



# **2022 Power Strategic Long-Term Resource Plan (SLTRP)**

## **Roadmap to 100% Carbon Free by 2035**

**SLTRP Advisory Group Meeting #4  
Phase II (Scenario Development)  
October 22, 2021**

# Meeting Agenda

Joan Isaacson, Kearns & West

- Welcome & Introductions
- Meeting Purpose and Agenda Overview
- Customer-Focused Programs
  - Energy Efficiency & Building Electrification
  - Transportation Electrification
  - Demand Response
- 2022 SLTRP: Draft Scenario Matrix
- 2022 SLTRP: Breakout Discussion Sessions
- Wrap Up

Website: [www.ladwp.com/SLTRP](http://www.ladwp.com/SLTRP)

Email: [powerSLTRP@ladwp.com](mailto:powerSLTRP@ladwp.com)

# Guides for Productive Virtual Meetings



Use Chat for input OR Raise Hand to join the conversation

Help to make sure everyone gets equal time to give input

Keep input concise so others have time to participate

Actively listen to others, seek to understand perspectives

Offer ideas to address questions and concerns raised by others

# Advisory Group Meeting Plan

Phase 1   Q3 2021 Launch & Laying Foundation	Phase 2   Q3 2021 Scenario Development	Phase 3   Q4 2021 Modeling	Phase 4   Q1 2022 Results	Phase 5   Q2-3 2022 Outreach
<p><b>#1 September 23</b></p> <ul style="list-style-type: none"> <li>Advisory Group Launch</li> <li>LADWP Overview</li> <li>LA100 (Achieving 100% Renewable Energy)</li> <li>2022 SLTRP Orientation</li> <li>Advisory Group Protocols &amp; Operating Principles</li> </ul>	<p><b>#4 October 22</b></p> <ul style="list-style-type: none"> <li>Customer Focused Programs               <ul style="list-style-type: none"> <li>Energy Efficiency &amp; Building - Electrification</li> <li>Transportation Electrification</li> <li>Demand Response</li> </ul> </li> <li>Draft Scenario Matrix</li> </ul>	<p>November-January</p> <ul style="list-style-type: none"> <li>Internal Modeling</li> <li>Analysis of Scenarios</li> </ul>	<p><b>#7 February TBD</b> Preliminary Results</p>	<p><b>#8 July TBD</b> Public Outreach Results</p>
<p><b>#2 September 30</b></p> <ul style="list-style-type: none"> <li><i>LA100 Study Review (NREL) at 9 am</i></li> <li>LA100 Rates Analysis (OPA) at 10 am</li> <li>LA100 Next Steps (LADWP)</li> <li>LA100 Assumptions (PSRP)</li> <li>Consider Topics for October 22</li> <li>Consideration of Scenario Definition</li> </ul>	<p><b>#5 November 10</b></p> <ul style="list-style-type: none"> <li>Metrics &amp; Evaluation Process</li> <li>Scenario Considerations               <ul style="list-style-type: none"> <li>Implementation &amp; Feasibility</li> <li>Supply Chain Impacts</li> <li>Human Resources Plan</li> <li>Energy Burden</li> </ul> </li> <li>Refine Scenario Matrix</li> </ul>	<p>Modeling Underway</p>	<p>March – April TBD Potential field</p>	<p>August Review Draft 2022 SLTRP</p>
<p><b>#3 October 08</b></p> <ul style="list-style-type: none"> <li>SLTRP Deep Dive</li> <li>SB100 Review (LADWP)</li> <li>100% Carbon-Free by 2035 Requirements (NREL)</li> <li>Green Hydrogen in LA (LADWP)</li> <li>2022 SLTRP Key Considerations and Potential Scenarios</li> </ul>	<p><b>#6 November 19</b></p> <ul style="list-style-type: none"> <li>Develop Scenarios</li> <li>Final Scenario Matrix</li> </ul>	<p>Modeling Underway</p>	<p>May – June TBD Community Outreach Meetings</p>	<p>September Submit Final 2022 SLTRP for approval</p>

# Advisory Group Role in 2022 SLTRP

The Advisory Group will provide input and feedback based on their expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by Advisory Group members.

# Role of Customer-Focused Programs

**LA100 showed customers have an important role to play in reaching 100% carbon-free energy.**

**Energy efficiency:** Offsets electrification-driven load growth; mitigates potentially higher electricity rates; lowers energy burden for low-income residents.

**Greater electrification:** Contributes to higher public health and GHG benefits; helps reduce per-unit electricity cost.

**Customer demand flexibility:** Helps contain costs of adding electrification and achieving 100% renewable energy; also supports reliability.



# LADWP Energy Efficiency and Building Electrification Programs

## David Jacot, LADWP Director of Efficiency Solutions



# LA100 Study – LADWP & NREL

The 100% Renewable Energy Study was completed and final report was released on March 24, 2021.

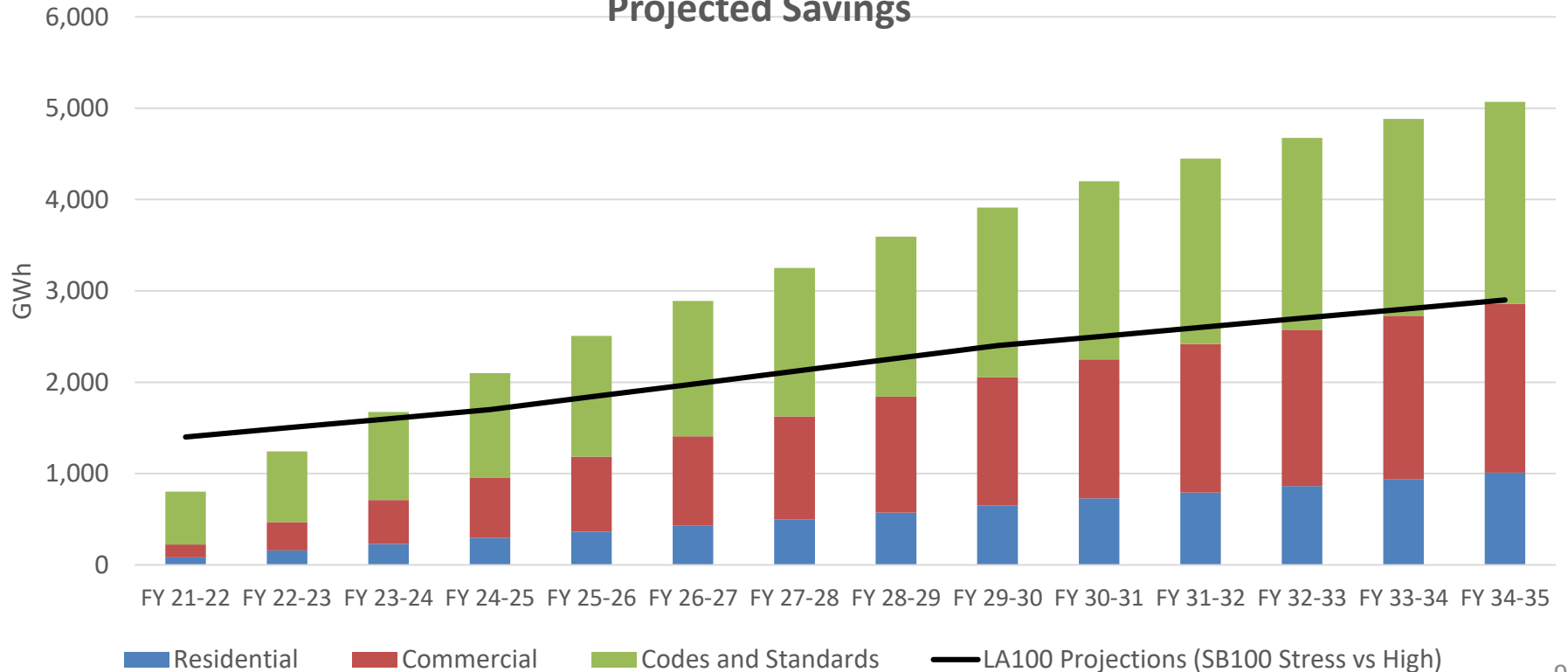
- 100% renewable energy in LA by 2035 is achievable through multiple pathways
- Rate impacts will approximately track inflation IF we see robust electrification (transportation and buildings)
- Significant investment (approx. \$50-80B) and job creation
- Lowest cost pathway **requires** significant growth in customer-facing Distributed Energy Resources (DER) programs like energy efficiency, demand response and flexibility, onsite solar and storage, electrification, etc.
- DERs, and **EE in particular**, make **everything else** smaller:
  - **Utility scale renewable generation and storage**
  - **Transmission, distribution, and substation upgrades**





# Onward to 2030 and Beyond

## Potential Study Cumulative Savings vs. LA100 Energy Efficiency Projected Savings



# Overview of LADWP's Portfolio of Energy Efficiency Programs

Mass Market (Residential)	Commercial, Industrial & Institutional
---------------------------	--

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Consumer Rebate Program</li><li>• Comprehensive Affordable Multifamily Retrofit (coming soon)</li><li>• Efficient Product Marketplace</li><li>• Residential Lighting Efficiency Program</li><li>• Refrigerator Exchange</li><li>• Refrigerator Turn-In &amp; Recycle</li><li>• Home Energy Improvement Program</li><li>• AC Optimization</li><li>• City Plants</li></ul> | <ul style="list-style-type: none"><li>• Commercial Direct Install</li><li>• LAUSD Direct Install</li><li>• Commercial Lighting Incentive Program</li><li>• Custom Performance Program</li><li>• Zero By Design</li><li>• Food Service Program</li><li>• Upstream HVAC</li><li>• Commercial Product Marketplace (coming soon)</li></ul> |
|--|--|

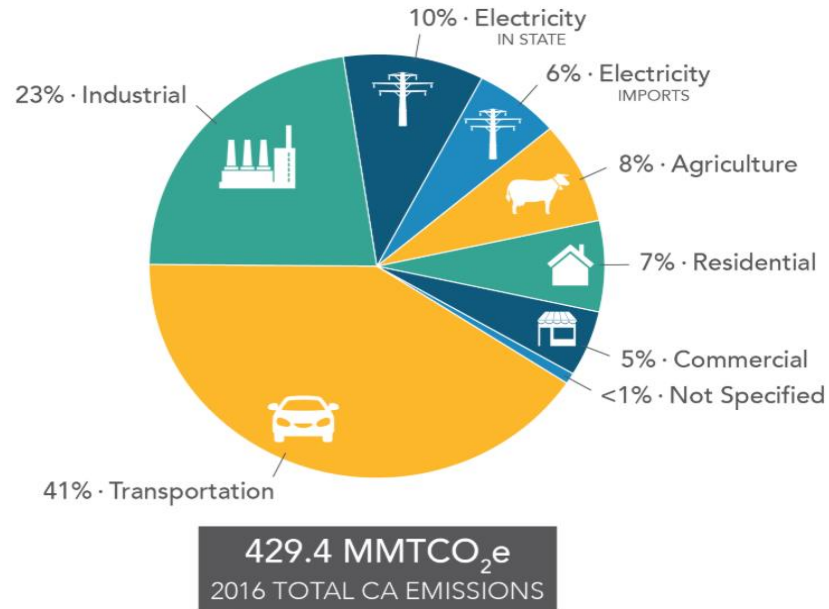


# Comprehensive Affordable Multifamily Retrofits (CAMR)

- Deep decarbonization of multi-family buildings by retrofitting for energy efficiency, building electrification, and on-site solar PV
- Significant utility cost savings for low income tenants and affordable housing property owners and managers
- Skilled, family-supporting green jobs for the local workforce

# CA GHG Inventory

## *Emissions by Economic Sector*



Source: CARB 2018 GHG Inventory Report

# Discussion and Q&A

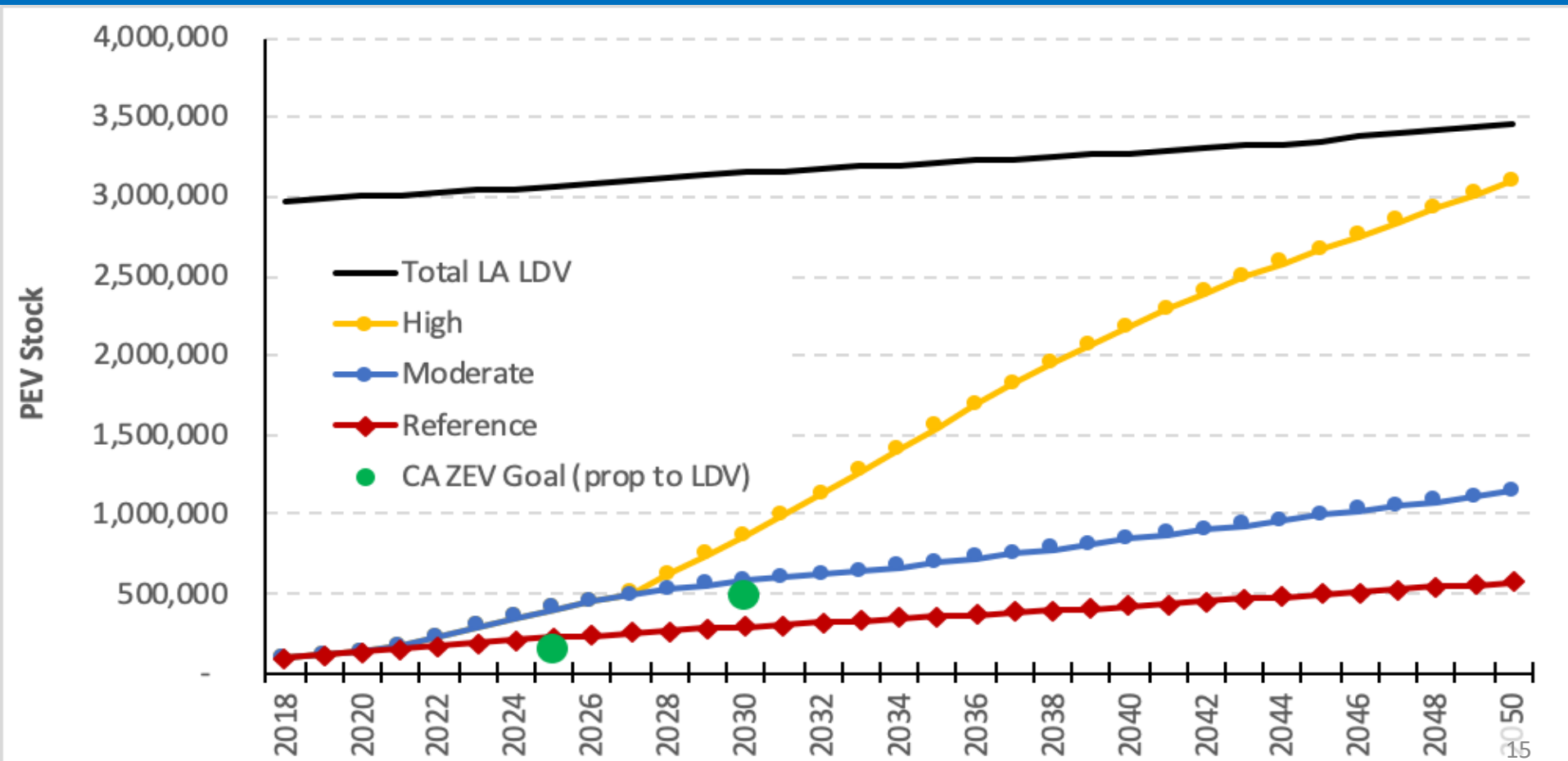


# LADWP Electric Transportation Programs

Yamen Nanne, LADWP Manager of Distribution System Development and Reliability

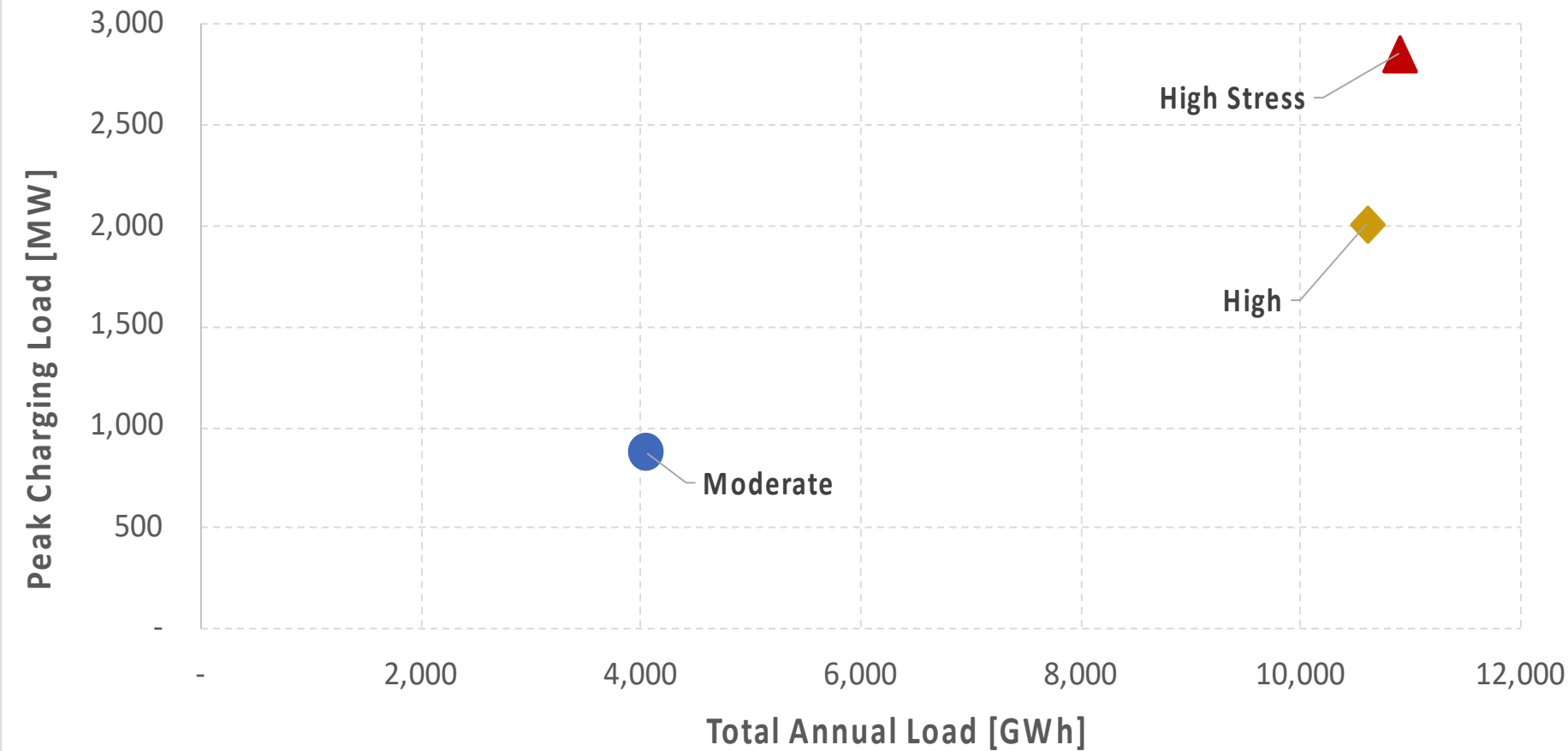


# LA100 Electric Vehicle Adoption Projections



# LA100 Load Projections from Transportation

## Light-duty EV Charging Loads





# State Zero Emissions Vehicle (EV) Goals

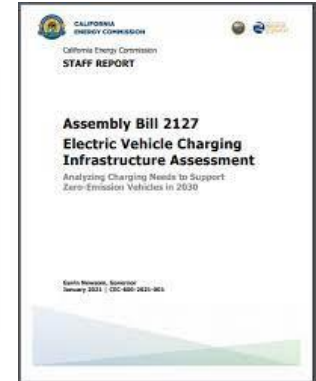
## Governor Newsom's Executive Order (N-79-20):

- Requires dealers to end sale of new fossil fueled light-duty passenger vehicles by 2035.
- Electrify Freight Trucks by 2035 and Medium & Heavy Duty Fleets by 2045.



## Assembly Bill 2127 EV Charging Infrastructure Assessment :

- Baseline: 1M public and shared private EV chargers are needed to support 5M EVs by 2030.
- CARB 2020 Mobile Source Strategy: 1.2M chargers will be needed for the 7.5M EVs required by 2030 in CA based on CARB's Draft 2020 Mobile Source Strategy.



# LADWP's Revised Electric Transportation Goals

## Electric Vehicle Adoption Targets:

- 250,000 Light Duty (LD) and 4,000 Medium Duty and Heavy Duty (MDHD) EVs by 2025
- 550,000 LD EVs by 2028
- 750,000 LD and 12,000 MDHD EVs by 2030



## Commercial EV Charging Infrastructure:

- 45,000 Charging Stations by 2025 - Including 1,000 DC Fast Chargers
- 120,000 Charging Stations by 2030 - Including 3,000 Fast Chargers

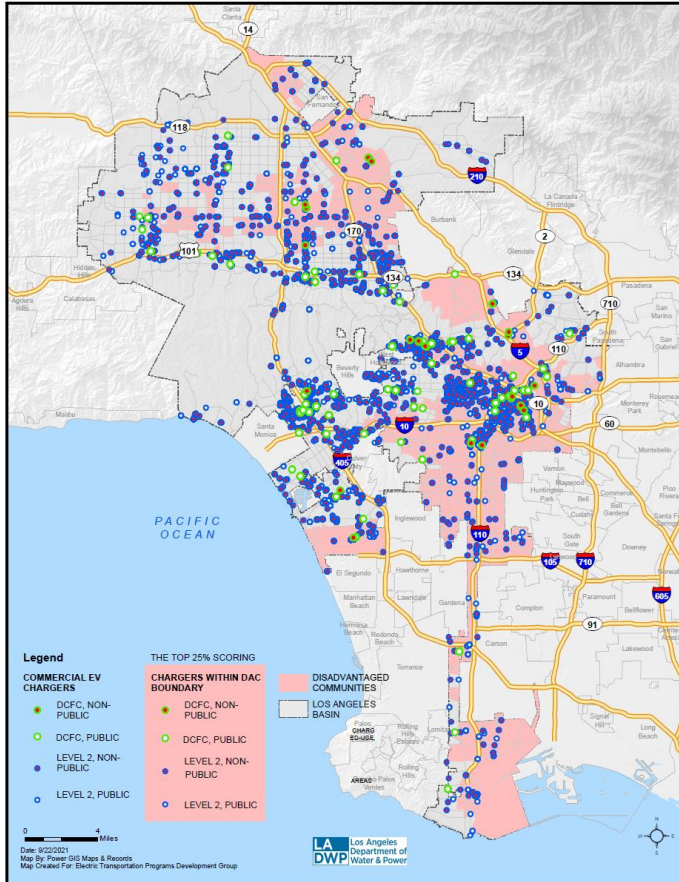


## Electrification of City and Transit Fleets:

- ED25 – Electrify all new City light duty sedans in 2021
- 100% by 2028 (where technically feasible)



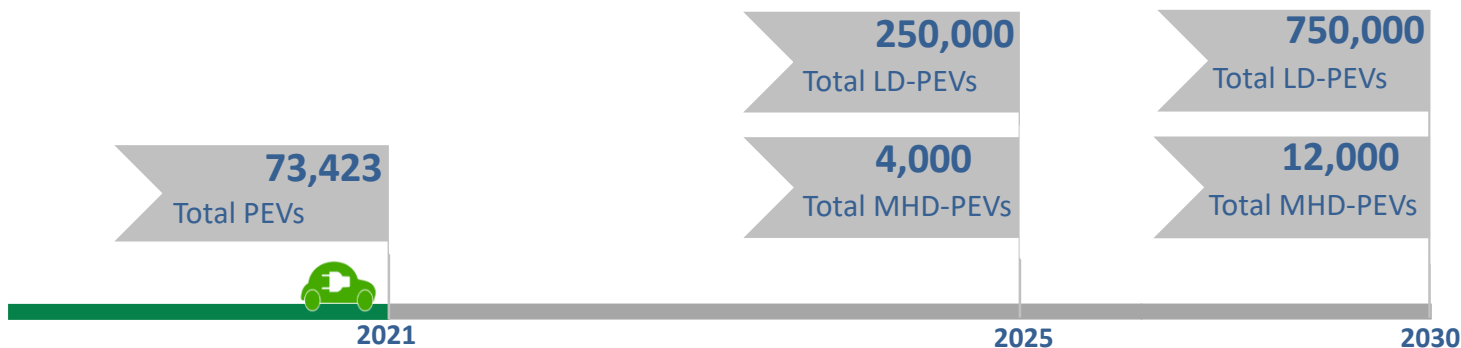
# LA's Charging Station Map



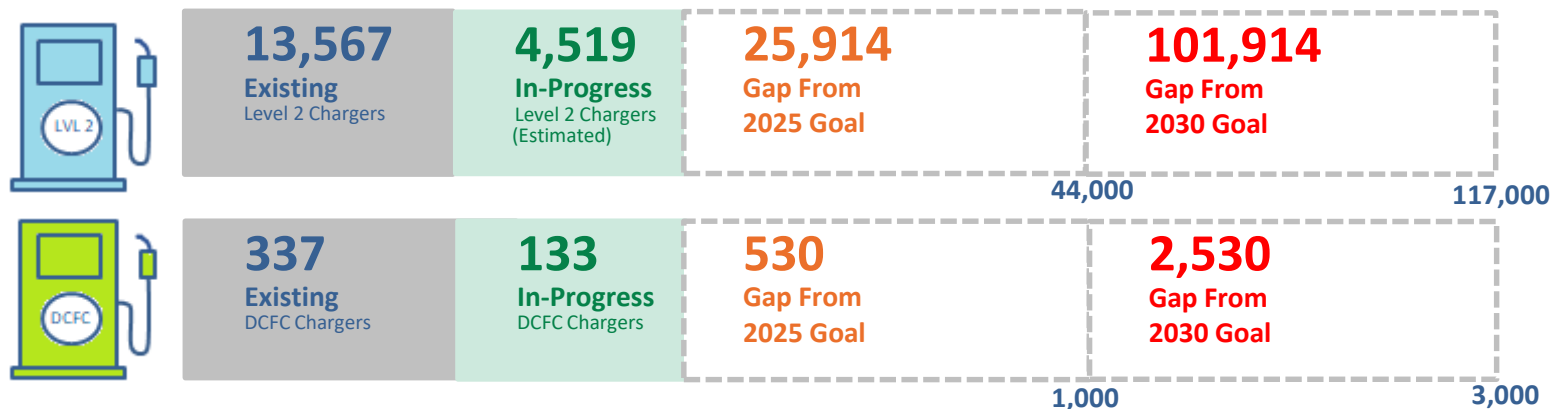
	Publicly Accessible	Restricted Access	Total
DWP Charging Stations (L2)	90	912	1,002
City-Owned (Non-DWP) L2 Charging Stations	713	694	1,407
DC Fast Charging Stations	255	82	337
Private-Owned Charging Stations (L2)	1,605	9,553	11,158
<b>Total</b>	<b>2,663</b>	<b>11,238</b>	<b>13,904</b>

# Revised EV Adoption Goals & Infrastructure Needs

## Vehicles



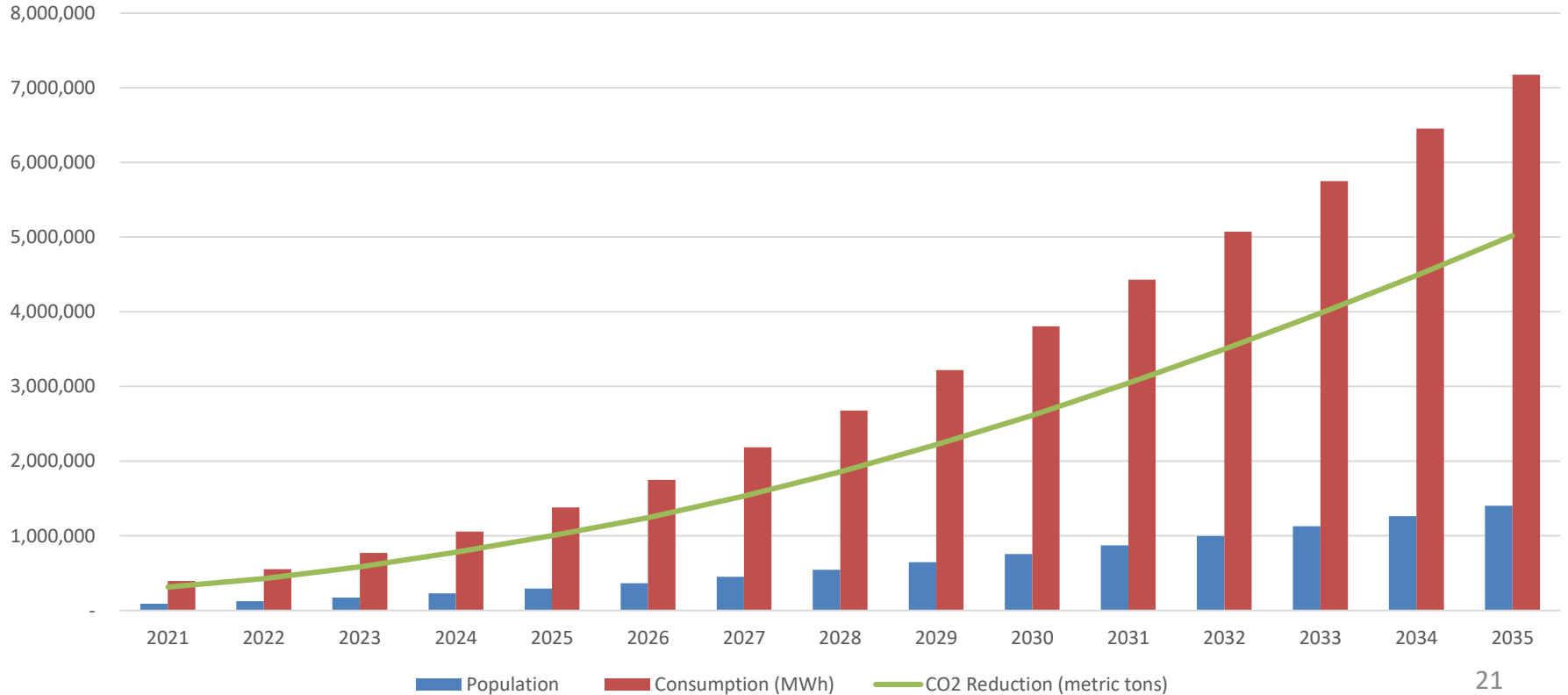
## Infrastructure



**Achieving the New Goals Bridges the Gap needed to Spur Targeted EV Adoption**

# Light, Medium, and Heavy Duty EV Population, Energy Consumption, and CO2 Reduction

## Light Duty + Medium & Heavy Duty



# Electric Transportation Program Initiatives and Strategies

**Preparing the Grid**

**Customer Incentives  
City Partnerships  
Direct Deployment**

**Increase Equitable Access to  
Public Charging**

**Targeted Education, Marketing  
and Outreach Campaigns**

# Commercial EV Charging Station Rebate Programs

## Level 2 Chargers

- Up to \$4,000 per level 2 charging station, with \$1,000 adder in DACs
- **Increases access to charging at MUDs, workplaces, and public destinations**

## DC Fast Chargers

- Up to \$75,000 per DC Fast Charger
- **Improves access to fast charging and alleviates range anxiety**

## Chargers for Medium- and Heavy-Duty Vehicles

- Up to \$125,000 per charging station
- **Helps electrify one of the largest source of pollution across the transportation sector**

**\$40M**

FY 21-22  
(Proposed)

Commercial L2  
EV Chargers

**\$24M**

Commercial DC  
Fast Chargers

**\$7M**

Commercial  
MDHD EV  
Chargers

**\$4M**

Residential L2  
EV Chargers

**\$2M**

Used Electric  
Vehicles

**\$3M**

# Planned Improvements

## Used EV and Residential Charger Rebate Programs



Level 2

Program	Current Rebate Amount	Proposed Changes (+ Equity Adder)	Total Rebate	Total Rebate Amount (with Low Income Adder)
Used EV Rebate	\$1,500	<b>+\$1,500 for Low Income</b>	\$1,500	<b>\$3,000</b>
Residential L2 Charging Station	\$500 for L2 charger	+\$500 for charger installation <b>+\$500 for Low Income</b>	\$1,000	<b>\$1,500</b>



# Discussion and Q&A



# Demand Response Programs

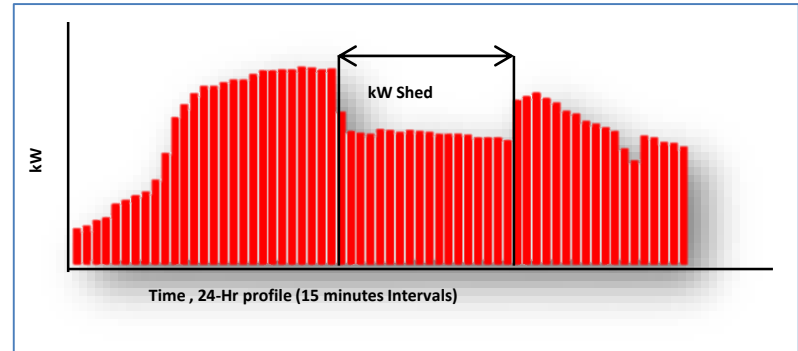
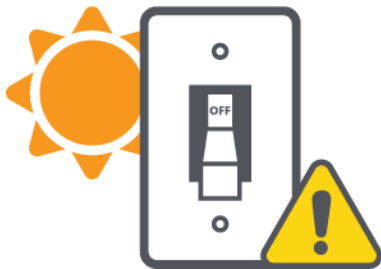
Hassan Motallebi, LADWP Manager of Demand Response Programs  
Zaw Htin, Program Lead  
Linda Novoa, Program Engineer



# Demand Response

## What is demand response?

- Change in electric load (reductions, shifts, or increases) in response to market or system conditions
- Or, a Smart Resource-Load Management Strategy



# Demand Response Benefit

## REDUCES ENVIRONMENTAL IMPACT

Reduces greenhouse gas emissions and carbon footprint



## INTEGRATES RENEWABLES

Promotes grid integration of renewable energy



## PROVIDES T&D SUPPORT

Relieves system's load during peak demand conditions



## INCREASES ENERGY RELIABILITY

Helps lower chances of outages



# Demand Response Timeline

2014

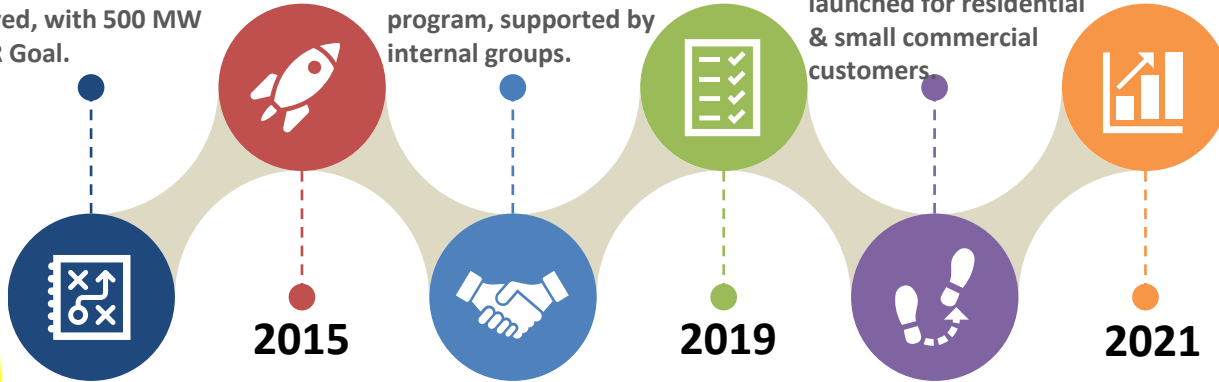
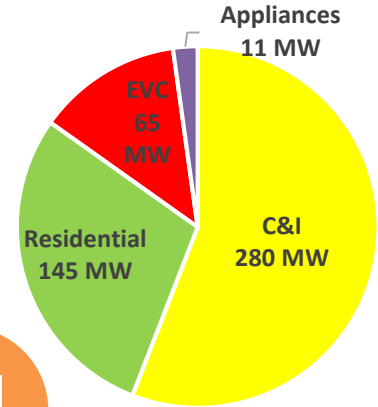
Strategic Demand Response Implementation Plan was finalized and approved, with 500 MW of a DR Goal.

2017

In-house team took over day-to-day operation of the program, supported by internal groups.

2020

BYOT program, publicly marketed as Power Savers Program, was launched for residential & small commercial customers.



2015

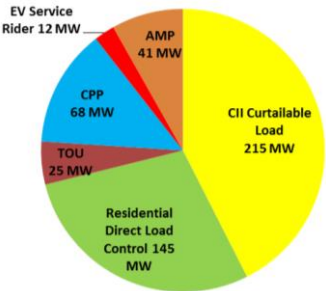
C&I Demand Response Program was launched with the support from the SME contractor.

2019

An RFP for Residential Bring-your-own-thermostat (BYOT) program was advertised through SCPPA.

2021

- LA100 Study was completed.
- C&I Program includes 58 participants with 35 MW of capacity.
- Power Savers Program currently comprising 35,000+ devices with 24 MW of capacity.



# Power Savers Program

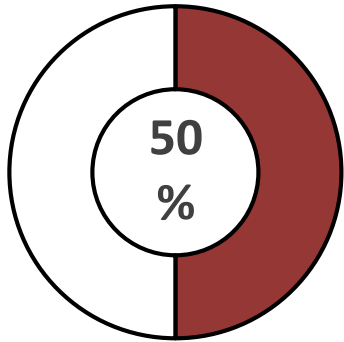


# Power Savers Program Stats

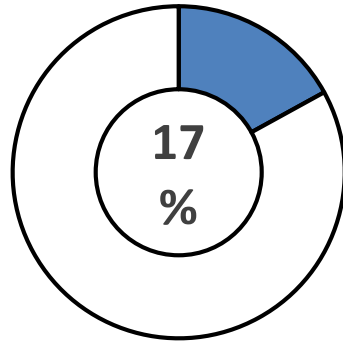


- 31,464 Participants
- 35,033 Thermostats
- Total of 124 MW over 7 events
  - On average 17 MW/event saved (max 23 MW event)
- Total of 303 MWh
  - On average 43 MWh/event saved

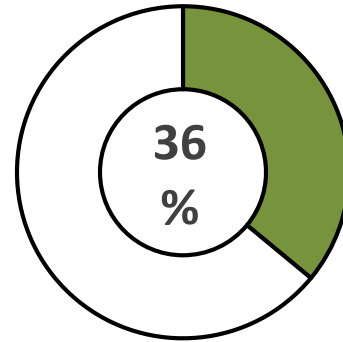
# Program Achievement



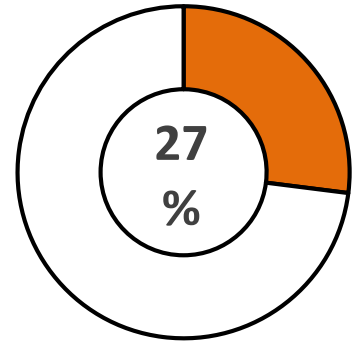
Equity Target



Stressed Feeders



Other than Houses



Apartment

Zip codes from accepted participants were gathered and compared to several zones as seen above



# Commercial and Industrial Program

## Program Parameters

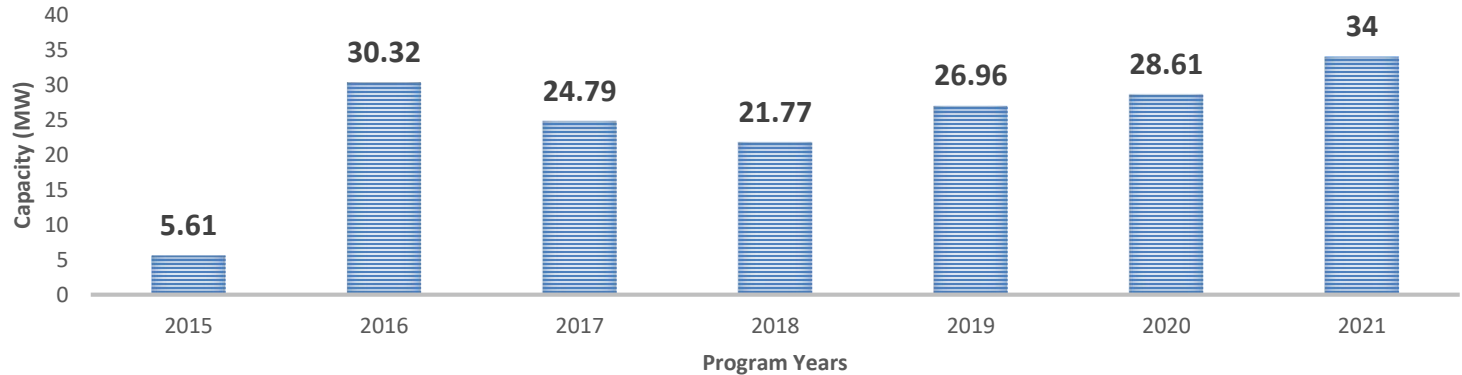
For Large Commercial and Industrial Customers

Commitment	Notification	Incentive	Season	DR Event
Requires to Commit <b>Minimum 100kW</b> of Load Reduction	2-Hour or 24-Hour Advanced Notification	<ul style="list-style-type: none"><li>Capacity: \$12 or \$8 per kW/mo</li><li>Energy: \$0.25 per kWh</li></ul>	From June 15 through October 15	<ul style="list-style-type: none"><li>Maximum 12 Events</li><li>1 p.m. to 5 p.m. on Weekdays</li><li>Up to 4 hr Duration</li></ul>

Managed by DR Group with Support from Other Stakeholders (Key Account Management, Rates Group, Communication, ECC, FSO)

# Commercial & Industrial Program Stats

## C&I DR PORTFOLIO

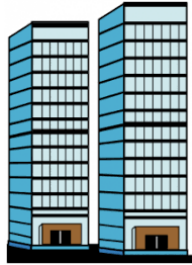


Program Years	2015	2016	2017	2018	2019	2020	2021*
Number of Participants	28	34	40	43	50	49	58
MWh Saved	112	485	522	447	443	658	-
Number of Events	5	4	6	5	3	8	3

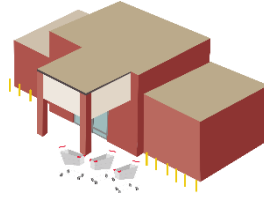
# Participant's Industries



**Manufacturing  
Plants**



**Office Buildings**



**Retail Buildings**



**Entertainment  
Studios**



**Grow Houses**



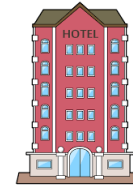
**Educational  
Institutes**



**Museums**



**Cold Storages**



**Hotels**



**Pumping Stations**

# Key Challenges

## Customer Recruitment

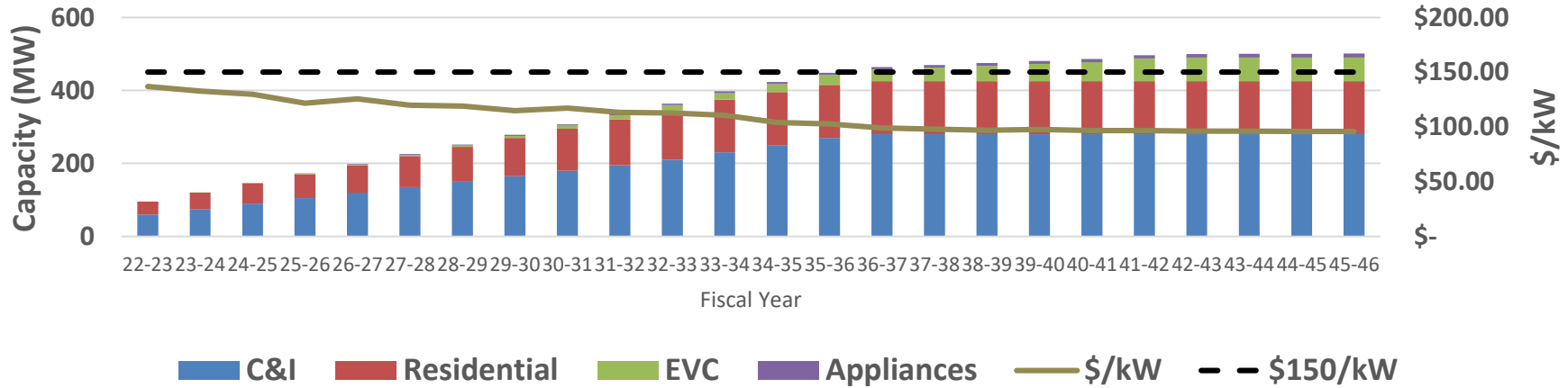
- Program Awareness
- Outreach Effort
- Competing Program/s

## Required Infrastructure

- Automation
- Interval Meters
- Adequate Staffing

# Demand Response Goal and Cost

## DR Capacity Goal and \$/kW Cost



Fiscal Year	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	30-31	31-32	32-33	33-34	34-35	35-36	36-37	37-38	38-39	39-40	40-41	41-42	42-43	43-44	44-45	45-46
<b>C&amp;I</b>	60	75	90	105	120	135	150	165	180	195	210	230	250	270	280	280	280	280	280	280	280	280	280	280
<b>Residential</b>	35	45	55	65	75	85	95	105	115	125	135	145	145	145	145	145	145	145	145	145	145	145	145	145
<b>EVC</b>		0.5	1	1.5	2.5	3.5	4.5	5.5	8.5	11.5	14.5	17.5	22.5	27.5	32.5	37.5	42.5	47.5	52.5	62.5	65	65	65	65
<b>Appliances</b>			0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
<b>\$/kW</b>	\$ 136.84	\$ 132.78	\$ 129.69	\$ 121.74	\$ 125.63	\$ 119.73	\$ 119.05	\$ 114.90	\$ 117.26	\$ 113.26	\$ 112.64	\$ 110.69	\$ 104.02	\$ 102.56	\$ 99.14	\$ 97.98	\$ 96.84	\$ 97.81	\$ 96.71	\$ 96.68	\$ 96.10	\$ 96.00	\$ 95.90	\$ 95.81



# Future of LADWP's Demand Response



- Grow Existing Programs
- Develop Automated DR System
- Implement EV Charger DR Program
- Explore More DR Opportunities
- Promote DR Culture in City of LA

# Discussion and Q&A



# 2022 SLTRP: Draft Scenario Matrix

Joan Isaacson, Kearns & West

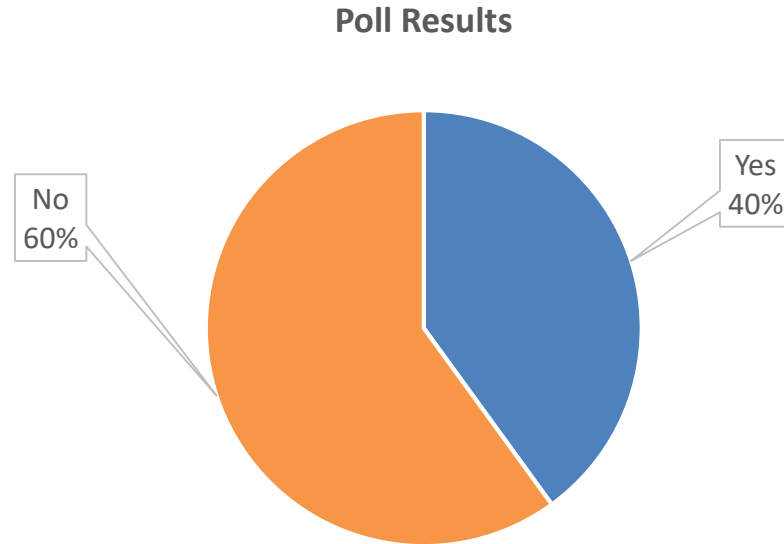
Jay Lim, LADWP Manager of Resource Planning





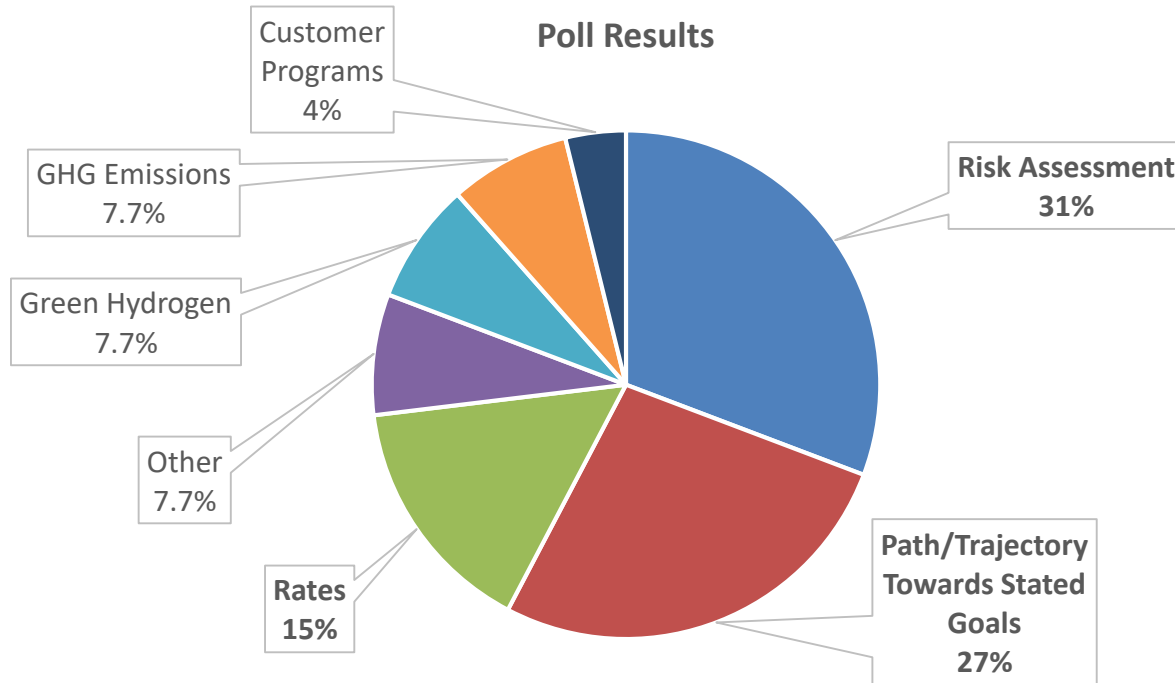
# Poll Results, Q1

*Q1: Do the draft scenarios presented by LADWP today capture the full spectrum of the Advisory Group's interests and priorities for the SLTRP process?*



# Poll Results, Q2 (Previous labels)

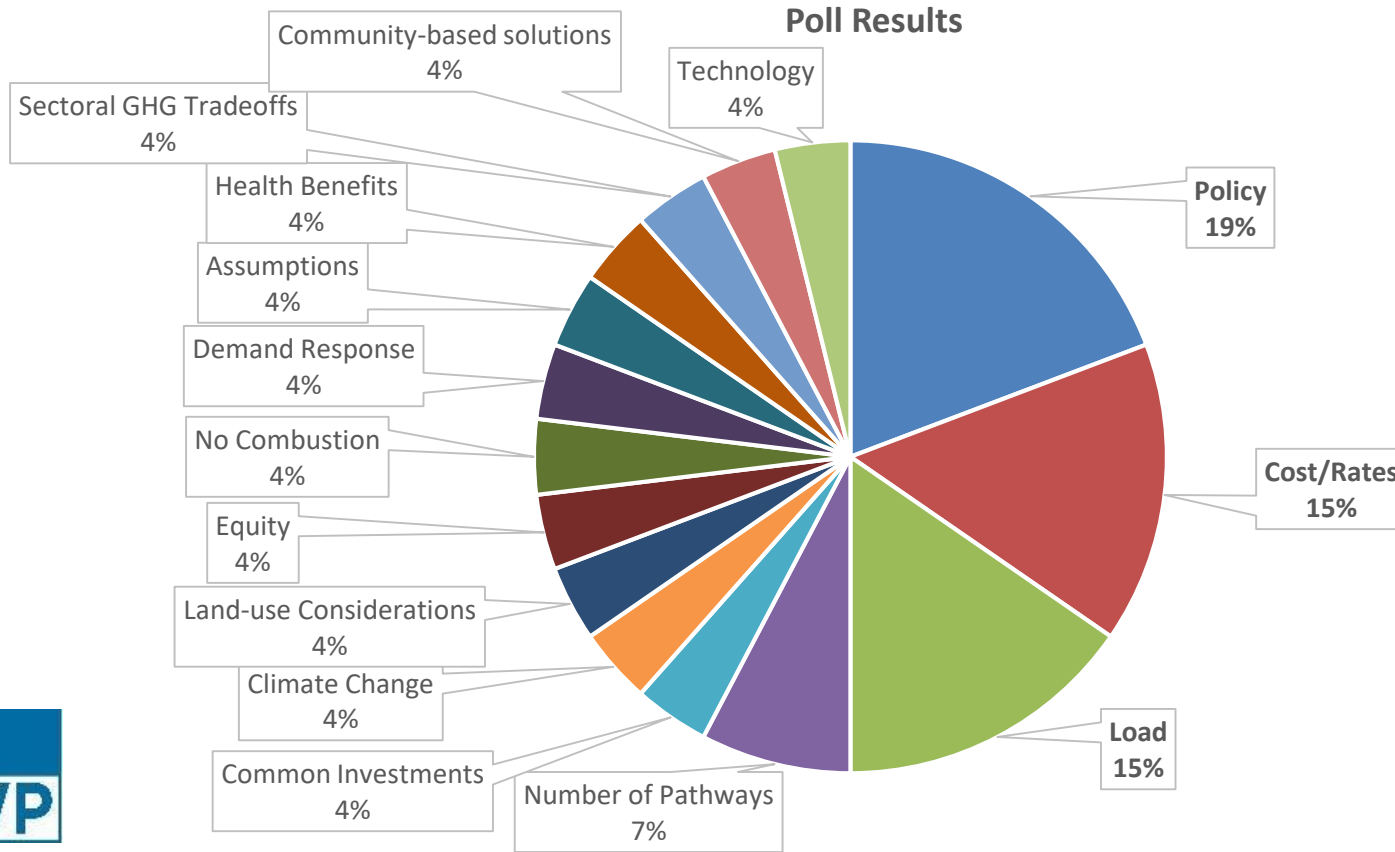
*Q2: If you selected no, what additional scenarios or elements would bolster the draft scenarios presented by LADWP today?*



“Other” includes:  
land-use  
considerations,  
single scenario  
modeling

# Poll Results, Q2 (Detailed labels)

Q2: *If you selected no, what additional scenarios or elements would bolster the draft scenarios presented by LADWP today?*



# Response Topics

<b>Path/Trajectory Towards Stated Goals</b>	<b>Risk Assessment</b>	<b>Rates</b>	<b>Reliability</b>	<b>Customer Programs</b>	<b>SLTRP Process</b>	<b>GHG Emissions</b>	<b>Green Hydrogen</b>	<b>Resiliency</b>	<b>Other</b>
If City Council is mandating option 3, which is more aggressive than option 2, why are we considering option 2?	Look at various demand scenarios re pace of electrification in transportation and building sectors; seems like that has huge impact on pace and magnitude of increased power needs	Scenario without last 10% which seems to be most costly		Multidag demand response scenario		The recent AG interest is the importance of electrification of transportation and building to maximum GHG reduction and health benefits, the goal of 100% versus a lower level, or the use of RECs, should be considered in terms of spending more on EV's etc. to maximize GHG reduction.	A possible equity priority scenario and a no in-basin hydrogen scenario		Analyze one pathway so easier to understand.
Shouldn't we be analyzing multiple different scenarios that all meet the requirements from LA City Council, rather than looking at options that don't meet it?	LA100 pointed out there is a risk that climate change will affect renewable production. I would like to see this risk modeled. The risk is to concentrate solar or wind installations in a location that may have decreased radiance or wind in the future.	Also, what is the risk in rates if widespread electrification does not materialize.					No in basin gas or hydrogen.		Impact of growing opposition to large-scale solar and wind on undisturbed lands, and mining for materials needed for electrification
Option 2 and 3 should be the same for all contracts up to a certain decision date, and that date should be made clear.	Look at sales scenario with a continued decline in load.	Can we use scenarios to look at the effect of rate design on cost?							
While I like the three options provided, they do not include DIVERGENCE from the political direction to the Department. As an independent engineering business, if there are impracticalities in the politically-directed goals, or if achieving those goals will cost ratepayers too much for them to reasonably bear, those political directives should be questioned.	Analyze more pathways to better understand contingencies	Contingencies in load level, technology and its cost, renewable performance...							



*Note: Some responses may appear under more than one category due to multiple categories referenced*

# Response Topics (continued)

<b>Path/Trajectory Towards Stated Goals</b>	<b>Risk Assessment</b>	<b>Rates</b>	<b>Reliability</b>	<b>Customer Programs</b>	<b>SLTRP Process</b>	<b>GHG Emissions</b>	<b>Green Hydrogen</b>	<b>Resiliency</b>	<b>Other</b>
The scenarios should all be within the scope of the city council motion. The scenarios can have separate electrification demand, no in basin gas or hydrogen. Multiday demand response scenario	Separate electrification demand								
Community based solution scenario!	More scenarios are always good but better to focus on revisiting and testing underlying assumptions in various scenarios								
The recent AG interest is the importance of electrification of transportation and building to maximum GHG reduction and health benefits, the goal of 100% versus a lower level, or the use of RECs, should be considered in terms of spending more on EVs etc. to maximize GHG reduction.	Contingencies in load level, technology and its cost, renewable performance...								



*Note: Some responses may appear under more than one category due to multiple categories referenced*

# DRAFT SB100 (Reference) Scenario Matrix

		SB 100 (Reference Case)
	2030 RPS Target	60%
	Compliance Year for 100% zero carbon/Carbon-Free	2045 (100% zero carbon by sales)
Technologies	Solid Biomass	No
	Biogas/Biofuels	Yes*
	Fuel Cells	Yes*
	Hydro - Existing	Yes*
	Hydro - New	No
	Hydro - Upgrades	Yes*
	Natural Gas	Yes*
	H2 Turbines	Yes*
	Nuclear - Existing	Yes*
	Nuclear - New	No
	Wind, Solar, Geo, Small Hydro	Yes*
Energy Storage	Yes*	
Maintain existing gas capacity (non-OTC units)	Haynes, Scattergood, Harbor	Yes
DERs	Local Solar, Local Storage, etc.	Reference
RECS	Financial Mechanisms (RECs/Allowances)	Yes*
Load	Customer Demand	High/low sensitivities
	Energy Efficiency	Reference
	Demand Response	Reference
	Electrification	Reference
Transmission	New or Upgraded Transmission Allowed	Reference
Fuel Prices	Natural Gas, H2, etc.	High/low sensitivities
GHG Prices	GHG Allowance Prices	High/low sensitivities
Storage Prices	Li-Ion, flow, etc.	High/low sensitivities

\*Note: Optimal portfolio will be determined through the capacity expansion model

\*\*Note: Zero carbon includes RPS + nuclear + large hydro

## SB100 State Legislation

### Evaluate under Moderate and High Load Electrification

- 100% clean energy by 2045
- Target based on retail sales by 2045, not generation
- Allows up to 10% of the target to be natural gas offset by renewable electricity credits
- Allows existing nuclear and upgrades to transmission

# DRAFT Balanced Decarbonization Scenario Matrix

		Balanced Decarbonization
	2030 RPS Target	80%
	Compliance Year for 100% zero carbon/Carbon-Free	2040 Carbon Free (100% zero carbon by sales in 2035)
Technologies	Solid Biomass	No
	Biogas/Biofuels	No
	Fuel Cells	Yes*
	Hydro - Existing	Yes*
	Hydro - New	No
	Hydro - Upgrades	Yes*
	Natural Gas	Yes*
	H2 Turbines	Yes*
	Nuclear - Existing	Yes*
	Nuclear - New	No
	Wind, Solar, Geo, Small Hydro	Yes*
	Energy Storage	Yes*
Maintain existing gas capacity (non-OTC units)	Haynes, Scattergood, Harbor	Yes, until made hydrogen ready or replaced by new H2 capacity
DERs	Local Solar, Local Storage, etc.	Moderate
RECS	Financial Mechanisms (RECs/Allowances)	Yes*
Load	Customer Demand	High/low sensitivities
	Energy Efficiency	High
	Demand Response	High
	Electrification	High/low sensitivities
Transmission	New or Upgraded Transmission Allowed	Reference
Fuel Prices	Natural Gas, H2, etc.	High/low sensitivities
GHG Prices	GHG Allowance Prices	High/low sensitivities
Storage Prices	Li-Ion, flow, etc.	High/low sensitivities

\*Note: Optimal portfolio will be determined through the capacity expansion model

\*\*Note: Zero carbon includes RPS + nuclear + large hydro

## Balanced Decarbonization

Evaluate under Moderate and High Load Electrification

- 100% clean energy by 2035 and 100% carbon free by 2040, or when practically feasible
- Target based on retail sales by 2035, and based on generation by 2040, or when practically feasible
- Allows up to 10% of the target to be natural gas offset by renewable electricity credits until green hydrogen is fully mature and deployed
- Allow existing nuclear and upgrades to transmission

# DRAFT City Council Motion Scenario Matrix

		City Council Motion
	2030 RPS Target	80%
	Compliance Year for 100% zero carbon/Carbon-Free	2035 (Carbon Free)
Technologies	Solid Biomass	No
	Biogas/Biofuels	No
	Fuel Cells	Yes*, excluding biofuels
	Hydro - Existing	Yes*
	Hydro - New	No
	Hydro - Upgrades	Yes*
	Natural Gas	Yes*, until 2035
	H2 Turbines	Yes*
	Nuclear - Existing	Yes*
	Nuclear - New	No
	Wind, Solar, Geo, Small Hydro	Yes*
Energy Storage	Yes*	
Maintain existing gas capacity (non-OTC units)	Haynes, Scattergood, Harbor	Yes, until 2035
DERs	Local Solar, Local Storage, etc.	High
RECS	Financial Mechanisms (RECs/Allowances)	No
Load	Customer Demand	High/low sensitivities
	Energy Efficiency	High
	Demand Response	High
	Electrification	High/low sensitivities
Transmission	New or Upgraded Transmission Allowed	Moderate
Fuel Prices	Natural Gas, H2, etc.	High/low sensitivities
GHG Prices	GHG Allowance Prices	High/low sensitivities
Storage Prices	Li-Ion, flow, etc.	High/low sensitivities

\*Note: Optimal portfolio will be determined through the capacity expansion model

\*\*Note: Zero carbon includes RPS + nuclear + large hydro

## City Council Motion

### Evaluate under Moderate and High Load Electrification

- 100% carbon free by 2035
- Target based on generation by 2035
- Does not allow renewable electricity credits
- Allow existing nuclear and upgrades to transmission



# DRAFT 2022 SLTRP Scenario Matrix

		2022 SLTRP Core Scenarios		
		SB 100 (Reference Case)	Balanced Decarbonization	City Council Motion
2030 RPS Target		60%	80%	80%
Compliance Year for 100% zero carbon/Carbon-Free		2045 (100% zero carbon by sales)	2040 Carbon Free (100% zero carbon by sales in 2035)	2035 (Carbon Free)
Technologies	Solid Biomass	No	No	No
	Biogas/Biofuels	Yes*	No	No
	Fuel Cells	Yes*	Yes*	Yes*, excluding biofuels
	Hydro - Existing	Yes*	Yes*	Yes*
	Hydro - New	No	No	No
	Hydro - Upgrades	Yes*	Yes*	Yes*
	Natural Gas	Yes*	Yes*	Yes*, until 2035
	Green H2 Turbines	Yes*	Yes*	Yes*
	Nuclear - Existing	Yes*	Yes*	Yes*
	Nuclear - New	No	No	No
	Wind, Solar, Geo, Small Hydro	Yes*	Yes*	Yes*
Energy Storage	Yes*	Yes*	Yes*	
Maintain existing gas capacity (non-OTC units)	Haynes, Scattergood, Harbor, Valley	Yes	Yes, until made hydrogen ready or replaced by new H2 capacity	Yes, until 2035
DERs	Local Solar, Local Storage, etc.	Reference	Moderate	High
RECS	Financial Mechanisms (RECs/Allowances)	Yes*	Yes*	No
Load	Customer Demand	High/low sensitivities	High/low sensitivities	High/low sensitivities
	Energy Efficiency	Reference	High	High
	Demand Response	Reference	High	High
	Electrification	Reference	High/low sensitivities	High/low sensitivities
Transmission	New or Upgraded Transmission Allowed	Reference	Reference	Moderate
Fuel Prices	Natural Gas, H2, etc.	High/low sensitivities	High/low sensitivities	High/low sensitivities
GHG Prices	GHG Allowance Prices	High/low sensitivities	High/low sensitivities	High/low sensitivities
Storage Prices	Li-Ion, flow, etc.	High/low sensitivities	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

# Discussion and Q&A



# 2022 SLTRP: Draft Scenario Matrix

Jay Lim, LADWP Manager of Resource Planning

Joan Isaacson, Kearns & West, Facilitator



# Discussion and Feedback

Do the Draft Scenario Matrix and sensitivities presented by LADWP today capture the full spectrum of the Advisory Group's interests and priorities for the SLTRP process?

# Breakout Rooms

- Each room will have SLTRP team member and facilitator/notetaker
- 20 minutes to:
  - Quickly introduce yourselves
  - Identify a volunteer to report back at the end
  - Ask questions and learn more about the scenarios
  - Provide input on what elements that you think are still missing from the scenarios

***Remember – Keep the conversations concise and focused in order to make the best use of the time together!***

# Reporting Back

Provide **two** examples of:

- Questions asked in your group
- Elements identified by your group as still missing from the scenarios

# Discussion and Feedback

Do the Draft Scenario Matrix with Sensitivities presented by LADWP today capture the full spectrum of the Advisory Group's interests and priorities for the SLTRP process?

If you selected no, what additional scenarios or elements would bolster the draft scenarios presented by LADWP today?

# Advisory Group Meeting Plan

Phase 1   Q3 2021 Launch & Laying Foundation	Phase 2   Q3 2021 Scenario Development	Phase 3   Q4 2021 Modeling	Phase 4   Q1 2022 Results	Phase 5   Q2-3 2022 Outreach
<p><b>#1 September 23</b></p> <ul style="list-style-type: none"> <li>Advisory Group Launch</li> <li>LADWP Overview</li> <li>LA100 (Achieving 100% Renewable Energy)</li> <li>2022 SLTRP Orientation</li> <li>Advisory Group Protocols &amp; Operating Principles</li> </ul>	<p><b>#4 October 22</b></p> <ul style="list-style-type: none"> <li>LA100 Equity Strategies</li> <li>Electrification</li> <li>Energy Efficiency</li> <li>Draft Scenario Matrix</li> </ul>	<p>November-January</p> <ul style="list-style-type: none"> <li>Internal Modeling</li> <li>Analysis of Scenarios</li> </ul>	<p><b>#7 February TBD</b> Preliminary Results</p>	<p><b>#8 July TBD</b> Public Outreach Results</p>
<p><b>#2 September 30</b></p> <ul style="list-style-type: none"> <li><i>LA100 Study Review (NREL) at 9 am</i></li> <li>LA100 Rates Analysis (OPA) at 10 am</li> <li>LA100 Next Steps (LADWP)</li> <li>LA100 Assumptions (PSRP)</li> <li>Consider Topics for October 22</li> <li>Consideration of Scenario Definition</li> </ul>	<p><b>#5 November 10</b></p> <ul style="list-style-type: none"> <li>Metrics &amp; Evaluation Process</li> <li>Scenario Considerations               <ul style="list-style-type: none"> <li>-Implementation &amp; Feasibility</li> <li>-Supply Chain Impacts</li> <li>-Human Resources Plan</li> <li>-Energy Burden</li> </ul> </li> <li>Refine Scenario Matrix</li> </ul>	<p>Modeling Underway</p>	<p>March – April TBD Potential field</p>	<p>August Review Draft 2022 SLTRP</p>
<p><b>#3 October 08</b></p> <ul style="list-style-type: none"> <li>SLTRP Deep Dive</li> <li>SB100 Review (LADWP)</li> <li>100% Carbon-Free by 2035 Requirements (NREL)</li> <li>Green Hydrogen in LA (LADWP)</li> <li>2022 SLTRP Key Considerations and Potential Scenarios</li> </ul>	<p><b>#6 November 19</b></p> <ul style="list-style-type: none"> <li>Develop Scenarios</li> <li>Final Scenario Matrix</li> </ul>	<p>Modeling Underway</p>	<p>May – June TBD Community Outreach Meetings</p>	<p>September Submit Final 2022 SLTRP for approval</p>



# Wrap Up & Next Meeting

**Next Meeting:**

**November 10, 2021 (10 am to 12 pm)**

**Future Meeting:**

**November 19, 2021 (10 am to 12 pm)**

**Website: [www.ladwp.com/SLTRP](http://www.ladwp.com/SLTRP)**

**Email: [powerSLTRP@ladwp.com](mailto:powerSLTRP@ladwp.com)**

