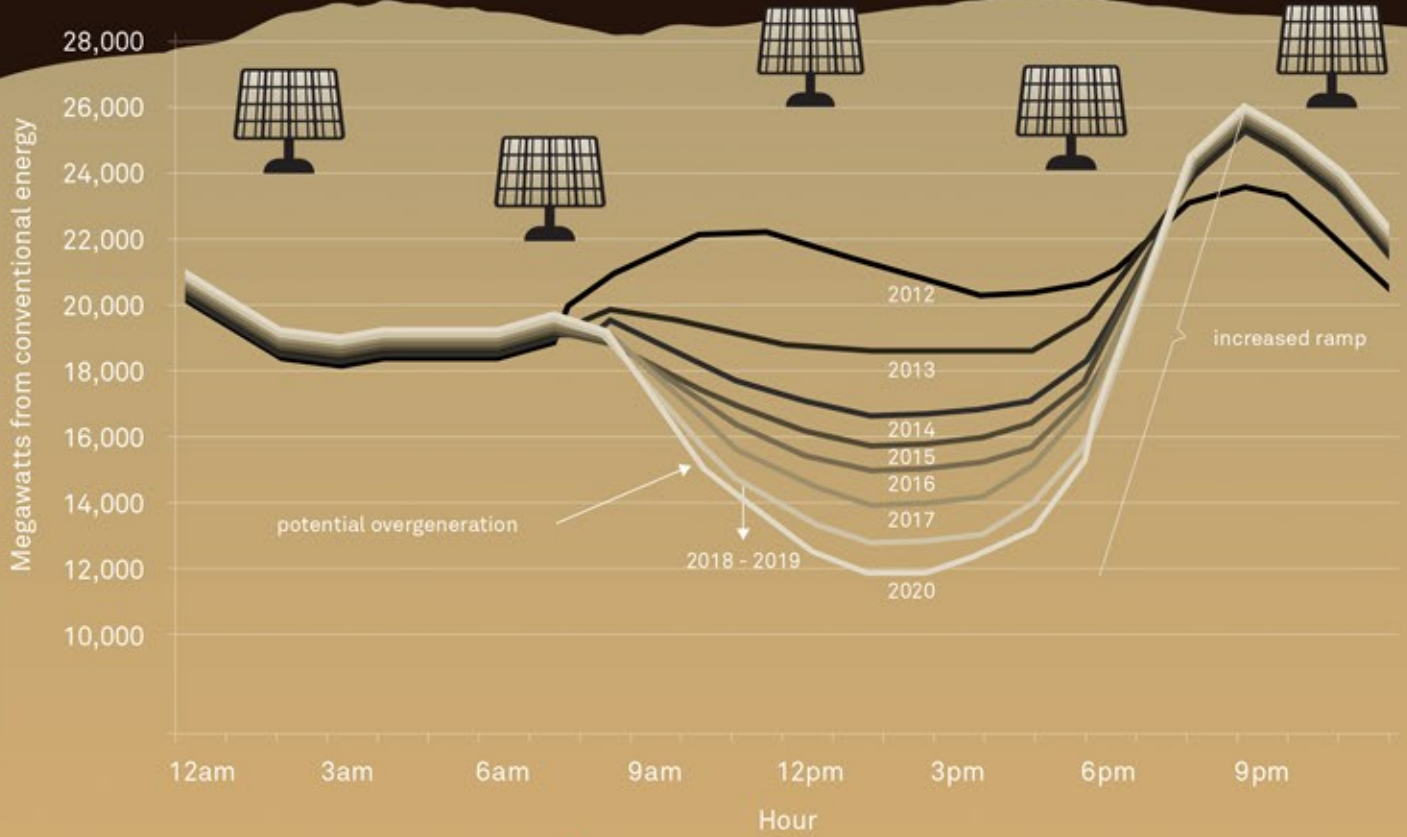


Shining a light on solar energy over-generation

California's net load: As solar generation increases through a typical spring day the requirement for energy from conventional sources declines. When the sun sets, this trend abruptly reverses.



The net load for energy companies generating non-solar electricity during peak sunlight hours on a typical spring day is estimated to have declined by nearly 50% since 2012.



22,000

Megawatts
in 2012



13,000

Megawatts
in 2018

Drop of nearly
50%

Source for all data: California Independent System Operator Corporation based on historical and projected sunlight on March 31st 2012 through 2020. Report published in 2016.

California finds itself at the forefront of a quest to find new avenues for energy efficiency. Blessed by its sunny climate and following a lot of investment in solar panels, utilities in the Golden State now produce a glut of cheap energy during its many cloudless days.

As capacity has built out, the required base load from non-solar sources during the day has fallen further and further. According to one estimate, the net load for energy companies generating non-solar electricity during peak sunlight hours on a typical spring day will have declined from over 22,000 megawatts in 2012 to less than 13,000 megawatts in 2018, a drop of nearly 50%.¹

While that's fine in theory, it does create a headache when the sun goes down. That's when traditional generators of energy – whether nuclear, gas or coal – face a sudden requirement to ramp up their contribution to the grid as the contribution of solar energy fades.

Plotted on a chart, this supply/demand dynamic takes on a distinctly anatine shape, hence the name, the duck curve.

Utilities are working hard to find a solution to this duck-shaped dilemma, including time-of-use plans, smart grids and new ways of storing energy. As more renewables come online and the energy mix changes we think utilities will be transformed. We're not quite there yet but we do believe it could be an interesting area for investment in the future.

¹Source: California Independent System Operator Corporation, "What the duck curve tell us about managing a green grid", Report published in 2016.

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