1/6/2017

Solar in Your Community Challenge
Project/Program Worksheet

We encourage you to submit this completed worksheet as your three-page written application. This information will not be made public and you may include proprietary information. However, if you do so, please clearly mark which information is proprietary.

Section 1: Goals & Impact
What is your solar project/program? Why is your solar project/program important to your community?

The Solar in Your Community Challenge Project Team of the Kerrville Public Utility Board (KPUB) has developed a plan that will appreciably expand its solar market by including non-profit organizations and Low to Moderate Income (LMI) households that otherwise would not be able to afford this form of green energy installation. Through a novel approach partnering with local non-profits, KPUB proposes to utilize various sites throughout its service territory to build one, or more, community solar projects sized at .99 MW AC. Distributing the output from these solar arrays to the non-profits and to the LMI households is in keeping with KPUB'S mission to be a "provider of reliable, high-quality utility services at the lowest reasonable price" to 22,500 customers in Kerrville, TX and the surrounding communities. By allowing LMI and community non-profits to pursue solar through a virtual net metering program, KPUB's team can support their community and their customers by helping them reduce their monthly electric bills while promoting green energy in, and around, Kerrville, TX.

What are the barriers to solar access that your team will address? How will you address them?

KPUB's Project Team seeks to overcome several barriers relating to solar access for LMI customers. The primary encumbrances targeted will be cost of solar and placement issues related to either apartment living or lack of home ownership. These will be addressed by partnering with local non-profits through either team membership or through ancillary programs to leverage their land availability and existing desire to pursue distributed solar. By utilizing land already available to these non-profits, KPUB will work towards making solar more accessible by lowering or eliminating land costs and providing economies of scale that rooftop solar does not support.

List your top three goals to achieve within the period of performance and how you plan to quantify each one.

Through participation in the Solar in Your Community Challenge, the KPUB Project Team will:

1. ***Enroll LMI households*** in programs with direct assignment of output from any community solar site(s) supported by an estimated 1,100 MWh annually or 500 kW AC (per 1 MW AC project) of output from developed sites and projects. This will occur through partnerships with local landlords and property owners who will apply to have their property be eligible for a new rate class supported by solar. To qualify, property owners will need to reasonably demonstrate (e.g., show that the development is approved for the Texas Housing Tax Credit, Multifamily Direct Loan Program, etc.) that targeted or occupying tenants are low to moderate income. To further reduce energy costs for the LMI households served by this new rate, the Team plans to evaluate the most effective way to entice property owners to leverage LIHEAP and other available energy efficiency grants as a condition for eligibility for the new LMI rate.
2. ***Encourage renewable and solar energy use by local non-profits*** through facilitating project offtake by siting projects on available land owned by the non-profit and reducing the cost of energy. The cost reduction would occur through participation in the community solar project sited on their land and combined with virtual net metering, allowing the non-profit to take advantage of economies of scale they would not otherwise have had. The team will evaluate the success of this goal through qualitative methods with the target partner and customer base.
3. ***Reduce and maintain wholesale power and transmission expenses*** incurred by KPUB by taking advantage of provisions and clauses within existing wholesale power supply contracts and existing Electric Reliability Council of

Texas (ERCOT) market protocols. This will be quantified and evaluated through forecasts and post-hoc analyses of credits and debits relating to total wholesale power expenses.

Benefits can be divided into the following categories:

a. Peak shaving
    i. Avoids peak demand costs for Transmission
    ii. Avoids Congestion Revenue Right purchases
b. Energy savings
    i. Avoids on peak higher power purchase prices
c. Environmental credits
    i. Produces or avoids the cost of Renewable Energy Credits

Estimate <u>at least three</u> of the following impact metrics you plan to achieve by the end of the Challenge:

- Number of LMI household customers served = 184 LMI households are estimated to directly benefit from this program
- Number of non-profit organizations served = Based on interest, available remaining offtake, and size of potential participants, we estimate that between one to five potential non-profits will participate.
- Average annual electricity bill savings per customer = Each 1MW system, 500kW of capacity, or approximately 1,100 MWh annually will be available to serve 184 LMI customers. KPUB's current residential rates are approximately $0.08 per kWh, and based on historical data, calculate that rate will escalate 2% annually. We anticipate pricing the LMI solar offtake at $0.075 per kWh with no escalation for 25 years. Over the 25-year life of the project, each LMI household will save approximately $165 per year, or a total of $4,124.54 over 25 years. **The entire group of 184 LMI customers will save $756,166 over 25 years.** For LMI households with energy efficiency improvement opportunities, additional savings are possible. The remaining 500kW of capacity, or approximately 1,100MWH annually will be available to serve 1-5 non-profit customers. KPUB's current residential rates are approximately $0.065 per kWh, and we assume that rate will also escalate 2% annually. We anticipate pricing the non-profit solar offtake at $0.056 per kWh with no escalation for 25 years. **Over the 25-year life of the project, the non-profits will save approximately $20,107 per year, or a total of $502,666.**
- Private capital secured to finance solar projects = We anticipate executing a purchase power agreement (PPA) with a project developer who will partner with a tax equity investor to maximize the benefits of the Investment Tax Credit.
- # New jobs created =
- Other indirect impact (e.g. solar visibility, training, education, community building) = Through developing this project, solar visibility will increase within the community, thereby creating additional interest in solar energy beyond the original targeted customers of this project. Community connections between KPUB, non-profits, the City, and various community members will be strengthened with the emerging partnerships required to facilitate the mutual goals. Finally, KPUB and its team seek to provide educational opportunities with these non-profits, affording students and community members to experience and learn about an increasingly prevalent source of energy in Texas.
- Other (Define) = Reduce utility system wholesale power and transmission expenses – previous KPUB analysis indicates that solar energy will save the utility system $0.026 per solar kWh delivered directly to the distribution system by avoiding ERCOT wholesale market costs. The KPUB rate payers will save $57,200 per year for each 1 MW system that we install.

If possible, estimate the size of LMI/non-profit solar (in MW) that is currently deployed in your community. If known, please provide a breakdown by financing model (e.g. PACE, PPA).

Although KPUB offers net metering, low rates have discouraged the installation of solar systems in our community. The first 1 MW installed under the Solar in Your Community Challenge will increase the total solar installed in our community by over 5 times and take LMI households from zero households served to the most number of households. We are not

aware of any LMI solar installed in our service area. We have 8.32 kW of solar at three of local school districts and at the KPUB office for demonstration/educational purposes. Texas Parks and Wildlife has 54.56 kW of solar installed within our service area. Other commercial installations total 30.7 kW. Finally, there are approximately 20 other residential systems totaling 125.6 kW. Currently, the total of solar installations on the KPUB system is 219.14 kW or 0.22 MW.

Estimate the size of LMI/non-profit solar projects (in MW) that could be deployed in your community by 2020 because of your participation in this challenge.

We expect our community to deploy between 1 to 3 MW before 2020. Applying the proposed model, KPUB and its team will be able to serve approximately 20% of area households living in poverty with 3 MW of installed solar capacity. The impact of this model is significant. As a small utility that peaks at 150 MW serving 22,500 customers, KPUB can serve 2% of its load and 2.5% of its customer base with solar energy produced within its native service territory.

If applicable, what is your goal for improving the financing of your solar portfolio?

At this time, KPUB, as a municipally owned utility with a non-competitive service territory and strong credit rating, will likely pursue a PPA arrangement for any solar purchased through this program. Through a PPA, the developer will be responsible for the financing obligations, with those costs being passed through to KPUB and its customers on a fixed dollar per MWh basis. With a PPA secured for all of the offtake, it allows the developer to pursue better financing options due to the low risk associated with the project.

Section 2: Innovation & Plan
How is your approach unique, innovative and creative? Please be as specific as possible.

Among several key points detailed below, the proposed project is both unique and innovative in that it will provide access to LMI households and non-profits within Kerrville, TX and the surrounding community with little to no costs to potential offtakers. KPUB will partner with a solar developer to build a new solar site and contract via a PPA for the entirety of the output from the facility. With this arrangement, KPUB, its partners, and its customers will have minimal to no upfront capital expenses. This will allow for greater participation by non-profits and LMI households who otherwise would not have the opportunity to offtake from solar projects or facilities due to the high initial capital expenditure.

With the entirety of the capacity from the solar development available to KPUB, 50% of the energy will be allocated to directly benefit LMI households. The program that will be supported through this grant is the creation and application of an LMI rate class. Currently, KPUB does not have any rate class that benefits LMI households directly. Because of their socioeconomic status, housing available to LMI households tends to be less energy efficient and highly dependent upon electricity for heating, cooling, and cooking needs. With the proposed LMI rate, KPUB will offer a set number of kWh at the price of solar from the facility, exempting the customer from system distribution and energy charges for those kWh. While KPUB already has a low cost of power, initial expectations and estimates suggest that the cost of solar will be below the combined system distribution and energy costs. This rate would allow for the set service by the solar kWh to be first served to the customer, ensuring a reduced cost to the account.

The aforementioned LMI rate class will account for 50% of the offtake from the solar projects supported with any grant funding. The remainder of the solar offtake will be allocated to non-profits in the community. Because a number of non-profits in KPUB's service territory have significant land holdings, there is interest by both KPUB and several non-profits to either develop or repurpose land for a community solar development. Depending on the potential partner with whom KPUB sites the project, KPUB will either allocate a portion or all of the offtake to the hosting non-profit. In the event that the hosting non-profit cannot take the entirety of the remaining 50% of the energy from the project, KPUB will pursue community solar contracts for the remaining project capacity with other non-profits in the community.

Several local non-profits are also looking to expand service to LMI households through bill pay assistance programs using support of solar output from this project. Collaborating non-profits would receive a set output of energy from the solar

project at the cost of solar rate. None of the energy that the partnering program receives would be dedicated to self-use. Instead, the energy could be allocated by the non-profit to individual customers to support their need-based bill assistance programs. By lowering the cost of energy to the non-profits through replacing the system energy rate with the cost of solar, partnering entities can either opt to expand their bill assistance programs or reallocate funding to other community focused programs, all while promoting solar within Kerrville.

KPUB's project team is dedicated to allocating the entirety of this 999 kW project to either LMI households or non-profits heavily involved and invested in Kerrville. KPUB believes it can provide a cost reduction and open access to these customers who are traditionally underserved by solar. Moreover, KPUB believes that it can do this, with the support of the Solar in Your Community Grant, at minimal cost to the rest of the system. In consideration of all these points, we feel that we have taken a truly innovative and unique approach to reach energy saving goals for the community that otherwise might have been unachievable.

How have you or others tested your approach in the past? How will you avoid pitfalls or build on previous successes?

While researching for this project, the Project Team was unable to find any projects that directly targeted LMI or non-profits in this way. However, there were several projects inspired by other programs that involved either virtual metering or low-income rate structures.

The low income economy rate was inspired by a rate class implemented by San Bernard Electric Cooperative (SBEC), who provides a limited amount of energy to a very select group of customers at no cost. Their Board supports this rate class, but only so far in that it is reserved for low usage customers with a very limited income; the effect being there are very few customers who are eligible to be in the rate class, particularly with hot Texas summers. However, the basic model for this rate class can work well to promote solar with the target LMI group. To do this, there were a few modifications that needed to be made to address issues with the SBEC model. The first of these would be to expand eligibility for the customer class. KPUB will likely opt to set the rate class on an income requirement basis only, rather than incorporating an additional kWh cap for participating customers, as well. This will be finalized as the project and program progress due to the intricacies involved with developing a new rate class and evaluating its impacts on other rate classes. The second revision to the SBEC model that needed to be made was the replacement of free energy with solar energy. This change addresses KPUB Board concerns relating to the financial strain of providing a new rate class with solar energy. To ensure customers in this new rate class receive solar energy as well as a bill reduction, KPUB will ensure that the first kWh billed to the customer will be at the cost of solar rather than the system rate. Thirdly, KPUB will work primarily with landlords and property owners to identify customer accounts eligible for the rate. SBEC's program has very little visibility due to a lack of promotion and education for individuals that would benefit from the rate. By working with a developer or property owner, KPUB can readily identify new or existing LMI developments whose tenant could qualify for the rate. Because the cost of solar is expected to be cheaper than the system rate, developers and property owners are willing to partner with KPUB to champion this cause, as it helps to make their housing more attractive due to the lower cost of energy. Instead of relying on an individual to independently enroll in the rate class with no initiative, the property owner and Utility will instead take the lead, educating, promoting, and encouraging solar participation. Furthermore, as KPUB staff and management develop this rate, it will provide regular updates to and receive regular input from the KPUB Board to ensure the proposed rate is implemented as designed.

The site hosting by non-profits may also prove to be a challenge. Because the current conceptualization of the project (PPA with the developer) will involve three parties in the construction of the facility – one to develop the project, one to host the site, and the other to interconnect and purchase energy – there are myriad opportunities for communication to fail or cause a project delay. To help alleviate this potential pitfall, KPUB has already reached out to possible partners to site the land. KPUB is willing to lease the land from the non-profit so that the construction and interconnection process goes smoothly.

At this time, as the interconnecting utility, sole offtaker of the site, and selector of any solar developer, KPUB does not foresee any significant issues relating to the interconnection of the solar facility to the grid.

1/6/2017

List the top three enabling factors that allow your approach to scale. What are limiting factors that would make scaling your approach a challenge?

This project structure can be scaled and deployed across other utilities because it is administered by the operating utility, requires minimal to no capital expenditures on the part of the program's beneficiaries with minimal cost to the utility, and builds on existing community programs or rate mechanisms. However, there could be potential opposition to promoting programs that benefit LMI households and non-profits, particularly when there is not a justification through cost of service or related rate development methodologies.

KPUB is not unique in that it is both the distribution utility and the load serving utility, particularly for residential customers. While there are areas where this function is separated throughout the country, including Texas, a utility that serves both load and operates the distribution system is well positioned to drive solar development in its service territory. With a combined distribution and load serving utility, promoting solar, particularly community solar models, allow for the utility to champion its program and cause for development. This can be outside of any regulatory mandates at the state or federal levels, allowing the process to be driven by stakeholders. Furthermore, KPUB is a member of both the Texas Public Power Association and American Public Power Association, allowing successful programs developed around LMI and non-profit solar to be promoted with utilities with similar business structures with strong ties to their local communities.

The requisite capital expenditure for a variety of products often makes solar inaccessible, particularly to the groups targeted by this grant program – LMI households and non-profits. However, by minimizing the capital costs to participants and implementing amenable rate structures, customers can benefit through reduced bills, while utilities will still generate revenue through the cost of solar. Instead of losing revenue from solar generated onsite and behind the meter, the utility still recovers revenue relating to the sale of the solar energy to its end customers.

Many utilities already have rates and other programs that can assist low income households as well as relationships with non-profits for bill assistance programs. KPUB and its project team's proposal build on the already existing structures and relationships to implement and champion solar among these targeted groups. This project and its associated programs are based on already accepted practices by many utilities across the country; it simply uses solar to augment and expand the viability of these programs.

Some limitations to this program include the cost of the program and cost of service and rate theory. The first of these is that the utility can only support so much of the cost of the program under its already existing rate structure. While the cost of solar is recovered under the proposed program, the Utility is still losing some revenue to support its distribution system. 1-3 MW of solar will not significantly impact system revenues under the proposed rate structures, as it is within standard swings in revenue related to system sales, but beyond that amount, the Utility may have to burden other customers with increased rates to support the reliable delivery of energy. This feeds into the second limitation surrounding cost of service and rate theory. Good utility practice, which KPUB strives to maintain and exceed, dictates that rates and rate classes should be justified based on sound cost of service and rate theory. While there are different methodologies to assign costs to various rate class, very few account for social externalities that would encourage the implementation of special rates for specific rate classes, particularly where the Utility cannot receive direct benefits relating to the accounted externalities. Fundamentally, the rates for LMI and non-profit customers must be created with the support of the Utility, its management, and its governing body, recognizing the social benefits to these customers, that the Utility will not receive direct benefits, and that traditional cost of service and rate making theory cannot fully support the development and implementation of these rates.

1/6/2017

What type of financing do you anticipate using and how will the majority of your finance needs be met?

KPUB and its project team intend to utilize a PPA to purchase solar energy from a developer whose site is within KPUB's service territory; this project will not require any financing on the part of KPUB's project team. The cost of offtake will be passed along to participants within the program as the cost of solar.

What is your deployment plan for the next 18 months?

- Month 1
  - KPUB coordinates with non-profits to identify potential solar development sites
  - KPUB secures site commitment from partnering non-profit
- Months 1-3
  - KPUB conducts RFP with solar developers for partnership
  - KPUB begins contract negotiation with RFP finalist
- Months 4-16
  - Partnered solar developer builds and completes project
  - KPUB develops and refines rates and tariff structures
    - KPUB educates non-profits and property owners on new rate structures
      - Property owners and non-profits enroll accounts in new rate structures
- Months 17-18
  - KPUB takes offtake from solar site
  - KPUB deploys new rates and programs for LMI and non-profit customers

How many LMI customers and/or non-profits do you plan to reach?

With a 1 MW system we plan to reach 184 LMI customers and one to five non-profits.

How many MWs in solar projects will benefit LMI customers and/or non-profits? By when?

We plan to deploy at least 1 MWs in solar projects to benefit 184 (LMI households) and one to five non-profits organizations before June 2018.

How large will your average solar project be?

Our target sized solar project would be 999 (kW) and our first project will be fully operational by April 2018. Due to siting challenges, we may consider two or more smaller sites to accomplish the 1 MW goal. We do not anticipate any system being smaller than 200 kW.

What are your top three plan milestones? How do you plan to measure your progress towards each milestone?
Milestone #1:

We will identify site development as milestone #1, which will be measured by the start of construction at the site.

Milestone #2:

We will select a partnering developer as milestone #2, which will be measured by executing a purchase power agreement with the developer. The developer will be able to finalize financing arrangements upon execution of the PPA.

1/6/2017

Milestone #3:

We will complete and implement tariffs and policies as milestone #3, which will be measured by the KPUB Board officially approving all rate structures and program policies associated with the aforementioned programs for this project. The implementation of these policies and tariffs will officially shift project beneficiaries into their respective programs once the project is completed.

Section 3: Team & Expertise
Tell us about your team expertise and composition.

KPUB's project team is currently comprised of KPUB and Schneider Engineering; we anticipate adding team members as programs supported by the project are finalized and implemented.

- KPUB is a municipally owned transmission and distribution utility founded in 1987 to provide reliable, high-quality utility service at the lowest responsible price to Kerrville, TX and the surrounding area; it serves 22,500 customers throughout its 146 square mile service area with peak of 150 MW. The Utility is a corporate member of the Electric Reliability Council of Texas, the Texas Public Power Association, and American Public Power Association. The Utility manages several wholesale power supply contracts to meet current and future energy needs for its customers. As a municipally owned utility, KPUB's Board and the Kerrville City Council approve KPUB's rates and policies. KPUB meets or exceeds applicable ERCOT, Public Utility Commission of Texas, Texas Reliability Entity, and North American Electric Reliability Corporation protocols, rules, and standards.
- Founded in 1991, Schneider Engineering is a consulting firm providing services to a wide variety of clients, including municipally owned utilities and electric cooperatives. Services provided to customers include distribution system planning, generation design and interconnection, substation design, and business services, including regulatory support, financial services, project management, and general electric market support. KPUB and Schneider Engineering have developed a strong, collaborative relationship in areas relating to engineering, wholesale power supply, and the ERCOT market.

Why is your team uniquely positioned to succeed?

This team is uniquely positioned to succeed in that KPUB is exempted from several regulatory hurdles, allowing the Utility to design and implement experimental projects and program as discussed in this application. Because of KPUB's status as a municipally owned utility, it has longstanding relationships with numerous non-profit organizations through whom KPUB can either partner with for offtake or more effectively target LMI customers. Moreover, KPUB management and staff have the full support of their Board to pursue programs and projects that meet the core of KPUB's mission – to provide reliable energy at the lowest responsible price. This project supports KPUB's mantra as it helps maintain system revenue and provides long term price stability. With Schneider Engineering's expertise in project management and evaluation, the ERCOT market, and retail rate programs and designs, the project and programs proposed by KPUB's team will be successfully implemented.

How much funding have you secured or plan to secure from other sources? Justify why your team needs DOE support.

Because of the structure of this project, KPUB has not secured any funding, nor does it plan to at this time because it is pursuing a PPA arrangement for the solar energy. KPUB is proposing to allocate funds related to this grant for program and rate development, engineering analysis and required distribution system improvements that will need to be implemented to support 1 MW AC being injected into the distribution system. Current sites under consideration are at the end of feeders with limited offtake potential along the feeder. Studies and analysis will be needed to determine the extent of any upgrades needed to accommodate the implementation of the solar facility. These may include facility upgrades to accommodate the reverse flow of energy from the site to the rest of the grid. By using grant funding for these upgrade studies and potential projects, KPUB can help further reduce the cost of solar to LMI and non-profit offtakers, since minimal upgrade costs will be assigned to the solar development, itself.

1/6/2017

Please describe any additional resources you plan to leverage, including other Federal funds.

KPUB may utilize the services of an outside rate consultant to model and evaluate the impact of the proposed LMI rates into its system tariffs. The Technical Assistance vouchers available through Solar in You Community Challenge will help support this activity.

Please list your key team members and provide a link to their website or LinkedIn profile.

- KPUB - http://www.kpub.com/Home.aspx
  - Mike Wittler
    - https://www.linkedin.com/in/mike-wittler-9345ba76
  - Tommy Nylec
    - https://www.linkedin.com/in/tommy-nylec-40b6299
  - Jill Sadberry
    - https://www.linkedin.com/in/jill-sadberry-98b72871
- Schneider Engineering - http://www.se-texas.com/
  - Steve Moffitt
    - https://www.linkedin.com/in/steve-moffitt-4422087
  - Ramsey Cripe
    - https://www.linkedin.com/in/ramsey-cripe-52a91844