Los Angeles Department of Water & Power

Next Century Water and Power:
Efficiency Solutions for LA

Data Analytics and Energy Efficiency
ACEEE Intelligent Efficiency Conference

December 7, 2015

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Data Analytics and Energy Efficiency Agenda

- Why Energy Efficiency for LA?
- Commercial sector key to LADWP's energy efficiency goals
- Data analytics and energy efficiency
  - Remote assessments and audits
  - LA Unified School District pilot
  - Phased roll-out to our larger commercial customers
- Potential to reinvent commercial program EM&V

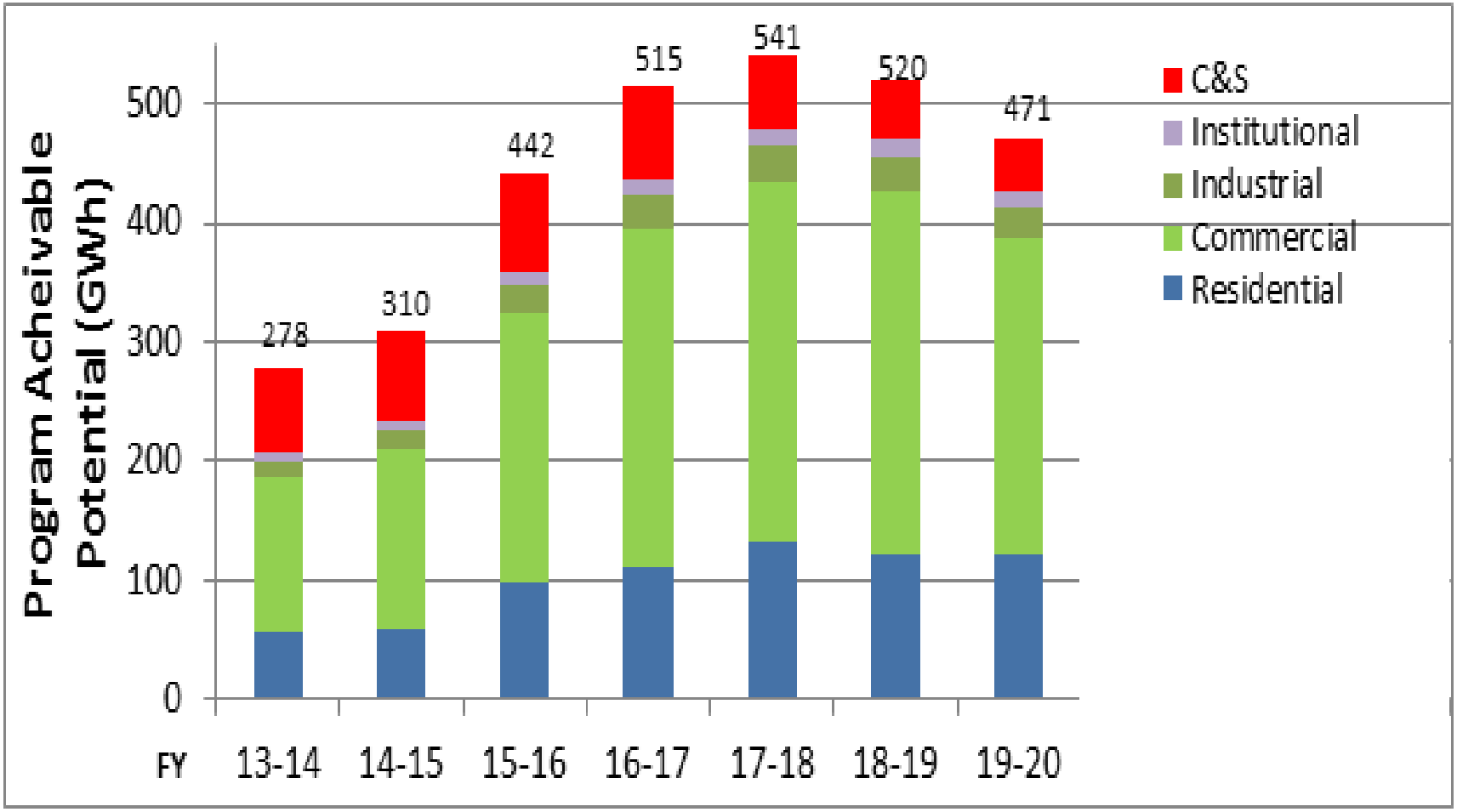
Next Century Power: Why Energy Efficiency for LA?

- Drivers:
  - LADWP plans to exit coal by 2025
    - CA AB 32 – Environmental Leadership
    - Coal about 33% of power supply today
  - Transportation Electrification
    - CA AB 32
    - 100% conversion of LDV would double our load
  - Other drivers: population growth, climate change, rising affluence (plug loads)

- Options:
  - New Power Sources
    - Natural gas
    - Renewables – 33% State-mandated by 2020
    - Energy Efficiency (EE) – 15% goal by 2020
  - How much more EE and Renewables by 2030? 2050?

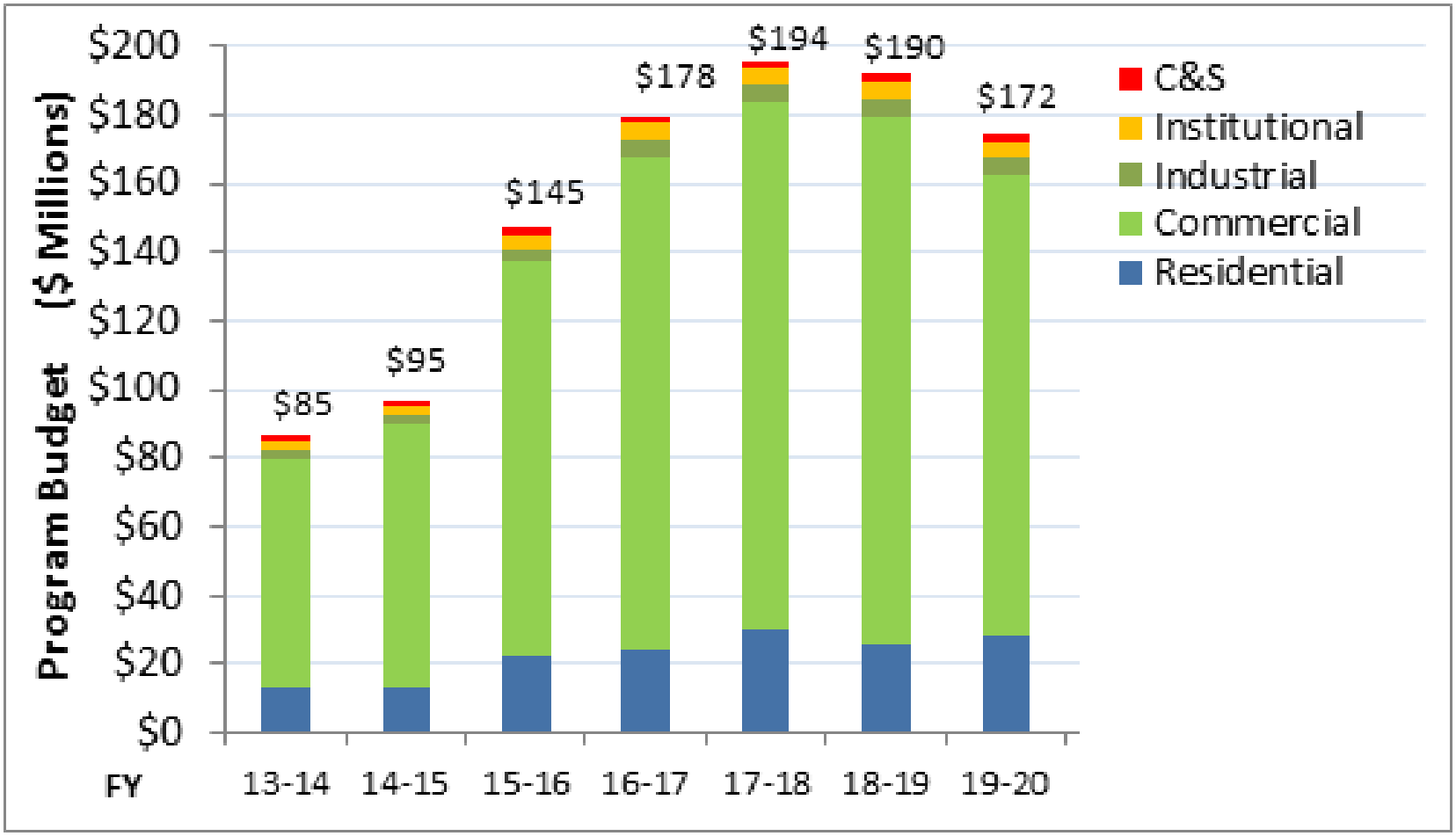
Next Century Power:
15% Supply from Energy Efficiency – Key Sectors

Projected EE Savings (GWH) by Sector: 2013 - 2020



Next Century Power:
15% Supply from Energy Efficiency – Key Sectors

Projected EE Spending by Sector: 2013 - 2020



Next Century Power:
Data Analytics and Commercial Energy Efficiency

- Data analytics approach – Remote Assessments and Audits
  - Uses a mix of data sources to remotely predict EE opportunities – retrofit and retro-commissioning
  - Interval meter data (hourly or 15 minute)
  - Actual weather data
  - Facility characteristics from public records and satellite imagery
  - Simulation methodology
- Independent 3rd party studies: < +- 5% variance vs. efield audits, at < 1/5th cost per site
- Can be used for continuous performance monitoring after project completion – **EM&V**

Next Century Power:
Data Analytics Pilot – LA Unified School District

- CA voters passed Prop 39 in Nov 2012
  - Closed out-of-state corporate tax loophole to generate ~$1B per year in corporate tax revenue
  - ~ $500M/yr for 5 years dedicated to EE and Clean Energy for public schools, community colleges, possibly others
  - LAUSD allocated ~$25M in 2014
- Prop 39 guidelines require metrics-based approach to prioritizing schools for EE funding (Expenditure Plans)
  - Can be EUI-Based
  - Data analytics approach much more accurate and sophisticated

Next Century Power:
Data Analytics Pilot – LA Unified School District

- LADWP data analytics pilot for LAUSD
  - Conceived in 2013 specifically to support Prop 39 EE for LAUSD
  - 200 remote assessments
  - 20 remote audits
- Data analytics enabled identification of sites with highest EE opportunities
- LAUSD pilot ultimately deemed successful - Results are guiding LAUSD's Prop 39 Expenditure Plans filed with the CEC

Next Century Power:
Data Analytics for Commercial Customers

- LADWP's vision is to offer data analytics to all mid- and large-sized commercial customers (>20kW) with qualifying facilities
  - LADWP plans phased approach over 3-5 years
  - Phase 1: Premier Accounts ~ 150 commercial customers
  - Phase 2: >200 kW ~ 10000 customers
- Remote audits – Most promising 20% of remote screens
- Phase 1 expected to generate additional 40-50 GWh/yr EE savings

Next Century Power:
Data Analytics for Commercial Customers – Phase 1

- LADWP is using data analytics to proactively engage our larger commercial customers on EE
  - Remotely screen our larger commercial customers and perform remote audits for up to 700 large commercial facilities
  - Develop facility-specific measure-level EE recommendations
  - Meet with customers to present identified opportunities
  - Connect customers to trade allies to leverage our traditional incentive programs and execute projects
  - Data analytics for these customers can also be used to monitor persistence of savings; *potentially augmenting or even replacing traditional EM&V of commercial programs*

Next Century Power:
Data Analytics – Potential to Reinvent EM&V

- Traditional EM&V is expensive, time-consuming, and often lags project installations by 3 years or more

- Data Analytics can perform M&V of anticipated savings in near real-time
  - Actual savings and persistence can be tracked over time
  - Programs benefit from more immediate feedback on project performance
  - Front end/back end nature allows continuous recalibration of the savings identification methodologies

- Integrating data analytics into commercial EE programs produces better Evaluation results
  - Tighter causal links between programs and savings
  - Better customer engagement and experience

Questions?