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It is clear that one of the major technological trends that is beginning to shape the electric utility industry is the move toward "distributed generation." The concept refers to the way in which small generation units located on the customer's side of the meter – most typically, photo-voltaic or "PV" solar panels – provide energy to the customer-owner, and at times to the electric utility in an arrangement known as net-metering. The utility buys this excess energy, when it is produced, and in turn sells it to its customers. This model stands in contrast to the longstanding "centralized generation" model in which a few large generators power the entire grid. In addition to increased public demand, other drivers of the change are technological and cost improvements, public policy and greater access to financing.

For the electric utility, reliability and cost-allocation implications become more amplified as the number of solar customers expands. Therefore, the board of directors recently has begun to review the costs and benefits of interconnecting a growing number of solar customers to the IREA grid in anticipation of making revisions to our Rates, Rules and Regulations. IREA has a low service charge compared to most Colorado cooperatives and does not have a demand charge for residential customers. As a result, we recover most of our fixed and demand costs, as well as our margin, from residential customers through the energy charge. When customer-generators offset power purchases from IREA with their own excess generation, they effectively "reverse the charges" not only for the energy they produce (as they should be able to), but also for fixed and demand costs that should be charged to all customers. We are looking for the best and fairest way to compensate customer-generators for the energy and other benefits they provide to the grid while compensating IREA for the services it provides.

IREA's objective is to accommodate large amounts of customer-sited solar arrays in a way that is fair to all customers and economically sustainable as a business practice. Customers who wish to add solar panels to their home should be fairly compensated; likewise, customers who do not own solar panels should not be harmed by the energy choices of others. We believe a fair balance can be struck.

We would appreciate your input on this matter. Please email us by clicking **Contact Us** under the Get Info button at www.IREA.coop. For technical assistance in this regard, please contact Mark Badertscher at (720) 733-5547 or email MBadertscher@irea.coop.

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MAY 2015 - What's the Cost to "Go Solar"?

IREA will continue to communicate about this issue with our customers in future editions of this publication; however, for customers currently considering the purchase or lease of solar panels for their home, we encourage you to take the time to fully understand the costs, benefits and potential impacts of that decision. According to the Solar Energy Industries Association, during the 4th quarter in 2014 the average installed cost for a turnkey residential rooftop photovoltaic system was $3.48 per watt of capacity. The "Solar Market Insight Report 2014 Q4" may be accessed at www.SEIA.org.

Also, if you want to know the cost of the energy that your PV system will produce, this is easy to do. You need to ask the provider of the PV array for two numbers. First, you need the total amount of money that you will spend on all the payments that you will make over the life of the system. This number should include the financing costs as well as the installed price of the system. Next, you need the total amount of energy that the system will produce during its lifetime. When you have these two numbers, simply divide the first number by the second number. The result will be the "all-in" price, on a per-kilowatt-hour basis, of your PV system.

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JUNE 2015 - IREA Considers Revised Rate for Solar Customers: Fixed and Demand Costs Enter in

The number of IREA customers with solar panels has increased significantly over the past eighteen months. We want to accommodate those customers who choose solar in as fair a way as possible. As we wrote in the May edition of Watts and Volts, the Board of Directors currently is reviewing IREA's net metering rate structure to determine whether a rate revision is appropriate to ensure that net metering customers are fairly compensated for the power they produce and any other benefits they provide to the system while also ensuring that those customers pay for the services and benefits they obtain from IREA. This rate issue currently is the subject of much consideration and debate here in Colorado, where the Colorado PUC has an ongoing docket addressing the issue, and in other states.

The principal issue is the manner in which different kinds of costs are recovered in rates. In general there are three major kinds of costs: the cost of energy (measured in kilowatt hours, or kWh), fixed costs, and demand costs.

Energy Costs

Energy costs are those costs incurred to purchase or generate the energy distributed by IREA to its customers. Those costs also include costs incurred to transmit energy from the generation sources to the IREA distribution system.

Fixed Costs

Fixed costs are related to the costs of items such as customer service, meter reading, billing, administration, and service calls for linemen. Fixed costs are by definition those that are set month to month irrespective of the amount of electricity purchased by customers. IREA recently conducted a cost of service study in which we determined that the actual fixed cost of serving each residential customer is about twenty-three dollars per month.

Demand Costs

Demand costs may be thought of as the price customers pay to make electricity available. Demand costs represent overhead and include the cost of installing and keeping on continual standby the equipment needed to move electricity to electric customers. It includes costs related to items like transformers, wires, substations and power plants.

The Rate Concerns

IREA recovers part of its residential service fixed costs through a ten dollar monthly service charge, but most of its fixed costs and all of its energy and demand costs currently are recovered through the electric consumption charge, called the energy charge on our bills. Net metering customers offset energy delivered to them by IREA with excess energy produced by their own facilities; when that occurs they are avoiding not only the energy charges offset by their production, but also fixed and demand

costs associated with the energy they consumed but then offset with their own production. On the other hand, IREA's wholesale energy cost is reduced and IREA's wholesale demand costs may be reduced by the energy production of net metered customers. The concern is that the savings that IREA realizes are not enough to offset the reduction in collection of fixed and demand costs and therefore the difference must be collected from other IREA customers.

As the number of net metering customers grows, it becomes more important to ensure that rates are designed so that those customers pay for the costs of the service they receive while being fairly compensated for any savings they provide. Customers who choose to have solar generation should be able to do so in a manner that does not shift costs to those customers who do not. Likewise, solar customers ought to be fairly compensated in their rate for the energy and any other benefits they provide.

The Association will publish notice in a future Watts and Volts to inform you of proposed changes to the net-metering rate. The rates in our other rate classes will remain the same. We will not propose a rate increase in 2015.

For further information about home solar panels please see your local provider. To discuss interconnecting your system to IREA's grid, please contact Mark Badertscher at (720)733-5547.

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JULY 2015 - Update on Proposed Changes to Rates, Rules and Regulations

As we've written in previous editions of Watts and Volts, the Board of Directors is studying proposed changes to the Association's Rates, Rules and Regulations that could affect net-metering customers. The Association has conducted a series of meetings, including publically noticed Board Meetings, public study sessions, as well as private meetings between IREA and representatives of the rooftop solar industry, to discuss these issues.

At the June 2nd meeting of IREA's Board of Directors, the Board deferred starting the process of giving notice to customers of a proposed rate change in order to give additional consideration to the input it received during the public comment period. It is to be expected that the Board will formally begin the notice process to address this issue in the near future.

Why the change?

Because IREA has a low service charge compared to most Colorado cooperatives and does not currently have a demand charge for net-metered customers, we recover most of our fixed and all of our demand costs through the energy charge (kWh) alone. The dilemma we have with this bundled rate structure is that we do not recover the costs of the services we provide to net-metered customers who put energy they produce back onto the grid and offset retail sales we made to them with their own production. It may help to think of the grid as a battery that net-metered customers use when they are not generating their own energy. Customers who significantly offset their usage with their own production are using "battery" capacity but are not paying for the "battery" capacity they use. Those costs are borne by the residential customers who do not own their own solar arrays.

We anticipate that several thousand – or possibly even more – new rooftop solar systems will be added to the homes of IREA customers in the coming years. We want to accommodate this anticipated development, both technologically and through a sustainable rate structure.

Fairness

We are looking for the fairest way to compensate customer-generators for the energy and contribution to capacity they provide while also compensating IREA for the services it provides. Our rates are based on our costs of service. We want to make sure that net-metering customers receive credit for the costs they save us and that all customers pay to cover the cost of services we provide. We are seeking an approach that is consistent with those goals and will accommodate those customers who wish to pursue rooftop solar.

As a non-profit rural electric cooperative, our interest isn't profit. In fact, part of our margin is normally refunded to our customers as capital credit refunds each year. Neither is our interest the expansion – or decline – of the solar industry. Our interest, rather, is to find a way to provide our customers what they want in a way that doesn't favor or disadvantage one group at the expense of or to the benefit of others.

What's next?

If the Board decides a workable approach has been developed, IREA will issue formal notice to our customers in the Watts and Volts in the month following the Board's vote to initiate the rate change process. This gives our customers information about the change as well as adequate time to review the proposed rate and provide input. Please look for more information in the August Watts and Volts in which we will detail any pertinent results of the July board meeting, which were not available at the time of publication. Also, we invite you to visit our website at www.IREA.coop where you can find more information about net-metering by clicking on the Electrical Services link on the homepage.

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AUGUST 2015 - Board Votes to Notify Customers of Proposed Changes to Rates, Rules and Regulations

Most Changes Do Not Affect Current Customers

Accompanying this issue of Watts and Volts is a notice of proposed changes to IREA's Rates, Rules and Regulations. Most of the changes that affect current customers are minor and do not increase rates, while the most substantive change would pertain only to new residential services and interconnections where a meter is installed after December 30, 2015. The change is scheduled to be finalized at the October board of directors meeting. The rate will NOT apply to current customers unless they obtain a new service or interconnection.

As detailed in the May and June editions of this publication, the Board has been studying the issue of cost recovery from net-metered customers. The proposed rate change described in the attached notice includes a *Load Factor Adjustment* (LFA) provision that will position the Association to begin recovering the costs of using the grid as customer usage patterns change in ways that result in the under recovery of costs under the existing rate structure. The LFA is generally applicable and is intended to address the same problem that prompted us to examine net metering rates.

If adopted, the new rate will apply a LFA rider to new residential services to allow the Association to recover capacity-related costs from customers whose peak demand far exceeds their average electricity usage in a given month.

Specifically, the LFA will apply only if a new customer's load factor during a monthly billing period falls below a low threshold as follows: for residential customers in unincorporated areas whose load factor for the month is less than 9%, or for residential customers in incorporated areas whose load factor for the month is less than 10%. When the customer's LF for the month falls below these thresholds, the load factor adjustment will be applied at $4.04 per kilowatt of peak demand for unincorporated residential customers, or $4.13 per kilowatt of peak demand for incorporated residential customers.

The LFA rider is expected to impact a small percentage of new residential customers because the average residential customer's load factor is about 23%--more than twice the threshold amounts of 9% and 10%. Therefore, the LFA rider would not be applied in the vast

Demand

This refers to the rate at which electric energy is delivered to a customer over the course of a monthly billing cycle.

Kilowatt

A unit of electrical energy equal to 1,000 watts.

Kilowatt hour

A basic unit of electrical energy which equals one kilowatt of energy used for one hour.

Load

The term "Load" refers to the amount of electric energy delivered to or required by a customer; it refers to the amount of power that is consumed by a customer.

Load Factor

The term "Load Factor" refers to a customer's average consumption as a percentage or proportion of their

majority of cases. The reason for the limited reach of the LFA is that IREA's average residential customers consume enough energy each billing cycle relative to their peak demand that the Association is able to recover the customer's grid use costs through the existing energy charge alone. For new customers who use small amounts of energy and do so all at once or sporadically, the LFA likely would apply. New net-metered customers who are able to control their demand should be only modestly affected.

The LFA change is the result of several months of consideration by IREA staff and the Board of Directors, including three public meetings, stakeholder engagement and substantial public comment and outreach. The amendments also include a modification to the annual net-metering true up for current and new net-metered customers. Additionally, the proposal includes several non-substantive changes intended to clarify the IREA Rates, Rules and Regulations and make them more user-friendly in anticipation of web publication.

Any time IREA proposes an adjustment to the Rates, Rules and Regulations, formal notice is distributed to our customers. Customers are provided at least 30 days to review the proposed changes and provide input to the Association. The Board of Directors will consider customer input and take action on the proposed changes at its regularly scheduled meeting in October. See the accompanying notice for more details.

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SEPTEMBER 2015 - Proposed Rates, Rules, and Regulations Changes

The August issue of Watts & Volts gave notice of proposed changes to IREA's Rates, Rules, and Regulations. Many of the proposed changes involve "housekeeping" corrections or clarifications. Some are substantive, but will apply to very few customers. There is no general rate increase; our rates will stay as they have been for the past two and one-half years. We have no plans to increase rates through at least 2016.

The proposal currently being considered does create a "Load Factor Adjustment" (LFA) that would be applied to new residential services and new residential interconnections with our system after December 30, 2015. The LFA would not apply to existing IREA customers unless a new meter is installed for a new residential service or interconnection, such as the construction of a new outbuilding, barn, etc. or the interconnection of a rooftop solar system after December 30, 2015.

The load factor adjustment would add a demand charge to those new customers' bills in months when their load factor falls so low that IREA cannot recover costs of service. IREA recovers its demand costs through the energy charge under current rates, so if a customer uses a small amount of energy compared to the capacity used, demand costs are not recovered. Under the proposal a customer with very low average usage, but a high peak usage in a given month would have an abnormally low load factor and the LFA would apply. At that point, a residential customer subject to the LFA and living in an unincorporated area would be charged an additional $4.04 per kilowatt of peak usage, while a residential customer to the LFA and living in an incorporated area would be charged an additional $4.13 per kilowatt.

Overall, this new LFA would not apply to the vast majority of new residential customers and none of our existing customers. Load factor is calculated as the average demand over a period of time divided by the peak demand over the same period of time. The proposed LFA is only triggered if the load factor for an unincorporated residential customer falls below 9%, or below 10% for an incorporated residential customer. For reference, the typical load factor for an average residential customer is about 23%.

As a non-profit electric cooperative, our interest isn't profit. Neither is our interest the expansion – or decline – of the solar industry. Our interest, rather, is to find a way to provide our customers what they want in a way that doesn't favor or disadvantage on group at the expense of, or to the benefit of others. To that end, we are proposing a way to recover costs for services in circumstances where our current rate structure causes us to provide service at a loss. For more information, please visit the "Understanding Electricity" page at www.irea.coop.

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