



Texas Solar Owners need fair treatment in the Marketplace **Fix Texas' Broken Net-Metering Policy**

A Report by Public Citizen



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Fix Texas' Broken Net Metering Policy

Assuring Texas Solar Owners get treated fairly in the Market Place

By David Power, Public Citizen

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Introduction

Net metering is a missing key strategy in our broad renewable energy portfolio. Consumers, generators, and retail providers of electricity in Texas operate in a unique competitive market, but this market demands a fair marketplace. The uncertainty facing Texans wishing to invest in solar or other types of renewable energy is what is the value of a kilowatt of electricity generated by a small generator? A strong net-metering policy will allow consumers open access to the market if they choose to install solar. If they will get a fair market rate for their excess generation, they can estimate revenue from the sale of excess electricity thus providing financial certainty so they can “take it to the bank” and get financing.

Now in place in 44 states, net metering allows homeowners and business owners who install solar panels or other clean energy systems get paid a fair price for any surplus electricity feed back to the grid for the benefit of other customers.

Texas needs to establish a state wide net-metering policy to provide a market based incentive to those who wish to install distributed generation, to fairly compensate those that have already installed systems and to provide market certainty to allow financing and growth in the industry.

Power produced by solar or other types of renewable energy is especially valuable to the electric grid since it can reduce high cost peak power, pollution, reduce investments in transmission and distribution system and create local jobs.

Texas' net-metering polices determine how utilities will compensate renewable generators for their system's excess energy production. Net metering is a key component in Texas “Bill of Rights” for customer-owned solar energy, ensuring that clean power generated by customers is treated equally in the market place to electricity from large power plants..

The Problem

Only a few utilities have net metering and the programs vary dramatically.

During the summer of 2010 Public Citizen conducted a survey of the 47 Retail Electric Providers, the 76 municipally owned utilities, and the co-ops in the state of Texas to see what a customer who wanted to install a rooftop solar generation system or small wind system would experience. We would ask utilities' customer service representatives if we installed a solar or small wind system what kind of buyback rate or net metering policy the utility had. We then followed up during the fall to clarify with other utility personnel some of the answers that were frequently negative, ambiguous or non-responsive.

We found that:

- Only 4 of 47 REPs had a net metering policy (8.5%)
- Only 24 of 80 Co-ops had a net metering policy (30%) *during the follow up calls we were only able to confirm the programs with 17 of the co-ops in the original sample, the rest were unsure or the programs were changing.*
- Only 5 of 74 munis had a net metering policy (6%) *most surveyed were uncertain or unresponsive.*

What kind of buy back programs do Texas Electrical Providers provide?

Generally we found that most of the electricity providers in Texas have not implemented **any** net-metering policies at all. They could not answer the most basic of the questions that we were using or just replied that they did not provide this service at this time.

Most of the Electric providers have an online presence and websites have become the standard that electric providers use to communicate with customers, this should be used as a public forum to list the terms and conditions that they offer net metering customers.

Texas has the “Power to Choose” (<http://www.powertochoose.org/>) website where Retail Electric Providers list their offerings and rates. All net metering offers by REP’s should be listed here for comparison by potential customers.

We found the programs that are in place are complicated and vary enormously by region and electrical provider leading to customer confusion. The programs we surveyed included a wide variety of components:

1. The offer price for the energy consumed by the customer
2. The offer price for any excess energy produced beyond that used by the customer and exported to the electrical grid.
3. The offer price for any excess energy produce that exceeds the total monthly customer consumption.
4. A time period that value of any excess production may be carried over.
5. An installation fee.
6. An equipment fee.
7. Inspection and certification fees.
8. An insurance liability policy the names the electric provider as the beneficiary.
9. A limit on the amount of energy that would be compensated for based on a monthly cycle.
10. No compensation for energy produced.

However, in most cases, **no program was in place** to allow interconnection or energy production compensation.

In the areas where competition has been in place, 6 had some Retail Electric Providers (REP's) providing a Renewable Generation offer program, 1 of the areas had **no** REP’s with any programs in place.

Most Munis and co-ops still have policies in place that actually discourage customer renewable generation that need to be removed for the market to function.

Some of these are:

1. No net-metering policies.
2. High liability insurance policies whose cost often exceeds the annual value of the energy generated.
3. Expensive equipment that is not required by UL or code (separate meters, disconnect boxes)

4. Complicated and permitting and inspection processes.
5. High installation fees

Our survey methodology included calling customer service numbers and various departments, many of which directed us to web sites or who emailed us information. In some cases voicemails were left as it was unclear by the electric provider who would be able to answer the questions or if a program was in place. We also reviewed the websites (if available) to try to locate the information. This left us unable to verify if many of the smaller electric providers had a program in place. As several of the programs had changed during the time between the original survey and follow up calls, a customer should always call and verify the program details before proceeding.

Because of a lack of consistency or any leadership from state lawmakers, Texas customers are offered a hodge-podge of options for the electricity their solar cells may generate. It is clear that the “market” has not been successful in advancing net-metering policies and programs, and because of this confusion it makes it impossible for solar entrepreneurs, installers, and retailers to be able to reliably show the cost-effectiveness of their product.

Retail Electric Providers

Of the 47 REP's only 4, or 8.5%, were found to have some sort of net-metering policy. They ranged from:

- Full retail credit for all energy produced but no credit for any energy in excess of the customer's monthly consumption (Kinetic),
- Full retail credit energy produced then full retail credit for the first 500kwh of excess production then a reduced rate of 50% of full retail (Green Mountain Energy)
- A flat rate of \$0.075 per kWh for Solar or \$.06 per kWh for non-solar production (TXU).
- A flat rate of \$.085 per kWh (Reliant Energy)

Munis

Of 74 Municipal Utilities polled:

- 5 (6%) had net metering policies, all offered full retail credit
- Excess generation was compensated for at avoided cost, which was calculated differently for each provider.

CPS energy in San Antonio also provides a feed in tariff commercial only program, that pays businesses \$0.27kwh for energy produced. This is not used to reduce customer load but is separately metered and is a production incentive showing the value they place on this peak generation resource.

Co-ops

Of the 80 Co-ops polled:

- 24, about one third, had net-metering policies of some sort, but many had restrictions to make this financially unviable to the customer, the cost would be greater than the benefit.
- Some provided full retail credit for excess energy produced.
- Pedernales Electric Co-op also carried over at full retail price excess generation to the next month's bill.

Examples of net-metering policies

In many other states, a policy pays full retail value, or pays the same amount on a kWh: to kWh basis for energy produced or consumed. Policies can also vary according to time of use rates.

This type of program, which has no cost to the state budget, has helped the electric grid by enabling clean power generation to be added during peak demand periods – the time of day when electricity is most needed and expensive- when the dirtiest "peaker" power plants are typically cycled on.

It also rewards savvy consumers who choose to be more self-sufficient in their electrical usage and sell more energy back to the grid when market conditions are right. As of now, these thrifty consumers can have their pockets picked by policies which de facto incentivize waste and a “use it or lose it” attitude. With so much of the state in prime location to produce solar energy, many consumers would install solar on their homes if they knew the system would pay for itself. Having a fair net metering policy is key to making solar more affordable for households.

Net metering policies from other states and from Texas utilities provide a wealth of guidance both on what strategies to adopt and what not to do. But policies within the state range from excellent to worst. Following are the policies we found while polling the utilities, that were the best and worst responses a customer could get, we could not find a provider offering an “excellent” rated service and only one Co-op that would be rated as good in Texas.

Excellent net-metering	Good net-metering
<ul style="list-style-type: none"> • Fair market price at the time of production • You get paid for your energy at the value that it has when it’s produced (peak power is more expensive). • Simple connection procedures and permitting. • Excess production is paid or credited to your next month’s bill. 	<ul style="list-style-type: none"> • You get paid the retail rate (the price you are charged) for the energy you produce. • Excess production is paid at the retail rate and credited towards your next month’s bill. • Simple connection procedures and permitting
Simple net-metering	Bad net-metering
<ul style="list-style-type: none"> • Retail rate (the cost you are charged) or lower is paid for your energy produced • Excess energy is paid at avoided cost, avoided cost = fuel charge or some minimal payment. • Any excess is credited in the month it was generated. 	<ul style="list-style-type: none"> • Not paid for your production, your energy is free to the utility • Only paid avoided cost, minimal payment • Expensive insurance policies required to connect • Complicated or non existent permitting procedures. • “What’s net metering and why are you bothering us?”

In Texas, we do not have a statewide statute or Public Utility Commission rule that sets a net-metering standard. Although some utilities offer voluntary net-metering programs, distributed renewable generation rates can range from avoided costs, a term that is not clearly defined and has many different interpretations, varying rates based on a offer by an electric provider, offers that are based on the wholesale market rate, full retail value or nothing at all.

In many parts of the state a distributed generation owner that puts energy onto the electrical grid gets **no compensation** whatsoever, or may actually **have to pay** to do this.

The state of Texas has evolved a confusing and wildly varying set of procedures and standards when it comes to interconnecting and compensating a generating resource that is located at the customer's site or facility. In fact, according to a recent study done by the Interstate Renewable Energy Council¹, “Texas provides the **sole example of a retail choice state that has essentially disallowed net metering**”.

This lack of coherent standards has led to confusion in the market by individuals or companies wishing to install a distributed renewable energy system regardless of the type.

No state-wide standards currently exist, only guidelines, for interconnection or compensation. This document attempts to cover the state of the market that customers are participating in, what barriers they can expect and some recommendations to help resolve some of these issues. In some cases we found the installation costs and required insurance policies cost the customer **more** annually than the value of the energy generated, so the customer ends up paying to generate electricity for the grid.

Net metering offers are available on the Power to Choose website but are not clear on specific terms, conditions and bypass charges or fee structures, and generally not available on the REP's websites.

Recommendations for net metering.

Net metering measures the difference between the electricity you buy from your utility and the electricity you produce using your own renewable energy systems. Many homes now have digital meters, which total consumption and generation separately. The utility, in order for net-metering to occur, must read the “net” difference between these totals. Each utilities’ net-metering policy determines how you will be reimbursed for the energy your system generated.

Some sophisticated policies have emerged that separate the transmission and distribution system cost and fees from the energy charges. As the net metering customer uses the grid as a storage mechanism and receives the benefit of the grid to supply energy during system times when the distributed generation system is not producing and that some state programs rely on this for their funding it insures that an equitable collection of these fees continues.

With the deployment of digital bi-directional meters that have the ability to measure consumption and production, Texas has the ability to leverage its investments in the smart meter system and establish a net-metering policy that compensates the distributed generation owner while still charging for the use of the electrical grid, its management and the other charges incurred for programs and grid stability.

This would require a net-metering program that resembles the commercial rates developed by many electrical providers and is broken up into:

1. Demand charges- a fee based on the total energy used during a billing cycle
2. Energy charge- a true netting of the consumption and production based on the retail rate charged to the customer, any excess if applicable would be credited to the next billing period
3. Fuel charge- a true netting of the consumption and production based on the retail fuel rate charged to the customer, any excess if applicable would be credited to the next billing period.
4. Fees and taxes and any other charges normally found on the customer’s bill.

This type of advanced rate also known as “Dual-Bank” netting, would insure that there is recovery of any charges or credits incurred on the distribution side of the system, which is typically determined by state law and can then be addressed under separate terms.

¹ The intersection of Net Metering and Retail Choice Dec 2010 <http://irecusa.org/wp-content/uploads/2010/12/FINAL-Intersection-of-Retail-Choice-and-Net-Metering-Report.docx.pdf>

This also removes the potential that neither the Transmission and Distribution company, nor the Energy Supplier or Retail Electric Provider benefits at the expense of the other. The customer would continue to receive the benefits provided by net-metering.

This standard is achievable by municipally owned utilities, co-ops as well as the deregulated areas.

We are recommending this be adopted as a state wide standard so customers at any location and with any electrical provider will have the same expectations and understanding of what a distributed net metering contract will be entered into.

This should be included as a basic principal in the following bill of rights for a distributed generation owner.

Bill of Rights for Solar Owners

The following principals should be incorporated into a new set of policies that we would like to call the “Solar Owners Bill of Right”

1. All electrical providers shall be required to offer net metering to their customers.
2. Easy interconnect standard compliant with state electrical code.
3. Required to inform consumers of net metering information in a comparable way on their web site and on the “Power to Choose” website.
4. Existing home insurance liability policies are sufficient, no additional insurance policies may be required.
5. Homeowner associations may not prohibit installation.
6. All new home construction shall be Solar ready by 2015.
7. Simple registration of the system with the State Energy Conservation Office when interconnected.
8. Supplying digital meter for net metering customers at a reasonable fee if not supplied as part of the state mandated metering program.
9. Crediting any excess generated to the next billing period with an annual settlement.
10. Compensation shall be based, at a **minimum**, on the average wholesale market price.

Falling Behind Other States

The IREC report, alluded to earlier, provides even more context for just how far, and why, Texas has fallen behind other states.

“Texas provides the **sole example of a retail choice state that has essentially disallowed net metering**. In Texas, utilities are not required to net their distribution charges and retail providers are permitted, but not required, to compensate customers for electricity exported to the grid by distributed generation systems. Retail providers in Texas are responsible for billing customers for both energy supply and distribution charges. The retail provider then pays the utility for distribution charges associated with the gross amount of electricity that their customer imports during a billing period. This creates a situation where the retail provider can offer a program resembling net metering to its customers. However, the retail provider remains responsible for paying the utility for customer distribution charges.”

The current discrepancy in the design and implementation of vastly different programs has created an uneven playing field for renewable energy service providers and utilities alike, and is preventing distributed renewable energy technologies from reaching economies of scale.

Only about one fifth of providers offer any programs in Texas. Some voluntary standards based net-metering programs are available to residential, industrial and commercial renewables generators presently. A fair net-metering policy will expand these programs statewide to establish them as a floor and guarantee a fair price for all.

Last session the both Houses of the Texas Legislature passed a bill to remedy this problem, unfortunately the conference committee bill which revised the differences between the House and Senate bill died on the last day of the session, it tried to resolve this question of what price should be paid by urging REPS to pay the market price at time of generation. While this seemed like a good idea at the time, we have analyzed the prices that would have been paid if this standard were in place and realize that it might create some serious problems. These are discussed below.



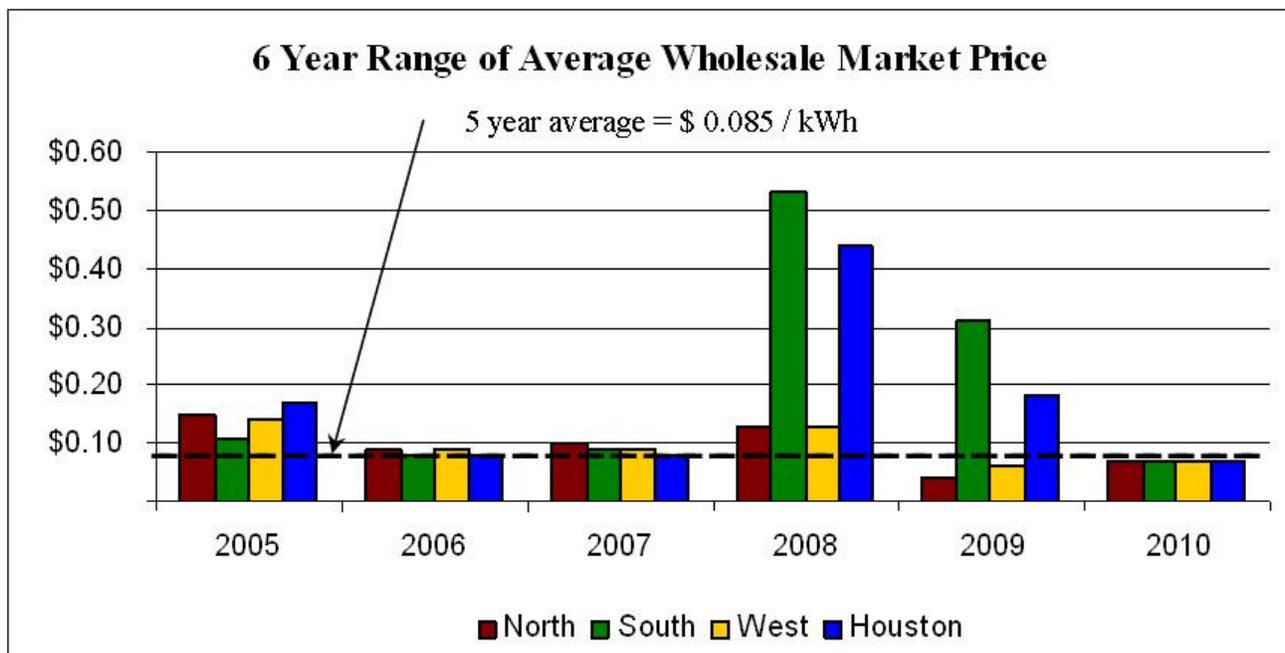
What is Full Retail Value?

Some net-metering programs pay for energy generated by your renewable system at the same price you bought energy from the main grid, called full retail value. This has been the defacto standard until the introduction of smart meters and the passage of HB 3693 in 2007.

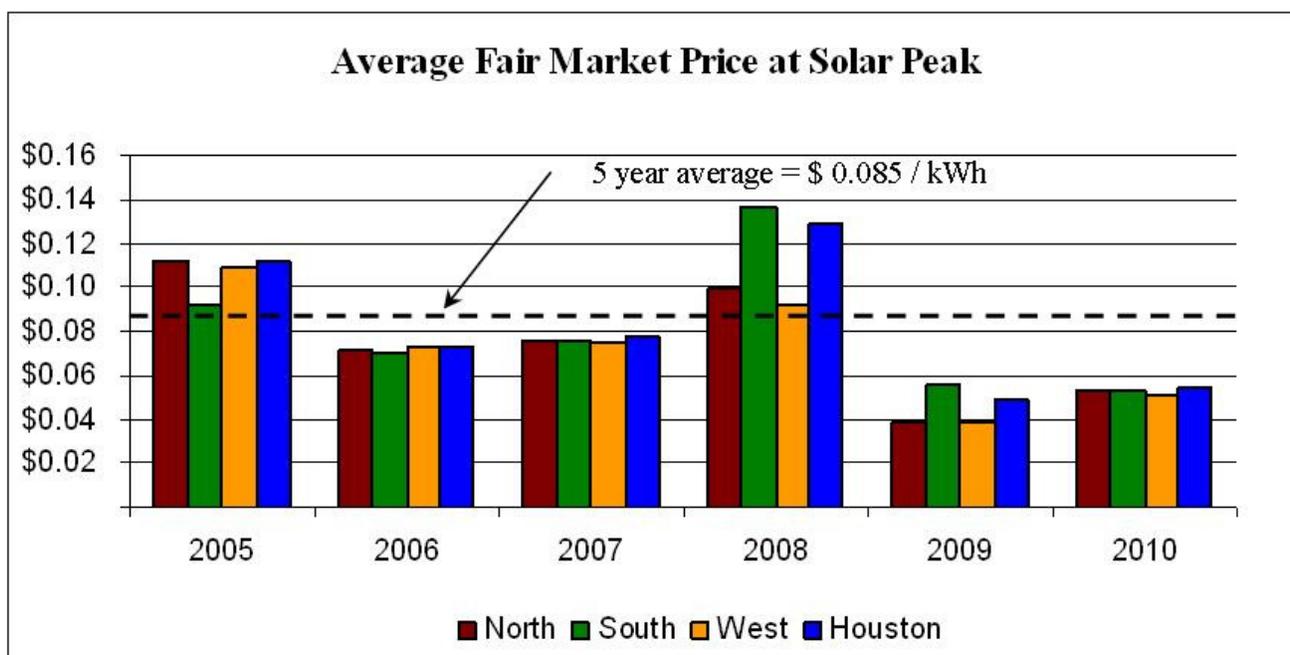
What is Fair Market Value?

Energy prices vary according to the time of day the energy was generated. During the afternoon (peak consumption hours), energy is more expensive, conversely the price of power is the lowest overnight when the least energy is used. The market price is set based on bid submitted by generators to buy electricity on a market run by the Electric Reliability Council of Texas (ERCOT). The market price of power varies from \$.03 per kWh to over \$2.50 per kWh depending on the time of day and the season. The fair market value is often a fraction of the full retail price you pay, but on a hot summer day when the demand is highest, may exceed the retail price.

We used data from 2005-2010 during the **peak solar production times and days** (May-Sept from 11:00am to 6:00pm) and found considerable variation in the price both by date and by the area of the state (electrical zone) that the data was measured from. Low prices were found to be .03 per kWh and high prices were over \$225 per kWh. Market highs were found to hit peaks as high as the market cap would allow, of \$225 per kWh, and the new price cap will go up to \$300 per kWh in 2011.



Paying back solar owner's full market prices of this range could bankrupt REP's and result in huge windfalls to solar owners but would result in times of extraordinarily low payback, so we decided to look at what the average market would be over the last five years. We generated average weekly and monthly pricing information to smooth out the variations in the market to establish a minimum fair pricing mechanism that might be used to compensate a generation-customer and found the following information.



As this shows there is still a significant price differential that makes it difficult for a generator-customer to make a purchase decision or give reasonable expectation of the price that might be received for exported energy. If the policy makers determine that the adoption of a minimum price based on the wholesale market is to be the standard used, this shows that \$.085 per kWh would be the minimum market price based on the market prices over the last five years during the times that a solar system would most likely produce excess energy. Using a 5 year rolling average, as is used in the states energy efficiency program, would give a floor to use as a minimum starting point.

What is avoided cost?

The Public Utility Commission's Substantive Rules order provides that excess generation is minimally purchased at avoided cost to the energy provider. Providers generally determine this value, often measured by avoided fuel costs of energy production of \$.02-\$.03 per kWh, which is a fraction of the retail price or the wholesale price paid to by the utility to buy electricity on the open market. The retail provider, coop or muni purchases excess energy at the value of avoided cost and turn around to sell it at full market value or retail value usually at a profit, even though the energy was originally generated by a renewable energy producer.

What Policy Makers Can Do

Most DRG owners are trapped in areas where REP's, munis, or co-ops don't buy back energy at any price.

In 2007 HB 3693 was passed that created a lot of uncertainty and confusion in the market.

It set up a out of balance market -§25.216(f) (3) specifies that sellers of DRG electricity "shall sell ...at a price to which both parties agree". This assumes a willing buyer can be found, will pay a fair price. Thus they do not have a willing buyer. This would leave the DRG owner in the position that any disagreements or unreasonable conditions will be left unresolved and the DRG system owner will be unable to obtain any compensation for the energy exported to the grid left without a source of income.

Uncertainty of revenue or non-existent revenue will make it difficult to justify the financing of a DRG system or the ability of the system to cover its costs because of:

- No ability to net generation credit against consumption;
- The uncertainty of a willing buyer to sell to,
- The market power imbalances that favor purchaser over seller in any price negotiation.

Because of these factors, additional questions were left in the decision making process, which are:

- Consumption costs: "In its tariff, a transmission and distribution utility may charge for the customer's electricity consumption from the distribution network". Because the DRG system cannot use its own generation to offset usage, DRG owners must pay for their electricity consumption as though there is no DRG system in place.
- Metering costs: "The distributed renewable generation owner must pay the differential cost of the metering unless the meters are provided at no additional cost.
- Process complexity: Under the "willing buyer, willing seller" pricing, DRG owners won't be able to estimate their system's revenue until they have negotiated a contract with a "willing buyer", assuming one might exist. Contracts will be subject to limited term periods, renegotiation and re-pricing provisions, adding uncertainty an additional risk that must be assumed by the DRG owner.

During the rulemaking proceedings, testimony was given by the Interstate Renewable Energy Council (IREC) to provide recommendations and guidelines to the new rule-making.

The IREC has been developing model rules since 2003 and has updated them several times; these represent a foundation to build on. Many of the basic issues needed to develop a successful net-metering policy have not changed, but significant advances in the renewable generation industry have shown that these guidelines will continue to change.

“IREC has been a participant in more than thirty state utility commission rule-makings regarding interconnection and net metering of distributed generation. As states have adopted procedures, both good and bad, IREC has witnessed the effects of those procedures on the development of the renewable energy markets within those states. In response, IREC has synthesized the best practices developed at the state and federal levels within these updated model rules,” says Jason Keyes with Keyes and Fox LLP, legal counsel to IREC for regulatory issues.

Texas should consider adopting these guidelines for all participating electrical providers in the state to allow customers to have a clear set of standards and compensation guidelines to allow them to make an informed decision when choosing to invest in a renewable energy system and what the net value will be to them.

Public Citizen recommends that these standards be used to develop a fair and comprehensive set of net metering rules. See the Appendix for further recommendations

Solutions:

- Adopt minimum floor for excess energy produce at of retail value or at average market price.
- Adopt the “Solar Owners” bill of rights a statewide policy.
- Adopt a state wide Dual-Bank netting policy.

Why Texas Policy makers need to act.

Previously, when a distributed renewable generation system was installed, an analog “rollback” meter was installed by the electric provider. This allowed any excess generation (generation greater than the load at that time) to roll the meter in reverse giving the customer the full 1:1 credit for the energy they produced regardless of the type of generation (wind, solar or other) to compensate the system owner for the energy produced and allow them to build up credit during periods of high production that was later used during periods of high load. However, as electric providers began to switch to “Smart Meters” the value of energy produced by consumers began to be debated.

Some of the confusion results from the 2007 Legislative session when HB 3693 was passed and attempted to clarify the problem but inadvertently cause confusion. In several sections “**may**” was used instead of “**shall**”, creating loopholes that allow electric providers to take excess generation from customers for free (see Appendix B for an analysis of legislation). The following excerpts show the problem.

39.916(a) (1) "Distributed renewable generation" means electric generation with a capacity of not more than 2,000 kilowatts provided by a renewable energy technology, as defined by Section 39.904, that is installed on a retail electric customer's side of the meter.”

39.916(a) (3) “Interconnection" means the right of a distributed renewable generation owner to physically connect distributed renewable generation to an electricity distribution system, and the technical requirements, rules, or processes for the connection.

39.916 (f) A transmission and distribution utility or electric utility shall make available to a distributed renewable generation owner for purposes of this section metering required for services provided under this section, including separate meters that measure the load and generator output or a single meter capable of measuring in-flow and out-flow at the point of common coupling meter point. The distributed renewable generation owner must pay the differential cost of the metering unless the meters are provided at no additional cost. Except as provided by this section, Section 39.107 applies to metering under this section.

39.916 (h) An electric utility or retail electric provider **may** contract with a distributed renewable generation owner so that:

(1) surplus electricity produced by distributed renewable generation is made available for sale to the transmission grid and distribution system; and

(2) the net value of that surplus electricity is credited to the distributed renewable generation owner.

39.916 (j) For distributed renewable generation owners in areas in which customer choice has been introduced, the distributed renewable generation owner must sell the owner's surplus electricity produced to the retail electric provider that serves the distributed renewable generation owner's load at a value agreed to between the distributed renewable generation owner and the provider that serves the owner's load which **may** include, but is not limited to, an agreed value based on the clearing price of energy at the time of day that the electricity is made available to the grid or it may be a credit applied to an account during a billing period that **may** be carried over to subsequent billing periods until the credit has been redeemed. The independent organization identified in Section 39.151 shall develop procedures so that the amount of electricity purchased from a distributed renewable generation owner under this section is accounted for in settling the total load served by the provider that serves that owner's load by January 1, 2009. A distributed renewable generation owner requesting net metering services for purposes of this section must have metering devices capable of providing measurements consistent with the independent organization's settlement requirements.

These changes made major market changes to the interpretation of net-metering as adopted by 44 other states and federal law.

The PUC setup rules to allow the net metering market to develop by having the Retail Electric Providers negotiate with distributed generation owners, and as our survey shows this hasn't happened.

In Section 39.916 the commission did give some direction as to the price that should be paid but they are subject to confusing and sometimes conflictive language and provide no clear guideline or definition.

In Section 39.916 (h) 2. It states "*the net value of that surplus electricity is credited to the distributed renewable generation owner.*" without defining what the net value might be.

In Section 39.916 (j) it does include including references to the clearing price of energy at the time of day that the electricity was put on the grid.

Summary:

- **Texas has some of the worst policies in the nation.**
- **Texas has the greatest potential to generate electricity with solar energy in the nation.**
- **Solar and other kinds of distributed renewable energy can be very valuable to the utility system by reducing cost of peak power and reducing the cost of expanding the grid.**
- **Our net metering policies need to be reformed to allow solar energy owners to know what prices are likely to be paid for excess energy.**
- **This will enable potential solar buyers to be able to have a price they can “take to the bank” and help them obtain financing for solar systems.**

We recommend:

- **Modifying policy to make net metering mandatory;**
- **Requiring REPS to provide comparable information on their websites and on the Power to Choose websites;**
- **Buying back excess power at fair market price; and**
- **Adopting the “Solar Owners Bill of Rights” as the policy of the state .**

Appendix A: Definitions and General Information

Definition (IREC)²

Net Metering

(a) Definitions

- (1) “Biomass” means a power source that is comprised of, but not limited to, combustible residues or gases from forest products manufacturing, waste, byproducts, or products from agricultural and orchard crops, waste or co-products from livestock and poultry operations, waste or byproducts from food processing, urban wood waste, municipal liquid waste treatment operations, and landfill gas.
- (2) “Customer-generator” means any customer of an Electricity Provider that generates electricity on the customer's side of the billing meter with Renewable Energy Generation that is primarily intended to offset part or all of the customer's electricity requirements. A Customer-generator does not need to be the owner of the Renewable Energy Generation system.
- (3) “Electricity Provider”- means the jurisdictional entity that is required to offer Net Metering service to eligible Customer-generators.
- (4) “Net Metering” means a methodology under which electric energy generated by or on behalf of a Customer-generator and delivered to the Electricity Provider's distribution facilities may be used to offset electric energy provided by the Electricity Provider to the Customer-generator during the applicable billing period.
- (5) “Renewable Energy Generation” means an electrical energy generation system that uses one or more of the following fuels or energy sources: Biomass, solar energy, geothermal energy, wind energy, ocean energy, hydroelectric power, or hydrogen produced from any of these resources.
- (6) “Renewable Energy Credit” means a tradable instrument that includes all renewable and environmental attributes associated with the production of electricity from a Renewable Energy Generation system.

(b) Net Metering general provisions

- (1) All Electricity Providers shall offer Net Metering to Customer-generators with Renewable Energy Generation that that is interconnected and operated in parallel, pursuant to the interconnection rules in Section 25.211; provided, however, that the rated capacity of the Renewable Energy Generation does not exceed the Customer-generator's service entrance capacity.
- (2) All Electricity Providers shall make Net Metering available to Customer-generators in a timely manner and on a first-come, first-served basis. An Electricity Provider shall not limit the cumulative, aggregate generating capacity of net-metered systems in any manner.
- (3) Each Electricity Provider shall develop a net metering tariff that provides for Customer Generators to be credited in kilowatt-hours (kWh) at a ratio of 1:1 for any excess production of their generating facility that exceeds the Customer-generator's on-site consumption of kWh in the billing period.
- (4) The Electricity Provider shall carry over any excess kWh credits earned by a Customer generator and apply those credits to subsequent billing periods to offset the Customer-generators consumption in those billing periods until all credits are used. Any excess kWh credits shall not reduce any fixed monthly customer charges imposed by the Electricity Provider.
- (5) An Electricity Provider shall offer a Customer-generator the choice of a time differentiated energy tariff rate or a non-time-differentiated energy tariff rate, if the Electricity Provider offers the

² IREC Model Net metering <http://www.irecusa.org/NMmodel09>

choice to customers in the same rate class as the Customer generator. If a Customer-generator uses a meter and retail billing arrangement that has time differentiated rates, the Electricity Provider shall net any excess production against on-site consumption within the same time-of-use period in the billing period. Excess monthly kWh credits shall be based on the ratio representing the difference in retail rates for each time of use period.

(6) If a Customer-generator terminates service with the Electricity Provider or switches Electricity Providers, the Electricity Provider is not required to provide compensation to the Customer-generator for any outstanding excess kWh credits.

(7) A Customer-generator facility used for Net Metering shall be equipped with metering equipment that can measure the flow of electricity in both directions. For Customer generator facilities less than 25 kilowatts (kW) in rated capacity; this shall be accomplished through the use of a single, bi-directional electric revenue meter that has only a single register for billing purposes.

(8) A Customer-generator may choose to use an existing electric revenue meter if the following criteria are met:

- i. The meter is capable of measuring the flow of electricity both into and out of the Customer-generator's facility; and
- ii. The meter is accurate with a degree of accuracy that the Electricity Provider requires when measuring electricity flowing from the Customer-generator facility to the electric distribution system.

(9) If a Customer-generator's existing meter does not meet the requirements of subsection (b) (8), the Electricity Provider shall install and maintain a new revenue meter for the Customer-generator at the Electricity Provider's expense. Any subsequent revenue meter change necessitated by the Customer-generator, whether because of a decision to stop Net Metering or for any other reason, shall be paid for by the Customer generator.

(10) The Electricity Provider shall not require more than one meter per Customer-generator. However, an additional meter may be installed under either of the following circumstances:

- i. The Electricity Provider may install an additional meter at its own expense if the Customer-generator provides written consent; or
- ii. The Customer-generator may request that the Electricity Provider install a meter, in addition to the revenue meter addressed in subsection (b)(8), at the Customer-Generators expense in such a case the Electricity Provider shall charge the Customer-generator no more than the actual cost of the meter and its installation.

(11) A Customer-generator owns the Renewable Energy Credits (RECs) associated with the electricity it generates, unless such RECs were explicitly contracted for through a separate transaction independent of any Net Metering or interconnection tariff or contract.

(12) An Electricity Provider shall provide to Customer-generators electric service at nondiscriminatory rates that are identical, with respect to rate structure, retail rate components and any monthly charges, to the rates that a Customer-generator would be charged if not a Customer-generator, including choice of retail tariff schedules.

(13) An Electricity Provider shall not charge a Customer-generator any fee or charge; or require additional equipment, insurance or any other requirement not specifically authorized under this subsection or the interconnection rules in Section 25.211, unless the fee, charge or other requirement would apply to other similarly situated customers who are not Customer-generators.

(14) Each Electricity Provider shall submit an annual Net Metering report to the State Energy Conservation Office (SECO). The report shall be submitted by April 1 of each year, and shall include the following information for the previous year:

- i. The total number of Net Metered Customer-generator facilities, by resource type;
- ii. The total rated generating capacity of Net Metered Customer-generator facilities, by resource type;

- iii. The total number of kWh received from Net Metered Customer-generators; and
- iv. The total estimated amount of kWh produced by Net Metered Customer-generators, provided that this estimate does not require additional metering equipment.

(c) General Provisions

(1) If a Customer-generator's Renewable Energy Generation system has been approved for interconnection under the interconnection rules in Section 25.211, the Electricity Provider shall not require a Customer-generator to test or perform maintenance on the Customer-generator's system except in the case of any testing or maintenance recommended by the system manufacturer.

(2) An Electricity Provider shall have the right to inspect a Customer-generator's system during reasonable hours and with reasonable prior notice to the Customer-generator. If an Electricity Provider finds that the Customer-generator's system is not in compliance with the requirements of the interconnection rules in Section 25.211 and the requirements of IEEE Standard 1547, and non-compliance adversely affects the safety or reliability of the Electricity Provider's facilities or of other customers' facilities, the Electricity Provider may require the Customer-generator to disconnect the facility until compliance is achieved.

(3) Each Electricity Provider shall make Net Metering applications available through the Electricity Provider's website.

(d) Meter aggregation

(1) For Customer-generators participating in meter aggregation, the following provisions apply:

- i. For the purpose of measuring electricity usage under these Net Metering rules, an Electricity Provider must, upon request from a Customer-generator, aggregate for billing purposes a meter to which the Net Metering facility is physically attached ("designated meter") with one or more meters ("additional meter") in the manner set out in this subsection. This rule is mandatory upon the Electricity Provider only when:
 - a. The additional meter is located on the Customer-generator's contiguous property;
 - b. The additional meter is used to measure only electricity used for the Customer-generator's requirements
- ii. A Customer-generator must give at least 30 days notice to the Electricity Provider to request that additional meters be included in meter aggregation. The specific meters must be identified at the time of such request. In the event that more than one additional meter is identified, the Customer-generator must designate the rank order for the additional meters to which Net Metering credits are to be applied.
- iii. The Net Metering credits will apply only to charges that use kWh as the billing determinant. All other charges applicable to each meter account will be billed to the Customer-generator.
- iv. If in a monthly billing period, the Net Metering facility supplies more electricity to the Electricity Provider than the energy usage recorded by the Customer-generator's designated meter, the Electricity Provider will apply credits to additional meters in the rank order provided by the Customer-generator, and any remaining credits after doing so will be rolled over to the designated meter for use during the subsequent billing period.
- v. Customer-generators participating in meter aggregation do not have to have all meters on the same rate schedule.

Appendix B: Legislative and regulatory history

In the 2007 Legislative session HB 3693 was passed, an act relating to energy demand, energy load, energy efficiency incentives, energy programs, and energy performance measures.

Section 26 created a new section in PURA §39.916 governing “Interconnection of Distributed Renewable Generation”

The Electric Reliability Council of Texas (ERCOT) formed a Distributed Generation Task Force to implement its role under HB 3693.

The Public utility commission then held several sessions to interpret the effects of these rule changes.

The section of the bill that impacts net-metering customers is contained in:

SECTION 26. Subchapter Z, Chapter 39, Utilities Code, that was amended by adding Section 39.916: Subsection (f-J) dealt the establishment of a net-metering standard:

(f) A transmission and distribution utility or electric utility shall make available to a distributed renewable generation owner for purposes of this section metering required for services provided under this section, including separate meters that measure the load and generator output or a single meter capable of measuring in-flow and out-flow at the point of common coupling meter point. The distributed renewable generation owner must pay the differential cost of the metering unless the meters are provided at no additional cost. Except as provided by this section, Section 39.107 applies to metering under this section.

(g) A renewable energy credit that is earned by a distributed renewable generation owner through the interconnection of a renewable electric system is the sole property of the distributed renewable generation owner unless the distributed renewable generation owner engages in a transaction to sell or trade the credit under Section 39.904. For electric utilities, the commission shall address the ownership of renewable energy credits associated with power sold to the utility.

(h) An electric utility or retail electric provider may contract with a distributed renewable generation owner so that:

(1) surplus electricity produced by distributed renewable generation is made available for sale to the transmission grid and distribution system; and

(2) the net value of that surplus electricity is credited to the distributed renewable generation owner.

[(i) reserved]

(j) For distributed renewable generation owners in areas in which customer choice has been introduced, the distributed renewable generation owner must sell the owner's surplus electricity produced to the retail electric provider that serves the distributed renewable generation owner's load at a value agreed to between the distributed renewable generation owner and the provider that serves the owner's load which may include, but is not limited to, an agreed value based on the clearing price of energy at the time of day that the electricity is made available to the grid or it may be a credit applied to an account during a billing period that may be carried over to subsequent billing periods until the credit has been redeemed. The independent organization identified in Section 39.151 shall develop procedures so that the amount of electricity purchased from a distributed renewable generation owner under this section is accounted for in settling the total load served by the provider that serves that owner's load by January 1, 2009. A distributed renewable generation owner requesting net metering

services for purposes of this section must have metering devices capable of providing measurements consistent with the independent organization's settlement requirements.

The Public Utility Commission (PUC) of Texas assigned a project number 34890 and held a series of meetings to establish policies and procedures to implement this change to the Utility Code.

In February of 2008 the Commission approved Staff's Proposal for Publication of new §25.213 to define metering as it pertains to distributed renewable generation. "This limited rule-making was taken up to provide market participants with the information needed to develop procedures needed to comply with the requirement PURA 39.916 (J) to account for distributed renewable generation transactions by January 1, 2009.

The rule was adopted in the 2/9/08 Open Meeting. The new rule will be published in the Texas Register on May 9, 2008 with an effective date of May 14, 2008."³

In the rule-making the PUC stated "The commission does not find the position of IREC and Public Citizen on netting over the billing period to be consistent with PURA §39.914(d) and §39.916(f) and therefore declines to amend the proposed language. The commission notes that "net metering" is a defined term in 16 U.S.C.A. §2621(11) and has various applications in other markets. It is often used to refer to "retail roll backs" or "banking" of electricity, whereby the meter for a retail electric customer that produces electricity is allowed to roll backwards as the DRG (1) produces more electricity than is consumed by the customer's load and (2) places such surplus electricity on the distribution network. All charges incurred by such a retail electric customer for power the customer actually consumes from the grid at other times during the billing period are reduced or eliminated by these "retail roll backs" or "banking." However, the commission does not find that PURA §39.914 or §39.916 mandates the concepts of "retail roll backs" or "banking" as described above. Additionally, PURA §39.914(d) and §39.916(f) stipulate that meters for DRG be capable of measuring in-flows and out-flows."

Further they stated

"The commission further declines to amend the language consistent with the comments of IREC and Public Citizen et al. that customers should receive retail prices for energy they export to the grid. PURA §39.914(c) and §39.916(j) state that the price for energy sold by the DRGO shall be at a value to which both parties agree. PURA §39.914(c) and §39.916(j) further suggest that a possible outcome of such an agreement might be the wholesale clearing price of the energy at the time of day that it is made available to the grid. Absent the ability to quantify out-flows, there is no basis for the DRGO and REP to determine when the energy is made available and arrive at the value of this energy in the wholesale market. Thus, under PURA, it is not sufficient merely to quantify the difference between in-flows and out-flows."

Attempts to have the commission setup guidelines for the Co-ops and Municipally owned utilities also were not done at this time.

"While the customers of cooperatives and municipally owned electric utilities might benefit from standardized rules regarding DRG, PURA §39.002 specifically exempts municipally owned and cooperative electric utilities from the requirements of PURA §39.914 and §39.916."

The commission did not address the provision to set the size of the system as laid out in HB 3693

³ <http://www.puc.state.tx.us/rules/rulemake/34890/34890.cfm>

“The commission adopts language in subsection (b) (2) to incorporate the 2,000 kW limitation from HB 3693.

The commission declines to take up the issue regarding compliance with other commission interconnection rules in this rule-making, as they will be addressed in the second phase of this project.”

In Sections 8 and 9 of the adopted rule the commission laid out the guidelines

(8) Owners of distributed renewable generation may begin selling out-flow at any time, but transmission and distribution utilities are not required to comply with paragraph (1), (2) or (3) of this subsection, as they relate to reporting the two metered values, and the entity responsible for settlement is not required to accept the meter data provided pursuant to paragraph (1), (2) or (3) of this subsection until January 1, 2009.

(9) The entity responsible for settlement shall develop processes for settlement of electricity consumption and out-flow that reflects time of generation by January 1, 2009.⁴

Later in June of 2008 the PUC revisited Project 34890 for further clarification. The final rule that further modifying this rule was approved at the December 18 2008 open meeting.⁵

The commission stated *“As discussed above, in adopting §25.213 in the current project, the commission concluded that the use of a roll-back meter is inconsistent with PURA §39.914(d) and §39.916(f). In addition, PURA does not provide for financial incentives, apart from the possibility of obtaining renewable energy credits, or guaranteed returns for DRGOs.”*

They further clarified their position *“In an area with customer choice, the commission does not have the authority to impose a purchase price on the DRGO’s or ISD- DG Owner’s REP. A DRGO or ISD-DG Owner has a choice of REP and therefore can negotiate with more than one REP in an effort to obtain the best deal for the sale of its electricity. However, in an area without customer choice, the DRGO’s or ISD-DG Owner’s host electric utility will often be the only practical option to sell electricity. In areas without customer choice, the commission does have the authority to impose a purchase price on the electric utility where the DRGO or ISD-DG Owner and the electric utility do not agree to a price. The commission has set this price at avoided cost, calculated in a manner consistent with §25.242, the QF rule and 18 C.F.R 292.304. Avoided cost is an appropriate purchase price, because it is equal to the cost the electric utility would have incurred had it not purchased from the DRGO or ISD-DG Owner. The electric utility would need to prove the reasonableness of any price above avoided cost.”⁶*

So to summarize the following changes were made to PURA:

39.916(a) (1) "Distributed renewable generation" means electric generation with a capacity of not more than 2,000 kilowatts provided by a renewable energy technology, as defined by Section 39.904, that is installed on a retail electric customer's side of the meter.”

39.916(a) (3) “Interconnection" means the right of a distributed renewable generation owner to physically connect distributed renewable generation to an electricity distribution system, and the technical requirements, rules, or processes for the connection.

4 <http://www.puc.state.tx.us/rules/rulemake/34890/34890adt.pdf>

5 http://www.puc.state.tx.us/rules/rulemake/34890/34890adt_2.pdf

6 http://www.puc.state.tx.us/rules/rulemake/34890/34890adt_2.pdf

39.916 (f) A transmission and distribution utility or electric utility shall make available to a distributed renewable generation owner for purposes of this section metering required for services provided under this section, including separate meters that measure the load and generator output or a single meter capable of measuring in-flow and out-flow at the point of common coupling meter point. The distributed renewable generation owner must pay the differential cost of the metering unless the meters are provided at no additional cost. Except as provided by this section, Section 39.107 applies to metering under this section.

39.916 (h) An electric utility or retail electric provider may contract with a distributed renewable generation owner so that:

(1) surplus electricity produced by distributed renewable generation is made available for sale to the transmission grid and distribution system; and

(2) the net value of that surplus electricity is credited to the distributed renewable generation owner.

39.916 (j) For distributed renewable generation owners in areas in which customer choice has been introduced, the distributed renewable generation owner must sell the owner's surplus electricity produced to the retail electric provider that serves the distributed renewable generation owner's load at a value agreed to between the distributed renewable generation owner and the provider that serves the owner's load which may include, but is not limited to, an agreed value based on the clearing price of energy at the time of day that the electricity is made available to the grid or it may be a credit applied to an account during a billing period that may be carried over to subsequent billing periods until the credit has been redeemed. The independent organization identified in Section 39.151 shall develop procedures so that the amount of electricity purchased from a distributed renewable generation owner under this section is accounted for in settling the total load served by the provider that serves that owner's load by January 1, 2009. A distributed renewable generation owner requesting net metering services for purposes of this section must have metering devices capable of providing measurements consistent with the independent organization's settlement requirements.

These changes made major market changes to the interpretation of net-metering as adopted by 44 other states and federal law.

The PUC setup rules to allow the net metering market to develop by having the Retail Electric Providers negotiate with distributed generation owners, and as our survey shows this hasn't happened.

In Section 39.916 the commission did give some direction as to the price that should be paid but they are subject to confusing and sometimes conflictive language and provide no clear guideline or definition.

In Section 39.916 (h) 2. It states "*the net value of that surplus electricity is credited to the distributed renewable generation owner.*" without defining what the net value might be.

In Section 39.916 (j) it does include including references to the clearing price of energy at the time of day that the electricity was put on the grid.

*the distributed renewable generation owner must sell the owner's surplus electricity produced to the retail electric provider that serves the distributed renewable generation owner's load at a value agreed to between the distributed renewable generation owner and the provider that serves the owner's load which may include, but is not limited to, an agreed value based on the **clearing price of energy** at the time of day that the electricity is made available to the grid or it may be a credit applied to an account during a billing period that may be carried over to subsequent billing periods until the credit has been*

redeemed.

Information on these rules and other distributed energy information can be found at <http://www.powertochoose.org/content/about/drg.asp>

Interconnection agreement terms: <http://www.puc.state.tx.us/rules/subrules/electric/25.211/25.211.pdf>

Interconnection Technical requirements:
<http://www.puc.state.tx.us/rules/subrules/electric/25.212/25.212.pdf>

Metering for distributed generation:
<http://www.puc.state.tx.us/rules/subrules/electric/25.213/25.213.pdf>

Distributed renewable generation: <http://www.puc.state.tx.us/rules/subrules/electric/25.217/25.217.pdf>

Agreements between qualifying facilities and electric utilities:
<http://www.puc.state.tx.us/rules/subrules/electric/25.242/25.242.pdf>