

# Case Study: Affordable Community Energy Services Harvesting Solar Gardens



*Mission: To keep affordable housing affordable to low-income families by reducing maintenance and utility bills, while also benefiting the environment.*

## ACE at a Glance

- Affordable Community Energy Services
- Founded in 2016
- Based in Chicago, with a nation-wide portfolio of over ninety properties
- Provides energy to low-income families and residents, either through retrofits or through innovative strategies

The Affordable Community Energy Services, or ACE, is dedicated to providing energy efficiency, water conservation and sustainable energy to low-income families, a demographic that is normally unable to obtain high-tech devices from the green energy industry. This case study is related primarily to the sustainable energy part of ACE's mission.

When looking at the total consumer demographic of solar energy, it is clear that the majority of residential solar energy consumers are in the middle and upper classes. Research conducted by PowerScout found that 70% of all personal solar panels belonged to consumers in the middle class. While this may not come as a surprise, it does highlight the gap in access to affordable solar energy between the middle and lower classes.



**Jeff Greenberger**  
Founder and President, ACE

ACE began as a for-profit subsidiary of a non-profit developer, Hispanic Housing Development Corporation (HHDC), which developed and managed affordable housing in the Chicago area. Jeff Greenberger and the President of HHDC saw the urgent need for sustainable and affordable energy for these developments, and did nearly ten million dollars' worth of retrofit projects on Chicago affordable units. In 2016, ACE reincarnated itself as a separate entity from HHDC and Jeff Greenberger became CEO of the new ACE. ACE remained in Chicago, but understood that there was a nation-wide need for affordable and equitable clean energy. Since its inception, ACE has been able to retrofit affordable housing properties to have energy efficiency, water conservation, and renewable energy.

## What is a solar garden?

*A solar garden is an array of solar panels that has multiple subscribers. These subscribers pay a monthly or annual fee to use the energy generated from the solar arrays.*



## Picking the Field

A great metaphor to use with harvesting solar energy is farming. With a solar garden, the property is your field, the panels are your crop, and the kilowatt hours produced are your yield. And just like farming, a solar garden is only successful if it is in the right field. If the field is in a bad location, then the solar garden will be less productive. Make sure factors, such as real estate and utilities, do not compromise the monetary performance of your solar crop.

ACE evaluates several criteria to determine whether or not a project is viable. These criteria include the following:

1. Insolation (strength and intensity of the sun)
2. Cost of installation
3. Cost of real estate
4. Cost of electricity
5. Available Subsidy Programs
6. Length of the Power Purchase Agreement (PPA)



### Power of the Sun: Insolation

When looking for a place to plant your crop, or install solar panels, it is important to consider insolation. Insolation is a measure of the strength of the sun's rays, which varies based on region of the country, and therefore can affect a solar project. For example, Chicago lies in an area with less insolation, while Albuquerque lies in an area where the sun's rays are much more intense. Much is made of the fact that on average solar rays in Albuquerque produce 1.33 times more energy than Chicago. But, this differential is often more than offset by differences in electricity costs and incentives, discussed below. In theory, any location within the US should be able to support viable solar installations. For example, the sun produces as much potential power in Chicago as it does in Germany, one of the world's leaders in solar energy.

### Cost of Installation

The price of installation has been steadily declining in the past decade. According to SEIA, the Solar Energy Industry Association, "the cost to install solar has dropped by more than 70% over the last decade, leading the industry to expand into new markets and deploy thousands of systems nationwide." While the cost of installation has dropped significantly and it typically isn't the most important part of the financial equation, it is still something to consider.

### Cost of Real Estate

Similar to cost of installation, cost of real estate has a smaller impact on the financial performance of a solar project than many of the other factors. But, it is still something to consider when looking for a place to build a solar garden. The cost of land or rooftops in an urban area can be much more expensive than in a remote rural area.

### Electricity Prices

One of the two factors with the biggest impact on the financial performance of a solar installation is the price of electricity. A project will be more financially feasible if the local cost of electricity is higher, since the value of the electricity produced by the solar panels will also be higher. For this reason, California's high electricity prices (along with high water prices) makes the state a fertile ground for solar development. (California also has high levels of solar subsidies, particularly for low-income properties, the other key factor discussed below.)

### Subsidy Levels

Subsidy levels, which vary dramatically by state, also greatly impact the financial performance of a solar project. For example, a program in Boston will fund 100% of a project that provides renewable energy for low-income housing. With ACE's California Mercy Housing project—which involved energy efficiency and water conservation retrofits—half of all costs were covered by incentives. Subsidies for solar installations in California have been substantial and continue to increase, approaching 100% for low-income properties. Many of the states where the sun shines the strongest have chosen for whatever reasons to not provide subsidies to solar development. While the temptation may be to focus on the differences between the power of the sun in different states, the reality is that there is a much greater difference among levels of subsidies and incentives. These different levels of subsidies more than offset any difference in the power of the sun.

### Length of Term of the Power Purchase Agreement

The length of the power purchase agreements (PPAs), whereby a customer purchases renewable energy from the developer, must be viewed from two perspectives. From a developer's perspective a longer PPA allows them to pay a lower annual cost to their lenders. This has two benefits: 1. it may make a project feasible that would not be feasible with a shorter term and 2. it could allow the developer to charge its customers less for the electricity. Some owners might initially dislike the fact that PPAs are long (the average length of a PPA contract is between twenty to twenty-five years) until they understand the reasons for a longer term.

## Preparing the Soil

Now that the location of the field has been examined for its energy, real estate, and other costs, it's time to focus on preparing the soil. In other words, a successful field needs stakeholder buy-in — by both internal and external stakeholders.

### Internal Stakeholders

Internal stakeholders need to be managed at least as carefully as external stakeholders. Greenberger suggests that “an internal stakeholder’s best practice is to build from the property levels up and to build from executive suite down. A holistic approach has a much better chance of success than one that says to do a top-down approach only.” It is important to understand that however well-managed a project might be by your contractors, a project of this scope will require some time and attention of onsite staff. Being sensitive to their schedules and workloads is critical.

### External Stakeholders

Greenberger advises that you communicate with the external stakeholders—such as a lender or an investor—as soon as possible, so that you can address their questions and concerns early on. “Your strategy relative to getting them to buy in is largely going to be dependent on the terms of the agreement you have with those stakeholders, your relationships with them, and maybe the advice you get from your legal department about how to proceed.” He goes on to say, “but we strongly recommend with these projects that you describe them very clearly, but don’t explicitly ask for approval. Any party that thinks its approval is required will be certain to tell you that.”

## Conclusion

Solar installations have multiplied exponentially over the last 5-10 years as installation costs have dropped, electricity prices have increased, and enlightened governmental officials have understood the importance of decreasing our collective dependence on fossil fuels and increasing our use of renewable energy. This increase in activity has naturally drawn more capital sources into the picture and made it possible to install solar panels in more locations. Those locations are not necessarily the ones where the sun shines the brightest, but where higher electricity prices and incentives make an investment feasible.



In considering whether to participate in this movement, choose your partners carefully, consider ongoing maintenance costs, but most importantly, remember that there are benefits beyond the financial, to our communities and our planet.

## Learn More

Affordable Community Energy Services (ACE)  
<https://www.affordablecommunityenergyservices.com/>

