

## DOCKETED

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# California Energy Demand (CED) 2018-2030 Revised Electricity and Natural Gas Demand Forecast: Process, Summary of Results, and Choice of Planning Forecast

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## Purpose/Uses of Forecast

- Integrated Resource Planning
- Distributed Resource Planning
- California ISO Transmission Planning Process (TPP)
- CPUC/California ISO Resource Adequacy
- CPUC energy efficiency potential studies
- Benchmark for policy planning (e.g. SB 350)
- Renewables planning
- Other



# Process: How We Got Here

- Total of 7 IEPR workshops
- Demand Analysis Working Group (DAWG) meetings
- Joint Agency Steering Committee (JASC) guidance
- Process alignment discussions: IRP, DRP, TPP, and IEPR forecast
- Other stakeholder discussions



## CED Forecasts Incorporate Policy Initiatives

- Building codes and appliance standards
- IOU, POU, and other efficiency programs and initiatives
- Distributed generation incentive programs
- Demand response programs, including large-scale residential TOU programs
- ZEV incentives
- Electrification (ports, airports, HSR, etc.)



# CED Forecast Methods and Inputs Evolve Over Time

## Changes/Improvements vs. CEDU 2016

- Hourly load forecasting model for the three IOU TAC areas
  - Incorporates hourly PV generation, EV consumption, residential TOU, and additional achievable energy efficiency (AAEE)
  - Allows estimates of peak demand which incorporate changes in peak hours (peak shift)
- Estimates of AAEE savings for 38 POUs in addition to IOU estimates



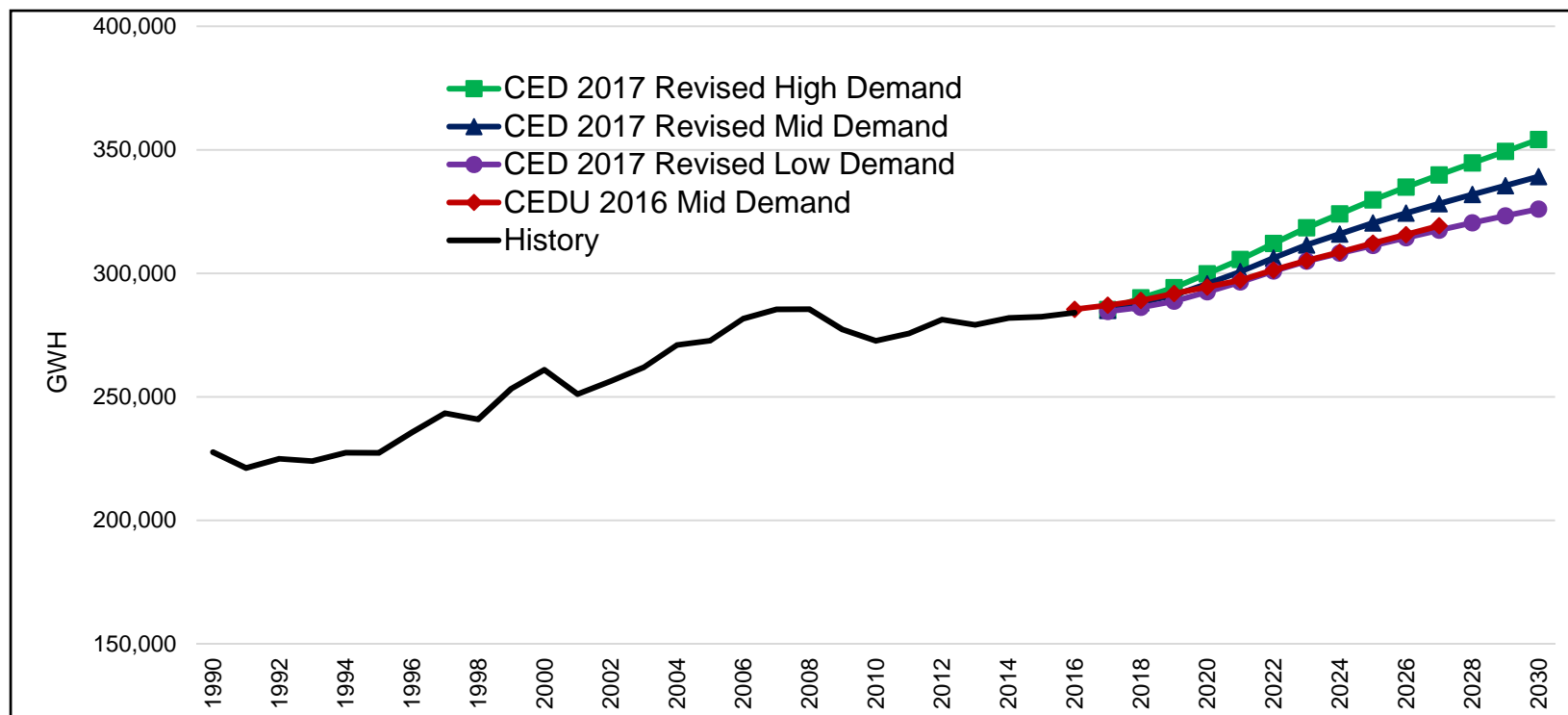
## Changes/Improvements vs. CEDU 2016 (cont.)

- Analysis of efficiency initiatives beyond traditional AAEE in support of SB 350 targets
  - Includes an optimistic “what if” case for comparison to SB 350 doubling goals
- Additional achievable PV (AAPV)
- Developed a DAWG subgroup for vetting EV forecast
- Analysis and incorporation of large increase in community choice aggregators (CCAs)



## Summary: Statewide Baseline Electricity Consumption

New mid case growth faster than *CEDU 2016 mid*

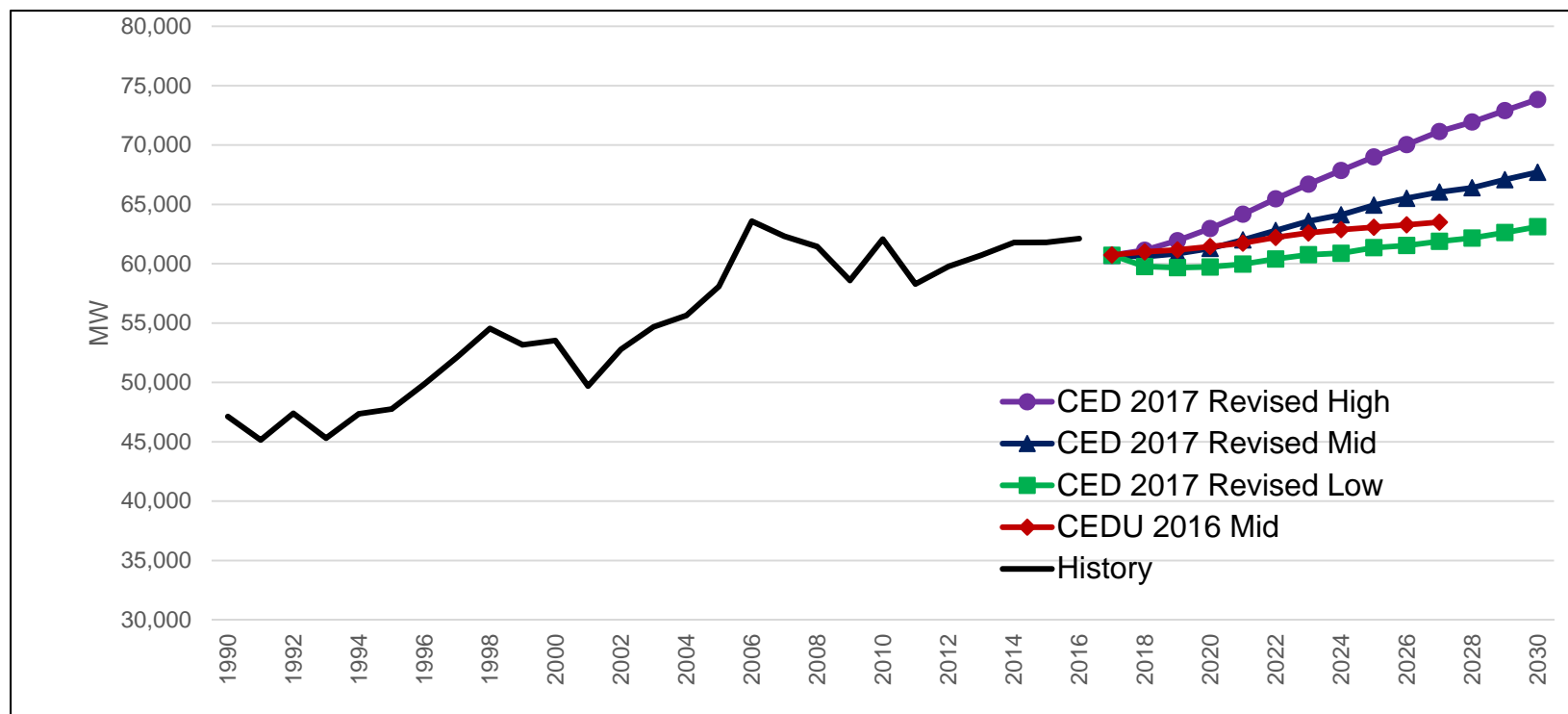






# Statewide Baseline Electricity Peak Demand (Noncoincident)

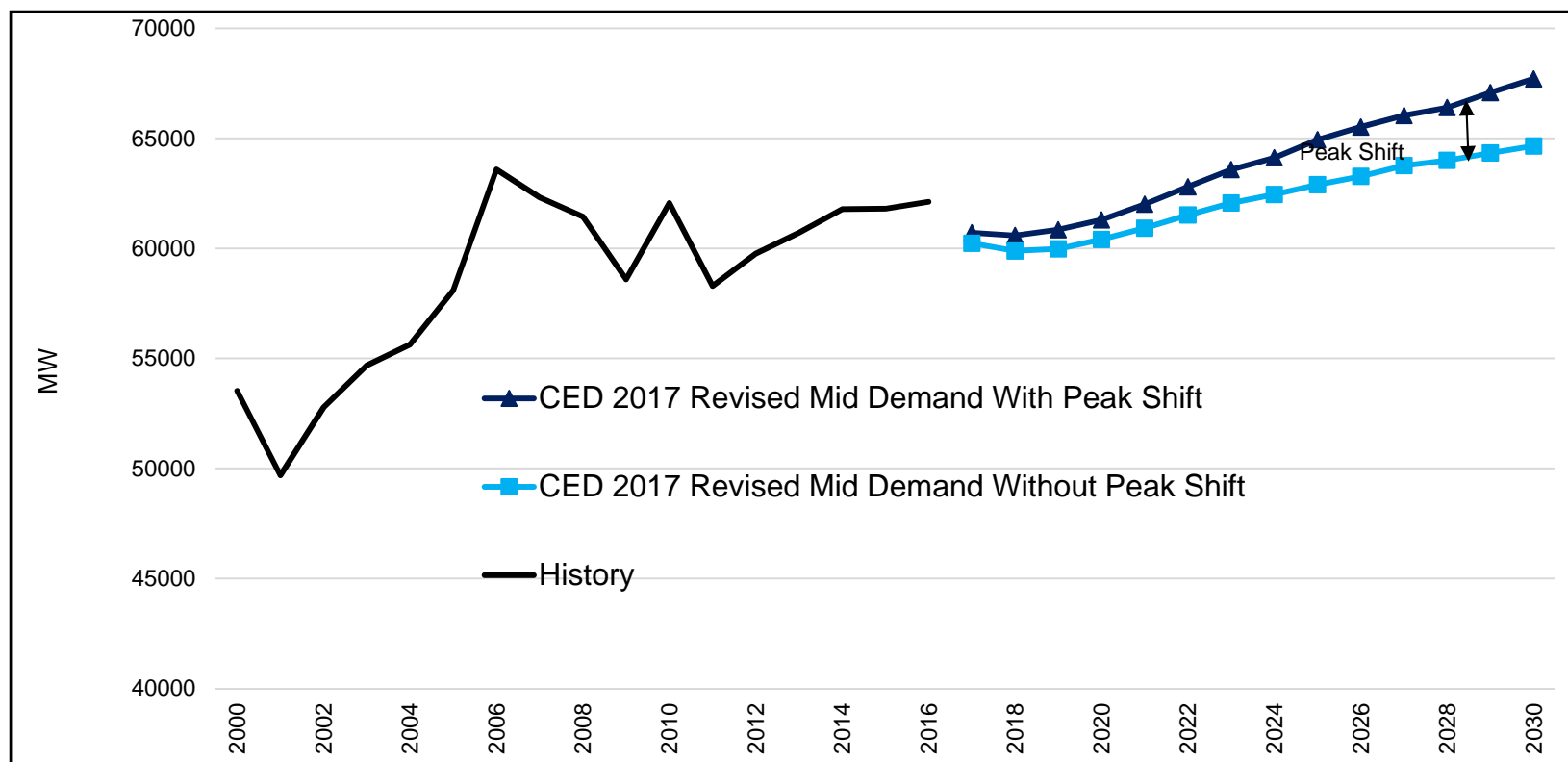
Faster consumption growth and peak shift increase peak demand





# Impact of Peak Shift (Noncoincident Statewide Peak)

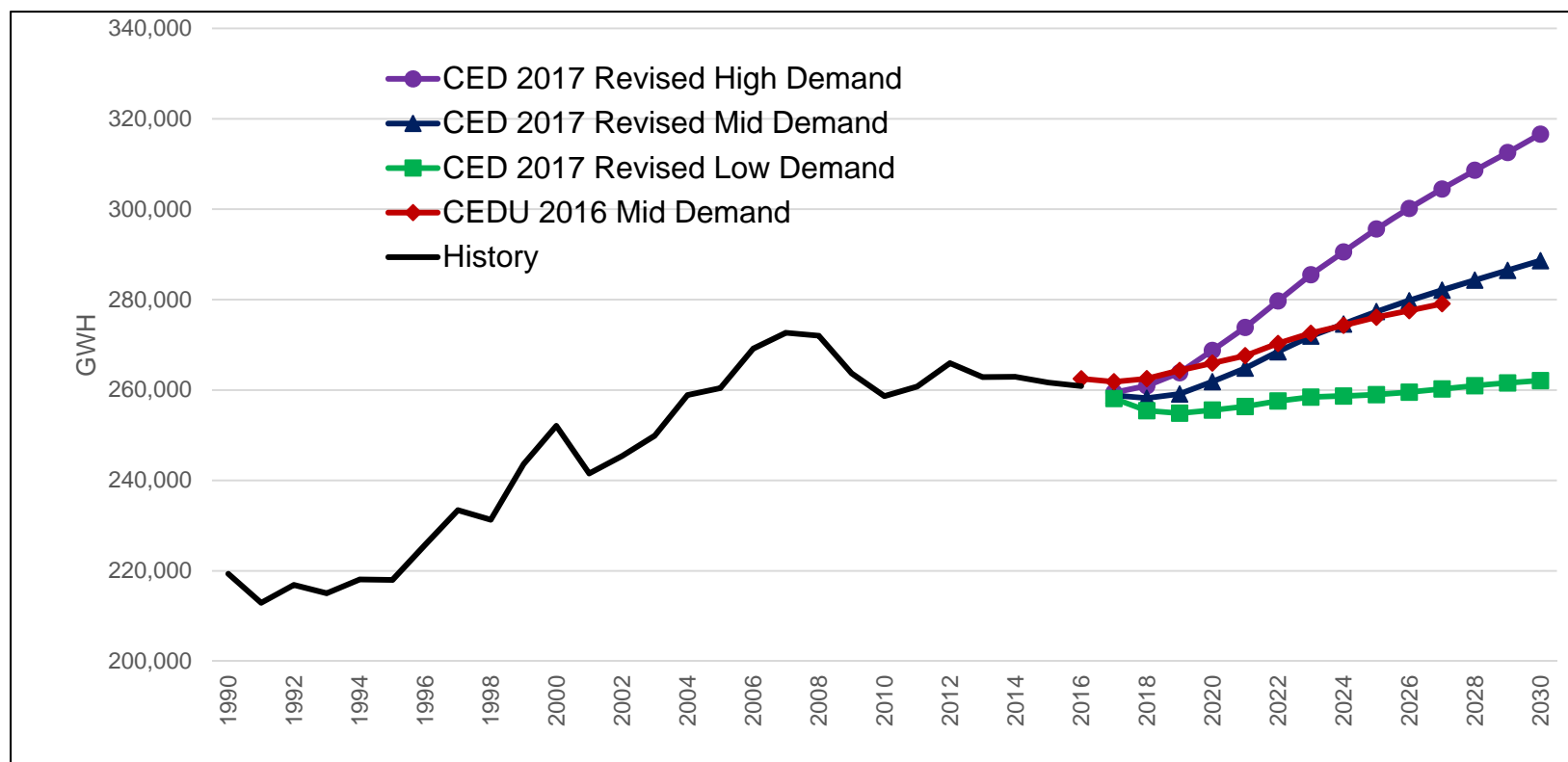
## Mid Baseline Demand Case





## Statewide Baseline Electricity Sales

Higher consumption increases sales vs. 2016





## From Baseline to Managed Forecasts: AAEE and AAPV

- Incremental to committed savings and PV in the baseline *CED 2017 Revised* forecasts
- AAEE based on *2017 Potential Study*, POU goals, and SB 350 analysis
- 6 AAEE scenarios for electricity and natural gas consumption and peak; 4 AAPV scenarios
- Adjusted, or managed, forecasts for planning purposes



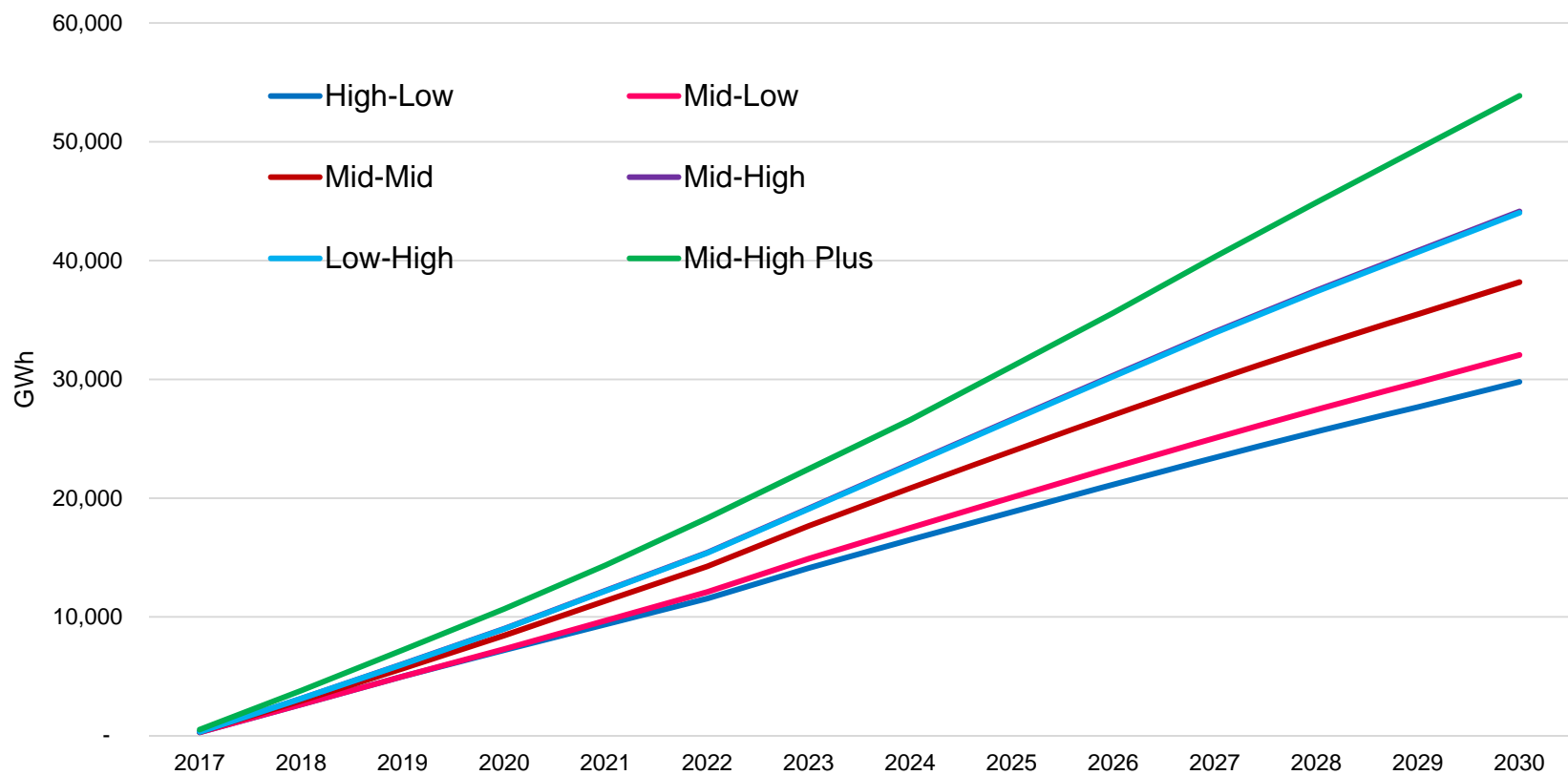
## AAEE Scenarios

1. High Baseline Demand-Low AAEE Savings (high-low)
  2. Mid Baseline Demand-Low AAEE Savings (mid-low)
  3. Mid Baseline Demand-Mid AAEE Savings (mid-mid)
  4. Mid Baseline Demand-High AAEE Savings (mid-high)
  5. Low Baseline Demand-High AAEE Savings (low-high)
  6. Mid Baseline Demand-High Plus AAEE Savings (mid-high plus)
- AAPV with Scenarios 1,2,3, and 5



# Statewide Savings by AEEE Scenario

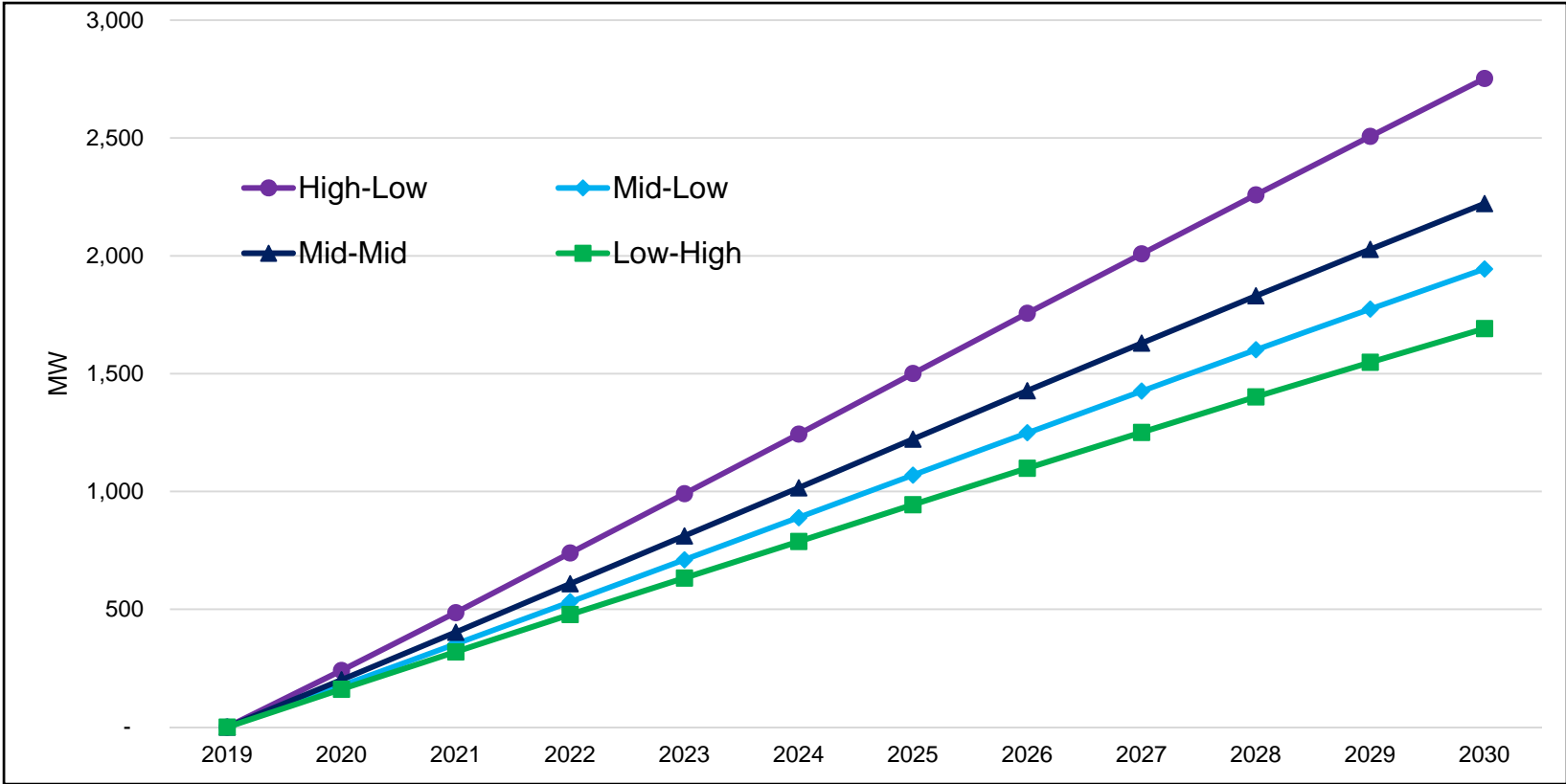
In 2030, 54,000 GWh for mid-high plus, 38,000 for mid-mid





# AAPV Additional Capacity, Statewide

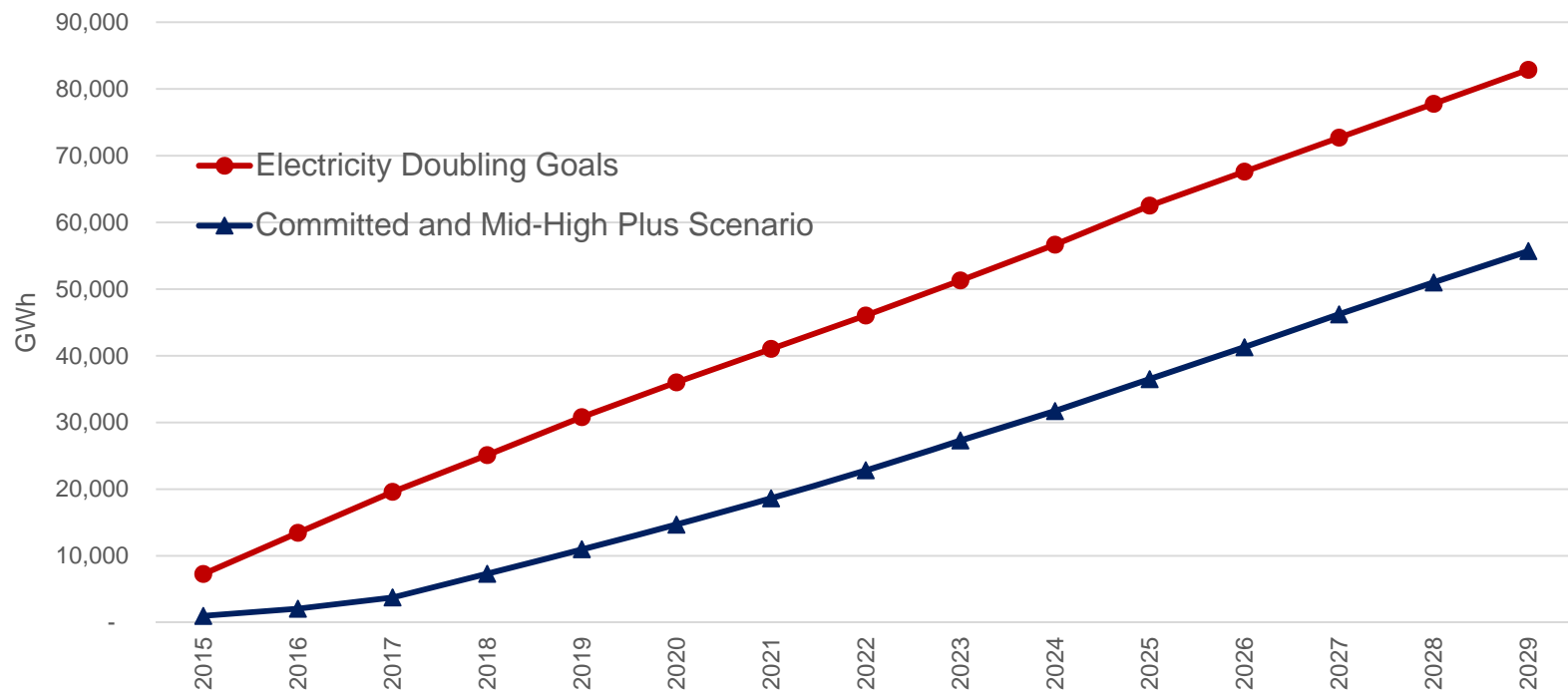
Translates to around 4,000 GWh in 2030 in mid-mid case





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# “What If” Scenario (Mid-High Plus) with Committed Savings 2015-2017 versus Electricity Doubling Goals







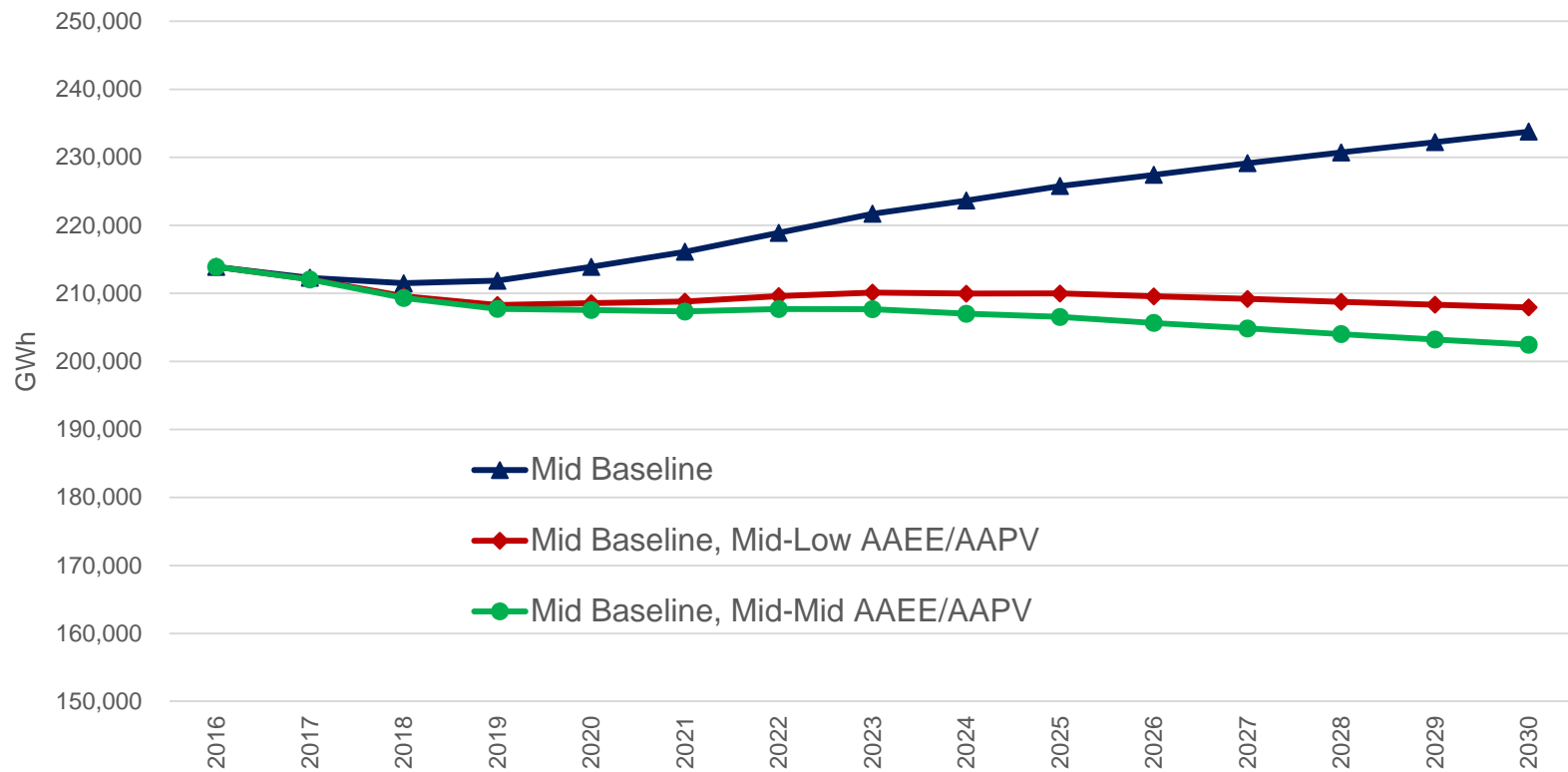
## Choice of Single Forecast Set for CAISO/IOUs from Managed Forecasts

- *CED 2017 Revised* mid baseline demand combined with:
  - Mid baseline-mid AAEE/AAPV for system and flexibility planning
  - Mid baseline-low AAEE/AAPV for localized planning



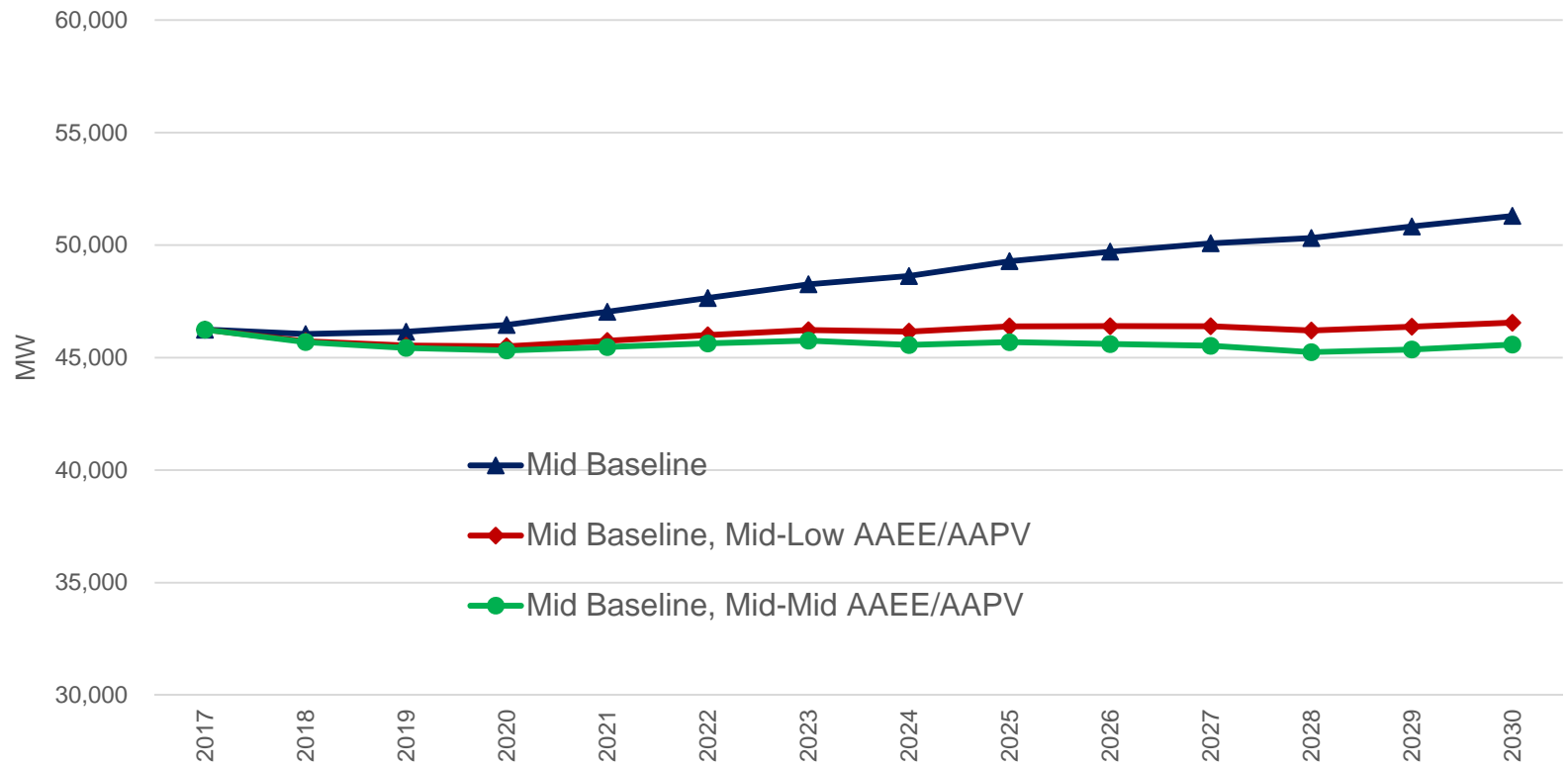
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# Single Forecast Set: CAISO Sales





# Single Forecast Set: CAISO Coincident Peak





# Moving Forward

- Forecast update later this year
  - Update econ-demo, historical data, PV and EV forecasts, and CCAs
- 2019 IEPR
  - Continue work on hourly load models
  - Refine/update SB 350 and AB 802 analysis
  - CEUS and RASS surveys
  - Model updates, revisions, and improvements
  - Further geographic disaggregation
  - Other



**Comments/Questions?**