The California Energy Commission

Facts About August 2017 Eclipse

A solar eclipse occurs when the moon blocks the sun from the Earth's view. On August 21, portions of western United States will experience a total and partial solar eclipse. California will experience a partial obstruction of the sun from 9:02 a.m. to 11:54 a.m., with the peak obstruction at 10:22 a.m. [1]

What does it mean?

- Northern California will see 76 percent of the sun blocked
- Southern California will see 62 percent of the sun blocked
- Electricity from solar photovoltaic and solar thermal may be produced throughout the eclipse, but it will drop to much lower levels
- The California Independent System Operator (California ISO) must ramp down natural gas-fired energy production as solar generation ramps up with the sunrise and vice versa when the sun sets
- During the eclipse, the California ISO will have to do a second, smaller version of the ramp up and ramp down during the morning as the eclipse occurs

Why is this eclipse different?

- California's last annular eclipse was May 20, 2012 from 5:15 p.m. to 7:38 p.m.[2]
  - » Solar capacity was about 500 megawatts (MW)[3]
  - » Solar generation was about 1,000 gigawatt hours (GWh) in 2012
- California's last partial solar eclipse was October 23, 2014 from 1:51 p.m. to 4:32 p.m.[4]
  - » Solar capacity was about 6,000 MW
  - » Solar generation was about 10,500 GWh in 2014
- In 2016
  - » California has more than 14,000 MW of solar generation capacity, double the capacity from two years ago
    - › Around 5,200 MW of self-generating solar
    - › Around 9,000 MW of solar generation capacity utility scale
    - › Around 18,000 GWh were produced from solar generation (including out-of-state sources), nearly twice from two years ago

Impact of eclipse on California's solar energy

- Generation during the eclipse is expected to decrease from normal
- The largest gap from normal generation is predicted to be 5,600 MW
- Solar system generation is expected to go from 64 to 83 percent capacity at the start of the eclipse to 15 to 37 percent capacity at its height and then return to 79 to 98 percent capacity once it is over
- Rooftop solar systems will also decrease generation

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1. https://www.caiso.com/Documents/Briefing_SolarEclipse-ISOReport-May_2017.pdf. Most of the facts come from this report.
2. https://www.timeanddate.com/eclipse/in/usa/sacramento?iso=20120521
3. http://www.energy.ca.gov/renewables/tracking_progress/documents/installed_capacity.pdf
4. https://www.timeanddate.com/eclipse/in/usa/sacramento?iso=20141023

Solar eclipse impact on electric service reliability

- There is no reason to anticipate any eclipse-related electric service outages because of the reduced solar generation
- The California ISO will ramp up generation to compensate for the lost solar generation, but there is plenty of capacity available to meet need. The California ISO has dealt with ramps of 13,000 MW in two hours in the evenings
- The California ISO has prepared for multiple scenarios where solar generation could drop, like excessive cloud cover or unprecedented weather patterns; it's not unusual
- The California ISO has also prepared for the eclipse with a suite of 12 tools to proactively reduce possible impacts to the grid in addition to normal operational tools. They include:
  - » Procuring additional reserve supplies for power plants
  - » Having more power plants ready that can quickly ramp up production
  - » Using market transfers with nearby regional grids to import more energy
  - » Potentially asking homeowners to use less electricity

What can I do?

- How will my solar system be affected?
  - » Your solar system PV will not produce as much energy or your solar thermal system will not heat as much water during the eclipse
- What can I do to help during the eclipse?
  - » You can incorporate energy savings into your daily behavior, every day. Here are a few suggestions:
    - › Upgrade to LED light bulbs
    - › Unplug "vampire" electronics, such as coffee makers, when not in use
    - › Use high energy consuming devices, such as dish-washers, after 9 at night
  - » Learn more about sustainable energy conservation at https://www.energyupgradeca.org/home-energy-efficiency/