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

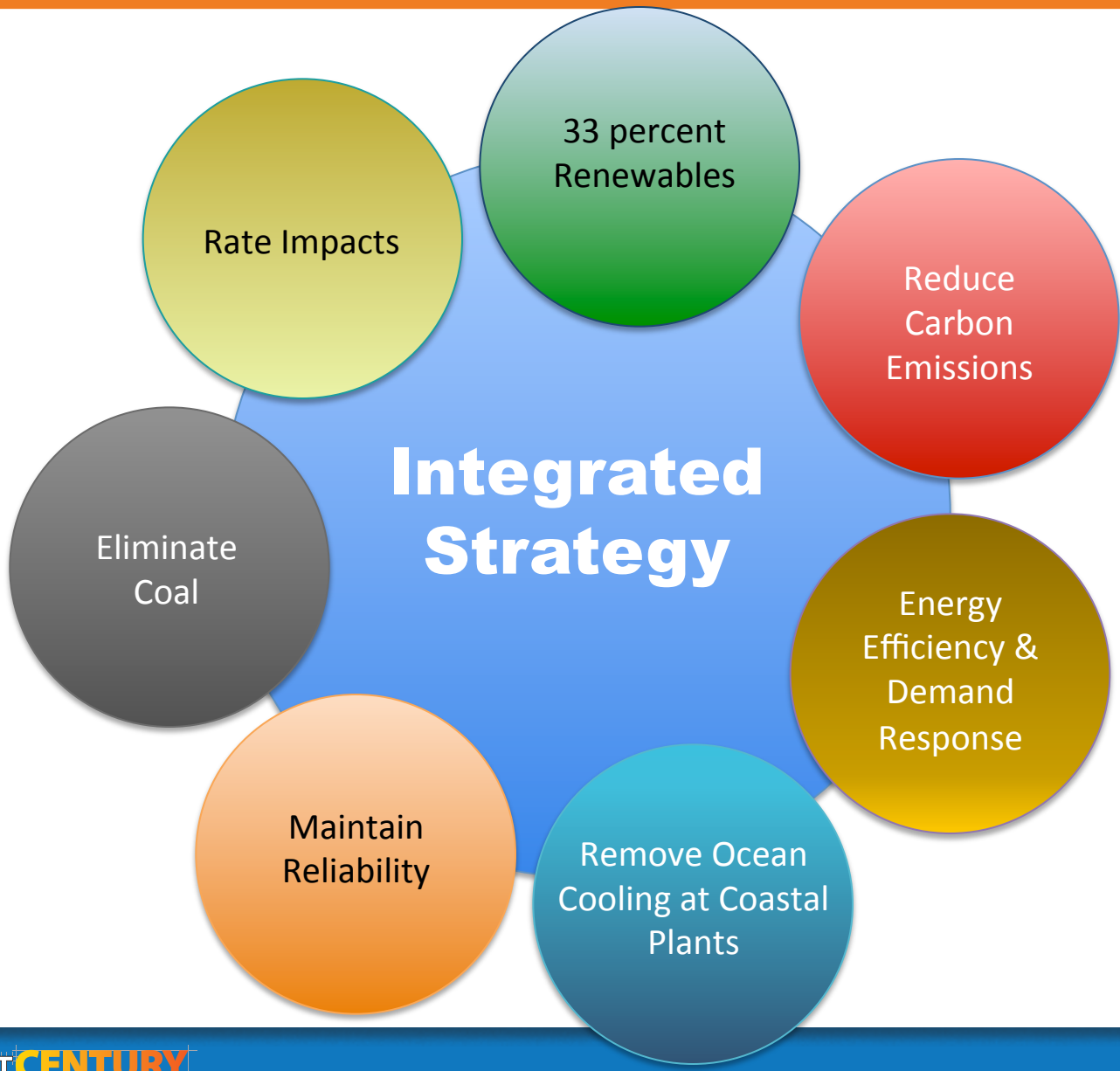
Haynes, Scattergood and Harbor Generating Stations

Achieve at Least 10 percent Energy Efficiency by 2020

Invest in Power Reliability Program

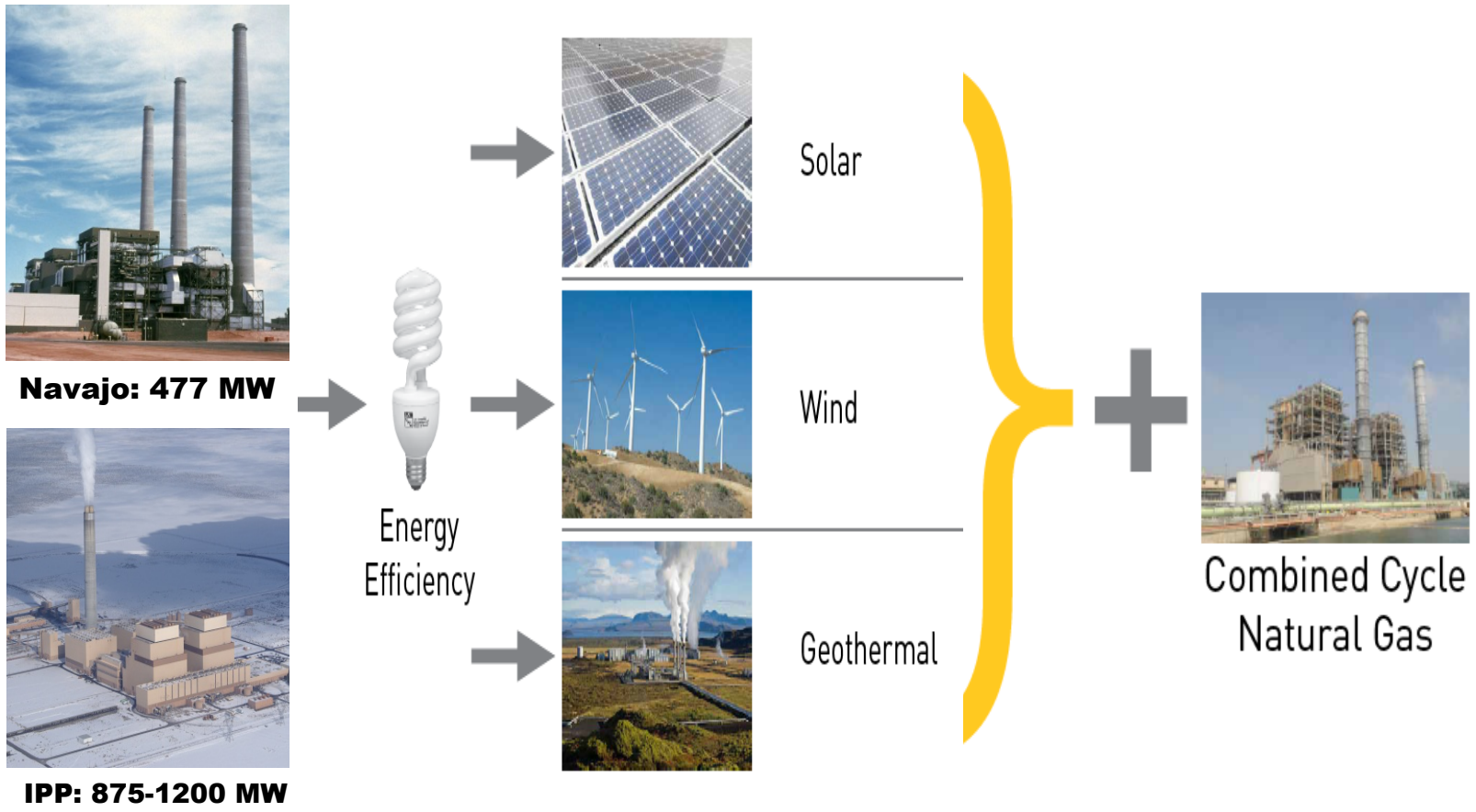
Replace aging and inadequate infrastructure

Challenges of Transformation



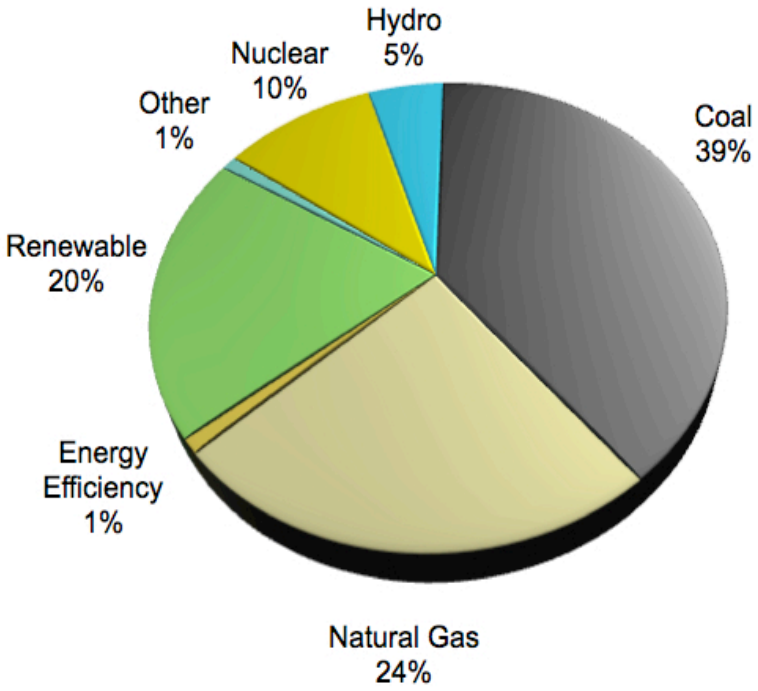
Coal Transition and Supply Integration

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.

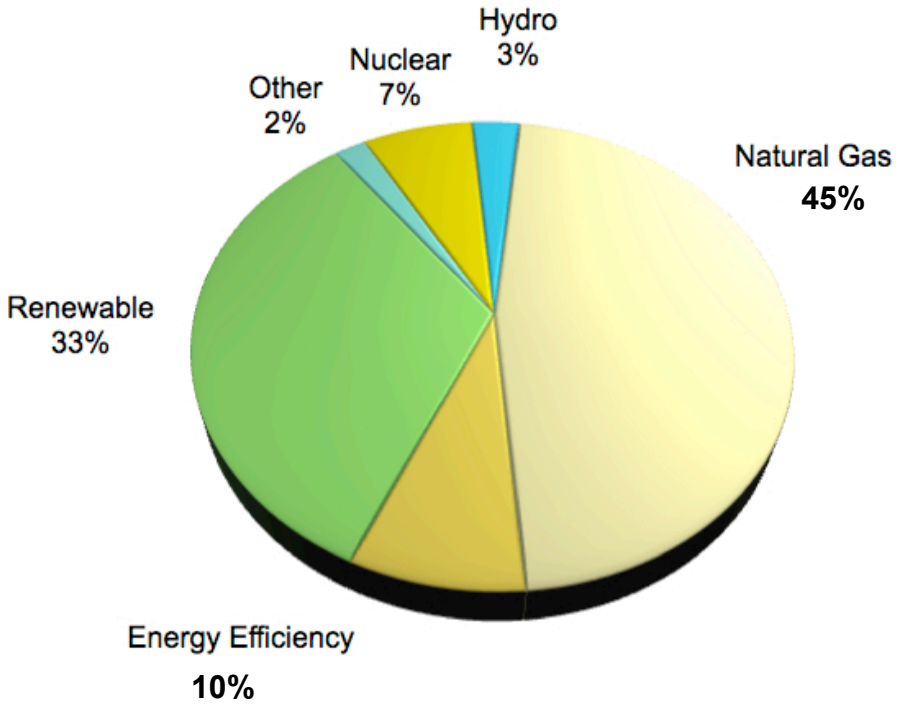


Transformation of Energy Sources

Present

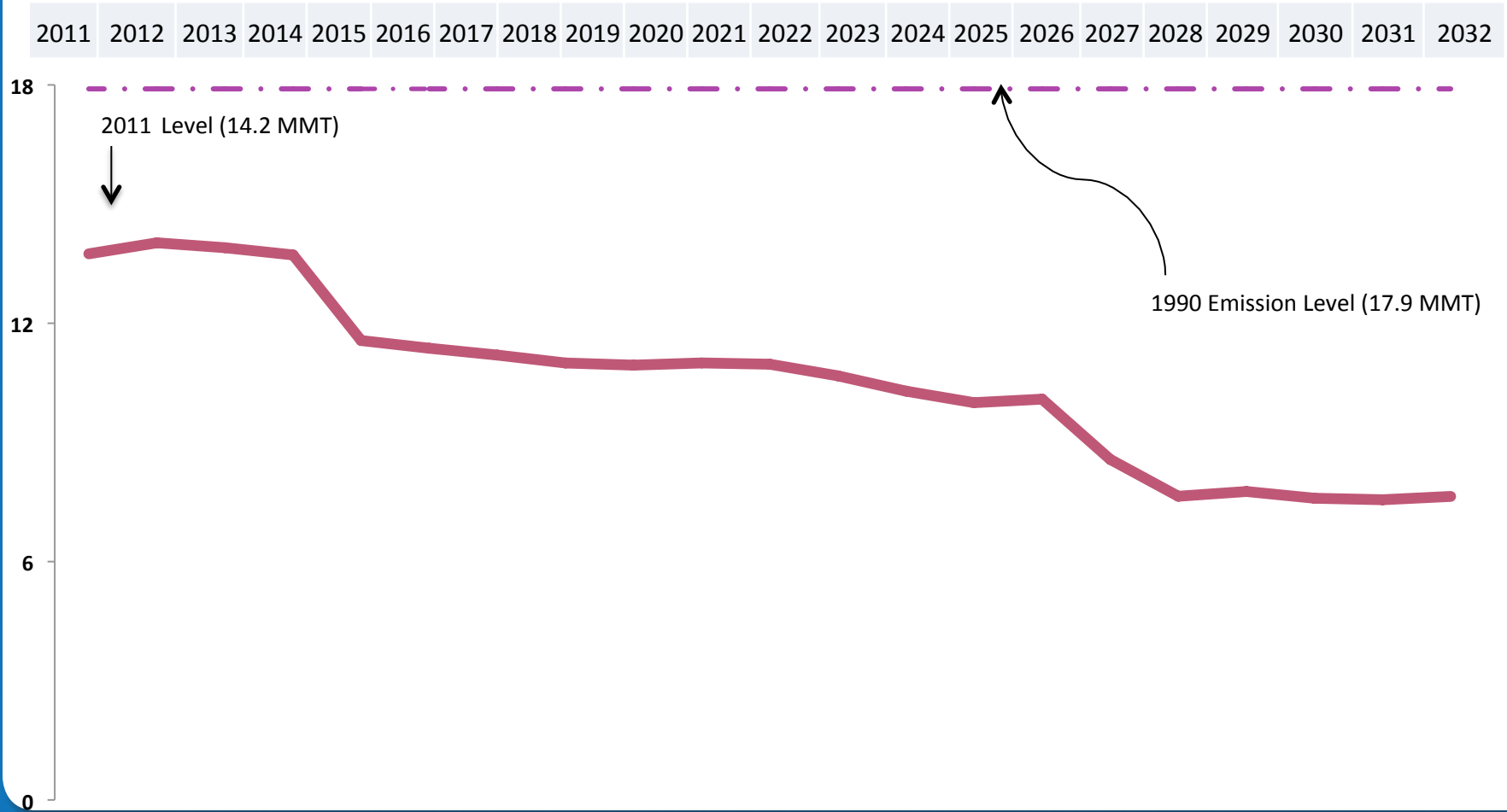


Future



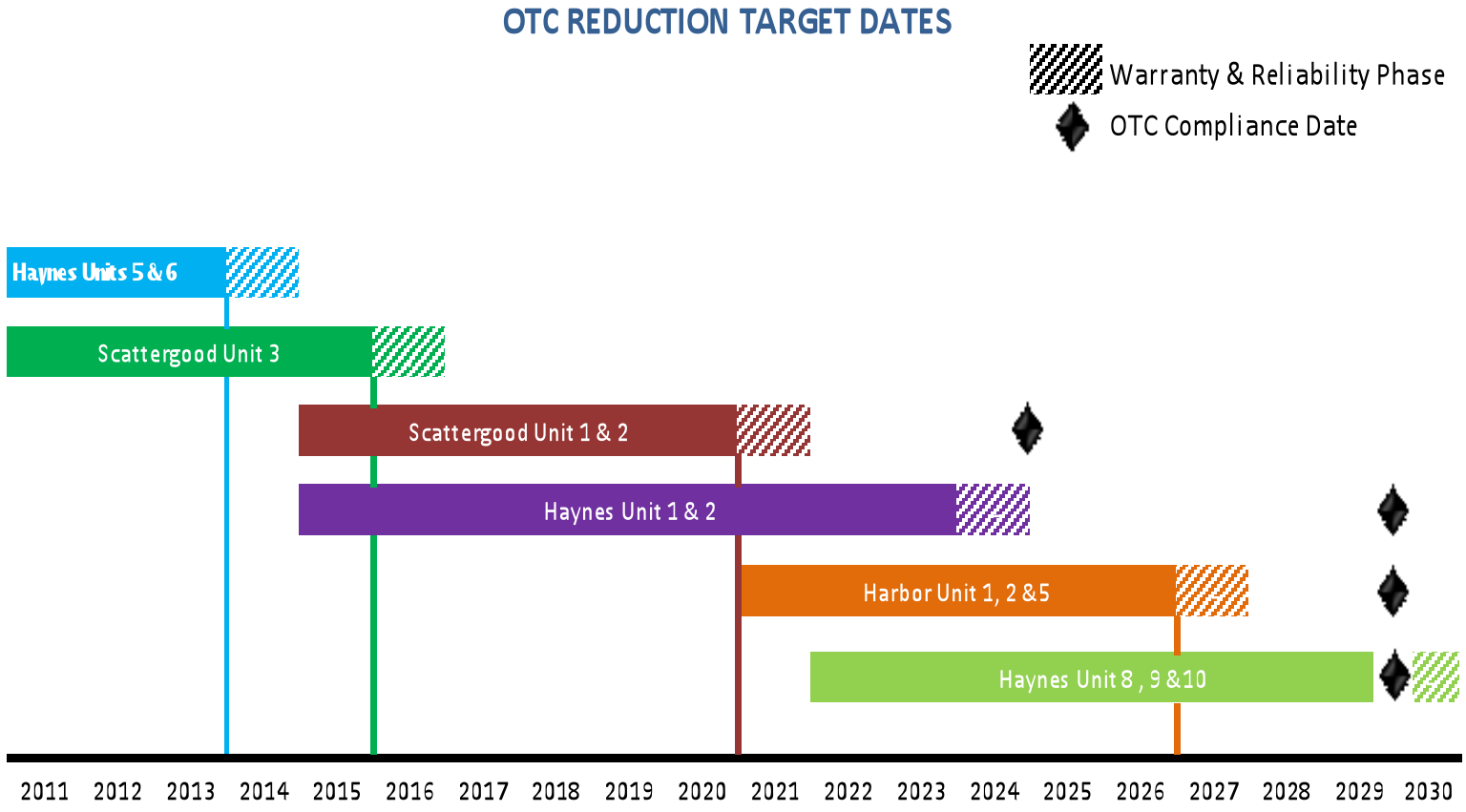
Los Angeles' Clean Energy Future

LADWP's CO_2 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

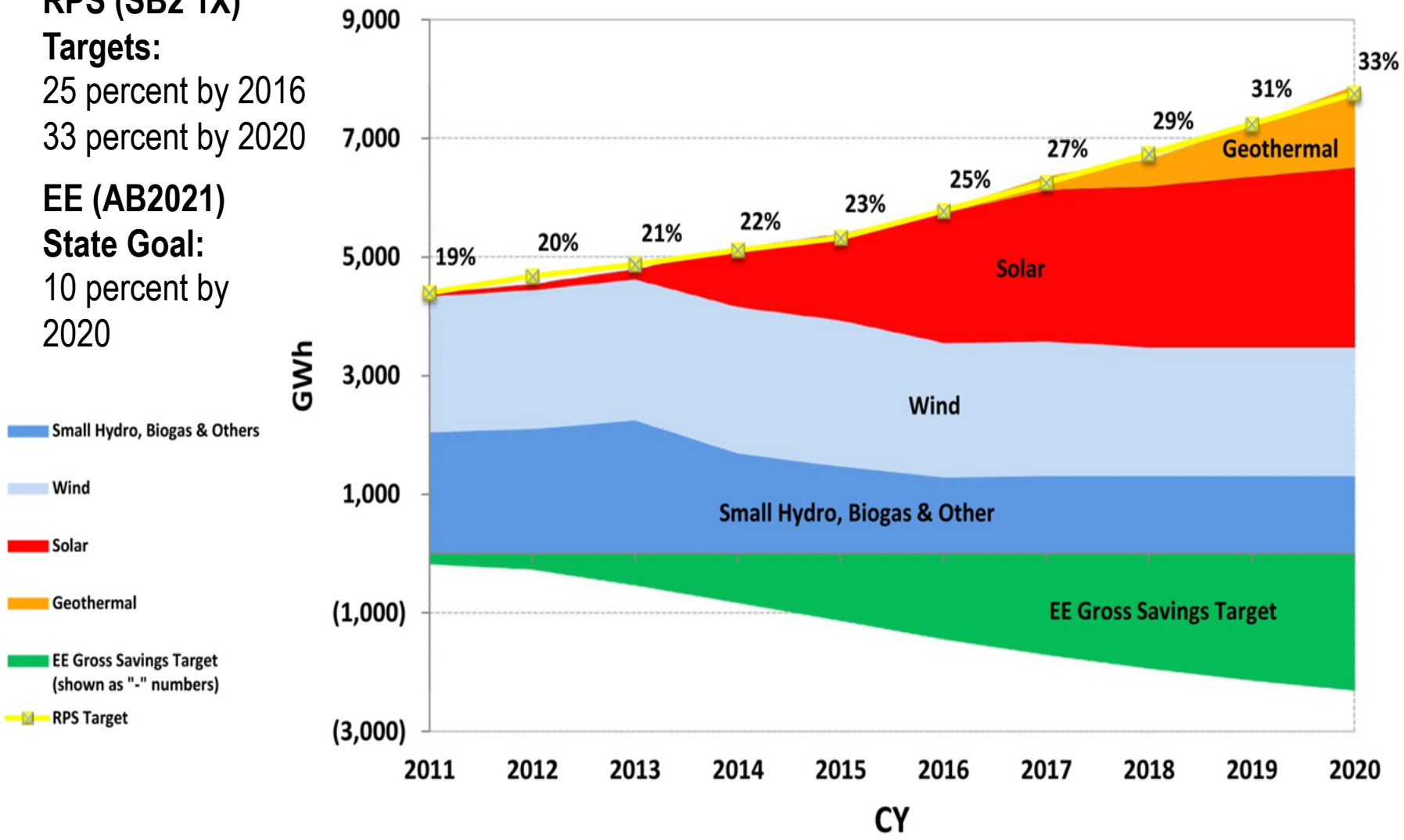
LADWP must replace 9 generating units at 3 Coastal Power Plants. No unit can be taken off-line until its replacement is ready.



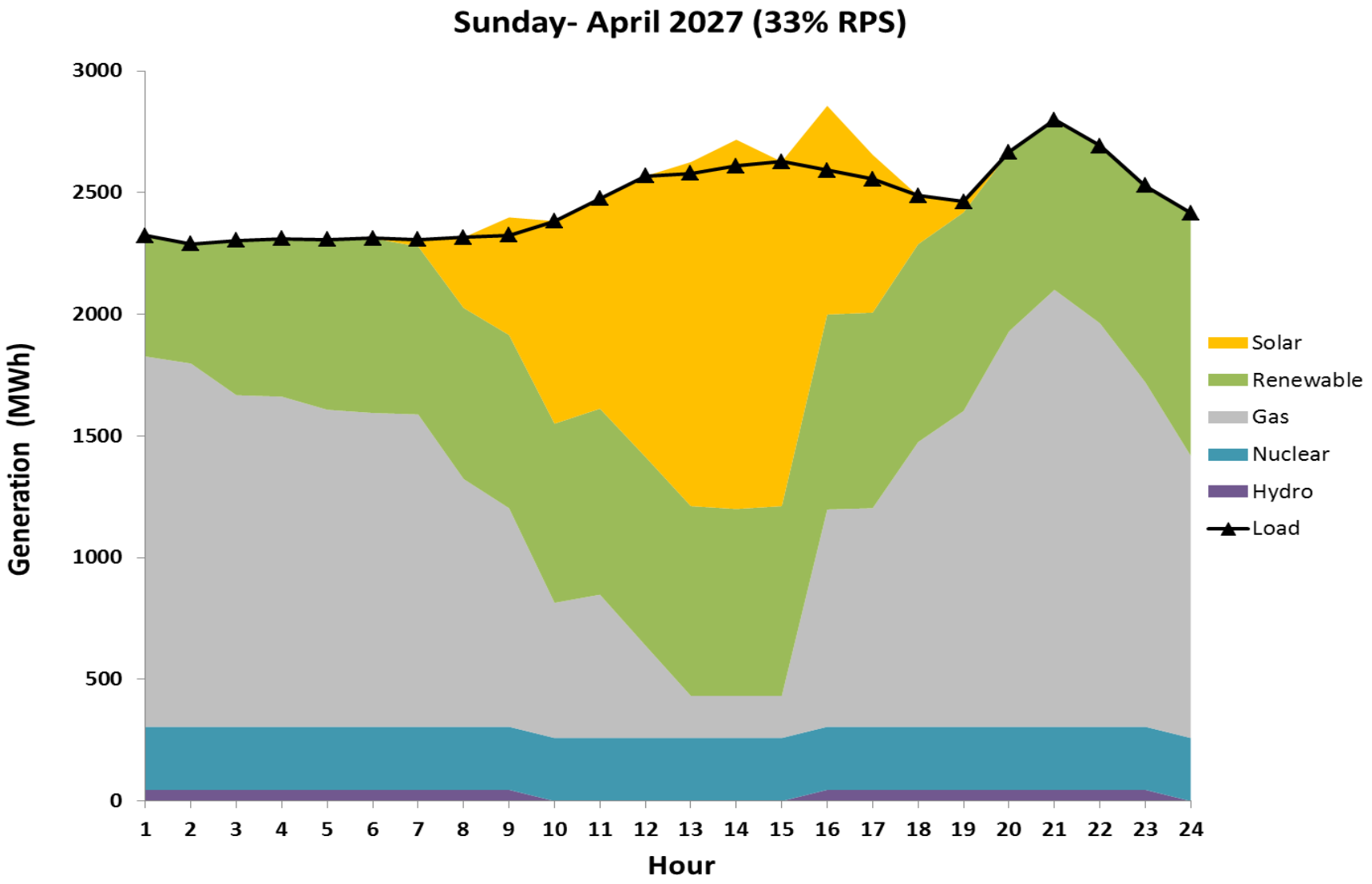
Increasing Renewable Energy and Energy Efficiency (EE)

RPS (SB2 1X) Targets:
25 percent by 2016
33 percent by 2020

EE (AB2021) State Goal:
10 percent by 2020



Integration Challenge



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