



Sustainable Freight Advisory Committee *Meeting Summary - DRAFT*

- Date:** March 22nd 2017 | 11 am – 3 pm
- Location:** In-person at the Port's Harbor Administrative Building and via phone conference
- Attendees:** Attachment A
- Meeting Agenda:** Attachment B

Overview:

The March 2017 Sustainable Freight Advisory Committee (i.e. the Committee, or SFAC) meeting focused on discussions with LADWP on planning for future electrification at the Port and discussing the impacts of CARBs new CHE resolution for terminal operators and the CAAP process. Future recommendation topics were discussed and expected to move towards approved recommendations at the March SFAC meeting.

Key Discussion Items (Action items in green)

1. Review and approve February meeting summary

- The Committee agreed to approve the minutes as is
 - **ACTION ITEM:** GNA to send the approved meeting summary to Mayor Eric Garcetti, via Matt Petersen, and Gene Seroka.
 - **ACTION ITEM:** GNA to post meeting summary on website
- During this agenda item, the Committee discussed drafting recommendations on converting the Port's lights to LEDs and on a west coast port RFI
 - **ACTION ITEM:** GNA to work with CLA to draft recommendations for approval at April meeting

2. Update from POLA

- Chris Cannon provided an update on upcoming EIRs
 - Everport draft EIR will be released in April and will include a 45 day comment period. The project includes dredging of two berths, adding ship-to-shore cranes, AMP plug-ins and development of 23.5 acres.
 - The project will incorporate a lot of zero and near-zero emission equipment.



- Chris also provided an update on a lease re-opener concept that would require terminal operators to meet with POLA if they are purchasing new equipment to ensure they are looking at the cleanest available technologies.

3. Update on previous recommendations

- Zero-emission top handlers:
 - CEC funding has been approved for five units, which includes two top-picks and three battery-electric yard trucks
 - GNA provided a presentation on aggregating projects that have applied for grant funding for port equipment. **(See attachment C)**
 - **ACTION ITEM: Committee to provide feedback on any missing projects in tracker.**
 - **ACTION ITEM: GNA to add to POLA air quality website.**
- HPEC
 - Jonathan Rosenthal informed the Committee that an MOU and an ENA has been signed by POLA
- LADWP-POLA Committee
 - Committee would like to see this Committee formed and begin meeting immediately to better plan for future electrification

4. LADWP presentation on electrification infrastructure

- Marvin Moon from LADWP and his team gave a presentation on LADWP's Integrated Resource Plan, which, due to SB350, includes a robust program for transportation electrification. **(See attachment D for presentation)**. This program includes six sections:
 - Education and research (such as Ride & Drives)
 - Medium- and heavy-duty fleets
 - Commercial charging (includes rebates for charger instillation)
 - DWP and City of LA to purchase BEVs for fleet replacement
 - Residential charging (rebates for charger instillation)
 - City chargers (goal is to install 1,000 chargers over the next five years)
- The Committee asked if the Port area has enough power for future electrification projects. Marvin explained that the harbor generating station has three large transformers, which provides plenty of capacity.
- The Committee discussed the need for the Port to come up with a vision for future electrification and to meet with DWP to determine what the roadmap will be to make the transition.

5. CHE recommendation update / CARB CHE resolution overview

- Liz Yura with CARB gave an update on CARB's new CHE resolution, which has not been signed by CARB's executive office yet so some language may still change.
- Vessels must have emissions reductions for every visit (at-berth requirement):



- This is a further expansion of the types of vessels the regulation applies to
- CARB will look at expanding technology other than AMP, which includes emissions capture systems
- Still not enough clarity on what “adjacent to” will mean to determine which ports will fall under this new regulation, and if airports and/or other facilities will also be included
- 100% zero emission CHE by 2030
 - The Committee discussed the challenges and feasibility of achieving a goal of 100% zero emission equipment by 2030 given the current status of available and tested technology
 - ARB’s Tech Assessments provide some good insight into the current status of technology, and CARB will begin to engage with stakeholder groups pretty soon in workshops and other formats
- It was discussed that a possible recommendation could be to aggregate and share data from demonstration projects of zero-emissions equipment; industry and end-user involvement in this process will be important.

6. POLA GHG presentation

- Chris Cannon gave a presentation on a carbon offset fund concept
 - The offset fund would be developed in coordination with CARB or other appropriate entity to mitigate impacts to the maximum extent feasible
 - This would only apply to projects on the POLA property
 - The Committee discussed the need to determine how the offset gets attributed to a project (i.e., what percentage and what is the justification for it)
 - Local investments and those with co-benefits will be important

7. Clean Truck Program 2.0

- Due to time constraints the Committee agreed to table this discussion until the next meeting.

8. Discussion on how to increase on-dock rail to 50%

- Due to time constraints the Committee agreed to table this discussion until the next meeting

9. Marine and rail discussion and draft recommendation concepts

- Due to time constraints the Committee agreed to table this discussion until the next meeting.



Attachment A

Meeting Attendees

COMMITTEE MEMBERS

Michele Grubbs	Vice President, Pacific Merchant Shipping Association
Joe Lyou	President & CEO, Coalition for Clean Air & Governor's Appointee to the SCAQMD Governing Board
Nidia Erceg	Deputy Policy Director, Coalition for Clean Air
Adrian Martinez	Staff Attorney, Earthjustice
Cynthia Marvin (via phone conference)	Division Chief, California Air Resources Board
Henry Hogo	South Coast Air Quality Management District
Fred Minassian	South Coast Air Quality Management District
Peter Peyton (via phone conference)	Former President, ILWU Marine Clerks Association of Los Angeles & Long Beach
Jonathan Rosenthal (via phone conference)	Co-Portfolio Manager, Saybrook Capital
Elizabeth Warren	Executive Director, FuturePorts
Thomas Jelenic	Vice President, Pacific Merchant Shipping Association
James Jack (via phone conference)	Executive Director, Coalition for Responsible Transportation
Louis Dominguez	Chair of the Port and Environment Committee, Coastal San Pedro Neighborhood Council

CITY OF LOS ANGELES

Matt Petersen	Sustainability Officer, City of Los Angeles Mayor's Office
Michael Samulon	Policy Analyst, Sustainability Office, City of Los Angeles Mayor's Office
David Reich	City of Los Angeles

PORT OF LOS ANGELES & CONSULTANTS

Gene Seroka	Port of Los Angeles
Marla Bleavins	Port of Los Angeles



Chris Canon

Port of Los Angeles

Andrew Scott

Port of Los Angeles

Emily Yen

Port of Los Angeles

Erik Neandross

GNA

Patrick Couch

GNA

Alexis Wiley

GNA

GUESTS

Marvin Moon

Los Angeles Department of Water and Power

Bassam Abou-Chakra

Los Angeles Department of Water and Power

Elizabeth Yura

California Air Resources Board



Attachment B

Sustainable Freight Advisory Committee

March 29th | 11 am – 3 pm

Meeting Agenda

1. Review and approve meeting summary from February meeting – 5 mins
2. Update from Gene – 15 mins
3. Update on previous recommendations – 5 mins
 - a. ZE top handlers
 - b. ZE trucks
 - c. Clean Trucks Program
 - d. HPEC
 - e. POLA-LADWP Committee
4. LADWP presentation on electrification infrastructure (Marvin Moon, LADWP) – 45 mins
5. Lunch – 30 mins
6. POLA GHG presentation (Chris Cannon, POLA) – 30 mins
7. CHE recommendation update / CARB CHE regulation overview – 30 mins
8. Clean Truck Program 2.0 – 15 mins
9. Discussion on how to increase on-dock rail to 50% – 30 mins
9. Marine and rail discussion and draft recommendation concepts – 30 mins
11. Agenda planning for April meeting (Wednesday, April 26th)



Attachment C

Draft Status of Zero Emission Development for Cargo Handling Equipment and Drayage Trucks

Summary

Equipment Type	Completed Projects	Active Projects	Total Units
ZE RTG	1	1	10
Hybrid RTG	1	0	1
ZE Yard Tractor	3	7	76
PHEV Yard Tractor	1	0	1
NZE Yard Tractor	0	2	22
ZE Top Handler	0	3	4
ZE Reach Stacker	0	1	1
ZE Drayage Truck	1	10	70
NZE Drayage Truck	0	1	20
PHEV Drayage Truck	0	8	22
ZE Forklift	0	1	2
Other*	0	2	N/A
Total	7	19	229

*Workforce Training and Charging Equipment projects

- Note that most projects are expected to complete in the 2017-2019 timeframe.
- Total value of funds awarded for identified projects: \$117 million
- The total does not include \$545,000 for Charging Equipment and Workforce Training projects recently awarded to the Port of Long Beach.

Other Funded ZE Truck Deployments

Program	Tractor	UTR	Delivery	Utility	Bus
Proposition 1B	47 (+55 pending)	0	35 (+149 pending)	0	0
HVIP	0	15	348	1	225
Total	47 (+55 pending)	15	383 (+149 pending)	1	225



- 46 of 47 Proposition 1B awards for Class 8 tractors were awarded by SCAQMD. This does not include the most recent round of Proposition 1B funding. Recipients included:
 - Akaal Delivery Service Inc
 - Overseas Freight, Inc
 - Anthony H Osterkamp Jr, Inc
 - Gelson's Markets, Inc
 - Best Overnight Express, Inc
- 26 of the 35 Class 6 delivery trucks funded under Proposition 1B were awarded to UPS by SCAQMD. The remaining 9 trucks were awarded to Durkee Drayage by BAAQMD.
- HVIP data represents awards from February 2010 through January 2017
- All recent awards under HVIP (last 9 months) have been to BYD or Motive Power for fleets in Southern California and are for Class 4-6 delivery trucks.



Project-Specific Summaries

Zero Emission Rubber Tire Gantry cranes (RTGs) – Repower 9 diesel RTG’s at SSA Marine Pier J to full electric power. Southern California Edison (SCE) is proposing to provide the infrastructure pending approval by CPUC. SSA Marine will provide the equipment.

- Grant Awarded to: Port of Long Beach
- Partner: SSA Marine and SCE
- Grant funded by California Energy Commission
- May 2019 – May 2020
- Award: \$4,860,000

Zero Emission Yard Tractors –Develop and demonstrate up to 12 zero emission yard tractors at International Transportation Service (ITS), Long Beach Container Terminal (LBCT) and BYD. This project would test the various performances of battery electric yard tractors in a rigorous port duty

- Grant Awarded to: Port of Long Beach
- Partners: ITS, LBCT and BYD
- Grant funded by: California Energy Commission
- Dates: April 2019 – April 2020
- Award: \$3,430,000

Zero Emission Yard Tractors and Top Handlers – Everport will test (3) battery electric yard tractors with BYD battery engines and (2) Battery Electric Top Handlers to test the performance of this equipment in the demanding marine terminal operations duty cycle.

- Grant Awarded to: Port of Los Angeles
- Partners: Everport Terminal, BYD and Taylor Machine Works
- Grant funded by: California Energy Commission (CEC)
- Dates: February 2019 – May 2020
- Award: \$4,524,000



Zero/Near Zero Emission Yard Tractors and Efficient Applications for Trucking –Everport Terminal will test (5) BYD battery electric yard tractors and 20 near zero emission yard tractors equipped with Cummins Westport near zero 0.02 grams/bhp-hr NOx engines Productivity Apex, Inc. will test the Eco-FRATIS Drayage truck efficiency project, which includes a suite of applications developed and currently being demonstrated in San Pedro Bay on behalf of US Department of Transportation. These applications include Info Magnus GeoStamp product which provides real time truck travel and terminal turn times and UC Riverside’s Eco-Drive technology which uses traffic signal timing information to optimize acceleration/deceleration of trucks.

- Grant Awarded to: Port of Los Angeles
- Partners: Everport Terminals, BYD, Apex, InfoMagnus
- Grant funded by: California Energy Commission
- Dates: January 2018 – June 2019
- Award: \$5,833,000

Zero Top Handler and Zero/Near Zero Emission Drayage Trucks – Demonstrate zero and near zero technologies. Partnering with APM Terminals, Hyster-Yale with wireless inductive charger, Cummins Westport and Velocity Vehicle Group (Freightliner Dealer) and Efficient Drivetrains Equipment to demonstrate (1) zero emission top handler and (20) Class 8 Trucks equipped with Cummins Westport 12L near zero beta engine, (3) Class 8 Hybrid Trucks, and (1) zero emission Class 8 Battery Electric Truck.

- Grant Awarded to: South Coast Air Quality Management District (SCAQMD)
- Partners: Clean Energy, Cummins, Hyster-Yale APM Terminals, Southern Counties Express, Three Rivers, heavy-Load Transfer
- Grant funded by: California Energy Commission
- Dates: July 2017 – July 2018 Clean Energy/Cummins Westport Trucks
October 2018 – 2019 Hyster-Yale Top Handler
- Award: \$10 million

Zero Emission Green Omni Terminal Project - The Project is designed to test pre-commercial zero and near zero emission technologies. Pasha Terminal will demonstrate (4) electric yard tractors, (2) electric Class 8 on road trucks, (2) electric hi-tonnage forklift retrofits, (1) electric top handler retrofit and an at berth vessel emission control system. The project will also include the construction of a solar powered micro grid, which will be supported by 2.6 megawatts of backup battery storage intended to provide power to the charging units for the plug in electric equipment and terminal systems during a grid power outage.

- Grant Awarded to: Port of Los Angeles



- Grant funded by: California Air Resource Board (CARB)
- Testing Dates: June 2017 – February 2019
- Award: \$ 14,510,000

Zero Emissions Drayage Trucks – Convert up to 4 Liquefied natural Gas (LNG) drayage trucks to zero emissions. This project would repower LNG trucks to plug in hybrid capability (electric trucks with an LNG range extender). Partnering with US Hybrid and Total Transportation Services, Inc. (TTSI) the trucks will have a geofencing component that can set the truck to run automatically in zero emissions mode near the port. The trucks will be powered with renewable natural gas.

- Grant Awarded to: Port of Long Beach
- Partners: TTSI, US Hybrid
- Grant funded by: California Energy Commission
- Dates: February 2018 – April 2019
- Award amount: \$1,320,000

Charging Equipment – demonstrate smart yard truck charging equipment to support the wide spread deployment of zero emissions equipment. This demonstration will test a prototype of automated system to support the fast, large scale charging system.

- Grant Awarded to: Port of Long Beach
- Grant funded by: California Energy Commission
- Dates: December 2017 – April 2019
- Award: \$495,000

Workforce Training – The Port of Long Beach will partner with International Brotherhood of Electrical Workers (IBEW) and Long Beach City College augment the electrical apprenticeship programs so the workforce is ready for these new technologies.

- Grant Awarded to: Port of Long Beach
- Partners: IBEW and Long Beach City College
- Grant funded by: California Energy Commission
- Dates: February 2018 – April 2019
- Award amount: \$50,000



Zero Emissions Yard Tractors and Delivery Trucks – Demonstrate 23 electric yard tractors at BNSF rail yards and a Daylight Transport inland warehouse facility. This project would deploy 23 BYD T9A yard tractors with a targeted 8+ hour operating time between charges. The project will also demonstrate four T5 BEV service trucks with a 16,100 GVWR.

- Grant Awarded to: San Bernardino Association of Governments
- Partners: BYD, BNSF, Daylight Transport
- Grant funded by: California Air Resources Board
- Dates: January 2016 – April 2019
- Award amount: \$9,100,800

Zero Emissions Drayage Trucks – Develop and demonstrate PHEV and BEV drayage truck technologies including: (1) 25 BYD battery-electric trucks, (2) eight Peterbilt/Transpower BEVs with 80 miles of range, (3) four Peterbilt/Transpower BEVs with 200 miles of range, (4) four Kenworth/BAE CNG PHEVs with 50 miles of all-electric range, (5) two Volvo diesel PHEVs with 30 miles of all-electric range.

- Grant Awarded to: South Coast AQMD
- Partners: Many. Four air districts, eight industry partners, 13 fleets, six other partners
- Grant funded by: California Air Resources Board
- Dates: October 2015 – April 2019
- Award amount: \$23,658,500

Zero Emissions Drayage Trucks – Construct and demonstrate a one-mile catenary system for on-road trucks and demonstrate zero-emission trucks operating on the catenary system. Drayage trucks to be developed and demonstrated include: (1) four Transpower BEVs with 100-150 miles of range, (2) two CNG PHEVs with 30 miles of all-electric range, (3) two US Hybrid BEVs with 100 miles of range, (4) three LNG PHEVs with 30 miles of all-electric range. The catenary portion of the project was not funded by DOE, but was subsequently funded by South Coast AQMD.

- Grant Awarded to: South Coast AQMD
- Partners: Port of Los Angeles, Port of Long Beach, SCAG, GCCOG, California DOT, Siemens, Transpower, US Hybrid, NREL
- Grant funded by: US Department of Energy
- Dates: October 2012 – ongoing (projected completion in 2018)
- Award amount: \$4,200,000



Zero Emissions Drayage Trucks – Develop and demonstrate PHEV CNG and diesel trucks as well as fuel cell PHEV drayage truck technologies including: (1) one plug-in hybrid truck with CNG range extender and catenary interface, (2) two diesel PHEVs with ultra-fast charging, (3) five battery-electric trucks with fuel cell range extenders.

- Grant Awarded to: South Coast AQMD
- Partners: BAE, Transpower, US Hybrid, International Rectified (withdrawn), Center for Transportation and the Environment, Gas Technology Institute
- Grant funded by: US Department of Energy
- Dates: June 2016 – September 2018
- Award amount: \$10,000,000

Zero Emission Yard Tractors – Demonstrate two zero emission yard tractors at various cargo facilities, with the ultimate user intended to be Eagle Marine Terminals at the Port of Los Angeles. This project would test the various performances of TransPower’s battery electric yard tractors in a rigorous port duty cycle.

- Grant Awarded to: Port of Long Beach and Port of Long Beach
- Partners: TransPower, SA Recycling, TTSI, IKEA, Dole Foods, Eagle Marine Terminals
- Grant funded by: California Air Resources Board
- Dates: September 2014 – May 2015
- Award: \$1,000,000

Zero Emission Yard Tractors – Demonstrate five zero emission yard tractors at various facilities in the Central Valley and Sacramento. An objective of the project is to demonstrate the ability to complete two full shifts of 6.5 to 8 hours each with minimal downtime between shifts for charging.

- Grant Awarded to: TransPower
- Partners: IKEA, Harris Range, Grimmway Farms, Devine Intermodal
- Grant funded by: California Energy Commission
- Dates: June 2015 – March 2019
- Award: \$3,000,000

Zero Emission Yard Tractors and Reach Stacker – Transpower will develop and demonstrate (1) two BEV drayage trucks, (2) two BEV yard tractors, and (3) one BEV reach stacker. Goals of the project include demonstrating a 150 mile operating range for drayage trucks and 24 hours of continuous operation for yard tractors. Reach stacker operating time to be extended from two



hours to ten hours of continuous use. The equipment will be tested in the port environment at the Port of San Diego.

- Grant Awarded to: TransPower
- Partners: BAE Systems, Dole Fresh Fruit, Terminalift
- Grant funded by: California Energy Commission (CEC)
- Dates: June 2015 – May 2019
- Award: \$3,000,000

Zero Emissions Drayage Trucks – Conduct a field demonstration project of advanced vehicle technologies and intelligent transportation systems in and around the Port of San Diego. The project will build 10 new or repowered precommercial electric vehicles for demonstration in and around the port by tenants CEMEX, Continental Maritime, Dole Food Company, Harborside Refrigerated Services and Cold Storage, Marine Group Boat Works, Pasha Group, and TERMINALIFT. Drayage trucks will be required to travel up to 20 miles inland to a freight yard and transfer site.

- Grant Awarded to: San Diego Port Tenants Association
- Partners: Many. TransPower, Efficient Drivetrains Inc, carbonBLU, GC Green, Greenling Institute, Grant Farm, BYD, CEMEX, Pasha, Terminalift, others
- Grant funded by: California Energy Commission
- Dates: July 2016 – April 2020
- Award: \$5,903,652

Zero Emissions Drayage Trucks – Conduct an advanced fuel cell drayage truck demonstration project. The demonstration will occur in the Ports of Los Angeles and Long Beach and the Alameda Corridor, and within disadvantaged communities in these areas.

- Grant Awarded to: Hydrogenics
- Partners: TTSI, Siemens, ACTIA
- Grant funded by: California Energy Commission
- Dates: August 2015 – May 2019
- Award: \$2,679,417

Zero Emissions Drayage Trucks – Demonstrate the reliability and performance of battery electric Class 8 trucks by placing them in trial service transporting containers at the Ports of Long Beach and Los Angeles. Two BEV drayage trucks will be delivered and demonstrated in port drayage operations



- Grant Awarded to: CALSTART
- Partners: TransPower, Navistar, TTSI, Quantum, EPC Power, Flux
- Grant funded by: California Energy Commission
- Dates: June 2012 – March 2017
- Award: \$2,296,167

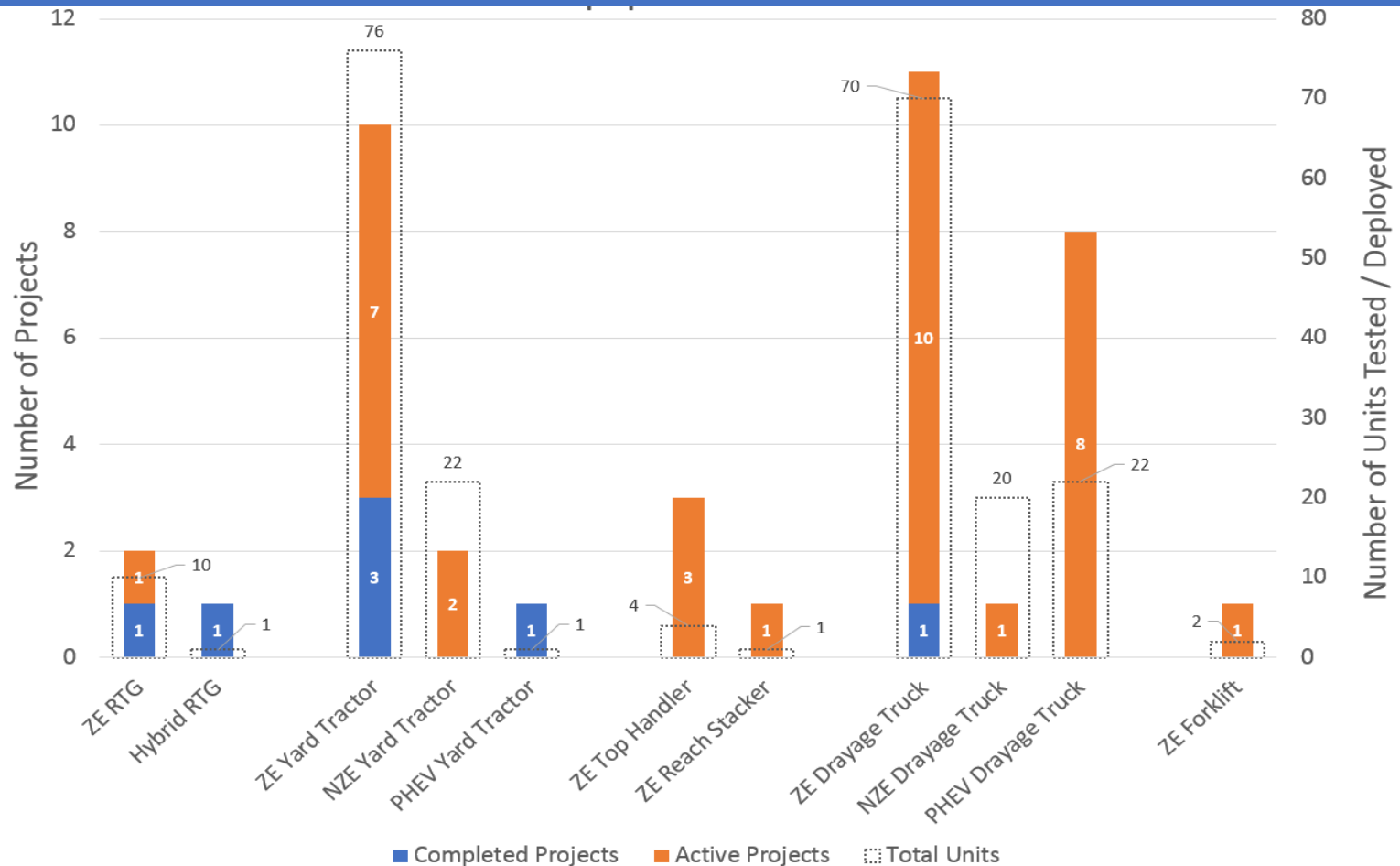
Zero Emissions Drayage Trucks – Demonstrate the reliability and performance of plug-in hybrid electric Class 8 trucks with diesel range extending engines by placing them in trial service transporting containers at the Ports of Long Beach and Los Angeles. Two PHEV drayage trucks will be delivered and demonstrated in port drayage operations and demonstrate a 10-mile all-electric range.

- Grant Awarded to: CALSTART
- Partners: Volvo, Mack, AeroVironment, Green Fleet Systems
- Grant funded by: California Energy Commission
- Dates: June 2012 – March 2017
- Award: \$2,139,423

Zero Emissions Drayage Trucks – Demonstrate the reliability and performance of one all-electric and one range-extended plug-in hybrid electric Class 8 truck by placing them in trial service transporting containers at the Ports of Long Beach and Los Angeles. The drayage trucks will be delivered and demonstrated in port drayage operations.

- Grant Awarded to: CALSTART
- Partners: Volvo, Artisan Vehicle Systems, Kenworth, West Coast Container Services
- Grant funded by: California Energy Commission
- Dates: June 2012 – March 2017
- Award: \$908,473

Zero and Near-Zero Technology Demonstration Projects of Port Equipment in CA



- Note that most projects are expected to complete in the 2017-2019 timeframe.
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Other Funded ZE Truck Deployments

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Example of Project-Specific Summaries

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Attachment D

Los Angeles
Department of
Water & Power



Transportation Electrification The LADWP Plan

POLA Sustainable Freight Advisory Committee
March 29, 2017





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Water & Power

Discussion Today

Discussion today:

- Role of Transportation Electrification for LADWP (IRP)
- How to do it (The Plan)
- Other important transportation electrification efforts





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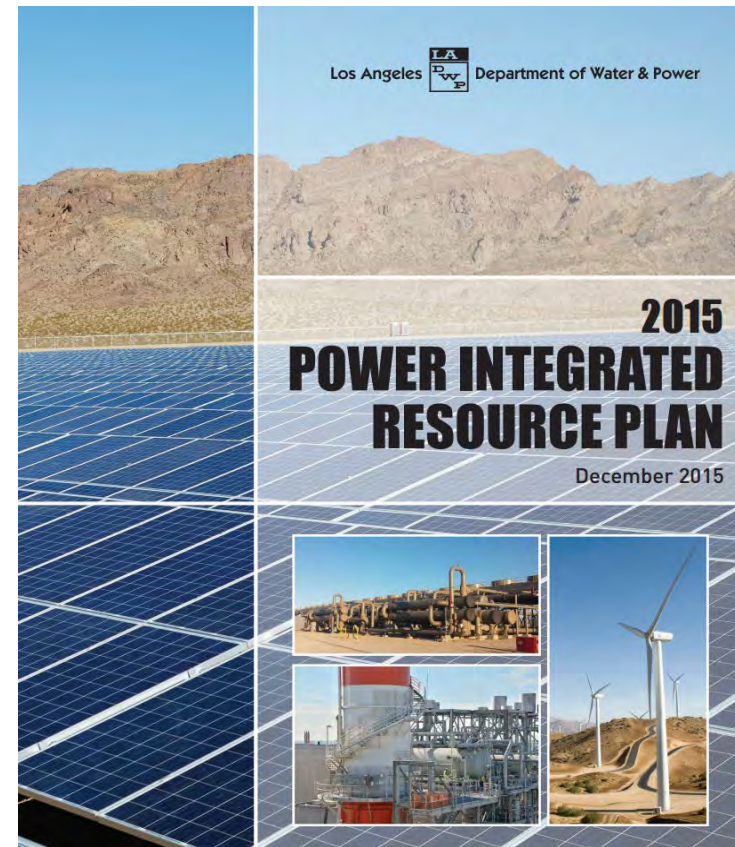
LADWP's Integrated Resource Plan

Electric Vehicles (EVs) role in IRP...

- Promote a green environment. (75% less GHG than gas).
- Promote customer efficiency
 - Less than \$1 per gallon of gas
 - All Customer Save Money
- Integration of renewable resources.
- Every BEV = ½ a house night load.

In addition...

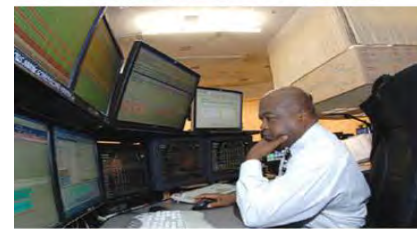
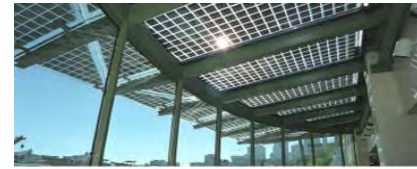
- Build a new industry for jobs.
- Local green energy
- Better use of utility assets.





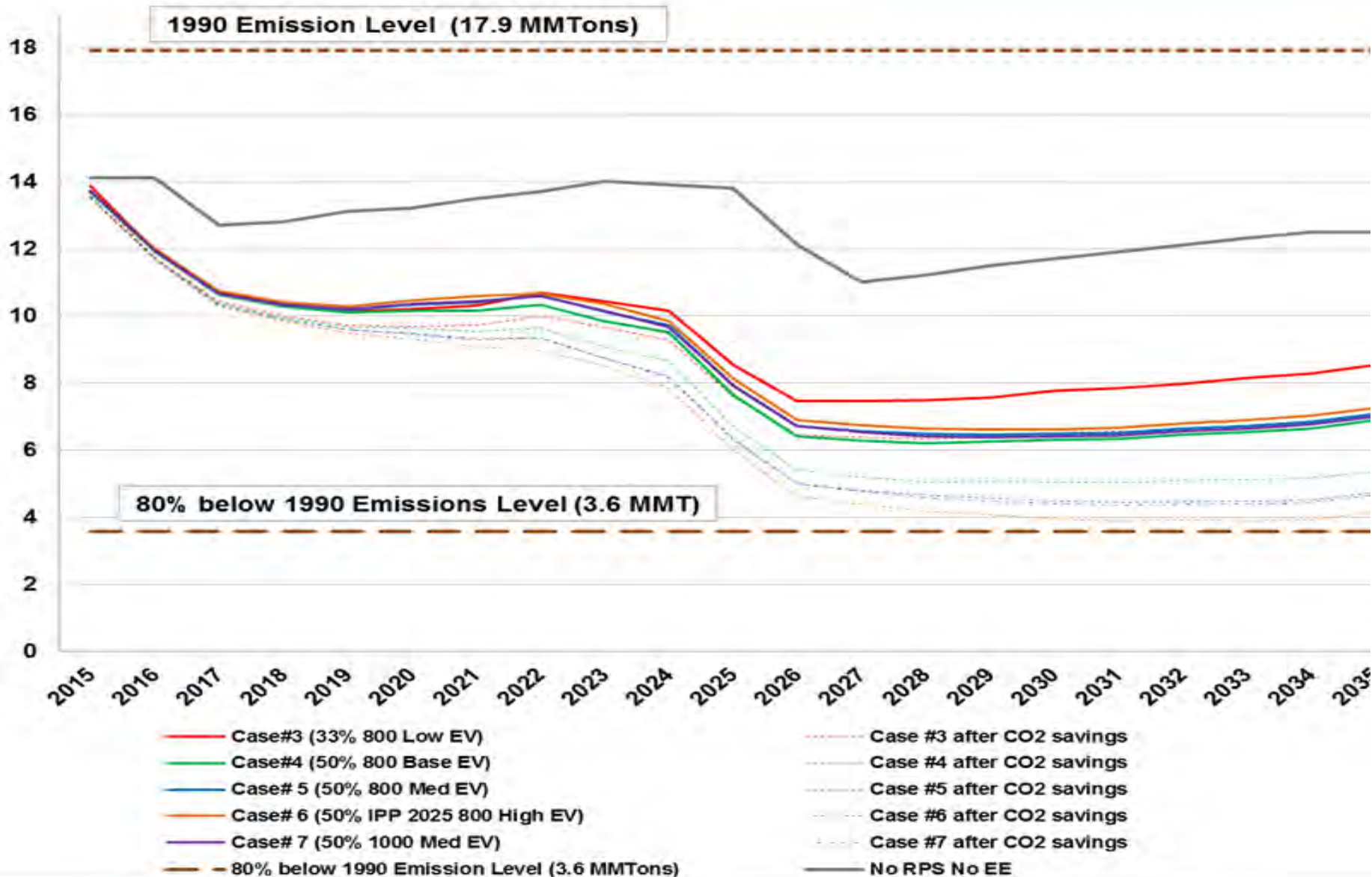
Green House Gas Emission Reductions:

- Goal of AB 32 is 80% reduction below 1990 levels by 2050
- CARB reported in 2012 Transportation was 37% of CO₂.
Electric Generation was 11%.
- Recommended Case:
 - 50% Renewable
 - No Coal Power
 - High Energy Efficiency (EE)
 - No Once Through Cooling
 - High EV Model





GHG Emission Reduction



How Many EVs are Needed?

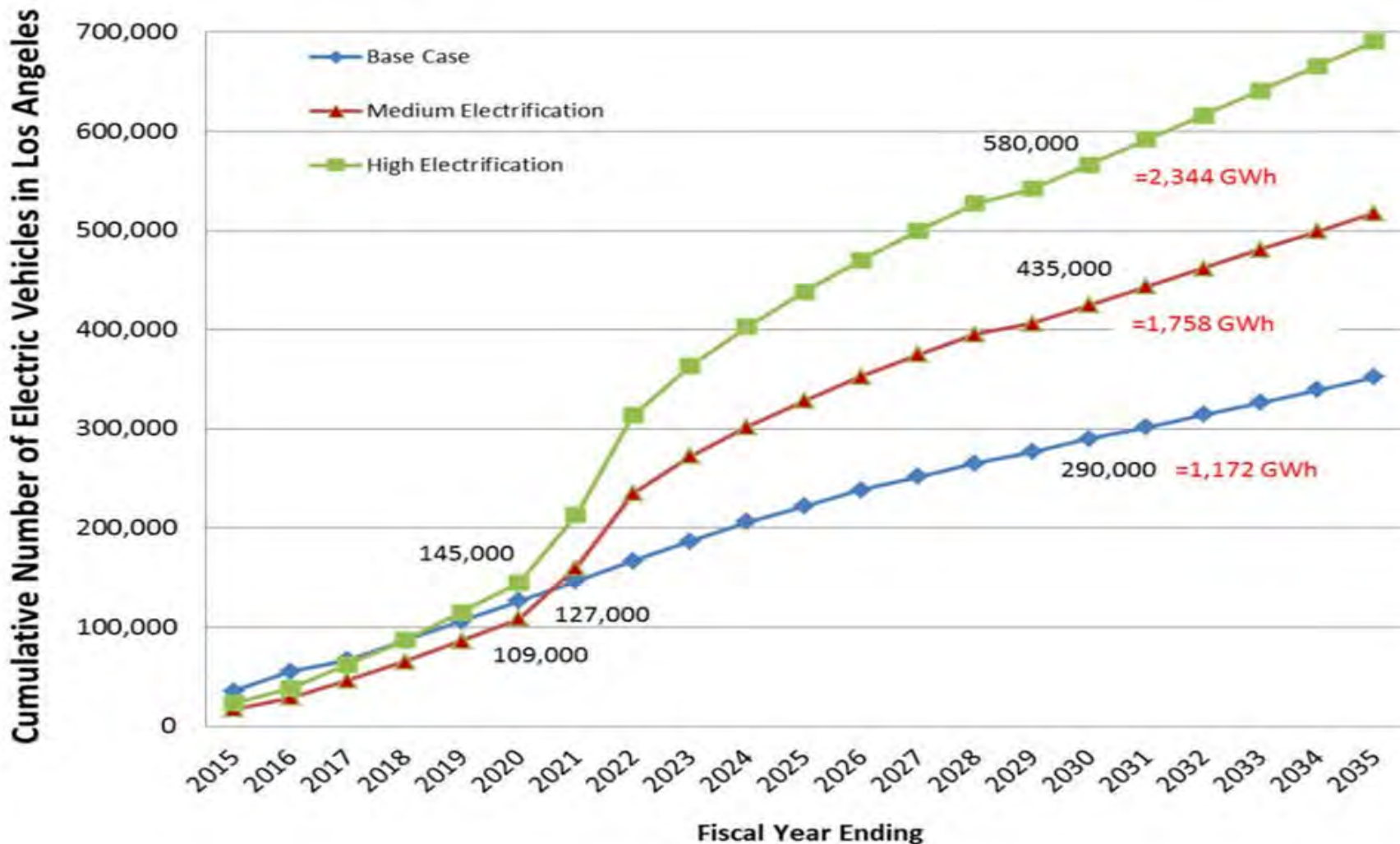
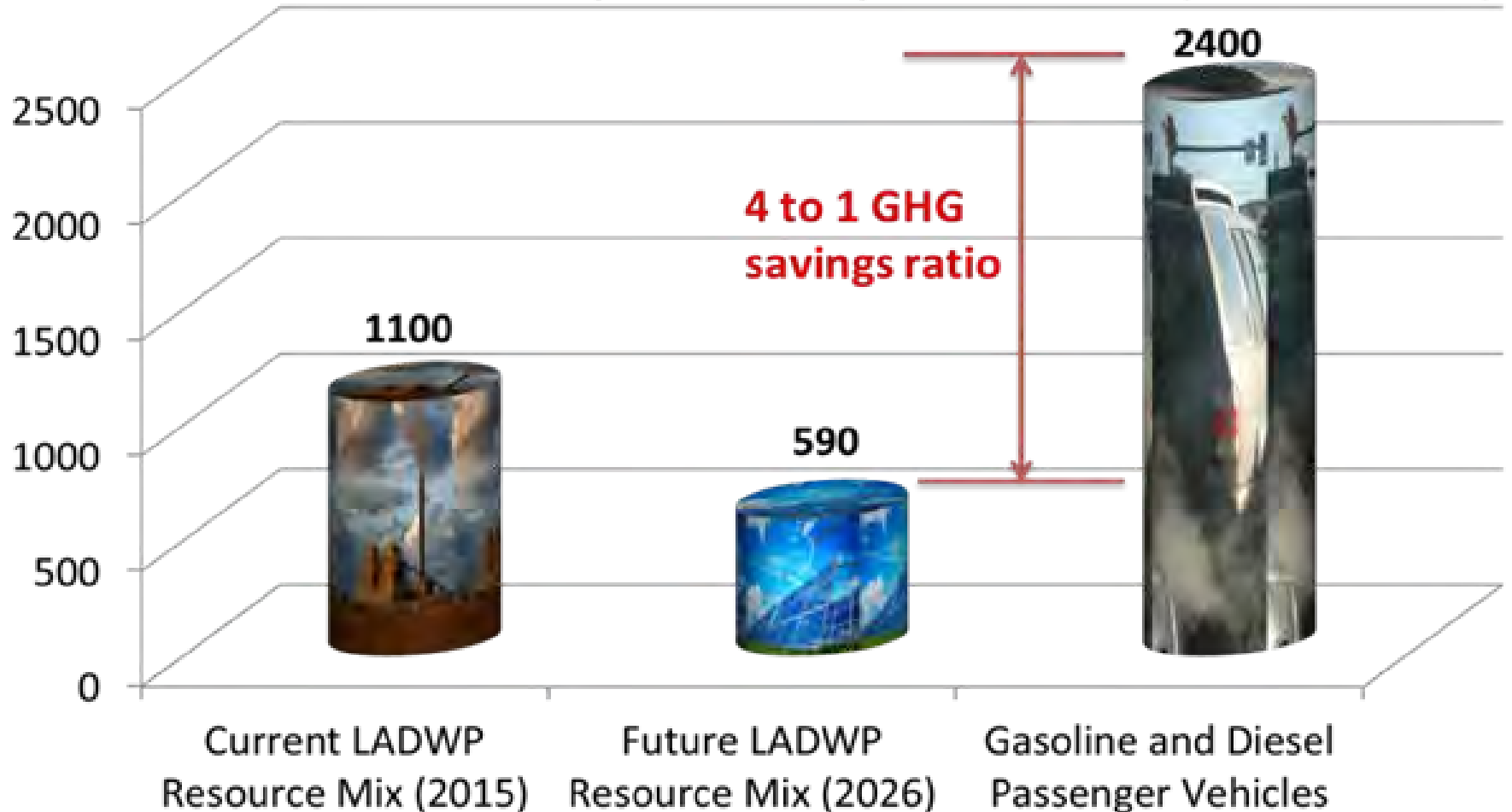


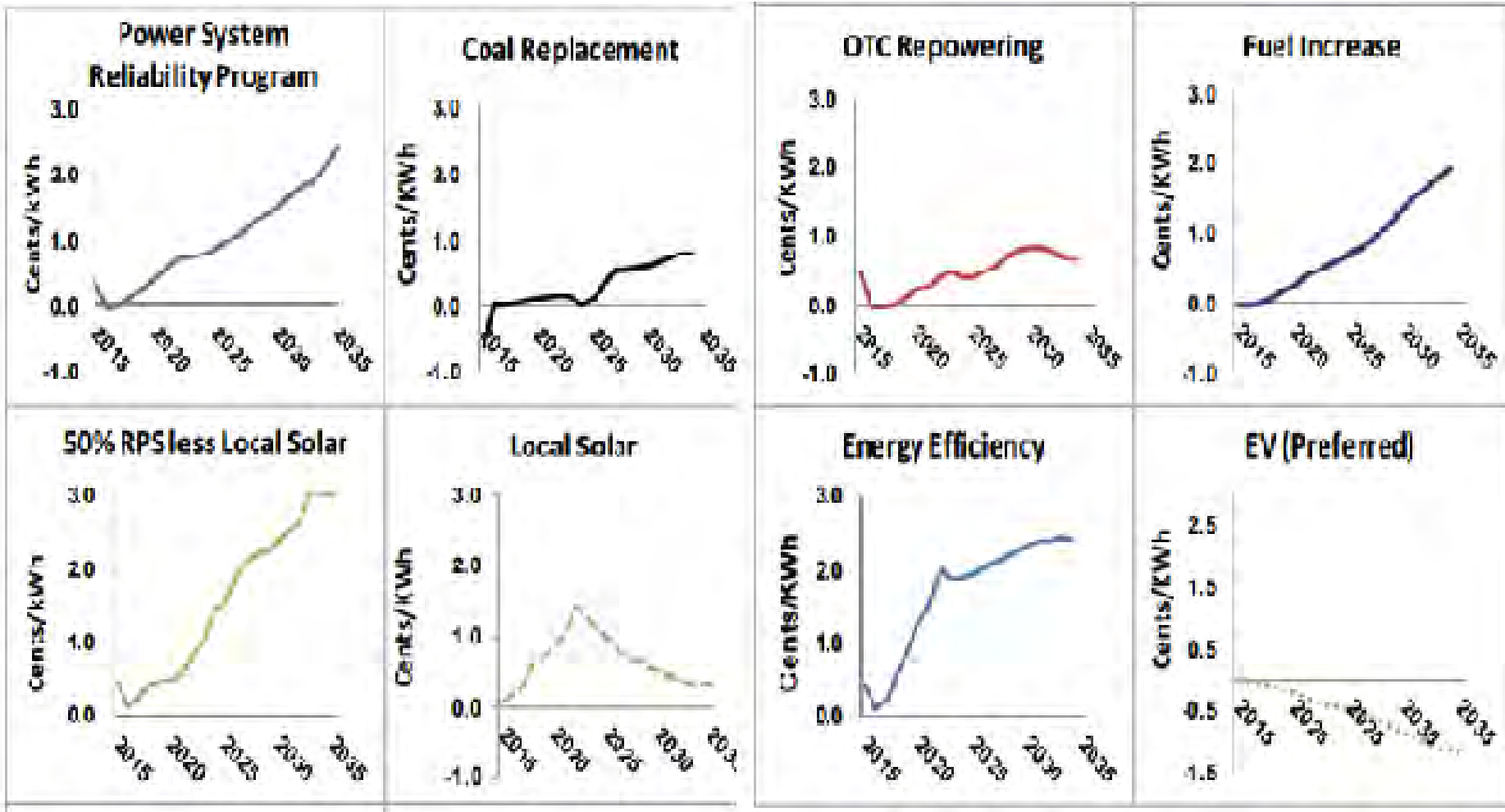
Figure 3-9. Electrification levels in the Los Angeles basin

All Program Rate Contribution

Carbon Intensity of Electricity vs. Petroleum (lbs CO₂/MWh)



EVs Save Everyone Money



- Contribution to Retail Rates for Recommended Case



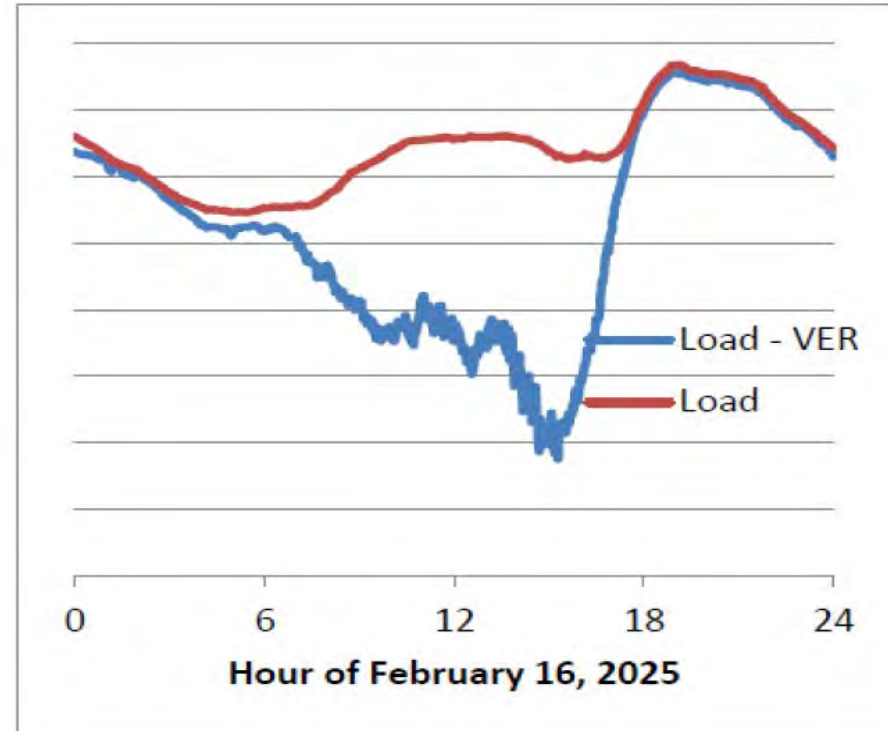
EVs and Integration of Renewables

Three Concerns:

- Intermittency of Renewables
- Over-generation from Solar
- Huge Load Ramp Rate at Sundown

EV Solution:

- Prescriptive Preferred Rates
- Dynamic Rate Pricing
- EV Infrastructure to Support It.
- Better Utility Load Factor



LADWP Electric Transportation Program

FY 2015-2020

Draft-For Discussion Only

5 Year Goal: The equivalent of 145,000 Electric Vehicles in LA.

- Strategy:**
1. Increase EV adoption to 15% of vehicle purchases.
 2. Count Public and Workplace Chargers as EV equivalents.
 3. Consider non-light duty as EV equivalents (i.e., Medium & Heavy Duty)





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LADWP Draft EV Plan

Education and Outreach:

Goal: 15% of all new vehicle purchases in LA are plug-in by 2020.

60K registered EVs in LA,
Programs: Drive, Social, HOA, etc.

Med. & Heavy Duty Fleet:

Includes POLA, LAWA, Forklift, Rail, Busses. Incentive toward charging infrastructure (Proportional to Commercial). Goals: TBD

Commercial Charging:

Charge-Up LA!, Workplace, Public EVSE
\$4000 rebates, (9K EVSE) Phase II:
Direct Install & Green Bldg. Ordinance.

LADWP & LA City Fleet:

LADWP 100%, City 50% New Cars
1600 vehicles. — No Program Cost

Residential Charging:

Charge-Up LA! Rebate: \$500 (5K)
Phase II: Smart Charger Rate

City EV Chargers:

1000 Curbside/Parking Lot Public
1600 City Fleet Chargers,
25 City DC Fast Chargers
500 City Workplace Chargers
3125 Total Chargers





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What Is DWP Doing to Support Infrastructure?

City Infrastructure:

- Retrofitted and installed over 300 chargers on City Property. Includes LADWP, City Hall, the Convention Center, LAX, City Parking Structures. 400 more soon.
- Installed 16 DC Fast Chargers in and around LA.

Customer Infrastructure:

- Residential Charger Rebates: **Up to \$500/ L2 charger**
- Commercial Charger Rebates for Workplace/Public/MUD:
Up to \$4000/ L2 charger
(up to 20 rebates/site)
- Grants for Heavy Duty EV





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How will LADWP support Heavy Duty?

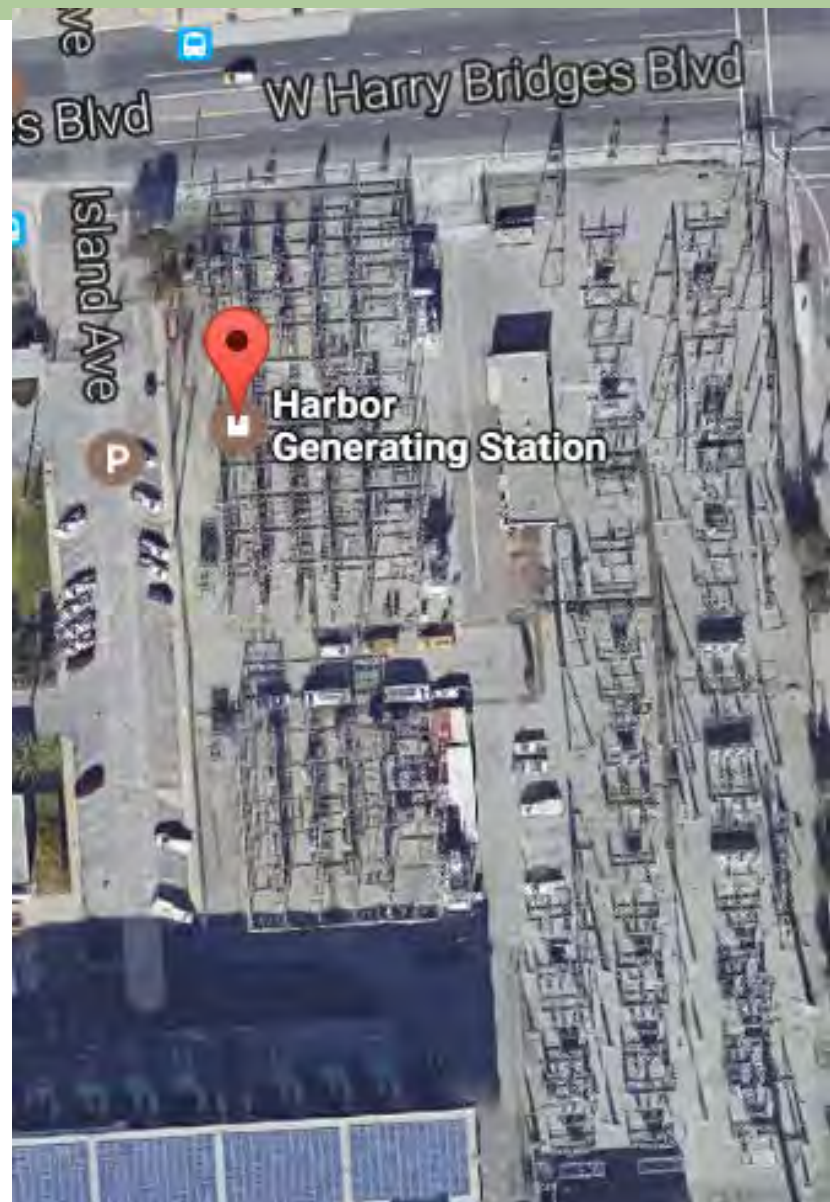
- Service Planning connections
- Charge-Up LA! EV Charger rebates
- LCFS gap funding





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Enough Power For Electrification?

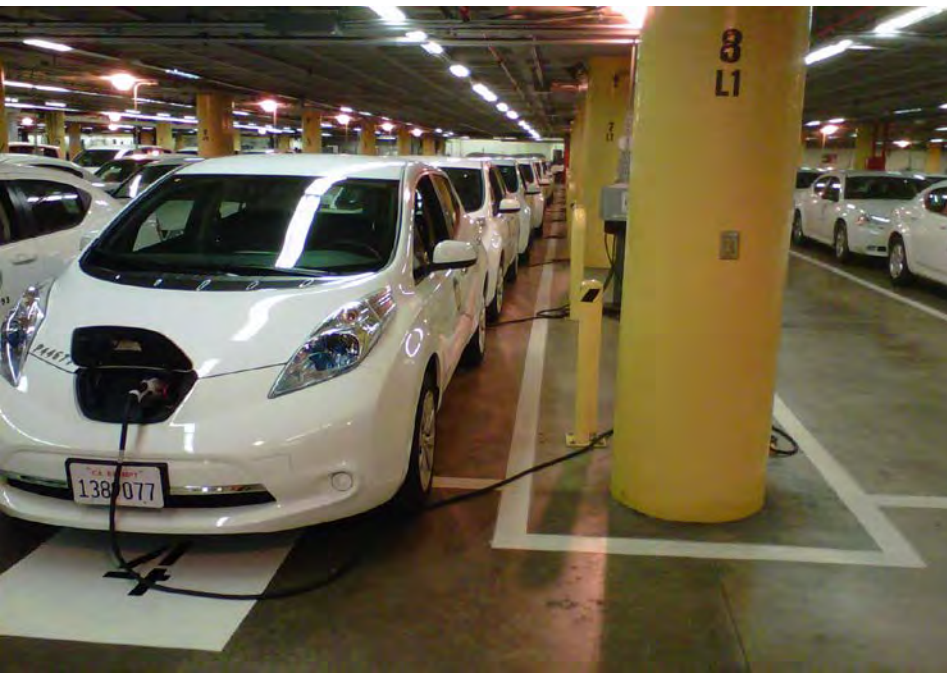




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DWP's EV Light Duty Fleet

- 111 BEV and PHEV vehicles.
- Soon will be approximately 228 plug-in Vehicles.
- Criteria for pool cars/take home/assigned vehicles.
- Charging Infrastructure



Other Important Programs:

- Residential Smart Charging Demo
- Low Income LA Car Sharing Program
- LA Green Building Ordinance Change
- Investigating Commercial EVSE Direct Install
(similar to EE programs)
- EV Discount Rates





Expected Program Results:

- The equivalent of 145,000 plug-in EVs in Los Angeles.
- LA's visible support for EV Technology through 10,000 City and Private Commercial Chargers for Public, Workplace, Multi-Unit Dwellings and 1600 City Plug-in vehicles.
- Support Residential Charging (5000 chargers)
- Utility Goals including GHG emission reductions, integration of renewable energy, better utilization of assets, and customer savings.