



NEXTCENTURY

BUILDING LA'S WATER & POWER FUTURE

LADWP POWER SUPPLY TRANSFORMATION

CEC Workshop – 2030 Electricity System Needs



L.A.'s Power supply was built over the last 100 years.



Over the next 15 years, Los Angeles Department of Water and Power (LADWP) will replace over 70 percent of it . . .

Power Supply Transformation Elements

Reach 33 percent Renewable Energy by 2020

Interim Target: 25 percent by Calendar Year 2016

Includes solar, wind, hydroelectric, geothermal, and biogas energy resources

Includes expanded local solar program (Solar Incentive and new Feed-in Tariff programs)

Eliminate Coal from LADWP's Power Supply

Navajo Generating Station

Intermountain Generating Station

Rebuild Coastal Power Plants to Eliminate Ocean Water Cooling and Integrate Renewables

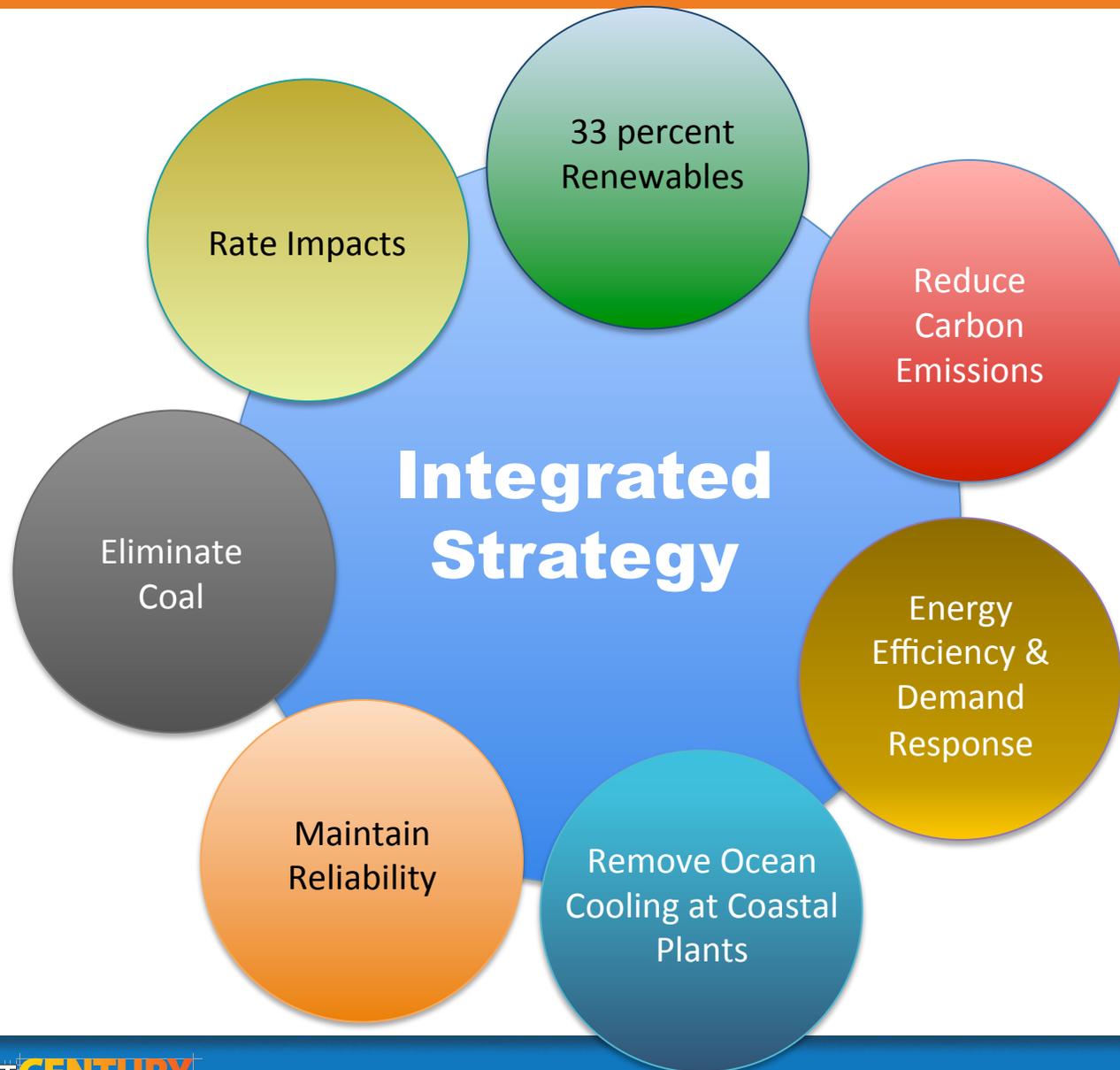
Haynes, Scattergood and Harbor Generating Stations

Achieve at Least 10 percent Energy Efficiency by 2020

Invest in Power Reliability Program

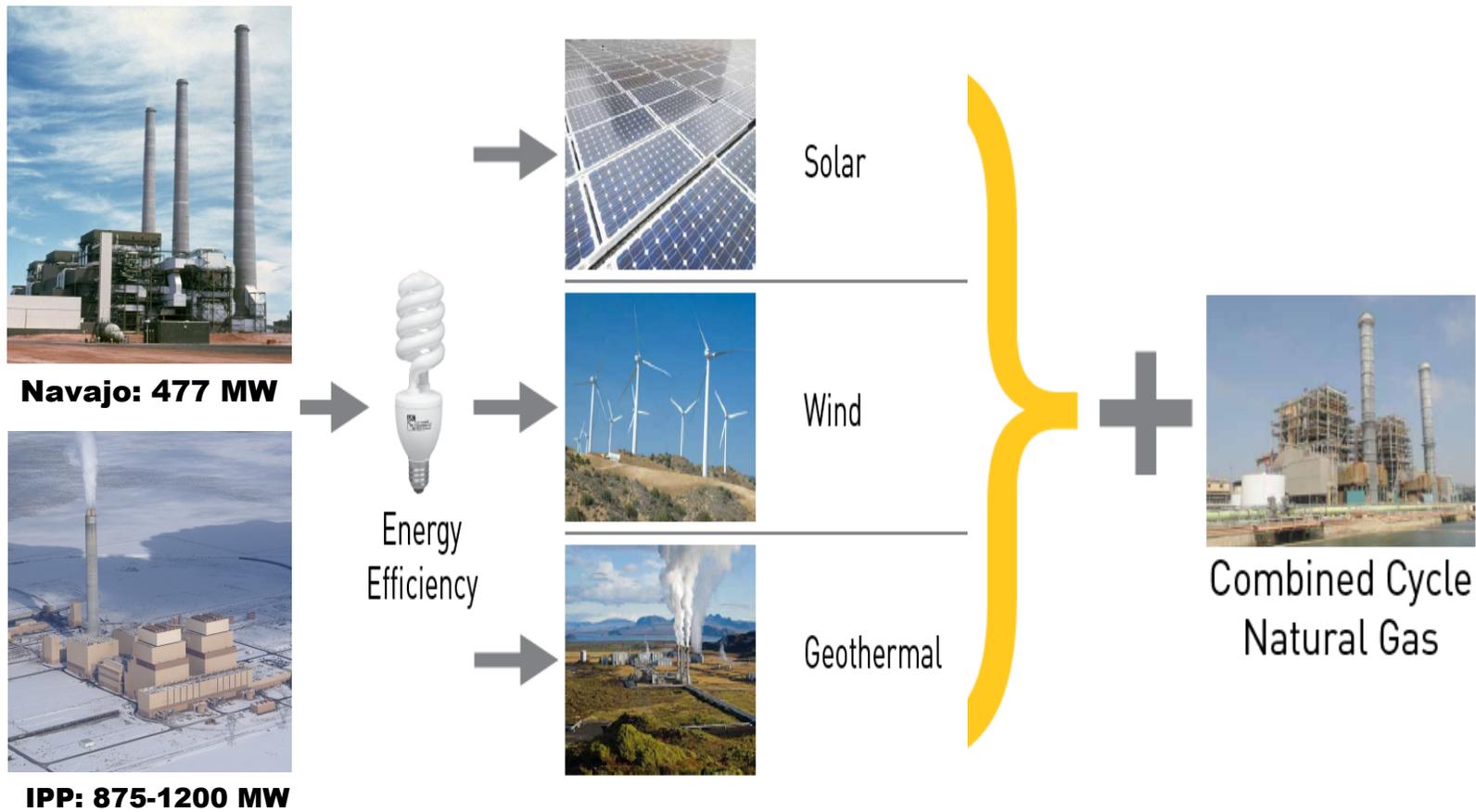
Replace aging and inadequate infrastructure

Challenges of Transformation



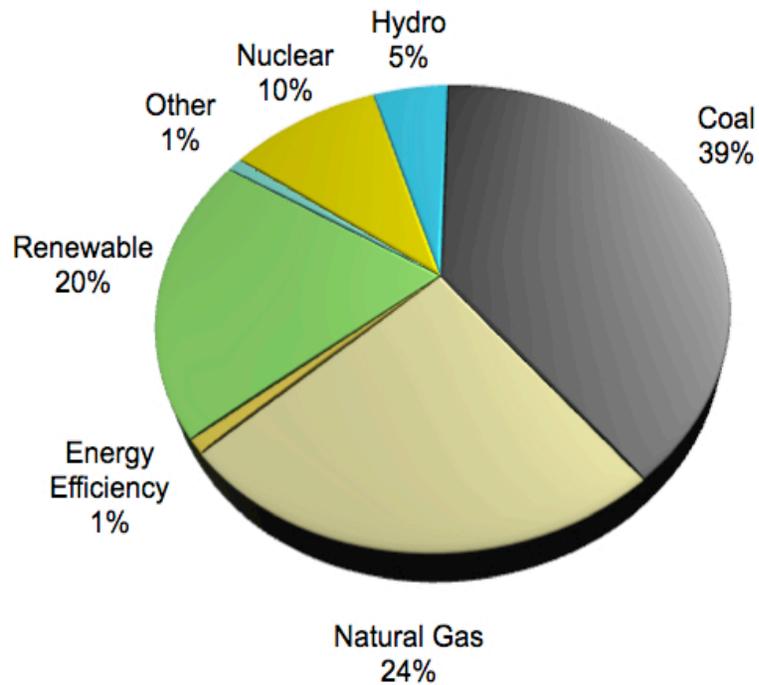
Coal Transition and Supply Integration

We are moving forward with eliminating coal from our energy mix. To maintain reliable energy supply without coal requires careful integration of all transformation elements.

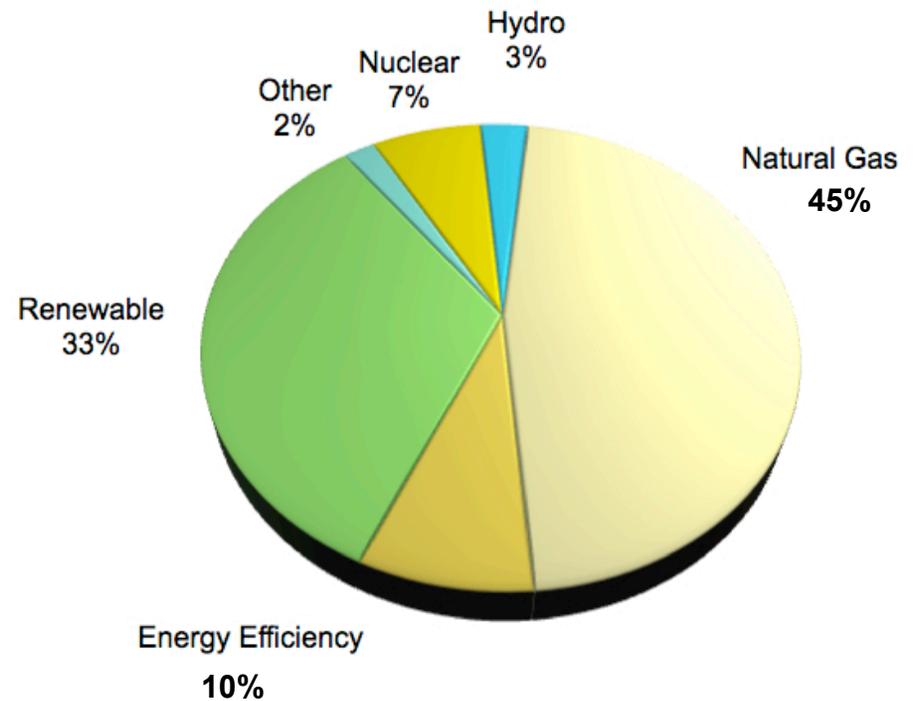


Transformation of Energy Sources

Present

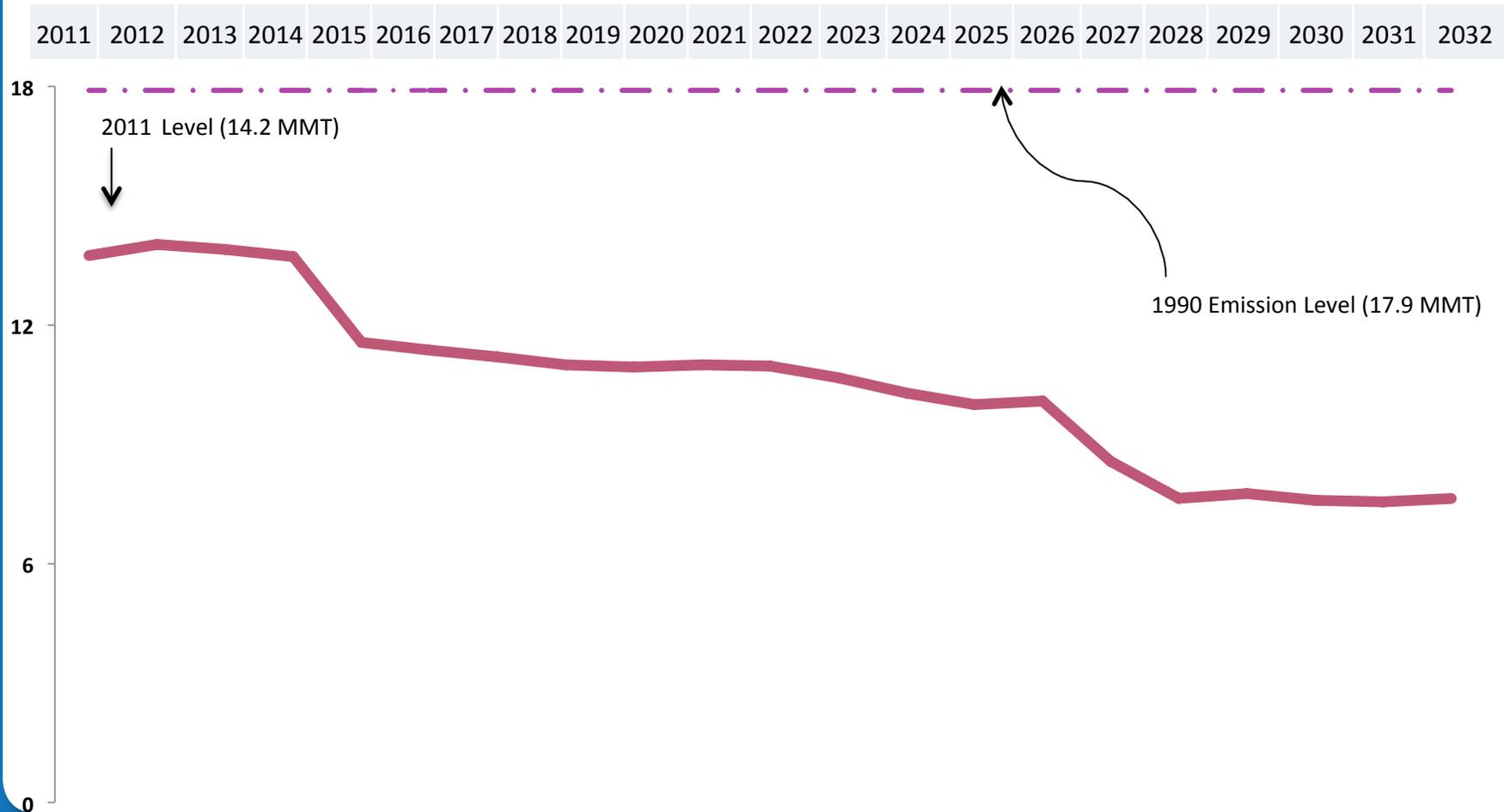


Future



Los Angeles' Clean Energy Future

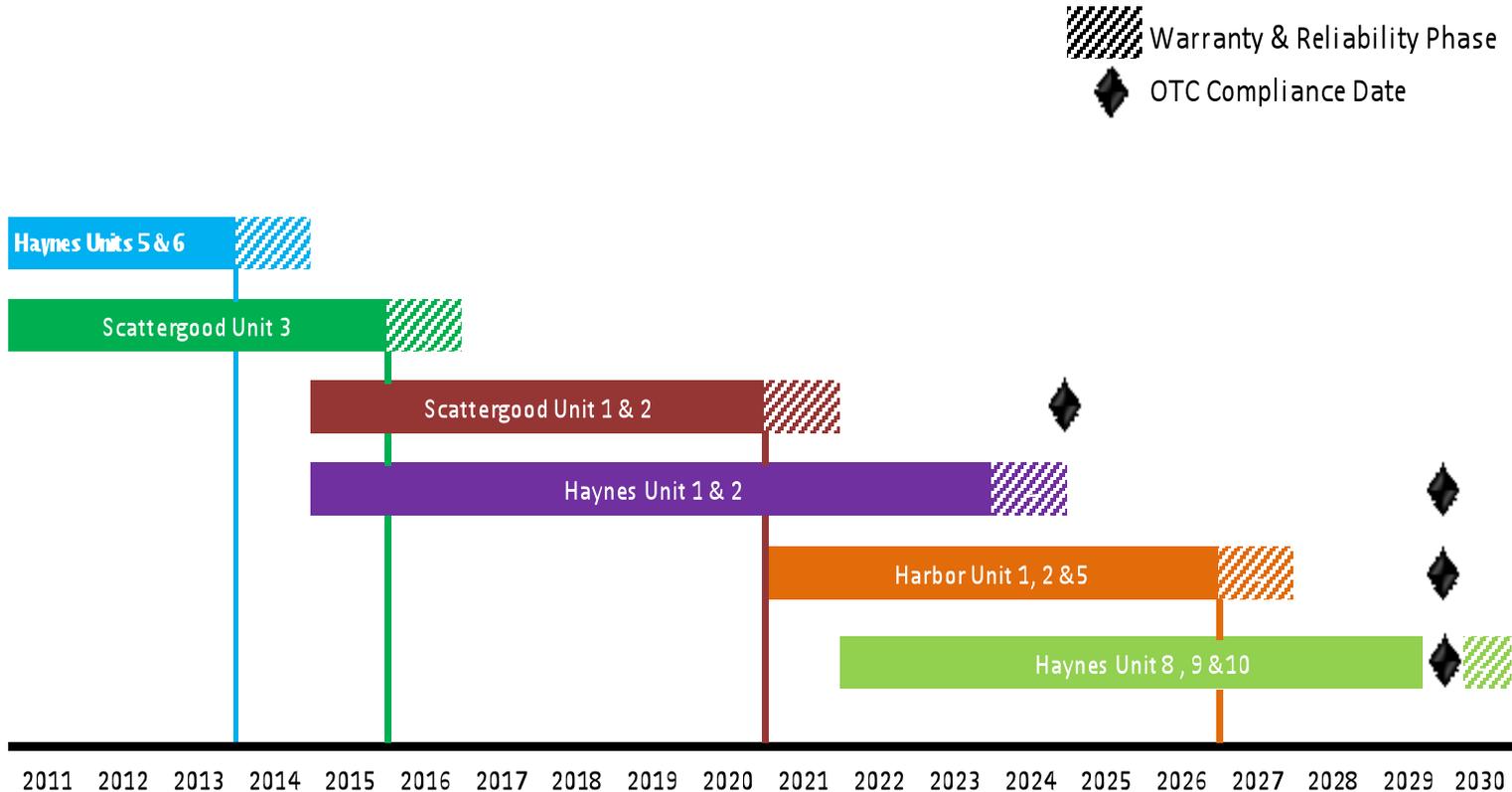
LADWP's CO₂ emissions are 21 percent below 1990 levels, and are expected to be 60 percent below the 1990 level by 2025.



Road to Once-Through-Cooling Compliance

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

OTC REDUCTION TARGET DATES



Increasing Renewable Energy and Energy Efficiency (EE)

RPS (SB2 1X)

Targets:

25 percent by 2016

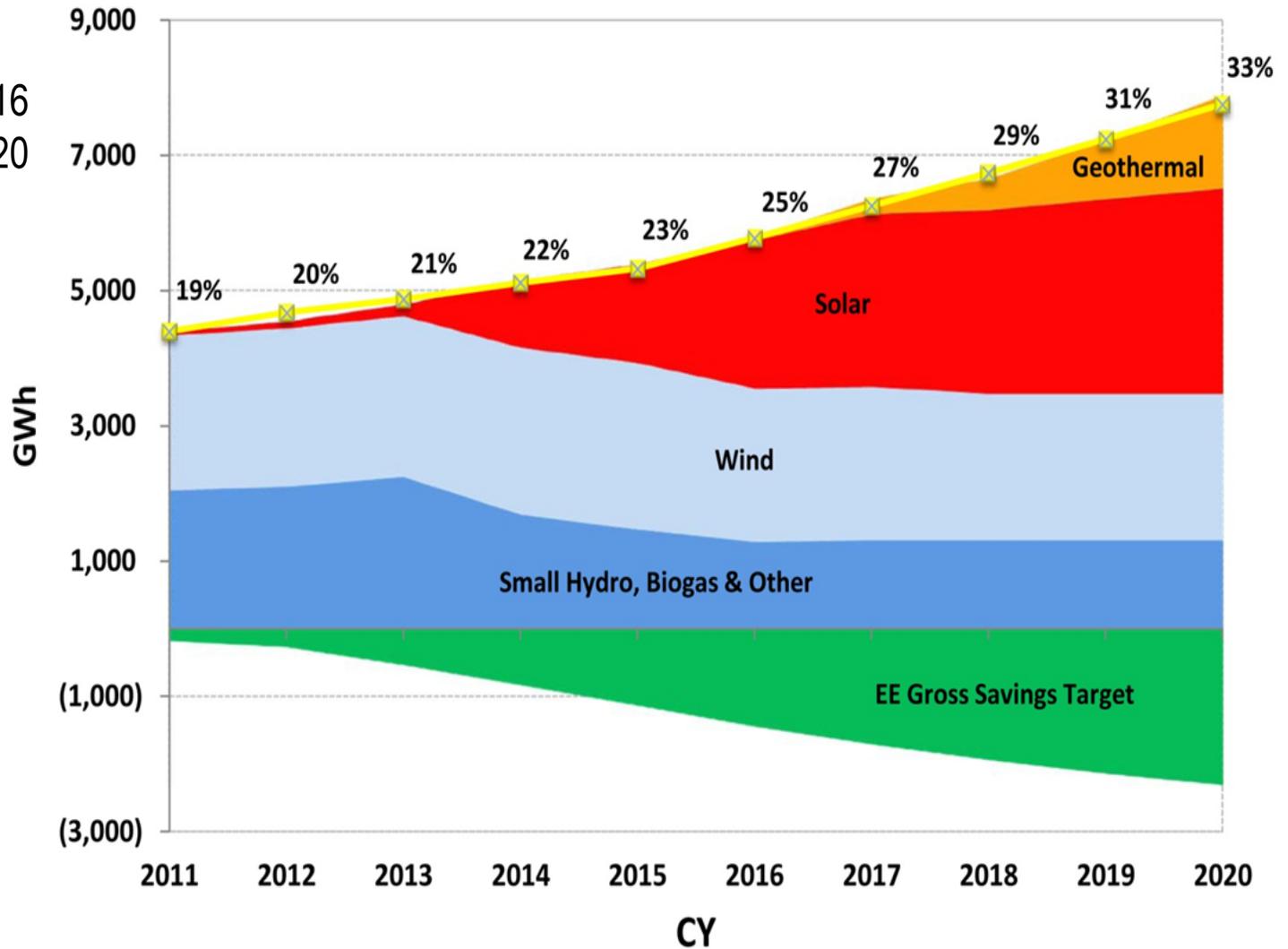
33 percent by 2020

EE (AB2021)

State Goal:

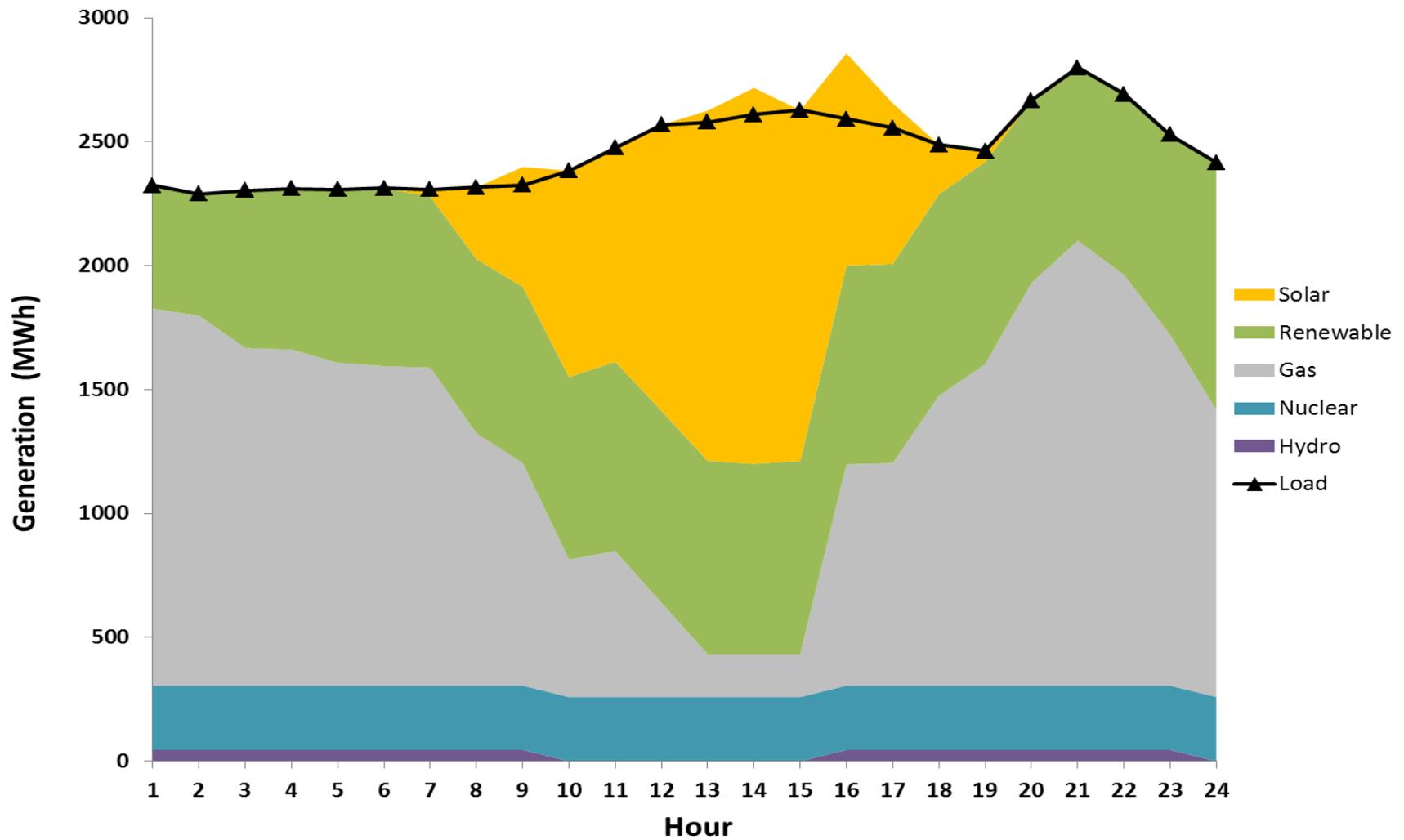
10 percent by 2020

- Small Hydro, Biogas & Others
- Wind
- Solar
- Geothermal
- EE Gross Savings Target (shown as "-" numbers)
- RPS Target



Integration Challenge

Sunday- April 2027 (33% RPS)



Issues to be Addressed

- **Ability to Respond to Fluctuations of VER's**
 - Nimble gas and hydro generation
 - Demand response programs
 - Utility scale proven and cost effective storage
 - EV charging response programs
- **Ability to Control VER's**
 - Output and Ramp
 - Voltage Regulation, Frequency
 - Information systems to control 1000's of power plants
 - Greater regional coordination within WECC
- **Better Understanding of Stability of Transmission System**
 - Ability to build transmission
- **Better understanding of impact of local VER's on Distribution System**

Issues to be Addressed (continued)

- **More flexibility and diversity in a renewable portfolio**
 - In-state and out-of-state biogas
 - Out-of-state resources
 - Focus on GHG reduction
- **Financing**
 - Rate impacts
 - Cost/benefit comparison with other forms of GHG reduction
 - Reflection of total cost of increasing renewables
- **Better Predictive Technologies**
 - Real-time weather forecasts
 - Predict voltage instability based on variability

Conclusion

Policy adjustments need to be informed based on the experience of “what we will have” and targeted studies on “what it will take”

Policy should be based on the most cost effective measures to achieve GHG goals

For More Information

www.ladwp.com

The screenshot shows the LADWP website interface. At the top, there is a navigation bar with the LADWP logo, the phone number 1-800-DIAL DWP (1-800-342-5397), and a 'Contact Us' button. Below this is a secondary navigation bar with tabs for 'Who We Are', 'Water', 'Power', 'In Our Community', 'Finances & Reports', 'Upcoming Events', and 'Careers'. The main content area is titled 'Power' and features a sidebar with various links: 'Past & Present', 'Facts & Figures', 'Power Content Label', 'Integrated Resource Planning' (highlighted), 'Plan Overview', 'Community Outreach Documents', 'FAQs', 'Power Reliability', 'Power Quality', 'Renewable Energy', 'Projects', 'Energy Efficiency & Rebates', 'Electric Safety', 'Smart Grid L.A.', and 'Rates'. The main content area is titled 'Integrated Resource Planning' and includes a section for 'Reliability of the Power System' with a photo of workers on a power line. Below this are sections for 'Integrated Resource Plan' and 'Project Documents'. The 'Project Documents' section contains the text: 'LADWP's 2012 Final Power Integrated Resource Plan is now available. To view or download a copy, please see all 2012 IRP documents →.' The arrow in this text is circled in red.