



# Solar Roof Project

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# Presentation Agenda

**Tesla's Solar Roof &  
Current Market**

**Solar in  
Practice**

**Public Policy &  
Solar**



# Tesla's Solar Roof & Current Market

# What is Solar Roof?



# What is Solar Roof?

- 30-year net savings
- Dependencies:
  - Location
  - Local energy prices
  - Inflation rates
- 30% tax credit
  - Solar tiles
  - Powerwall



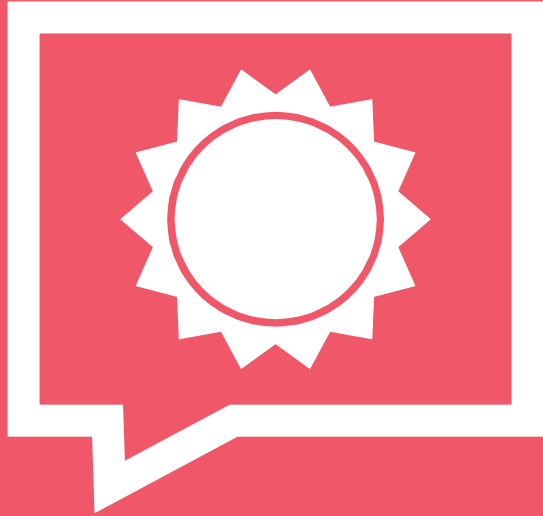
## Target Demographic

- Homes with right conditions in right place
- Innovators who embrace new technology



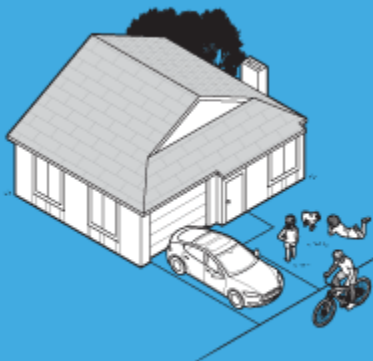
## Current Market

- Is there potential to improve Tesla's solar business with Solar Roof?
- Current Issues
  - Not a new technology
  - Solar roofs can be less efficient and economical than traditional panels
- Advantages
  - Tesla's brand value
  - Means of production



# Solar in Practice





## Soak Up the Sun

### ONE-STORY RANCH IN THOUSAND OAKS, CALIF.

BUILT: 1975 | INTERIOR SQUARE FOOTAGE: 1,500 | ROOF SQUARE FOOTAGE: 1,878

#### WHAT THE ROOF COSTS

Solar Roof: 50% solar tiles, 50% nonsolar tiles **\$49,800**

One Powerwall battery **\$7,000**

#### WHAT THE OWNER GETS BACK

Federal tax credit **\$13,900**

Estimated energy savings over 30 years **\$84,700**

#### AFTER 30 YEARS A SOLAR ROOF WOULD SAVE

**\$41,800**



## Through the Roof

### TWO-STORY HOME IN BELLAIRE, TEXAS

BUILT: 1990 | INTERIOR SQUARE FOOTAGE: 4,562 | ROOF SQUARE FOOTAGE: 2,779

#### WHAT THE ROOF COSTS

Solar Roof: 50% solar tiles, 50% nonsolar tiles **\$73,600**

Two Powerwall battery **\$12,500**

#### WHAT THE OWNER GETS BACK

Federal tax credit **\$21,300**

Estimated energy savings over 30 years **\$52,100**

#### AFTER 30 YEARS A SOLAR ROOF RESULTS IN A SAVINGS SHORTFALL OF

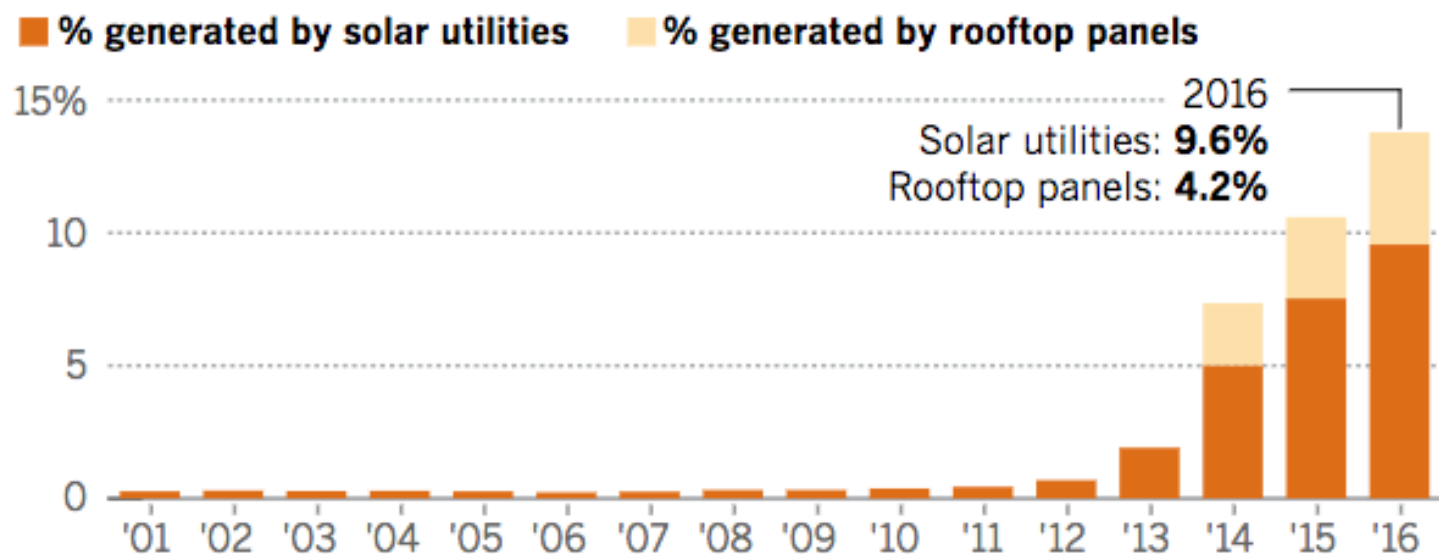
**-\$12,700**

## Case Study: California

- 27% of energy from renewables
- Goal to have more than half of energy from renewables by 2030
- CAISO pays states to take excess energy
- Due to a glut of power, Californians pay 50% more for electricity than the national average

## California's solar boom

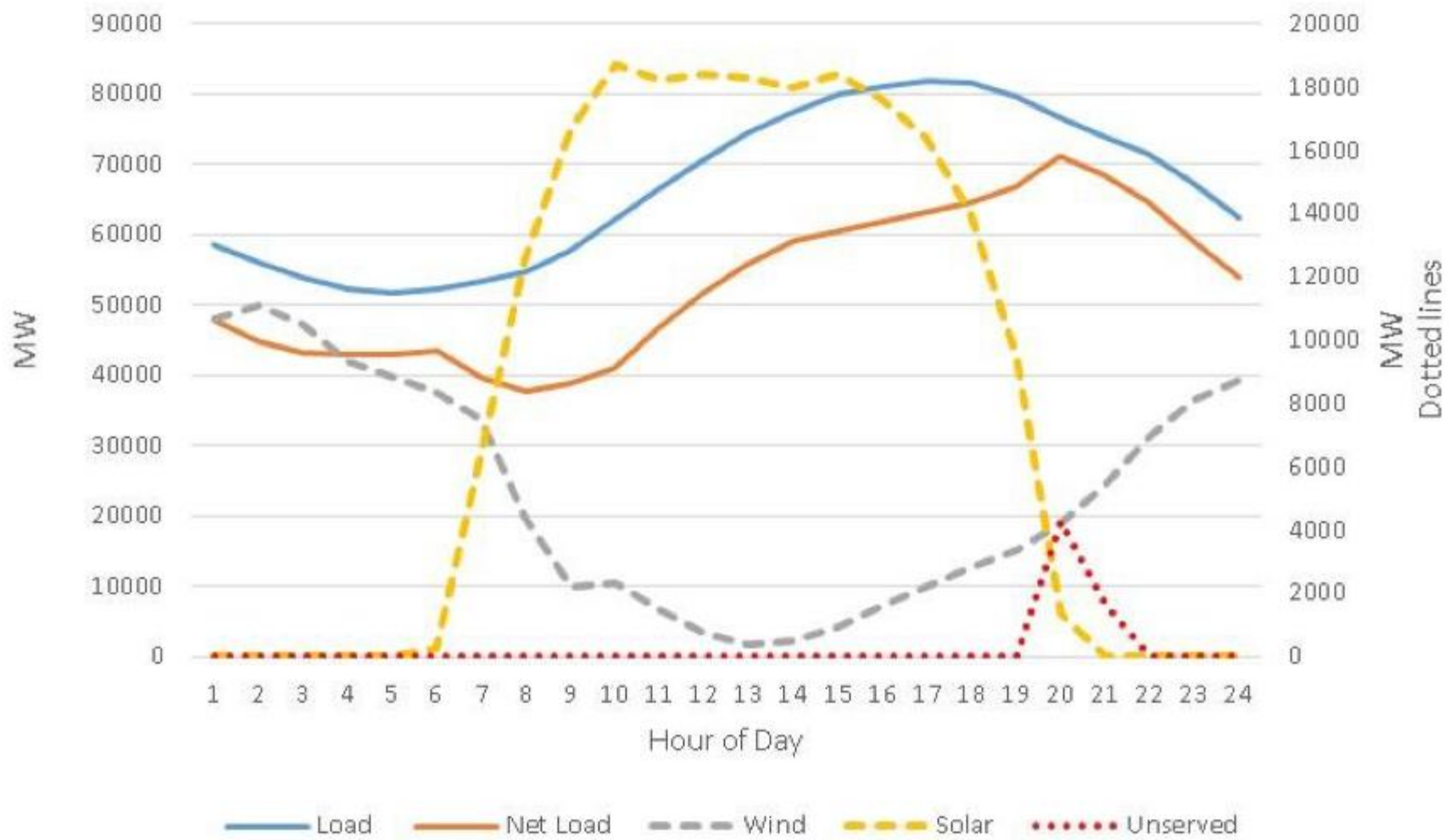
The share of the state's power generated by solar utilities and rooftop panels has skyrocketed in recent years.



Note: Rooftop panels were not tracked by the federal government prior to 2014.

Source: Energy Information Administration

@latimesgraphics



## Case Study: Florida

- FPL rules require residents to connect to the grid but can disconnect at their own discretion
- Illegal to utilize solar capacity when the grid shuts down

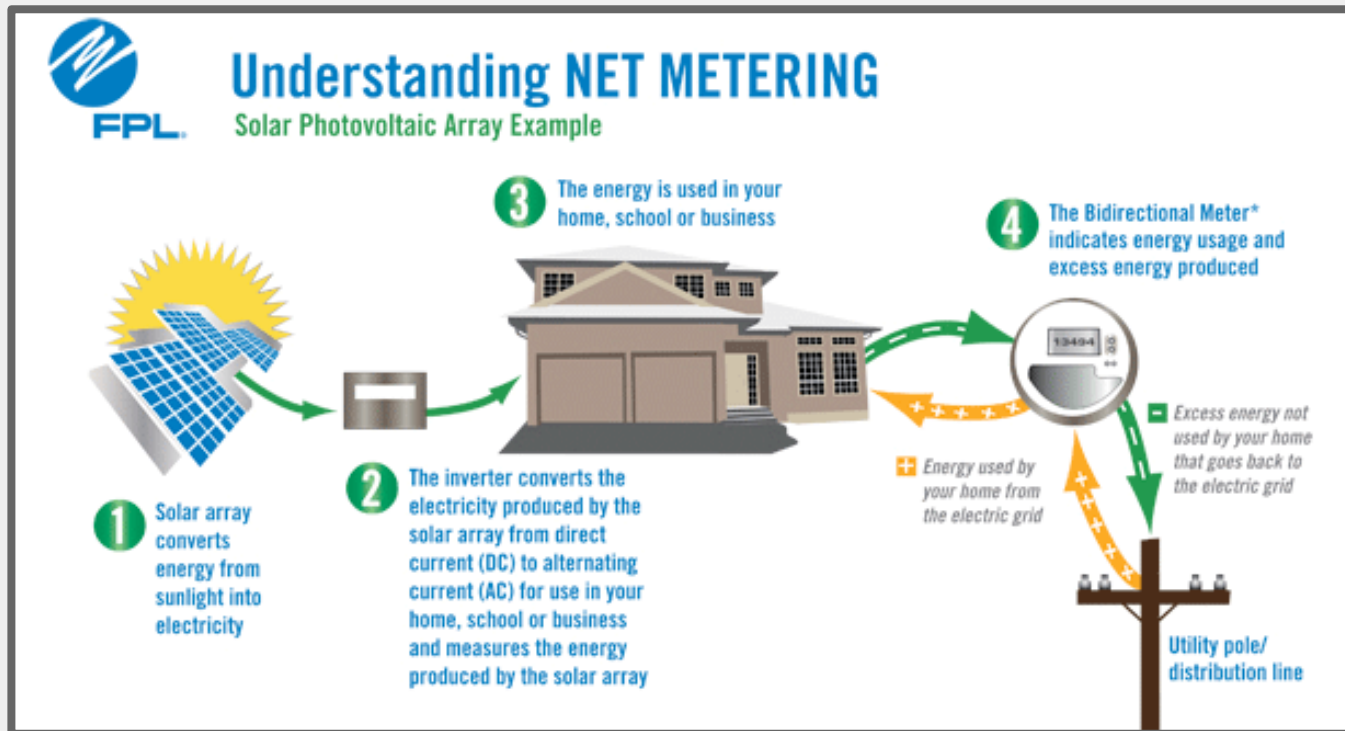




# Solar & Policy

# Policy & Solar Roofs

- Two main facets of solar roofs that interact with policy
  - Net Metering
  - Solar Renewable Energy Credits (SRECs)





## Policy & Solar Roofs

- Traditional utility companies opposed to solar roofs
  - The way solar roofs interact with the grid through net metering threatens utility companies
- Over past 6 years, rooftop solar grew by as much as 900%
  - Has declined drastically - 2% decline this year
  - Partially due to lobbying efforts from traditional utility company

The background of the slide is a photograph of several high-voltage power line towers and their associated power lines. The scene is captured during sunset or sunrise, with a warm, orange and yellow glow on the horizon and a darker, blueish-purple sky above. The towers are silhouetted against the sky, creating a strong geometric pattern of lines and triangles.

## Utility Company Lobbying

- Net metering unfair to other consumers
- Solar roofs only benefit the wealthy who can afford installations
- No guarantee power prices will remain stable

## Policy & Solar Roofs

- Utility company lobbying has seen some success at state level
  - Nearly every state is reviewing current solar energy policies
  - In the past 4 years, Hawaii, Nevada, Arizona, Maine, and Indiana have taken steps to phase out net metering
- Potential influence at federal level
  - Brian McCormack - new Chief of Staff for Rick Perry (Energy Secretary)
  - McCormack leading new DOE study on how renewables harm fossil fuels



Edison Electric  
Institute



“

*“There’s no doubt these utilities are out to kill rooftop solar, and they’re succeeding. They’re now driving the agenda.”*

■ David Pomerantz, Executive Director of Energy Policy Institute at University of Chicago



# Thank you!

## Closing thoughts:

- Better batteries to improve inefficiencies
- Ongoing policy struggle between pro-solar and utilities companies will continue and will drastically impact the field

## Sources

- [https://www.nytimes.com/2017/07/08/climate/rooftop-solar-panels-tax-credits-utility-companies-lobbying.html?\\_r=1](https://www.nytimes.com/2017/07/08/climate/rooftop-solar-panels-tax-credits-utility-companies-lobbying.html?_r=1)
- <https://www.teslarati.com/teslas-solar-future-challenged-by-lobbying-from-power-companies/>
- <https://www.consumerreports.org/solar-panels/doing-the-math-on-teslas-solar-roof/>
- <https://www.tesla.com/solarroof>
- <https://www.directenergysolar.com/why-direct-energy-solar/frequently-asked-questions/>
- <https://c1cleantechnicacom-wpengine.netdna-ssl.com/files/2016/01/net-metering-diagram.gif>
- <https://www.teslarati.com/teslas-solar-future-challenged-by-lobbying-from-power-companies/>
- <https://www.fpl.com/clean-energy.html>

## Sources

- <https://www.dallasnews.com/business/economic-snapshot/2017/03/25/texas-sun-powered-boom>
- <https://energymarketingconferences.com/the-ercot-market-of-today-will-not-be-the-same-tomorrow/>
- <http://www.sierraclub.org/texas/blog/2016/07/it-all-comes-sunshine-texas-s-electrical-future-armadillo-curve-concerns-ercot>
- <https://alcse.org/the-duck-curve-what-is-it-and-what-does-it-mean/>
- <https://www.greentechmedia.com/articles/read/the-california-duck-curve-is-real-and-bigger-than-expected#gs.kzSWsCg>
- <http://www.latimes.com/projects/la-fi-electricity-capacity/>
- <http://www.latimes.com/projects/la-fi-electricity-solar/>
- <http://www.wftv.com/news/local/want-solar-panels-you-still-have-to-pay-florida-utilities/276475576>
- <https://www.salon.com/2017/09/18/floridas-largest-power-company-made-installing-solar-panels-much-harder/>