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California Energy Demand 2021: Consumption and Sales Forecast Results

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December 16, 2021, 2021 IEPR Commissioner Workshop

2021 Forecast Products

Electricity Consumption and Sales Forecast

- Annual 2019 to 2035 by planning area and sector
- LSE Sales 2020-2035 Forecast

Peak Forecasts

- Annual and hourly 2020 to 2035
- by TAC (Hourly) and BAA (Form 1.5)

End-Use Natural Gas Forecasts

- Annual 2019 to 2035
- by planning area and sector

Managed Sales and Peak Forecast

- Mid-Mid and Mid-Low used for planning purposes

CED 2021 Key Forecast Changes

- Starting point reflecting actual 2020 consumption and sales
- May 2021 Moody's economic outlook
- Increased light, medium and heavy-duty EV demand
- Revised self-generation inputs and modeling
- Additional baseline energy efficiency
  - 2019/2020 efficiency programs
  - 2019 T24 and T20 building and appliance standards
- Both additional achievable energy efficiency and fuel substitution
- Detailed information on demand forecast workshops in:

https://efiling.energy.ca.gov/GetDocument.aspx?tn=240764&DocumentContentId=74204

Demand Scenario Assumptions

High Energy Demand
- Moody's Custom High growth Scenario
- Higher household growth
- High EV adoption, high climate change impacts
- Low electricity rates; low self-generation adoption

Low Energy Demand
- Moody's Prolonged Lower Economic growth scenario
- Low EV adoption; no climate change impacts
- High electricity rates; high self-gen adoption

Mid Energy Demand
- Baseline (50/50) Economic scenario
- Mid self-generation and EV adoption
- Includes expected climate change impacts
- Incremental savings from Title 20 and Title 24 standards as of 2019 same in all scenarios

Statewide Comparison by Demand Case

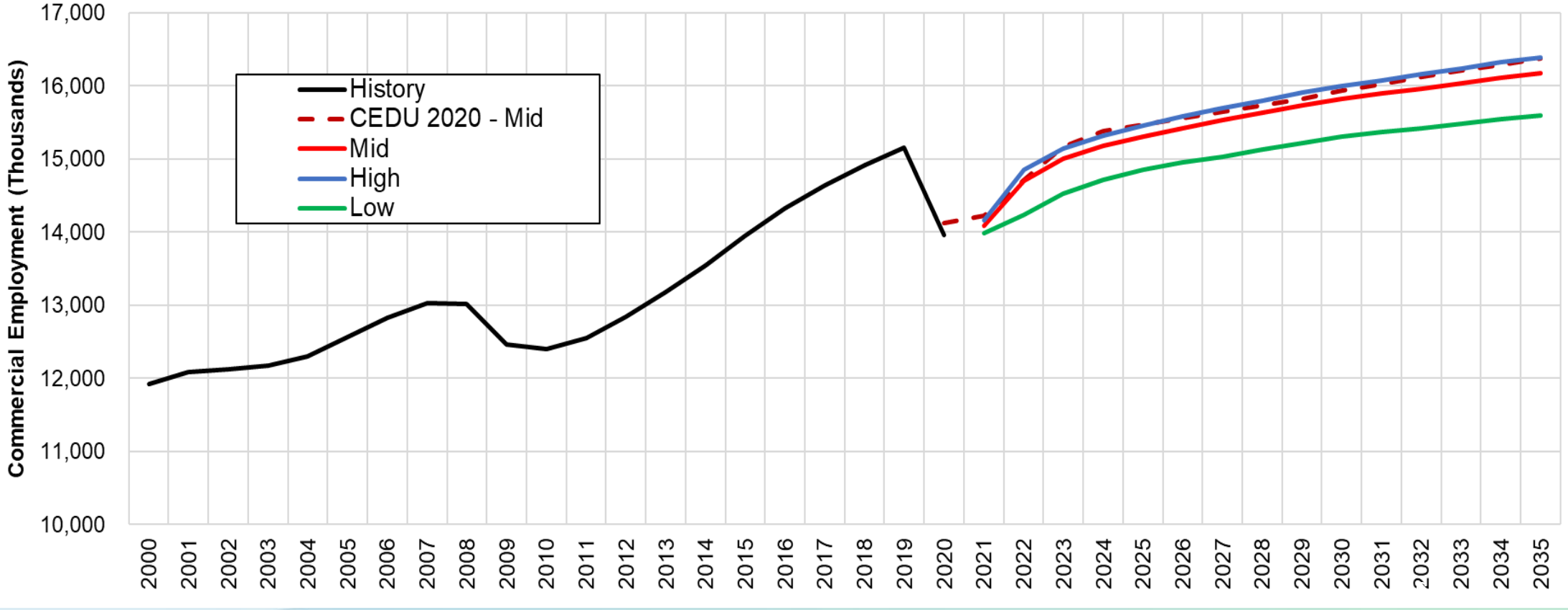
Average Annual % Growth, 2021-2035

Driver	CEDU 2020 - Mid	Mid	High	Low
Gross State Product	2.3%	2.4%	2.6%	1.9%
Per Capita Personal Income	2.1%	1.8%	2.0%	1.5%
Commercial Employment	1.0%	1.0%	1.1%	0.8%
Population	0.5%	0.5%	--	--
Households	0.8%	0.8%	1.2%	--

- Long-term growth rates for population and household are similar but levels have been reduced
- Population reduced by 1.1% by 2035
- Total households reduced by 3.7% by 2035

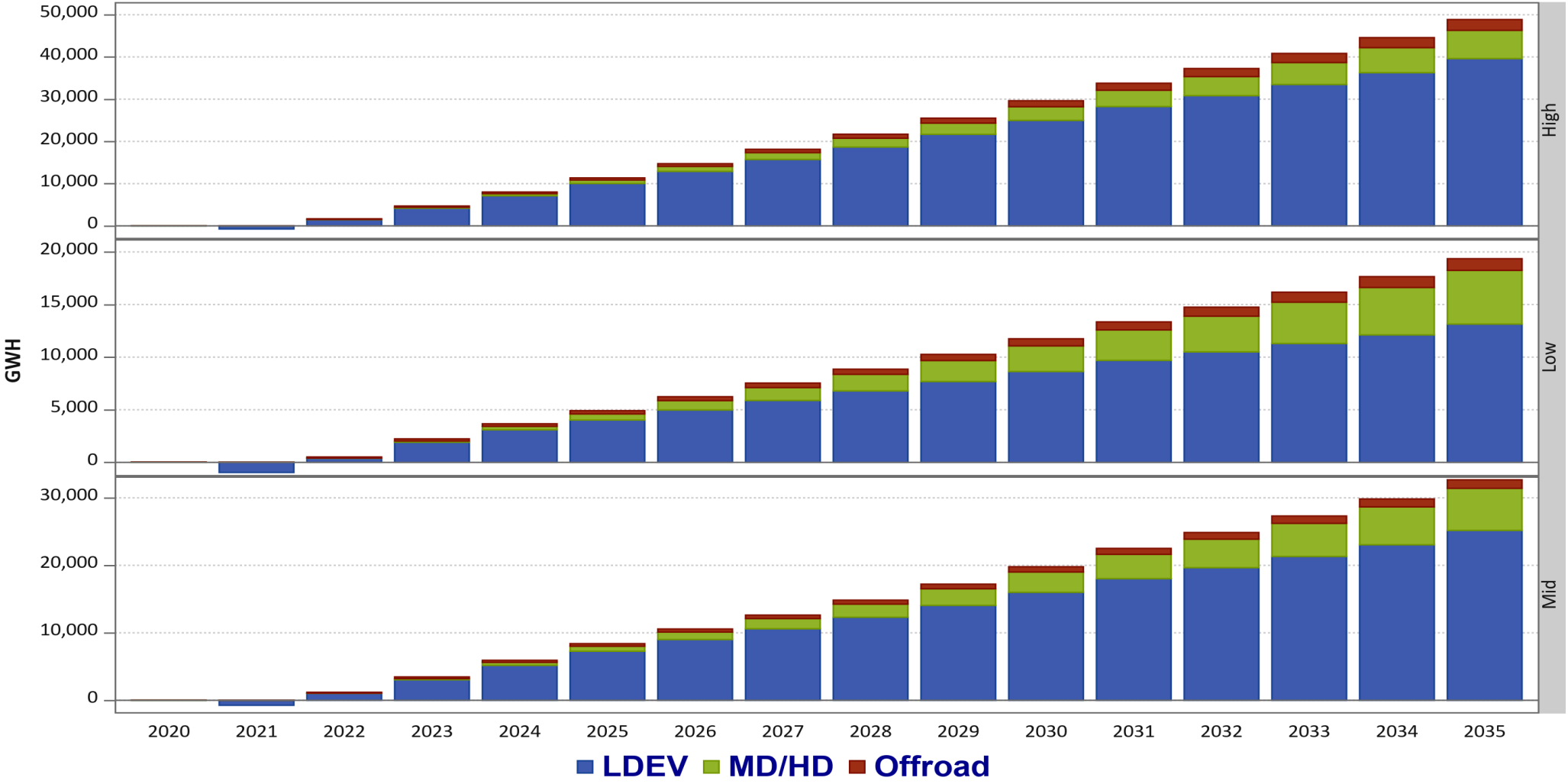
Commercial Employment

- -7% decrease in 2020; 12% total unemployment rate
- Recovery of ~2% annually through 2023
- 2% below previous mid case forecast by 2030



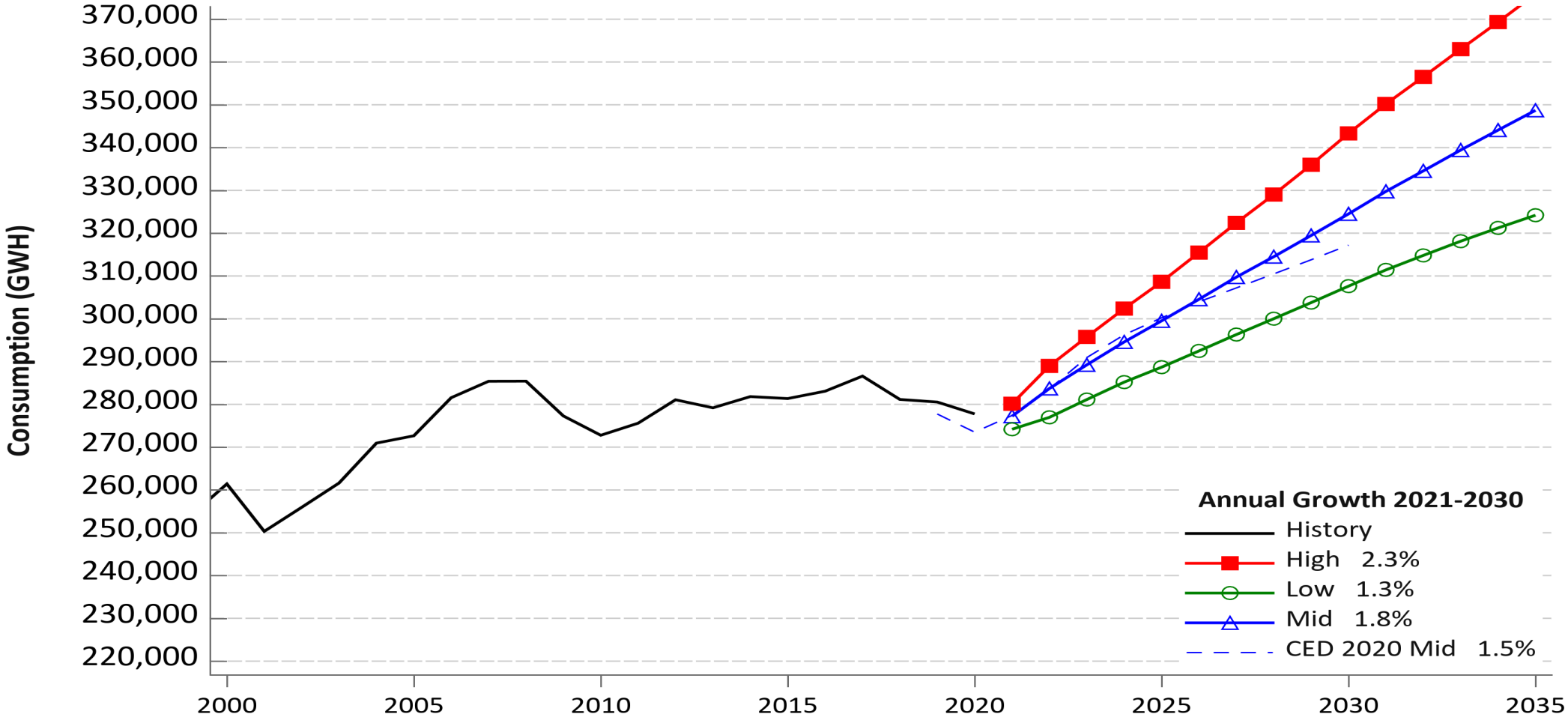
Transportation Electrification Incremental Electricity Consumption

- This is an increase of 5,700 GWH over CED 2020 by 2030
- Two-thirds of this additional load is in nonresidential sectors



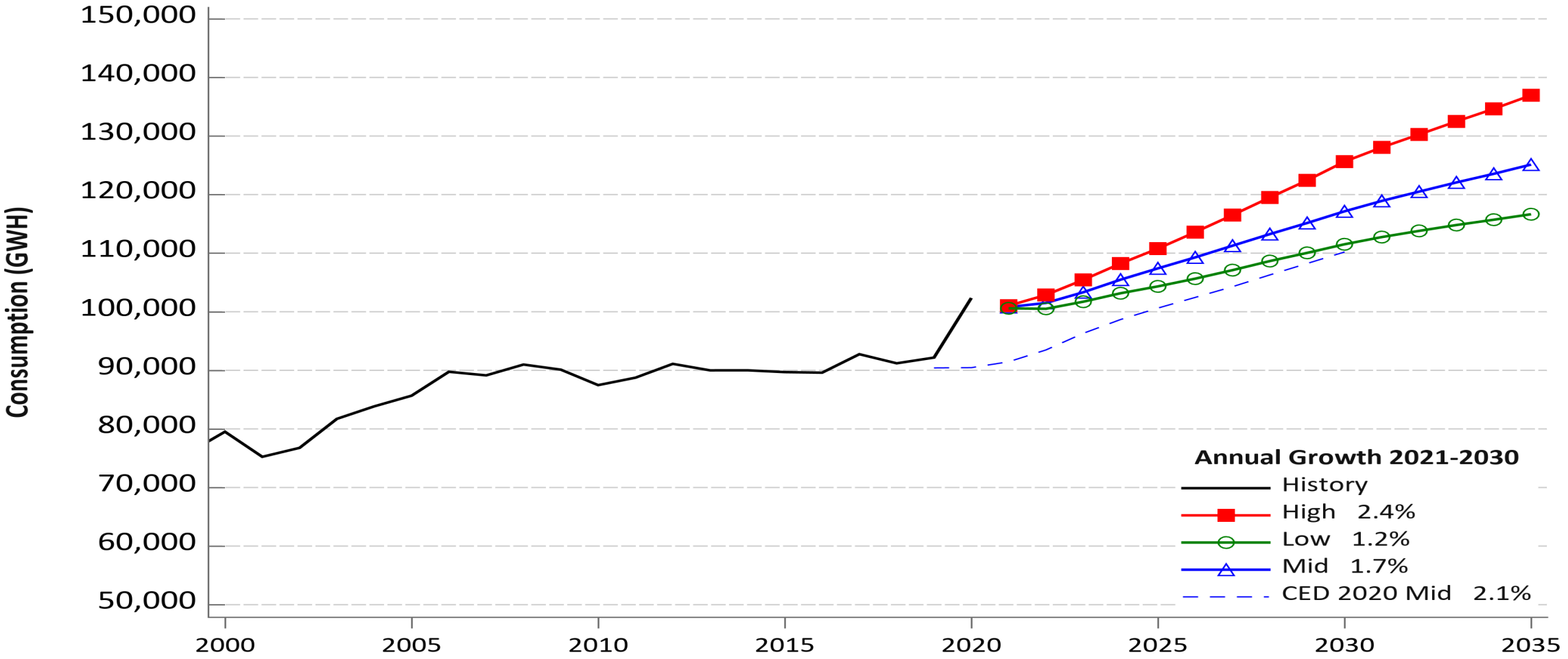
Statewide Consumption

- Consumption is 2.3% higher in 2030 than in the CED 2020 forecast
- Faster growth in commercial sector due to economic recovery and transportation electrification



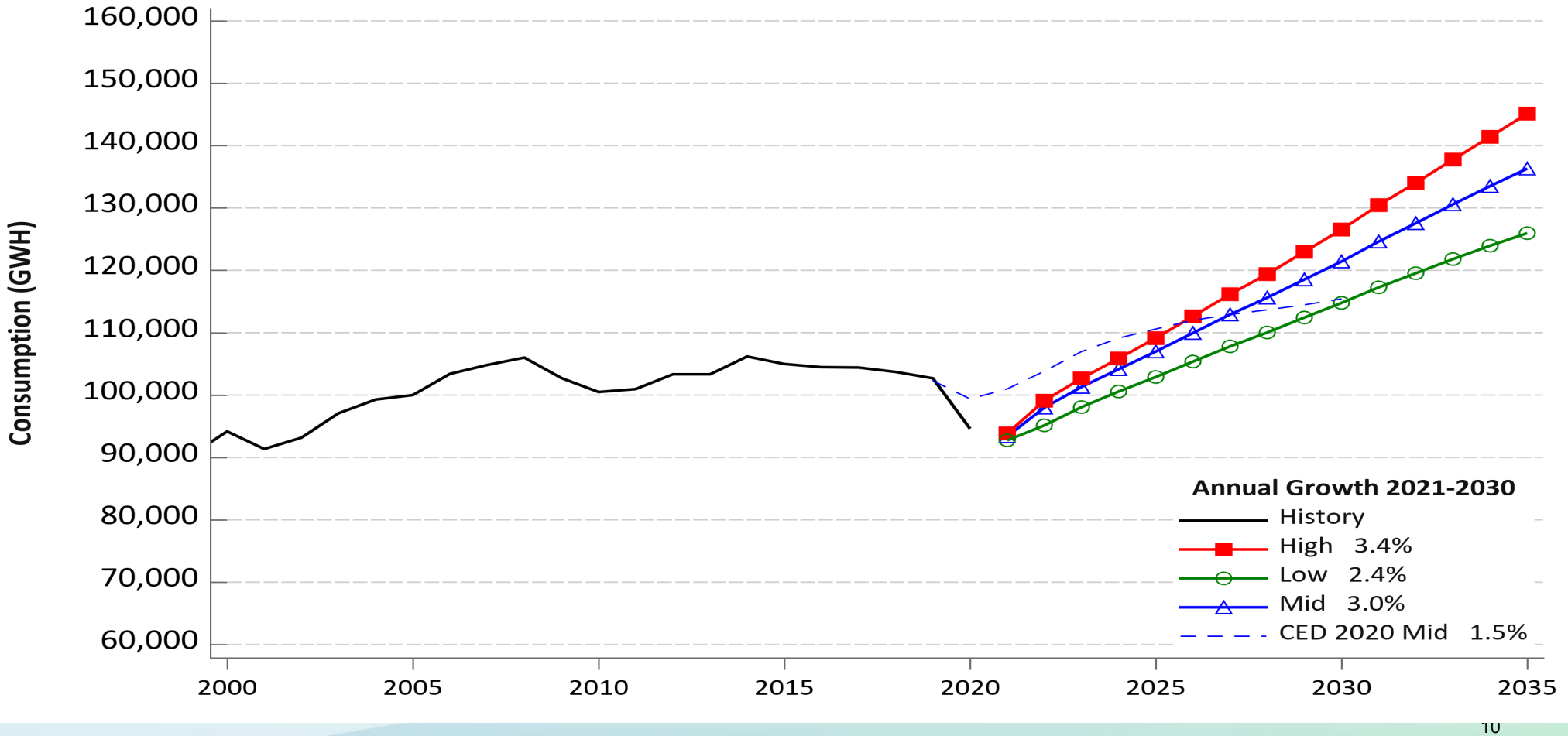
Statewide Residential Consumption

- Much of the pandemic increase in residential usage persists in the forecast
- Additional EV load partially offset by building and appliance standards



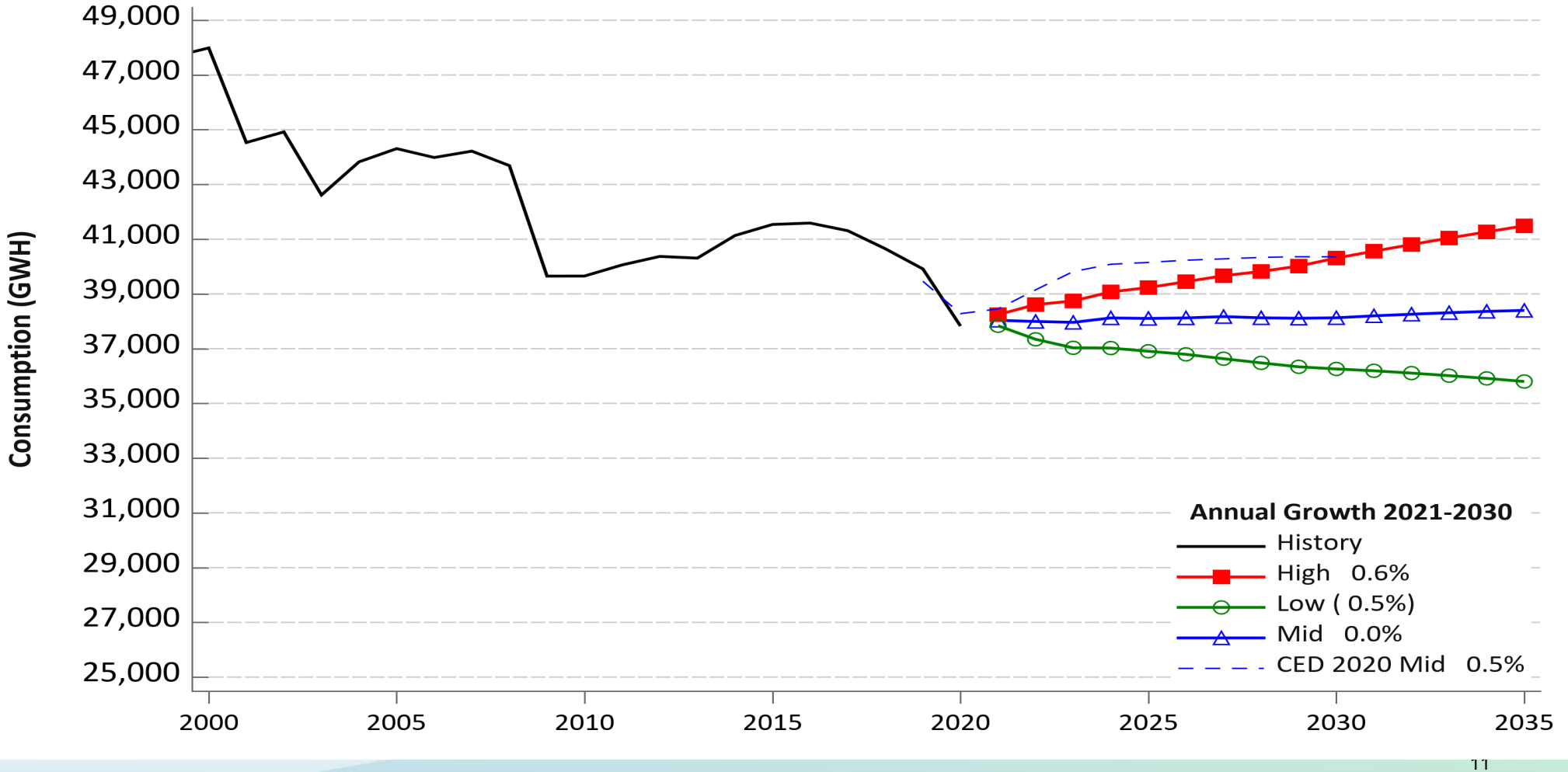
Statewide Commercial Consumption

- Commercial sector usage declined far more than forecast in 2020
- Higher growth rate reflects employment recovery and EV load growth



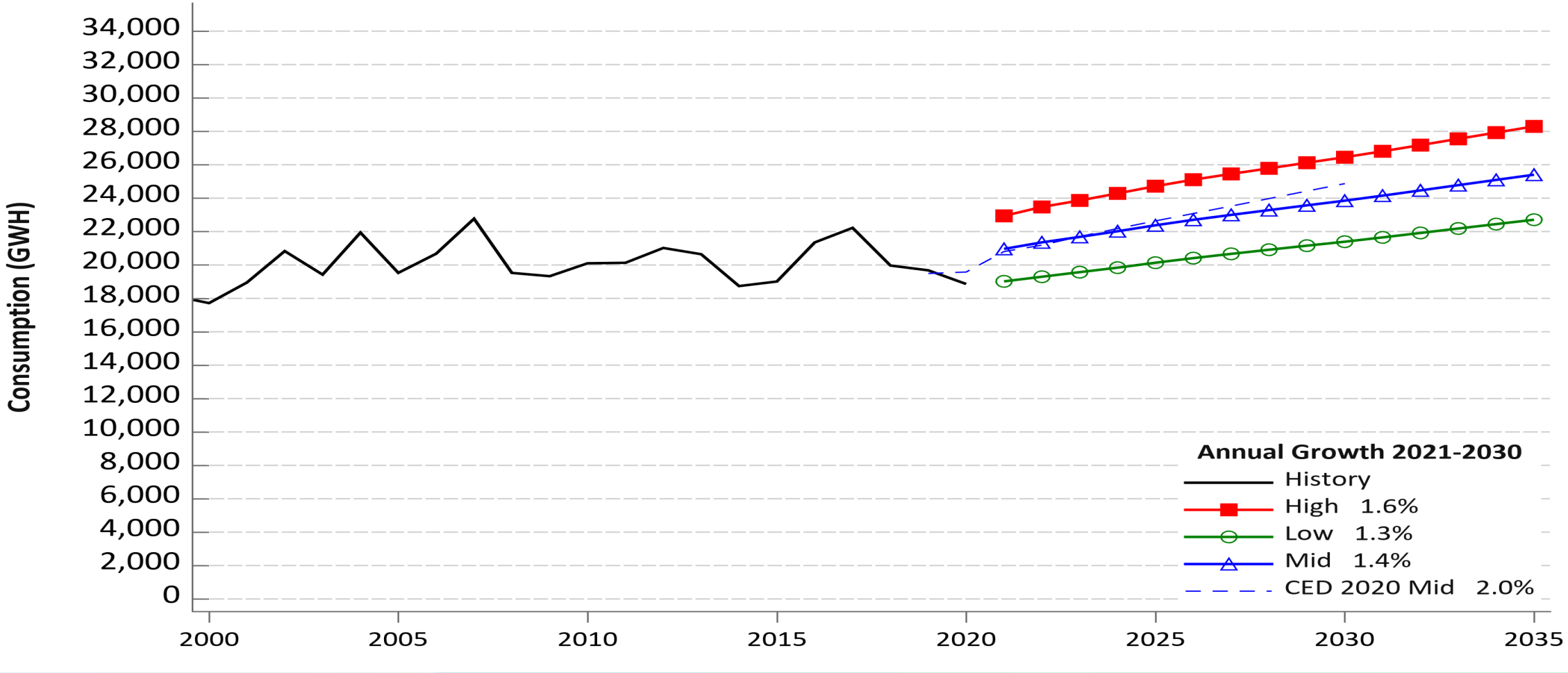
Statewide Industrial Consumption

- Slight rebound in 2021 from 5% decline in 2020, but lower forecast due to lower economic projections and higher electricity rates.



Statewide Agriculture & Water Pumping Consumption

- Lower usage trend in core ag. and water pumping; cannabis forecast slightly higher



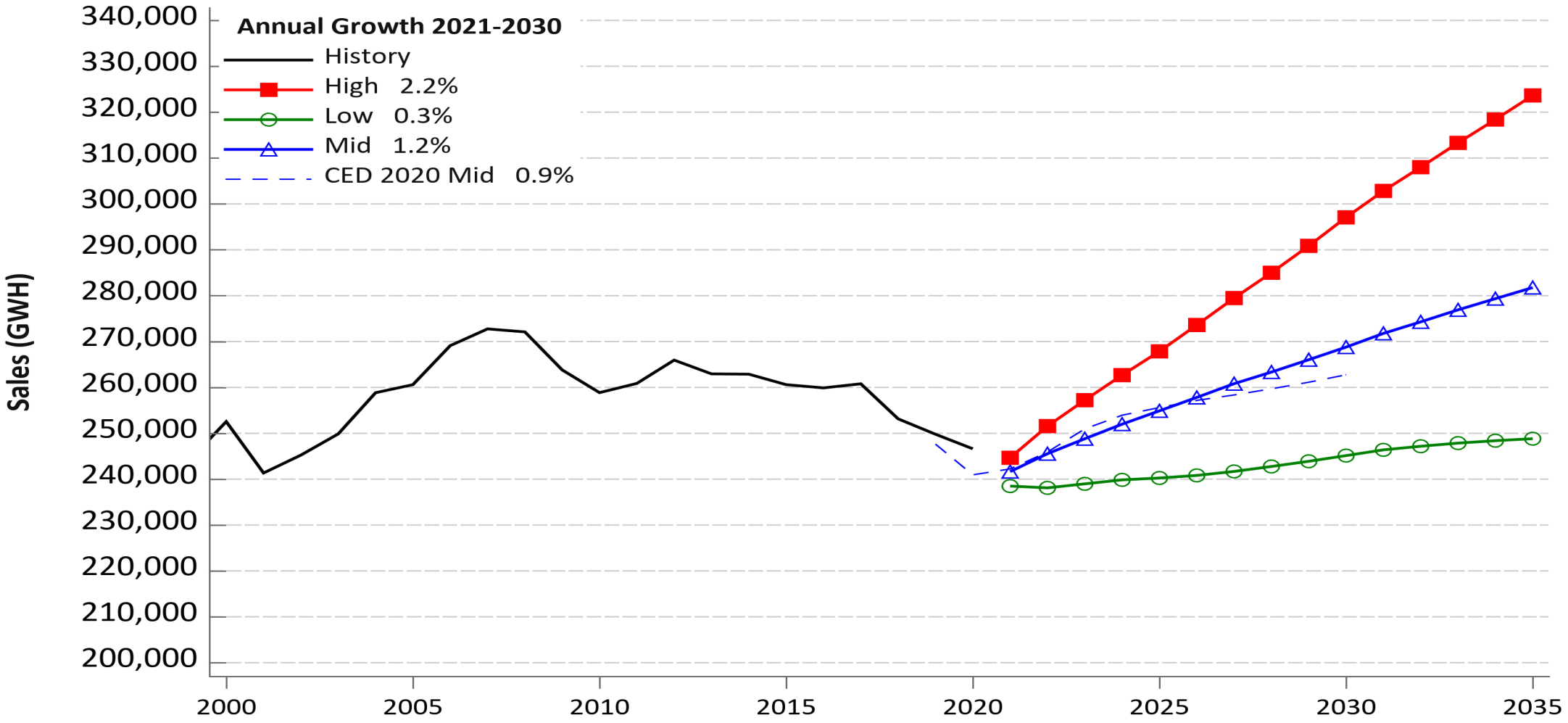
Statewide Self-Generation

- Self-generation forecast incorporated new interconnection data, modeling of NEM 3.0 options, updated rates, ITC extension, revised residential T24 modeling, modeling of POU net billing, and 2022 Title 24 standards for nonresidential PV (over 2300 GWH by 2035)
- Net impacts vary by planning area and sector

Mid-Case Self-Generation Forecast by Planning Area (GWH)					
Planning Area	2020	2030	2035	Annual % Increase 2020-2035	% Change from CED 2020 in 2030
Burbank/Glendale	59	196	281	11%	34%
IID	166	397	571	9%	-19%
LADWP	1,793	3,209	3,689	5%	37%
NCNC	751	1,900	2,725	9%	1%
PGE	14,746	27,217	31,958	5%	6%
SCE	10,525	17,067	20,770	5%	-8%
SDGE	3,104	5,736	6,944	6%	10%
Statewide	31,144	55,722	66,938	5.2%	2.3%

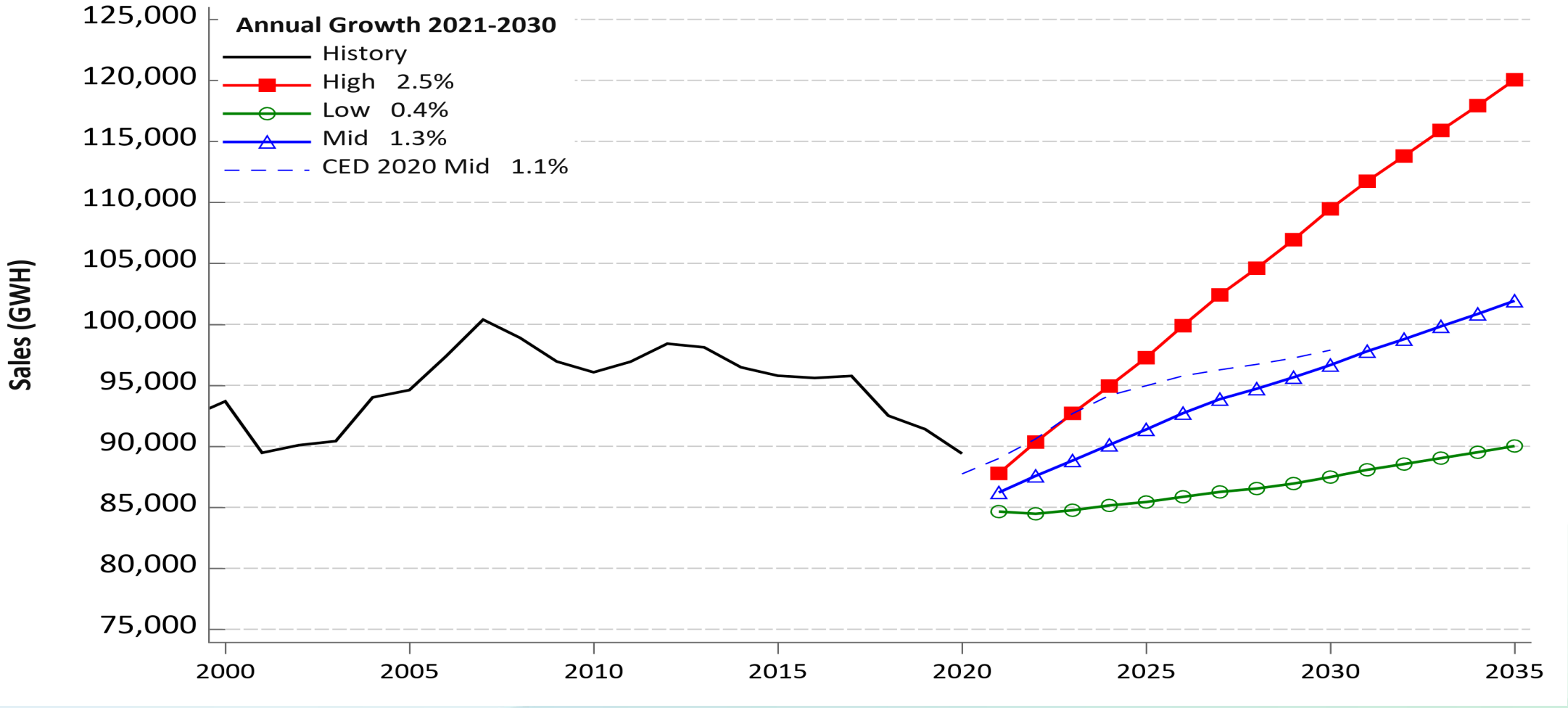
Statewide Sales

- Additional self generation reduces growth rate compared to consumption



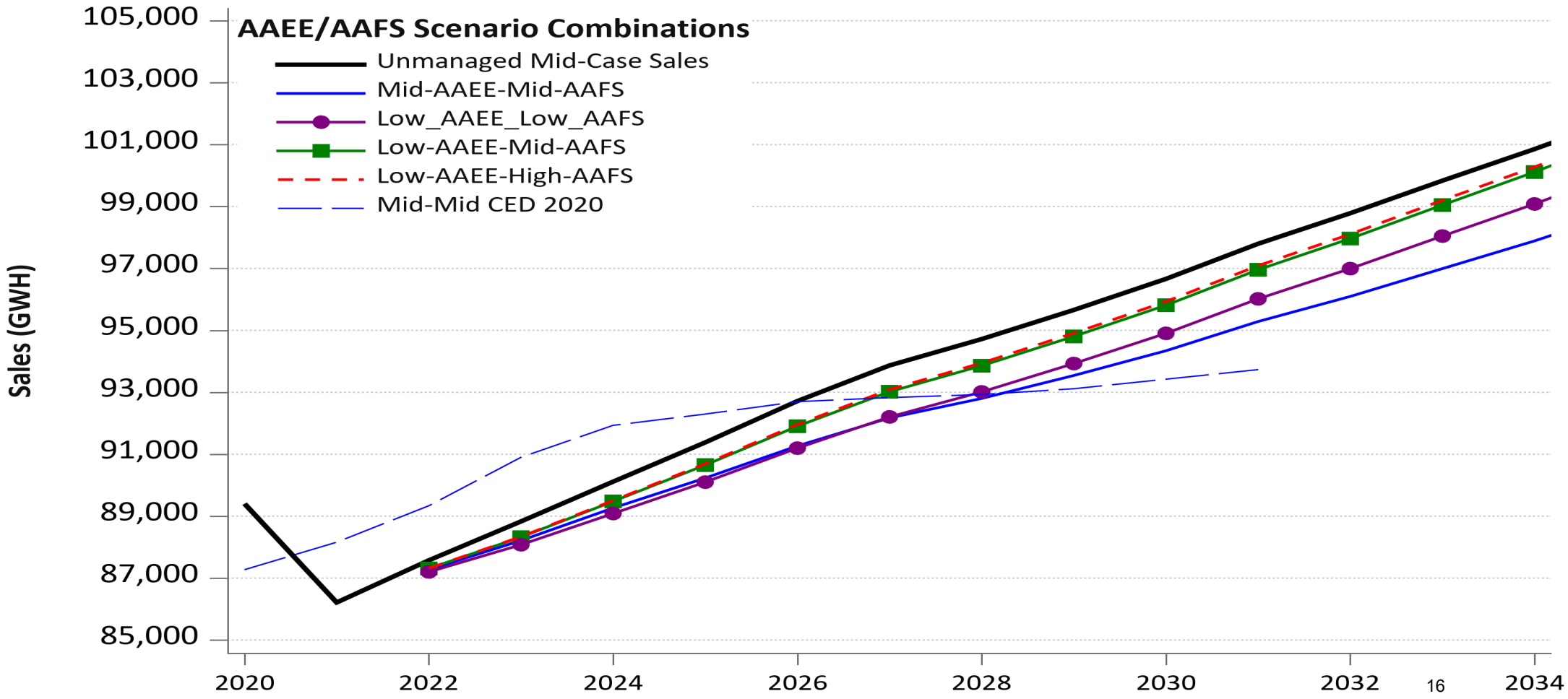
PG&E Planning Area Sales

- Large decline (9%) in commercial usage in 2020, not fully offset by increased residential.



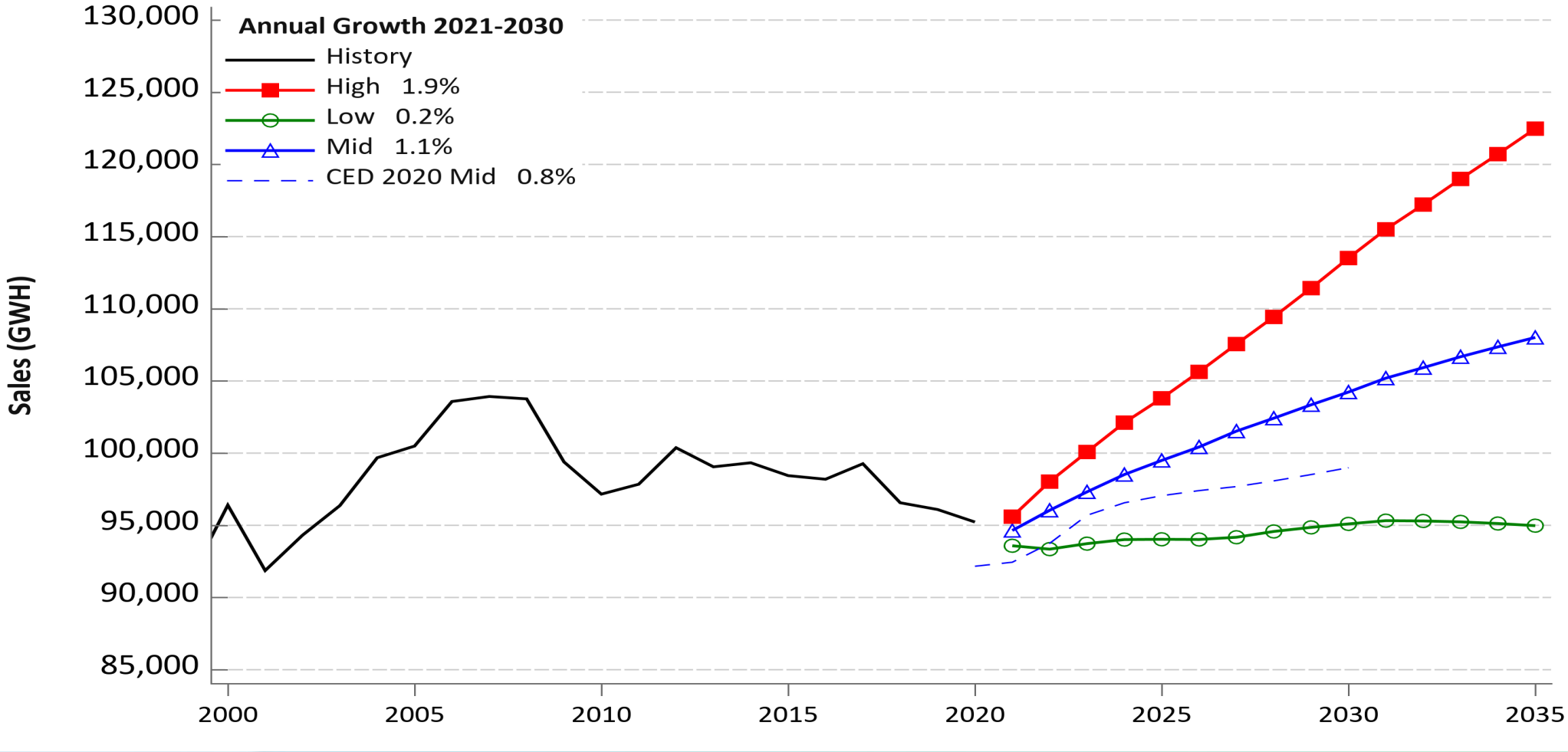
PG&E Mid Case Managed Sales Forecasts

- Mid-Mid AAEE-Mid-AAFS (AA Scenario #3) is 3 percent lower CED 2020 in 2023, but 1% higher by 2030.
- Low=AA Scenario #2; High=AA Scenario #4



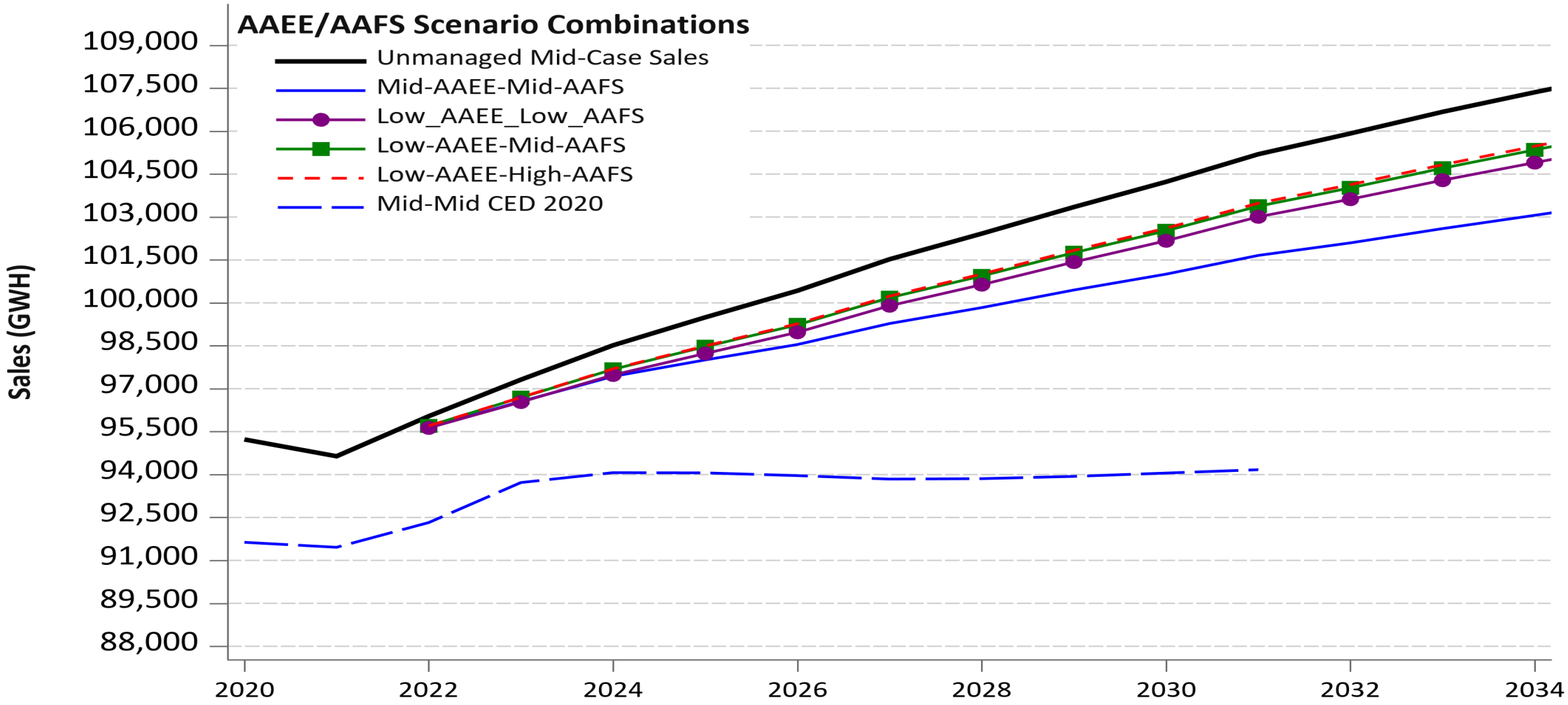
SCE Planning Area Sales

- Higher starting point, lower forecasted self-generation, and higher EV growth increase the forecast by 5% by 2030 compared to CED 2020



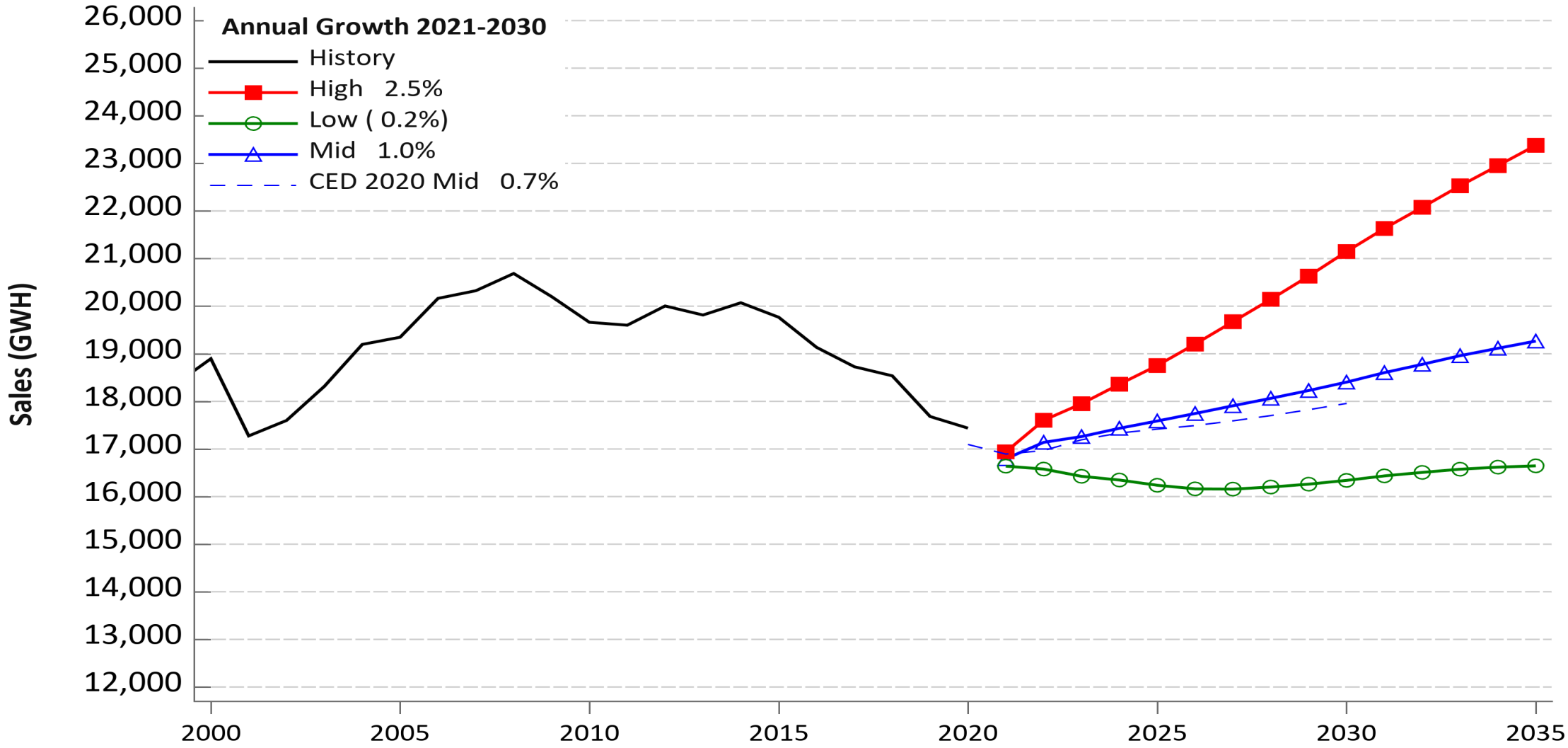
SCE Mid Case Managed Sales Forecasts

- Mid-Mid is 3% higher in 2023 and 7% higher in 2030



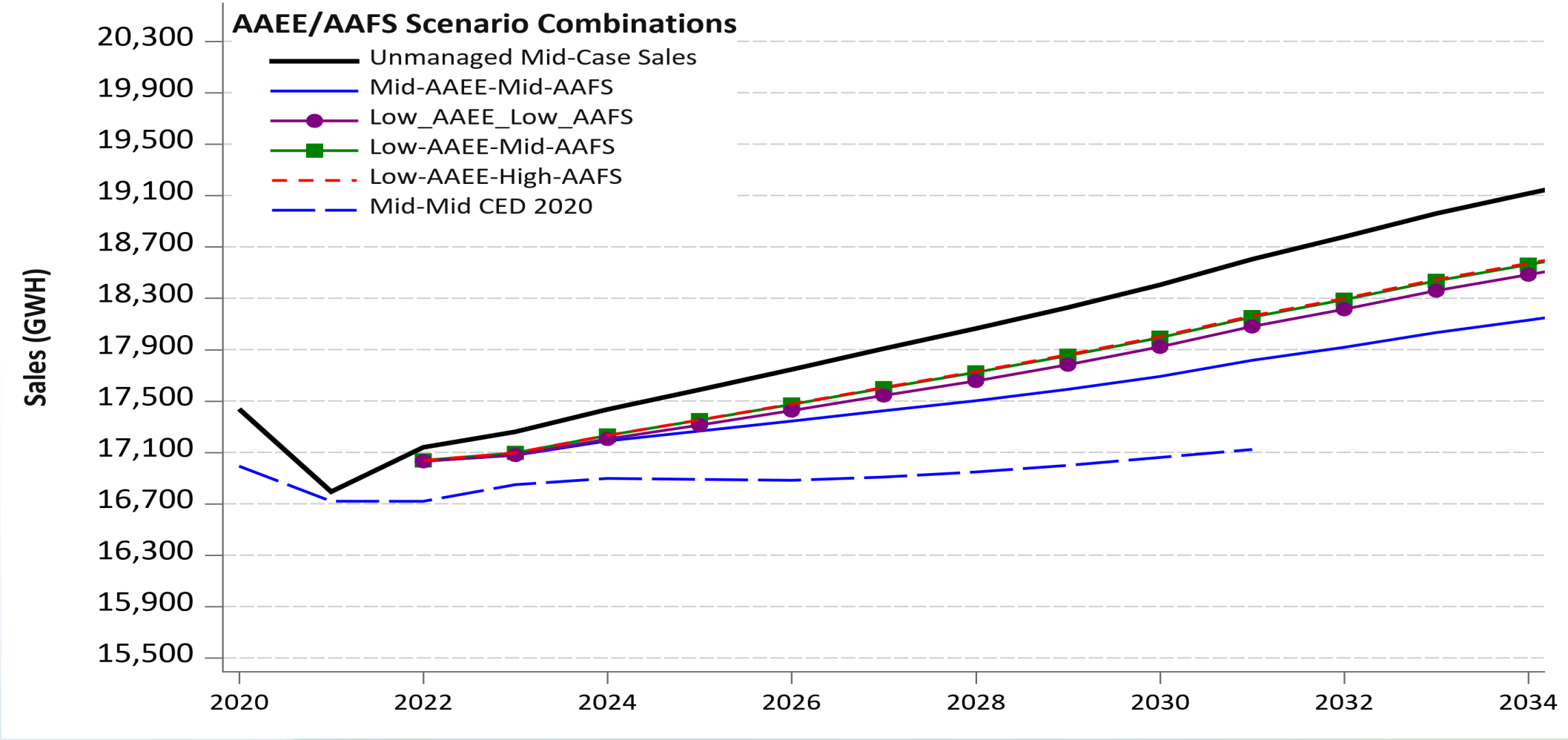
SDG&E Planning Area Sales

- Increase in self-generation offsets transportation electrification load increase.



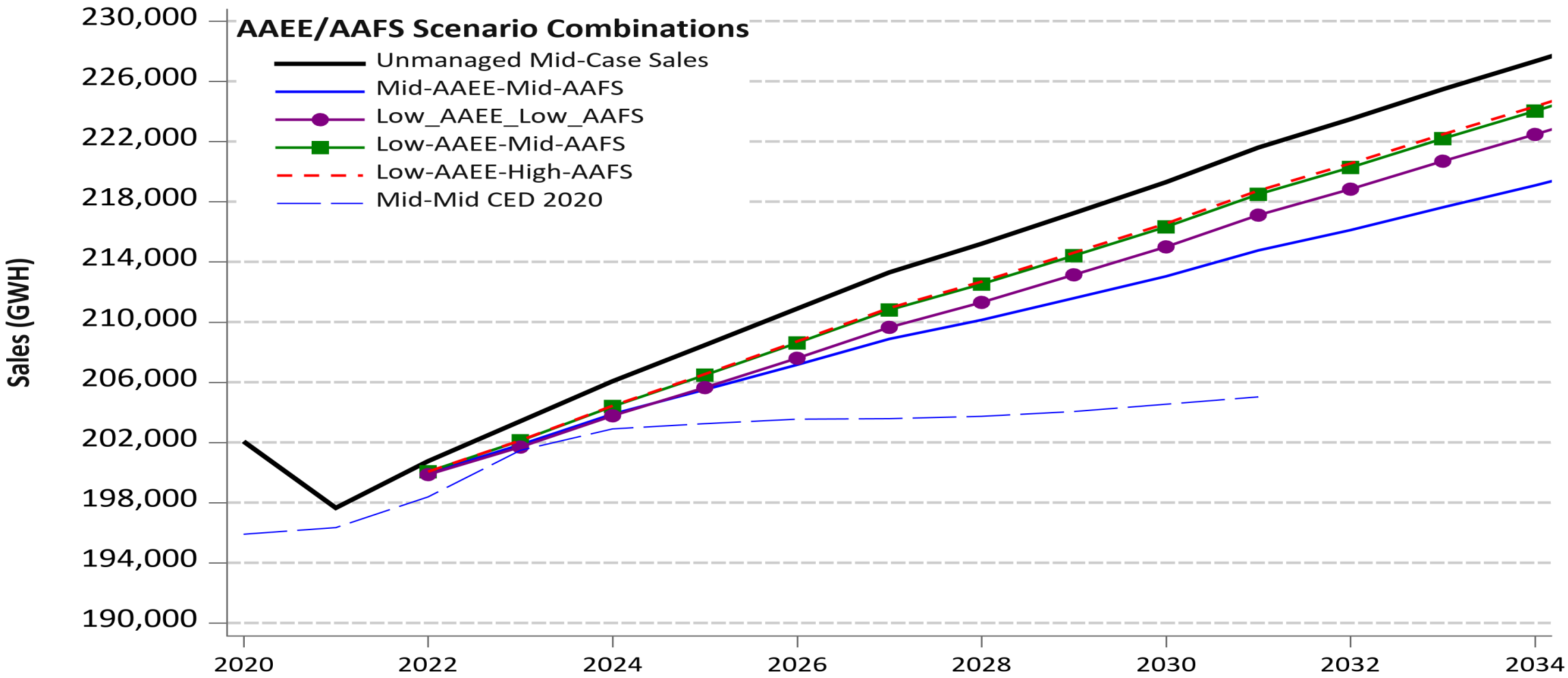
SDG&E Mid Case Managed Sales Forecasts

- While unmanaged forecast is only slightly higher, net AA is reduced by fuel substitution



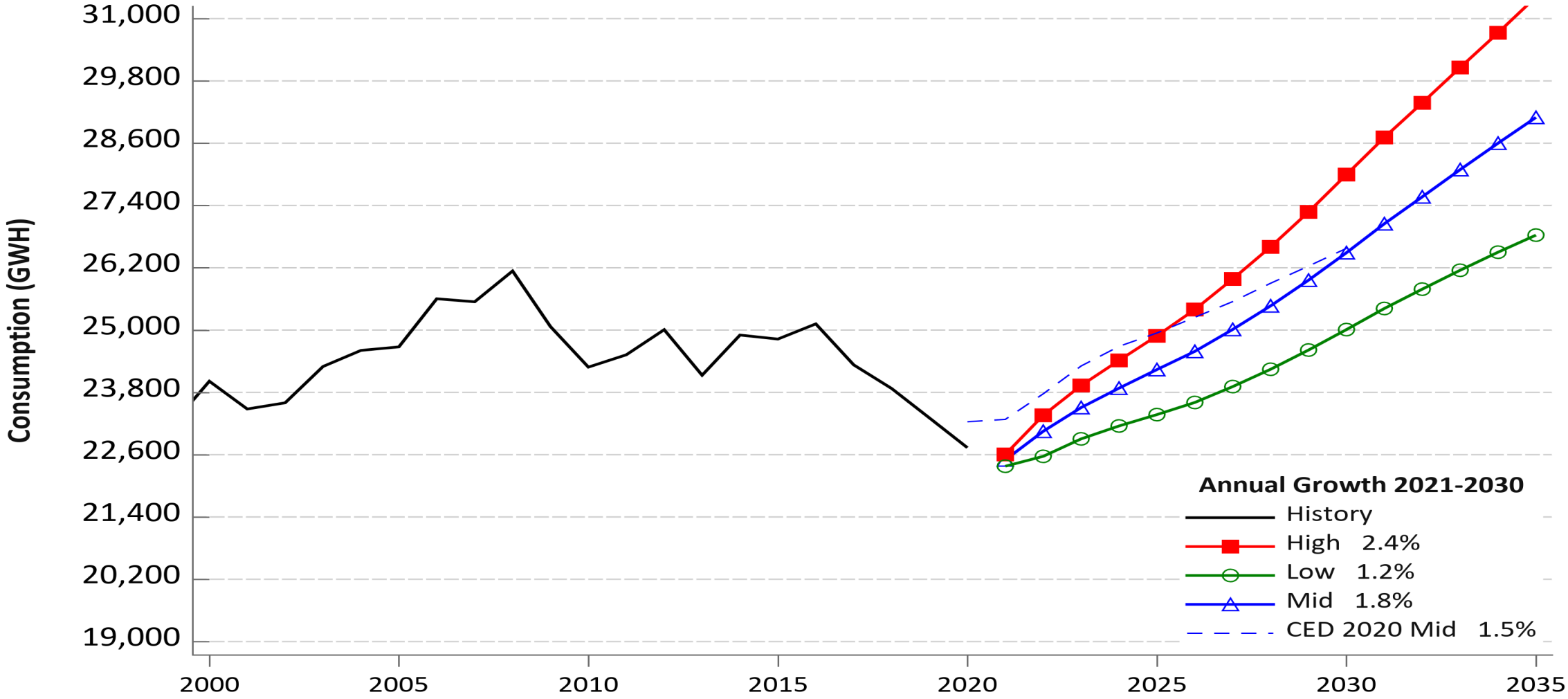
CAISO Mid Case Managed Sales Forecasts

- 2023 mid demand-mid-AA is unchanged; 2030 is 4% higher.



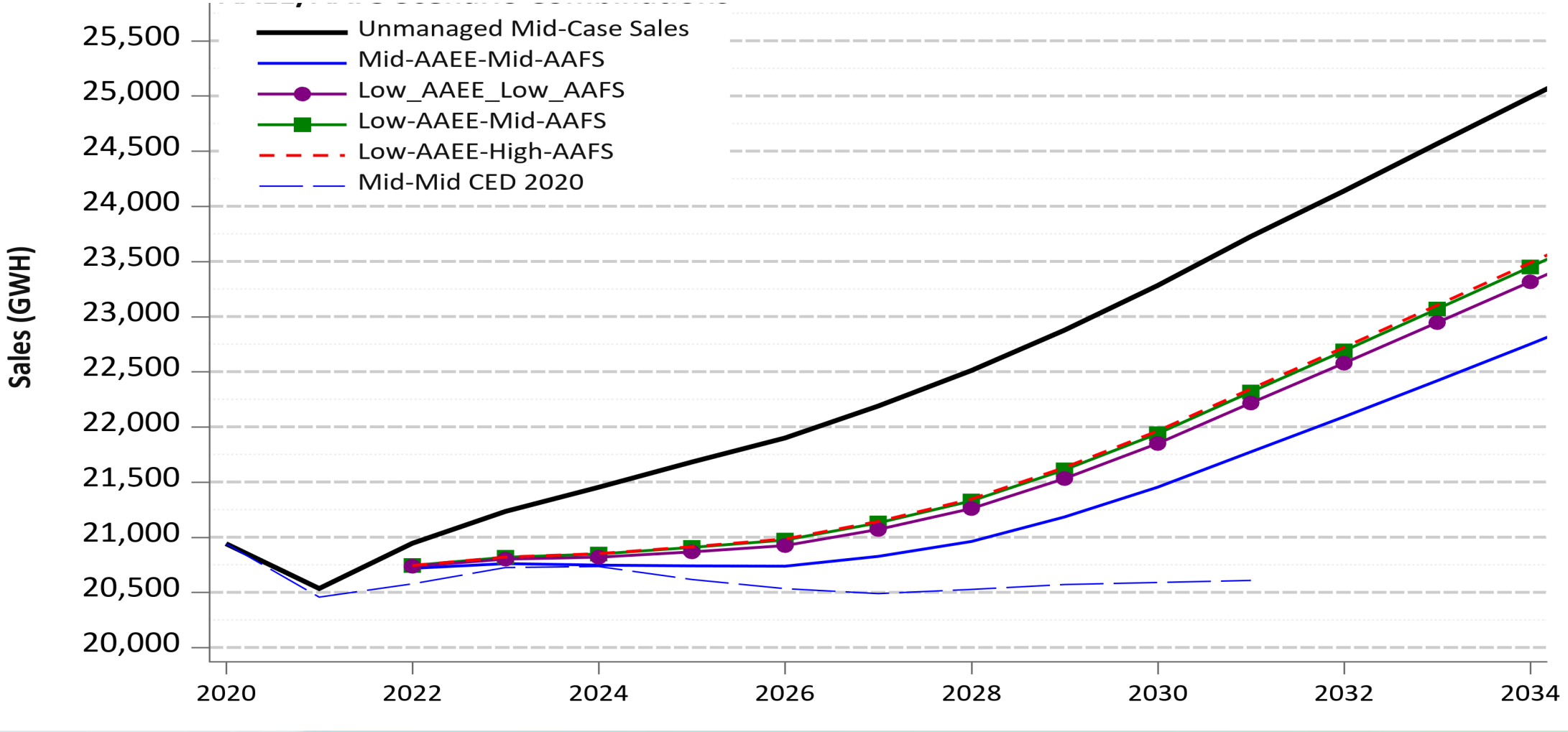
LADWP Planning Area Consumption

- Commercial consumption dropped 11% in 2020 and is projected to return to previous levels by 2025
- By 2035, almost 13% of consumption is serving electric vehicles



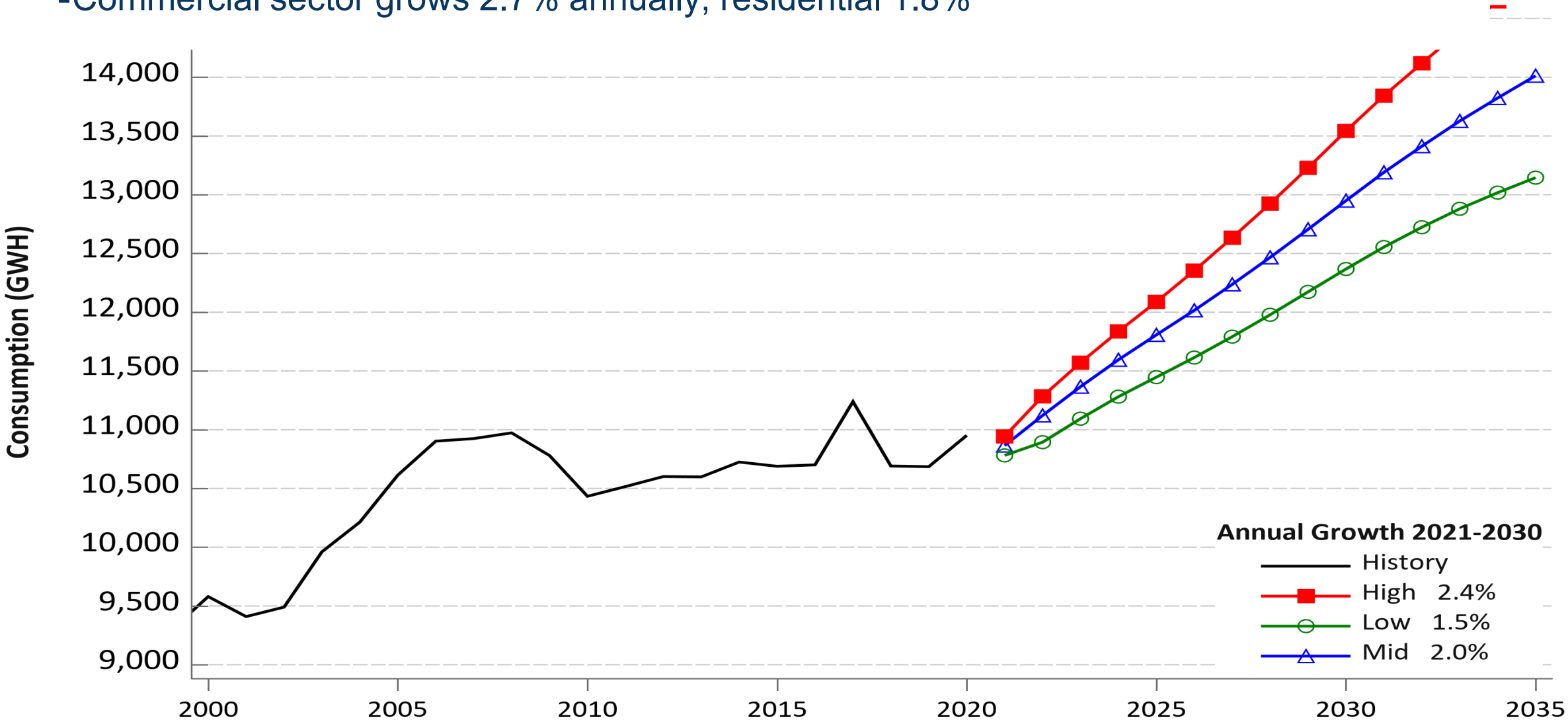
LADWP Mid Case Managed Sales Forecasts

- The mid-mid scenario reduces sales by 9% in 2035



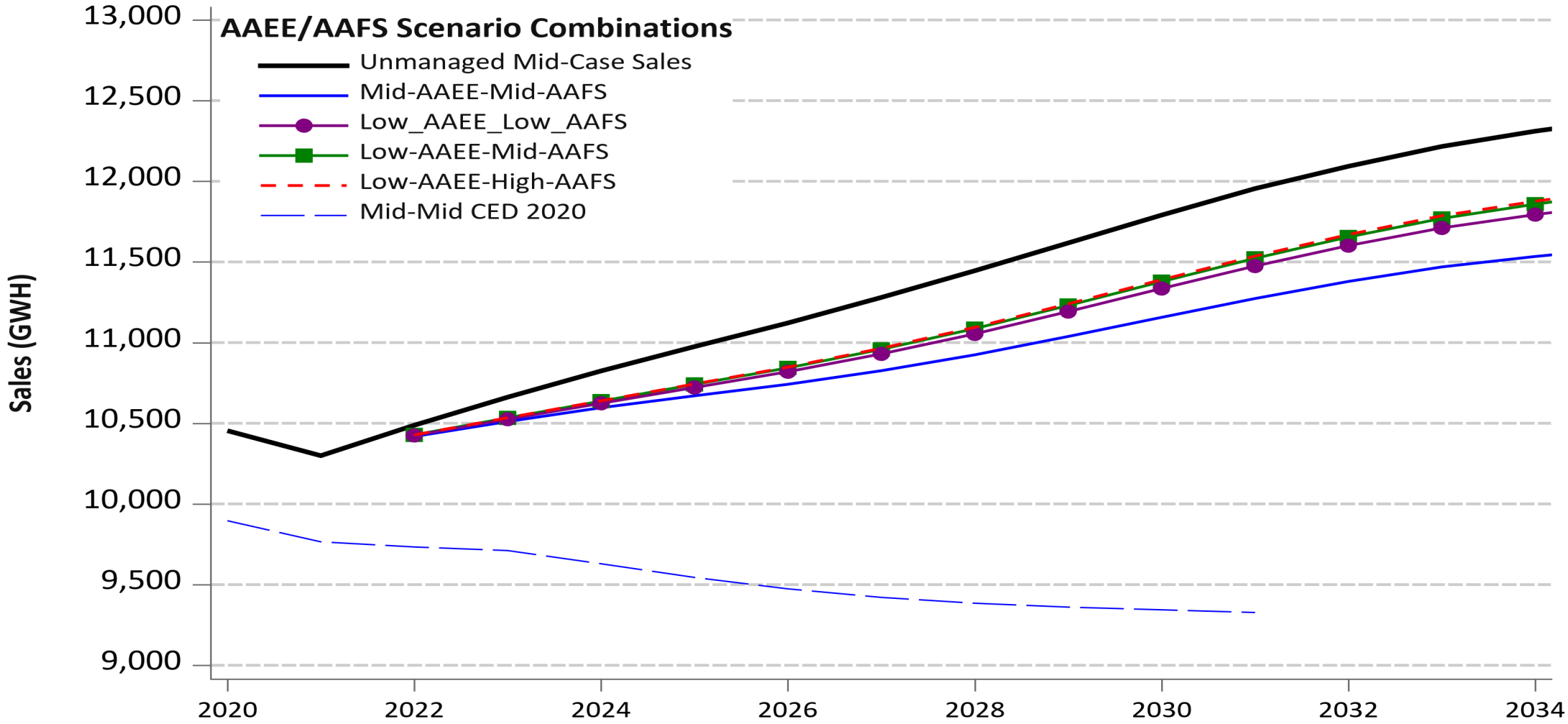
SMUD Electricity Consumption

- Commercial sector grows 2.7% annually; residential 1.8%



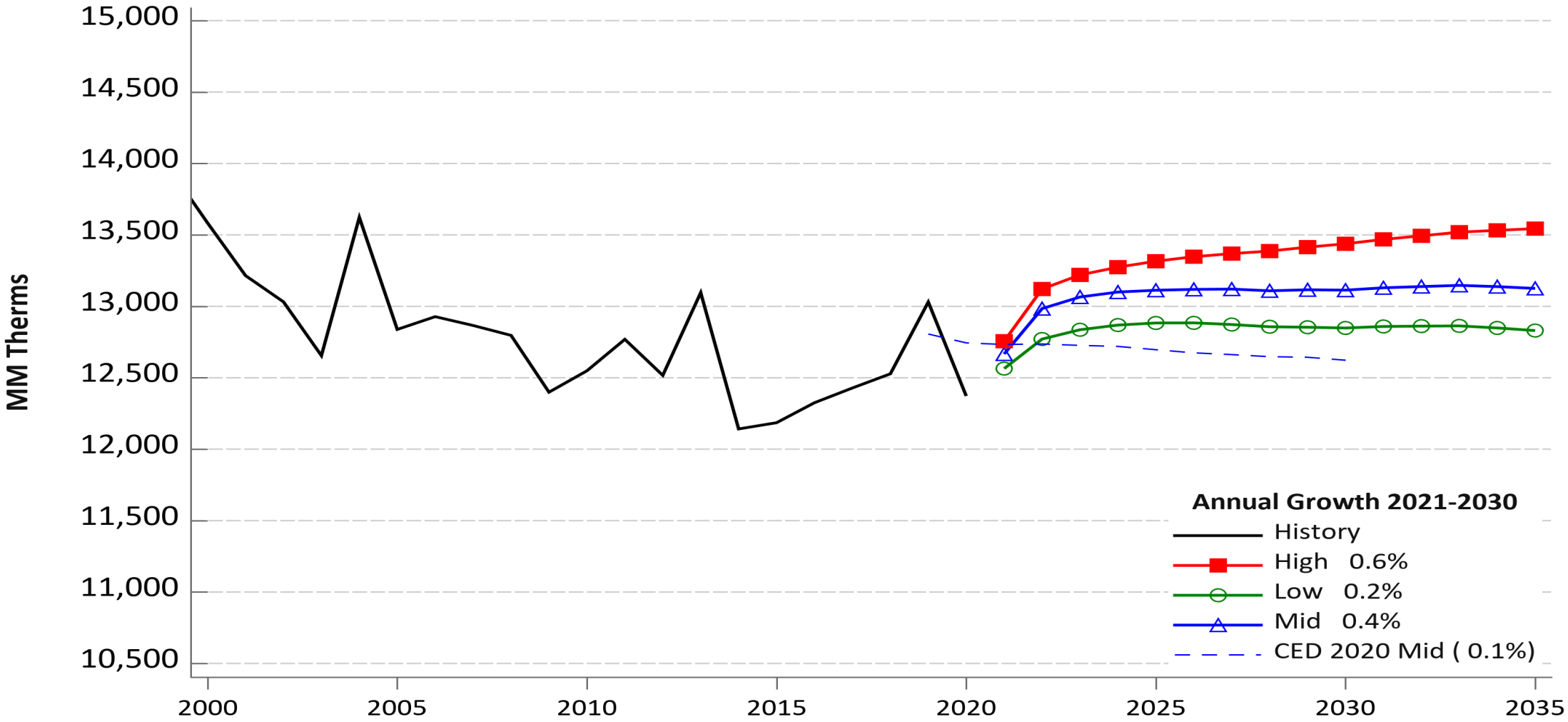
SMUD Mid Case Managed Sales Forecasts

- The mid-mid scenario reduces annual growth to 1.3%



Statewide Natural Gas Consumption

- Commercial consumption dropped 15% in 2020 and rebounds by 2025.



Statewide Managed Natural Gas Scenarios

- The mid-mid scenario reduces natural gas consumption by almost 12% by 2035.