



Why the poor pay more for utilities?

Words: Ganesan (Dr. Vish) Visvabharathy

It is clear that the solar revolution is sweeping across the globe, with or without governmental incentives. Particularly in North America, the largest job creator in the past year has been singularly the solar industry. But a deeper analysis reveals that most of the growth over the past decade has been in utility-scale sector, although certain states like California, New Jersey, and Pennsylvania lead the way in residential sector as well.

Even in these states, if we look a bit deeper into the residential sector, we find that most of the penetration has been in the mid to upper echelons of society, while leaving out the vast majority of low income communities. Thus, in a sense, solar is still the playground of the rich, in spite of drastically falling costs in the industry, and significant federal, and state level incentives

Consequently, the affordable housing residents do not have an opportunity to enjoy the savings due to solar installations, nor the health benefits of clean power. To make matters worse, most of the coal plants are located close to low income communities.

We don't need to look far to find out the reasons for this situation; the residents of low income communities cannot invest any monies toward a solar installation. With a tight budget and nearly 40% or more of the monthly income being spent toward rent, there is very little room for such things as a solar installation.

Although various models of participation in the residential solar revolution are prevalent such as lease, Power Purchase agreements, or ownership, funded via the loan model, none of these options are available to low income residents. How can we ameliorate this situation?

For gaining deeper penetration in the affordable housing market, there needs to be a coalition of local government agencies, non-profits, community service organizations, and churches. This coalition is to be formed, not just for raising funds for deployment of solar, but also for customer education on safety issues, long term maintenance of the asset, prudent use of energy over the life of the system, just to name a few.

The impediments to greater penetration can be classified into 3 categories: financial, utility policies and solar illiteracy. Let us review each of these in detail.

The financial issue

The low income residents rarely, if ever, need any tax credits. So, even if they tide over the liquid cash issue, they will not be motivated to install solar by focusing on the tax credits for themselves. Thus, self-financing, or bank financing is out of the question. So, why can't a for profit developer come in and enjoy the tax benefits, while passing on the utility bill

savings to the low income resident? For this to happen, there has to be scale. So, agglomeration of customers into a larger pool of energy capacity is the first step.

Even if this was achieved with the help of local community agencies, how can the developer be assured of payment? He may be worried about customers' credit issues. One option is to have a power purchase agreement with the customer, but many states do not allow PPAs.

Also, whereas many states have good solar incentives, they are mostly applicable to 'for profit' entities, which precludes the possibility of a non-profit organization being seriously interested in owning a system for the benefit of low income residents, even if such non-profit was willing to fund the system.

So this leaves one of the few available options on the table, such as non-profit foundations making grants for installation of solar in affordable housing communities. Although there are some examples such as the Clean Energy Community Foundation in Illinois, they are just far and few between. Besides, their kitty is also very limited in size, in most cases.

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TALKING POINT







Utility policies

Some states do not have a net metering policy, which means the customer cannot get credit for excess solar production. Also, even in states which allow net metering, the size of the system that can be eligible for net metering is quite small. For instance, the limit is 1 MW in North Carolina, and even less in some states.

A large apartment complex, comprising entirely of low income residents, is likely to need a system well in excess of this limit of 1 MW. So, if the apartment complex needs a 3 MW system, the residents can enjoy the benefits of only one third of the system capability. If there is no net metering policy at all, the situation is even worse.

Another impediment is the lack of virtual net metering in many states. If virtual net metering was allowed, such as in Community Solar models adopted by some states, then, the low income consumers can participate in the solar revolution by getting credit for at least a portion of their consumption by either purchasing a limited number of panels, or by entering into a PPA in states where allowed. But, this model is largely undeveloped across vast swaths of the country.

Solar illiteracy

This is another major impediment to propagation of solar among low income communities. Just like the situation of the poor people having unhealthy eating habits not for any reason other than the fact that they do not know any better, the lack of knowledge about solar and its moneysaving capabilities is another major negative factor affecting the widespread adoption of this clean energy mechanism. So, how do we overcome these impediments to ensure a solar future for all, including the residents of low income communities?

First of all, there have to be government policies and incentives exclusively targeted toward 'affordable solar'. One of the most successful government programs is in the housing area targeted exclusively toward low income customers is the LIHTC (low income housing tax credit) program.

In this program, almost 90% of the cost of building a home (or apartment complex) is recouped via tax credits which are soaked up by banks, insurance companies and other profitable enterprises. As a result, literally, hundreds of thousands of units have been developed in the US for low

income population, most of them of exceptional quality.

If a similar 90% incentive is offered to solar projects geared toward affordable housing communities, then, there will be a big boost in solar penetration levels in such communities. A similar incentive could be considered at the state level as well. Local governments could consider issuing 'Affordable Solar Bonds', exclusively targeted at bringing solar to low income residents.

Second, community organizations have to lobby for changes in utility policies directed toward universal net metering for low income communities and adoption of PPAs at least for low income communities. Whereas the idea of limiting the MW that can qualify for net metering is reasonable in view of grid capacity, and utilities staying in business for the long haul, the MW restriction has to be relaxed at least for low income communities. Also, virtual net metering must be allowed at least for low income communities, universally, across all states

And finally, the community organizations must take up the challenge of propagating the solar benefits, cost advantages, and environmental benefits to the low income residents. Good education regarding the prudent use of energy, safety habits with respect to solar installations and cost savings, due to adoption of clean energy, are an absolutely essential part of making solar affordable for all!

In this respect, the recent 'Solar in your Community Challenge' program by the Department of Energy is a good step in the right direction. The department is awarding a huge prize of \$1 m, as well as several small grants for companies to come up with innovative business models for propagation of solar in low income communities.

Solar Micronics is one of the proud participants in the challenge, and has been selected by the Department of Energy to participate in the final round of the competition. About 500 companies around the nation participated in the challenge. As part of its efforts, Solar Micronics is putting up a 1.3 MW system for a low income apartment complex of 175 units.

Combining geothermal with solar and using the most efficient HVAC system, the residents will be able to enjoy more than 50% saving in their utility bills in this complex of Net Zero Energy, and Net Zero Carbon. Training of the low income residents in the solar installation field is also part of the program. The final results of the competition will be announced in Oct 2018.

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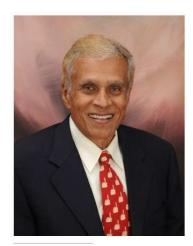


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ASK THE EXPERTS iii

Changes in US solar distribution



Dr Ganesan Visvabharathy

Dr Ganesan Visvabharathy, founder CEO of Solar Micronics Incorporated, shares his enthusiasm for providing clean energy to low income families with PES. The company has a wide portfolio, in a variety of areas and so brings a plethora of skills and expertise to the solar market.

PES: We are pleased to welcome you to PES Solar/PV. Would you like to begin by explaining a little about the background of your organisation and how you currently serve the solar/PV industry?

Dr Ganesan Visvabharathy: My background is electrical engineering, but I spent most of the past 27 years developing real estate. But, the great recession of 2008 made me focus on a burgeoning solar industry, with the bottom having fallen out

made me rocus on a burgeoning solar industry, with the bottom having fallen out of the real estate market. We started Solar Micronics in late 2009. Historically, we have focused providing clean energy for commercial and industrial sector.

Our operation base is Chicago, Illinois. Over the last years, Illinois hasn't been known for solar, but the recent fixing of the state's renewable portfolio (standards RPS) is changing all that.

Illinois is now poised to be the third largest solar market in US, with the recently announced changes to the renewable energy credit (REC) program. A bit more about us—our firm has a core set of professionals for design, and engineering, and procurement, but oftentimes, we hire installers on a per job basis.

All our installers are NABCEP-certified and have undergone the required OSHA training. As you know, NABCEP is the gold standard for installers in the US.

Solar Micronics has been blessed with a substantial order book with over 30 commercial installations pending, all of which will bloom when the state's adjustable block incentive (ABI) program comes into place.

We are not operating in just Illinois, but also in North Carolina, South Carolina, Massachusetts, and Rhode Island. In our efforts, we are ably assisted by Yolanda Contreras, our Vice President for Operations and Bill Zastrow, our design engineer.

PES: We have been reading about Solar Micronics' participation in the national contest for bringing affordable solar to housing residents, could you explain to us what this entails?

GV: This is a national contest sponsored by the Department of Energy (DOE) to spur on creative business models to bring the benefits of solar to low income residents. Several firms around the nation are participating in this challenge.

The DOE nurtures the teams by bringing various professionals, such as community organizations, solar designers, as well as finance experts to assist the teams in bringing out successful models. In this respect, this is truly an innovative, and trend-setting attempt.

But then, that is what the DOE is known for. They always push things to the edge to

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achieve their goals. We are excited to be one of the participants.

Our participation is particularly gratifying to me personally, since I am also a developer of affordable housing in many communities and I know only too well the challenges faced by my residents in paying their utility bills.

PES: What is special about Solar Micronics that is likely to make you successful in this endeavor?

GV: One of the advantages of our firm is that our skill set extends far beyond pure solar. Apart from solar, we do geothermal systems, we use building construction techniques that provide for super insulated buildings, we use the most efficient HVAC systems such as VRF (variable refrigerant flow) systems, etc. etc.

Thus, via a combination of these techniques, we are able to minimize the needs, for the renewable system to the lowest possible level. What sets us apart is the combination of our multiple areas of expertise to deliver the lowest cost product to our low income residents.

Our experience, from having developed over 4 million square feet of properties, stands us in good stead when we consider options for energy cost reductions.

PES: Is there any financial or other paricipation by the the state for the residents?

GV: In the US, incentives for renewable energy varies from state to state, and also from utility to utility within each state. Thus, we have 50 different solar policies adopted by the 50 states, and maybe, more than 500 different utilities have a right to offer their own set of incentives.

Many local governments also have the right to issue bonds for the purpose of promoting clean energy. States such as California, Massachusetts, and Pennsylvania are pioneers in this area and offer numerous incentives, although not specifically geared toward low income communities. This is why DOE is taking up this task to get working models to provide affordable solar to low income residents.

PES: Is this feasible for low income familes, what difficulties would you need to overcome?

GV: This attempt is not without its challenges. The purpose of the contest is to arrive at a business model that can be

replicated all over the nation irrespective of local governmental policies or incentives.

Thus, it requires the joint efforts of real estate developers, building contractors, solar installers, solar engineers and local community organizations to come up with a viable plan.

If a policy change is to occur, it has to happen at the local level, and not at the federal level, since the latter is a monumental task. Hence, the need for local community organizations' participation in any effort to bring solar to low income residents.

PES: How long would it take for the residential user to benefit financially from this project?

GV: Fortunately, the residents can enjoy the benefits as soon as the system is energized. Usually, this process can take anywhere from six months to a year!

PES: How different is working in the domestic secotor to the industrial sector from a company point of view?

GV: I must say it is much easier to work in the industrial sector, since there is only one customer and the interconnection process is much simpler. No need for virtual net metering, as long as we have the space to produce the solar power.

In the housing sector with multifamily components, we have 200 customers, with no ability to connect just 5 panels, say, to each customer's meter. Thus, this makes life a lot more complicated.

PES: What makes Solar Micronics stand out from the competition and how do you intend to stay one step ahead?

GV: We are an innovative company, not just in technical terms, but in business models as well. For your information, I am the inventor of the Airline Overbooking Compensation plan, which is now the accepted and mandated practice not just in the US, but throughout the world.

Likewise, if my business model is successfully implemented in the State of North Carolina and accepted by the Department of Energy, it can serve as a national model.

In our program, we combine the benefit of cost savings with solar installation training for residents so that they can go out and get jobs in this booming industry and get themselves out of poverty.

This is where community organizations come in, since they have access to space and local support in many instances, thus enabling us to conduct classes, either full or part time. Many times, these classes are conducted in a building space donated by a local philanthropist, or even a community center that has been built by the city for its residents.

PES: Do you have any other projects on the horizon?

GV: Yes, we have over 30 commercial and industrial projects in the pipeline, and 3-4 utility scale projects waiting to happen.

Once our revised 'Renewable Portfolio Standards' takes effect in a few months, solar will be booming in Illinois.

RPS stands for the mandate that each state has adopted to promote renewable energy. For instance, Illinois has to procure 20% of its power needs from renewable sources by the year 2025. Hawaii has to procure 100% of its power needs from renewable sources by 2050 and so on.

PES: Speaking from a global standpoint, which geographical regions do you anticipate being key for you as we move to the end of 2017?

GV: At a global level, one of the hottest markets today is India and we are looking at certain Southern States for large scale solar deployment.

PES: Now that BREXIT is a reality do you think this will have any impact on the market?

GV: Not at all. The rest of Europe will work with redoubled vigor to make solar happen. The high utility costs prevalent in Europe will automatically act as a boost to solar development. Additionally, BREXIT itself is being re-evaluated by British citizens and may still not happen!

PES: Has 2017 been a good year so far for Solar Micronics and how are things looking for the end of the year?

GV: Yes, this has been a good year, but next year, it is going to be even better, with several Eastern States offering so many new programs. It is now the States' responsibility to make solar happens, since the Feds will offer no help, under the new administration, but the States are up to the challenge and it is gratifying to note that.

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