Preliminary California Energy Demand Updated Forecast, 2015-2025: Method and Summary of Results

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Presentation

- Method
- Economic/demographic assumptions
- Statewide baseline results
- Planning area baseline results
- Updated managed forecasts
- Next Steps

California Energy Demand Updated Forecast, 2015-2025 (CEDU 2014)

- Update for California ISO Transmission Planning Process and CPUC Long-term Procurement Planning
- Accounts for more recent expectations about the economy and demographics
- Update adds historical data (2013 consumption/sales, DG, and 2014 peak demand)
- Does not update forecasts for efficiency (including AAEE), distributed generation, demand response, electrification, or climate change, except to rescale

Method (1)

- Re-estimate econometric models for the major sectors (plus peak demand):
  - Residential
  - Commercial
  - Manufacturing
  - Resource Extraction/Construction
  - Agriculture/Water Pumping
  - Transportation, Communication, and Utilities
  - Street Lighting

Method (2)

- Run econometric models with economic and demographic data used in CED 2013 (adopted IEPR forecast) from July 2013
- Run econometric models with newer economic and demographic data (August 2014)
  - Rate growth assumed 1% from 2024-2025
  - Climate change impacts extrapolated one year
- Apply percentage differences in econometric forecasts to CED 2013 net of post processed impacts (efficiency, DR, electrification, etc.)

Method (3)

- Develop one more year (out to 2025) for post-processed impacts.
  - Committed efficiency decayed one more year
  - High-speed rail for 2025 from latest HSR plan
  - DR for 2025 same as 2024
  - EVs and electrification extrapolated out one year
- Apply rescaled post-processed impacts through 2025 to give electricity consumption and initial peak forecasts

Method (4)

- For electricity sales, subtract projected distributed generation updated with 2013 adoptions and pending adoptions
- Develop weather-normalized peaks for 2014 to serve as starting point for peak forecasts
- Post-process planning area results to develop sales by LSE (1.1c form) and sales and peak for local areas (1.5 forms)

Economic/Demographic Scenarios

Scenarios similar to CED 2013

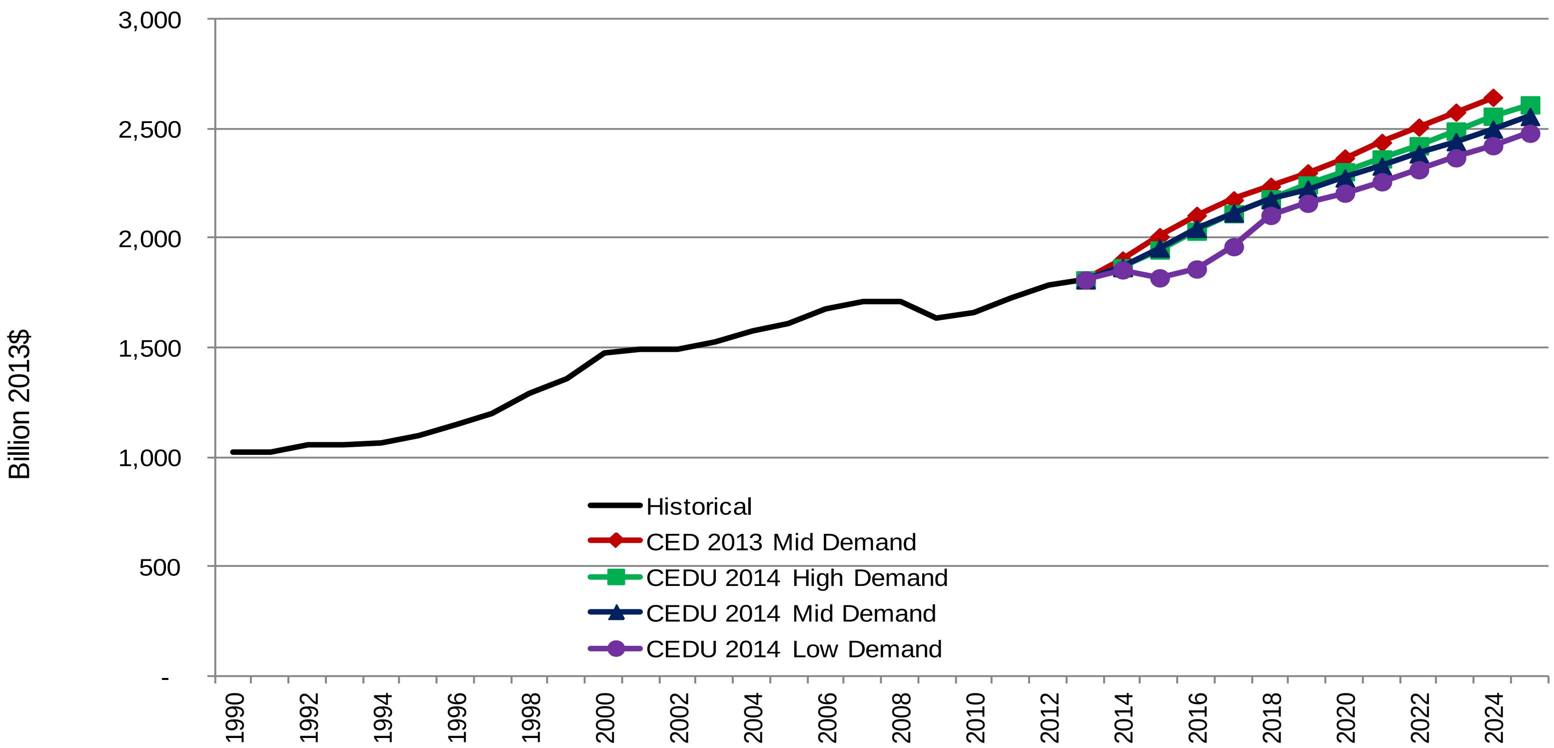
- High Demand Case: Global Insight Optimistic Scenario
- Mid Demand Case: Moody’s baseline
- Low Demand Case: Combination of Moody’s pessimistic and lower long-term growth scenarios

Economic and Demographic Data

- Newer projections for GSP, personal income, and employment show less growth compared to CED 2013, reflecting more pessimistic nationwide forecasts by Moody’s and Global Insight
- Moody’s manufacturing output growth higher than CED 2013
- Population projections slightly lower than CED 2013

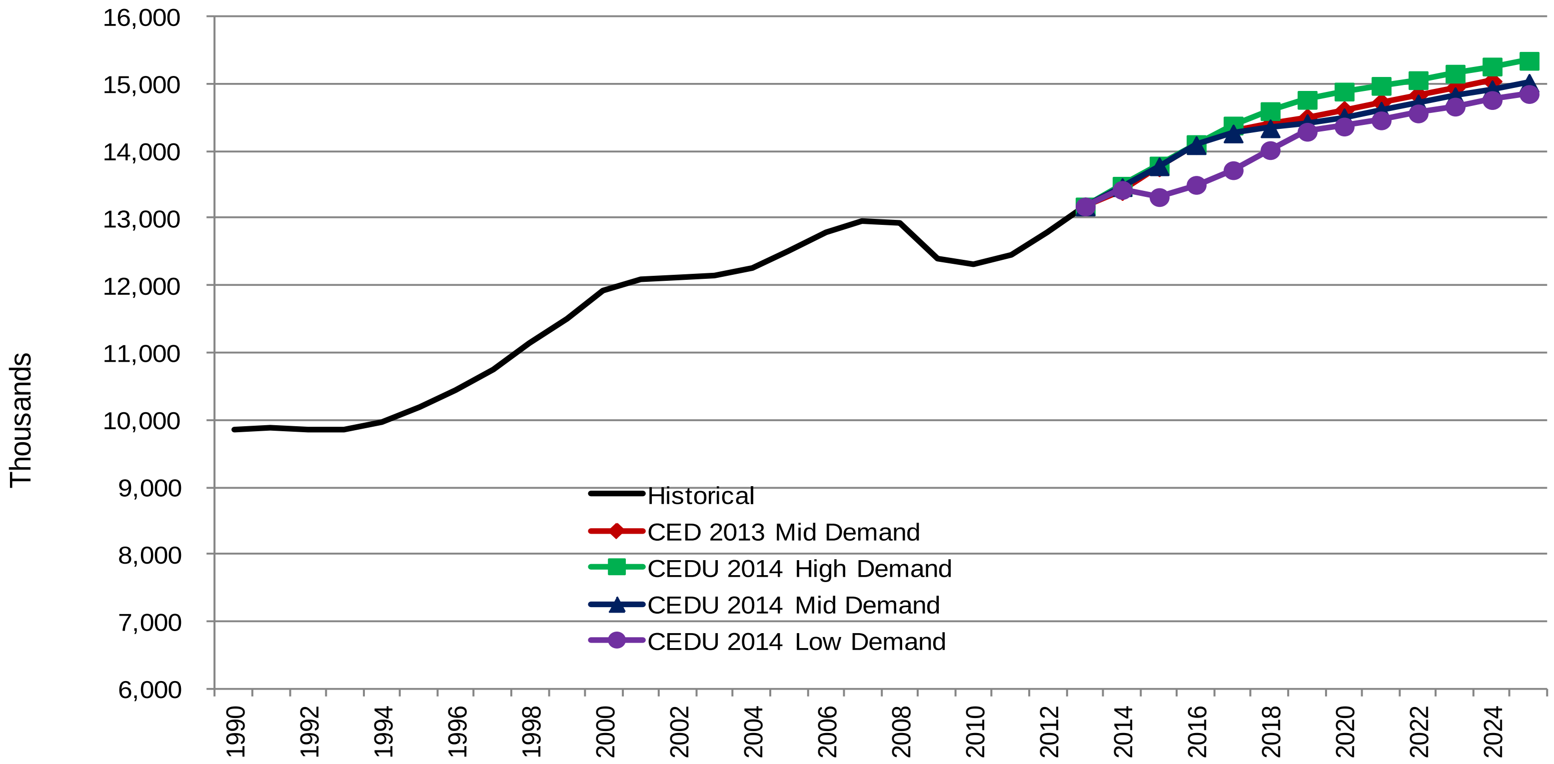
Statewide Personal Income

New mid case 5.5% lower by 2024 vs. CED 2013



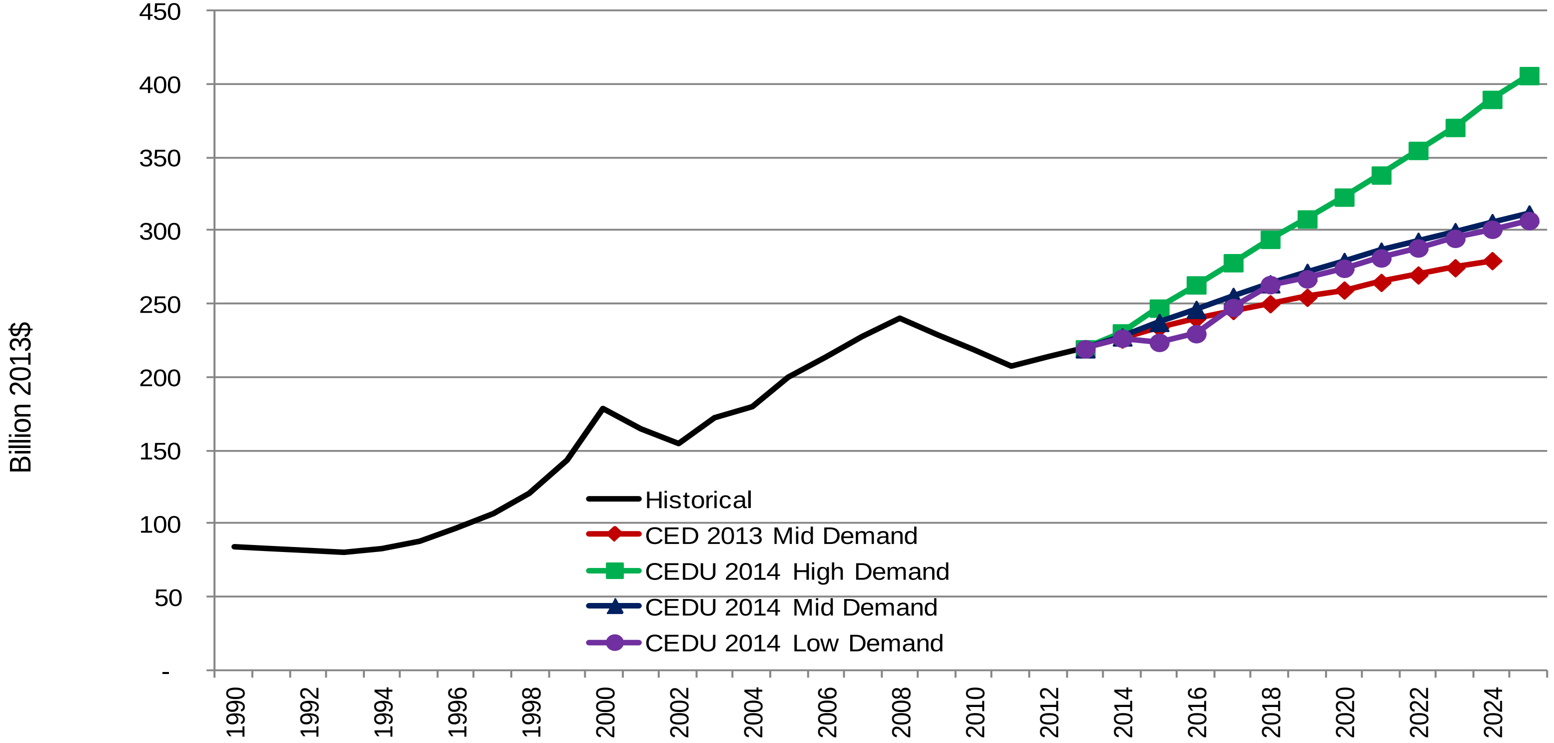
Statewide Commercial Employment

New mid case 0.8% lower by 2024 vs. CED 2013



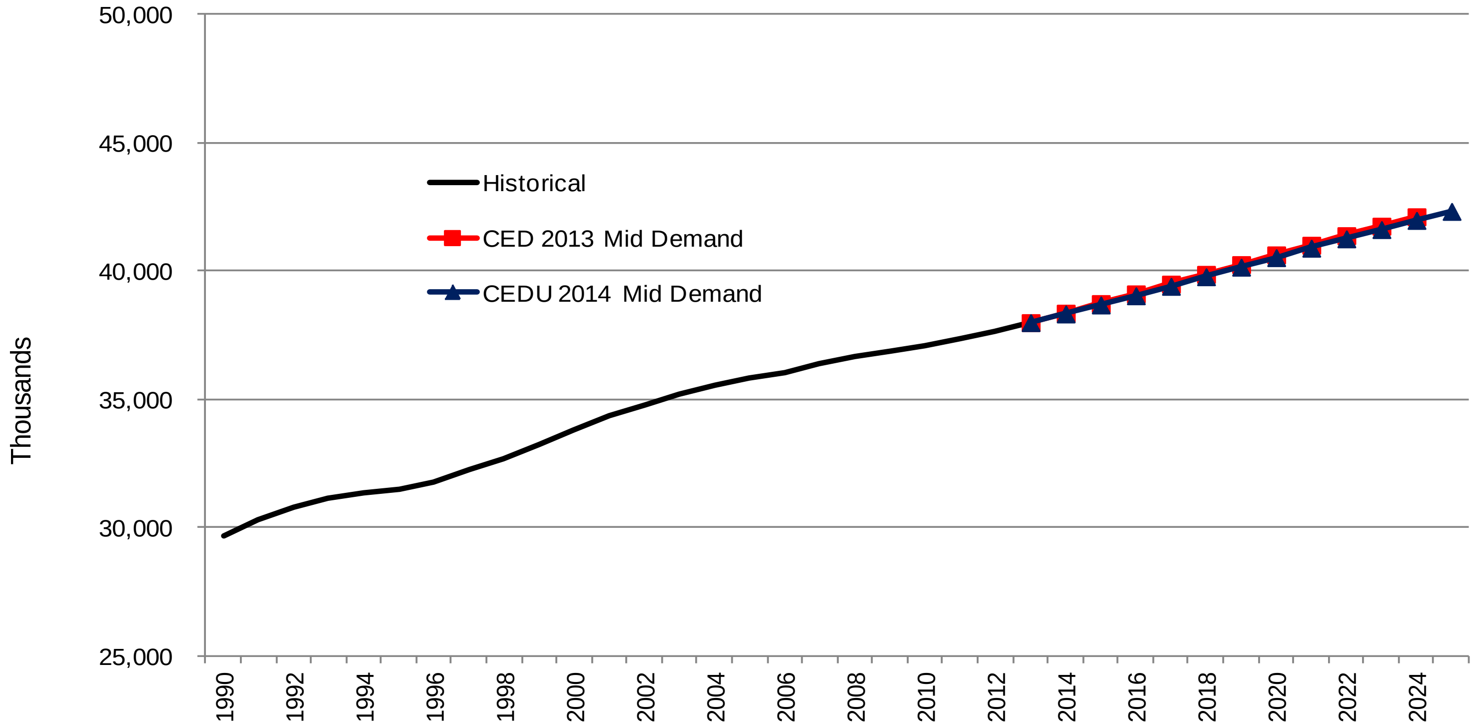
Statewide Manufacturing Output

New mid case 9% higher by 2024 vs. CED 2013



Statewide Population

New mid case 0.3% lower by 2024 vs. CED 2013



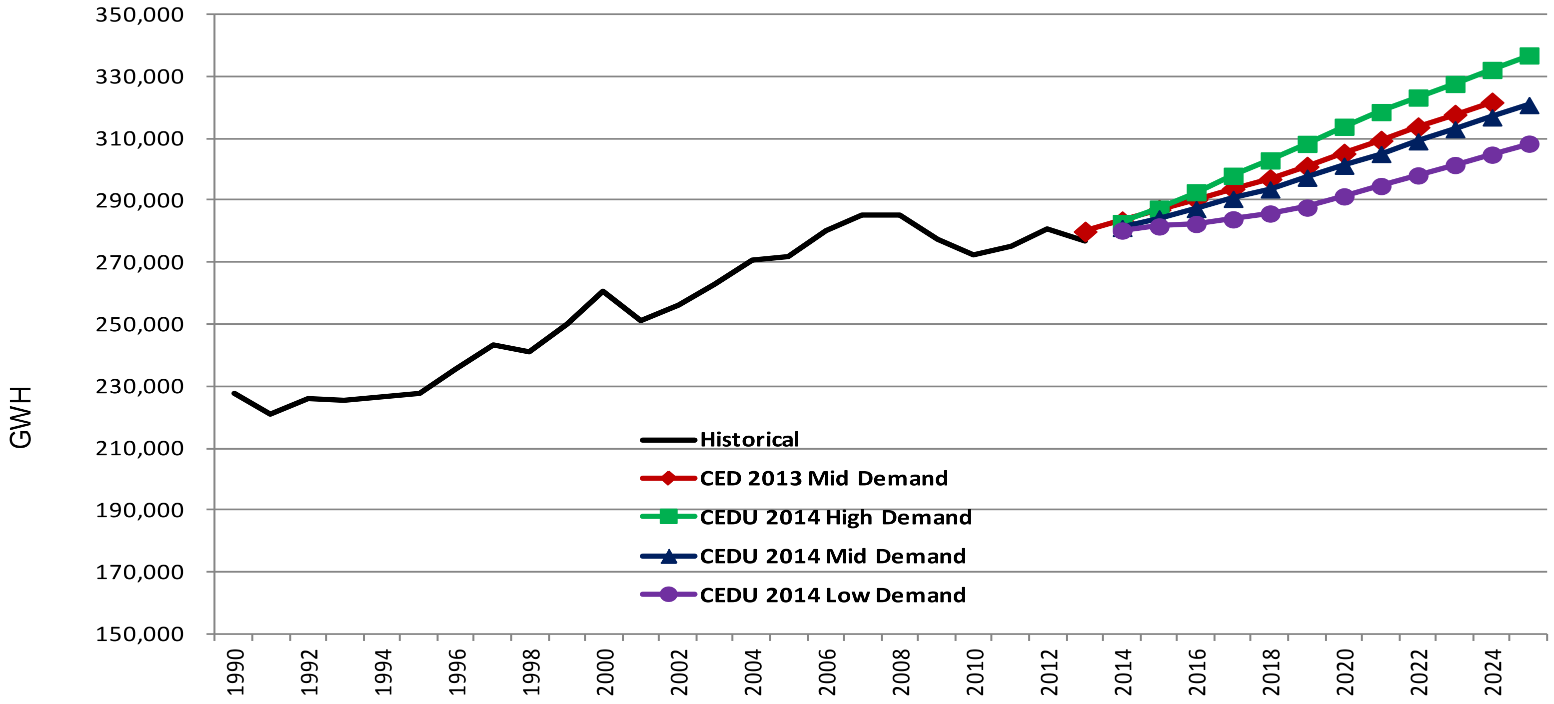
Econ-Demo Growth by Planning Area

Average annual growth for updated mid case versus CED 2013 mid case, 2013-2024

	PG&E		SCE		SDG&E	
	CED 2014 Update	CED 2013	CED 2014 Update	CED 2013	CED 2014 Update	CED 2013
Personal Income	3.08%	3.51%	2.88%	3.51%	2.95%	3.53%
Commercial Employment	1.23%	1.22%	1.05%	1.21%	1.12%	1.23%
Manufacturing Output	2.99%	2.16%	3.08%	2.23%	3.34%	2.61%
Population	1.00%	1.03%	0.93%	0.96%	0.68%	0.71%
	LADWP		SMUD			
	CED 2014 Update	CED 2013	CED 2014 Update	CED 2013		
Personal Income	2.69%	3.34%	3.31%	3.61%		
Commercial Employment	1.09%	1.18%	1.17%	1.06%		
Manufacturing Output	2.95%	2.25%	3.13%	1.69%		
Population	0.62%	0.65%	0.90%	0.93%		

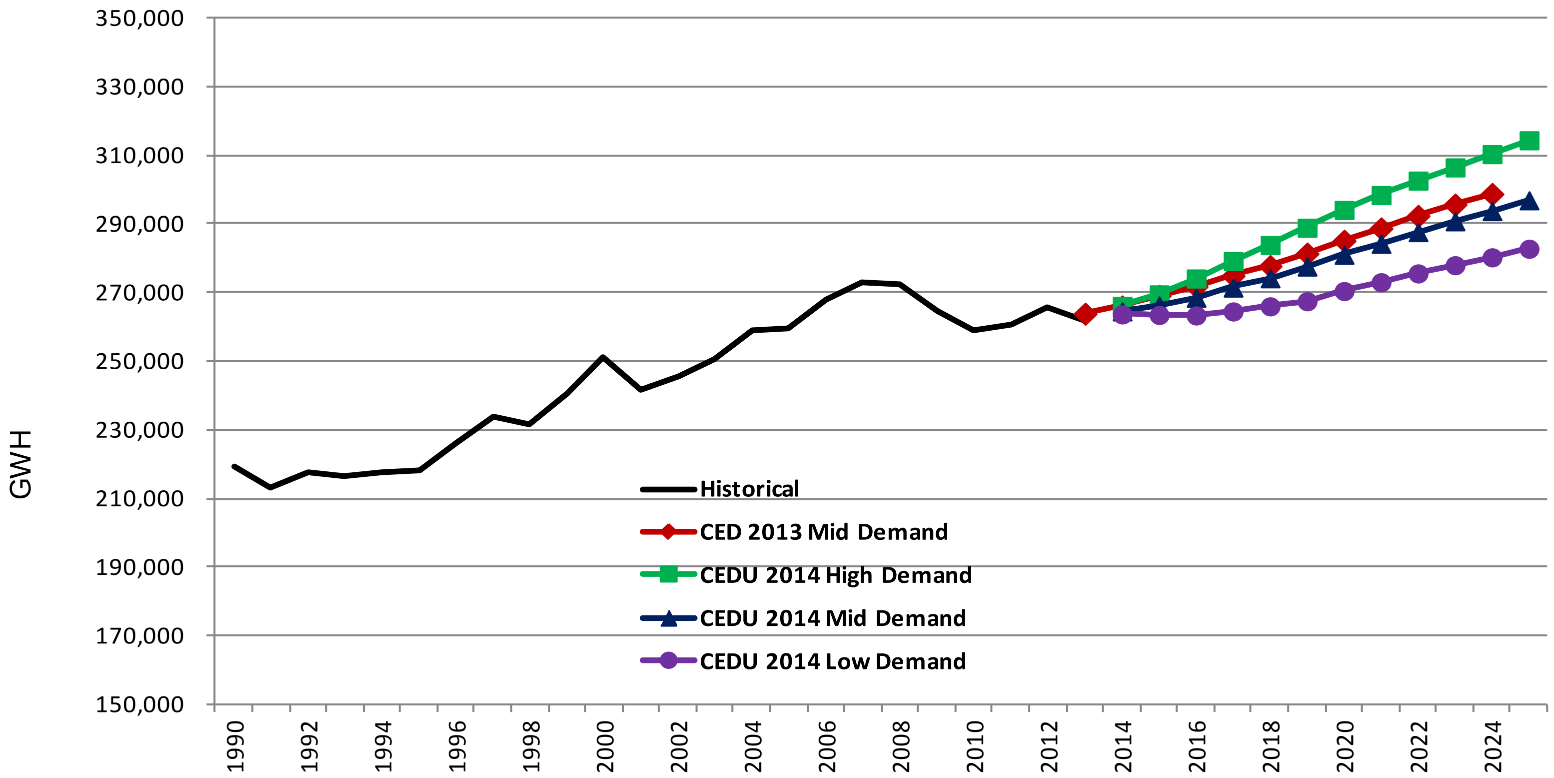
Statewide Results: Electricity Consumption

New mid baseline case 1.5% lower by 2024



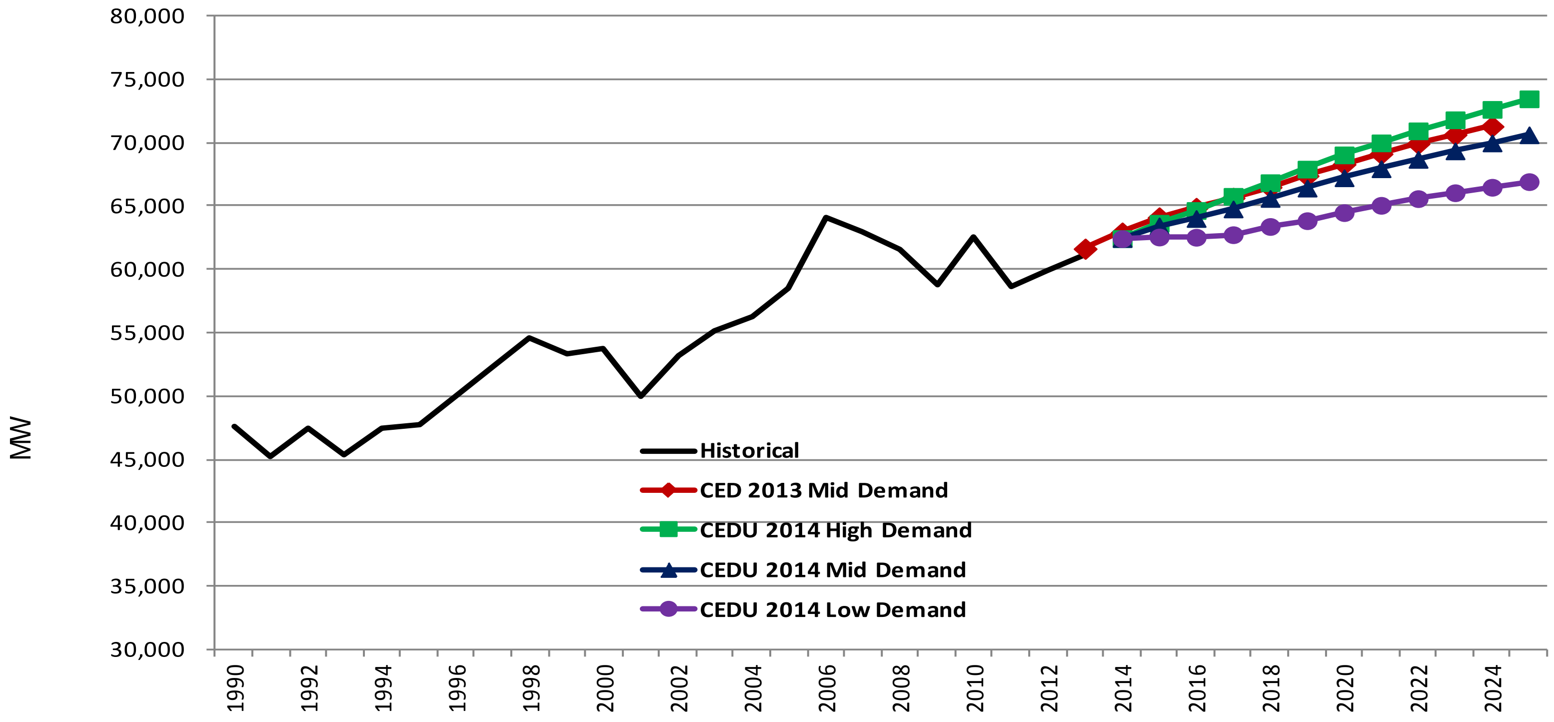
Statewide Results: Electricity Sales

New mid baseline case 1.7% lower by 2024



Statewide Results: Peak Demand

New mid baseline case 1.8% lower by 2024

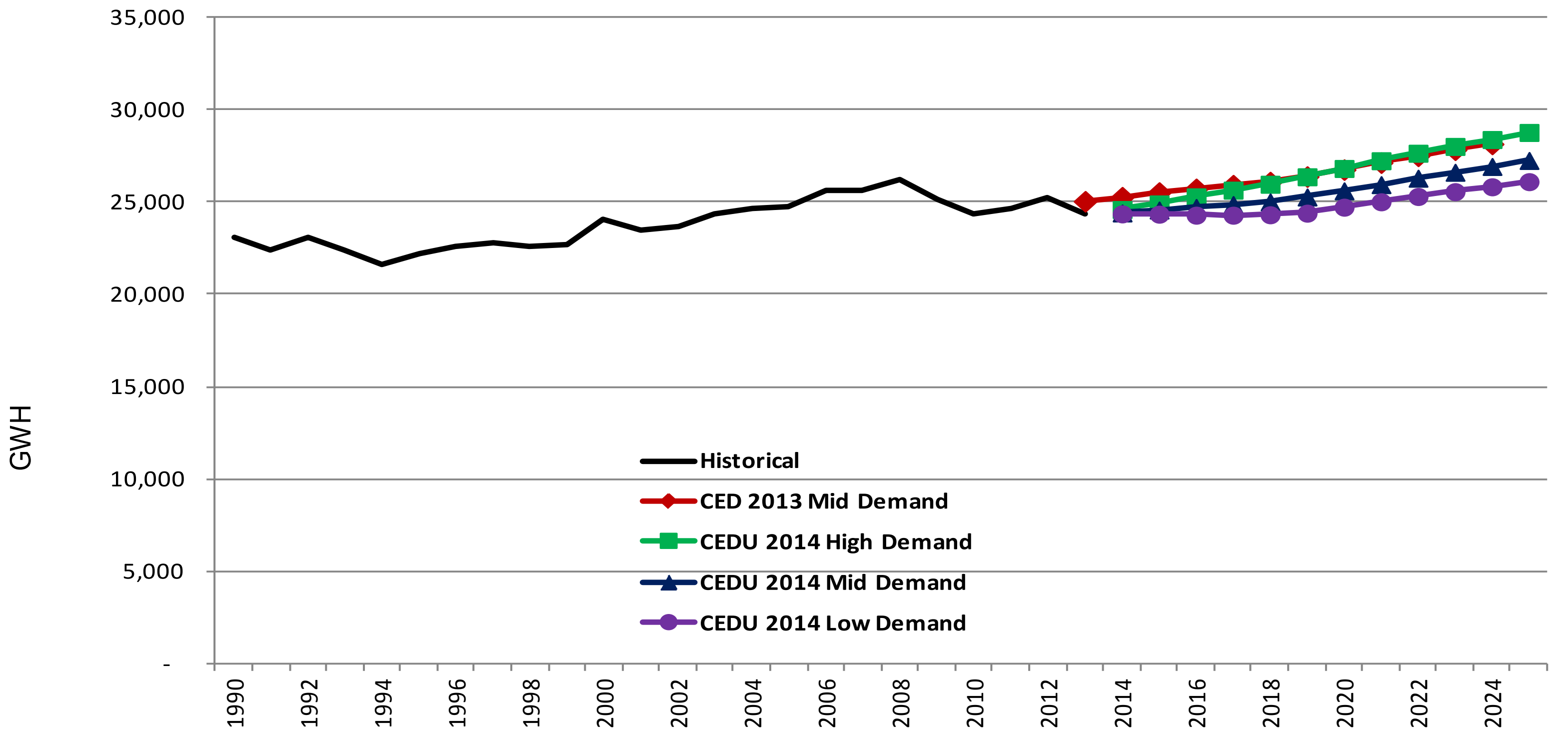


Forecast Planning Areas (electricity)

- Burbank/Glendale
- Imperial Irrigation District
- LADWP
- Pasadena
- PG&E
- Southern California Edison
- SDG&E
- SMUD

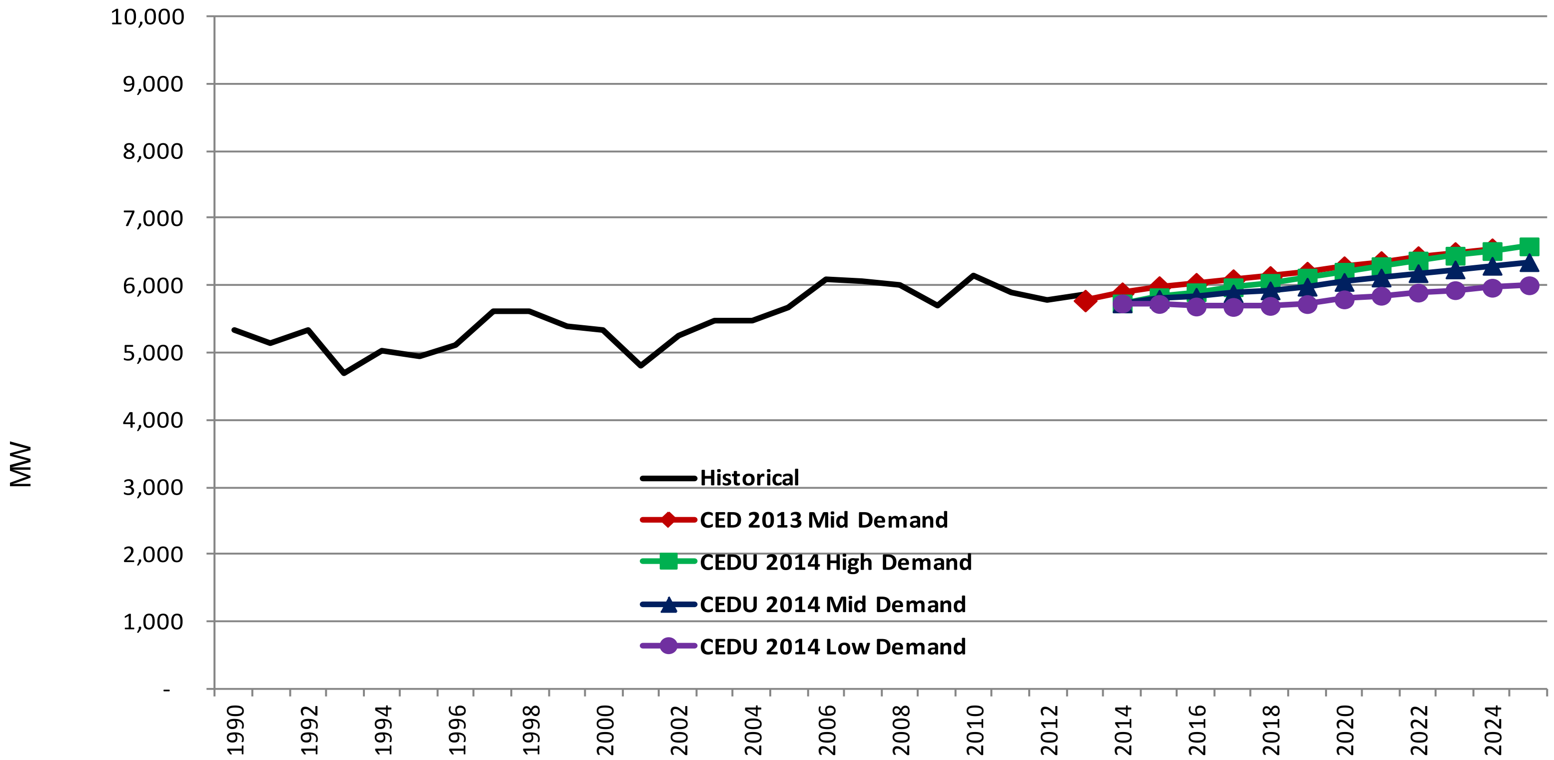
LADWP Electricity Consumption

New Mid Baseline Case Down 4.3% in 2024



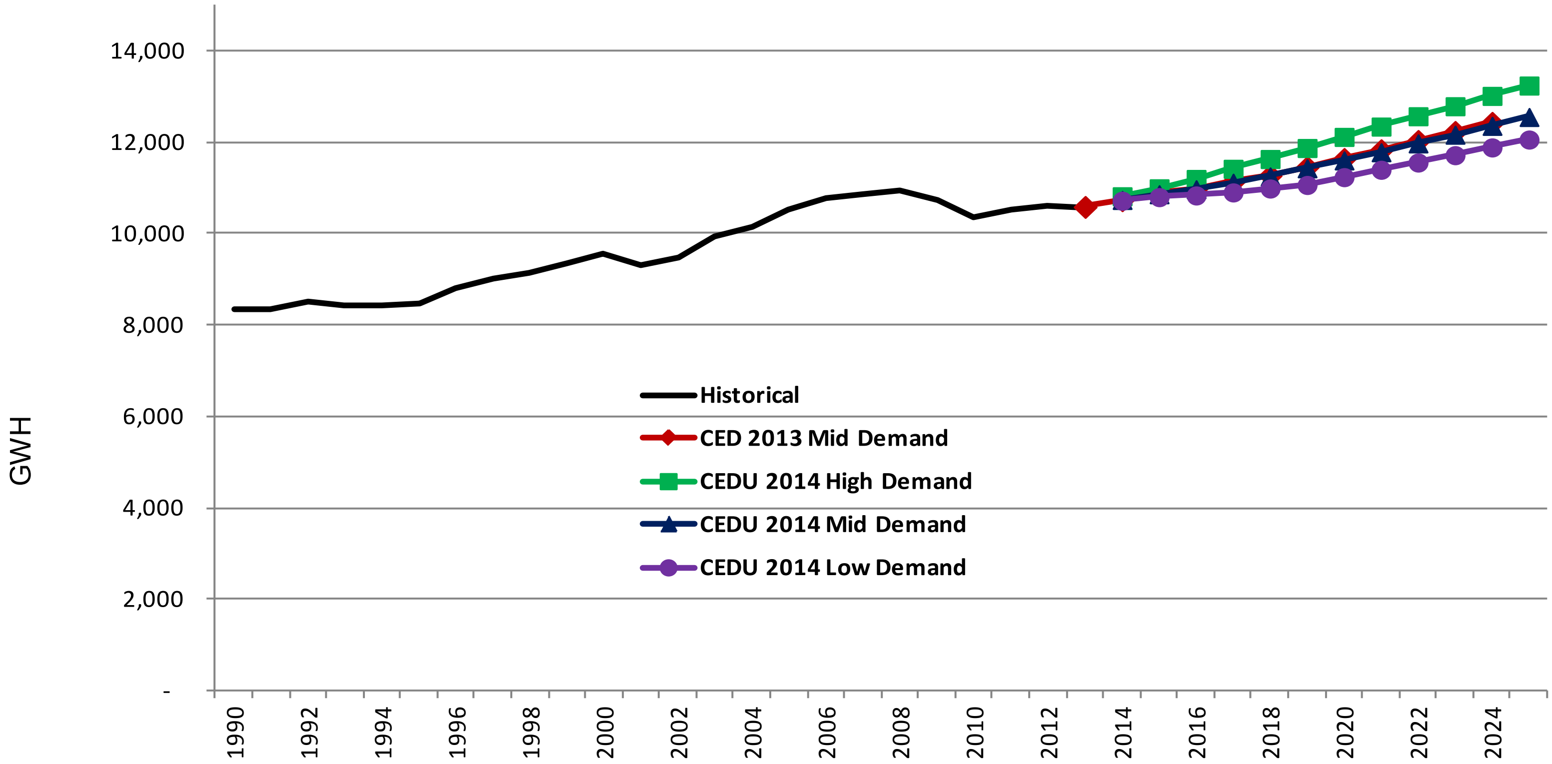
LADWP Peak Demand

New Mid Baseline Case Down 3.8% in 2024



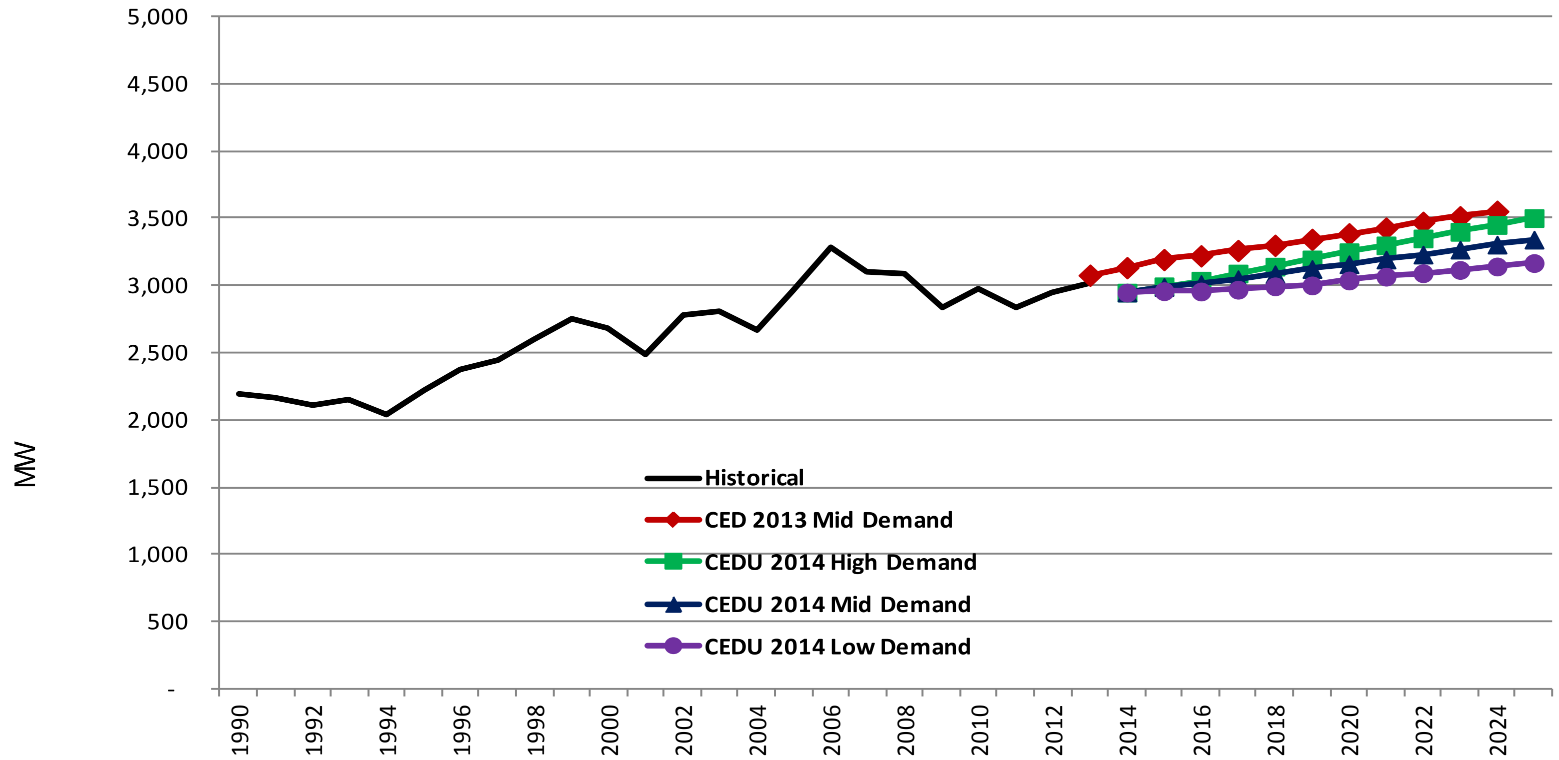
SMUD Electricity Consumption

New Mid Baseline Case Down 0.5% in 2024



SMUD Peak Demand

New Mid Baseline Case Down 7% in 2024



Results for IOU Planning Areas for Electricity Consumption, Sales, Peak

New mid baseline case versus CED 2013 mid baseline case in 2024

- PG&E: Electricity consumption down 0.6%, electricity sales down 0.4%, peak down 1.2%
- SCE: Consumption down 2.0%, sales down 2.4%, peak down 0.9%
- SDG&E: Consumption down 1.5%, sales down 1.8%, peak down 2.7%

Peak Weather Normalization for IOU Transmission Access Charge (TAC) Areas

- Used three years of summer hourly load data
- Log-linear regression to estimate temperature response
- 30 years of temperature data to develop distribution of loads—mean becomes 1 in 2 weather normalized peak

Peak Weather Normalization Results for 2014

- PG&E TAC area: 22,037 MW (vs. 21,628 MW in 2013)
- SCE TAC area: 23,411 MW (vs. 22,871 MW in 2013)
- SDG&E TAC area: 4,708 MW (vs. 4,699 MW in 2013)

Transmission access charge area

Managed Forecasts for IOU Service Territories

- Applies additional achievable energy efficiency (AAEE) savings to baseline forecasts for service territories
- Mid and low-mid AAEE scenarios applied to mid baseline forecasts for system-wide and localized planning, respectively
- No change in AAEE from *CED 2013* except to rescale—2025 extrapolated per Navigant

Rescaled Savings, Mid AAEE Scenario

Energy Savings (GWH)

Year	PG&E	SCE	SDG&E	IOUs Combined
2014	167	206	28	400
2015	938	1,152	247	2,337
2016	1,856	2,259	498	4,613
2017	2,746	3,308	735	6,789
2018	3,548	4,159	922	8,628
2019	4,428	5,020	1,134	10,581
2020	5,209	5,794	1,323	12,327
2021	6,043	6,625	1,532	14,200
2022	6,922	7,466	1,754	16,142
2023	7,866	8,386	1,988	18,240
2024	8,809	9,323	2,222	20,354
2025	9,862	10,362	2,483	22,707

Peak Demand Savings* (MW)

Year	PG&E	SCE	SDG&E	IOUs Combined
2015	200	216	52	468
2016	437	471	113	1,022
2017	664	706	169	1,539
2018	884	929	222	2,035
2019	1,099	1,145	276	2,519
2020	1,303	1,339	324	2,966
2021	1,522	1,550	378	3,450
2022	1,751	1,770	435	3,955
2023	2,001	2,015	497	4,513
2024	2,253	2,265	560	5,078
2025	2,536	2,546	630	5,713

Rescaled Savings, Low-Mid AAEE Scenario

Energy Savings (GWH)

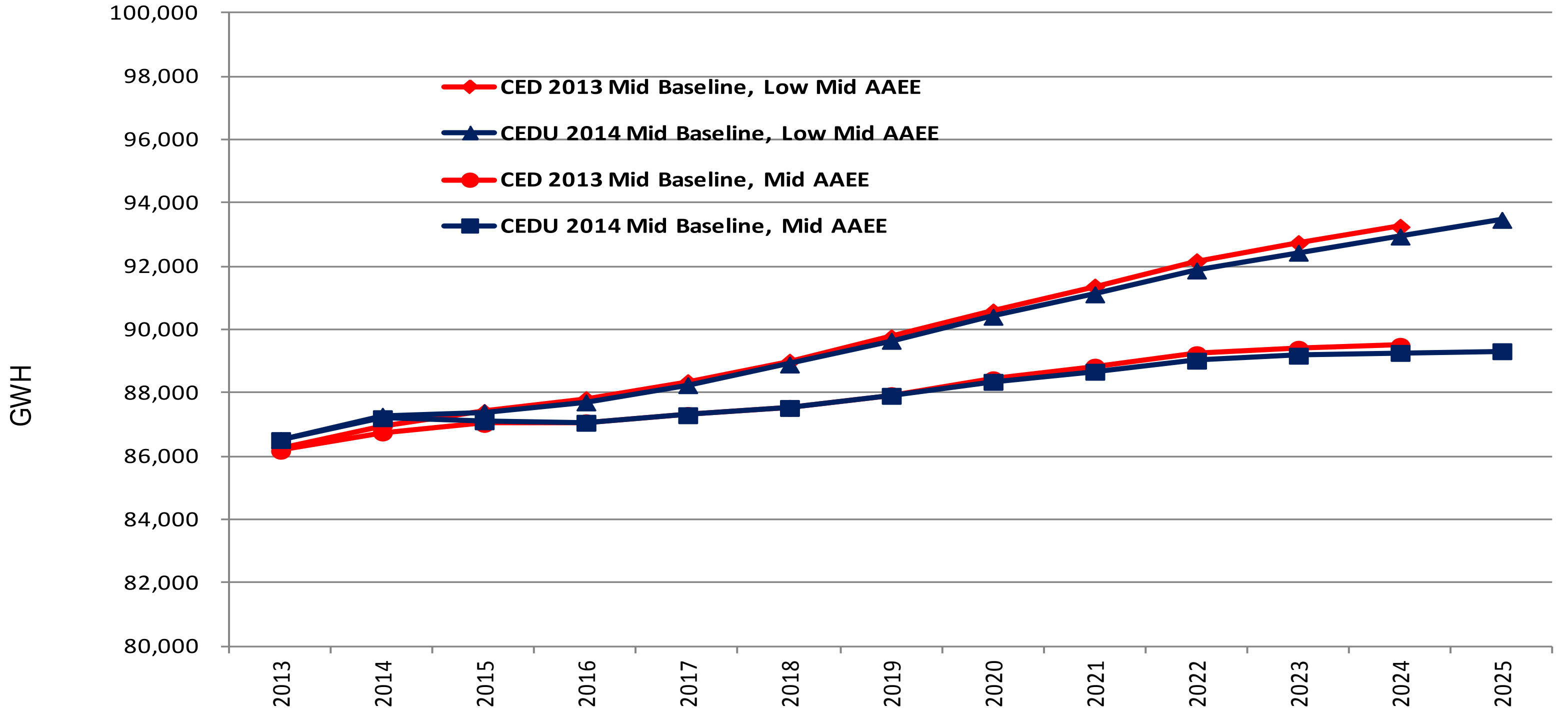
Year	PG&E	SCE	SDG&E	IOUs Combined
2014	90	126	10	225
2015	650	847	170	1,667
2016	1,213	1,579	331	3,123
2017	1,797	2,318	495	4,611
2018	2,177	2,738	585	5,500
2019	2,692	3,220	714	6,626
2020	3,156	3,684	841	7,681
2021	3,601	4,127	966	8,693
2022	4,076	4,568	1,100	9,743
2023	4,615	5,084	1,248	10,948
2024	5,137	5,596	1,391	12,123
2025	5,715	6,156	1,550	13,421

Peak Demand Savings* (MW)

Year	PG&E	SCE	SDG&E	IOUs Combined
2015	153	169	39	361
2016	307	339	79	725
2017	464	511	120	1,096
2018	581	635	149	1,365
2019	715	772	185	1,672
2020	839	898	218	1,954
2021	960	1,019	251	2,230
2022	1,085	1,143	287	2,515
2023	1,228	1,290	327	2,845
2024	1,372	1,439	366	3,177
2025	1,532	1,604	410	3,547

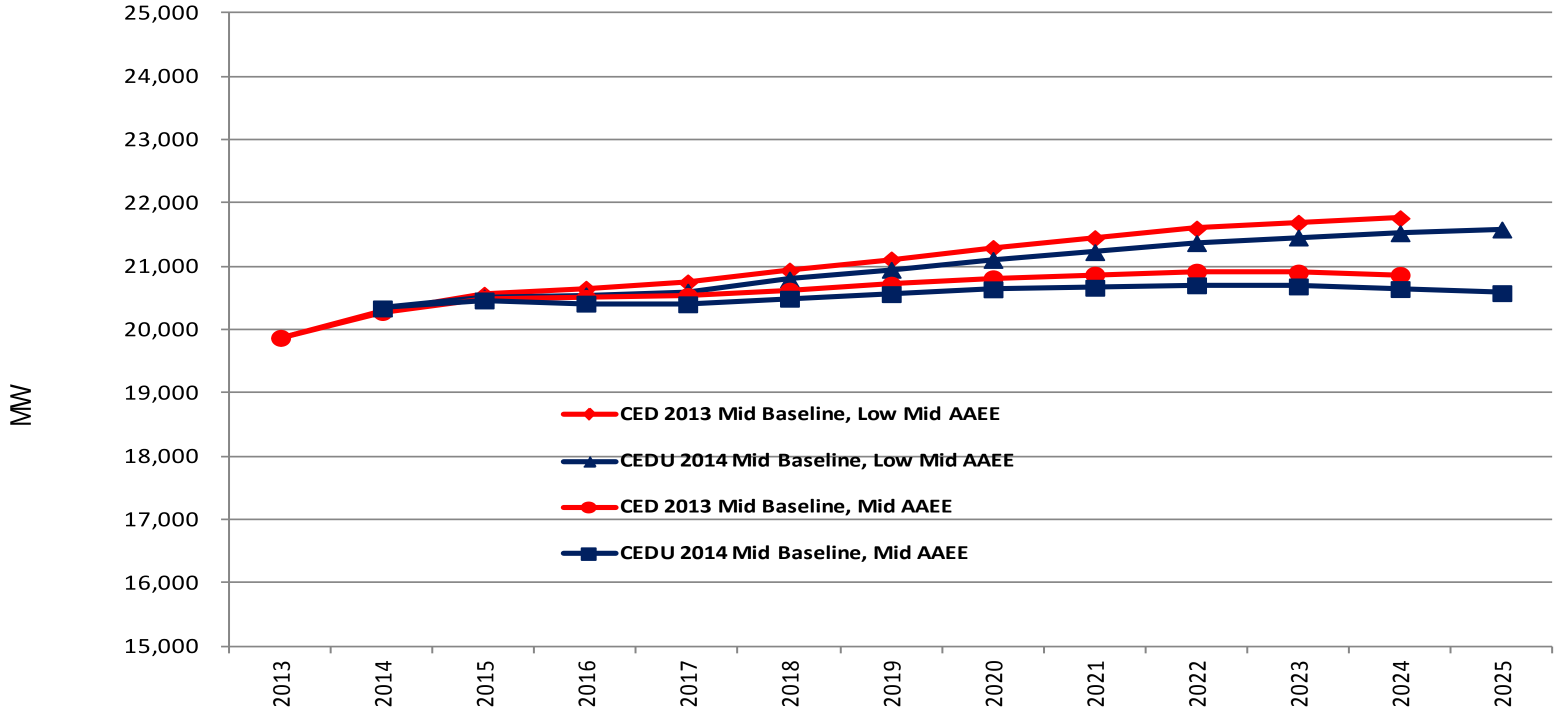
PG&E Service Territory Managed Forecast: Sales

Combined mid baseline-low mid AAEE down 0.3% in 2024, mid baseline-mid AAEE down 0.25%



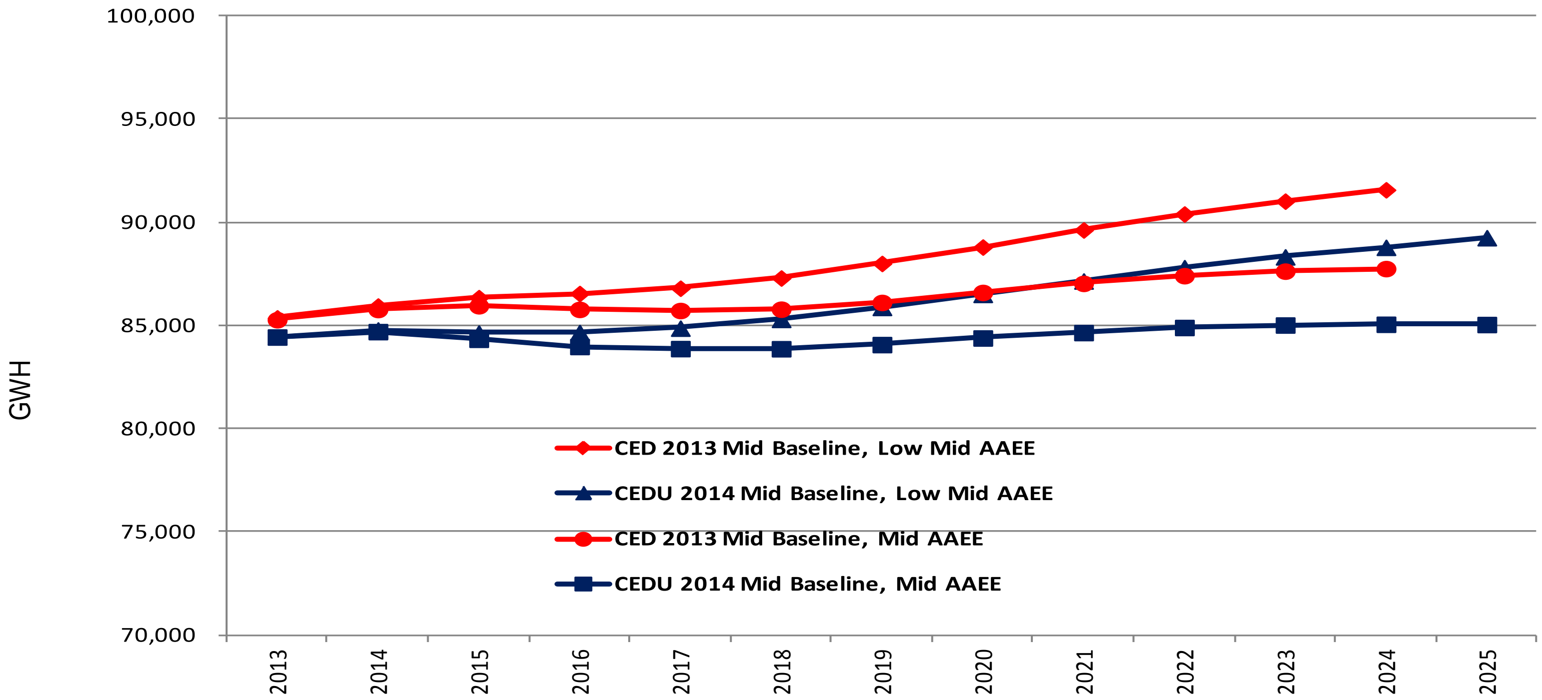
PG&E Service Territory Managed Forecast: Peak

Combined mid baseline-low mid AAEE down 1.1% in 2024, mid baseline-mid AAEE down 1.1%



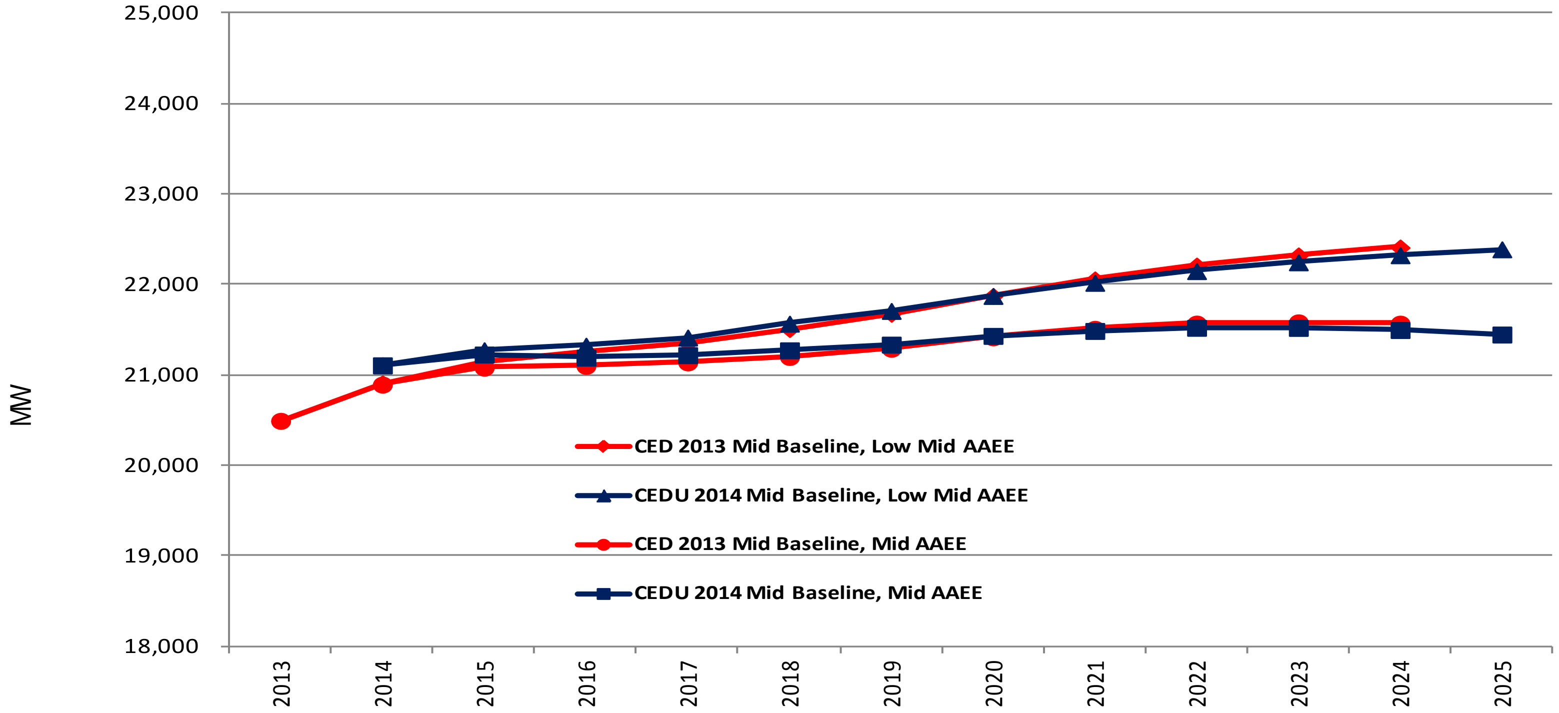
SCE Service Territory Managed Forecast: Sales

Combined mid baseline-low mid AAEE down 3.0% in 2024, mid baseline-mid AAEE down 3.1%



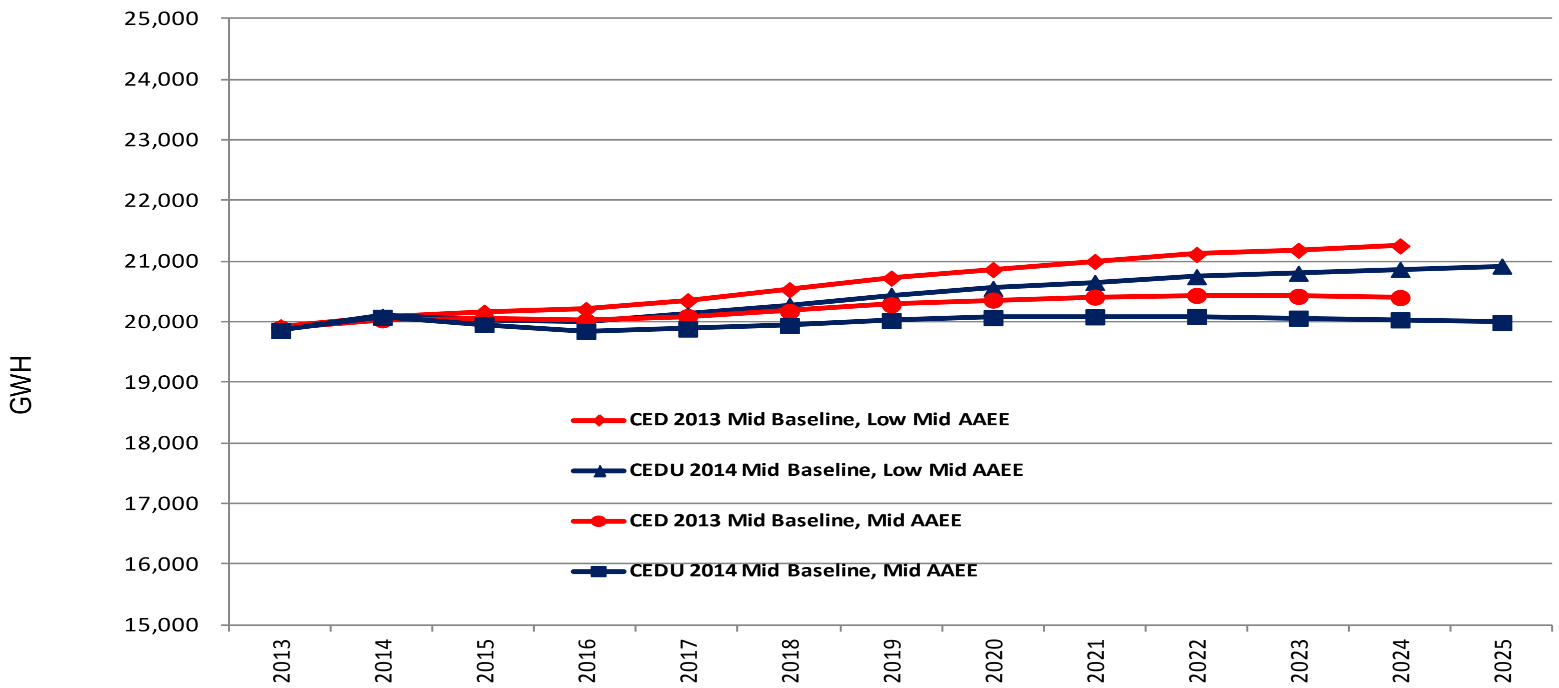
SCE Service Territory Managed Forecast: Peak

Combined mid baseline-low mid AAEE down 0.4% in 2024, mid baseline-mid AAEE down 0.3%



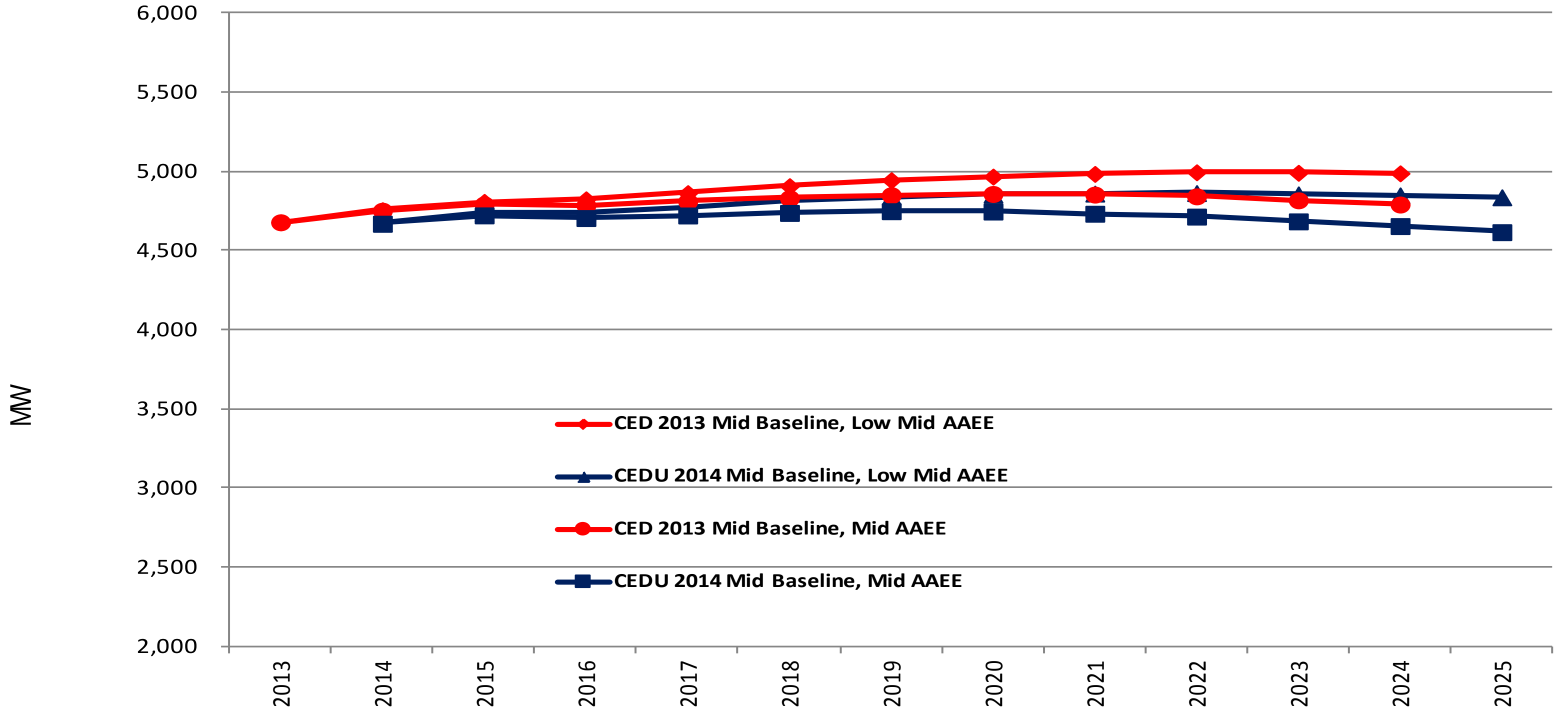
SDG&E Service Territory Managed Forecast: Sales

Combined mid baseline-low mid AAEE down 1.8% in 2024, mid baseline-mid AAEE down 1.8%



SDG&E Service Territory Managed Forecast: Peak

Combined mid baseline-low mid AAEE down 2.8% in 2024, mid baseline-mid AAEE down 2.8%



Next Steps

- Written comments from stakeholders due December 17
- Incorporate comments as appropriate
- Forecast adopted January 14, 2015