

ECLIPSING PROGRESS

The State of Solar Rates and Fees at Monopoly Electric Utilities in Texas

How Many Cooperative, Municipal and Investor-Owned Utilities are Stifling a Key Resource that Could Improve Grid Reliability

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EXECUTIVE SUMMARY

As of 2016, Texas had an estimated 62,700 megawatts (MW) of rooftop solar potential¹, which will have grown as the number and area of rooftops has increased. And yet, Texas has only 2055 MW of customer-sited solar as of October 2023.²

The Texas electric grid, managed by the Electric Reliability Council of Texas (ERCOT), is struggling to meet demand and energy prices are rising, partly because of transmission constraints and local energy shortages. Energy experts have advocated accelerating the deployment of customer-sited solar and batteries to strengthen the grid, reduce costs and improve community resilience. Customer-sited solar is a solar system that is co-located with an electric customer and is interconnected on the customer's side of the electric meter. This includes rooftop or ground-mounted solar on the property.

Despite high energy prices, falling grid reliability, and extreme weather threats, Texas utilities have policies that discourage customer-sited solar adoption that could bring relief.

Numerous factors contribute to the financial feasibility of customer-sited solar, including the cost of the equipment and installation, homeownership status, orientation and shading of rooftop space, roof and structure conditions, and electric provider rates and fees. Residential solar costs have declined by over 50% since 2010 and have been relatively stable during the past eight years.³ Most other factors are relatively stable. However, Texas is one of the few states without a statewide policy for compensating customers for energy produced from on-site solar installations.⁴ Thus, electric provider solar rates and fees are critical in determining the financial viability of customer-sited solar.

It is up to each municipal utility, rural electric cooperative, and monopoly investor-owned utility to determine the design of their distributed generation policy. Only the rates at the four investor-owned utilities are subject to Public Utility Commission of

¹ Pieter Gagnon, et al. "Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment," National Renewable Energy Laboratory. January 2016. <https://www.nrel.gov/docs/fy16osti/65298.pdf>.

² "Unregistered DG Installed Capacity Quarterly Report," ERCOT. 30 October 2023. <https://www.ercot.com/mp/data-products/data-product-details?id=NP16-533-M>.

³ "Solar Industry Research Data," Solar Energy Industries Association. 2022. <https://www.seia.org/solar-industry-research-data>.

⁴ Ben Zientara. "What is net metering and how does it work?" Solar Reviews. 3 November 2023. <https://www.solarreviews.com/blog/what-is-net-metering-and-how-does-it-work>.

Texas (PUC) oversight and approval. The municipal and electric cooperative utilities are free to set rates and fees in any way they wish, subject only to the approval of their boards of directors. Public Citizen conducted this study of rates and fees specific to residential customers with customer-sited solar at all non-competitive Texas electric utilities to inform policymakers. The scope of this research includes all municipal and cooperative electric utilities in Texas, and monopoly investor-owned electric utilities that serve Texas customers outside of ERCOT. This research complements the assessment by Solar United Neighbors (SUN) of solar compensation policies offered by retail electric providers that serve customers in ERCOT's competitive markets. SUN found that providers no longer offer full net metering and the solar buyback plans offered to customers provide limited financial benefit.⁵

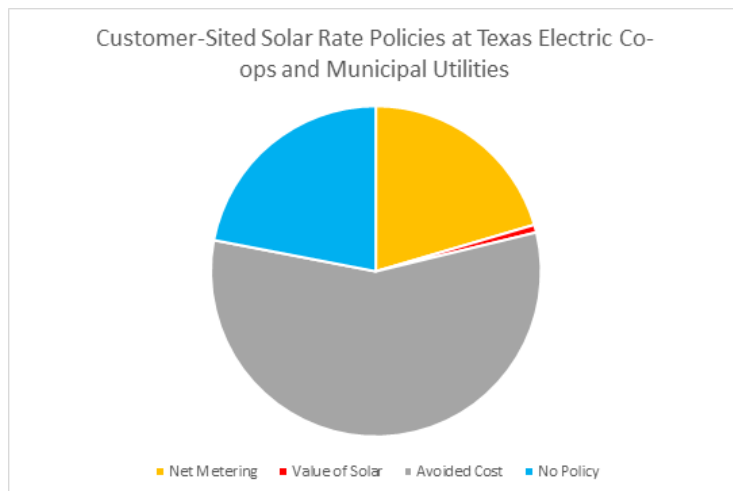
Despite high energy prices, falling grid reliability, and extreme weather threats, Texas utilities have policies that discourage the customer-sited solar adoption that could bring relief. There is no Texas statewide net metering policy or other standard for compensating customers for energy sent to the grid from customer-sited solar installations, resulting in a hodgepodge of policies and fees – most of which aren't favorable to rooftop solar.

Public Citizen's new research into customer-sited solar rate policies at the 141 noncompetitive electric utilities that serve Texas customers sheds light on one reason that Texas is lagging behind other states on utilization of rooftop solar, even as it captures the number one spot for utility-scale solar. We assessed solar policy at every noncompetitive utility in Texas and calculated how these policies affect the economics of purchasing a solar system. We found that there is a rooftop solar crisis in Texas: most utilities don't offer net metering or any similarly fair rate policy; the average avoided cost rate paid for solar energy sent to the grid is 43% of the retail rate, and most customers wouldn't break even on a solar system in 10 years if it is financed.

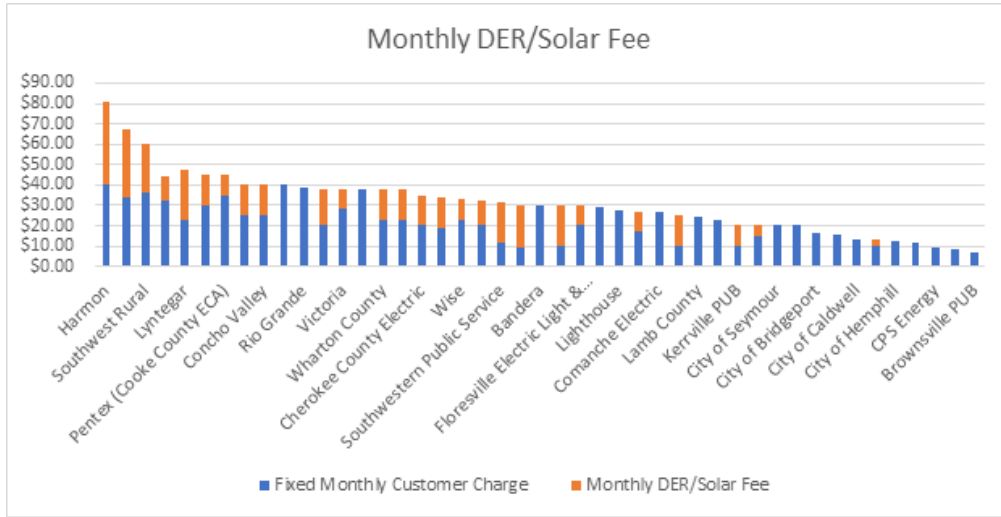
⁵ "Earning bill credit for excess solar generation in Texas," Solar United Neighbors. 2021. <https://www.solarunitedneighbors.org/texas/learn-the-issues-in-texas/net-metering-in-texas/>.

KEY FINDINGS

- Sufficient rate data to conduct a payback analysis was made available for 127 of the 141 non-competitive Texas utilities.
- 27 non-competitive Texas utilities offer net metering for customer-sited solar.
- One utility, Austin Energy, uses a Value of Solar (VOS) rate, which credits customers for all on-site solar production at a set rate, regardless of whether the energy is used on-site or exported to the grid. This rate is based on both avoided costs to the utility and environmental benefits from customer-sited solar. Austin Energy also uses tiered rates for energy consumption. The VOS for customer-sited solar is 100% of the consumption rate for customers who use 1,000 kWh per month.
- 75 non-competitive Texas utilities offer an avoided cost rate for customer-sited solar. The avoided costs rates range from 14% (Karnes) to 78% (Kerrville) of the utilities' respective residential retail electric rates, averaging 43%.⁶
- 29 non-competitive Texas utilities have no rate policies for customer-sited solar.
- 9 non-competitive Texas utilities refused to share their rate policies for customer-sited solar.
- Fixed monthly customer charges at non-competitive Texas utilities for residential customers without solar range from \$5 (City of Timpson) to \$40.50 (Harmon Electric).
- At least 35 non-competitive Texas utilities have an additional monthly fee that is charged only to customers with solar. Some of these fees are a fixed amount and others are charged based on solar system capacity. Those solar fees range from \$3 to \$40, averaging \$15.55 (assuming an 8kW system).
- At least three (3) utilities offer rebates for purchasing a solar system. These rebates can significantly help the customer pay off their system, especially if it is financed.



⁶ Under the assumptions used.



Sample of monthly charges at various utilities. (This sample has the highest charge, the lowest charge, and some charges in between).

TERMINOLOGY

Solar System: A set of photovoltaic solar panels, inverters and other components that generate electricity.

Distributed Generation/Distributed Energy Resource (DER): Electricity generated near where it is used rather than at centralized power plants connected to the grid by transmission lines. Rooftop solar systems and customer-sited solar are an example of distributed generation.

Customer-Sited Solar: A solar system that is located where the customer lives. It can be roof-mounted or ground-mounted. It connects to the distribution side of the electric meter, so it reduces the amount of energy the customer draws from the grid.

Utility-Scale Generation: Larger power plants and wind and solar farms. Utility-Scale generation usually has a capacity of more than one megawatt.

Kilowatt (kW) vs. Kilowatt Hour (kWh): Kilowatt is a unit of power and describes the maximum amount of power that can be produced at any given time from a generation source. Kilowatt-hour is a measurement of energy production or use. One kilowatt of energy used or produced over an hour is one kWh. For example, a residential rooftop solar system may have a capacity of 8 kW; over a month, it may produce almost 1,000 kWh of electricity.

Electric Reliability Council of Texas (ERCOT): ERCOT is an independent system operator that operates the electricity grid serving 90% of Texas electricity demand.⁷ ERCOT reports to a state agency, the Public Utility Commission of Texas.

Public Utility Commission (PUC): The PUC regulates the electric transmission and distribution utilities that serve the competitive regions within ERCOT, the non-competitive electric utilities that operate within Texas outside of ERCOT, and the wholesale electric generation market via ERCOT.

Competitive vs Non-Competitive Retail Electric Providers: Texas has a patchwork of retail electric providers, some of which compete with each other to serve the fully deregulated portions of the ERCOT market and others with monopoly status to serve all customers within a geographic area. Non-competitive retail electric providers

⁷ "About ERCOT," Electric Reliability Council of Texas. 2023. <https://www.ercot.com/about>.

include municipal electric utilities, electric cooperatives and investor-owned utilities that serve Texas customers outside of ERCOT.

Solar Compensation Policy or Rate: The method and amount that an electric utility will credit or pay a customer for energy produced and sent to the grid from a solar installation at a home or business.

Net Metering: A solar compensation policy where each kilowatt hour sent to the grid from a solar installation at a home or business is valued and credited to a customer at the same rate as the retail rate paid for electricity bought from the utility. Each kWh produced offsets a kWh used from the grid.

Avoided Cost Rate: A solar compensation policy where each kilowatt hour sent onto the grid from a solar installation at a home or business is assigned a set value independent of the retail rate paid for electricity bought from the utility. Utilities can change this rate month to month, and it sometimes matches the wholesale cost of electricity that a utility purchases.

Value of Solar: A value of solar analysis is a detailed calculation of all the benefits that distributed solar provides to the utility and society. A value of solar analysis can then be used to set a value of solar rate. A value of solar rate generally applies to all solar energy produced by the customer, even if it is used on site and not sent to the grid.

Power Cost Adjustment or Fuel Charge: A per kilowatt-hour charge on the electric bill that changes periodically (often from month to month) to reflect changes in the cost of fuel or purchased power that the utility sells to the ratepayer. It can be negative or positive.

METHODOLOGY

Data Collection

This research began with searching for distributed generation policies and rates on each of the municipal utilities and rural electric cooperatives' websites. This information included:

- Residential rates (including the base rate, power supply fee, transmission fees, and any other pass-through costs)
- Net metering policy or other solar compensation policy
- Avoided cost rates.
- Monthly fixed customer charge
- Application fees for installing solar.
- Any other fees for residential solar
- The number of meters and customers

After deriving as much information as possible from the utility websites, additional research was conducted by contacting the utilities. This additional research was necessary because many utilities do not disclose their rates and policies on their websites.

Most utilities provided the information in this report upon request. A few rural electric cooperatives were unwilling to provide select information (often Power Cost Adjustments or avoided cost rates) to people who were not members of the cooperative. Additionally, some municipal utilities (mostly smaller entities) did not respond to phone calls or email requests. Most responded to requests under the Texas Public Information Act (those that did not could be due to outdated contact information on the utility's website).

One municipal utility – Greenville Electric Utility – refused to share meter numbers, claiming that disclosing this information violates competitive information protection and consumer privacy laws. The Texas Attorney General's Office allowed Greenville to withhold the information.

Public Citizen gathered all data for this report in the summer of 2023. The Power Cost Adjustments, rate structures, and solar policies are all reflective of this time period.

Calculating Years to Recoup Residential Solar Investment

Electric consumption rates, monthly fees and solar rates all vary between the utilities. Likewise, energy consumption patterns, rooftop solar potential and access to capital all vary from customer to customer. The data was normalized to compare the financial impact of policies from one utility to another by calculating estimated time to recoup the expense of a solar system, utilizing a common set of assumptions. Different assumptions (such as the average solar irradiance in the utility's service area) would likely be required if one were to examine a particular utility's solar policies in more detail.

Assumptions

1. *Customer type:* residential
2. *Rooftop solar system capacity:* eight kilowatt (8 kW).⁸
3. *Solar system cost:* \$21,760 before federal incentives and \$15,232 after federal incentives.⁹
4. *Solar energy production:* 985.16 kilowatt hours (kWh) monthly, for a total of 11,822 kWh of electricity in year one.¹⁰ A solar panel degradation rate of 0.5% per year was assumed, in alignment with the degradation rates that researchers at the National Renewable Energy Laboratory have found.¹¹
5. *Home electricity consumption:* 1,000 kilowatt-hours (kWh) per month. This is near to the average residential customer's monthly consumption of 1,120 kWh, rounded for simplification.¹²
6. *Solar energy export ratio:* Two scenarios were calculated. In the first scenario, half of the electricity produced by the solar system is used on-site at the time of production and thus avoids consumption from the grid, and the other half is exported onto the grid. In the second scenario, 100% of the electricity produced

⁸ Data collected by Solar United Neighbors indicates this is an average sized installation for a home in Texas at this time.

⁹ "The Cost of Solar Panels in Texas," Energy Sage. 2023. <https://www.energysage.com/local-data/solar-panel-cost/tx/>.

¹⁰ Data comes from PV Watts. Since most of the population of Texas lives in the eastern half of the state, the solar irradiation of Austin, Texas, which sits in the middle of the state, was utilized for this analysis. An 8kW system would produce about 11,822kWh of electricity a year. This is at (30.25,-97.74).

"Solar Resource Data," National Renewable Energy Laboratory. n.d. <https://pvwatts.nrel.gov/pvwatts.php>.

¹¹ Dirk C. Jordan and Sarah R. Kurtz. "Photovoltaic Degradation Rates—An Analytical Review," National Renewable Energy Laboratories. June 2012. <https://www.nrel.gov/docs/fy12osti/51664.pdf>.

¹² This is the average monthly energy consumption of a home in Texas in 2020. "Annual Household Site End-Use Electricity Consumption in the United States by State-Averages, 2020," Energy Information Administration. June 2023. <https://www.eia.gov/consumption/residential/data/2020/state/pdf/ce4.6.el.st.pdf>.

by the solar system is used on-site at the time of production to avoid consumption from the grid.

7. *Electric rate escalation:* A 2% per year price escalator was applied to retail rates, fixed fees, and solar energy compensation rates.¹³
8. *Incentives:* A 30% federal income tax credit and any local incentives were assumed to be utilized.

An additional set of assumptions was used to examine the economics when solar systems are financed. In 2022, industry researchers estimated that 68% of residential solar homeowners took out loans to finance their solar systems.¹⁴ Thus, it is valuable to examine how these utilities' policies work when paired with solar loans. The following was assumed:

1. *Down payment:* 30%
2. *Interest rate:* 8%
3. *Loan term:* Net costs or savings were calculated for 10- and 15-year loans.

Using these assumptions listed above, net profits or losses over 10 years, 15 years, and 25 years were assessed.

Analysis

The use conditions under the assumptions were combined with the customer-sited solar policies of the utilities to assess how long it would take to recover the expense of purchasing a customer-sited solar system. Using the assumptions about the use of electricity, method of financing for the solar system, and solar irradiance, the solar policies of the utilities are compared. Net costs and savings over 10 years, 15 years, and 25 years were evaluated with no loan, a 10-year loan, and a 15-year loan.

Scenario 1 Results

The use conditions under the assumptions were combined with the customer-sited solar policies of the utilities to assess how long it would take to recover the expense of purchasing a customer-sited solar system. Using the assumptions about the use of

¹³ A 2% electricity price escalator is considered an industry standard. Additionally, if you look at the price of electricity nationally over the last ten years, it averages out to about 2%.

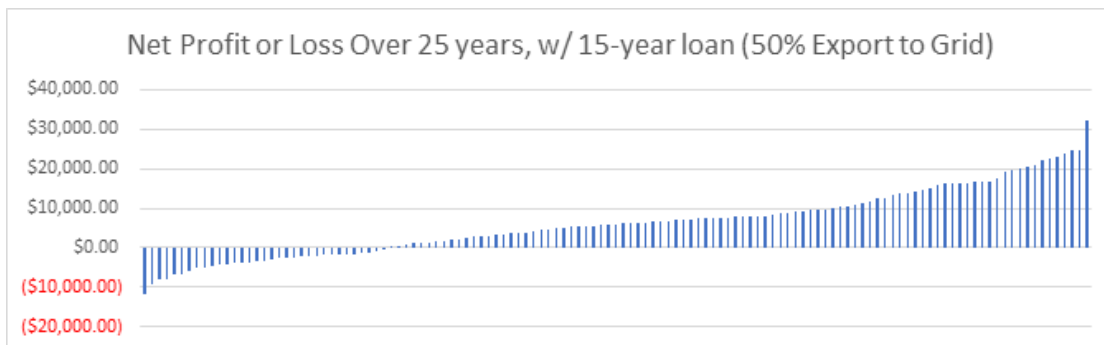
"Table 5.3. Average Price of Electricity to Ultimate Customers," Energy Information Administration. September 2023. https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_3.

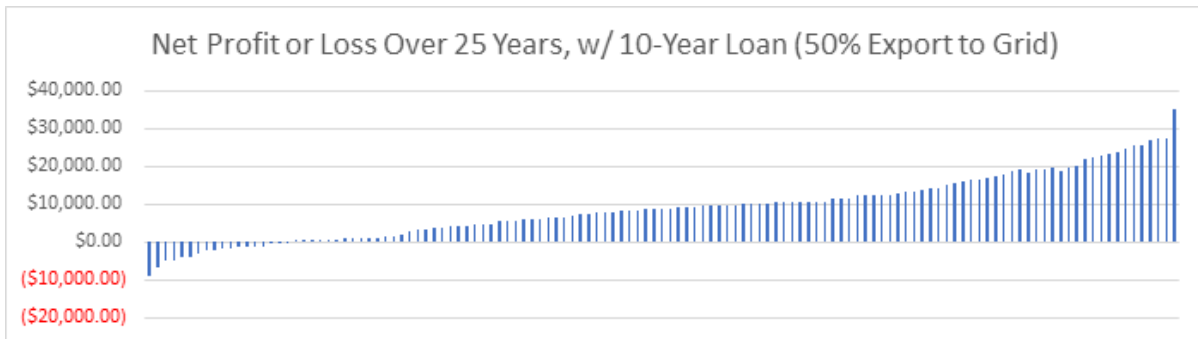
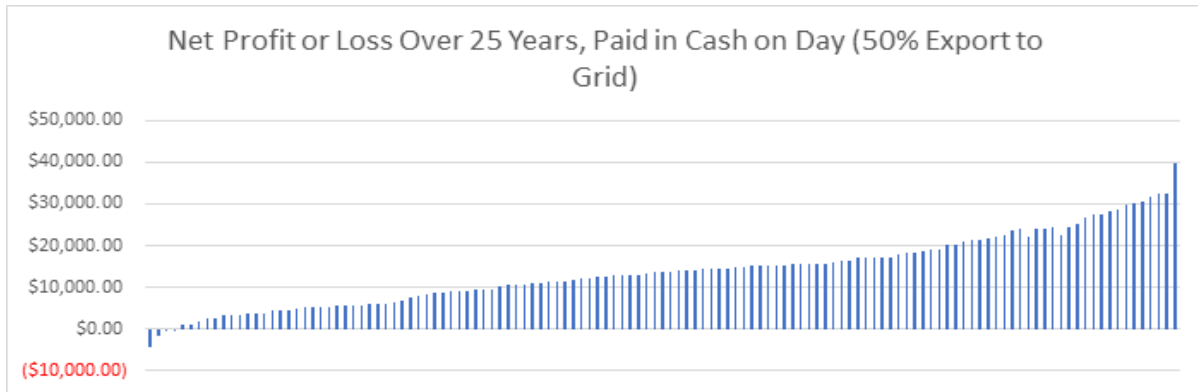
¹⁴ Zoe Gaston. "Will Rising Interest Rates Curb the Dominance of the US Residential Solar Loan Market?" Wood Mackenzie. 26 October 2023. <https://www.woodmac.com/news/opinion/will-rising-interest-rates-curb-the-dominance-of-the-us-residential-solar-loan-market/>.

electricity, method of financing for the solar system, and solar irradiance, the solar policies of the utilities are compared. Net costs and savings over 10 years, 15 years, and 25 years were evaluated with no loan, a 10-year loan, and a 15-year loan.

In the first scenario, half of the electricity produced on-site of the customer-sited solar is consumed at the time of production, and the other half is sent back to the grid. Under these assumptions:

- No utility has the conditions that allow a residential customer to recover the costs of an on-site solar system in 10 years if the customer finances their system with a 10-year loan.
- Residential customers at four utilities cannot recover the costs of their solar systems in 25 years, even if they purchased with cash on day one.
- Residential customers at 48 utilities cannot recover the cost of their solar systems after 15 years, even if they purchased with cash on day one.
- Residential customers at 111 utilities cannot recover the cost of their solar systems after 15 years if their system is financed with a 15-year loan.
- The average monthly cost of paying off a 10-year loan would be higher than the average monthly savings from switching to a solar system over 10 years at 119 utilities.
- The average monthly cost of paying off a 15-year loan would be higher than the average monthly savings from switching to a solar system over 15 years at 87 utilities.
- Only residential customers of 11 utilities can recover the cost of their solar systems after 10 years, and that is only if homeowners purchase the systems with cash on day one.



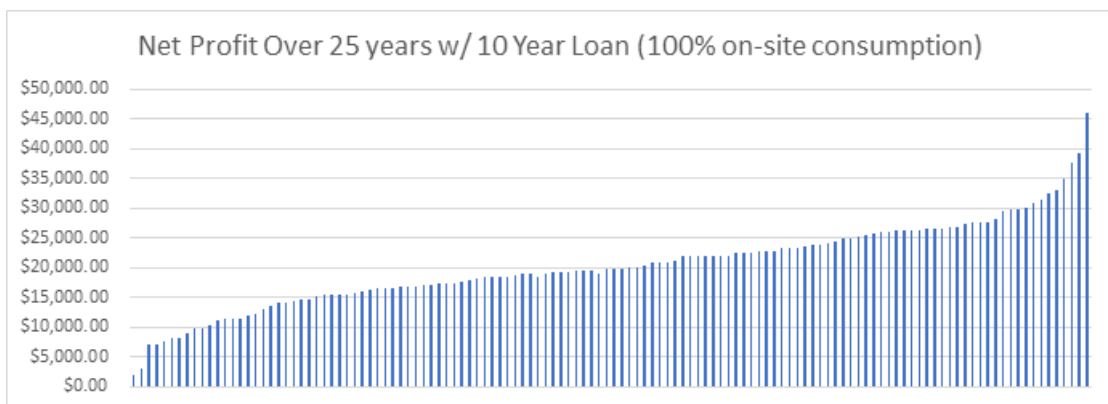
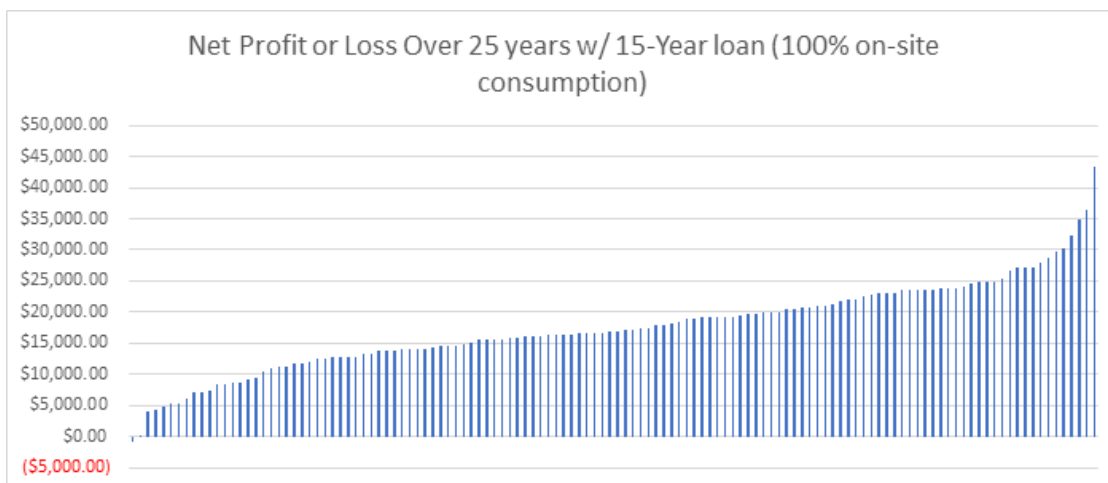


Scenario 2 Results

In the second scenario, all the electricity produced by the customer-sited solar installation is consumed on-site at the time of production, resulting in no electricity being exported to the grid. Under these conditions:

- Residential customers of 83 utilities cannot recover the cost of their solar systems within 10 years if the system is paid in full on day one.
- Residential customers of 127 utilities can break even (or make a profit) after 25 years if they pay for the system with cash on day one or finance with a 10-year loan.
- Residential customers of one (1) utility cannot break even after 25 years if they are financed by a 15-year loan.
- Only three (3) utilities have the conditions that allow residential customers to recover the cost of a solar installation within 10 years with a 10-year loan. All three utilities have no net metering or avoided cost policy, but their residential retail electricity rates are high. They are also small, with none having more than 2,500 residential meters in their service territory.

- Residential customers of 69 utilities cannot recover the cost of a solar installation after 15 years if the system is financed with a 15-year loan.



Analysis Summary

After 25 years, residential customers in almost every utility can make a profit if they fully consume the electricity from their solar system at the time of production. However, the savings potential varies widely between different utilities. At the utility least supportive to customer-sited solar, if one were to take a 15-year loan, after 25 years the customer would have almost \$1,000 of debt. At the utility most supportive of solar, under the same assumptions, the customer would save over \$40,000. Similarly, at the utility least supportive of solar, if a customer was to pay for their solar system with cash on day one, after 25 years, they would have saved over \$6,000. At the utility most supportive of solar, under the same assumptions, the customer would save over \$51,000. These are all under the assumption that 100% of the electricity generated on-site is consumed on-site.

If a residential customer only consumes half of their electricity at the time of production and send half back to the grid, the savings potential is much lower at utilities using

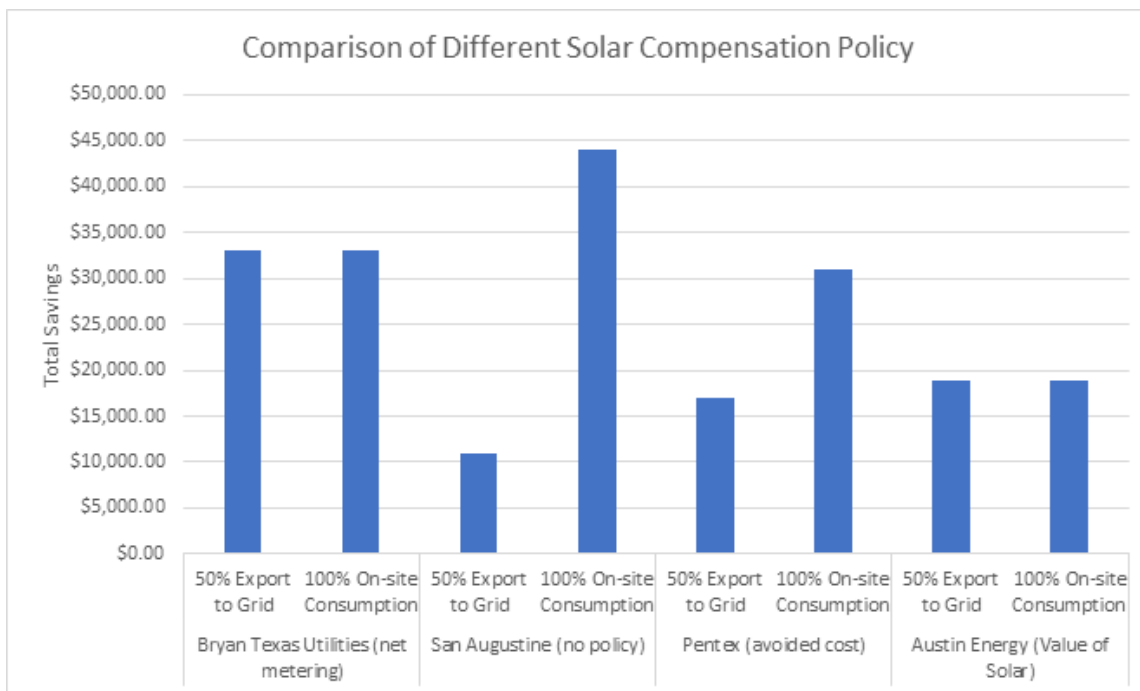
avoided cost rates. The savings potential between utilities varies as well. At the utility least supportive of solar, if a customer were to take a 15-year loan, after 25 years they would still have over \$11,000 of recovered cost. At the utility most supportive of solar, under the same assumptions, the customer would save over \$32,000. Similarly, at the utility least supportive of solar, if a customer were to pay for their solar system with cash on day one, after 25 years they would still have over \$4,000 in unrecovered cost. At the utility most supportive of solar, under the same assumptions, the customer would save over \$39,000.

Discussion

Net metering is extremely popular in Texas, with 90% of people supporting policies that compensate customers at the full retail rate for energy exported to the grid from customer-sited solar installations.¹⁵ And yet, most of the non-competitive utilities in Texas either provide no compensation for on-site solar energy production or compensation that is a fraction of the retail price of electricity.

Whenever solar energy is valued at less than the retail rate for consumption, it is financially better for customers to consume as much electricity at the time of production rather than self-consuming half and exporting half to the grid. The only exception to this is a value of solar rate – such as is utilized at Austin Energy – that provides a set value for all on-site solar energy production, regardless of whether it is consumed on-site or exported to the grid. Solar avoided cost rates that are lower than retail rates discourage larger solar systems that will export energy to the grid, as can be seen by the difference in savings between consuming all electricity at the time of production versus consuming half and sending half back to the grid.

¹⁵ Rashda Khan. “Majority of Texans Back Shift to Solar Energy,” 15 February 2023. University of Houston. <https://uh.edu/news-events/stories/2023/february-2023/02152023-hobby-energy-survey.php>.



This graph shows the difference in savings potential for customers depending on the solar compensation policy of their utility. These show the total savings over 25 years with a 10-year loan.

The top 10 utilities with the greatest savings potential when a customer sends back energy to the grid all employ net metering policies. The handful of utilities that offer net metering policies or a higher value of solar rate allow customers to cost-effectively purchase larger solar systems that can offset more of their electricity usage. These rate policies can be expected to be most effective at bringing the greatest amount of customer-sited solar capacity online and will be most impactful at reducing emissions and providing energy to the grid.

The utilities that offer avoided cost rates that are significantly lower than the retail consumption rate or have no compensation policies are discouraging customers from purchasing solar systems and/or sending a strong signal to avoid exporting energy to the grid. This can be expected to result in smaller solar systems and customers’ shifting energy usage to align with the times that their solar systems are producing. Rate policies that encourage customers to use more energy in the afternoons are contradictory to ERCOT’s repeated calls for energy conservation on hot summer afternoons. Even if customers are consuming just the energy they are producing, that is energy that could otherwise be used to serve other local demand and reduce stress on the grid.

Under existing avoided cost rate policies, avoiding energy exports to the grid is beneficial for the customer, but it is a lost opportunity for grid support. Distributed generation solar can offset the utility's purchase of utility-scale generation from other sources. This can relieve transmission congestion and ERCOT transmission fees. Transmission congestion in the ERCOT grid has cost ratepayers a significant amount of money and it will cost billions of dollars to upgrade aging transmission infrastructure.¹⁶ Increased uptake of distributed generation could bring valuable relief to the grid, like what was needed in early September 2023 when 1,000MW of electricity had to be curtailed to prevent frying a transmission wire.¹⁷

Additionally, these distributed generation policies could offer great financial and reliability benefits to Texas utilities and their customers. The price of electricity has been rising in Texas, especially since Winter Storm Uri in February 2021. As the prices of electricity and natural gas rise, the benefit to customers who have solar panels grows as well, unless utilities continue to enact rate policies that deny customers a fair value of the energy they provide to the grid. Utilities could avoid costly energy purchases and reduce their ERCOT transmission fees and ancillary services obligations by encouraging their customers to invest in on-site solar.

Without external regulation, many Texas utilities are moving in the wrong direction with their distributed generation solar policies and are discouraging the growth of valuable energy generation and encouraging customers to increase energy consumption when the grid is most stressed. In the absence of a statewide net metering or solar rate policy utilities are generally establishing rates based on only the most cursory information and are avoiding the work that goes into a deeper analysis that would identify the full suite of benefits provided by customer-sited solar. Hence rates are set to deny customers fair compensation for electricity provided to the grid from their solar systems.

The status quo is only getting worse for customers interested in purchasing distributed solar. Starting November 1st, Grayson-Collins rural electric cooperative is raising its

¹⁶ "Long-Term West Texas Export Study," Electric Reliability Council of Texas. January 2022. <https://www.ercot.com/files/docs/2022/01/14/Long-Term-West-Texas-Export-Study-Report.pdf>.

¹⁷ This incident happened in September of this year when a transmission wire sending wind energy from South Texas to Dallas almost overloaded with electricity. This caused a level 2 emergency, as about 1,000 megawatts of electricity was curtailed to avoid further damage to the wire. Sara DiNatale. "September grid emergency 'uncovers some deficits' in how ERCOT manages power, renewable electricity," San Antonio Express-News. 15 Sep 2023. <https://www.expressnews.com/business/article/ercot-september-emergency-uncovers-deficits-18366712.php>.

fixed monthly fees for distributed generation customers from \$18 to \$40.¹⁸ Lubbock Power and Light decided to join the deregulated market, and it is to be determined how their net metering policy will change as a result.¹⁹ Tri-County Electric Cooperative is moving from a net metering policy to avoided cost in March 2024.²⁰

¹⁸ “2023 Electricity Rate Change,” Grayson Collin Electric Cooperative. 29 Sep 2023. <https://www.gcec.net/news/2023-electricity-rate-change>.

¹⁹ “Retail Electric Competition,” Lubbock Power & Light. 18 April 2023. <https://lpandl.com/retail-competition>.

²⁰ “Tri-County Solar,” Tri-County Electric Cooperative. 2024. <https://tcectexas.com/solar>.

RECOMMENDATIONS

A statewide policy that establishes a fair rate of compensation for customer-sited solar is sorely needed.

A first step to achieving greater consistency in solar compensation rates would be for the PUC to conduct a study of the value that distributed solar provides to utilities, the grid and the state. Even if the value determined by the study is not established as a statewide mandate, such a study could establish a uniform methodology for utilities to use when calculating the avoided cost of distributed generation.

This assessment could take into account a variety of factors, many of which are described in detail in the National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources.²¹

Values to utilities and the grid that should be assessed include:

- Generation benefits: avoided costs of energy generation, capacity, environmental compliance, and ancillary services and reduced market prices
- Transmission benefits: conserving transmission capacity and avoiding transmission system losses.
- Distribution system benefits: conserving distribution system capacity, avoiding distribution system losses, reducing distribution system operations and maintenance costs, and maintaining distribution system voltage.
- Other benefits, including improved reliability and resilience, reduced risks, and reduced bad debt and disconnections.

Values to society that should be assessed include:

- Reduced greenhouse gas emissions
- Reduction of other air, water and land pollution and associated public health benefits.
- Local and statewide economic benefits, including job creation.
- Improved community resilience

²¹ Tim Woolf, et al. "National Standard Practice Manual For Benefit-Cost Analysis of Distributed Energy Resources," National Energy Screening Project. August 2020. <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>.

APPENDIX

Table of Utilities

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
Austin Energy	Value of Solar	\$0.0991	\$0.0991	100.00%	\$13	0
Bailey County Electric Co-op	Avoided Cost	\$0.0905	\$0.0000	0.00%	\$30	0
Bandera Electric Cooperative	Avoided Cost	\$0.0793	\$0.0343	43.26%	\$30	0
Bartlett Electric Cooperative	Net Metering	\$0.1180	\$0.1180	100.00%	\$38	0
Bastrop Power & Light	No Policy	\$0.1150	\$0.0000	0.00%	\$10	0
Big Country Electric Cooperative	Avoided Cost	\$0.1147	\$0.0567	49.42%	\$34	0
Bluebonnet Electric Cooperative	Avoided Cost	\$0.0960	\$0.0616	64.13%	\$22.50	0
Bowie-Cass Electric Cooperative	Net Metering	\$0.1448	\$0.1448	100.00%	\$22.50	\$15.00
Brownsville PUB	Avoided Cost	\$0.1107	\$0.0566	51.11%	\$6.94	0
Bryan Texas Utilities	Net Metering	\$0.1546	\$0.1546	100.00%	\$11	0
Central Texas Electric Cooperative	Net Metering	\$0.1120	\$0.1120	100.00%	\$27.50	\$15.00
Cherokee County Electric Cooperative	Net Metering	\$0.1293	\$0.1293	100.00%	\$20	\$15.00
City of Bartlett	Avoided Cost	\$0.1215	\$0.0000	0.00%	\$30	0
City of Bellville	No Policy	\$0.1061	\$0.0000	0.00%	\$11	0
City of Boerne	Avoided Cost	\$0.0998	\$0.0366	36.71%	\$15.24	0
City of Bowie	No Policy	\$0.1114	\$0.0000	0.00%	\$10	0

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
City of Brady	Avoided Cost	\$0.1433	\$0.0713	49.76%	\$10.25	\$3.00
City of Brenham	Net Metering	\$0.0995	\$0.0995	100.00%	\$13	0
City of Bridgeport	No Policy	\$0.0998	\$0.0000	0.00%	\$16	0
City of Brownfield	Avoided Cost	\$0.1147	\$0.1147	100.00%	\$15.03	0
City of Burnet	No Policy	\$0.1038	\$0.0000	0.00%	\$8	0
City of Caldwell	No Policy	\$0.1145	\$0.0000	0.00%	\$13.50	0
City of Castroville	Avoided Cost	\$0.1128	\$0.0482	42.73%	\$15	0
City of Coleman	No Policy	\$0.1180	\$0.0000	0.00%	\$13.50	0
City of College Station	Avoided Cost	\$0.1180	\$0.0549	46.53%	\$7	0
City of Cuero	Avoided Cost	\$0.1109	\$0.0435	39.26%	\$14.25	0
City of Electra	No Policy	\$0.1390	\$0.0000	0.00%	\$20	0
City of Farmersville	Avoided Cost	\$0.1477	\$0.0344	23.28%	\$6.75	0
City of Flatonia	Avoided Cost	\$0.0969	\$0.0501	51.70%	\$8	0
City of Floydada	No Policy	\$0.0619	\$0.0000	0.00%	\$7	0
City of Fredericksburg	Avoided Cost	\$0.0881	\$0.0686	77.86%	\$15.34	0
City of Giddings	No Policy	\$0.1230	\$0.0000	0.00%	\$15	0
City of Goldsmith	Avoided Cost	\$0.1300	\$0.0600	46.15%	\$8.88	0
City of Goldthwaite	Avoided Cost	\$0.1220	\$0.0600	49.18%	\$9.50	0
City of Granbury	Avoided Cost	\$0.1273	\$0.0355	27.88%	\$13.75	0
City of Hallettsville	Avoided Cost	\$0.1081	\$0.0503	46.57%	\$14	0
City of Hearne	Avoided Cost	\$0.1199	\$0.0300	25.02%	\$19.50	0

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
City of Hemphill	No Policy	\$0.1158	\$0.0000	0.00%	\$12.50	0
City of Hempstead	No Policy	\$0.1445	\$0.0000	0.00%	\$34.95	0
City of Jasper	No Policy	\$0.1177	\$0.0000	0.00%	\$7.53	0
City of Kirbyville	No Policy	\$0.0838	\$0.0000	0.00%	\$30	0
City of La Grange	No Policy	\$0.1100	\$0.0000	0.00%	\$15.50	0
City of Lampasas	Avoided Cost	\$0.1221	\$0.0500	40.96%	\$8	0
City of Lexington	No Policy	\$0.1002	\$0.0000	0.00%	\$18	0
City of Liberty	No Policy	\$0.1180	\$0.0000	0.00%	\$10	0
City of Livingston	No Policy	\$0.1475	\$0.0000	0.00%	\$10	\$19.95
City of Lockhart	Avoided Cost	\$0.0644	\$0.0423	65.68%	\$11.32	0
City of Mason	No Policy	\$0.1665	\$0.0000	0.00%	\$15	0
City of Moulton	No Policy	\$0.1100	\$0.0000	0.00%	\$16.08	0
City of Newton	No Policy	\$0.1194	\$0.0000	0.00%	\$17.50	0
City of Robstown	Avoided Cost	\$0.1190	\$0.0350	29.41%	\$10	0
City of San Augustine	No Policy	\$0.1857	\$0.0000	0.00%	\$34.90	0
City of San Marcos	Net Metering	\$0.0976	\$0.0976	100.00%	\$10.25	0
City of Sanger	Avoided Cost	\$0.1175	\$0.0482	41.02%	\$14	0
City of Schulenburg	Avoided Cost	\$0.1290	\$0.0430	33.33%	\$17.50	0
City of Seguin	Avoided Cost	\$0.0946	\$0.0390	41.24%	\$14.50	0
City of Seymour	Avoided Cost	\$0.1059	\$0.0577	54.49%	\$20	0

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
City of Smithville	No Policy	\$0.1621	\$0.0000	0.00%	\$10	0
City of Timpson	No Policy	\$0.1029	\$0.0000	0.00%	\$5	0
City of Tulia	No Policy	\$0.0757	\$0.0000	0.00%	\$10.44	0
City of Weatherford	Net Metering	\$0.1150	\$0.1150	100.00%	\$15	\$5.00
City of Weimar	Avoided Cost	\$0.1098	\$0.0400	36.43%	\$19	0
City of Whitesboro	Avoided Cost	\$0.1240	\$0.0400	32.27%	\$17	0
City of Yoakum	Avoided Cost	\$0.1076	\$0.0683	63.51%	\$11.50	0
Coleman County Electric Cooperative	Net Metering	\$0.0840	\$0.0840	100.00%	\$22.50	0
Comanche Electric Cooperative	Avoided Cost	\$0.1350	\$0.0530	39.26%	\$27	0
Concho Valley Electric Cooperative	Avoided Cost	\$0.1199	\$0.0600	50.04%	\$24.75	\$15.25
CoServ Electric Cooperative	Avoided Cost	\$0.1151	\$0.0663	57.60%	\$10	\$25.00
CPS Energy	Net Metering	\$0.1260	\$0.1260	100.00%	9.1	0
Deep East Texas Cooperative	Avoided Cost	\$0.1125	\$0.0439	38.98%	\$17	\$10.00
Denton Municipal Electric	Net Metering	\$0.1025	\$0.1025	100.00%	\$8.67	0
El Paso Electric	Avoided Cost	\$0.1201	\$0.0162	13.45%	\$9.25	\$21.00
Entergy	Avoided Cost	\$0.1176	\$0.0532	45.26%	\$14	0
Fannin County Electric Cooperative	Avoided Cost	\$0.1310	\$0.0719	54.91%	\$30	0

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
Farmers Electric Cooperative	Avoided Cost	\$0.1176	\$0.0660	56.12%	\$15	\$5.00
Fayette Electric Cooperative	Avoided Cost	\$0.0980	\$0.0428	43.67%	\$23	\$6 (\$0.75 times kW system)
Floresville Electric Light & Power System	Avoided Cost	\$0.1100	\$0.0500	45.45%	\$20	\$9.60
Fort Belknap Electric Cooperative	Avoided Cost	\$0.1400	\$0.0700	50.00%	\$33.50	\$33.50
Garland Power & Light	Net Metering	\$0.1230	\$0.1230	100.00%	\$5.34	0
Georgetown Utilities System	Avoided Cost	\$0.1096	\$0.0628	57.29%	\$24.80	0
Grayson Collin Electric Cooperative	Net Metering	\$0.1270	\$0.1270	100.00%	\$18	\$5.00
Greenbelt Electric Cooperative	Avoided Cost	\$0.1404	\$0.0470	33.48%	\$26	0
Greenville Electric Utility System	Avoided Cost	\$0.1300	\$0.0475	36.54%	\$11.25	0
Guadalupe Valley Electric Cooperative	Avoided Cost	\$0.1080	\$0.0850	78.70%	\$25	0
Hamilton County Electric Cooperative	Avoided Cost	\$0.1307	\$0.0354	27.12%	\$15	0
Harmon Electric Cooperative	Avoided Cost	\$0.1350	\$0.0450	33.33%	\$40.50	\$40 (\$5 per kW system)
Heart of Texas Electric Cooperative	Avoided Cost	\$0.1329	\$0.0481	36.19%	\$21	0
Hilco Electric Cooperative	Net Metering	\$0.1337	\$0.1337	100.00%	\$26.25	0

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
Houston County Electric Cooperative	Avoided Cost	\$0.1500	\$0.0590	39.33%	\$30	\$15.00
J-A-C Electric Cooperative	No Policy	\$0.1200	\$0.0000	0.00%	\$25	\$11.50
Jasper-Newton Electric Cooperative	Net Metering	\$0.1250	\$0.1250	100.00%	\$18.50	\$15.00
Karnes Electric Cooperative	Avoided Cost	\$0.1051	\$0.0150	14.28%	\$16.50	0
Kerrville PUB	Avoided Cost	\$0.0923	\$0.0730	79.08%	\$10.25	\$10.25
Lamar Electric Cooperative	Avoided Cost	\$0.1250	\$0.0600	48.00%	\$12.50	\$12.50
Lamb County	Avoided Cost	\$0.0792	\$0.0400	50.54%	\$24	0
Lighthouse Electric Cooperative	No Policy	\$0.1300	\$0.0000	0.00%	27.5	0
Lubbock Power & Light	Net Metering	\$0.1335	\$0.1335	100.00%	\$8.07	0
Lyntegar Electric Cooperative	Avoided Cost	\$0.0900	\$0.0460	51.11%	\$22.50	0
Magic Valley Electric Cooperative	Net Metering	\$0.1110	\$0.1110	100.00%	\$23.25	0
Medina Electric Cooperative	Avoided Cost	\$0.1083	\$0.0499	46.02%	\$29	0
Navarro Electric Cooperative	Avoided Cost	\$0.1300	\$0.0510	39.23%	\$21	0
Navasota Valley Electric Cooperative	Net Metering	\$0.1100	\$0.1100	100.00%	\$17.50	0
New Braunfels Utilities	Net Metering	\$0.1200	\$0.1200	100.00%	\$20	\$12.64 (1.58 times kW system)

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
North Plains Electric Cooperative	Avoided Cost	\$0.0973	\$0.0973	100.00%	\$20	\$18.00
Nueces Electric Cooperative	Avoided Cost	\$0.1500	\$0.0625	41.67%	\$32.50	\$19.50
Panola-Harrison Electric Cooperative	Avoided Cost	\$0.0885	\$0.0573	64.75%	\$9.00	0
Pedernales Electric Cooperative	Avoided Cost	\$0.1038	\$0.0600	57.83%	\$22.50	0
Pentex (Cooke County ECA)	Avoided Cost	\$0.1600	\$0.0815	50.91%	\$35	\$10.00
Rio Grande Electric Cooperative	Avoided Cost	\$0.1428	\$0.0550	38.52%	\$38.75	0
Rusk County Electric Cooperative	Avoided Cost	\$0.1045	\$0.0660	63.17%	\$26	0
San Bernard Electric Cooperative	Avoided Cost	\$0.1400	\$0.0655	46.79%	\$33	0
San Patricio Electric Cooperative	Net Metering	\$0.1410	\$0.1410	100.00%	21.5	\$12.00
South Plains Electric Cooperative	Net Metering	\$0.0974	\$0.0974	100.00%	\$16.50	\$11.47
Southwest Rural Electric Association	Avoided Cost	\$0.1250	\$0.0300	24.00%	\$36	\$24.00
Southwest Texas Electric Co-op	Avoided Cost	\$0.1013	\$0.0350	34.56%	\$22.50	0
Southwestern Electric Power Company	Avoided Cost	\$0.1204	\$0.0246	20.44%	\$9.42	0
Southwestern Public Service	Avoided Cost	\$0.1241	\$0.0251	20.19%	\$11.40	\$20.00

Utility	Policy	Retail Rate (\$/kWh)	Avoided Cost Rate at Yr 1 (\$/kWh)	Avoided Cost % of Retail Rate	Standard Monthly Fee	Additional Monthly DER/Solar Fee
Swisher Electric Cooperative	Avoided Cost	\$0.0925	\$0.0240	25.95%	25.37	\$15.00
Taylor Electric Cooperative	Avoided Cost	\$0.1250	\$0.0250	20.00%	\$39.95	0
Tri-County Electric Cooperative	Net Metering	\$0.1443	\$0.1443	100.00%	\$18	\$12.00
Trinity Valley Electric Cooperative	Avoided Cost	\$0.1048	\$0.0768	73.22%	\$20	0
United Cooperative Services	Net Metering	\$0.1400	\$0.1400	100.00%	\$17.50	\$18.50
Upshur Rural Electric Cooperative	Net Metering	\$0.1050	\$0.1050	100.00%	\$23.50	0
Victoria Electric Cooperative	Avoided Cost	\$0.0981	\$0.0400	40.76%	\$28	\$10.00
Wharton County Electric Cooperative	Avoided Cost	\$0.1468	\$0.0469	31.94%	\$22.83	\$15.00
Wise Electric Cooperative	Net Metering	\$0.1300	\$0.1300	100.00%	\$23	\$10.00
Wood County Electric Cooperative	Avoided Cost	\$0.1317	\$0.0910	69.14%	\$17	0



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