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The Conversation: How far is too far in promoting solar?

By Peter Asmus
Special to The Bee

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JOIN THE CONVERSATION: How much incentive should we provide for homeowners to install solar panels on their roofs? Add your comment below. To write a letter, go to sacbee.com/sendletter. Or comment on our Facebook page at facebook.com/sacramentobee.



Like anything in life, there are always two sides to every story. Take the case of **Kurt Strazdins / MCT** net metering, a policy that allows homeowners and commercial entities with solar photovoltaic panels on their roofs to barter electricity with their utility company.

At night, when virtually all of us are drawing power from the utility grid, your meter measuring consumption spins forward, adding to your monthly utility bill. During the day, if you have a solar panel on your rooftop and the sun is shining, the meter would instead spin backward under net metering, taking demand for power off the utility system.

Utility companies complain that this policy – which is the dominant approach to promoting solar energy in the United States – is unfair to customers who do not have solar panels.

The utilities complain that net metering is a way for wealthy customers who can afford solar photovoltaic, or PV, systems on their rooftops to avoid paying their fair share of the costs incurred to run the distribution and transmission grid that benefits us all. Net metering therefore reduces the fees they otherwise would be charged to maintain the grid.

Apparently, the perception that solar PV systems are toys for the rich in Malibu or Marin is no longer true. "Solar PV is no longer for the wealthy," points out Ed Fenster, co-founder of Sunrun Inc., one of a new breed of solar companies that will lease you solar PV systems, often for no money down. In the process, these solar PV systems can save you money while reducing air pollution linked to power production. Thanks to this recent solar lease model, two-thirds of solar PV installations over the last three years in California have occurred in ZIP codes with median income of less than \$85,000, clearly not the wealthiest regions in the state.

Fenster said that the poorest of California ratepayers are insulated from possible cost shifts from solar PV adoption due to ratepayer protections afforded in the California Alternative Rates for Energy

program, which, generally speaking, offers 20 percent discounts to low-income households.

In California, the nation's most successful solar market, the state's three investor-owned utilities have calculated that solar photovoltaic systems that will be added to the state's grid by 2015 under net metering will add up to approximately \$1.3 billion in increased electricity costs for the state's ratepayers without their own solar PV systems.

Here's how that more than a billion dollars is split among the state's three investor-owned utilities:

- San Diego Gas & Electric: \$200 million.
- Southern California Edison: \$400 million
- Pacific Gas & Electric: \$700 million

New study touts net metering

To fans of solar energy, net metering is a phenomenal success story. According to a report by Crossborder Energy consultants released this month, net metering actually provides more than \$92 million in benefits to ratepayers of PG&E, SCE and SDG&E. Interestingly enough, the report claims that the majority of the benefits of solar PV flow to customers who *do not* have solar on their rooftops, since they reap the benefits of reduced demand on utility grids, lowering overall system costs.

PG&E claims the study is bogus. The wrong natural gas price forecast was used, which means solar PV is less economical, since natural gas prices have dropped an additional 20 percent from the prices used by Crossborder, largely due to the controversial practice of fracking. That's just one in a long list of esoteric assumptions behind competing calculations of costs and benefits.

The biggest bone of contention, however, is that the Crossborder Energy study looked at just 30 percent of the total power exported to the grid by a solar PV panel under typical circumstances. The remaining 70 percent is usually consumed on site, at the house or business. PG&E, and its utility brethren, claim the entire output of the system should be counted when number crunching on the magnitude of a cost shift.

"The Crossborder study was funded by Vote Solar, who work to allow strong solar markets to grow, but without any balancing concerns about who pays that cost," said Denny Boyles of PG&E's external communications department. "Over the long term, PG&E seeks a sustainable solar market to provide our customers with choices, while being cognizant of the rate impacts solar installations can have on other customers."

Bringing this issue to a boil is a state law that places a cap on net metering that, thanks to a ruling by the California Public Utilities Commission, is now higher than originally thought: 5,700 megawatts of solar PV, or the equivalent amount of potential power that could be produced by more than six Rancho Seco nuclear reactors. At present, the amount of net metered solar PV feeding into California's grid is just under 2,000 megawatts, which, due to the intermittency of solar, is less than 0.4 percent of utility total power demand in the state.

While a victory of sorts for solar power, the PUC ruling would also end the net metering program as of

Jan. 1, 2015. PG&E is expecting that the number of solar PV customers using net metering within its service territory will reach its cap of 5 percent of its systemwide peak demand for electricity this year, hence its particularly aggressive stance on net metering. Even in the Crossborder Energy study, PG&E customers are singled out as the only ratepayers in California subjected to any cost shifting from those with solar to those without.

To put this issue in context, consider that state rebates to install solar PV are declining to near zero under the California Solar Initiative program, a 10-year program designed to wean the solar industry off subsidies. Solar PV costs are declining to near the utilities' retail price for electricity. Though consumers throughout the United States can still access a federal investment tax credit, the need for an additional state subsidy has shrunken over time. Yet in order for consumers to fully maximize the value of their solar systems, net metering is now more important than ever before.

"Utilities such as PG&E see the writing on the wall as solar PV is being installed at costs near parity with generic, dirty grid power," commented Adam Browning, executive director of Vote Solar, a nonprofit solar advocate. As state subsidies run out, "there is no other way than net metering to capture the value these solar PV systems bring to California's grid."

Who's right, who's wrong?

As anyone who has put together an Excel spreadsheet knows, numbers can say very different things based on one's assumptions. Dueling studies and statistics highlight how beauty clearly lies in the eye of the beholder. The PUC, thanks to Assembly Bill 2514, is now performing its own study on cost shifts, which the solar industry claims is based on a methodology skewed to make solar look bad. Though not required to be released until October, rumor has it the study is being rushed out the door, setting up a major battle in the Legislature over net metering as early as this spring.

The solar industry is not fully united on the topic of net metering. Some, such as Craig Lewis, executive director of the CLEAN coalition, a Palo Alto-based nonprofit promoting local energy solutions, claim there is a better way. Lewis likes the model that has flourished in European countries, such as Germany. It is called a "Feed-in Tariff," which pays consumers for the power they generate as it flows onto the grid just like any other power source.

"I think both the utilities and net metering advocates are right," said Lewis, acknowledging that calculating cost shifts and benefits attached to net metering is incredibly complicated.

"If taken to the extreme, net metering could lead to a downward spiral death for utilities," he warned.

Interestingly enough, the Sacramento Municipal Utility District has just deployed the feed-in tariff model and added almost 100 megawatts of new solar PV over the past two years at a cost of 14 cents per kilowatt-hour. For comparison purposes, SMUD has added 34 megawatts of solar PV on rooftops through net metering.

The vast majority of solar PV developed across the globe relies upon feed-in tariffs, though there is a backlash occurring against this policy as well. Take the case of Germany, where payments to consumers for rooftop solar PV was two to three times what is paid in the United States, but where the actual cost for installation is a third of what it is here. Germany is restructuring its incentives so that more power is consumed on-site, reducing feed-in tariff rates by as much as 26 percent. The

purpose of the cuts is to shrink the size of solar PV systems, limiting the power flowing beyond the site owner's property and into the grid, a goal that aligns with the basic concept of net metering.

SMUD is not the only California utility developing significant solar PV without net metering. PG&E, SCE and SDG&E also have been authorized by the PUC to build and own solar PV that will add up to 1,100 megawatts. They can charge up to 28 cents per kilowatt-hour, double what SMUD just paid for solar PV, and costs which are spread over all of its ratepayers, whether they like solar or not.

There are two sides to every story. In the end, it is likely that there are some small cost shifts with net metering, but there are benefits to the power grid as well. When you consider that ratepayers in Southern California are paying utilities \$1 billion over the course of a year for a shuttered San Onofre nuclear power plant that is not producing any power at all, any cost shift appears to be a small price to pay for democratizing our power supply with solar energy, rooftop by rooftop.

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just4thought · 2 days ago

The cost of solar energy increases costs to us all. The burden is mostly felt by commercial and industrial users so the voters don't openly revolt. The result is employers, most manufacturers, fleeing the state. On top of the highest tax rates in the state, California has the highest industrial electrical rates in the nation. Manufacturing companies of all sizes are leaving California because they have no choice. They

leave behind jobs at McDonald's and Walmart. The real jobs are now in Texas or South Dakota

7 ^ | | v · Reply · Share ›



enviro_nazi · 2 days ago

When the government uses taxpayer money to reward "good" energy and punish "bad" energy, you have an illegitimate government. The same goes for "good" and "bad" companies, ethnic groups, sexual anatomies, skin colors, religions, bank accounts. Our government does all of these and many, many more. Our government's illegitimacy approaches 100%.

5 ^ | | v · Reply · Share ›



Steven Maviglio → enviro_nazi · 2 days ago

There's no government money involved here whatsoever.

0 ^ | | v · Reply · Share ›



enviro_nazi → Steven Maviglio · 2 days ago

Of course there is. The solar energy is produced by taxpayer-subsidized solar panels. Taxpayer money finances all of the lawyers suing PG&E Taxpayer money paid for the politicians to write the law forcing PG&E to allow connections to their equipment. It's all taxpayer money vs PGE. In any government dealings with anything, it's all taxpayer money they are using.

1 ^ | | v · Reply · Share ›



pistach · 2 days ago

make net metering based on wholesale cost of the electricity itself and eliminate using the rate that includes transmission and distribution (and miscellaneous) and the problem is solved. Asmus makes a few fundamental errors in the above as well, for net metering is second to the various tax credits that pay for half or more of the system, in "encouraging" solar, even as the state subsidies shrink. The CPUC rate designs simply shift costs from some ratepayers to others, and in ways that further harm the less fortunate. But good heavens, feed in tariffs are the worst of all possible worlds. Maybe, just maybe, if the government teat is taken away, solar will grow up to compete on its own.

4 ^ | | v · Reply · Share ›



Jim Jenal · 2 days ago

The investor-owned utilities - SCE, PG&E and SDGE - are attacking net metering because it ultimately threatens their bottom line. As more distributed generation comes online, there is less need for the IOUs to build generating capacity - and that is the basis for their guaranteed profit margin. But here's the thing - not one of these companies has a business plan that makes them viable in a world where we actually take steps to drastically reduce carbon emissions. They are the buggy whip manufacturers of the 21st Century and no matter how much they couch their argument in faux economic populism, they simply

do not have a viable business model going forward.

More specifically to their actual argument against the expansion of net metering, they claim that because solar users use less electricity, they are not paying "their fair share" of costs for transmission (i.e., bringing electricity at substantial loss from far away) and distribution (getting that electricity down from the poll to the customer's home or business). Of course, it wasn't the solar customers who designed the IOUs rate structures that oddly tie payment for fixed cost assets (like transmission lines) to a variable factor like usage - the IOUs did that. Guess what - every customer who reduces their energy usage - whether by solar or by efficiency - pays less for transmission and distribution in exactly the same way that solar customers do. Are people who simply learn to turn off unnecessary loads or who invest in energy-efficient lights and appliances also not paying their "fair share"?

Solar is not a "silver bullet" but it has a significant role to play in ending our dependency on fossil fuels. We can either make the world safe for the profit margin of the IOUs, or we can rescue the world from Climate Change - we cannot do both. The last people we should be taking advice from on how to plan for the future are the buggy-whip boys at the IOUs.

3 ^ | v · Reply · Share ›



rogro → Jim Jenal · 2 days ago

About 14 years ago we tried making the IOUs obsolete. The result was many billions of dollars in added costs to the ratepayers. We are still paying.

You say that utilities designed their rates. Maybe, but I thought the CPUC did that. I would think that the utilities would be happy to have all customers obligated to pay their share of fixed costs if the CPUC would allow it.

2 ^ | v · Reply · Share ›



Fifty Ville → rogro · 2 days ago

That's true. The solar user whose excess wattage feeds into the grid pays nothing towards the upkeep of the infrastructure and the salary of the lineman who must climb the poles to keep the wires intact.

0 ^ | v · Reply · Share ›



California Solar · 2 days ago

Solar energy is a shining example of CA and US energy policy actually working.

Solar has delivered results, is building an industry and creating American jobs -- over 43,000 in California alone. Solar energy is a cost-effective energy choice for businesses and homeowners today -- not tomorrow. Solar is cheaper than fossil-fueled peaking power plants and the large-scale solar farms being built are being done at or below the cost of new natural gas-fired generation. Solar installations continue to increase (and nearly double) year over-year while the incentives decline and prices drop. Solar and renewable energy has been under-subsidized relative to oil, gas, nuclear and ethanol by nearly any

metric...and has become commercialized and cost-effective. As an added bonus, solar is clean energy that doesn't release mercury, nitrous-oxides, arsenic and other harmful pollutants into our air and waterways.

3 ^ | | v · Reply · Share ›



VanCleve · a day ago

Why aren't we talking about the brown outs we used to have during peak demand which the solar energy has prevented? That has prevented building costly extra infrastructure that would lie dormant and inefficient during non peak hours thereby costing all rate payers more. The solar panels have saved rate payers money there. How does that factor in?

2 ^ | | v · Reply · Share ›



rogro · 2 days ago

Being intermittent, rooftop energy should be equivalent in market value to wholesale economy energy, which is worth about 3 cents/kWh. A residential rate is more like 14 cents. The difference of 11 cents has to be made up somehow, and regulated utilities are entitled to charge rates that fully cover their costs including a return to the stockholders. Ratepayers have to cover the difference.

2 ^ | | v · Reply · Share ›



althink → rogro · 2 days ago

\$0.14/kwh is very low as a proxy for the solar subsidy given to large homeowners because the rate subsidy has to calculate incrementally. Even in low use two bedroom condo with no pool or jacuzzi and gas heat I am into tier 3 rates that averages \$0.28/kwh. larger homes easily get into tier 5, average price \$0.35.

2 ^ | | v · Reply · Share ›



rogro → althink · 2 days ago

Thanks. I'm just a few years behind the times.

0 ^ | | v · Reply · Share ›



althink · 2 days ago

To encourage technology, I can support some subsidy to the solar industry for larger, much more cost effective and controlled commercial installations such as on expansive warehouse and school rooftops, but residential solar is just another middle-class welfare program. Current residential solar subsidies are a temporary employment program, but definitely not an effective energy conservation or supply program. Residential solar programs are all about politics with no net consumer and economic benefits.

Traditional CA residential rates are energy tiered to discourage high use to encourage conservation. That is a good thing. It is then counter-intuitive that we would then undo this benefit, even reverse it, by sending the greatest solar subsidies to higher users installing solar. Not to mention the economic damage done by unjustified rate increases on other users to fund the subsidy.

2 ^ ⋮ v · Reply · Share ›



polyduces · 2 days ago

Our company leases the panels to home owners.....who pay the lease with what they would have otherwise spent in power bills. Next zero gain in expense. They're totally affordable.

2 ^ ⋮ v · Reply · Share ›



Pressto · 2 days ago

"How far is too far in promoting solar?"

It starts when the government mandates its use. Bottom line is while solar is a nice idea the technology is still not there yet to make it an affordable and reliable energy source.

2 ^ ⋮ v · Reply · Share ›



AmericanCommonsense · 2 days ago

Can't agree more. As solar gets cheaper and cheaper, we of California who are uniquely blessed to be able to take advantage of it should do so with all speed.

2 ^ ⋮ v · Reply · Share ›



s_kruse · 21 hours ago

Conservation and efficiency come first, then "go get more". We should follow Germany's example or PV panels along every freeway, solar farms, roof tops on apartments and schools. It makes perfect sense to get away from centralized generating and transmitting electrons long distance and move toward distributed generation where, to the extent possible, electricity is produced close to where it is consumed. The \$0.03 vs. \$0.14 comparisons fail when viewed on the local level.

1 ^ ⋮ v · Reply · Share ›



mschliebs · a day ago

Wow ! I am not paying my fair share to the share holders.

1 ^ ⋮ v · Reply · Share ›



Chuckiechan · a day ago

If solar really was economically efficient, people would buy and finance their own systems. Instead, the math is massaged to make it seem like a good deal, when in reality it is not.

Rate payers are paying extra money so other people can save money on systems other rate payers paid for.

That is called "Obama math".

So if you are going to use "Electrical welfare" call it what it is - a transfer of resources from one rate

So if you are going to use Electrical wire , call it what it is - a transfer of resources from one rate payer's rooftop. It's really "solar for the rich" so they can have smaller electric bills.

1 ^ ⋮ v · Reply · Share ›



Nils Tønning → Chuckiechan · 5 hours ago

Wow! You just don't get it at all!

0 ^ ⋮ v · Reply · Share ›



pman2008 · 2 days ago

Using the utilities argument " paying their fair share of the costs incurred to run the distribution and transmission grid that benefits us all." would also mean that those using very little electricity are also not paying their fair share since to provide a watt or a kilo-watt to your house has a certain fixed cost attached to it that they are not paying unless they are at or above the average. It is also unfair to change the billing rules for those who have installed a system that requires a 7 to 10 year return on investment which was based on how they currently charge.

Read more here: <http://www.sacbee.com/2013/01/...>

1 ^ ⋮ v · Reply · Share ›



Jim Youngs · 2 days ago

Is there a formula for computing net metering to investor-owned utility company greed?

1 ^ ⋮ v · Reply · Share ›



JOMICA · 2 days ago

Regarding Fenster quotes in the article;

"Solar PV is no longer for the wealthy." Even in CA ZIP codes with median income households less than \$85,000, there are sufficient wealthy households to install their share of the less than 0.4 percent of total demand.

"The poorest of CA ratepayers are insulated from cost shifts." If the poor are getting a 20% discount and the rates rise 10%, the poor will have a net increase of 8%. That seems to be an ineffective shield.

The above two quotes need to be followed by another quote; "Figures don't lie but, liars can figure."

1 ^ ⋮ v · Reply · Share ›



wyatt1sc · 2 days ago

with global warming increasing day by day, why NOT install panels?!?!?

The "tech" is only expensive because the money whores who reap the bucks from OIL don't wanna lose those quarterly bonus checks

1 ^ ⋮ v · Reply · Share ›



althink · 2 days ago

 re "some small cost shifts with net metering"

Some? Small? If the author really wanted a conversation they would not reveal their bias so clearly. If the author wanted a conversation he would provide facts on actual and projected cost shifts and not just opinion.

Even consumer groups are starting to complain about the subsidies. TURN is referenced in this article on fairness: "Solar Panel Payments Set Off a Fairness Debate" at <http://www.nytimes.com/2012/06...> . The BEE has even editorialized about the subsidies going to big and often wealthy homeowners. See: "Rich soak up solar subsidies" at <http://www.sacbee.com/2011/10/...> .

1   · Reply · Share ›



shaybuchanan · a day ago

We're off grid so I may be behind on this, but ... last time I paid an electric bill, there was a "use" fee that covered the cost to maintain the grid itself, and I understood the cost was flat, no tiering, and the only difference being between residential and business customers. Oversimplified, if the cost was \$100, and businesses used 60%, then \$60 would be divided by the number of business and that was their use fee, while the remaining \$40 would be divided by the residential units in the area and that was their use fee. In addition to the use fee, there was the kw/h rate that covered the cost of obtaining the electricity going through the grid. On that kind of a payment structure, there is no "not paying your fair share", especially if net metering cannot be applied to the use fee.

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vacadoug · 2 days ago

It's affordable here in PR where electricity rates with taxes are approaching 30 cents a KWH!

0   · Reply · Share ›

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