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National Community Solar Partnership: Technical Assistance Webinar

Greg Leventis, Naïm Darghouth, Alexandra Aznar, Kyle Fricker

May 7, 2020

https://www.energy.gov/eere/solar/national-community-solar-partnership

Today's Agenda

- Welcome
- National Community Solar Partnership (NCSP) Overview
- Technical Assistance (TA) Overview
- Examples of TA Engagements
- How to apply for NCSP TA
- Q&A

Welcome

Today's Webinar

- All participants are muted so everyone can hear
- Please use the Q&A box to submit questions
- Slides will be posted on DOE's National Community Solar Partnership community platform after today's webinar: https://ncsp.mobilize.io/main/groups/39758/lounge/files?path=%2FTechnical%20Assistance

NCSP Overview

National Community Solar Partnership (NCSP)

Interested in Joining the Network?

Visit:
https://ncsp.mobilize.io/registrations/groups/39758

Email: community.solar@ee.doe.gov

The NCSP is a coalition of community solar stakeholders working to expand access to affordable community solar to every American household by 2025.

Goals

- Make community solar accessible to every US household by 2025
- Ensure community solar is affordable for every US household
- Enable communities to realize supplementary benefits and other value streams from community solar installation

Approach

- Network Infrastructure: access an online community platform, virtual and in-person meetings, webinars and other tools to engage with DOE staff and peers.
- Technical Assistance: apply for technical assistance resources from DOE, its National Laboratories, and third-party experts on local challenges.
- Collaboration: join multi-stakeholder teams with specific goals to address common barriers to solar adoption through peer exchange.

Technical Assistance (TA) Overview

TA Overview: Eligibility

- Eligibility for NCSP technical assistance:
  - Must be an NCSP partner. You can register to be a partner here: https://ncsp.mobilize.io/registrations/groups/39758
  - Individuals must be citizens or permanent residents of the United States; Public or private entities must be legally formed in and maintain a primary place of business in the United States.
  - TA application is not for duplicative work (for example work happening in another DOE project)

TA Overview: Providers

- NCSP technical assistance will be provided by subject matter experts from:
  - Lawrence Berkeley National Laboratory
  - The National Renewable Energy Laboratory
  - Third party subject matter experts

TA Overview: Areas of TA Available (1)

- Co-location technical challenges or valuing the benefits
- Customer acquisition, subscriber management, and billing
- Integration with existing state/NGO/utility energy programs
- Integration with other technologies
- Outreach and engagement with governments and public officials
- Outreach and engagement with low-income communities/households
- Outreach and engagement with utilities

TA Overview: Areas of TA Available (2)

- Program and project evaluation, in particular existing pilot programs
- Program design
- Project finance
- Project planning and development
- Regulatory issues
- Resiliency of energy systems, grid impacts, and interconnection issues
- Solar modeling, analysis, and tool development
- Workforce development

TA Overview: Types of TA Available

- Consultation
- Presentation(s)
- Support for workshops or other meetings
- Technical review of proposed plans or documents
- General information/education to inform development of community solar initiative rules, guidelines, etc.
- Technical analysis and modeling of potential program costs, benefits and impacts
- Exploratory and foundational research
- Data analysis, evaluation, and model/tool development

TA Overview: Timeline

Registered NCSP Partners can apply for direct technical assistance to help accelerate their community solar goal(s)

TA Announcement	Today's webinar on TA Application and Review Process	TA Applications Due	Selected Applicants Notified
Wednesday, 4/29	Thursday 5/7	Friday 5/29	June 2020

TA Overview: Review Process

- **Step 1:** Assessment of applications based on review criteria (next slide)
- **Step 2:** Applications that are selected will be matched with TA provider (based on requested TA and provider expertise)
- **Step 3:** Partner is notified and begins work with TA provider

TA Overview: Review Criteria

1. Overall merits of the application – The request is well-defined, forward-looking, specific, and within the scope of the program; the requestor is well-positioned to address their challenge and has identified/involved the necessary partner organizations.
2. Impacts and replicability – TA has the potential for significant impact in advancing the requesting party's community solar project; TA products show potential value and replication in similar and other jurisdictions.
3. Alignment with NCSP Goals – The request is well aligned with the goals of NCSP (see NCSP Factsheet); timing of request aligns well with requestor's ongoing activities and locational context; the proposed schedule allows for sufficient time to address the request, and the requesting party is likely to use the technical assistance in the near-term.

Examples of TA Engagements

Energy Technologies Area Lawrence Berkeley National Laboratory

Connecticut Technical Assistance: Informing Solar Regulation through Analysis

Naïm Darghouth
Lawrence Berkeley National Laboratory

May 2020

This analysis was funded by the Office of Electricity of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.

Introduction

- Berkeley Lab received funding under the Public Utility Commission Analytical Support (PUCAS) project from DOE
- Berkeley Lab was selected for TA in 3 states: Indiana, Maryland, Connecticut
- High level topics for technical assistance:
  - Energy regulations, program design, Solar modeling, analysis, and tool development
- Deliverables:
  - Technical memos, Briefings, Presentations (remote)
- Process:
  - Establish statement of work – deliverables and timeline
  - Initial 3 hour meeting with PUC staff to discuss context of work, work done to-date, how TA work would feed into regulatory process
  - Biweekly meetings with PUC staff
  - Deliver product + remote presentation and discussion

Context

- Berkeley Lab provided analytical support to the Connecticut Public Utilities Regulatory Authority (PURA) on the implementation of section 7 of Connecticut Public Act 18-50 (PA 18-50), “An Act Concerning Connecticut’s Energy Future.”
- In particular, section 7 of PA 18-50 calls for changes in tariffs related to the compensation of behind-the-meter PV, including a revision of net metering rules

Net metering

PV generation can reduce customer’s billed load, regardless of timing

Net billing

PV generation that is exported to the grid is compensated at a different rate, usually lower than the retail rate

Context

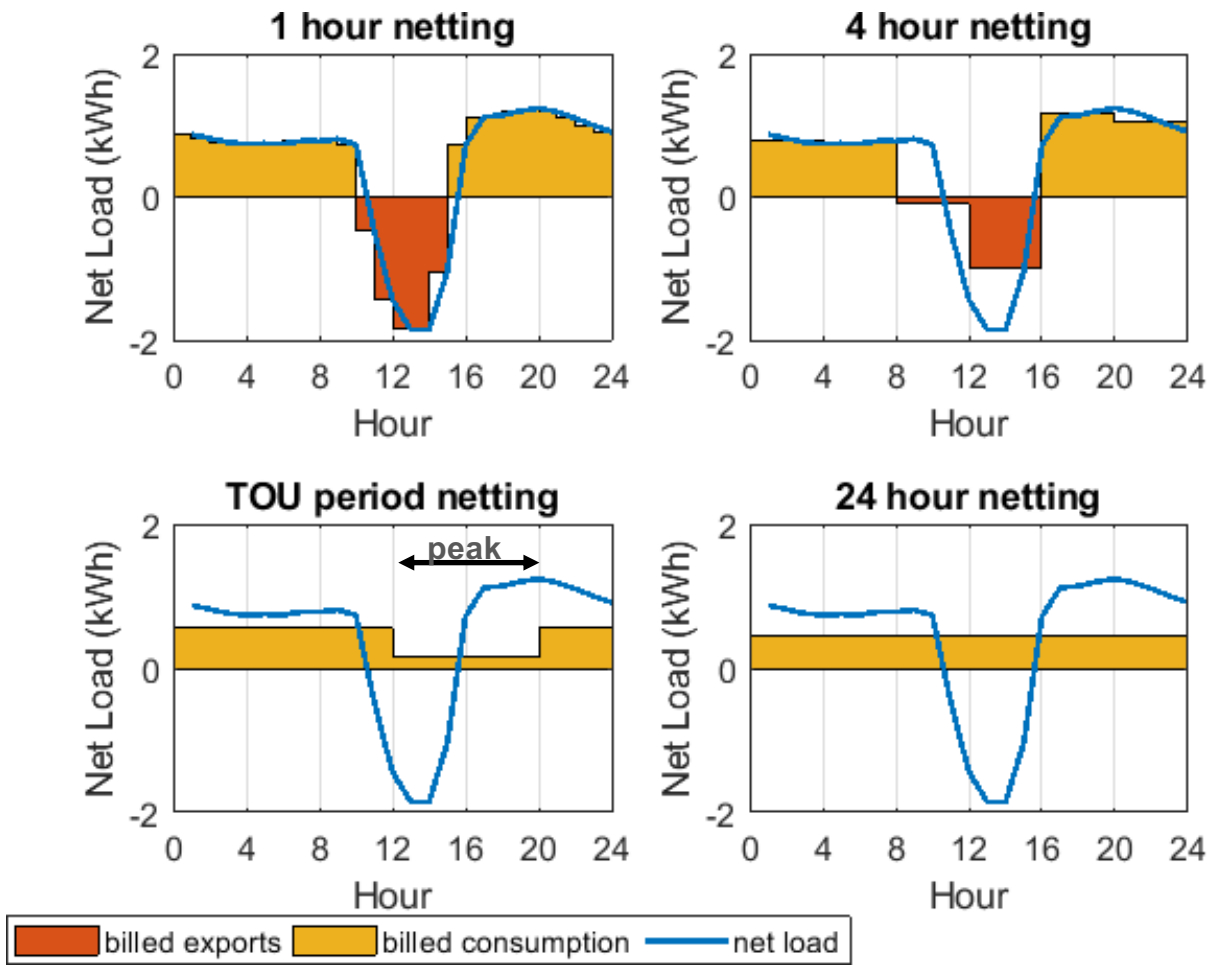
- Topic was specific to details of net billing implementation
- The netting frequency – used to determine PV exports billed – is to be reduced from one year (under current net metering regulations). PA 18-50 allows for the use of either a daily, sub-daily, or real-time netting frequency which is to be determined by PURA
- PURA established Docket No. 18-08-33 “Proceeding to Establish Section 7 of Public Act 18-50, Procurement Plans and Related Tariffs and Other Issues”
- This analysis considers the implication of the choice of netting frequency on (a) the amount of kWh’s metered as exports and (b) the payback time for behind-the-meter PV systems

Objectives

To understand the impact of netting frequency on the billed PV export levels in Connecticut for a large variety of residential, commercial, and industrial customer load shapes, PV system sizes, regions, and PV system orientations

To quantify the impact of the netting frequency on the payback times for a number of Eversource and United Illuminating residential, commercial, and industrial retail electricity rates

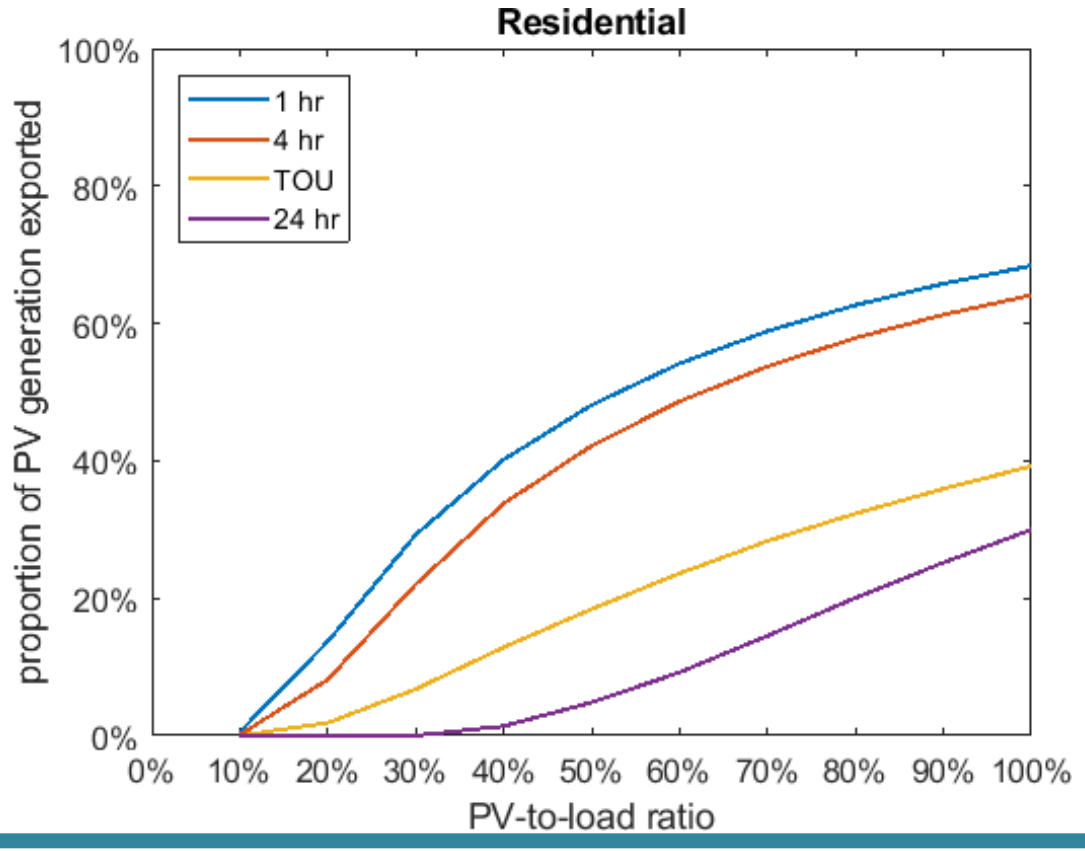
Netting frequency example



- This example shows a customer's net load with PV with the billed consumption and PV exports for the four netting frequencies considered in this analysis
- Areas shown as net consumption are billed at the customer's underlying retail rate; billed exports are compensated at a predetermined export rate
- Hourly netting leads to the most billed PV exports as the short netting period does not allow net consumption to offset net grid injections other than hours which contain both net consumption and net grid injections

Netting frequency greatly impacts billed PV exports for residential customers

Figure shows proportion of PV exported for increasing PV system sizes for various netting frequencies for median customer with South-facing PV panels



- Each line represents the median PV export percentage over one year using all residential profiles from both utilities
- Exports billed are highest with hourly netting and lowest for 24 hour netting
- Differences in PV exports are highest for PV systems sized to meet more than 40% of annual customer load

Impact of billed PV export levels on the customer economics of PV

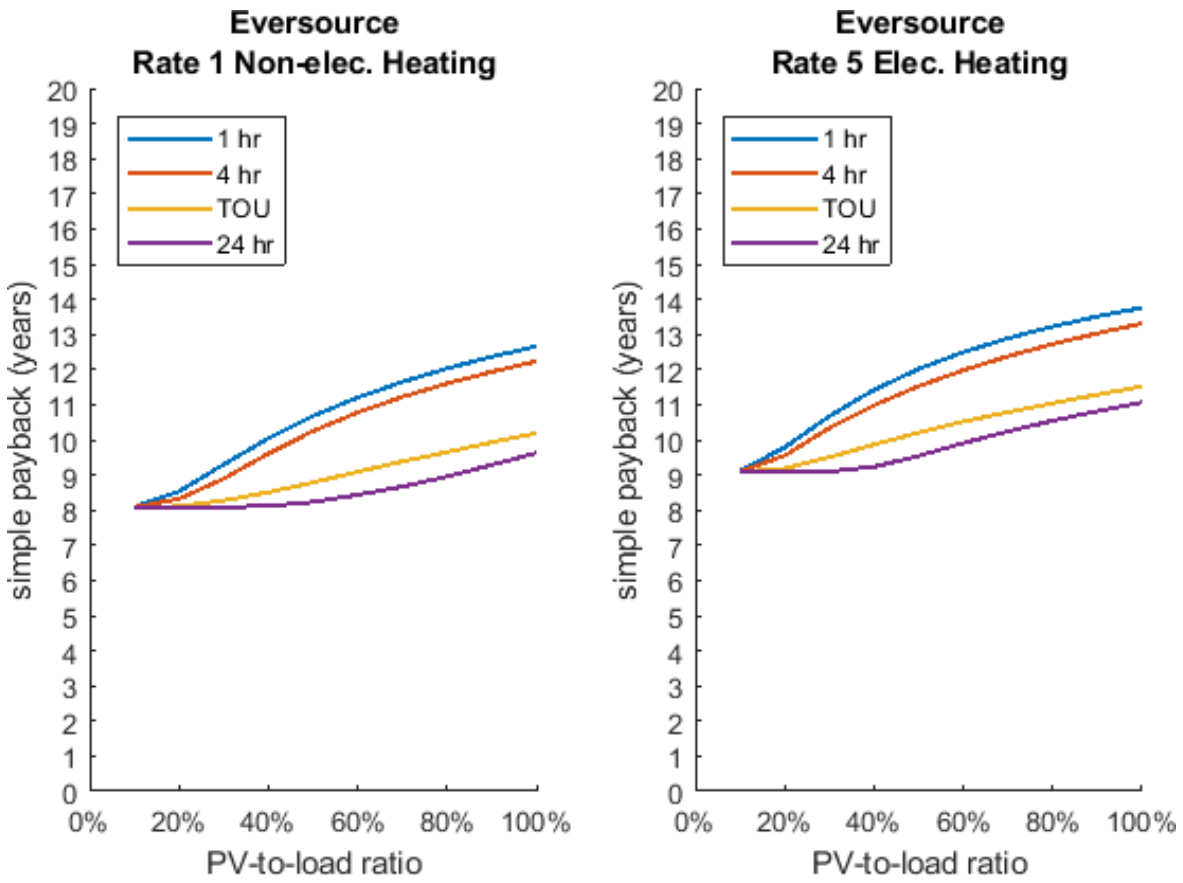
Quantifying the impact of billed exports on the customers economics of solar

- How do various netting frequencies impact the customer economics of solar?
- To determine this, we calculate the customer bills for each customer and PV system combination, to calculate the average bill savings (in $/kWh) and simple payback time

$$Simple\ payback\ time(yr) = \frac{total\ upfront\ cost\ of\ PV\ system\ (\$) - incentives(\$)}{average\ bill\ savings(\$/kWh) \times annual\ PV\ generation\ (kWh/yr)}$$

Netting frequency can greatly impact PV system payback time for Eversource residential customers, particularly for larger systems

Figure shows median payback time vs. PV system size for the South-facing PV systems in our sample



- PV system payback time is significantly greater with hourly netting than with 24 hour netting, increasing payback by over 3 years for most systems over with 50% PV-to-load ratios
- Increasing payback times with PV system size for all netting frequencies, though differences highest for hourly netting
- The difference in payback times is not as significant for smaller PV systems
- The payback time for annual net metering equivalent to that of other netting frequencies for very small PV systems without any exports (9.5-10.5 years)

Conclusions

Conclusions

- Larger PV systems can export a significant fraction of their PV generation – over 60% for PV systems with a 100% PV-to-load ratio – under hourly netting for most residential and commercial customer
  - By extension, instantaneous netting would lead to an even higher proportion of PV generation exported
- Longer netting periods lead to lower percentage of billed exports than hourly netting, although large systems still export over 25% of their PV generation for most residential and commercial customers with 24 hour netting
- Larger PV systems have the highest PV payback times regardless of netting frequency
- Hourly netting – and by extension, instantaneous netting – can lead to significantly higher PV payback times than 24 hour netting for residential customers

Next Steps for LBNL's TA work with CT

- Changes in CT legislation (HB 5002)
  - Effectively extends net metering through 2021 and pushes back the implementation of net billing
  - Requires PURA and the Department of Energy and Environmental Protection (DEEP) to initiate a joint a value of DER study
- Continued work with CT PURA for Value of Distributed Energy Resources study
  - Review technology production profiles to be considered in study
  - Provide feedback on a select number of inputs and methodologies for proposed analytical work
  - Reviewing assumption value of DER study at all stages
  - Review and provide comments on the draft value-of-DER study
  - Provide feedback on a select number of stakeholder comments

Community Solar Technical Assistance

Alexandra Aznar

Who?

California Department of
Community Services & Development

- California Department of Community Services and Development (CSD)
  - Mission: *CSD reduces poverty for Californians by leading the development and coordination of effective innovative programs for low-income individuals, families, and their communities.* –CSD, 2020

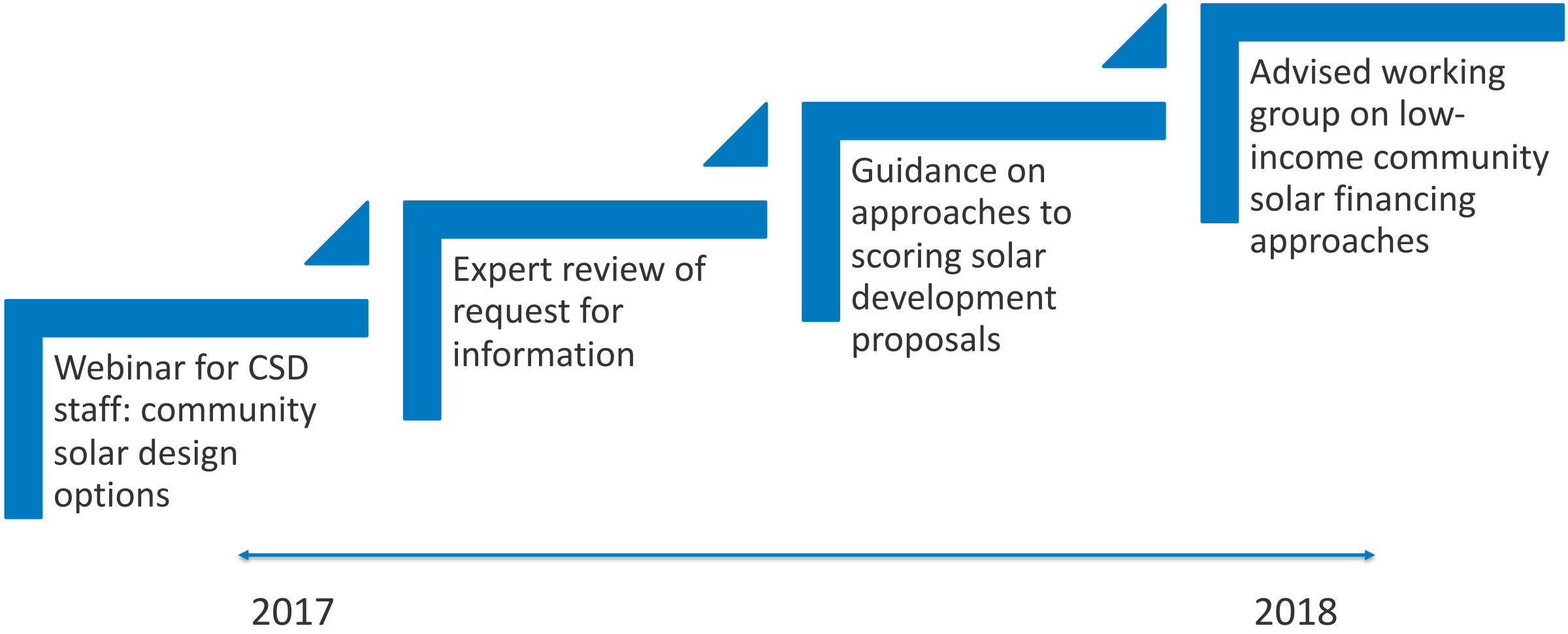
The Ask

- How can CSD design low-income community solar pilots that meet agency goals?
  - Funding available from California Climate Investments (i.e. cap and trade $$$)

CSD Low-income Community Solar Goals

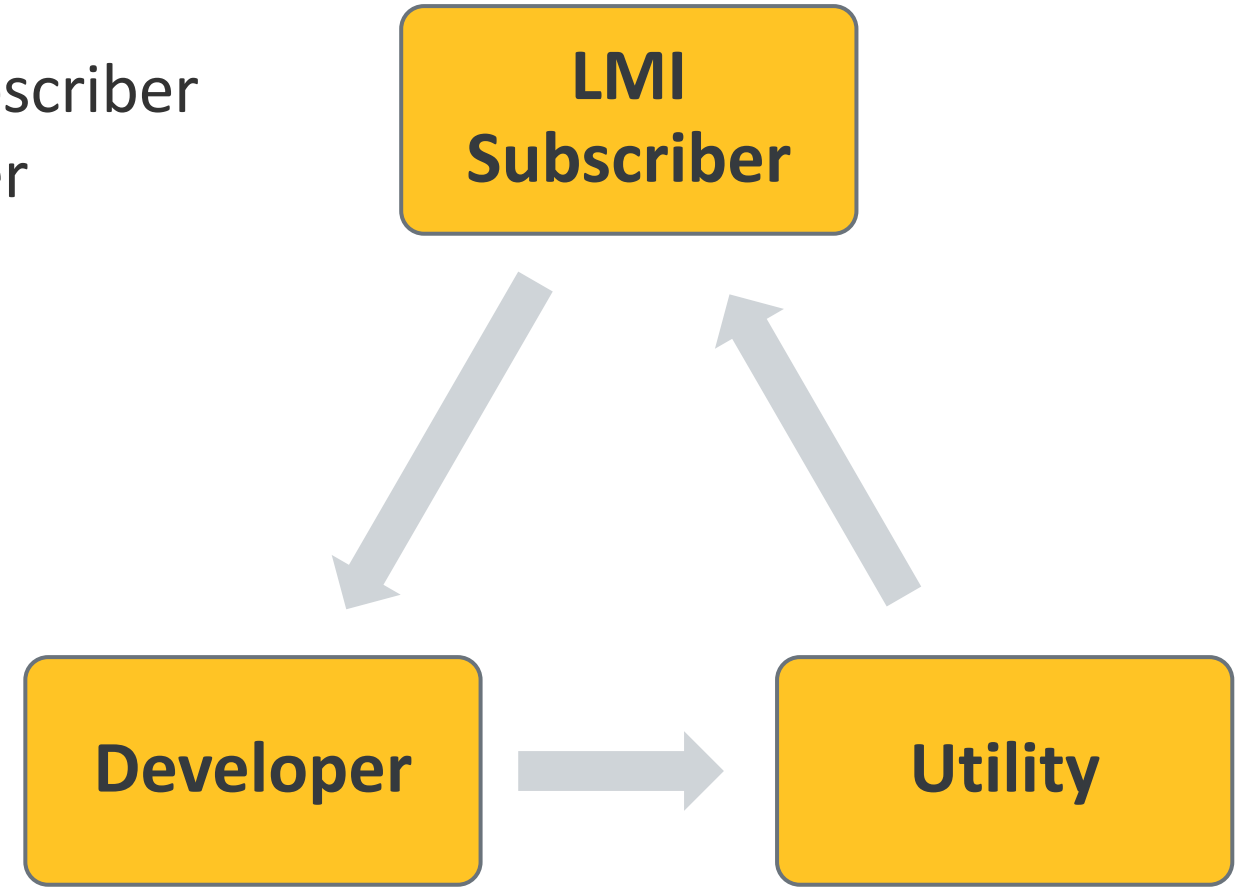
For CSD Customers:	Program Design:
• Reduce customer electricity costs by a "to be determined" percentage • No costs or financial barriers (up-front costs, credit checks, etc.) • Easy to understand bill • Live in a disadvantaged community (DAC) • Not qualified for rooftop PV (renters, poor roof quality, etc.) • Ability to identify and assist customers with high electric bills • Energy efficiency first	• A scalable model(s) that can be duplicated if future funding becomes available. • Quantifiable GHG reduction. • Able to provide electricity at a lower cost per watt than rooftop PV, and benefit the maximum number of customers. • Able to fully spend funds by June 2020. • Bring leveraged dollars to the project. • Ability to target qualified customers with the greatest need (highest electric bills) • An outreach plan for finding and enrolling qualified customers. • Combine with energy efficiency and customer education • Incorporate workforce development for DAC residents.

Technical Assistance



What role would CSD play in community solar project?

1. Support LMI subscriber
2. Be the Developer
3. Partner with the Developer



Results

Two pilot projects awarded with Grid Alternatives and:

1) Santa Rosa Band of Cahuilla Indians;
2) City of Richmond

CSD Awards $4.4 Million for California's First Low-Income Community Solar Projects

June 5, 2019

The California Department of Community Services and Development (CSD) today announced final awards totaling $4.4 million to GRID Alternatives for two Community Solar Pilot projects in Contra Costa and Riverside Counties. These first-in-California low-income community solar projects are part of California Climate Investments and will make the cost-saving benefits of solar energy accessible to more low-income households while contributing to California's efforts to reduce greenhouse gas emissions.

"CSD is excited to have the opportunity to pilot new program models like community solar to help ensure that the investments the state is making to fight climate change continue to benefit all Californians," said CSD Director Linné Stout. "The innovative projects that are being funded under the Community Solar Pilot Program will deliver financial savings to low-income households that otherwise can't be served by existing solar programs, while also reducing greenhouse gas emissions."

The Community Solar Pilot Program, part of CSD's Low-Income Weatherization Program (LIWP), is designed to reduce energy costs for households that are not currently able to benefit from existing low-income solar programs. Most Californians face barriers to traditional rooftop solar, including those who rent, don't have a roof suitable for solar, who live in an apartment building, or lack financing options. Well-designed community solar increases access to clean renewable energy by enabling multiple households or buildings to participate in a larger scale shared solar installation located in their community. The goal of CSD's Community Solar Pilot Program is to provide funding for the implementation and testing of models to deliver community solar to low-income households in innovative ways that have the potential to be replicated elsewhere and to scale, reduce greenhouse gas and toxic air emissions, reduce household energy costs, and provide workforce development opportunities and other co-benefits to communities.

"Community solar can provide more equitable access to renewable power and the clean energy economy. We're thrilled to be part of California's first community solar projects which will exclusively benefit low-income families," said Stan Greschner, chief policy and business development officer with GRID Alternatives. "Not only will the Community Solar Pilot Program directly lower residents' energy costs and provide workforce development opportunities in low-income communities, but these projects will be models for scalable programs in the future."

Following a competitive procurement, CSD selected two projects led by GRID Alternatives to receive funding under the Pilot. GRID has partnered with the Santa Rosa Band of Cahuilla Indians and City of Richmond for these community solar projects.

https://www.csd.ca.gov/Pages/Press-Releases-Page-1.aspx

Additional resources

- For other examples of community solar TA, see: NREL State and Local Project Map

Thank you

Alexandra.Aznar@nrel.gov

www.nrel.gov

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SOLAR ENERGY TECHNOLOGIES OFFICE

Solar in Your Community Challenge

Technical Assistance

Kyle Fricker

Solar in Your Community Challenge - Outcomes

172 Teams from **122** Cities and **4** American Indian Reservations in **40** States plus Puerto Rico, Guam and Washington D.C.

- NREL report detailing innovative models tested by SIYC teams: "Up to the Challenge: Communities Deploy Solar in Underserved Markets" https://www.nrel.gov/docs/fy19osti/72575.pdf
- Some high level takeaways:
  - Siting: municipal buildings, single-family homes, and nonprofits most common
  - Finance: variety of mechanisms were used in projects (tax incentives, PPA, loan, demand response, crowd-sourcing, RECs, etc.)
  - Technical assistance: teams needed most help with system design, financing, customer acquisition, and policy/regulatory issues
  - Innovative approaches: leveraging technology integration (e.g., demand response), partnerships (e.g., housing provider), and other (workforce training)

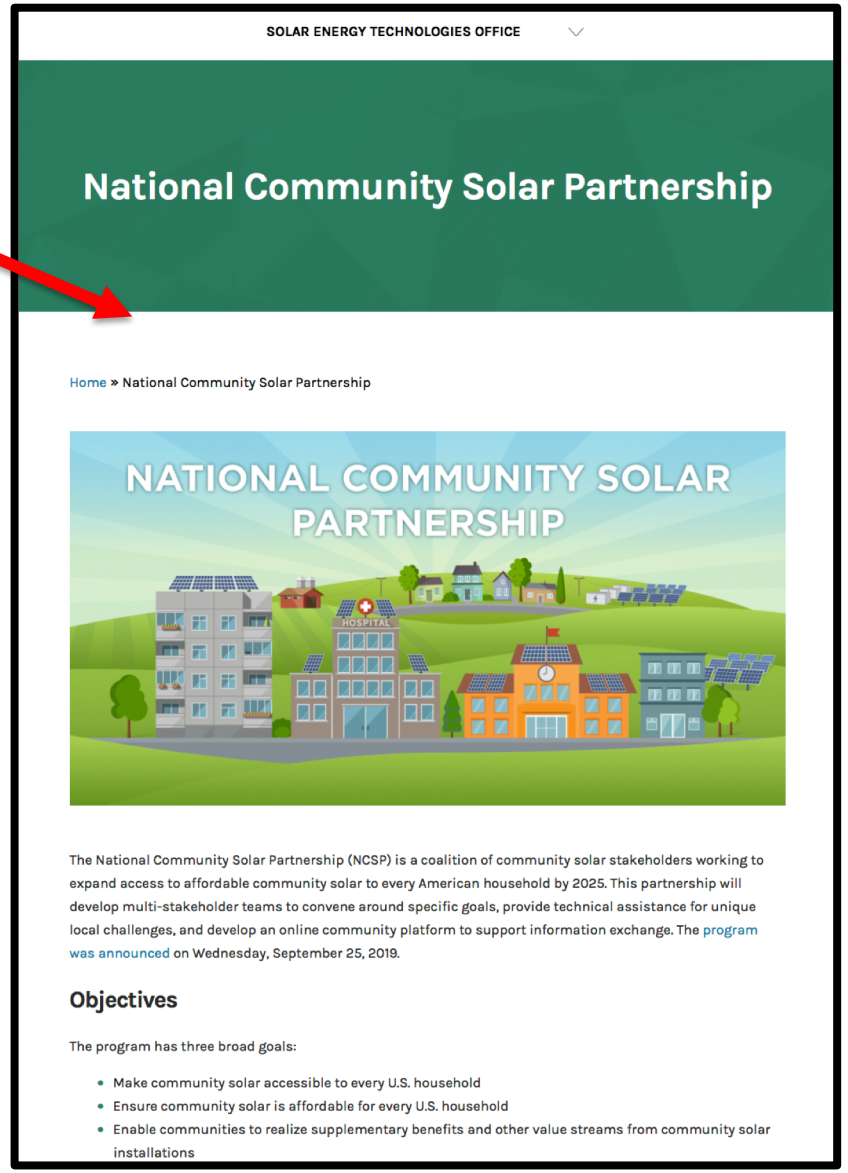
Examples of Technical Assistance

Project/Program Model Feasibility	• Assessment of community ownership models • Feasibility studies on program designs/integrations and interplays with utility rates • Case studies on model programs for LMI community solar
Customer Education & Subscription Management	• Consumer education, engagement strategy and outreach materials • Underserved community engagement planning and execution
Technology & Engineering	• Site selection and assessment studies • Project design, engineering, and permitting materials
Funding & Project Finance	• Coaching on project finance and capital structuring • Guidance on “pitch books” to investors, banks, and capital providers
Regulatory & Contracting	• Utility electricity billing and subscription credit management • Compliance review of local/state policy for community solar projects • Subscription contracts and term sheets reviews
Training & Other	• Training on on-site supervision, field management, and System Advisor Model software • Impact evaluation studies of existing community solar projects/programs • Guidance on long term resource or sustainability planning

How to Apply

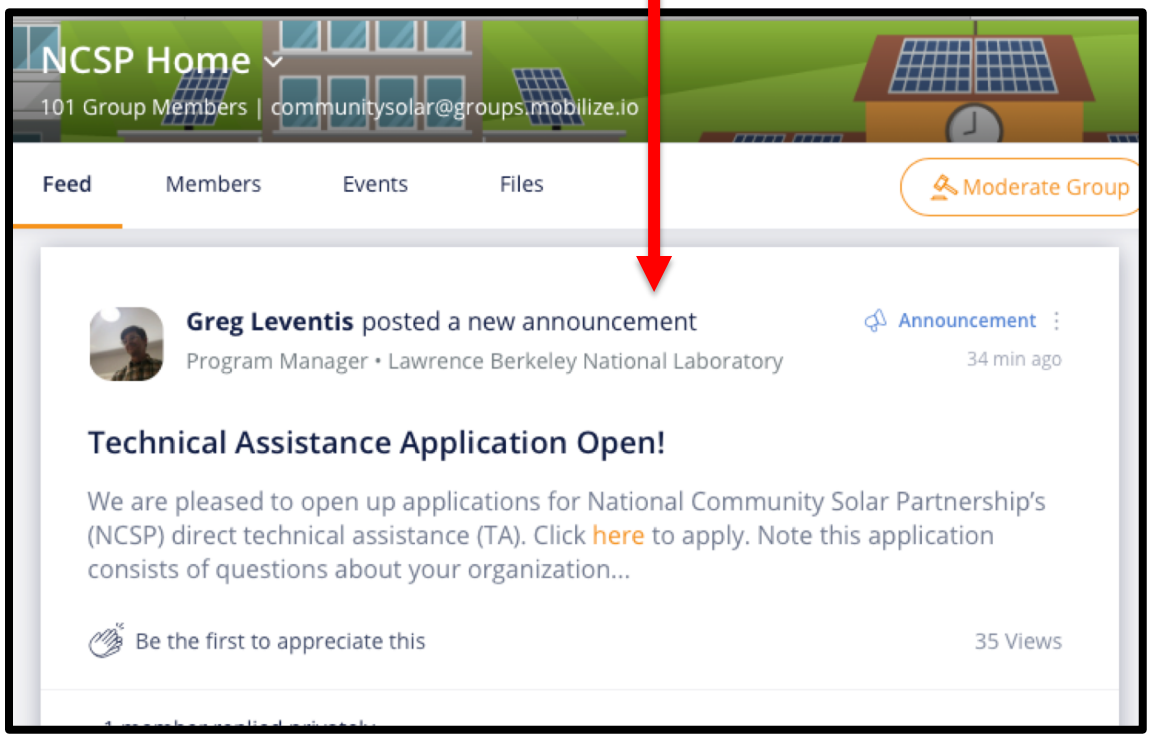
How to Apply

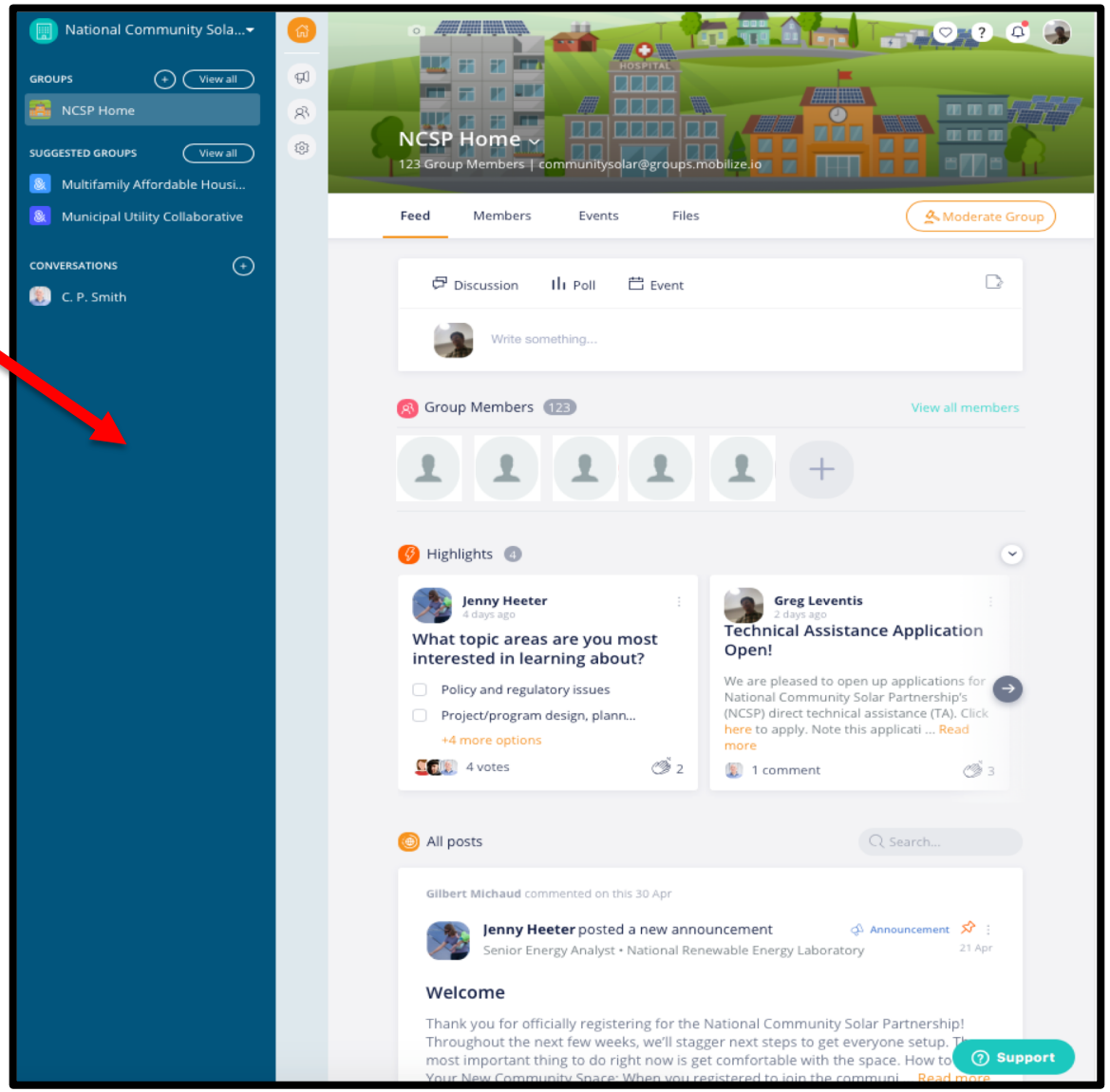
- First register to be a partner
- You can visit DOE's NCSP web page which will give you more information and lead you to the registration page



How to Apply

- Step 1: Log into Mobilize at https://ncsp.mobilize.io; see the April 29 announcement





How to Apply

- Step 2: Go to the application (click link in announcement): https://docs.google.com/forms/d/e/1FAIpQLScyGJC0ozNBmJr1iVJoyjsyhlASc1cdHJPAHTCLe2LCcaYFyA/viewform?usp=sf_link

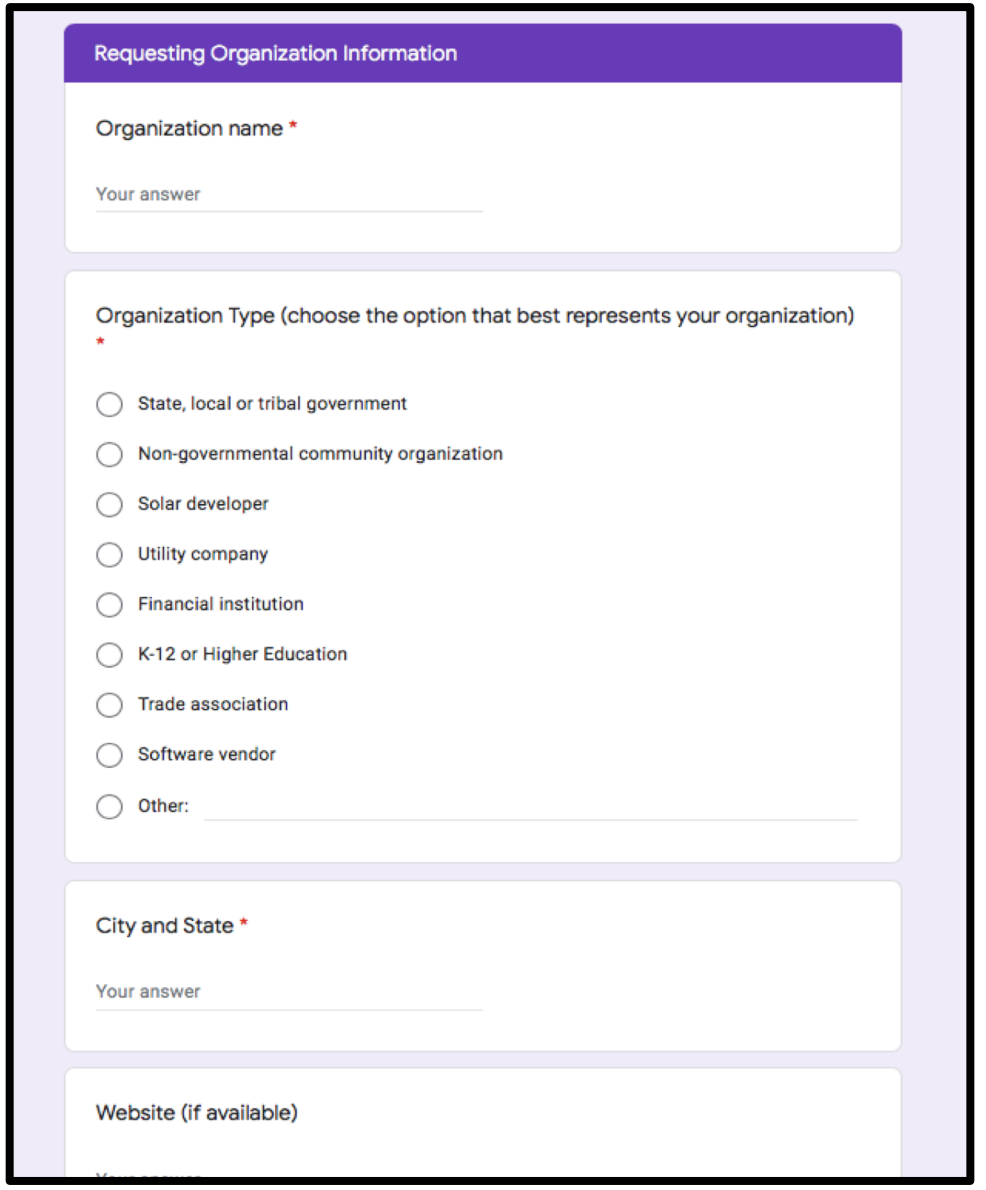
The National Community Solar Partnership: Application for Technical Assistance

The National Community Solar Partnership (NCSP) is a U.S. Department of Energy program with the goal of expanding affordable community solar access to every American household by 2025 (https://www.energy.gov/eere/solar/national-community-solar-partnership). This program is designed to support state, local, territory, and tribal governments as well as utilities and other community solar stakeholders (financiers, businesses, non-profit organizations, affordable housing providers, etc.) by providing the tools and information they need to design and implement affordable community solar models.

This application is for organizations interested in receiving technical assistance (TA) to

How to Apply

- Step 3: Fill out information about organization requesting TA and any other project team members (including information on organization(s) and point(s) of contact)



Requesting Organization Information

Organization name *

Your answer

Organization Type (choose the option that best represents your organization) *

- State, local or tribal government
- Non-governmental community organization
- Solar developer
- Utility company
- Financial institution
- K-12 or Higher Education
- Trade association
- Software vendor
- Other:

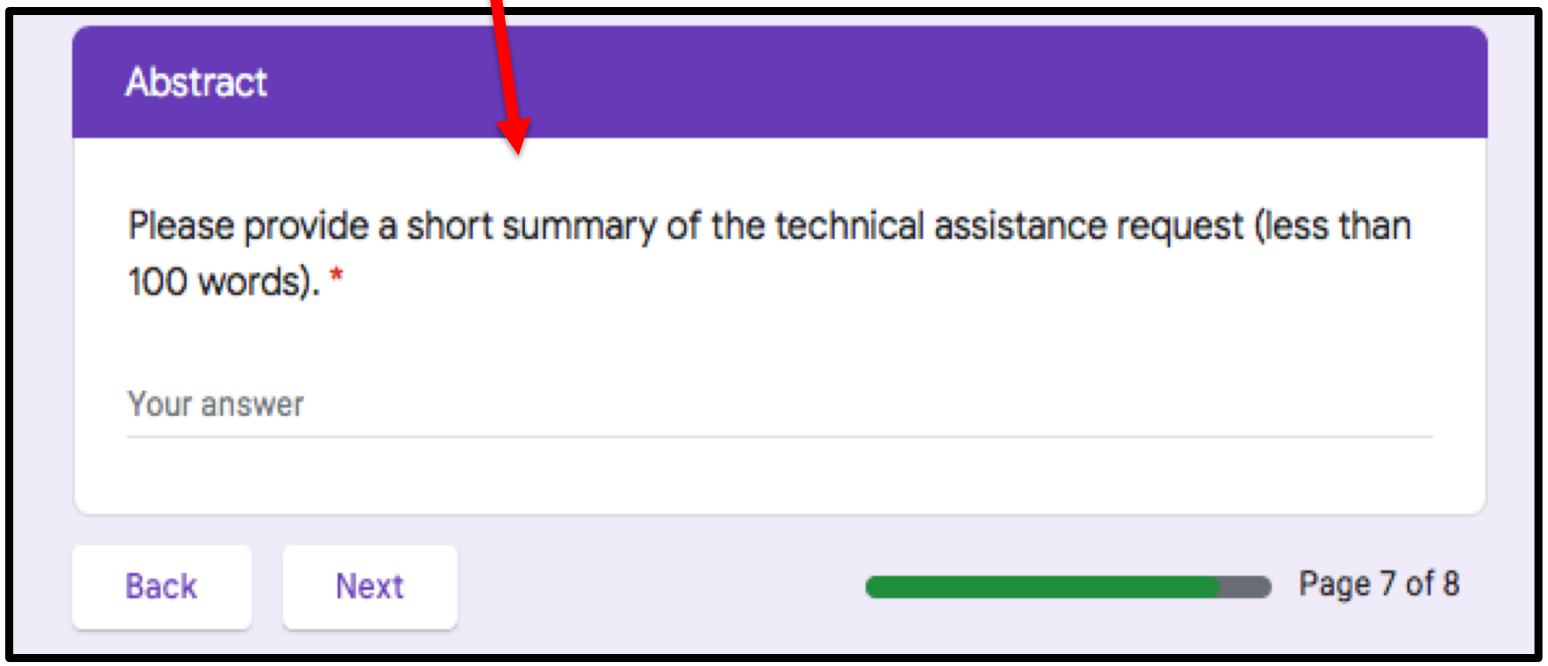
City and State *

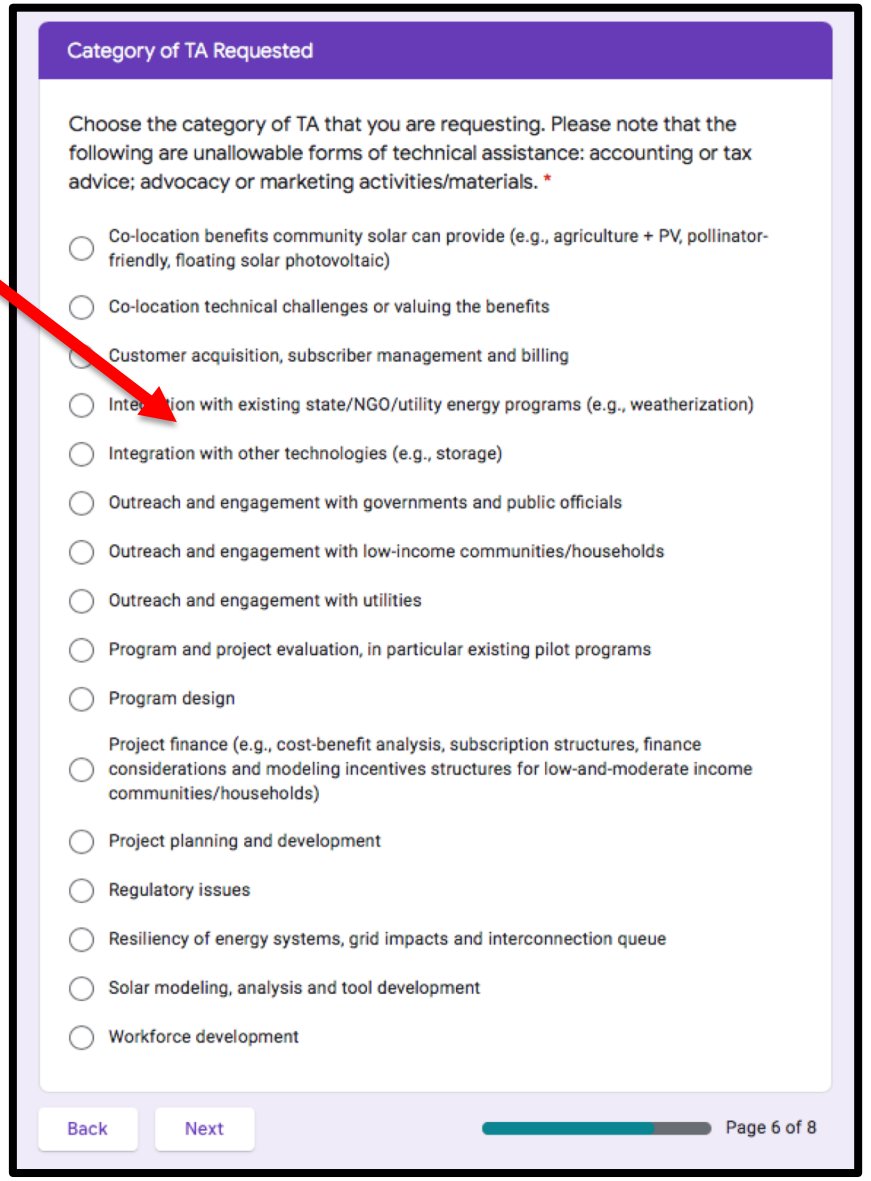
Your answer

Website (if available)

How to Apply

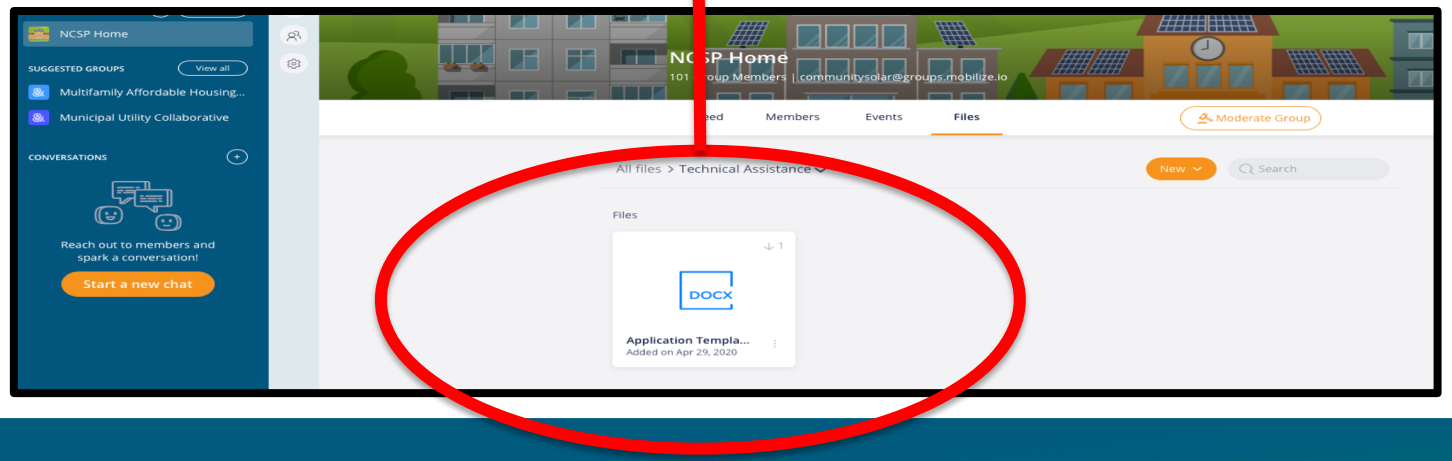
- Step 4: Choose the area of TA you are requesting and provide a summary of your TA request





How to Apply

- Step 5: In a separate document, answer questions about project justification and desired outcomes.
  - An application template for these questions can be found on the Mobilize website: https://ncsp.mobilize.io/main/groups/39758/lounge/files?path=%2FTechnical%20Assistance



Justification and Desired Outcomes

Instructions to submit Justification and Desired Outcomes:
Technical assistance requestors will answer the following questions in a separate document (the Application Template for these questions is provided in the link below and instructions to upload the finished document are further below). Responses will help DOE understand the justification and desired outcome of the technical assistance. The Application Template for these questions can be found at: https://ncsp.mobilize.io/main/groups/39758/lounge/files?path=%2FTechnical%20Assistance.

Please limit Justification and Desired Outcomes answers to 2 pages maximum in total (Times New Roman, 12-point font, single space). To be fair to all participants, any pages beyond the limit will not be reviewed. Please upload answers to the Justification and Desired Outcomes section as a Word or PDF document with your organization's name at the top.

Justification
1. What are your organization's community solar goal(s) and how do they align with one or all of NCSP's three goals (for goals, see Objectives section here: https://www.energy.gov/eere/solar/national-community-solar-partnership)?
2. What is the specific issue/question/task you face in implementing your organization's goal(s)?
3. What other organizations are currently—or planned to be—involved with your activities and what are their roles?
4. What challenges have you identified in your efforts that NCSP TA can help address?

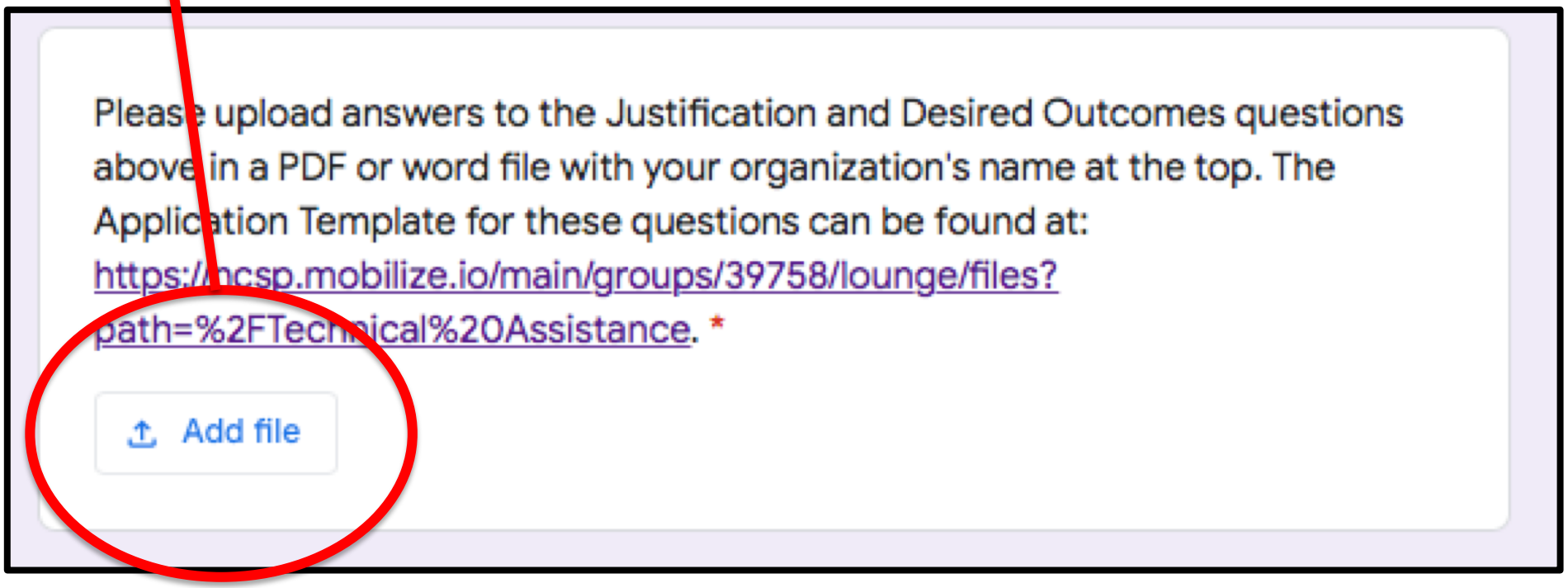
Desired Outcomes
1. What will the requested TA help your organization accomplish?
2. How would the TA product(s) align with your organization's timeframe to achieve your goals?
3. Once your organization's goals are met, how do you plan to share the success of your project?
4. How will the TA product(s) be valuable to other organizations/entities? How could your success be replicated for others interested in achieving similar goals?

Please upload answers to the Justification and Desired Outcomes questions above in a PDF or word file with your organization's name at the top. The Application Template for these questions can be found at: https://ncsp.mobilize.io/main/groups/39758/lounge/files?path=%2FTechnical%20Assistance. *

Add file

How to Apply

- Step 6: Upload your answers in a PDF or Word document by clicking the “Add file” button and selecting your file



Questions

Further Resources

- Questions about NCSP technical assistance can be directed to:
  - Greg Leventis, Lawrence Berkeley National Laboratory: gleventis@lbl.gov
  - U.S. Department of Energy: community.solar@ee.doe.gov and https://www.energy.gov/eere/solar/national-community-solar-partnership
  - NCSP community platform: https://ncsp.mobilize.io