angeles 100% Renewable Energy Study

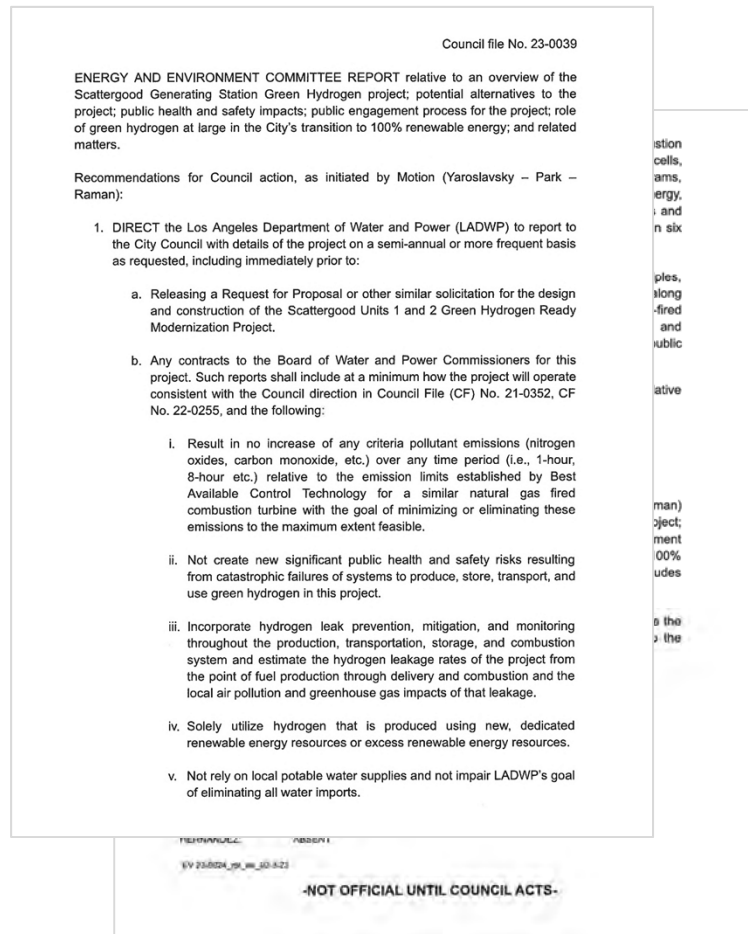
No Combustion Challenges. NREL identified reliability concerns in a no-combustion scenario. NREL found challenges with “supplying the in-basin resources required to serve load during times of system stress” after performing a no-combustion sensitivity.



The Scattergood Hydrogen-Ready Modernization project is designed to replace Units 1 and 2 at Scattergood Generating Station with a system that can use green hydrogen fuel.












- Ready to run on green hydrogen
- Accommodates 30% hydrogen blends
- 346 MW of capacity
- Low-capacity factor (~10%) expected
- Eliminate ocean-water once-through cooling
- Estimated cost: \$800M
- In-service date: December 31, 2029

In February 2023, the City Council approved the Project ordinance and issued a Motion directing LADWP to conduct additional studies.

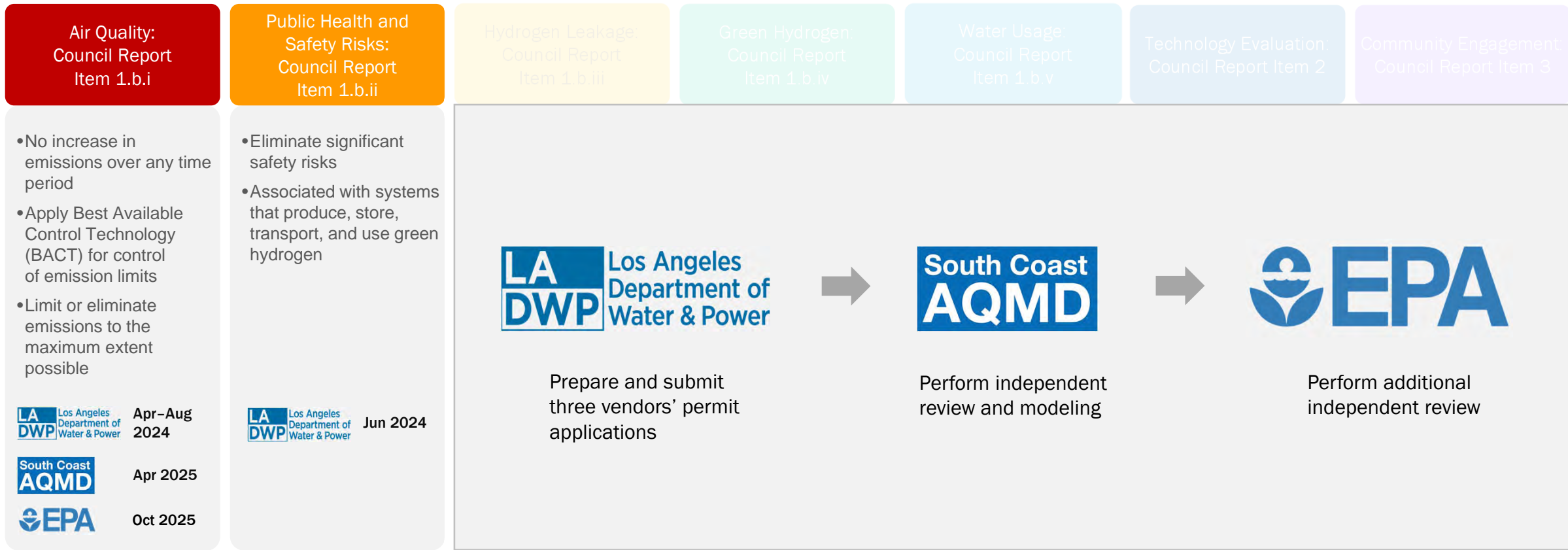


- The City Council directed LADWP to provide updates and technical analyses regarding the Scattergood Modernization Project.
- The Motion and related documents can be viewed in Council File No. 23-0039.
- LADWP is addressing these directives through a combination of activities.




The City Council directives fall into seven categories.

Air Quality: Council Report Item 1.b.i	Public Health and Safety Risks: Council Report Item 1.b.ii	Hydrogen Leakage: Council Report Item 1.b.iii	Green Hydrogen: Council Report Item 1.b.iv	Water Usage: Council Report Item 1.b.v	Technology Evaluation: Council Report Item 2	Community Engagement: Council Report Item 3
<ul style="list-style-type: none"> •No increase in emissions over any time period •Apply Best Available Control Technology (BACT) for control of emission limits •Limit or eliminate emissions to the maximum extent possible <p>  Apr–Aug 2024  Apr 2025  Oct 2025 </p>	<ul style="list-style-type: none"> •Eliminate significant safety risks •Associated with systems that produce, store, transport, and use green hydrogen <p>  Jun 2024 </p>	<ul style="list-style-type: none"> •Incorporate leak prevention, mitigation, and monitoring for all phases of system use •Estimate leakage rates of the project from source to production •Estimate local air pollution and GHG impacts of that estimated leakage <p>  </p>	<ul style="list-style-type: none"> •Solely utilize hydrogen that is produced using new or dedicated renewables •Utilize excess renewable resources <p>  </p>	<ul style="list-style-type: none"> •Do not rely on local potable water supplies •Do not impair LADWP’s goal of eliminating all water imports <p>  </p>	<ul style="list-style-type: none"> •Conduct new or updated assessments of non-combustion technologies, energy storage, demand response, and increased renewable import capability •Consider public health benefits, safety risks, and cost/benefit analysis <p>  Mar 2024  TBD </p>	<ul style="list-style-type: none"> •Equitable engagement principles to meeting with NCs and CBOs •Focus on near or adjacent communities along any hydrogen infrastructure, including existing plants •Consider air quality, climate change, and public health and safety <p>  Continuous  TBD </p>





Rigorous independent reviews by SCAQMD and the EPA will ensure the project adheres to applicable air-quality standards.



The Project will apply best practices to prevent hydrogen leakage, will only use green hydrogen for the project, and not rely on local potable water.

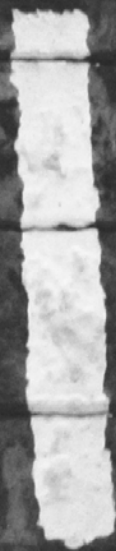
Air Quality: Council Report Item 1.b.i	Public Health and Safety Risks: Council Report Item 1.b.ii	Hydrogen Leakage: Council Report Item 1.b.iii	Green Hydrogen: Council Report Item 1.b.iv	Water Usage: Council Report Item 1.b.v	Technology Evaluation Council Report Item 2	Community Engagement Council Report Item 3
<p>LADWP as hydrogen off-taker:</p> <ul style="list-style-type: none"> • LADWP currently does not plan to produce its own hydrogen for use as a fuel. • LADWP plans to be an off-taker of hydrogen from the local hydrogen economy. • LADWP requires all contractors to incorporate all relevant standards and best practices for leak prevention, mitigation and monitoring in project designs and construction. 	<ul style="list-style-type: none"> • Incorporate leak prevention, mitigation, and monitoring for all phases of system use • Estimate leakage rates of the project from source to production • Estimate local air pollution and GHG impacts of that estimated leakage 	<ul style="list-style-type: none"> • Solely utilize hydrogen that is produced using new or dedicated renewables • Utilize excess renewable resources 	<ul style="list-style-type: none"> • Do not rely on local potable water supplies • Do not impair LADWP's goal of eliminating all water imports 	<p>An evolving hydrogen economy:</p> <ul style="list-style-type: none"> • LADWP is monitoring ongoing activities that will determine how the regional and national hydrogen economy will be developed. • A Key stakeholder in California is the Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES). • LADWP will always follow industry standards and best practices for any LADWP-owned hydrogen infrastructure. 		

LADWP is evaluating technologies internally and finalizing a contract with the National Renewable Energy Laboratory (NREL) to conduct additional studies.

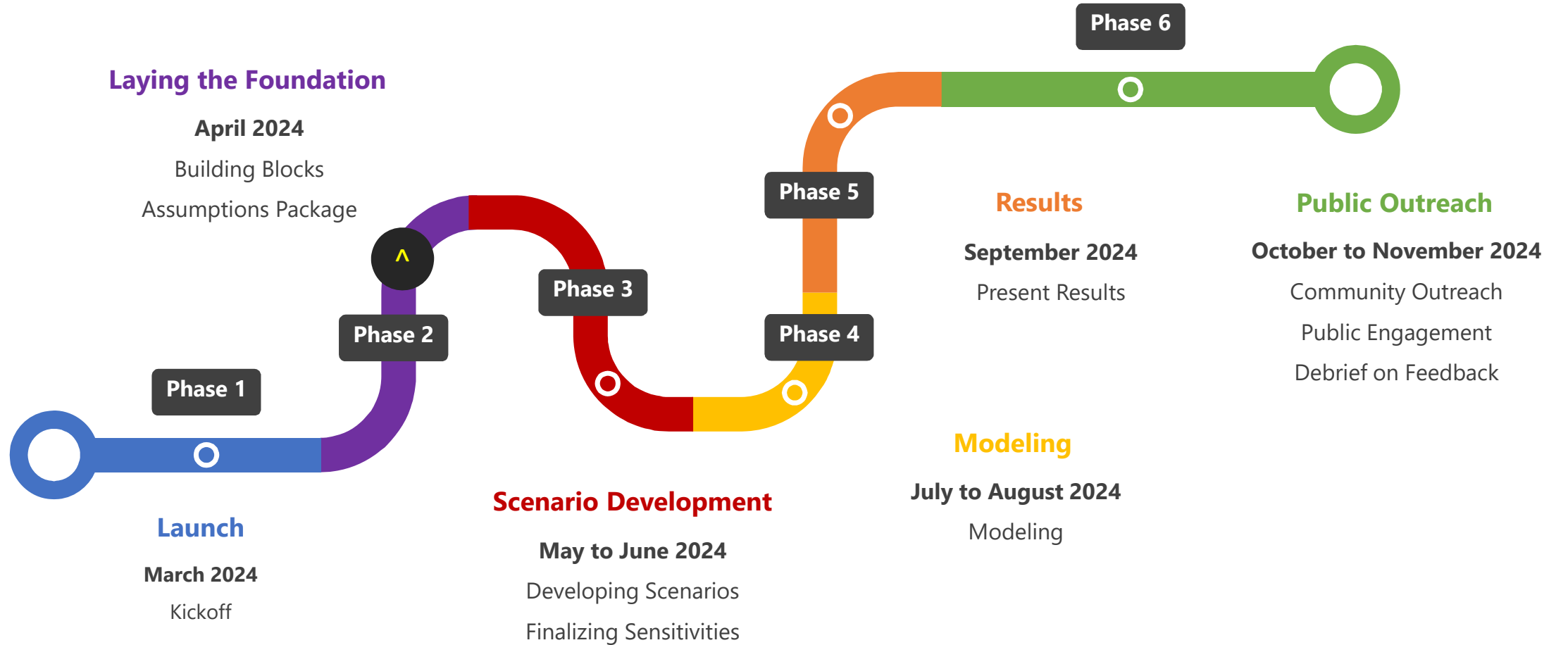
Air Quality: Council Report Item 1 b.i	Public Health and Safety Risks: Council Report Item 1 b.ii	Hydrogen Leakage: Council Report Item 1 b.iii	Green Hydrogen: Council Report Item 1 b.iv	Water Usage: Council Report Item 1 b.v	Technology Evaluation: Council Report Item 2	Community Engagement: Council Report Item 3
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;">  <p>Internal technology evaluation by LADWP:</p> <ul style="list-style-type: none"> LADWP completed an internal technology evaluation. This evaluation will be updated as new information becomes available. Other Project alternatives will be included in the CEQA, which includes a specific public comment period. </div> <div style="width: 45%;">  <p>Sole-source contract with NREL:</p> <ul style="list-style-type: none"> LADWP is finalizing a contract with NREL to build on the findings from LA100 and address the City Council Motion. The Board of Water and Power Commissioners is expected to consider the contract in Q2 2024. NREL may assist LADWP with community engagement activities. </div> </div>					<ul style="list-style-type: none"> Conduct new or updated assessments of non-combustion technologies, energy storage, demand response, and increased renewable import capability Consider public health benefits, safety risks, and cost/benefit analysis <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;">  <div> <p>Mar 2024</p>  <p>TBD</p> </div> </div>	<ul style="list-style-type: none"> Equitable engagement principles to meeting with NCs and CBOs Focus on near or adjacent communities along any hydrogen infrastructure, including existing plants Consider air quality, climate change, and public health and safety <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;">  <div> <p>Continuous</p>  <p>TBD</p> </div> </div>

2024 SLTRP

Q&A



NEXT STEPS – MEETING MAP





Thank You!

Email us @

PowerSLTRP@ladwp.com