

DOCKETED

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Putting Customers First



Los Angeles  Department of Water & Power

2015 POWER INTEGRATED RESOURCE PLAN

December 2015



2015 IRP

LADWP IRP Presentation to California Energy Commission

April 18, 2016

LADWP's Resource Stack (2015)



1,956 MW Hydro



**3,978 MW Nat Gas
54 MW Biogas**



1,679 MW Coal



387 MW Nuclear



996 MW Wind



375 MW Solar



69 MW Geothermal

IRP Key Strategic Initiatives



Eliminate Coal from LADWP's Power Supply



Reach 33% RPS by 2020 and 50% by 2030



Achieve 15% Energy Efficiency by 2020



Once-through Cooling Repowering



Invest in Power System Reliability Program



Support Electric Vehicle Expansion

GHG Reduction Strategy



Energy Efficiency



Navajo: 477 MW



IPP: 875-1200 MW



Solar



Wind



Geothermal



Combined Cycle Natural Gas

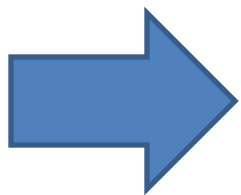
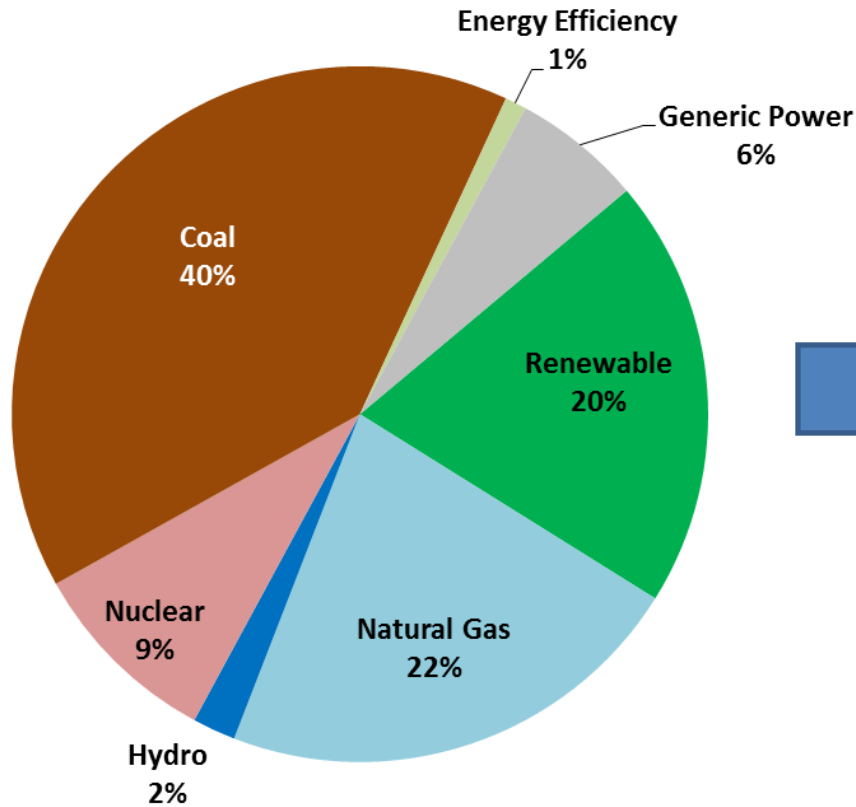


Electrification of the Transportation Sector

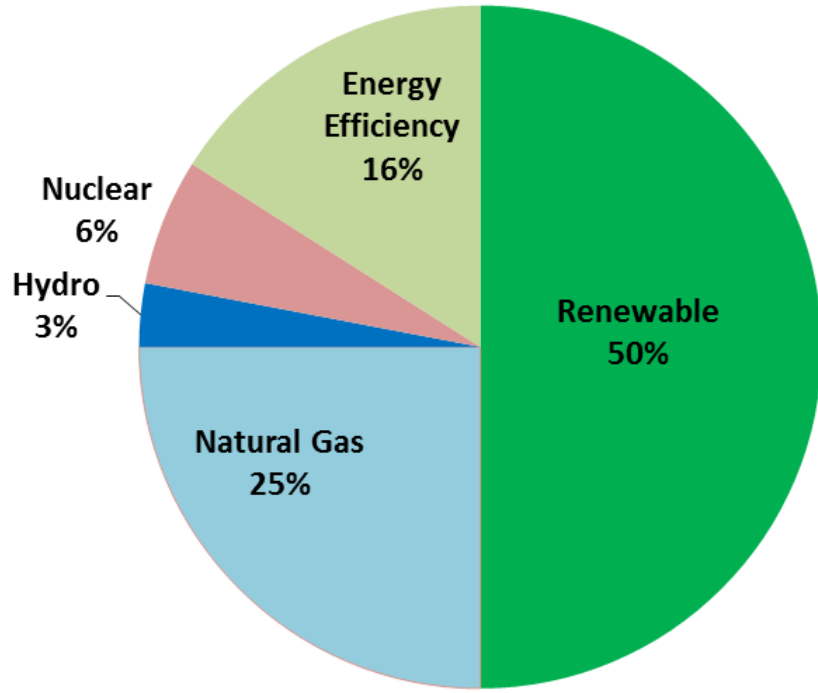
Meeting SB 350 Targets (2030)



2014



2030



Over the next 15 years, LADWP will replace over 70% of its generation infrastructure used to reliably deliver power to its customers

Coal is eliminated and natural gas levels decrease with increased renewables

IRP Public Outreach Process



- IRP Updated Annually
- Public Outreach every 2 years
 - Extensive Stakeholder Outreach
 - IRP Advisory Committee
 - IRP Public Workshops with Website and Online Forums
 - Address concerns and goals
 - Incorporate feedback

www.ladwp.com/powerIRP



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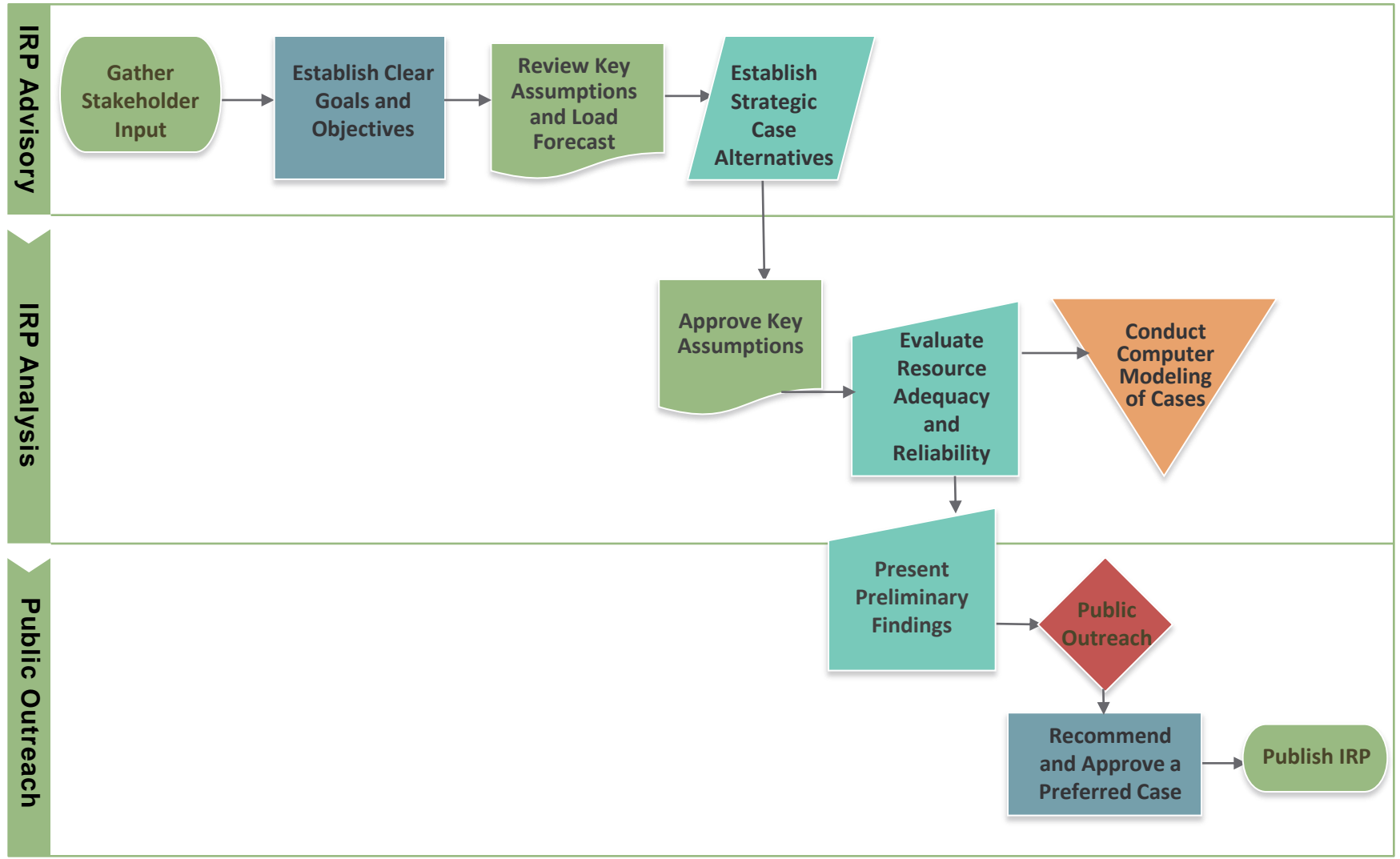


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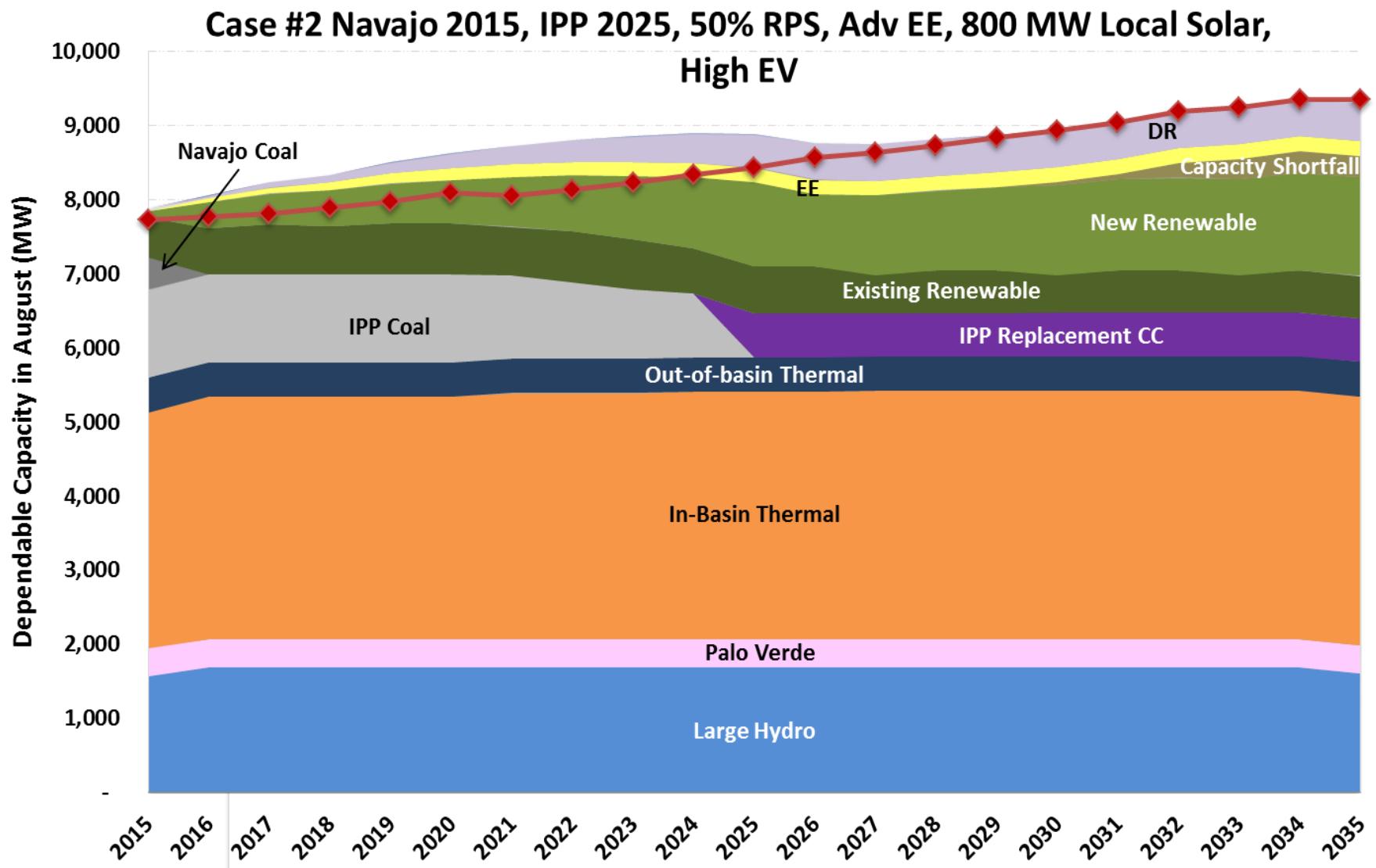


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LADWP's IRP Development Process



Dependable Capacity

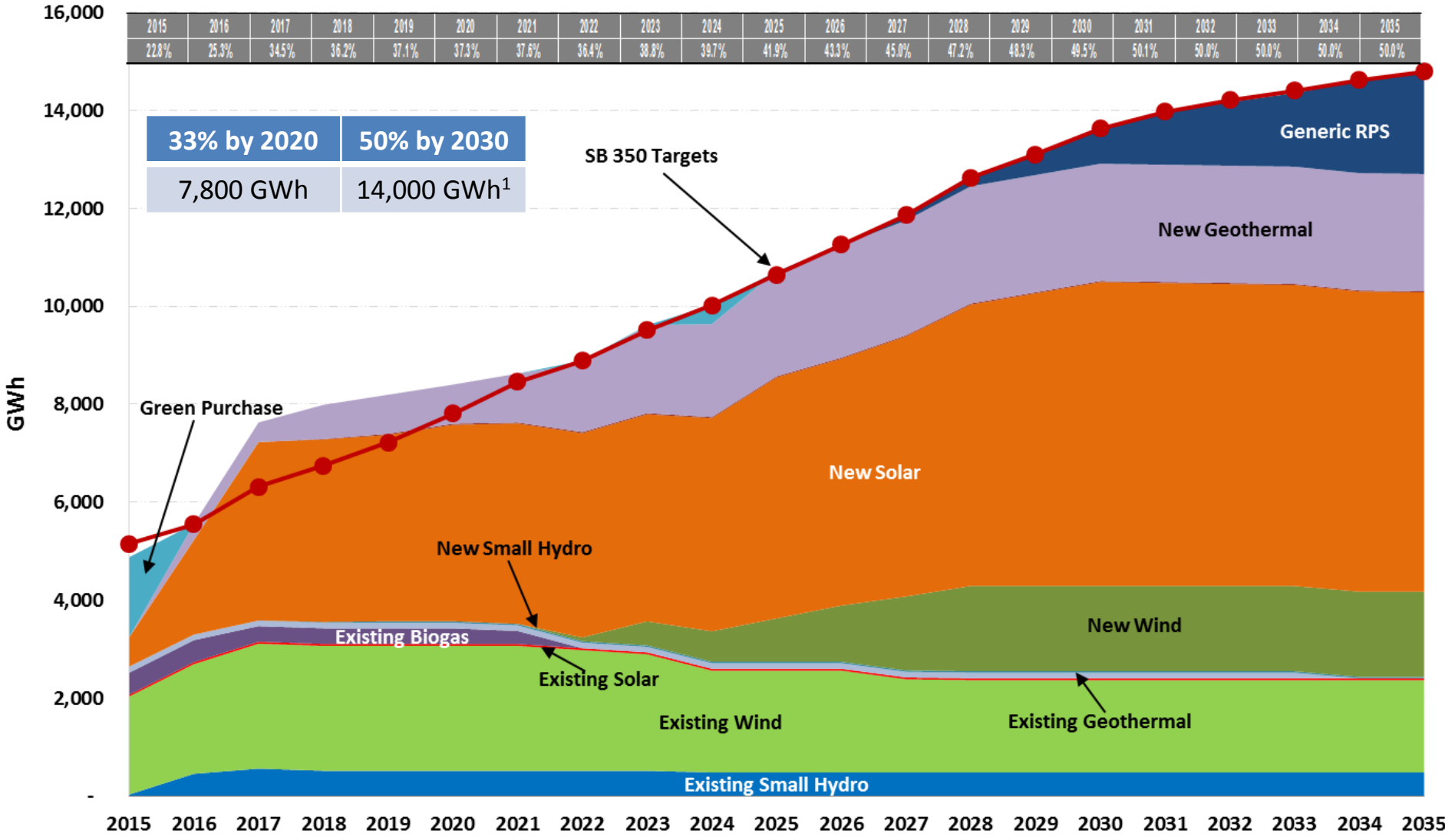


2015 IRP Recommended Case



Program/Initiative	Case	Year	Drivers
Coal Replacement	Navajo early divestiture	2016	SB1368, AB32, public feedback, core objective (environment)
	IPP early replacement	2025	
Energy Efficiency	15 percent less electricity usage than FY 2010; "advanced"	2020	AB2021, AB32, SB350, Mayor's pLAN, public feedback
RPS	25 percent of retail electricity sales	2016	SB2, AB32, SB350, Mayor's pLAN, public feedback, core objective (environment)
	33 percent of retail electricity sales	2020	
	40 percent of retail electricity sales	2024	
	50 percent of retail electricity sales	2030	
Local Solar	800 MW	2023	SB1, SB1332, Mayor's pLAN, public feedback
Transportation Electrification	2,344 GWh for 580,000 electric vehicles; "high"	2030	SB350, Mayor's pLAN, public feedback
Demand Response	200 to 500 MW	2026	SB1037, CEC
Energy Storage	Evaluate 154 MW for technical and economic viability	2021	AB2514, Mayor's pLAN, public feedback

Achieving 50% RPS by 2030



¹ Assumes 2,344 GWh of Electrification is Achieved

Energy Efficiency Programs



Commercial, Industrial, and Institutional

- Energy Efficiency Technical Assistance Program (EETAP)
- Commercial Lighting Incentive Program (CLIP)
- Custom Performance Program (CPP)
- Custom Express Program
- Retrocommissioning (RCx) Program
- Savings By Design (SBD)
- New Construction Incentive Program
- Food Service Program
- Commercial Direct Install (CDI) Program
- Commercial Heating, Ventilation, Air Conditioning (HVAC) Program

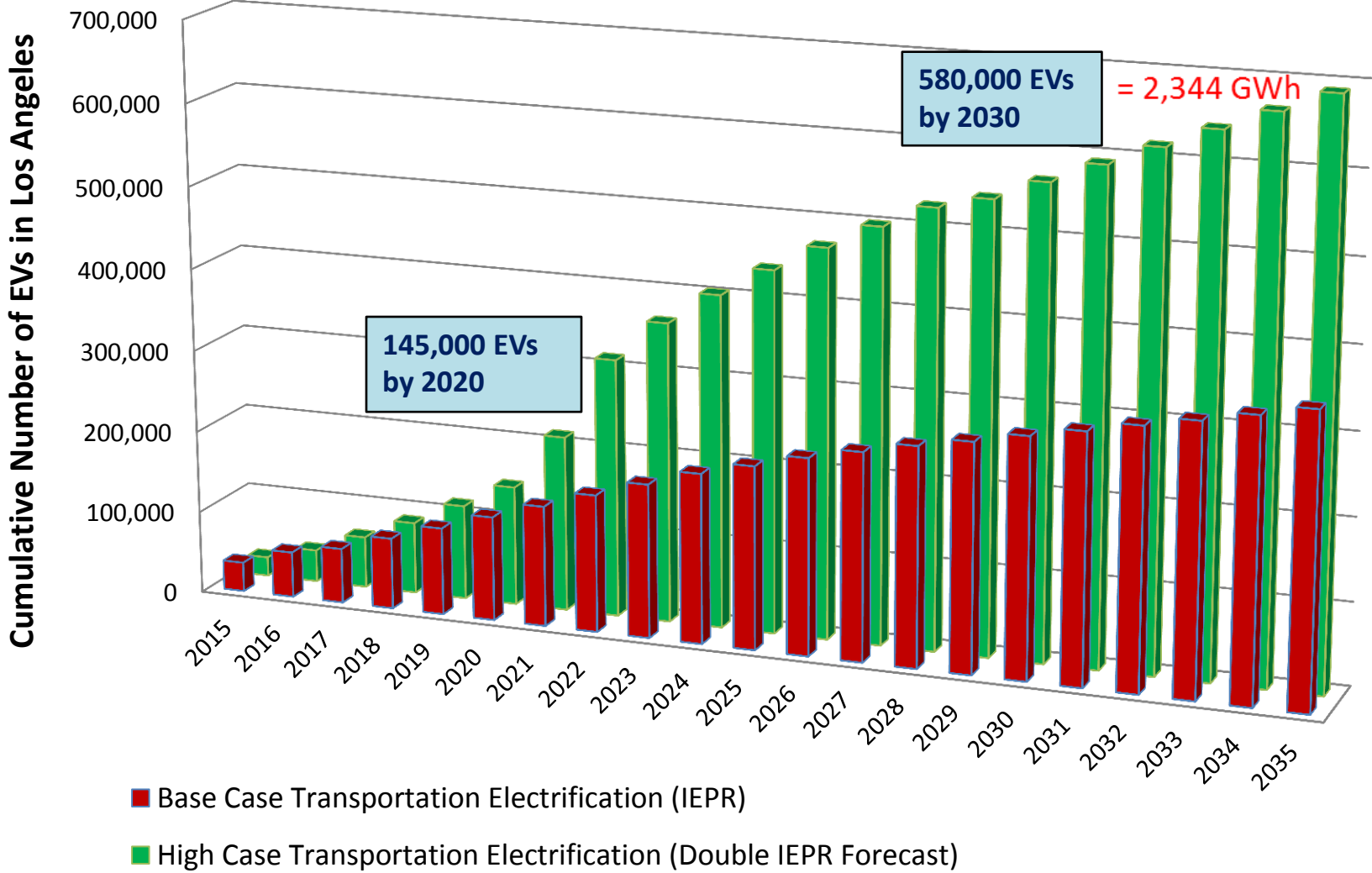
Mass Market Programs (Residential)

- *Home Energy Improvement Program (HEIP)**
- *Refrigerator Exchange Program (REP)**
- Appliance Recycling Program (ARP)*
- Consumer Rebate Program (CRP)*
- Solar Incentive Program (SIP)*
- Charge Up LA! – Home, Work and On the Go*
- Energy Upgrade California (EUCA)*
- Green Power for a Green LA Program (Green Power Program)*
- City Plants (CP)*
- California Advanced Homes (CAHP)
- LAUSD Direct Install Program (LDIP)
- Behavior-Based Energy Efficiency Program*
- Residential Lighting Efficiency Program*
- Air Conditioning Tune-Up Program*

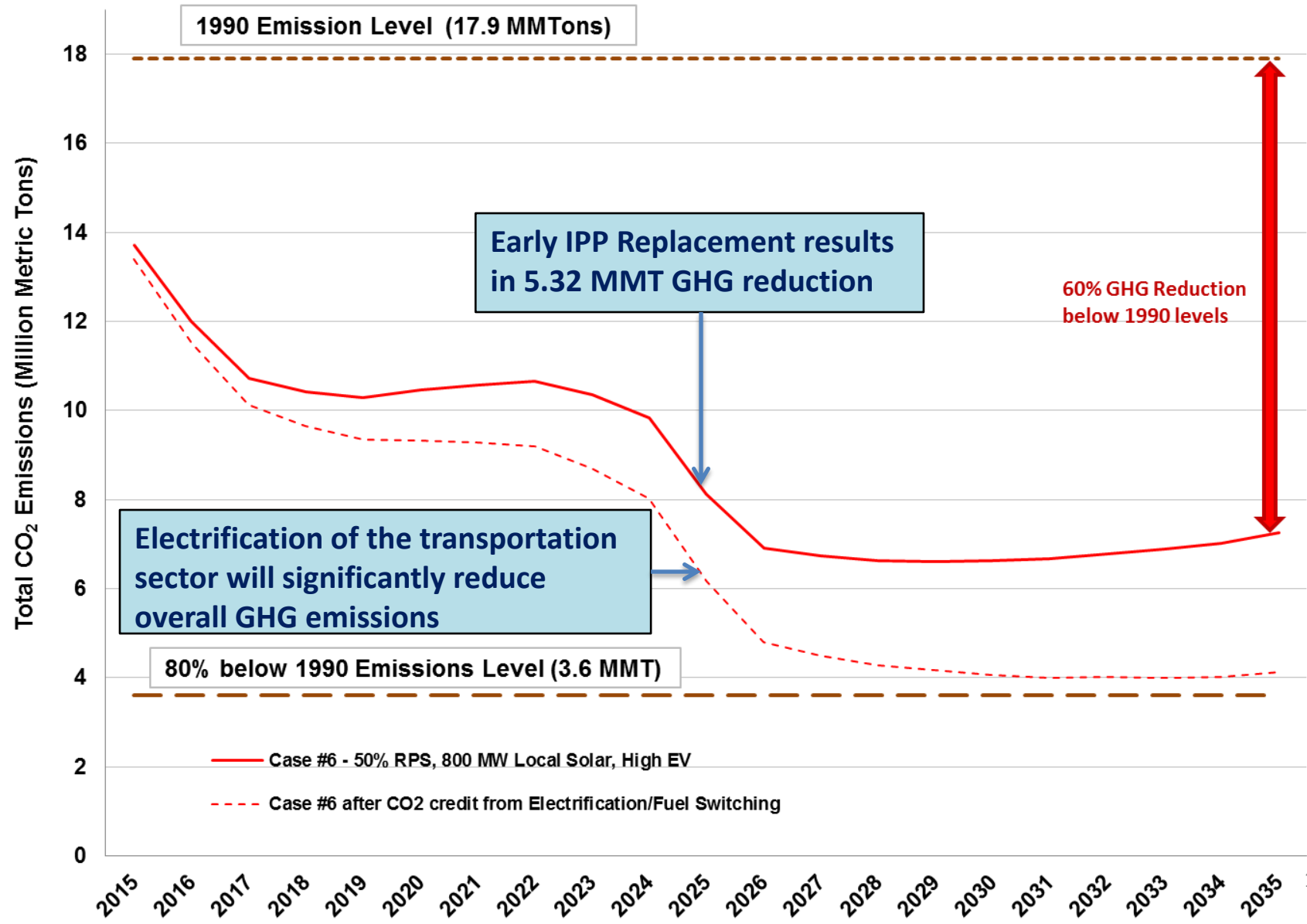


**Available to disadvantaged communities
Red text denotes programs targeted towards
disadvantaged communities*

Electric Vehicle (EV) Goals



GHG Emission Goals



Appendix



POWER SYSTEM RELIABILITY



Generation



Transformers
Major Inspections

Transmission



138kV UG Cables
138kV Stop Joints
Maintenance Holes
Restraints

Substations



Transformers
Circuit Breakers
Battery Banks

Distribution

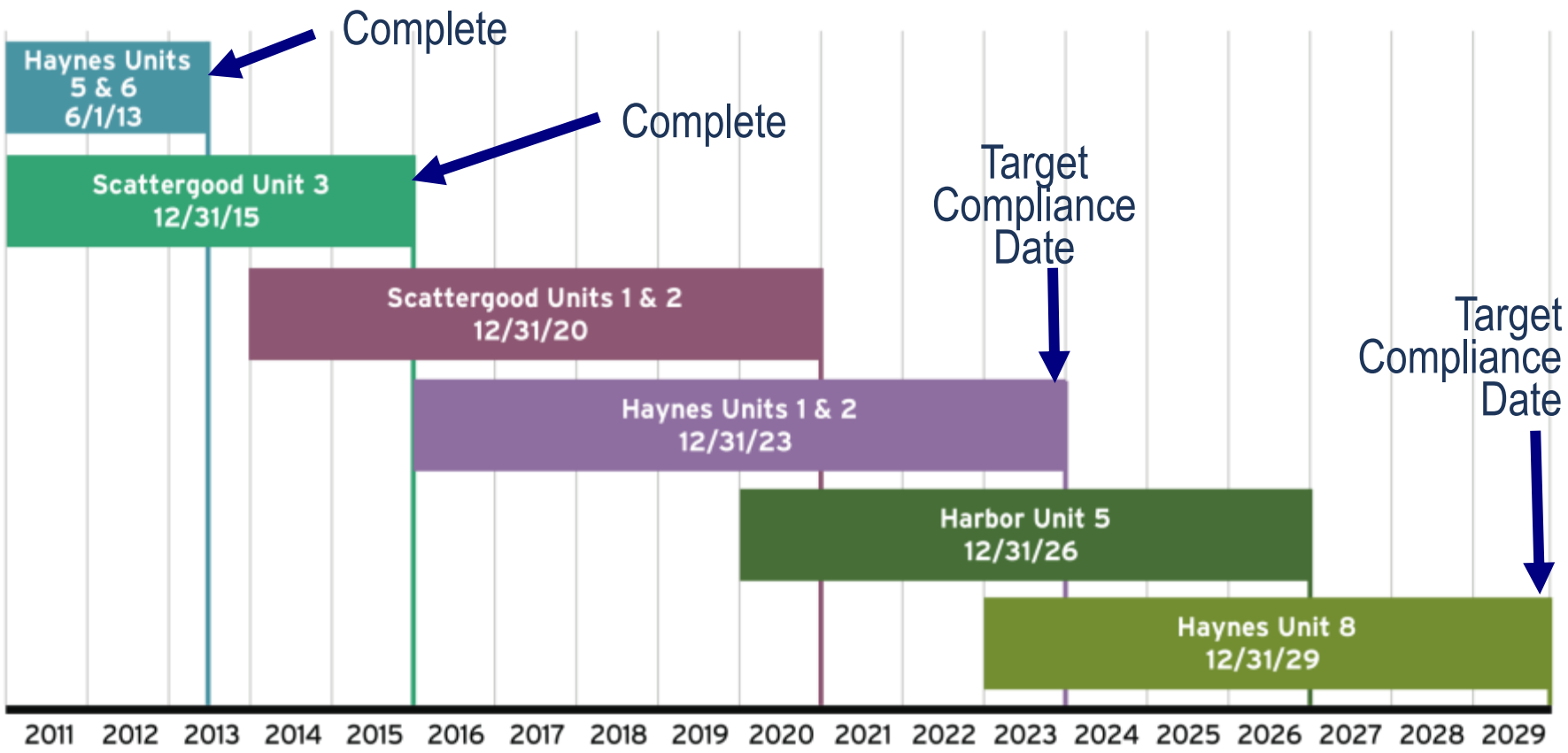


Poles
Crossarms
Lead and Synthetic Cables
Transformers
Substructures

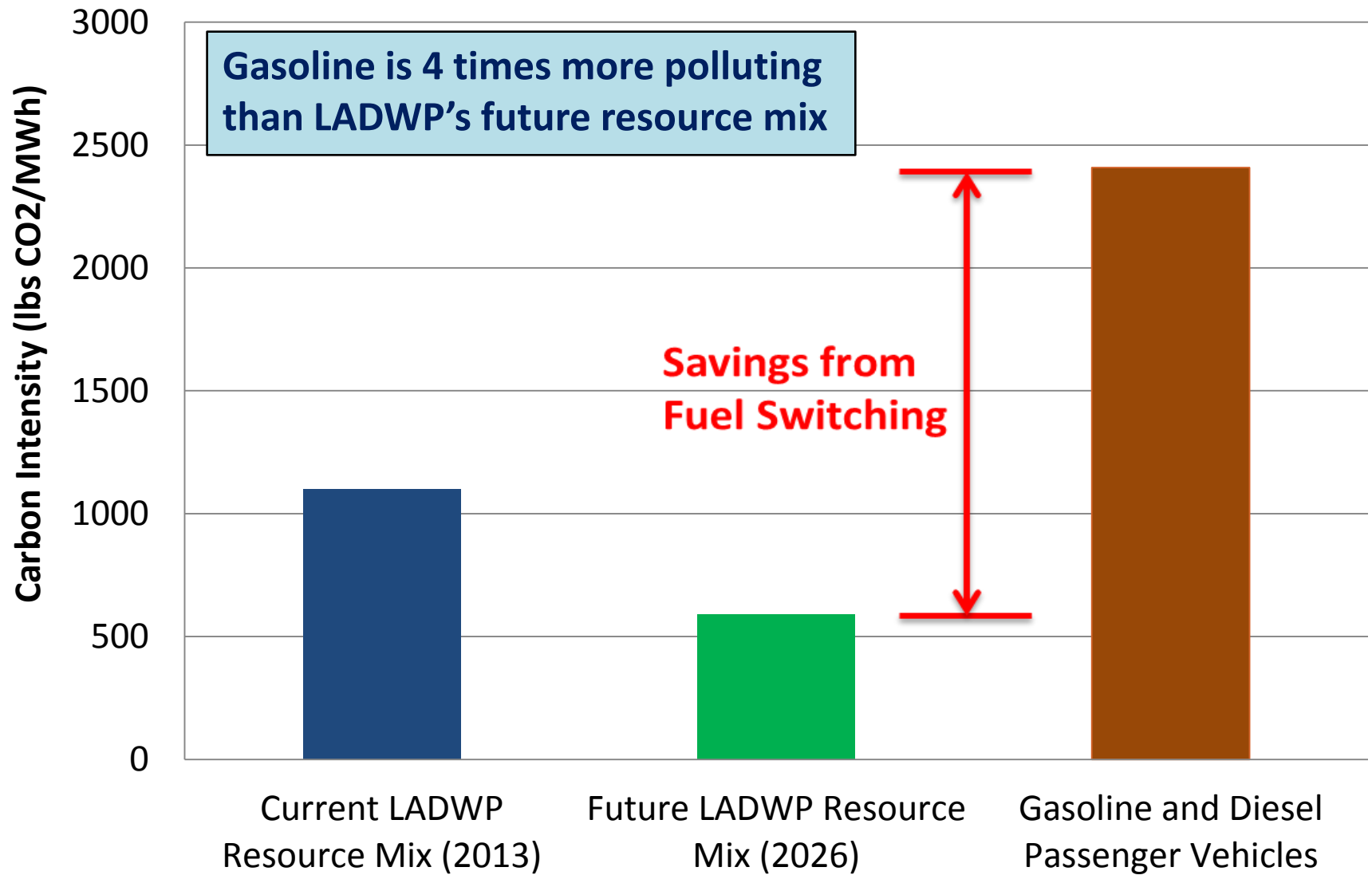
Eliminating OTC



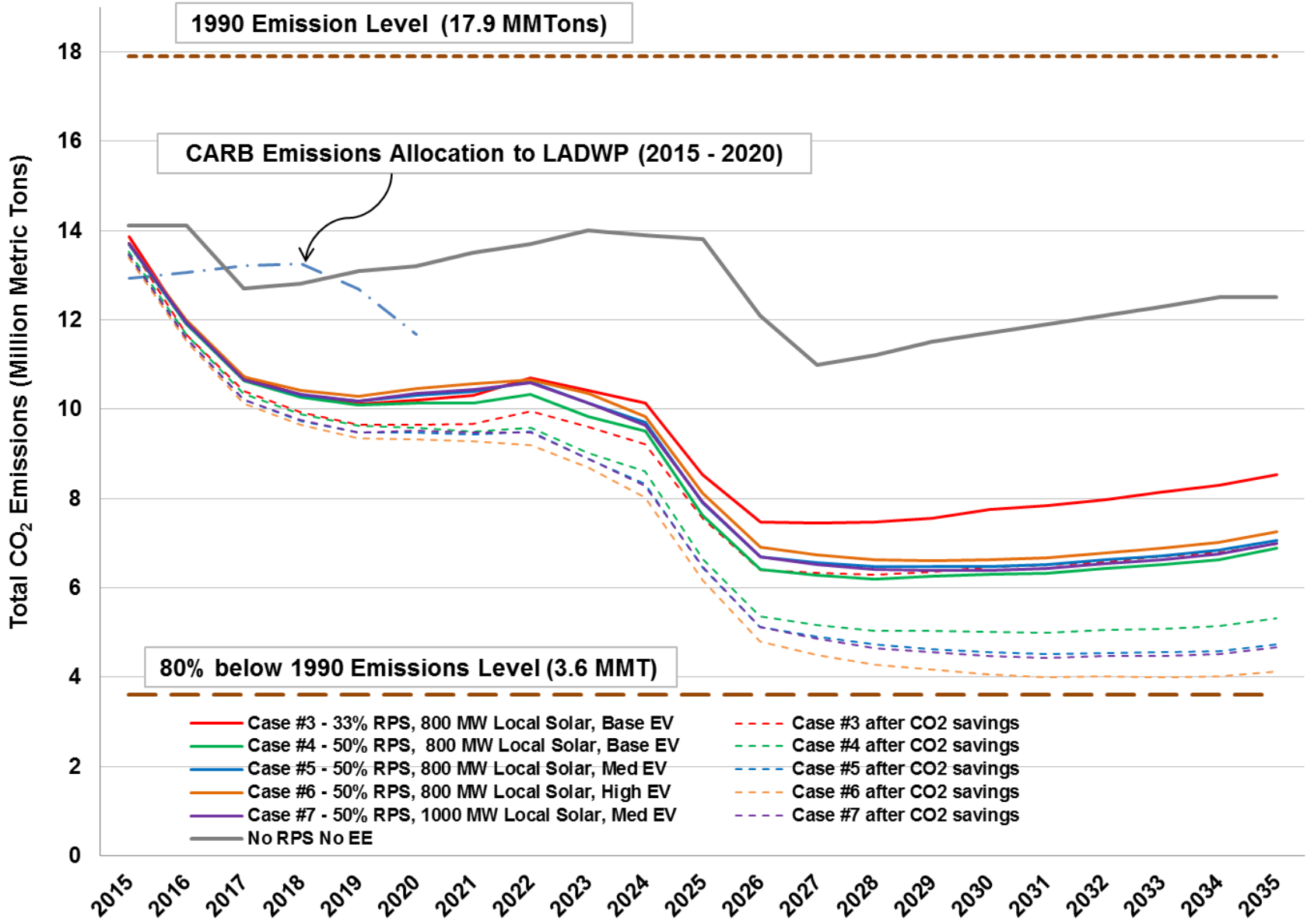
LADWP must replace 9 generating units at 3 Coastal Power Plants. No unit can be taken off-line until its replacement is ready.



Fuel Carbon Intensity



Case Comparisons of GHG Emissions



LADWP 2016 IRP Timeline



Kick-Off Meeting

