



Residential Solar and Changes in Consumption of Electricity

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RESEARCH QUESTIONS

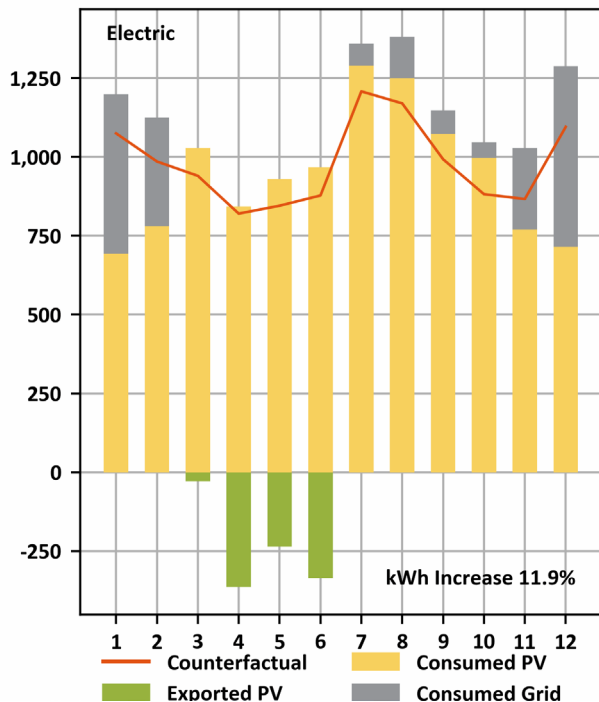
- » Do residential homes exhibit a change in their total consumption of electricity following the installation of solar panels?
 - Behavioral changes – “Free electricity”
 - Additional end uses – Added or upgraded AC, electric vehicles.
- » Topic surfaced during review of NEM 2.0 cost-effectiveness evaluation.
- » Limited prior research available on the topic with mixed results.

METHODS

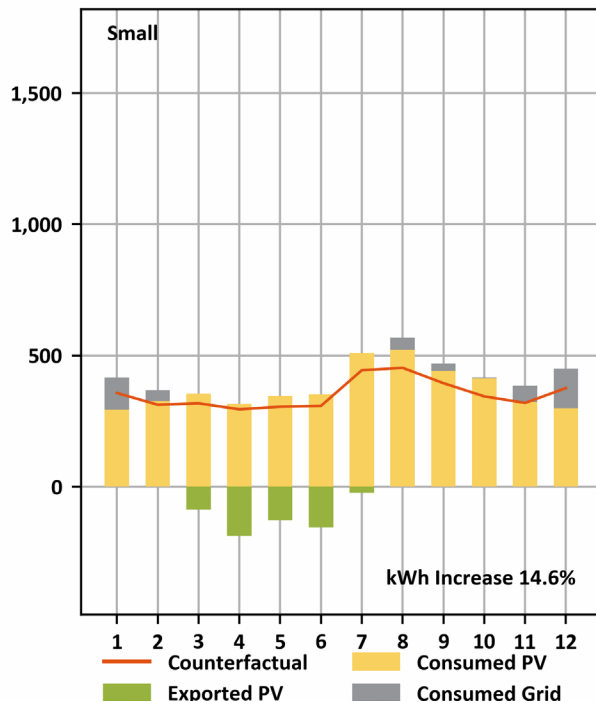
- » Relied on data from San Diego Gas and Electric NEM 2.0 customers from 2017 to 2019.
- » Statistically-adjusted engineering approach in a panel data model:
 - Net consumption modeled as a function of weather, calendar effects, solar generation, presence of an electric vehicle, and individual household (fixed) effects.
 - Parameter estimates for solar generation interacted with month answer primary research question:
 - Parameters of -1.00 indicate that solar generation had the expected effect on consumption.
 - Parameters greater than -1.00 indicate that solar had less than the expected effect on consumption, i.e., consumption increased.
- » Stratified by customer fuels, customer size, and climate zone.
- » Simulated solar generation developed using the Python pvlib package.

RESULTS

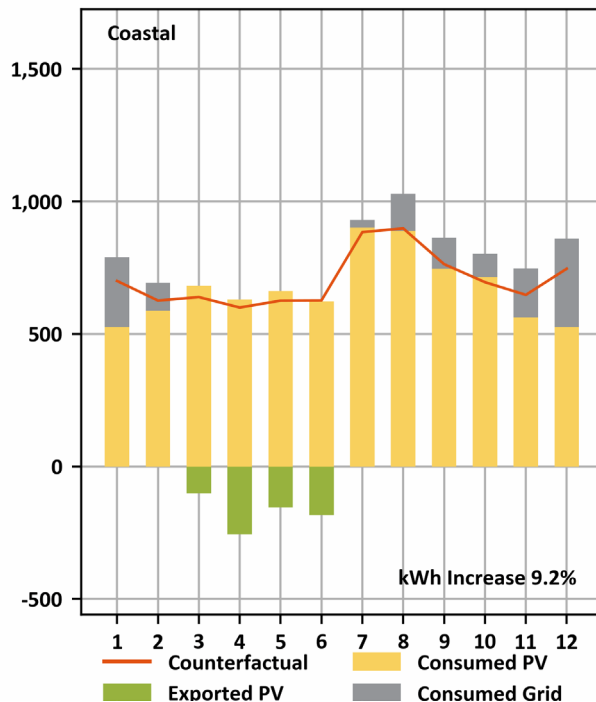
Fuel Type



Size



Climate Zone





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THANK YOU

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