



# Bright Tucson Community Solar Program

Tucson Electric Power's (TEP's) **Bright Tucson Community Solar (BTCS)** program, launched in 2011, offers most residential and business customers an easy and affordable way to meet their electric needs with locally generated solar power. TEP is the country's first investor-owned utility to offer a program that allows customers to purchase energy from a local solar array in 150 kilowatt-hour (kWh) "blocks."

TEP's community solar program has two core components. First, the utility sites, procures, and manages the solar photovoltaic (PV) project. The utility determines the location and scale of the project. Second, residential and commercial customers are eligible to purchase solar energy from that project and can choose the amount to purchase.

In developing BTCS, one of TEP's goals was to offer a solar program to its residential and commercial customers, especially those who could not or did not want to participate in rooftop solar. This includes customers who live in condominiums or apartments, customers in single family homes that are geographically or structurally unsuited to rooftop solar, customers who find the upfront costs of rooftop solar prohibitive, customers who don't want to make a long term commitment to solar, and others. Basically, BTCS was designed to be a solution for the diverse set of customers in the Tucson area. But, the program has evolved and is now also an innovative and cost-effective solution for larger customers, including municipal governments.

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## Bright Tucson Community Solar (BTCS) Program

Under BTCS, customers purchase solar energy “blocks” in 1 kW increments equal to 150 kWh through a solar tariff that adds about 2 cents per kWh to the customer’s average rate, giving all customers access to solar energy at very reasonable prices. On a monthly cost basis, this means that TEP customers can purchase a block of solar energy for just \$3 a month – less than a cup of coffee!

*A block of solar energy costs \$3 a month, less than a cup of coffee!*

TEP customers are eligible to purchase solar energy in 150 kWh blocks and can subscribe up to their average monthly kWh consumption. For example, a customer with an average monthly consumption of 900 kWh would be eligible to purchase 6 blocks of solar energy for a premium of \$18 per month. However, that same customer could purchase as little as 150 kWh of solar energy each month. When a customer purchases a block of solar energy, the customer receives an offsetting discount to the fuel and purchase power charge as well as the renewable surcharge on the monthly bill. Customers that purchase solar under the BTCS program are not under a contract and are free to drop out of the program at any time.

The community solar concept was developed in 2009, the solar tariff was approved in 2010, and the BTCS program was launched in 2011 (see Figure 1). Critical to the success of BTCS was its extensive community involvement including the development of TEP’s 1.6 MW solar project at the University of Arizona Science and Technology Park, which offered the first blocks of solar for sale. BTCS was available to customers well before the solar leasing model gained momentum.

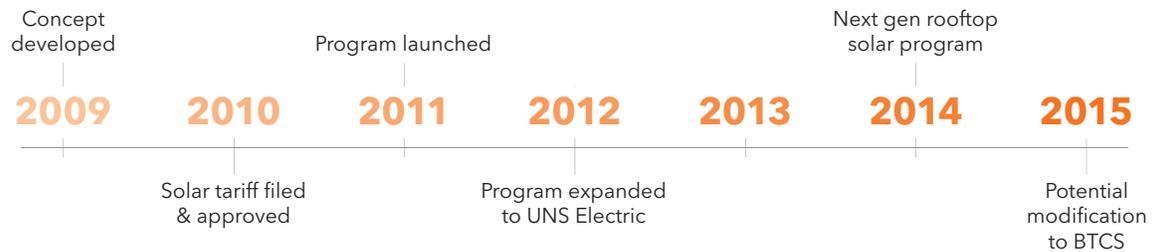


Figure 1: TEP's Bright Tucson Community Solar (BTCS) Program Timeline



Figure 2: Community solar at University of Arizona Science and Technology Park

## BTCS Customer Value Proposition

To encourage customers to sign up, the BTCS program includes a set of features and benefits designed to appeal to a diverse customer set, including cost-conscious customers, customers with rooftops not suitable for rooftop solar, customers in multi-family dwellings, green customers, and commitment-averse customers. These benefits include:

- No up-front expense or equipment maintenance costs
- No long term contract
- Flexible renewable energy alternative to rooftop solar PV
- Available to residential and commercial customers on several different rate plans regardless of housing arrangement
- Protection against future energy cost increases
- Carbon reduction
- Water savings
- Clean, green renewable energy at an affordable price
- Opportunity to 'Go solar' for as little as \$3 a month



Figure 3: TEP's solar calculator computes the costs and benefits of going solar

## BTCS Program Results

The BTCS program has a wide range of customers – residential customers, commercial customers, and communities. BTCS acquired 532 customers in its first year, who purchased a total of 334 MWh of solar energy. As shown in Figure 4, customer engagement has increased rapidly over the past 3 years. Today BTCS boasts over 1,200 customers who have purchased over 3,300 MWh of solar energy – a 10-fold increase in just three years. TEP found that program marketing drove customer engagement in the program.

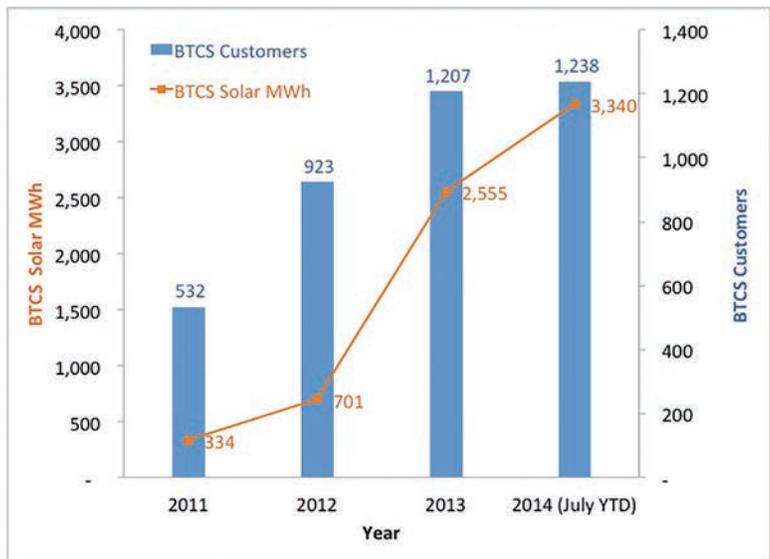


Figure 4: The BTCS program grew from 334 MWhs in 2011 to 3,340 MWhs by July 2014 through customer purchases of blocks of community solar energy

## Future Plans

Going forward, TEP believes that BTCS should include an on-bill presentation of the benefits of the program. A lesson learned so far from BTCS is that some customers did not understand the value of BTCS because it was not clearly represented on the monthly billing statement (Figure 5). TEP intends to modify the bill presentation to make it more customer-friendly.

TEP recently proposed a fixed-priced solar product. This would be offered to customers in return for allowing TEP to install and own a solar PV array on the customer's roof. This program is expected to be decided by the Arizona Corporation Commission in late 2014 and, if approved, would be implemented in 2015.

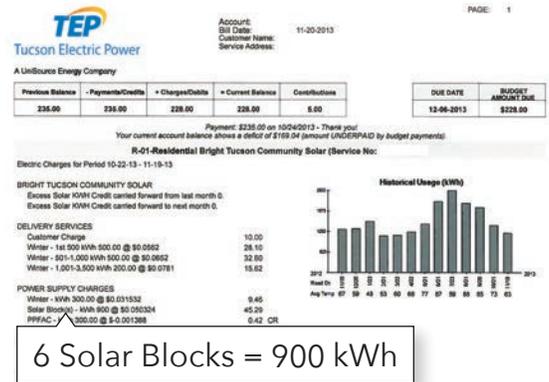


Figure 5: Customers purchase solar energy in 150 kWh blocks

## BTCS' Key Success Factors

BTCS is a good example of a program that is not only more cost effective than rooftop solar PV but it also allows all eligible customers, regardless of their credit scores, to purchase solar energy. Key success factors include:

### 1. Offer customers a smart and simple choice

Today's energy customers want guided choice, so they can make decisions without feeling overwhelmed. TEP prides itself on outstanding customer service and is constantly looking for new ways to act as a long-term trusted energy advisor to its customers. Through BTCS, TEP gives customers choice in their program participation level. According to Carmine Tilghman, Senior Director of Renewable Resources for UNS Energy who oversees the BTCS program, "You can buy some or all of your power through the program, reducing or eliminating your energy from conventional resources. BTCS gives our customers a convenient way to go solar." In addition, BTCS' no-risk option is an attractive choice for customers who do not want to lock themselves into a 20-year rooftop solar lease. BTCS residential customers are allowed to sign-up and cancel at any time with minimal contract period commitments.

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### 2. Tie customer value back to the local community

One of the biggest benefits of community solar is the strong link to the community where customers live. Only local solar resources are used in the program, so customers participating in BTCS know that they are helping the community both environmentally and economically. Further, TEP prefers to build the solar projects on brownfield, previously disturbed, or limited-use property. By investing in solar in the Tucson metropolitan area, TEP expands its renewable energy portfolio while helping to create jobs. All of these factors contribute to enhancing TEP's ties with its customers and the local community.

### 3. **Clearly educate on both the benefits and costs of community solar**

While it is easy to highlight the benefits of solar, TEP was careful to offer a more balanced message of both the costs and benefits of BTCS so that customers can make the right choice for themselves. Here is how TEP explains the costs relative to conventional energy:

**\$** *Solar power costs more than conventional energy derived from fossil-fueled power plants, so participating in the program will increase your electric bill. Each block replaces the charges for an equivalent amount of conventional power at a rate that currently adds \$3.00 to your monthly bill.*

### 4. **Include long-term economic benefits**

Because rooftop solar PV is often the reference point for many customers evaluating community solar as an option, it is helpful to offer economic benefits that prospective customers find familiar.

For BTCS, TEP offered the following.

- **Hedge against future energy price increases.** When a customer purchases solar under BTCS, the solar rate is fixed for 20 years, so customers are protected against fuel price increases. In addition, solar blocks are exempt from two surcharges applied to other electric usage: the Renewable Energy Standard Tariff (REST) and the Purchased Power and Fuel Adjustment Clause (PPFAC). These cost savings are realized during program participation.
- **Rollover benefits.** If the solar energy purchased through the program exceeds actual usage during a customer's monthly billing period, the excess is carried forward to the next billing period as a credit. Hence, customers can benefit from all of the solar they purchase.
- **No contract.** Customers that purchase solar are not under a contract and can drop out at any time. These customers avoid the costs and restrictions associated with long term contracts.

## Advantages of Community Solar

### Advantage 1: Community solar democratizes solar access.

Consistent with TEP's original vision, the BTCS program gives eligible customers the option to go solar at a reasonable price.

- For residents in non-solar suitable homes such as renters, multi-family dwellers, etc., community solar is an ideal option. At most, 25 percent of U.S. homes, or 33 million homes, are rooftop solar PV appropriate.
- Community solar offers an affordable pay-as-you-go solar solution that eliminates the rooftop solar PV upfront purchase cost or financing hurdle.

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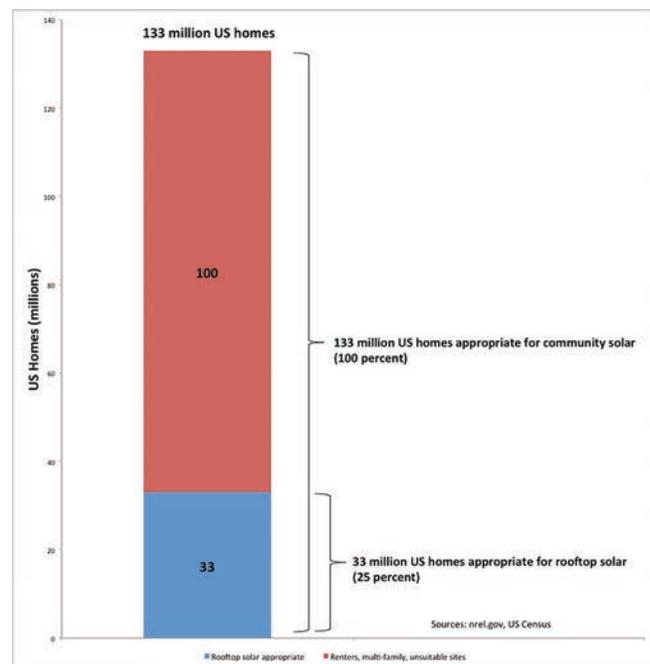


Figure 6: Only a fraction of U.S. homes are suitable for rooftop solar. BTCS was designed to be suitable for all customers.

- Community solar is flexible. Customers can decide how much solar energy to purchase and for how long.
- Unlike solar leasing model contracts, eligibility in the BTCS program is not dependent on a customer's credit rating.

**Advantage 2: Community solar customers do not shift costs onto non-solar customers.**

Under current net energy metering practices, rooftop solar PV customers do not pay for their fair share of the grid services that they use and these costs are shifted onto non-solar customers. In contrast, community solar customers continue to pay for the grid services they utilize and do not shift costs onto non-solar customers.

**Advantage 3: Community solar provides customers with a cost-effective alternative to customer-sited rooftop solar.**

With a community-scale, grid-tied project, the utility is able to appropriately size and locate the solar resource. On a per-watt basis, these types of projects cost considerably less than rooftop solar facilities. Community solar is cost-effective.

**Advantage 4: Community solar is regarded favorably by regulators and elected officials.**

The BTCS program has been successful with the Arizona Corporation Commission (ACC), ACC staff, and interveners in TEP's renewable energy implementation plan.

### Summary of Key Advantages of Community Solar

1. Community solar democratizes access to solar
2. Community solar eliminates the cost shift to non-solar customers
3. Community solar costs less than rooftop solar
4. Community solar is regarded favorably by regulators and elected officials



Tucson Electric Power

### About Tucson Electric Power Company

Tucson Electric Power (TEP) has been providing electricity to Arizona residents for over 120 years. Today, the company serves more than 414,000 customers in southern Arizona. TEP offers comprehensive energy services through reliable, traditional resources and cutting-edge "green power" projects. As a result, TEP was recognized as the Solar Electric Power Association's (SEPA's) investor-owned utility of the year in 2012.

For more information about Tucson Electric Power's Bright Tucson Community Solar Program, please contact Carmine Tilghman at [ctilghman@tep.com](mailto:ctilghman@tep.com).



## About the Institute for Electric Innovation

The Edison Foundation Institute for Electric Innovation (IEI) focuses on advancing the adoption and application of new technologies that will strengthen and transform the power grid. IEI's members are the investor-owned electric utilities that represent about 70 percent of the U.S. electric power industry. The membership is committed to an affordable, reliable, secure, and clean energy future.

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IEI is governed by a Management Committee of electric industry Chief Executive Officers. IEI has a permanent Advisory Committee of leaders from the regulatory community, federal and state government agencies, and other informed stakeholder groups. In addition, IEI has a Strategy Committee made up of senior electric industry executives and more than 30 smart grid technology company partners.

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## About The Edison Foundation

The Edison Foundation is a 501(c)(3) charitable organization dedicated to bringing the benefits of electricity to families, businesses, and industries worldwide. Furthering Thomas Alva Edison's spirit of invention, the Foundation works to encourage a greater understanding of the production, delivery, and use of electric power to foster economic progress; to ensure a safe and clean environment; and to improve the quality of life for all people. The Edison Foundation provides knowledge, insight, and leadership to achieve its goals through research, conferences, grants, and other outreach activities.

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