



Energy Insights

In response to COVID-19, there is increased interest in information about California's energy demand and supply issues. The California Energy Commission (CEC) is launching a new, regular publication, Energy Insights, to provide a snapshot of trends in the energy sector, including impacts to energy supply and demand since Governor Gavin Newsom announced California's stay-at-home order on March 19, 2020.¹

Key Highlights

- [Electricity Sector](#)
 - Since California's stay-at-home order was enacted on March 19, 2020, the average weekday demand for electricity in California declined by more than 4 percent in late March, and 9 percent in April compared to the same time last year.
 - Residential energy use by customers in the three investor-owned utilities increased by 8.9 to 12.4 percent for 2020 year-to-date compared to the same time period last year, but this was offset by substantial reductions in commercial and industrial demand.
 - Demand has dropped the most during midday hours from 11 a.m. to 3 p.m., compared to 2019, resulting in steeper evening ramps.

¹ It is important to note that a number of factors impact energy supply and demand from year-to-year and month-to-month, including economy demographics and weather variations. In addition, data is collected at various intervals and timeframes, depending on the reporting regulations for each energy sector.

- [Natural Gas Sector](#)
 - Natural gas demand during April 2020 was up about 6 percent, compared to April 2019. Most gains are in the electricity generation sector.²
 - In the Pacific Gas & Electric (PG&E) service territory, natural gas demand for electricity generation was up about 12 percent for April 2020 compared to April 2019.
- [Transportation Fuels Sector](#)
 - California transportation fuel production saw the following declines over the last month, week ending May 1, 2020, compared to week ending March 20, 2020:
 - Gasoline production declined 47.5 percent;
 - Jet fuel production dropped 68.3 percent; and
 - Diesel production decreased 33.2 percent.
 - To date, three refineries temporarily shut down in the United States, with one in California.

² Natural gas usage is highly correlated with weather. Isolating the effects of the COVID-19 impacts requires more data and analysis.

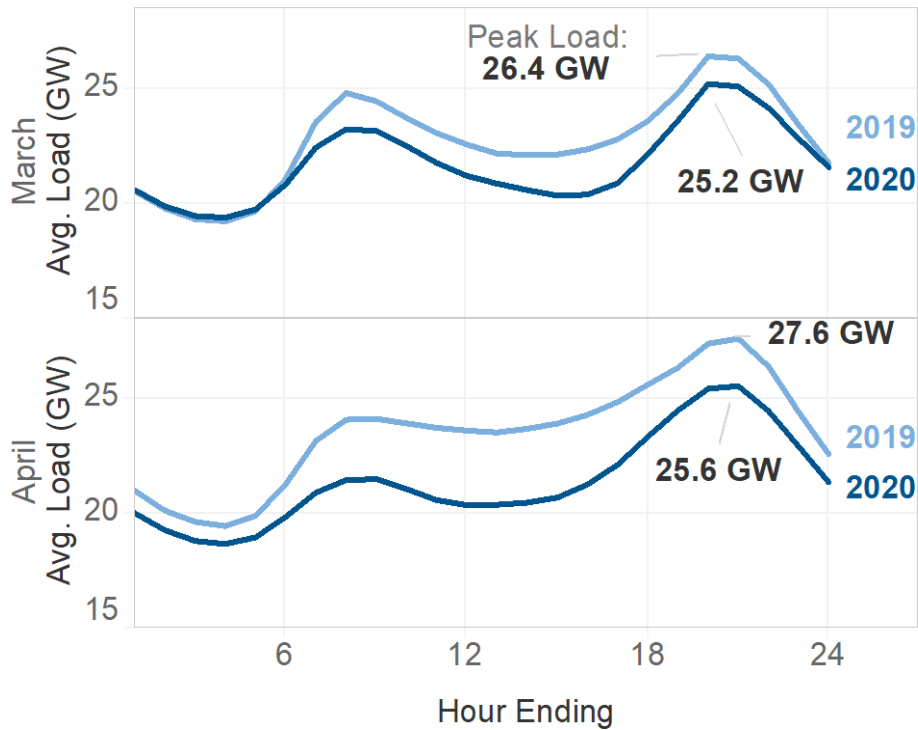
Additional Analysis and Trends

Electricity Sector

The California Independent System Operator (ISO)'s average weekday demand declined by more than 4 percent in March after the stay-at-home order was implemented relative to March 2019. Demand fell by 9 percent in April relative to April 2019. Average peak hour loads have fallen year-over-year by more than 2,000 megawatts (MW).

- Since the stay-at-home order was implemented in California on March 19, residential use has increased, and commercial and industrial use has declined. California ISO data at the system level show the reduction in average electricity use as show in Chart 1.
- Overall average weekday demand fell by 4.2 percent for March 18 to 31 and by 9 percent for April. The chart also shows that average loads in the peak hour on weekdays fell year-over-year by 1,257 MW in late March and 2,240 MW in April.

Chart 1: Year-to-Year Weekly California ISO Demand Comparison for Last Two Weeks of March 2020 and All of April 2020 (weekdays only)



Source: California ISO

For the week ending April 5, residential energy use by the customers of the three investor-owned utilities (IOUs) increased by 8.9 to 12.4 percent, but this was offset by reductions in commercial and industrial demand.

- Table 1 illustrates year-over-year changes in IOU retail sales by rate class for the week ending April 5.

Table 1: Year-over-Year Change in Electricity Retail Sales for Week Ending April 5, 2020

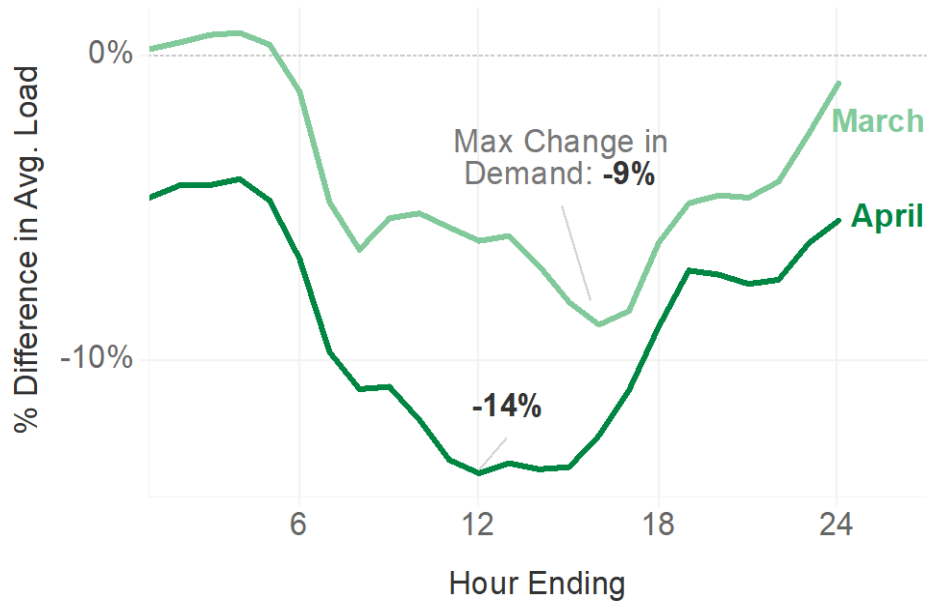
IOU	Residential	Small Commercial	Large Commercial & Industrial
Pacific Gas & Electric (PG&E)	+12.4%	-19.3%	-16.8%
Southern California Edison (SCE)	+8.9%	-15.6%	-12.9%
San Diego Gas & Electric (SDG&E)	+10.8%	-8.2%	-21.6%

Note: Only PG&E data is weather adjusted. SCE data is for seven-day period ending April 13.
Source: California Public Utilities Commission (CPUC)

The largest decreases in California ISO demand occurred in the mid-afternoon hours from 2 to 4 p.m., resulting in steeper evening ramps.

- Increases in residential loads and declines in commercial loads during early evening hours have resulted in greater reductions during mid-afternoon hours than at the early evening peak as shown in Chart 2.
- The changes in rate class loads increased ramping needs for the California ISO. The increase in average hourly loads between 3 and 4 p.m. to between 7 and 8 p.m. was 3,822 MW during March 19 to 31 in 2019. For the same period in 2020, it was 4,997 MW, an increase of 1,175 MW. The corresponding year-over-year increase for April 1 to 13 was 1,076 MW.

Chart 2: Year-over-Year Percentage Change in Average Hourly Weekday California ISO Loads for Last Two Weeks of March 2020 and All of April 2020



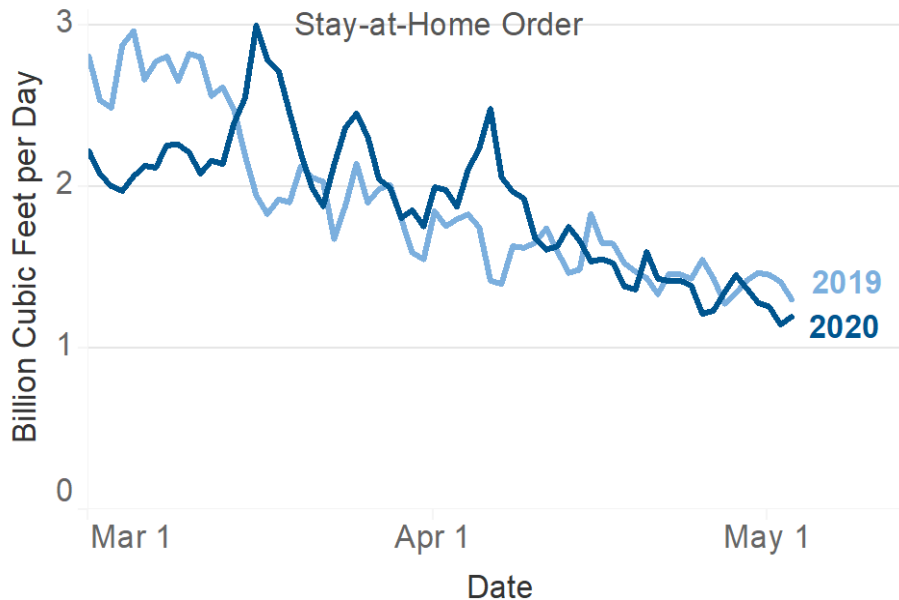
Source: California ISO

Natural Gas Sector

Overall natural gas demand from late March 2020 through April 2020 increased compared to the same timeframe last year.

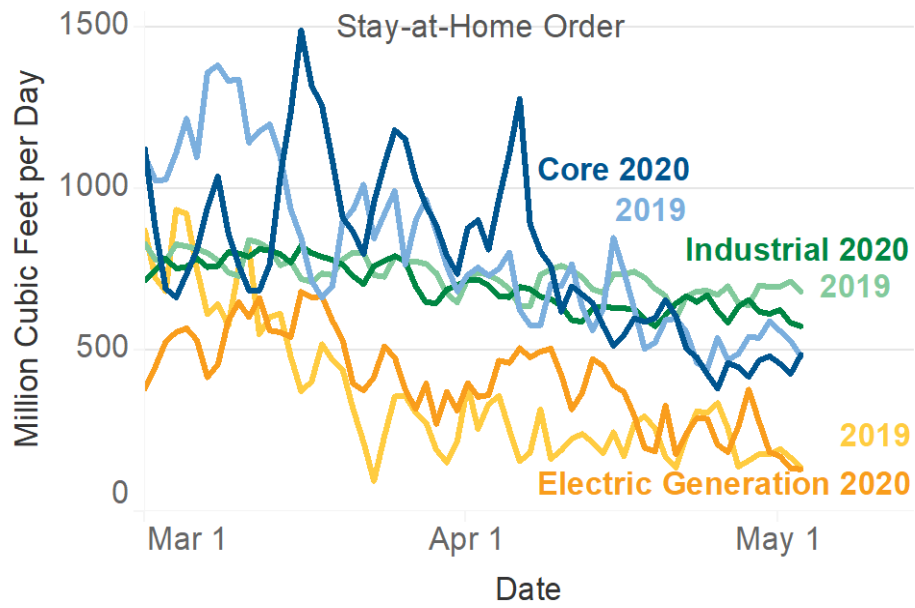
- Natural gas consumption was higher after the stay-at-home orders were implemented compared to the same period in 2019. Consumption is highly correlated with weather and isolating the effects of the COVID-19 impacts requires more data and analysis.
- Overall demand from late March through April is up in PG&E territory compared to the same timeframe last year. Natural gas residential consumption has been higher overall, while industrial sector consumption is on par with patterns during this same time period in 2019 as shown in Charts 3 and 4.

Chart 3: PG&E "Day After" Total Natural Gas Demand – 2019 vs. 2020



Source: PG&E, Pipe Ranger

Chart 4: PG&E "Day After" Natural Gas Demand by Customer Class – 2019 vs. 2020



Source: PG&E, Pipe Ranger

Transportation Fuels Sector

Gasoline and jet fuel production has declined significantly over the last six weeks as refiners adjusted operations to better align to decreased demand associated with stay-at-home orders and travel restrictions. Transportation fuel inventories are at or above normal levels for this time of year.

- The most recent CEC report on refinery operations released May 6 shows gasoline output has stabilized at a lower level while jet fuel production continues to drop. Gasoline output has decreased for four consecutive weeks, while jet fuel output has declined for ten consecutive weeks. California diesel fuel production has recently decreased over the last two weeks.
- Changes to California refinery operations over the last month (week ending May 1 compared to week ending March 20, 2020) show:
 - Gasoline production declined 47.5 percent, inventories decreased by 11.8 percent.
 - Jet fuel production dropped 68.3 percent, inventories up by 5.7 percent.
 - California diesel production decreased 33.2 percent, inventories up by 9.6 percent.
- Based on CEC refinery production and inventory data through May 1, apparent demand calculations show steep declines for jet fuel and gasoline compared to the week ending March 20. Diesel fuel demand has declined less than the other fuels as truck transportation continues to keep stores replenished with groceries and other consumer goods. The changes were:
 - California gasoline demand declined 37.7 percent.
 - Jet fuel demand dropped 60.5 percent.
 - California diesel demand declined 12.8 percent.
- California's average retail price for regular grade gasoline dropped below \$3 per gallon on April 3. This is the first time that the average price has dropped below \$3 since August 28, 2017 as show in Table 2.

- o California statewide average retail gasoline price increased for the first time on May 6, 2020, following 75 consecutive days of decline.
- o Current retail price for California diesel fuel is the lowest point since October 31, 2017.

Table 2: Retail Prices for Regular Grade Gasoline

	5/8/2020	Same Time Last Week	Same Time Last Month	Same Time Last Year
Retail Gasoline	Cents/Gallon	Cents/Gallon	Cents/Gallon	Cents/Gallon
California	274.4	274.6	293.5	409.8
United States	182.6	177.7	190.8	288.3
Price Change				
California		-0.2	-19.1	-135.4
United States		4.9	-8.2	-105.7
Retail Diesel Fuel	Cents/Gallon	Cents/Gallon	Cents/Gallon	Cents/Gallon
California	323.4	326.4	347.4	416.0
United States	242.3	244.0	255.7	310.4
Price Change				
California		-3.0	-24.0	-92.6
United States		-1.7	-13.4	-68.1
Crude Oil	\$\$/Barrel	\$\$/Barrel	\$\$/Barrel	\$\$/Barrel
California	18.58	6.25	24.88	65.48
International - Brent	29.46	25.27	31.87	69.88
Price Change				
California		12.33	-6.31	-46.91
International - Brent		4.19	-2.41	-40.42

Source: Retail prices, AAA; crude oil prices, Oil Price Information Service

To date, three temporary refinery shutdowns were announced in the United States and Canada, with one in California.

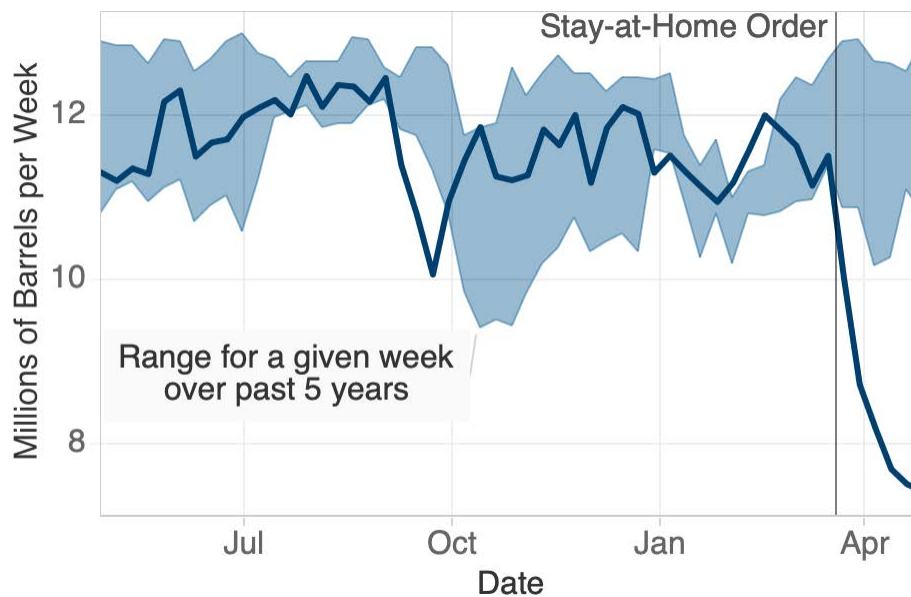
- On April 16, Marathon announced a plan to idle its facility in Martinez, California. The temporary closure was completed April 28.
- The temporary closure does not pose any near-term risks to the adequacy of California fuel supply since the inventory levels for all fuel types remain normal or higher-than-normal.

- No other California refineries have been shut down and the CEC continues to monitor for any refinery closures.

All California refiners have decreased the amount of crude oil being processed to help reduce the excess gasoline, diesel, and jet fuel output. Some refineries are operating at minimum levels.

- Crude oil inputs to California refineries for the week ending May 1 were down 35.5 percent compared to the week ending March 20. The quantity of crude oil processed at California refineries for that week is lower than at any other point in the CEC data series going back to 1981. The processing of crude oil by California refiners is now 3.4 million barrels per week below the bottom of the seasonal range as shown in Chart 5.

Chart 5: California Refineries – Crude Oil Inputs Through May 1



Source: CEC – Petroleum Industry Information Reporting Act weekly refinery reports

Contact

For more information, contact the CEC's Media and Public Communications Office at mediaoffice@energy.ca.gov or (916) 654-4989.