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CED 2019 Preliminary Forecast

Summary of Planning Area Forecasts

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California Energy Commission

Electricity Planning Areas

- Pacific Gas & Electric (PG&E)
- Southern California Edison (SCE)
- San Diego Gas & Electric (SDG&E)
- Sacramento Metropolitan Utility District (SMUD)
- Los Angeles Department of Water and Power (LADWP)

Planning Area Results

SCE

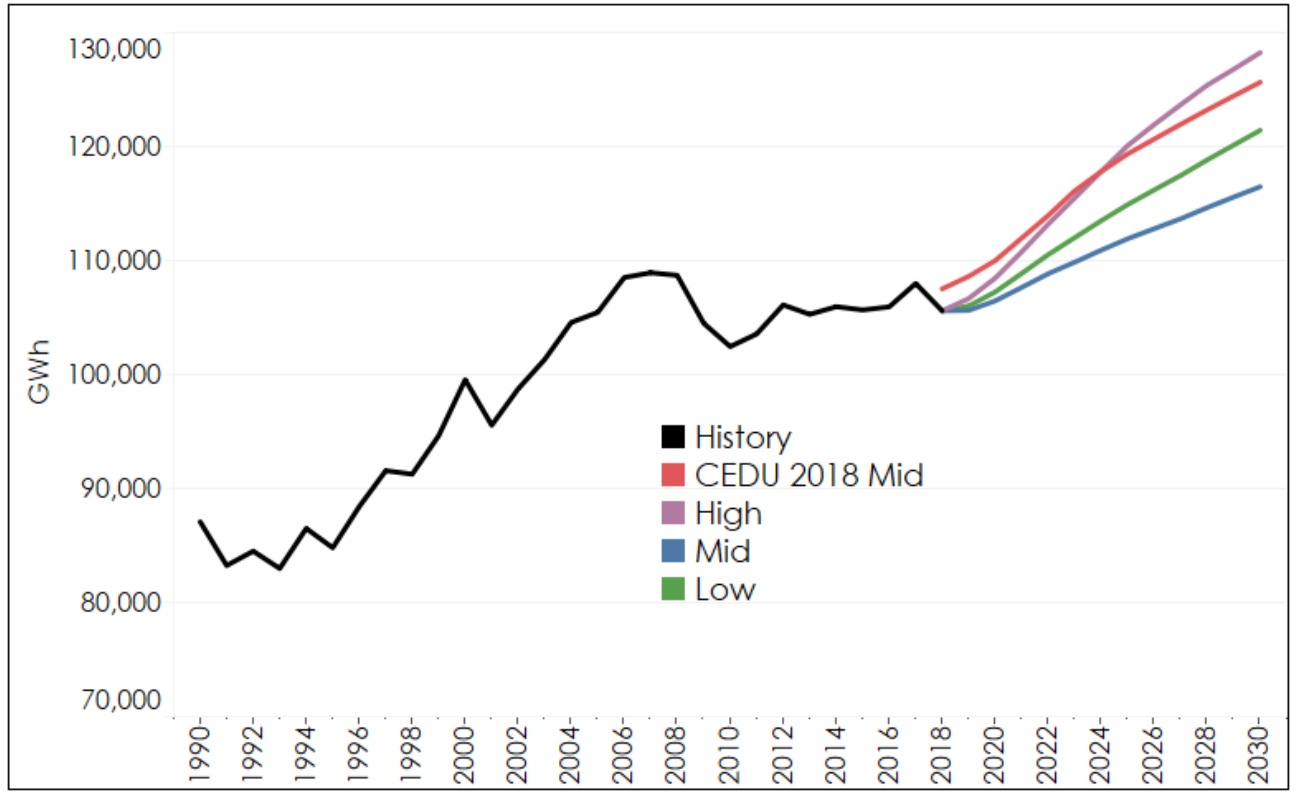
SCE: Summary

Annual Growth, 2019 – 2030

Economic Driver	CED 2019 Prelim	CEDU 2018
Population	0.7%	0.7%
Households	0.9%	0.8%
Personal Income	2.2%	2.3%
Manufacturing Output	1.9%	2.3%
Commercial Employment	0.4%	0.4%

- Population and household growth higher in inland areas
- 4,700 GWh of light-duty EV consumption in mid cases by 2030 (1.1 million EVs)
- 8,200 MW of PV capacity in mid case by 2030

SCE: Consumption

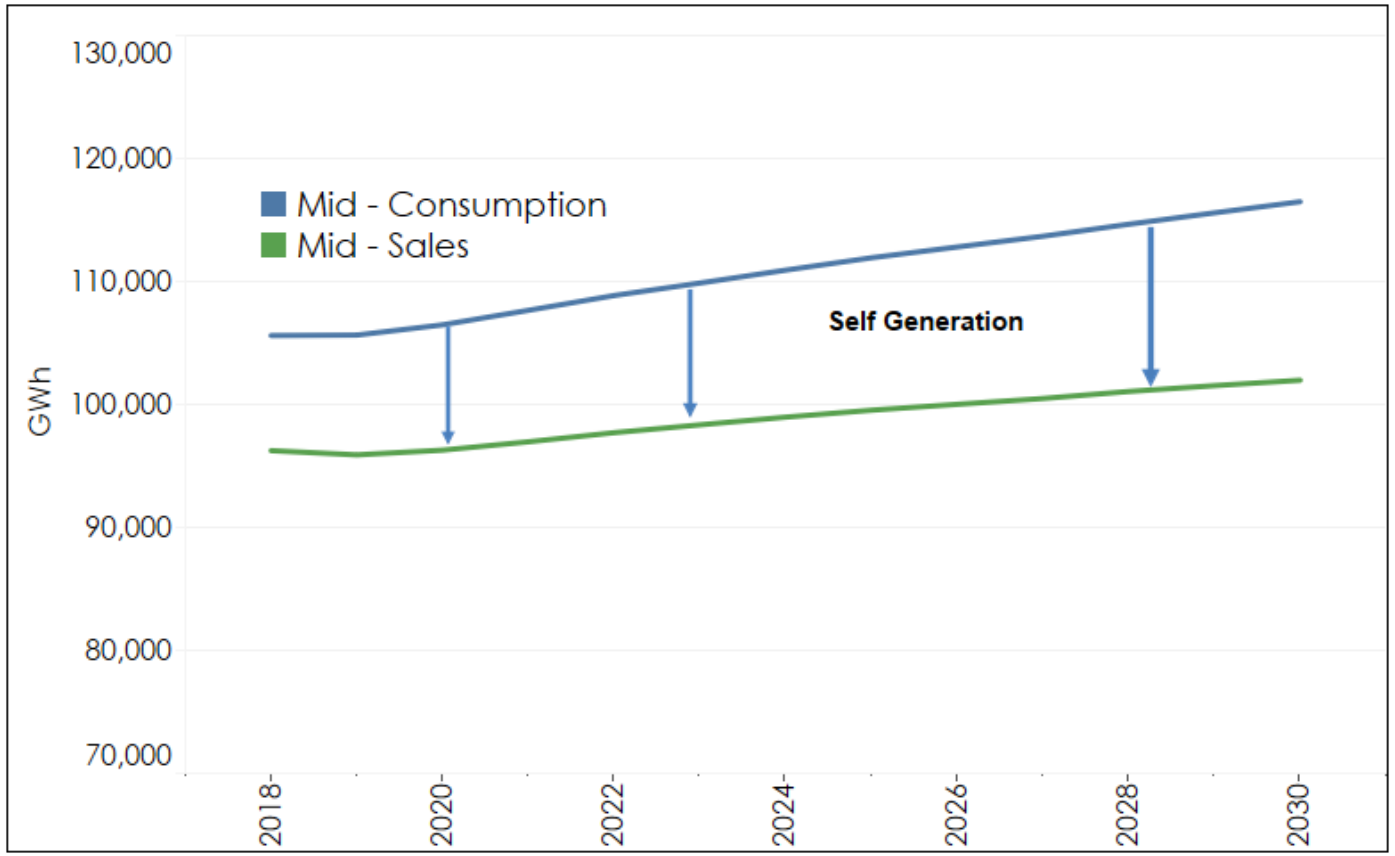


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.2%	1.3%	1.7%	1.0%

- Residential and commercial sector lower but grow at similar rates as CEDU 2018
- Industrial and mining flat/declining
- Inland household and population growth continues
- Eastern and Big Creek West FZs residential sector demand growing faster

SCE: Consumption to Sales



Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
0.6%	0.9%

2030

- 19,500 GWh of self-generation
- 75% is PV
- 8,200 MW of PV capacity
- PV energy impacts become higher in inland regions (6,200 GWh)

SCE: Forecast Comparison

- SCE sales forecast includes higher EV assumptions but PV impacts are comparable
- Declining sales forecast for bundled customers

- Peak demand differences related to peak shift
- SCE peak demand declining over the 10-year period

Planning Area Results

SDG&E

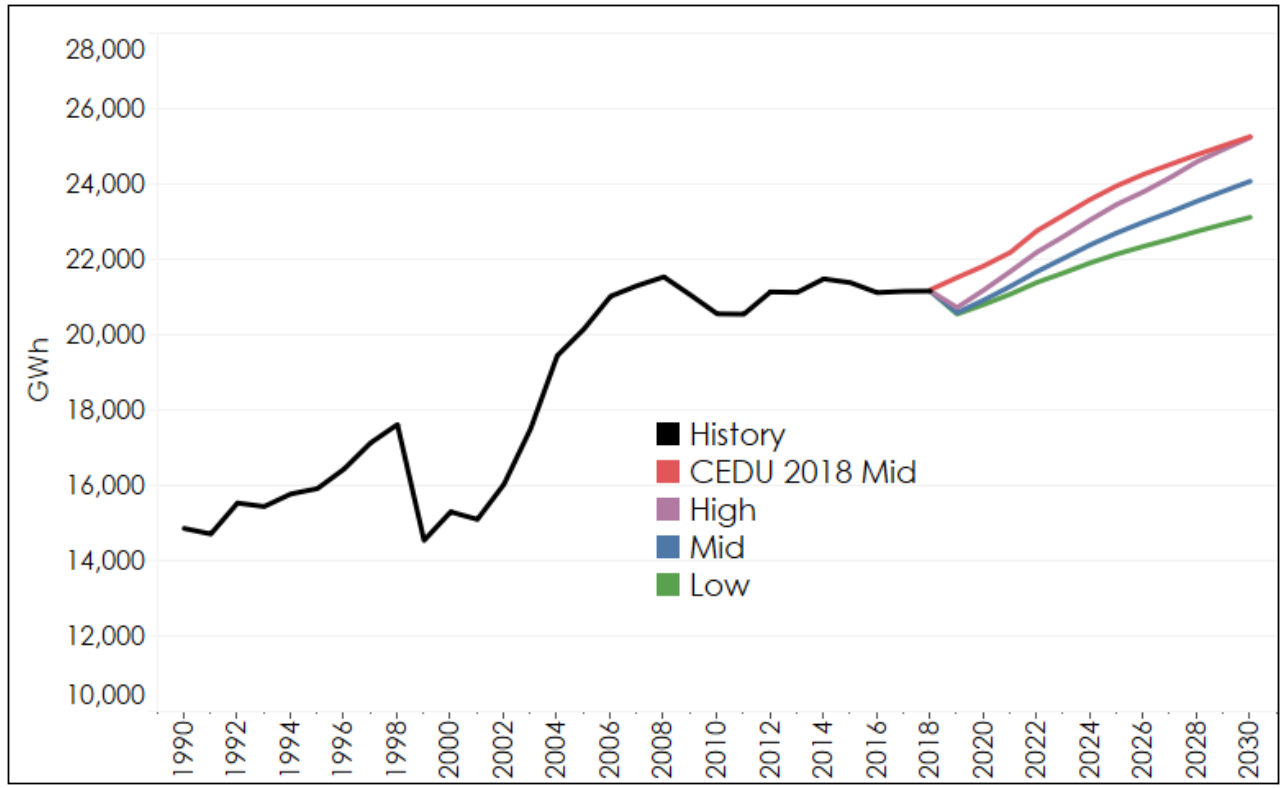
SDG&E: Summary

Annual Growth, 2019 – 2030

Economic Driver	CED 2019 Prelim	CEDU 2018
Population	0.7%	0.7%
Households	0.7%	0.7%
Personal Income	2.4%	2.5%
Manufacturing Output	2.3%	2.6%
Commercial Employment	0.5%	0.6%

- Residential and commercial sector growth is moderated by standards savings
- 1,300 GWh of light-duty EV consumption in mid cases by 2030 (300,000 EVs)
- 2,300 MW of PV capacity in mid case by 2030

SDG&E: Consumption

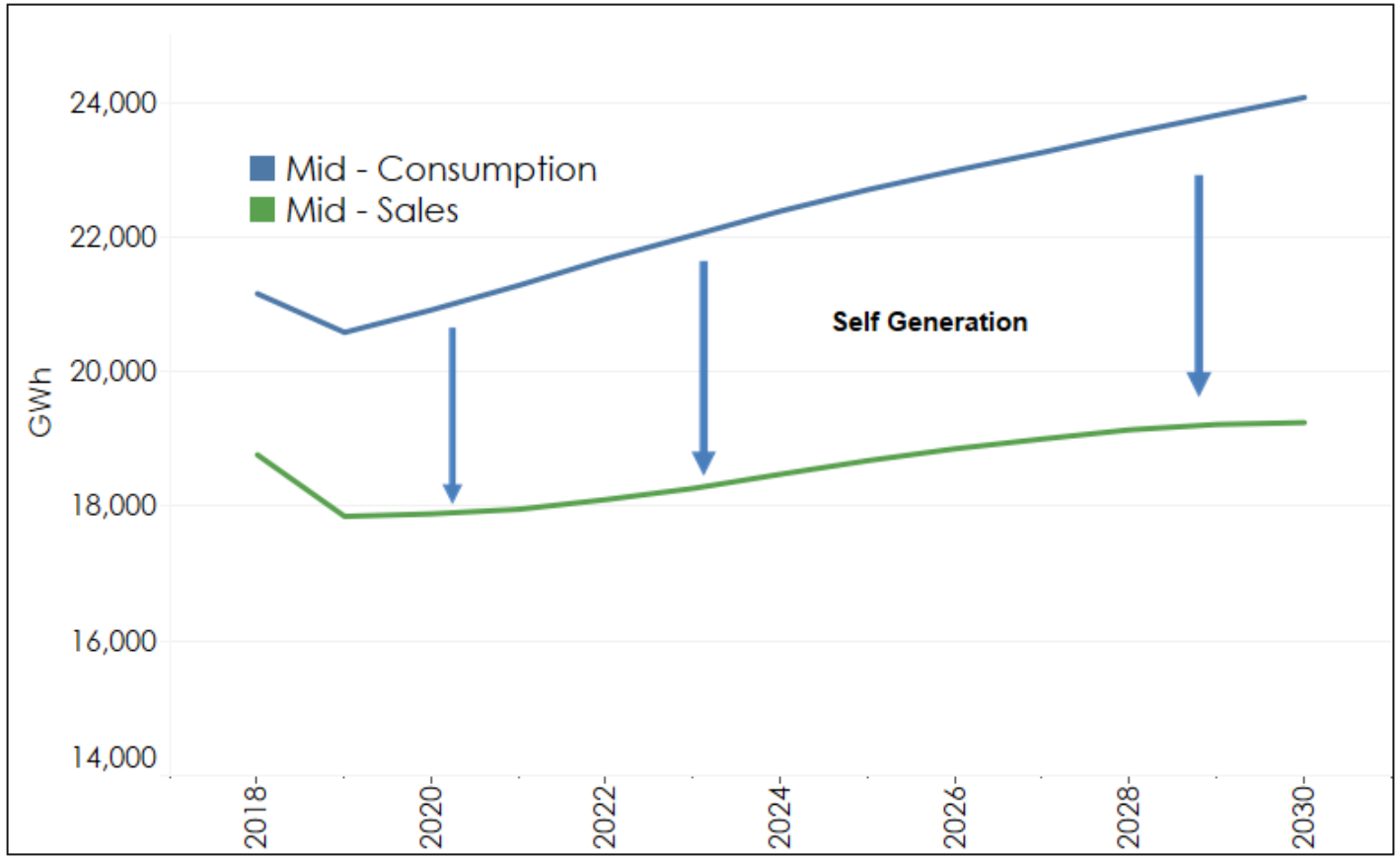


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.4%	1.5%	1.8%	1.1%

- Residential and commercial EVs sustain total consumption growth
- Industrial sector declines more than CEDU 2018

SDG&E: Consumption to Sales



Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
0.7%	0.9%

2030

- 4,800 GWh of self-generation
- 85% of self-gen is PV
- 2,300 MW of PV capacity
- Commercial PV installations growing faster than residential

SDG&E: Forecast Comparison

- SDG&E forecast has comparable EV and PV impacts
- Total unmanaged sales forecast grows slightly faster than CEC baseline

- Unmanaged peak demand forecast grows similar to CEC
- SDG&E 2030 estimate is higher due to differences in starting points

Planning Area Results

PG&E

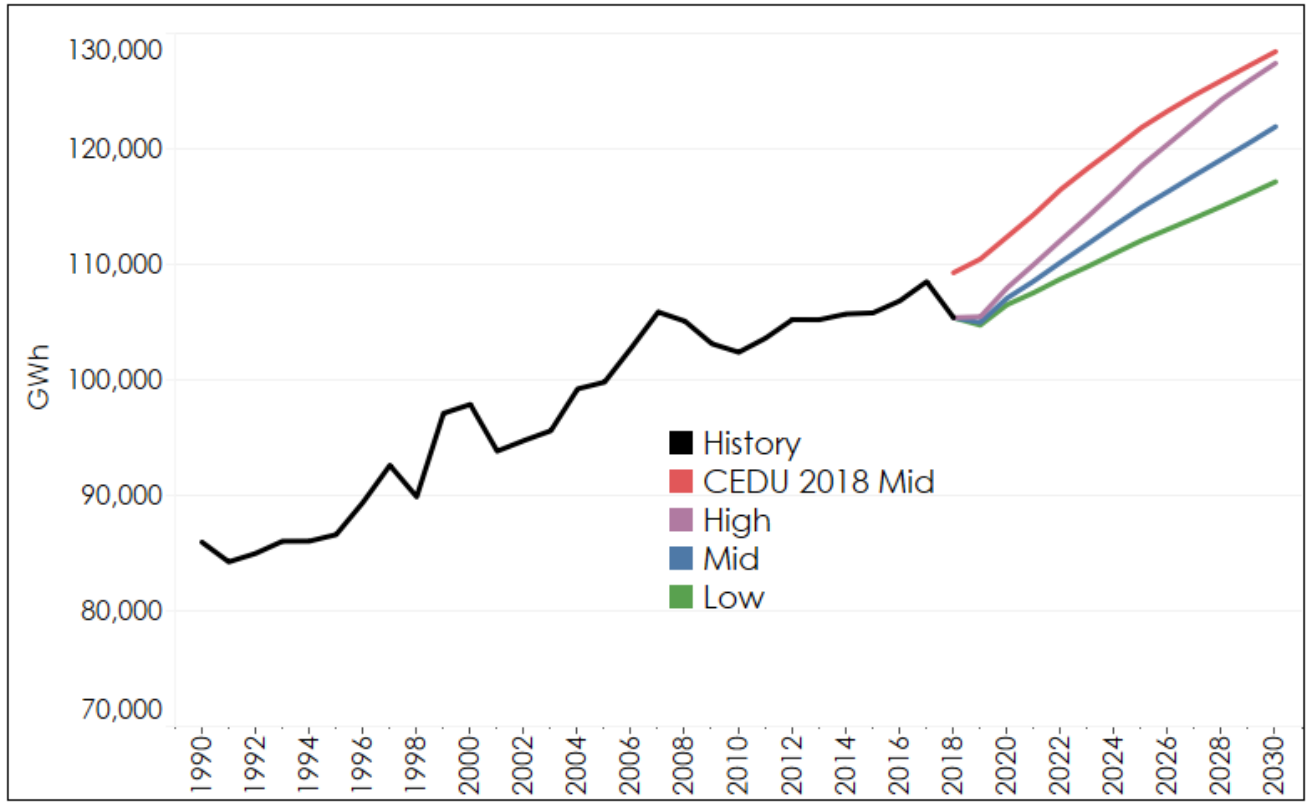
PG&E: Summary

Annual Growth, 2019 – 2030

Economic Driver	CED 2019 Prelim	CEDU 2018
Population	0.9%	0.9%
Households	1%	1%
Personal Income	2.8%	2.7%
Manufacturing Output	2.2%	2.5%
Commercial Employment	0.5%	0.5%

- Population/household and commercial sector growth continues in Central Valley moderating slower growth in industrial/mining across the PA
- 6,400 GWh of light-duty EV consumption in mid cases by 2030 (1.6 million EVs)
- 10,600 MW of PV capacity in mid case by 2030

PG&E: Consumption

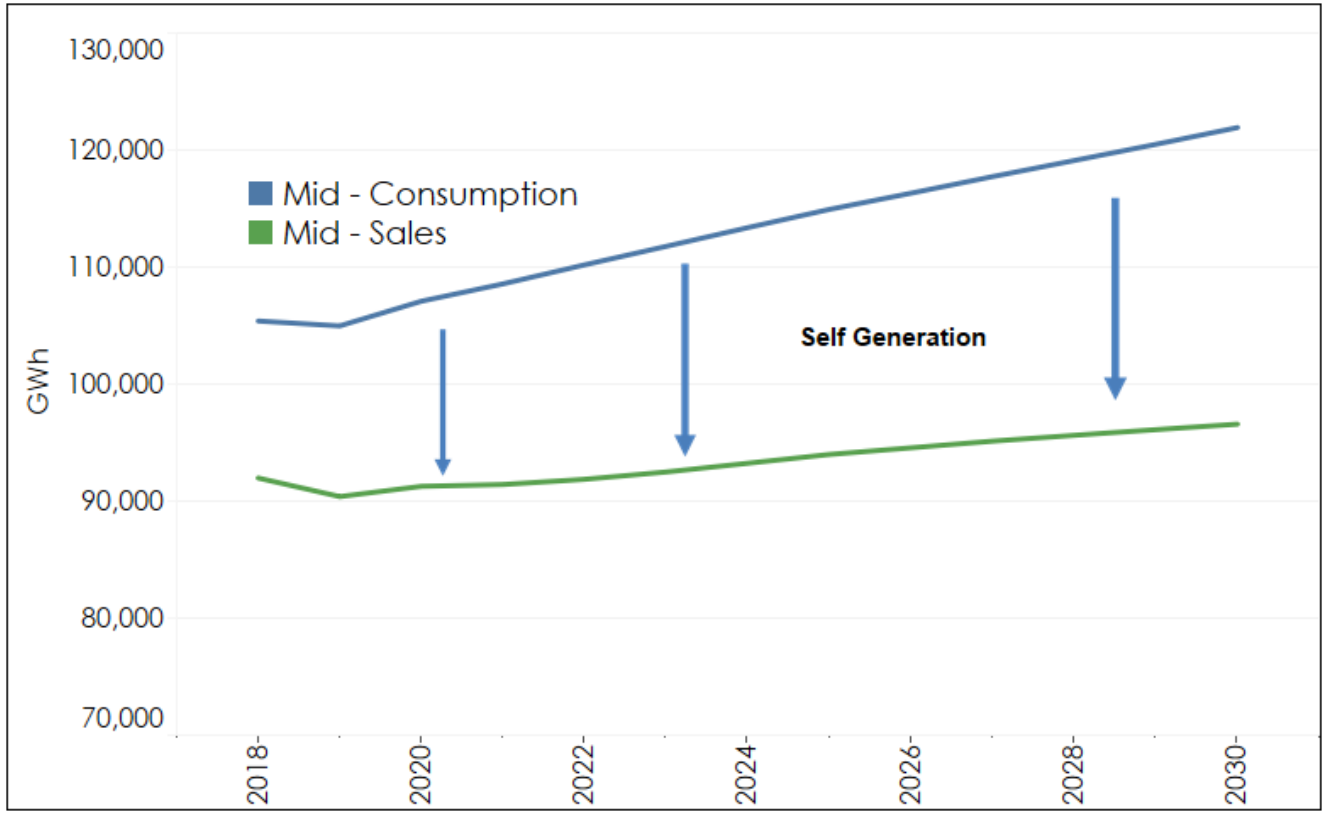


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.4%	1.4%	1.7%	1.0%

- Greater Bay Area FZ leads PA consumption at 1.5%
- Industrial/mining consumption is flat or declining across the PA
- Central Valley FZs grows at 1.3% from sustained residential and commercial demand

PG&E: Consumption to Sales



Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
0.6%	0.8%

2030

- 96,600 GWh of sales
- 25,300 GWh of self-generation
- 72% of generation from PV
- Central Valley FZs account for 50% of PV generation but higher per capita electricity sales

PG&E: Forecast Comparison

- PG&E has a higher EV but lower PV forecasts
- Accounting for those differences, PG&E sales forecast is comparable to CEC
  - Slower near term growth but faster growth in the long-term
  - Faster growth in residential and agriculture sectors
  - Slower growth in commercial/industrial sectors
- PG&E forecast of peak demand is declining

Planning Area Results

SMUD

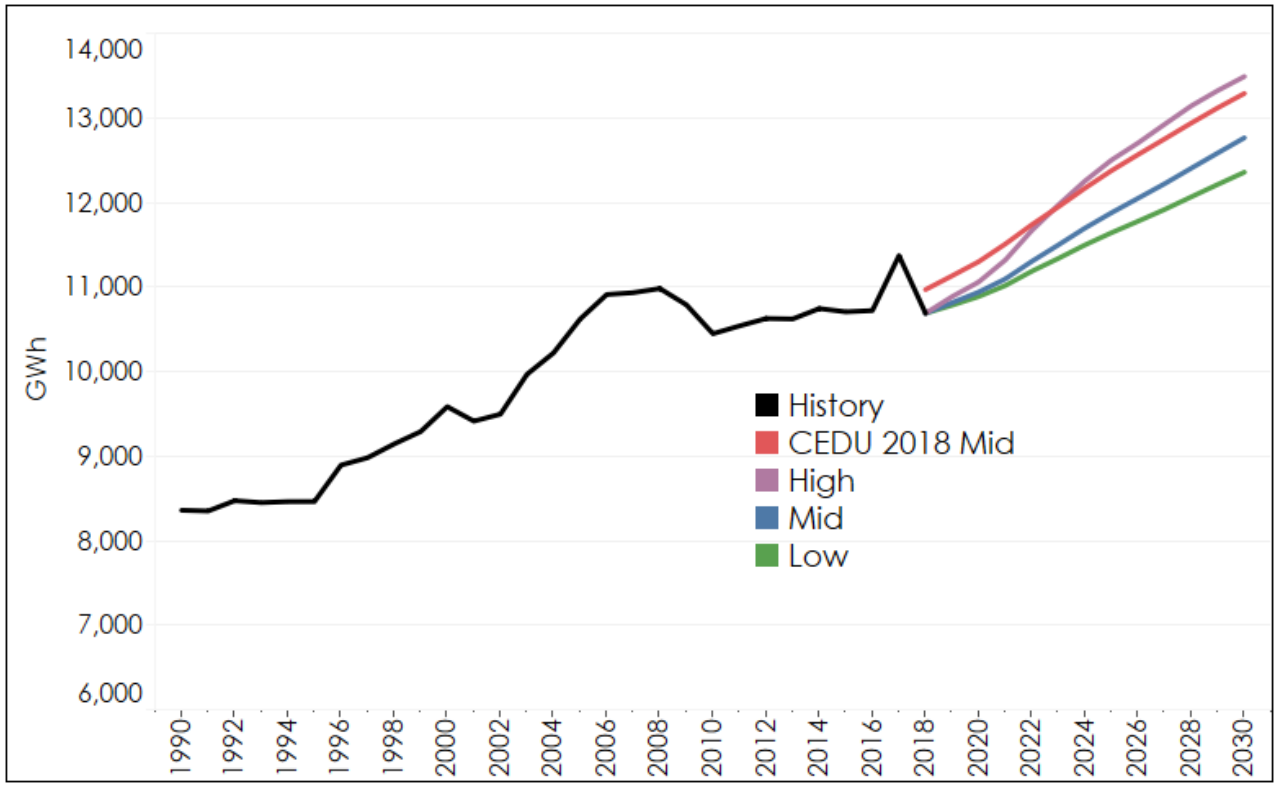
SMUD: Summary

Annual Growth, 2019 – 2030

Economic Driver	CED 2019 Prelim	CEDU 2018
Population	1.1%	1.1%
Households	1.1%	1.1%
Personal Income	2.5%	2.7%
Manufacturing Output	2.2%	2.4%
Commercial Employment	0.6%	0.6%

- Slower growth in residential and TCU sector consumption
- 480 GWh of light-duty EV consumption in mid cases by 2030 (120,000 EVs)
- 660 MW of PV capacity in mid case by 2030

SMUD: Consumption

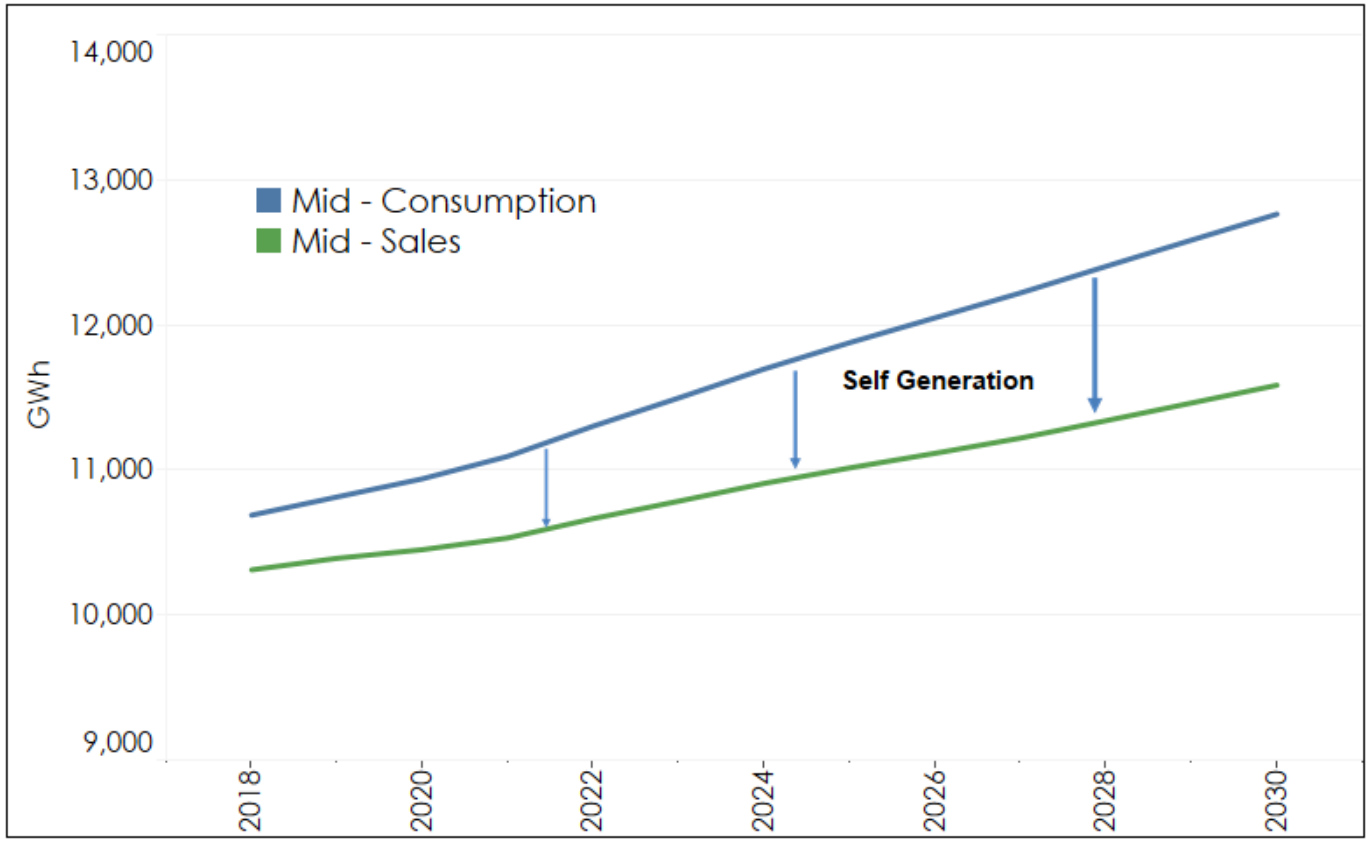


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.5%	1.6%	2%	1.3%

- New building and appliance standards reduce residential sector electricity demand
- TCU sector demand declines due to historic trend in telecommunications electricity usage

SMUD: Consumption to Sales



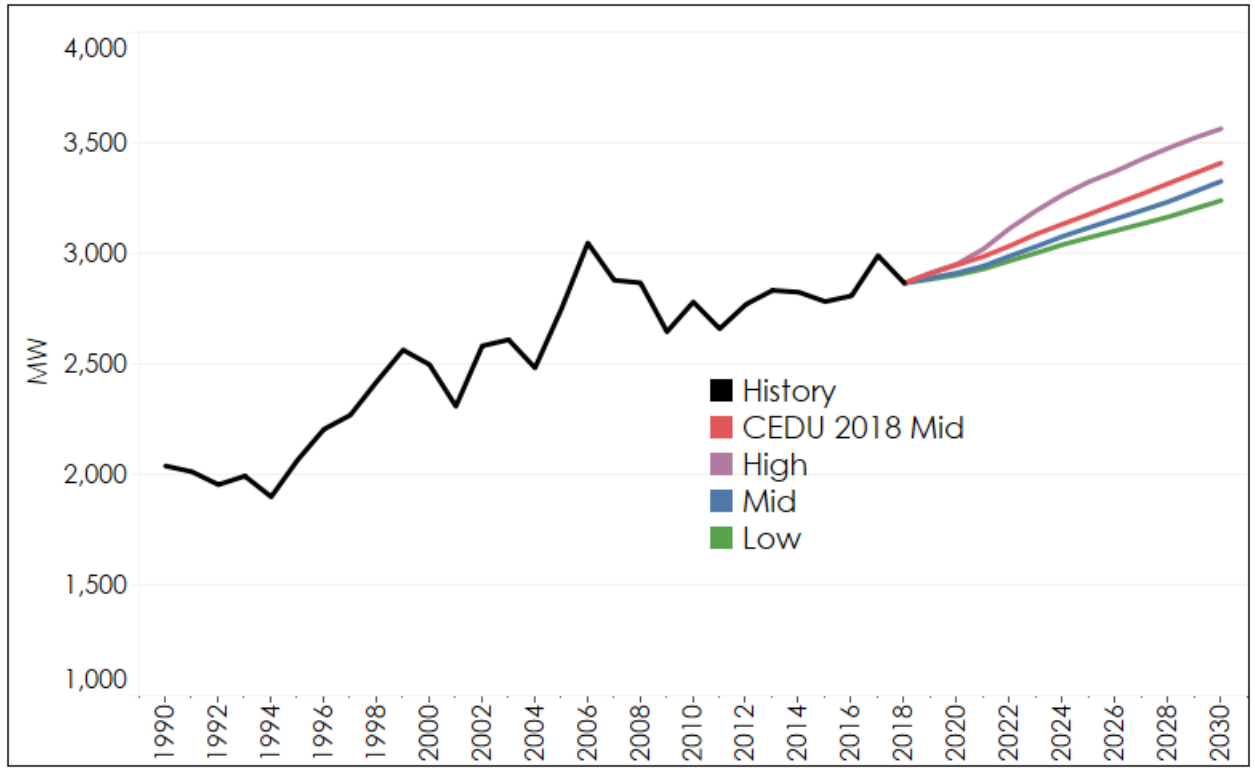
Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
1.0%	1.4%

2030

- 1,180 GWh of self-generation
- 96% of self-gen is PV
- PV growth results in slower growth in sales in comparison to consumption

SMUD: Peak End Use Load

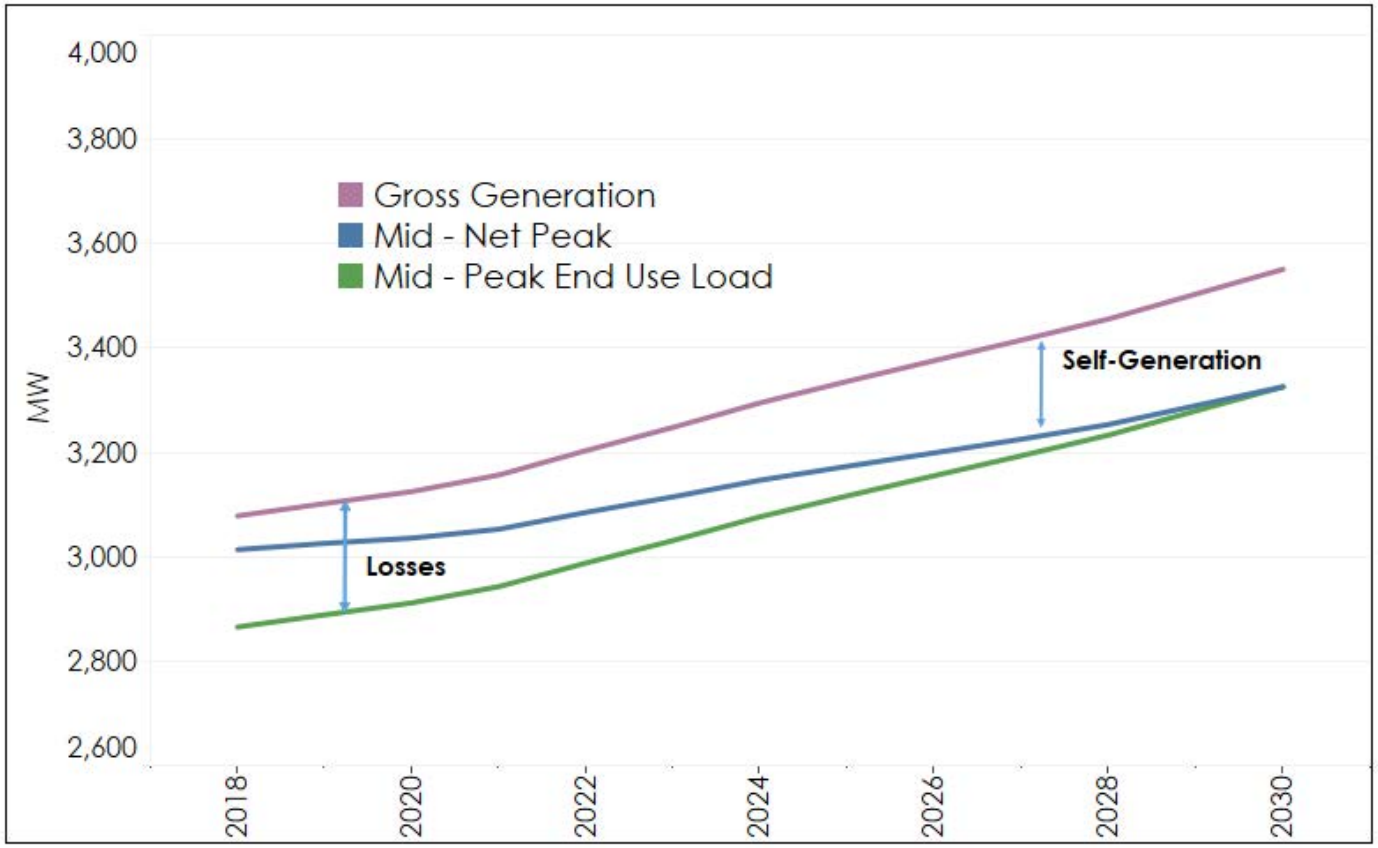


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.3%	1.5%	2%	1.1%

- Modest decline in peak end use load driven by slower growth in residential consumption

SMUD: End Use Load to Peak



Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
1.0%	1.3%

2030

- 220 MW of PV at peak
- Increasing self-generation impacts result in declining net peak relative to end use load

SMUD: Forecast Comparison

- SMUD forecast includes less PV and EVs
- Declining residential sales but growth in large commercial customer demand
- Resulting sales forecast is flat over the 10-year period
- CEC forecast shows higher residential and commercial demand

- SMUD unmanaged forecast is comparable to CEC growth expectations
- Managed forecast shows decline over the long-term

Planning Area Results

LADWP

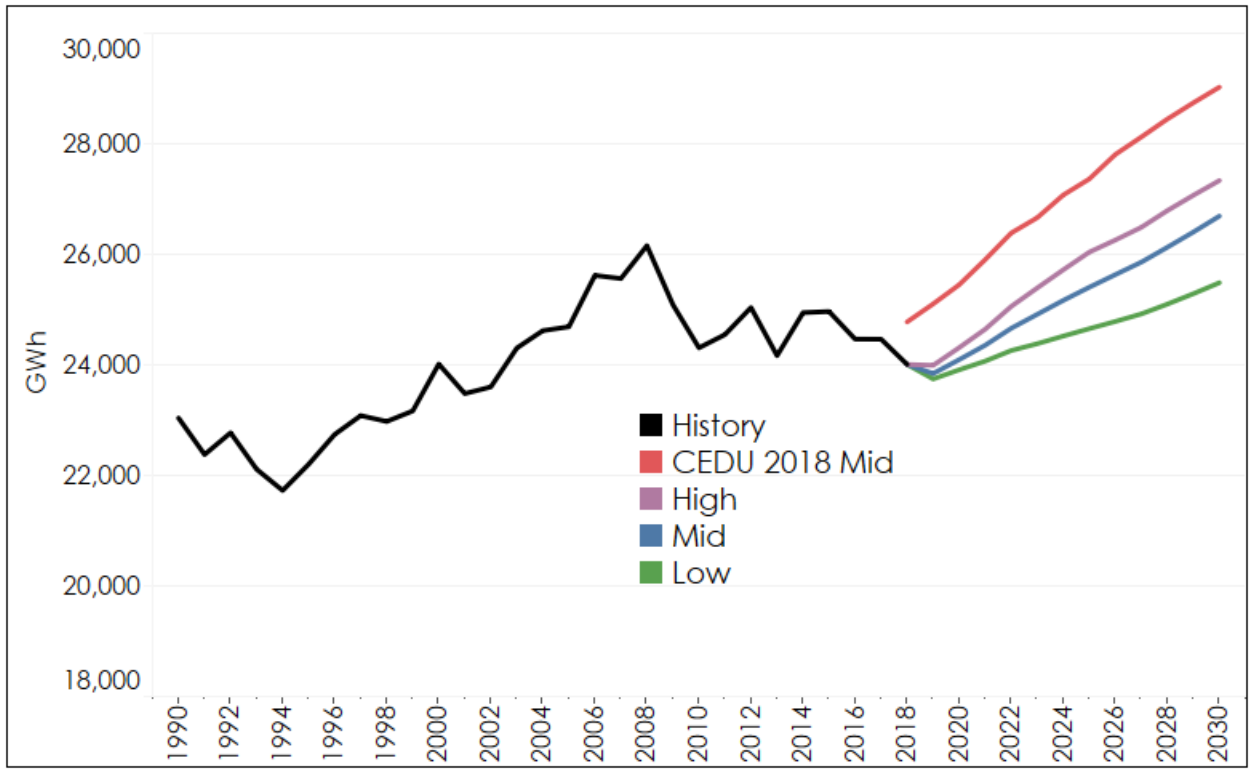
LADWP: Summary

Annual Growth, 2019 – 2030

Economic Driver	CED 2019 Prelim	CEDU 2018
Population	0.4%	0.4%
Households	0.7%	0.7%
Personal Income	2.0%	2.4%
Manufacturing Output	2.0%	2.3%
Commercial Employment	0.4%	0.4%

- Residential and commercial sectors grow slower than CEDU 2018
- Declining industrial/mining sector demand
- 1,600 GWh of light-duty EV consumption in mid case by 2030 (370,000 EVs)

LADWP: Consumption

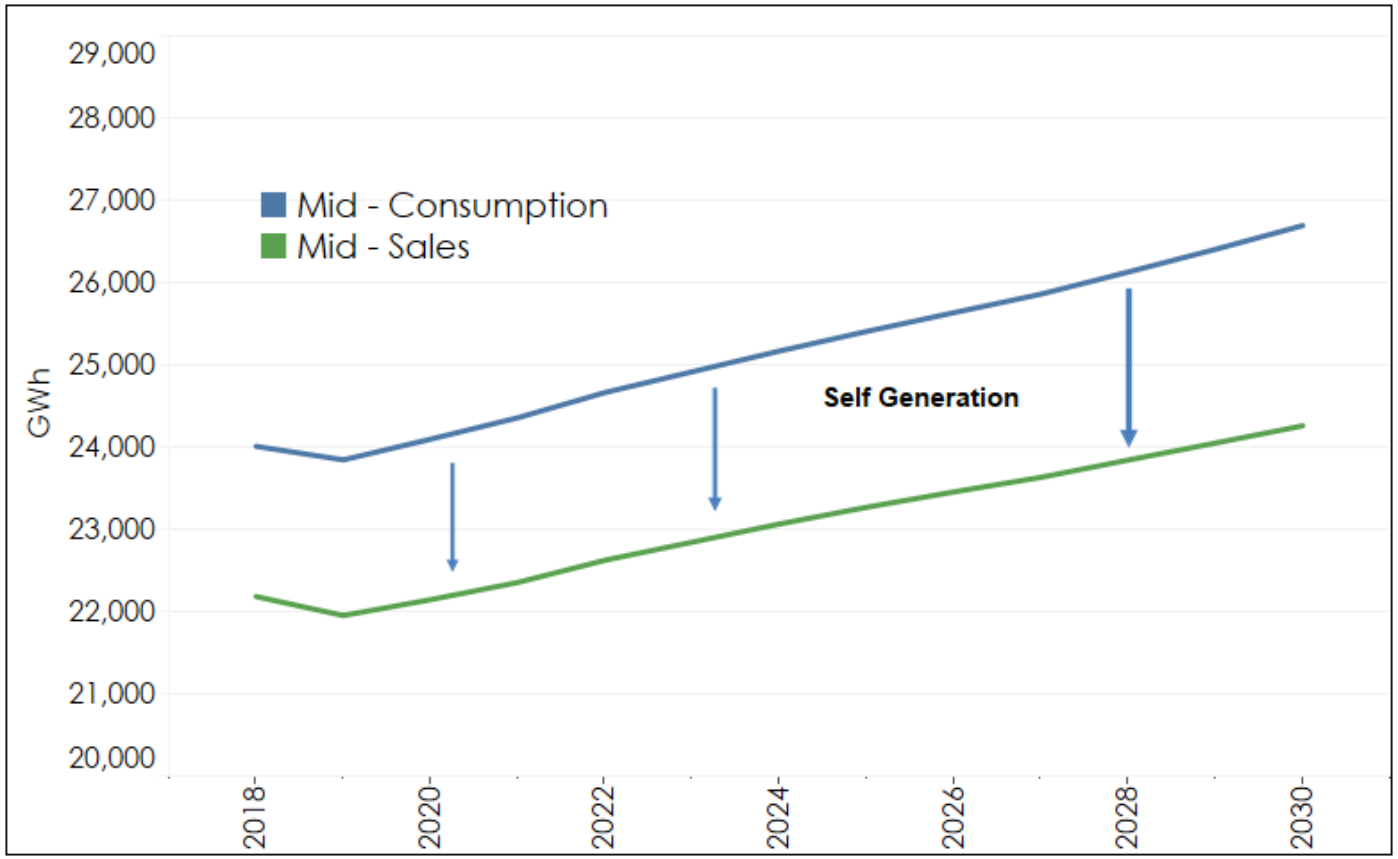


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
1.0%	1.3%	1.2%	0.6%

- Residential and commercial consumption slowed due to standards and economic drivers
- Industrial sector demand declining faster than CEDU 2018

LADWP: Consumption to Sales



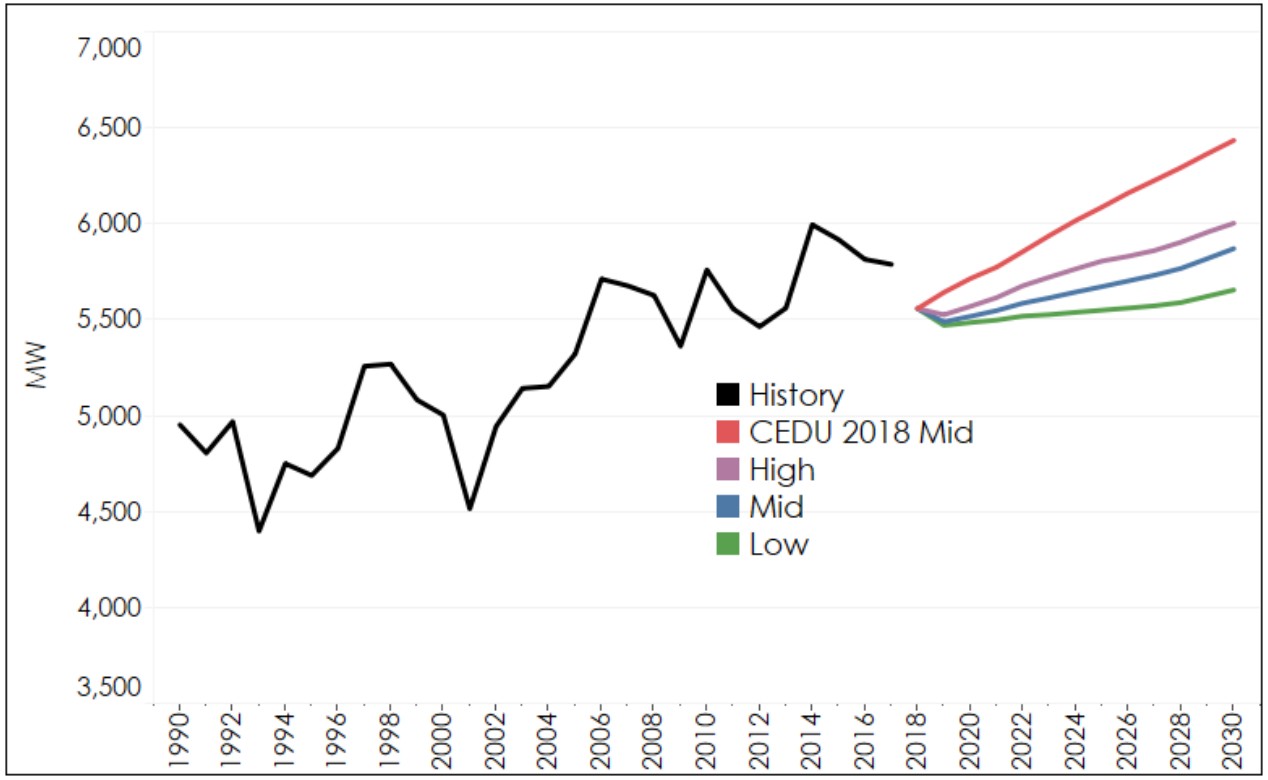
Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
0.9%	1.2%

2030

- 2,400 GWh of self-generation
- 44% of self-gen is PV
- PV capacity grows slower than statewide average

LADWP: Peak End Use Load

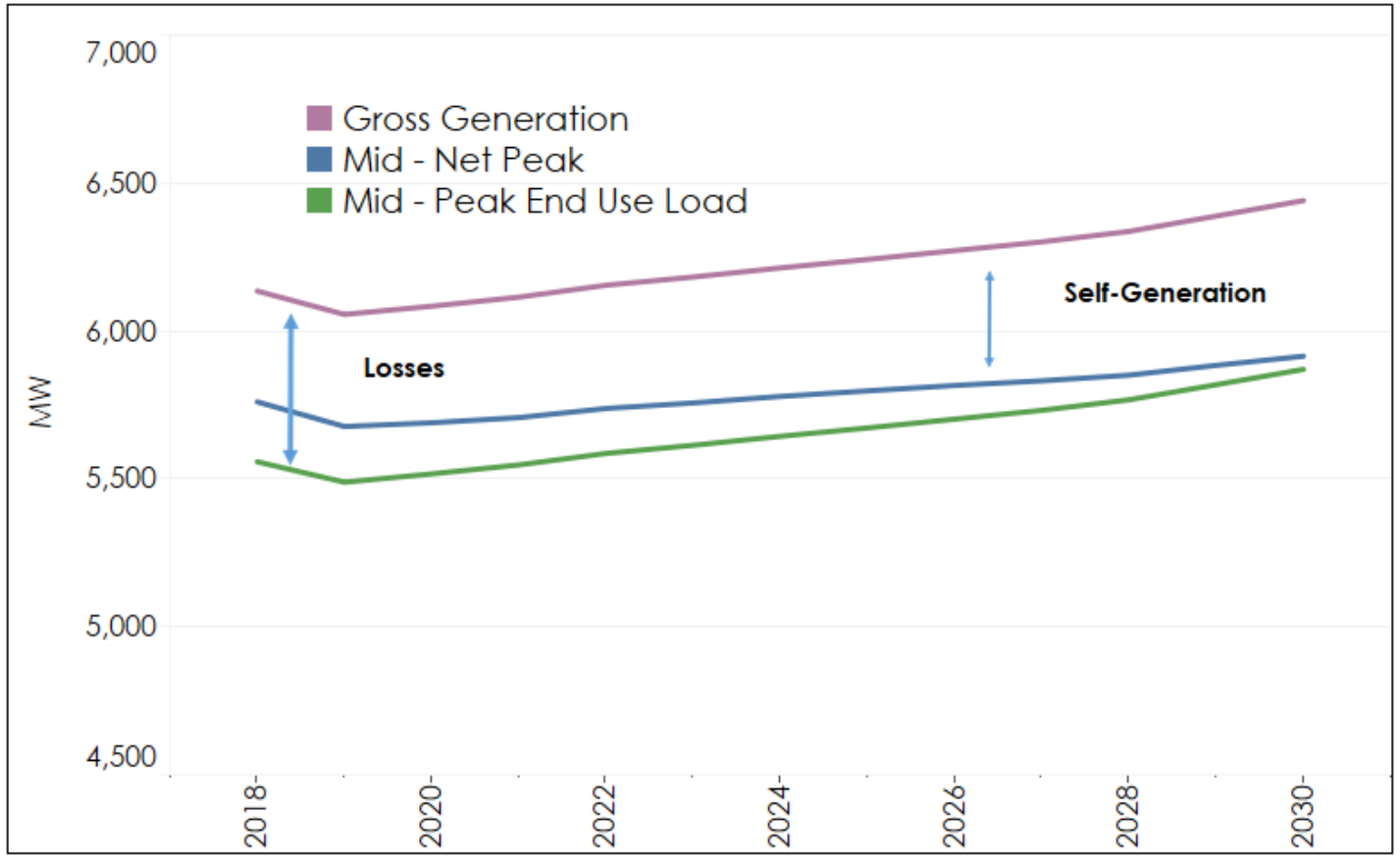


Annual Growth, 2019 – 2030

Mid	Mid (CEDU 2018)	High	Low
0.6%	1.2%	0.8%	0.3%

- Weather sensitive sectors drive peak end use load
- Lower residential and commercial sector consumption leads to reduced peak end use load growth

LADWP: End Use Load to Peak



Annual Growth, 2019-2030

Mid	Mid (CEDU 2018)
0.4%	1.0%

2030

- 280 MW of PV impact at peak
- Slower peak end use growth results in similar slow down in net peak forecast

LADWP: Forecast Comparison

- LADWP forecast includes more PV and EVs
- Lower residential and commercial sales forecasts lead to an overall lower forecast in comparison to CEC

- Aside from sales differences, peak forecast growth is comparable to CEC
- CEC peak forecast has lower starting point resulting in lower 2030 prediction

Questions/Comments?

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