SOLAR UNITED NEIGHBORS

The Myth of the Solar "Cost Shift" and the True Value of Solar

Background: the cost-shift myth

Monopoly electric utilities are waging a well-documented campaign against rooftop solar. They see it as a threat to their outmoded business model of selling more and more electricity in order to increase their profits. They are lobbying across the country to make it more expensive and difficult for people to go solar.

The utilities' primary claim is that non-solar customers are subsidizing solar owners. They describe this using the terms "cost-shift" or "cross-subsidization." Their logic goes like this:

- Rooftop solar users generate their own electricity
- Therefore, they buy less electricity from utilities.
- Solar owners still rely on the grid infrastructure the utility maintains.
- As a result, utilities claim, solar cuts into their revenue and forces them to raise rates on their other customers to maintain the grid.[1]

The "cost-shift" claim was first introduced by the Edison Electric Institute (EEI). EEI is a lobbying association for monopoly electric utilities. The solar cost-shift myth has become ubiquitous. This is thanks to repetition by electric utilities and by the front groups they fund.[2]

Utilities use this cost-shift myth to push for policies that unfairly target solar owners. This includes:

- Raising fixed costs and demand charges,
- Weakening or eliminating net metering policies that provide rooftop solar owners with fair credit for the solar energy they provide back to the electric grid.

Debunking the cost-shift myth

There is no evidence of a solar cost shift

Repeated studies, from Nevada to Mississippi to Maine, have found little or no evidence for a "cost shift" from rooftop solar customers.[3]

The total amount of electricity used in any given utility territory varies from year to year. This is due to many factors. These range from weather patterns, to natural disasters, to the construction of new

[1] https://www.freeingenergy.com/distributed-rooftop-solar-raise-electricity-prices-low-income/

[2] For example, see: "N.A.A.C.P. Tells Local Chapters: Don't Let Energy Industry Manipulate You" by Ivan Penn. NY Times. Jan. 5, 2020.

[3] https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/

homes. In most places, the reduction in electricity use from rooftop solar customers is less than that average annual variability.

For example, an analysis of ratepayers of Consumers Energy, a public utility in Michigan, showed that this regular variation in annual sales ranged from 9 to 63 times as much as annual net metering credits.[4]

Distributed solar adds value, not extra costs

The utility's cost shift claim is false. Research on the issue concludes that rooftop solar more often provides a *net benefit to all ratepayers*. Many of the state value-of-solar (VOS) studies mentioned above found that Solar customers often provide more benefits to the grid than they receive in return via net metering. Solar is a net benefit to all customers when accounting for the full economic and environmental value of solar to customers and the public.[5]

Benefits provided by distributed solar include:

- ***Economic growth:*** Researchers at Virginia Commonwealth University concluded that every dollar invested in distributed solar adds an additional $0.60 to Virginia's economy.[6]

- ***Job creation:*** As of 2019, about 250,000 people were employed in the solar industry in the United States.[7] The clean energy sector overall is one of the largest and fastest-growing sectors in the American economy — with the potential to create tens of thousands more jobs through the clean energy transition. The Solar Foundation estimates that 38.7 new jobs are created for every 1-MW (1-MW is 133 average 7.5 kW installations) of residential solar systems installed.[8] A recent report estimates scaling local solar and storage will result in 2 million local jobs by 2050.[9]

- ***Public health benefits:*** Generating more clean solar electricity means less pollution. This helps reduce the harmful and expensive public health and environmental impacts of climate change. These are borne disproportionately by low-income communities and people of color. A healthier environment benefits everyone, not just solar owners.

- ***Energy security:*** Solar provides a home-grown energy source. This reduces our dependence on volatile global energy markets.[10]

- ***Resilience:*** Distributed energy resources like rooftop solar are less likely to go offline during storms, wildfires, or other severe weather events. And, when paired with storage and connected in microgrids, solar can provide electricity even through multi-day power outages.

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[4] Source for this data: Rábago Energy LLC, see slide 11: https://www.solarunitedneighbors.org/wp-content/uploads/2020/09/Myth-of-Solar-Cost-Shift-slides.pdf

[5] Examples include: "SEIA finds rooftop solar is worth 24¢/kWh in Michigan"; "Rooftop solar in Indiana worth 13¢/kWh, not 3¢/kWh, says expert witness"; "Study finds Utah Solar Customers Provide over 14 times the value proposed by Rocky Mountain Power"; "Rooftop solar: Net metering is a net benefit"; "Minnesota's Value of Solar"; "Maine PUC study values solar at 33 cents/kWh, more than double the price of utility power"; "The True Value of Solar";

[6] Virginia Commonwealth University. 2020. "Assessing the benefits of distributed solar energy in Virginia."

[7] https://www.thesolarfoundation.org/national/

[8] See The Solar Foundation, National Solar Jobs Census 2018, February 2019, pg 30: https://www.thesolarfoundation.org/wp-content/uploads/2020/02/Solar-Jobs-Census-2018-1-1.pdf

[9] Vibrant Clean Energy. 2020. "Why Local Solar for All Costs Less"

[10] https://www.intechopen.com/books/energy-policy/towards-energy-security-for-the-twenty-first-century

California utilities are already investing extensively in solar microgrids to help keep the lights on during wildfire-related blackouts.[11]

- ***Peak Reduction:*** In most places, the price customers pay for electricity stays the same throughout the day. But, the cost to generate that electricity does not. When demand is high, utilities may need to purchase electricity from more expensive sources to meet demand. This cost is passed along to customers in the form of higher rates. Solar can meet this demand by providing additional electricity during times of high demand. This saves money for all ratepayers.[12]

- *Reduces wear and tear on the grid:* On-site distributed solar generation reduces the need to transmit electricity over long distances from power plants. More solar means less wear and tear on the grid, lower maintenance costs, and fewer expensive utility upgrades. All ratepayers share these savings.[13]

- *Provides high-value electricity to neighbors*: When rooftop solar systems send energy to the grid, they provide electricity to neighboring households. These households pay the electric utility full retail price for this electricity.

- *Lower energy costs for everyone:* Small-scale solar in New England produced energy system benefits of $1.1 billion from 2014-19.[14] Under a national 95% clean energy target, expanding local solar and storage can save $473 billion by 2050.[15]

The real cost shifts in the electric power system

The electric power system is full of cost shifts. Distributed solar is not one of them.

Several cost shifts are baked into electric utilities' rate design. Most electric utility bills include both a fixed monthly charge and variable costs based on the amount of energy consumed. Fixed charges often reflect expenses related to grid infrastructure, among other utility costs. These charges are spread evenly across customers.

In one example of a cost shift, building and maintaining electric grid infrastructure for rural communities is much more expensive than supplying electricity to customers in more densely-populated urban areas. Rural customers do not pay higher rates. This means the higher cost of supplying electricity to rural communities is shifted onto a utility's urban customers.

Similarly, overhead power distribution lines are cheaper to build and repair than underground lines. This means that customers whose electricity comes from overhead lines subsidize the added cost for customers served by underground lines (who, incidentally, also benefit from more reliable service, as underground power lines are safe from storm outages).[16]

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[11] https://www.vox.com/energy-and-environment/2019/10/28/20926446/california-grid-distributed-energy

[12] https://emp.lbl.gov/sites/default/files/comdemandcharge-execsummary.pdf

[13] https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/

[14] Synapse Energy. 2020. "Solar Savings in New England"

[15] Vibrant Clean Energy. 2020. "Why Local Solar for All Costs Less"

[16] https://www.seia.org/research-resources/net-metering-facts

Furthermore, fossil fuel energy creates perhaps the most significant cost shift of all. It forces some communities, disproportionately low-income or of color, to bear the costs of pollution. A Harvard School of Public Health study found that coal power inflicts between one-third and half a trillion dollars of external costs on the United States every year, in the forms of water contamination, air pollution, public health impacts, and coal's contributions to climate change.[17]

Shifting and subsidizing costs across the system is inherent to the electric power sector's business model. As shown above, cost shifts also aren't necessarily bad: some of these shifts, like rural electrification, are positive for society. Nonetheless, it is disingenuous for utilities to warn about the imagined cost shift from solar while ignoring real cost shifts.

Conclusion

The claim that rooftop solar imposes an unfair "cost shift" from solar to non-solar customers is false. The endurance of the cost-shift myth can be traced to persistent public relations efforts by utility lobbying associations. These are born out of their concern that a widespread adoption of rooftop solar poses a threat to utilities' monopoly. Repeated studies have shown rooftop solar provides a net benefit to all ratepayers and the public. Utilities should encourage *more* people to adopt rooftop solar, not spread misinformation that discourages it.

[17] https://www.hsph.harvard.edu/c-change/news/full-cost-accounting-for-the-life-cycle-of-coal/ (Epstein, P.R., Buonocore, J.J., Eckerle, K., Hendryx, M., Stout III, B.M., Heinberg, R., Clapp, R.W., May, B., Reinhart, N.L., Ahern, M.M., Doshi, S.K. and Glustrom, L. (2011), Full cost accounting for the life cycle of coal. Annals of the New York Academy of Sciences, 1219: 73-98. doi:10.1111/j.1749-6632.2010.05890.x)