

The Community Solar Playbook was created by the National Rural Electric Cooperative Association (NRECA) in collaboration with the Clean Energy Collective and support from the Meister Consultants Group and the National Consulting Group.

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The Community Solar Playbook builds on the knowledge and experiences developed in the Department of Energy SunShot Initiative’s Solar Utility Network Deployment Accelerator (SUNDA). The SUNDA Team includes the following:

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**Foreword: The Community Solar Playbook**

America’s Electric Cooperatives have been at the forefront of community solar photovoltaic (PV) development. In keeping with the spirit of the network, a number of cooperatives and NRECA are working together and with other partners to share their combined knowledge. NRECA’s Community Solar Playbook is a comprehensive guide that combines the experience of America’s electric cooperatives and the knowledge of the solar vendor community with the tools and resources developed at NRECA to help other cooperatives save time and resources in the design and development of community solar programs.

The Community Solar Playbook is the latest entry in a series of resources that your cooperative can use as templates as you go through the process of evaluating and potentially deploying a community solar project. The full set of resources provides objective information about PV technology through fact sheets, courses, and case studies. These resources also capture practical design, implementation, and operational practices for large-scale PV systems (the SUNDA Cooperative PV Field Manual and the Community Solar Playbook).

In the near future, there will be tools that provide templates for other consumer-centric programs for solar offerings and beyond. Look for the technical overviews, uses, and templates for offerings such as residential rooftop programs; C&I programs; and combined PV, energy efficiency, and battery system offerings.

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Module 3: Information Technology to Support Marketing and Program Administration

## About this Guide

Cooperatives have been early leaders in community solar photovoltaic (PV) development. At the same time, community solar program designs remain dynamic and there are opportunities for early adopters to benefit from emerging innovations. To help other cooperatives save time and resources, this Playbook provides community solar decision tools that share experiences and facilitate peer learning. These tools include resources to support (a) community solar program design and (b) community solar program implementation.

**The Information Technology to Support Marketing and Program Administration Module is one of 5 modules developed by NRECA, collectively forming the Community Solar Playbook. Each module is focused on the actions required from a particular division of a cooperative utility to establish a community solar program**, **including the following**:

1. Executive Management, Governance, and Regulatory

* Board of Directors Guide

1. Marketing, Member-Consumer Services, and Communications
2. **Information Technology to Support Marketing and Program Administration (this document)**
3. Business, Finance, and Program Administration
4. Section 1: Project Management Planning

Section 2: PV System Engineering, Commissioning, and Operations Guide

## Introduction

This module has been developed for IT Managers tasked with developing a software integration plan for a CSP. Software touches many departments, but this document focuses on meeting the needs of program administration – primarily billing and accounting. Additionally, it provides guidance on using software to support marketing, member-consumer acquisition, and consumer retention.

The sections of this module include the following:

* IT Manager’s Checklist
* Information Technology Planning for Community Solar
* Software Applications to Support Program Administration
* Software Applications to Support Marketing and Member-Consumer Services
* Cyber Security
* Software Interoperability
* Developing the IT Plan and Analyzing the Alternatives
* Resources for IT Managers
  + Tools and Resources from NRECA
  + Additional Online Training Courses

# IT Manager’s Checklist

The IT Manager will be responsible for the development of the IT plan, which includes selection and integration of the community solar software to support program administration (accounting, billing, and record keeping) as well as marketing and member-consumer communications (consumer engagement platform). A key element of this job is determining the value of “automation” to support these services. Additionally, the IT Manager will be critical to developing the Sales “Onboarding” Document that characterizes the various steps in the member-consumer acquisition process.

Table 1: IT Manager’s Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **INFORMATION TECHNOLOGY** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Determine process of recording production of array and information allocation to bills** |  |  |  |  |  |  |  |
| 🞎 | **Develop requirements for billing and record keeping** |  |  |  |  |  |  |  |
| 🞎 | **Assess the value of online consumer management tools and automated billing** |  |  |  |  |  |  |  |
| 🞎 | **Create the Sales Onboarding Document, application process, enrollment options, data requirements, and record-keeping requirements** |  |  |  |  |  |  |  |
| 🞎 | **Perform a cyber security impact assessment** |  |  |  |  |  |  |  |
| 🞎 | **Perform a software integration/interoperability analysis** |  |  |  |  |  |  |  |
| 🞎 | **Develop an IT system option assessment and suggested integration plan that includes budget and staffing requirements** |  |  |  |  |  |  |  |
| 🞎 | **Oversee software integration and testing** |  |  |  |  |  |  |  |

# Information Technology Planning for Community Solar

Software support for community solar can reduce costs, increase subscribership, increase retention, and reduce mistakes. Moreover, in a CSP, software integration has an important role as the “bridge” between the consumer and the array, providing the subscriber with real-time solar production data and/or potential cost savings. However, software products can be expensive and few options are available. Careful consideration must be employed to assess their costs and benefits as part of the IT plan. The IT Manager will be responsible for the selection and integration of the community solar software.

### Business Case Contribution and Planning Overview

The primary role of the IT Manager in developing the business case is to provide an IT plan that includes an assessment of software products to support marketing and administrative efforts, such as the following:

* CIS/billing modification requirements and options
* Consumer management tools, “self-serve” automation, and data collection service

Before developing the IT plan, the IT Manager will support staff by doing the following:

* Developing (with member-consumer services) a Sales Onboarding Document outlining the application and enrollment process
* Developing (with the Business Manager and legal counsel) requirements for program record keeping, security, and retention.
* Performing an IT System Options Assessment, including valuation (with member-consumer services and the Business Manager) of online consumer management tools and automated record keeping
* Determining a preference for either a fully automated and secure system or reliance on uploaded files
* Providing a cyber security and software interoperability risk analysis for the Risk Mitigation Plan

Finally, the IT Manager will develop an IT System Integration Plan that includes the following:

* Recommended software approach
* Business case for automated billing, consumer acquisition, and consumer management
* Cyber security analysis of software options that includes a description of the security risks/benefits associated with each option
* Interoperability analysis
* Integration timeline
* Budget and staffing requirements

# Software Applications to Support Program Administration

A typical 1-MW array provides energy to 250–300 consumers. For each consumer, it is necessary to do the following:

**Working within a Limited software Market**

Currently, there are few “off-the-shelf” software packages available to integrate the billing, reporting, and marketing of community solar. A cooperative has three\* options:

1. **Acquire proprietary software bundled with third-party PV equipment or service offerings**,such as those from Solar Edison, SolarCity, and others. Any cooperative working with a vendor for a community solar project should include a review of software offerings as part of the selection process.
2. **Purchase a stand-alone software service.** Currently, the only stand-alone software available is the Clean Energy Collective’s RemoteMeter™ Foundation and RemoteMeter™ Engagement (see more information in the Resources Section of the IT Module). This service is offered through NRECA’s National Vendor Discount Program.
3. **Develop new software or adapt current software in house.** The IT Manager will need to work closely with the cooperative software providers to assess beforehand what is and is not possible.

*\*As community solar programs and other consumer energy programs become more common, new products will come to market and be included as resources.*

NRECA does not endorse or recommend the use of particular vendors, including those vendors named in this Playbook.

* Track account data to answer questions, identify problems, or change subscriptions
* Check production from the consumer’s panels
* Translate this information to the consumer’s pro rata share of energy
* Input this information into the consumer’s account and bill accurately
* Double check the information for accuracy
* Access the account for transfers, if necessary

The ideal software support would do the following:

* Integrate a production reporting and billing software program into an existing billing system, tracking and applying credits directly to consumer bills
* Use a single program management dashboard, allowing the billing department to visualize, report, and manage all key metrics and actions
* Function as a single point of easy access for all internal inquiries and processes involving the CSP, and provide easy access to data needed to handle any disputes
* Enable the utility to remain in control of billing integration at all times
* Maintain adequate liability insurance to cover any security breaches
* Make information available to consumers via a mobile app for their tablets or phones

# Administrative Planning Requirements

**Generally industry practice regarding RECs includes**:

* RECs are the environmental attributes associated with the generation of a unit of renewable power, often referred to as a financial transaction, which can be separated from the physical power.
* You cannot sell or offer renewable power if you do not transfer the RECs to the entity purchasing the power.
* You cannot claim that the power is renewable if you have sold the RECs; likewise, you cannot offer or sell renewable power if you do not have the rights to the RECs.
* Public claims that delivered power is renewable cannot be made if the RECs have been sold or otherwise retired.
* RECs, for the most part (for example, some states allow for calculation of output from <10 kW solar installations), require metering and documentation by the cooperative; transfer of RECs needs to be recorded. Periodic auditing of records is strongly recommended.
* The value of the RECs can depend on the state in which they are created (registered) or the market segment where they are sold and often have to be registered with regional clearing systems (WREGIS, M-RETS, ERCOT, etc.).
* Community solar typically allows consumers to participate in the production of renewable energy and may or may not involve the consumption of renewable energy

Cooperatives are urged to consult legal counsel on all of these issues.

As part of the planning and implementation process, the IT Manager will need to coordinate with marketing and member-consumer services, accounting, billing, and other administrative staff. Basic joint administrative duties include the following:

Member-Consumer Application and Buy-In

Define how member-consumers will apply to and “buy into” the CSP:

* What application process and/or basic requirements should be required of member-consumers? The IT Manager should assess the potential of software automation and work with member-consumer services in determining the key application attributes.
* What enrollment options will the cooperative choose to provide? Single up-front payment, payment spread out on an installment plan, or monthly subscription? This analysis should include what data would need to be gathered.

Legal, Billing, and Record Keeping

Work with legal counsel to determine how consumers will receive credit for the value of production:

* Identify the need for, and value of, automation for billing and record keeping. Specifically, review Auditing Accountability and Responsibility Act (Sarbanes-Oxley) requirements for billing and data retention and corrections.
* Outline the record-keeping requirements, particularly as they relate to REC tracking.
* Determine the value of RECs and whether they are assigned to participants, retired on participants’ behalf, or retained by the utility.

## Software Applications to Support Accounting & Billing

An important consideration for establishing an effective CSP is the way in which the energy produced from the program is valued. To minimize potential regulatory implications, the primary goal should be to provide electricity to meet personal consumption needs, not for profit. An easy way to achieve this goal is to allow member-consumers to receive monetary credits on their bill correlated to the production from their share of the facility, thus providing economic benefit to the consumer while simplifying administration for the utility.

The most efficient way to handle consumer bill credits is to integrate a production reporting and billing software program into an existing billing system. This will guarantee accuracy and reduce any workload added to the utility’s accounting staff. To manage consumer billing activity, such as payments, transfer, or resale of ownership, some staff time will still be required; however, automation can greatly limit that burden.

**TIP: Billing Data Retention**

Retention of billing data is needed for a **minimum of seven years** for federal accounting compliance rules. Automated billing programs will streamline the process and guarantee accuracy.

Figure 1: How to Structure Billing and Reporting Processes

#### Record-Keeping Considerations

As mentioned in the figure above, **retention of billing data is necessary for a minimum of 7 years** to meet federal accounting compliance rules. Below is a quick checklist of the types of record keeping that should be strongly considered. The IT Manager will have to work with the Business and Finance, Marketing, and Project Managers, as well as accounting staff, to determine the requirements.

Records to Keep:

* Community solar power production (all production records must be stored for each billing cycle, by month, for a period of at least 7 years; they should be stored by consumer and facility)
* Records of estimated annual production for each facility for the life of the facility, as of the effective date of the participant’s contract
* Records related to the Auditing Accountability and Responsibility Act (Sarbanes-Oxley)
* Additional regulatory requirements from IRS and SEC
* Member-consumer information
* Member-consumer contracts, “subscription terms,” and rates
* Member-consumer billing activity, including energy consumption and application of community solar production
* RECs (or certificates) retirement documentation (for utility or consumer)
* Cyber security insurance documentation and reporting requirements

Additionally, there are at least five kinds of data that require confidential management:

* Personally identifiable information (PII), such as name, date of birth, social security number, medical information, etc.; the legal definition of PII may differ depending upon the state
* Payment card industry (PCI) compliance, such as payment and billing information, credit card data, banking account data, etc.
* Consumer usage data
* Sensitive business data
* Data your co-op has agreed to protect in any membership application, terms of use, or other agreement

# Software Applications to Support Marketing and Member-Consumer Services

Consumer engagement, e-commerce, and integrated bill credits are common features of CSPs that strengthen sales processes and enhance program administration. Effective software integration can be essential for bridging the information gap between the consumer and the array by providing the subscriber with real-time solar production data and/or potential cost savings. This not only alleviates the communication burden on co-op staff, but helps consumers feel connected and have agency in the process.

The most user-friendly approaches employ a single platform to organize all of the information regarding participants’ accounts. This enables consistent consumer access, which enhances individual understanding of the subscription components, the comparative value and cost savings, and the broader energy generation context, as well as letting consumer services access member-consumer information quickly and accurately.

## Consumer Engagement Platform

Consumer engagement platforms benefit both member-consumers and the utility by providing accurate, real-time information about the array and the ownership portions of each consumer. Production, inventory, and performance of the array will be monitored for the utility’s management of the program. Member-consumers will enjoy interacting with the information they receive about how their panels are performing and the level of their financial and environmental benefits from participating in their utility’s CSP.

**Figure 2:** CoServ allows members to monitor their energy usage, set threshold alerts and receive electronic bill notifications via text, voice or email.

In this role, the ideal software support would do the following:

* Function as a consumer management system
* Automate and track subscriptions
* Streamline and simplify sign-ups
* Provide data to prospective consumers
* Generate proposals
* Create marketing reports

**Single-Platform Approach**

A single-platform approach is optimal. Multiple platforms cause consumer service agents to have to piece together accurate production and billing information from multiple sources, thus increasing the risk of errors. A single platform means employees need to check only one place to get an answer, thus increasing speed and accuracy, both of which boost consumer satisfaction and confidence. From an administrative perspective, this will help staff manage and accurately report allocations of benefits, rates, rules, and member-consumer information.

Additional suggested requirements include the following:

TIP: PCI Compliance

Any cooperative engaging in e-commerce **must ensure that the software is compliant** with applicable laws and regulations, such as the Payment Card Industry Data Security Standard (PCI DSS or PCI). PCI DSS is a set of requirements designed to ensure that **ALL**companies that process, store, or transmit credit card information maintain a secure environment – essentially any merchant that has a Merchant ID (MID).

PCI applies to **ANY** organization or merchant, regardless of size or number of transactions, that accepts, transmits, or stores any cardholder data. To put it another way, if any consumer of that organization ever pays the merchant directly using a credit card or debit card, then the PCI DSS requirements apply.

The current PCI DSS documents can be found at the [PCI Security Standards Council Website](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-san-miguel.pdf). Available at: <https://www.pcicomplianceguide.org> and NRECA.coop. (http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-okanogan.pdf)

* Capability of software to aggregate consumer and solar output data every 15 minutes or less
* User data accessibility that accommodates multiple credential levels – an administrative platform and a reporting dashboard
* Data access through a web-based monitoring platform

#### E-Commerce

E-commerce capabilities will streamline the information exchange between the consumer and utility, providing accurate proposals and consumer contracts with usage data integrated into the documents. E-Commerce can also handle payments and credits using consumer credit cards or ACH. This function, along with electronic signatures, will keep the sales process moving with few to no errors to slow things down.

Benefits of e-commerce processes include the following:

* Reduce billing and recording errors, and eliminate the need for manual processing
* Provide accurate and efficient documents as a result of automated consumer proposals and contracts with integrated consumer data
* Speed up the sales process through easily shared files with electronic signature capabilities

Any cooperative engaging in e-commerce must ensure that the software is compliant with PCI Data Security Standard (PCI DSS, or simply PCI). See the compliance tip above for more details.

# Sales Onboarding Document

Typically, the sales onboarding process will document the entire consumer acquisition life cycle, from pitching the product to receiving payment. The IT Manager should work with member-consumer services and other sales functions to ensure an understanding of how the process works, so that when a potential candidate is located by way of in-person communications, newsletters and other media, or online “self-service,” the sales team can quickly close the deal. Automation can play a key role in this process. If soliciting consumers using automated calls or texts, be sure to consult your attorney with respect to applicable laws, such as the Telephone Consumer Protection Act.

The onboarding document should be used to compare the speed and value of automation versus manual processing.

The document should capture the following:

|  |  |
| --- | --- |
| ✓ | can communicate their interest to the co-op |
| ✓ | How members can communicate their interest to the co-op |
| ✓ | The documentation required for subscribing |
| ✓ | Where the documents reside |
| ✓ | How the consumer is charged/how the subscription information is integrated into billing |
| ✓ | How consumers receive information regarding their pro-rated share of community solar benefits |
| ✓ | How consumers can ask questions and change subscriptions |

# Cyber Security

TIP: How to Minimize Exposure of Data to Cyber Attacks (not an exhaustive list)

* Restrict user access to administration or root privileges on a host
* Ensure that systems containing sensitive data, or those with the ability to control any aspect of the operational system of the solar project, have limited, if any, access to the Internet and are separated from other systems on the network by using firewalls or “demilitarized zones” (DMZ)
* Physically limit access to systems by segmenting employee and volunteer duties to limit access of non-essential personnel and restrict vendor access as needed
* Utilize strong cryptographic protections (encryption) to prevent unwanted parties from reading or accessing information
* Regularly schedule software patches and keep all software updated
* Utilize anti-virus software and patch and update it regularly
* Monitor both intra- and inter-networks’ in- and out-bound communication for cyber security incidents

Maintaining consumer should be a priority. The responsibility for securing confidential consumer and business information and ensuring the security of the operational components of the community solar system rests with many people, not just the IT staff. Implementing cyber security protections requires vigilance from every member of an organization in every aspect of operations.

Cyber risk management can be broken down into three main categories—people/process, technology, and hardware.

People/Process (Examples):

* Create and document cyber security policy.
* Create and document a cyber asset inventory list, along with a pre-defined categorization using a risk-based assessment method.
* Provide cyber security awareness and training sessions. Educate all employees about proper cyber “hygiene.” Repeat this training often and impose consequences for security violations.
* Perform background checks, including but not limited to criminal background checks.
* Have a process to allow, deny, and modify user access.
* Systematic patch management; regularly schedule patches and keep all software updated.
* Develop a more solid password policy and use 2-factor authentication when possible.

Technology

* Monitor communication traffic for cyber security incidents, both within your organizational network and in external communications. For SCADA/ICS systems, this is a primary way to catch trouble.
* Scan for vulnerabilities on the systems and devices connected to the network, and follow your Risk Mitigation Plan. (For Risk Mitigation Plan information, please contact NRECA.)

Physical

* Know the risks and classify the cyber security assets to group them together and enhance their physical security protection.
* Provide critical areas, provide multi-layer physical security protection (e.g., surveillance camera, monitored alarm system, fence alarm, security guard, minimum of two different access controls – key and swipe).

A primary question to ask throughout developing a cyber security plan is: “Who should have access to this information?” As personal and financial information moves from a member-consumer to a billing office and back, restricting access using a “need-to-know” structure minimizes the potential cyber attack surface and the vulnerability of the system to any cyber incident, whether malicious or accidental. This is accomplished by creating different levels of access in the structure of the communications and records management systems. Some specific methods for implementing a need-to-know structure are in the tip box: How to Minimize Exposure of Data to Cyber Attacks (previous page).

If any confidential information is going to be recorded, stored, processed, and/or transmitted using a computer system, using cyber security practices for protecting the data is recommended, as is understanding your legal obligations.

### Third-Party Data Management

In the event that a third party is managing consumer bill credits, that party should not be permitted access to or be allowed to have control of a co-op billing system. The co-op should provide a method for the files to be securely exported to a third-party billing system that processes and returns the files in a secure manner back to the co-op’s existing billing system.

If a third party is going to be used for any aspect of the project, it is imperative that the vendors be made responsible for their part of the cyber risk management process. The U.S. Department of Energy provides sample procurement language and guidance to communicate cyber security expectations clearly. For example, when purchasing software, the recommended language is as follows:

“The Supplier shall remove all software components that are not required for the operation and/or maintenance of the procured product. If removal is not technically feasible, then the Supplier shall disable software not required for the operation and/or maintenance of the product. This removal shall not impede the primary function of the procured product. If software that is not required cannot be removed or disabled, the Supplier shall document a specific explanation and provide risk mitigating recommendations and/or specific technical justification. The Supplier shall provide documentation on what is removed and/or disabled.”

\*Note: DOE *encourages contracting officers to tailor this language appropriately to address the particular procurement.*

DOE: Cyber Security Procurement Language for Energy Delivery Systems

The U.S. Department of Energy (DOE) and the U.S. Department of Homeland Security (DHS) collaborated with industry cybersecurity and control system subject matter experts to publish *Cyber Security Procurement Language for Control Systems.* This document summarizes security principles and controls to consider when designing and procuring control system products and services (e.g., software, systems, maintenance, and networks), and provides example language that could be incorporated into procurement specifications.

Available at: [http://www.energy.gov/sites/prod/files/2014/04/f15/CybersecProcurementLanguage-EnergyDeliverySystems\_040714\_fin.pdf](http://www.nreca.coop/solar-case-studies/)



**Five Security Questions to Ask Your Software Vendor**

1. Do you review security at each phase of the software development lifecycle? The answer is most likely “no.” However, the vendor should indicate how much effort is put into security. Additional considerations include the following: If it is web software, does it follow any frameworks (OWASP Top 10)? Has the software undergone any sort of penetration testing and/or been certified by anyone? Follow up on whether the vendor has contracted for third-party penetration testing and code review, the availability of those test results, and whether all level 1 issues discovered have been addressed. Ask to see the remediation plan for any remaining issues.
2. Is the software deployed to you or hosted over the Internet? If it is a hosted solution, ask for the vendor’s SAS 70 certification as well as some detail about the location of the data centers and the “disaster response” procedures. If deployed at the co-op, inquire about any third-party tests (pen testing, veracode scanning, etc.) and any documentation on site. How often are those tests administered?
3. What is the “update” or “patch release” strategy? Most vendors do not offer regularly scheduled releases; even fewer offer fully tested patches. For those who offer both, you need to be aware that the amount of time between public disclosure of a vulnerability and issuance of a patch will be longer for vendors who fully test their patch releases. You need to decide if timeliness of patches or having fully tested patches is more important for your organization.
4. Do you disclose all vulnerabilities that affect your software? Software vendors that practice consumer or public vulnerability disclosure are generally diligent about explaining mitigation strategies, if any exist. Beware of the timing of the disclosure.
5. What are the terms and period of your security support agreement? Be aware that it is not common for software vendors to offer agreements that will indemnify your system if they are responsible for any losses resulting from a specified security breach. Even if a software vendor does not offer this agreement outright, such agreements should be included in the procurement contract. Software developers can purchase supplemental insurance, including cyber security insurance, available to both developers and end users.

Source: *5 Security Questions to Ask Your Software Vendor, available at:* [*http://www.cio.com/article/2442514/it-strategy/5-security-questions-to-ask-your-software-vendor.html*](http://www.cio.com/article/2442514/it-strategy/5-security-questions-to-ask-your-software-vendor.html)

## Cyber Security Risk Insurance

A CSP can also consider cyber risk insurance. Risk insurance cannot prevent a loss but it can be used to lessen the financial blow if the worst happens. Federated Rural Electric Insurance Exchange is one such company, among others, that now offers cyber security insurance. You should consult with your risk manager, broker, and/or account executive. *NRECA does not endorse or recommend the use of particular vendors, including those vendors named in this Playbook.*

Table 2: Overview of Security Goals and PCI Requirements**[[1]](#footnote-2)**

|  |  |
| --- | --- |
| **Goals** | **PCI DSS Requirements** |
| Build and Maintain a Secure Network and Systems | 1. Install and maintain a firewall configuration to protect cardholder data  2. Do not use vendor-supplied defaults for system passwords and other security parameters |
| Protect Cardholder Data | 3. Protect stored cardholder data  4. Encrypt transmission of cardholder data across open, public networks – e.g., communication between a remote location and a center-control location |
| Maintain a Vulnerability Management Program | 5. Protect all systems against malware and regularly update antivirus software or programs  6. Develop and maintain secure systems and applications |
| Implement Strong Access Control Measures | 7. Restrict access to cardholder data by business “need to know”  8. Identify and authenticate access to system components  9. Restrict physical access to cardholder data |
| Regularly Monitor and Test Networks | 10. Track and monitor all access to network resources and cardholder data  11. Regularly test security systems and processes |
| Maintain an Information Security Policy | 12. Maintain a policy that addresses information security for all personnel |

Disclaimer: You should consult with your legal counsel or data privacy officer about the specifics of PCI DSS.

# Software Interoperability

The IT plan must ensure that the CSP’s software is compatible and can be integrated with incumbent software. This can be done in the planning process by documenting the following:

1. Software and hardware requirements
2. Software customization requirements
3. Process semantics ‒ data inputs and outputs
4. Testing requirements

Ideally, in terms of interoperability, the software packages would have the following characteristics:

* Be ready to implement today
* Be previously proof-tested in multiple existing installations
* Allow product development that does not require extensive customization by the end user ‒thus, significant technical or IT staffs or outside consulting support are not required
* Be capable of being used either with or without messaging infrastructure (e.g., “middleware”)
* Be extensible without compromising the basic interoperability of the interface
* Be scalable to allow use for any size utility or information demand
* Be supported by wide range of vendors
* Have an existing, modestly priced commercial testing process to help utilities and vendors ensure interoperability
* Have a large number of individuals trained in the use of the specification

## Multispeak

The MultiSpeak specification is an industry-wide standard for enterprise application interoperability. The specification can help vendors and utilities develop interfaces so that software products from different suppliers can interoperate without requiring the development of extensive custom interfaces. It defines what data need to be exchanged between software applications to support the business processes commonly applied at utilities. To accomplish this goal, it makes use of three components:

* Definitions of common data semantics. Data semantics are an agreement about a specific item used in a business process – for example, a consumer or a service outage – which might be exchanged in the context of the outage management business process. Data semantics are documented in the form of an extensible markup language (XML) schema.
* Definitions of message structure (syntax). Once an agreement has been reached on what data need to be exchanged, it is necessary to define message structures to support the required data interchanges.
* Definitions of required messages to support specific business process steps. Web services method calls are linked together to accomplish each potential step in a utility business process. Such steps can then be strung together to support complete business processes.

### Specifying MultiSpeak

Co-ops may want to consider specifying application integration features that meet the requirements defined by the MultiSpeak specification and the inclusion of language similar to the following in software requests for proposals (RFPs):

"UTILITY shall give preference in evaluation of vendor proposals to software interfaces that have been tested to be compatible with the MultiSpeak Version 3.0 specification (or higher) unless the vendor can show that the interfaces proposed provide substantially improved functionality over those included in the MultiSpeak specification."

# Developing the IT Plan and Analyzing the Alternatives

### Developing the IT Assessment

IT planning documents can vary greatly in length and depth, depending on the level of investment. This planning document supports the greater business plan by laying out the software options, benefits, and costs, and ensures that cyber security and interoperability requirements are met. The goal is to provide options and analysis that enable the executive staff to make a decision. Below is a suggested basic outline that can be modified to fit your co-op’s requirements. Additional software integration planning documents may also need to be created.

Table 3: IT Plan Outline

|  |  |
| --- | --- |
| Section | Content |
| Executive Summary |  |
| Scope of Work/Problem Statement | * 1. Problem statement   2. Assessment objectives   3. Core process options (examples)      1. Recording system production      2. PV system monitoring      3. Automated billing and other record keeping      4. Sales and marketing automation/support      5. Member-consumer acquisition support      6. Online web portal/interface |
| Stakeholders | 1. Key staff involved in procurement process 2. IT Manager    1. Project Manager    2. Marketing Manager    3. Business and Finance Manager |
| Assessment Scope | 1. Business vision 2. Timing and scope |
| Inventory of Systems Evaluated | 1. Request for Information (RFI) results |
| Suggested Software Approach(es) | Approach(es) 1, 2, 3, etc.:   1. Software and hardware requirements 2. Benefits 3. Estimated cost and resource requirements 4. Overview of software customization requirements 5. Process semantics 6. Data inputs 7. Data output 8. Software testing requirements 9. Timeline |
| Cyber Security Risks/Mitigation | Identify key cyber security risks:   1. PII – such as name, date of birth, social security number, medical information, etc. 2. Payment and billing, such as credit card data, banking account data, and PCI solutions 3. Consumer usage data 4. Sensitive business data 5. Third-party data acquisition/controls/protection 6. Data loss and business interruption |
| Alternatives | Core Process, Costs, Benefits, and Risk Profile |
| Financial Analysis | 1. Summary and methodology 2. Current or estimated operating costs 3. Future investment options 4. Return on investment |
| Recommendations | Include specific action items |

## Software recommendation and Integration Plan

A combination of the Recommendations and Executive Summary sections can serve as the IT plan for inclusion int the overall Business Plan for the CSP. It should cover the core processes, costs, benefits, and risks for integration, and describe the alternative approaches not chosen. It should briefly describe the methodology and stakeholder involvement. Additional documentation may be needed to support the implementation, although it may not have been needed for the Business Plan. Below is a suggested outline.

* Recommended software approach
* Business case (for or against) automated billing, consumer acquisition, and consumer management
  + Cost, benefits, other approaches considered
* Cyber security analysis of software options that includes a description of the security risks/benefits associated with each option
  + Mitigation Plan
* Integration timeline
* Budget and staffing requirements

# Resources for IT Support

## Tools and Resources from NRECA

National Consulting Group Policy Development Services for Community-Based Solar Projects

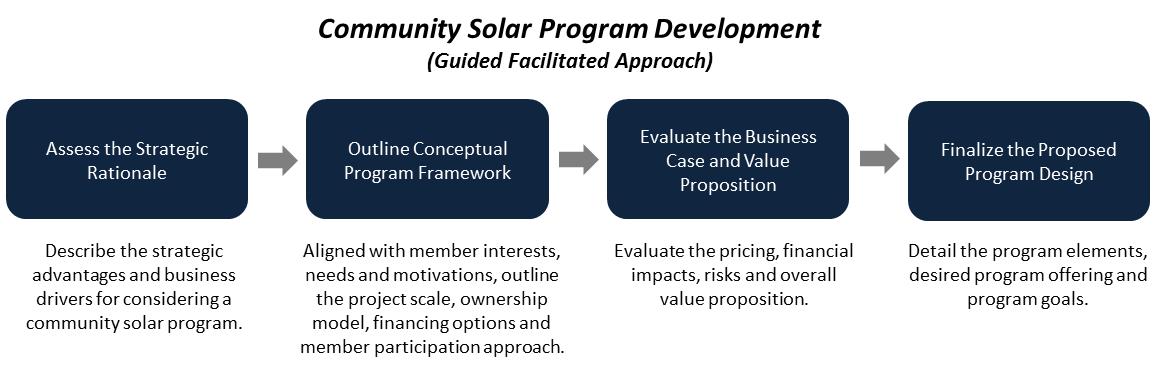
As interest in solar energy grows and the cost of deploying photovoltaic arrays becomes less prohibitive, many electric cooperatives are evaluating the feasibility of establishing CSPs. To assist with that process, NRECA is offering a suite of consulting services designed to help its co-op members deploy and operate solar generation projects.



Through its National Consulting Group (NCG), and in collaboration with the association’s Business and Technology Strategies (BTS), NRECA is providing a resource to help mitigate cooperatives’ risks and costs – and increase the value of successful CSPs. NRECA’s consultants work alongside cooperatives’ personnel to evaluate and plan for the strategic, business, financial, and resource requirements of solar projects.

Our strategic consultants bring third-party value to the planning and development process, including assessment and creation of the strategic rationale for community solar. This process ensures that member co-ops and their consumers clearly understand the advantages and business drivers of proposed projects. Every co-op is unique, so we strive to provide a range of options that provide the best solution to each.

The overall principle for performing these services is one of guided facilitation:



Contact: [Henry.Cano@nreca.coop](http://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency), 602-621-3905.

#### Solar Utility Network Deployment Acceleration (SUNDA)

NRECA created certain tools and resources pursuant to a DOE-funded project, the Solar Utility Network Deployment Acceleration (SUNDA). The purpose of the project was to enhance the ability of co-ops to design, deploy, and operate utility-scale, utility-owned solar PV systems at their facilities. Co-op project utilities installed more than 20 MW of utility-scale, utility-owned solar. SUNDA publications include the following:

**1. Cooperative Utility PV Field Manual** ‒ NRECA’s Cooperative Utility PV Field Manual is a three-volume series designed to support electric cooperatives as they explore utility-scale solar PV:

* + Volume I: Business Models and Financing Options
  + Volume II: Planning, Design, Installation/Interconnection, and Commissioning
  + Volume III: Operations, Maintenance, and Monitoring

**2. SUNDA Reference Designs** – Templates to design for 250-kW (single inverter and string inverter design), 500-kW, and 1-MW utility-scale PV solar projects

1. **Project Managers Quick Start Guide** – Summary and checklist of Project Manager tasks and documentation requirements
2. **Cost and Financing Screening Tool for Utility-Scale Solar Projects** – Open and editable spreadsheet for project financial examination
3. **Solar Communications Planning Guide** – Guide to creating a communications plan for a solar project launch and marketing for increased participation

Available at: [www.nreca.coop/SUNDA](mailto:eluesebrink@socoreenergy.com)

This work, authored by the National Rural Electric Cooperative Association, was funded in whole or in part by the Department of Energy under U.S. Government contract DE-EE-0006333.

#### .

#### Cooperative Solar Case Studies

**The following eight case studies illustrate innovative ways cooperatives are satisfying member-consumers’ demand for solar-derived electricity:**

* [Tri-County Electric Cooperative](mailto:ryan.cook@mc-group.com)
* [Southern Maryland Electric Cooperative](mailto:kjb@msuc.net)
* [San Miguel Power Association](mailto:jlee@bchain.com)
* [Okanogan County Electric Cooperative](http://www.nreca.coop/solar)
* [Green Power Electric Membership Cooperative](http://www.nrucfc.coop)
* [Cherryland Electric Cooperative](mailto:mark.wilkerson@easycleanenergy.com)
* [Kit Carson Electric Cooperative](mailto:jbridges@crossdiscipline.com)
* [Great River Energy](http://livewire.nreca.org/sites/mas_bpe_project/projectsandcollaboration/EandTEventSetup/Shared%20Documents/VendorMeetingEachBusinessGroupsNumber1s.xlsx)

Also available at: [http://www.nreca.coop/solar-case-studies/](http://www.nreca.coop/SUNDA)

#### Comprehensive Web-Based Courses

NRECA offers this series of online webinars to help cooperatives address and evaluate community solar options. Topics include the following:

1. **Strategic Business Options**
2. **Financing Options and Cost Estimates**
3. **Technical Project Management**
4. **Communications Best Practices**
5. **Case Studies from Electric Co-ops**

Available at: [http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/](http://www.cio.com/article/2442514/it-strategy/5-security-questions-to-ask-your-software-vendor.html)

#### Distributed Generation (DG) Toolkit

NRECA created this DG toolkit to help electric co-ops address the legal, economic and technical issues raised by consumer-owned generation. These materials provide models and guidance that each co-op can adapt to its unique needs after consultation with management, legal counsel and system engineers. We suggest beginning with the “Business and Contract Guide for Interconnection” that will guide you through the process and provide you descriptions for each of the documents. With this toolkit, each co-op should be able to independently draft the rules, policies, tariffs, contract documents and retail rates required to respond to member requests for interconnection.

Available at: [http://www.nreca.coop/nreca-on-the-issues/energy-operations/distributed-generation/](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-green.pdf)

### Additional Online Training Courses

#### State of Renewable Impact Analysis Software

This live 75-minute web conference presented by NRECA's Cooperative Research Network (CRN) provides co-ops with the basic technical guidance they will need to stay informed and on the leading edge of DG.

Available at: [https://www.cooperative.com/conferences-education/web-conferences/pages/state-of-renewable-impact-analysis-software.aspx](http://www.cio.com/article/2442514/it-strategy/5-security-questions-to-ask-your-software-vendor.html)

#### MultiSpeak Integrator Training

Learn the advantages of implementing MultiSpeak® specification and how it works during this in-depth training session for co-op staff, consultants, and software integrators. The workshop covers Version 3.0, which has been implemented at utilities since 2005.

Available at: [https://www.cooperative.com/conferences-education/courses/multispeak/Pages/default.aspx](http://www.greentechmedia.com/articles/read/IRS-Guidance-Finds-Individual-Community-Solar-Investor-Qualifies-for-the-Fe)

#### [Developing a Cyber Security and Risk Mitigation Plan](https://www.pcicomplianceguide.org?ID=2&Title=(175.1)+Developing+a+Cyber+Security+and+Risk+Mitigation+Plan?ID=2&Title=(175.1)+Developing+a+Cyber+Security+and+Risk+Mitigation+Plan)

NRECA’s CRN made news when it made available to the public the Guide to Developing a Cyber Security and Risk Mitigation Plan. Written for electric cooperatives, the Guide can be used by any co-op to start immediately strengthening its security posture and charting a path of continuous improvement. This one-day, 8-hour workshop introduces the Guide and its related documents, and walks participants through the process of developing their own cyber security plans. The workshop covers risks posed by people, processes, and technology, and also looks at NERC CIP compliance. After taking this class, co-op staff will be ready to create their own cyber security plans.

Available at: [https://www.cooperative.com/conferences-education/Lists/Courses/DispForm.aspx?ID=2&Title=(175.1)+Developing+a+Cyber+Security+and+Risk+Mitigation+Plan](http://pec.coop/Home/Energy_Services/altenergy/solartour.aspx?ID=2&Title=(175.1)+Developing+a+Cyber+Security+and+Risk+Mitigation+Plan)

This work, authored by the National Rural Electric Cooperative Association, was funded in whole or in part by the Department of Energy under U.S. Government contract DE-OE-OE0000222.

#### Enhancing IT Effectiveness: Managing and Planning the IT Function

This 2-day course covers the management techniques, current practices, tools, and resources crucial for effective IT planning, decision making, and leadership. The program also introduces a step-by-step approach to developing a strategic IT plan and guides participants in creating the foundation of an IT plan that can be taken back to their cooperatives.

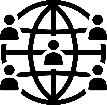
Available at: [https://www.cooperative.com/conferences-education/Lists/Courses/DispForm.aspx?ID=23&Title=(781.2)+Enhancing+IT+Effectiveness:+Managing+and+Planning+the+IT+Function](http://www.nreca.coop/SUNDA?ID=23&Title=(781.2)+Enhancing+IT+Effectiveness:+Managing+and+Planning+the+IT+Function)

#### Solar Tools: Getting Co-ops Up to Speed on Their Solar Options

NRECA has pulled together tools and resources to answer questions and help you make informed decisions when exploring the installation of your own solar arrays or participating in cooperative solar development, like community solar. This webinar updates our online toolkit, which incorporates the experience and input from experts and consultants across the country.

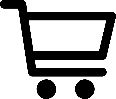
Available at: [https://www.cooperative.com/conferences-education/web-conferences/Pages/Solar-Tools-Getting-Co-ops-Up-to-Speed-on-Their-Solar-Options.aspx](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-kit-carson.pdf)

### Clean Energy Collective’s Community Solar Platform

 **RemoteMeter Foundation**™

The RemoteMeter Foundation™ (RMF) software is the core of CEC’s complete turn-key solution, making billing, administration, data reporting, and ongoing member-consumer engagement simple and reliable. The tools and services in this software suite will utilize the existing capabilities that CEC has developed over 6 years and millions of dollars of investment, in partnership with the Department of Energy and 25 utilities. By utilizing these existing, proven tools, cooperative utilities will be able to deliver program administration months faster than through any other option and at significantly lower cost, without encountering legal barriers, billing problems, crediting disputes, and the many other issues that can plague unproven program implementations. CEC will work closely with each utility partner to implement a best-in-class solution that includes these functions:

* Billing System Integration
* On-Demand Program Reporting
* Program Management Dashboard
* MyOwnCleanEnergy – Customer Engagement Application

 **RemoteMeter Engagement**™

Well-developed marketing materials and a sign-up strategy are essential to the success of the utility’s branded community solar programs. The Community Solar Platform allows this to happen via efficient, effective automated tools through RemoteMeter Engagement.™ Key components of RemoteMeter Engagement™ include a website that lists the details of your program and promotes your community renewables facility, an automated marketing process through downloadable marketing templates, and auto-generated member-consumer proposals. Certain marketing templates may be customized for participants in this pilot program.

The marketing of community renewables programs is a core focus and strong value proposition that CEC offers. This is an area that typically receives little attention up front and can very quickly result in an unsubscribed, failed program leading to a black eye for the utility. We offer this service under our RemoteMeter Engagement™ (RME) and will help cooperatives with the sign-up and marketing process by offering the following:

* Auto-generated member proposals
* Marketing templates, with potential for limited customization
* Integration of data into RMF program management dashboard

Disclosure: Clean Energy Collective is a primary contributor to this Playbook. NRECA does not endorse or recommend use of a particular vendor for its solar project needs.

## ENTITIES Providing Community Solar Services

### Executive Management, Governance, and Regulatory

**Vermont Energy Investment Corporation (VEIC)**

For three decades, the Vermont Energy Investment Corporation (VEIC) has provided energy services guided by our commitment to environmental and social justice, innovation, and results. VEIC provides utilities with program implementation and consulting services in energy efficiency, renewable energy, and transportation efficiency. VEIC specializes in policy and regulatory leadership, energy planning, financing and program design and review, grounded in our real-world experience delivering the awarding-winning programs Efficiency Vermont, the DC Sustainable Energy Utility (DCSEU), and Efficiency Smart. VEIC has consulted in Vermont and the District of Columbia to develop community solar regulations and creative models that include low-to-moderate income resident participation and employee/employer ownership.

Contact: Joananne Bachmann, Business Development & Sales Manager

Email: [jbachmann@veic.org](http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/)

Phone: +1.802.540.7838

**Clean Energy Collective (CEC)**

CEC utilizes its extensive experience to offer everything from turnkey CSPs to a comprehensive menu of products, software, and services to make each individual aspect of community solar a seamless process. CIC focuses on handling indemnity on securities and tax issues (SEC and IRS) as well as properly handling the ITCs, RECs and green claims for our partners. CEC’s policy team is a leader in the industry, active in virtually every interested state in driving toward positive CSPs and educating regulators, legislators, and stakeholders about the benefits of supporting such programs in communities.

Contact: Mark W. Wilkerson, VP Strategic Partnerships

Email: [mark.wilkerson@easycleanenergy.com](http://www.nreca.coop/solar-case-studies/)

Phone: +1.815.549.6051

**Meister Consultants Group (MCG)**

Meister Consultants Group provides expert technical and program assistance to rural electric cooperatives on a variety of clean energy programs including community solar projects. MCG works with cooperative leadership to understand, prioritize, and select community solar program design options, with an emphasis on developing community solar projects that are effective, financially sound, and in line with a cooperative’s organizational goals and principles. MCG provides targeted financial analysis that projects the financial impacts of programs on cooperatives and their members and supports rural electric cooperatives with member engagement and stakeholder education. MCG has worked with leading rural electric cooperative nationwide on community solar issues, and is a member of the White House Community Solar Partnership.

Contact: Ryan Cook, Consultant

Email: [ryan.cook@mc-group.com](mailto:Mark.Wilkerson@easycleanenergy.com)

Phone: +1.617.209.1990

### Marketing, Member-Consumer Services, and Communications

**Clean Energy Collective**

CEC has more experience in lead generation, sales conversion, and ongoing consumer engagement than anyone in the industry. CEC can offer everything from market research and consulting to a complete marketing suite, using consumer targeting and tactics that have been tested and refined in markets across the U.S. with multiple co-op partners. CEC continues to engage co-op member-consumers via production and credit tracking for the life of a project, as well as providing a custom portal through which consumers can view these numbers themselves on a computer or mobile or tablet device. CEC manages operations and maintenance of the array for the life of a project so that co-ops do not need to worry about them.

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Phone: +1.617.209.1990

### Information Technology

**Clean Energy Collective**

Through its proprietary software platform, as well as experience in working with numerous co-ops, CEC can ensure compliance with a wide range of billing systems. CEC provides automated reconciliation and application of solar panel production onto participating member-consumers’ accounts; an online credit check with adverse action letter (legal requirement); and e-commerce that allows for a quick, easy sign-up – all of which is entirely member-consumer driven and significantly eases the workload of a co-op’s employees in signing up member-consumers manually. CEC also provides multiple encryption options and secure consumer data-handling procedures.

Contact: Mark W. Wilkerson, VP Strategic Partnerships

Email: [mark.wilkerson@easycleanenergy.com](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-san-miguel.pdf)

Phone: +1.815.549.6051

**Federated Rural Electric Insurance Exchange**

Federated Rural Electric Insurance Exchange (Federated) is the leading provider of property and casualty insurance for rural electric cooperatives in 43 states. Federated is the only property/casualty insurer owned by the rural electric cooperatives. Its primary goal is to offer its co-ops the best insurance value while maintaining a stable, secure insurance market. Since Federated was formed, it has returned $322.6 million in cash and equity to its rural electric member co-ops.

Contact: Bill West

Email: wcw@federatedrural.com

Phone: +1.800.356.8360

**National Information Solutions Cooperative (NISC)**

National Information Solutions Cooperative (NISC) is a member-owned information technology cooperative that provides software and services to more than 750 community-based utility and telecommunication providers located in 49 states, Canada, American Samoa, and Palau.

Based on iVUE, its enterprise software solution, NISC offers accounting, consumer care solutions, and a suite of Smarter Grid solutions, which include meter data management systems (MDMS); prepaid metering; web-based and mobile consumer presentment, reporting, and payment tools; mobile workforce automation; mapping; outage management; and distribution analytics solutions. Additional information can be found at [www.nisc.coop](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-okanogan.pdf).

Contact: Susan Imm

Email: susan.imm@nisc.coop

Phone: +1.866.999.6472

**N-Dimension Solutions**

N-Dimension Solutions is a market-leading managed security service provider offering innovative solutions tailored to protect smart energy networks from cyber threats and vulnerabilities; improve system reliability; and safeguard critical infrastructures, data, and assets. Its services can protect operations and enterprise networks from internal and external cyber risks, providing a key element of a defense-in-depth security strategy.

Contact: Brad Luna, Senior VP

Email: [brad.luna@n-dimension.com](mailto:brad.luna@n-dimension.com)

Phone: +1.905.707.8884

**MultiSpeak**

The MultiSpeak® Initiative is a collaboration of NRECA, utility software vendors, and electric distribution utilities worldwide. MultiSpeak® is the leading standard for enterprise-level software interoperability. It allows for information sharing between systems in a cost-effective and standardized way. MultiSpeak® enables the Smart Grid and saves both vendors and utilities by simplifying software integration and minimizing expenses for custom interface solutions. It strengthens software applications and adds value to IT investments. For example, an advanced metering infrastructure (AMI) system automatically reporting power outages to an independent outage management system (OMS) via MultiSpeak adds tremendous value to both investments.

The MultiSpeak specification is the most widely applied de facto standard in North America pertaining to distribution utilities and all portions of vertically integrated utilities except generation and power marketing. It is the only interoperability standard of its type listed in the National Institute of Standards and Technology Smart Grid Interoperability Panel (NIST-SGIP) Catalog of Standards. It is used in real-time operations at more than 725 electric cooperatives, investor-owned utilities, municipals, and public power districts in at least 20 different countries worldwide. For more information, please visit www.multispeak.org.

Contact: Alvin Razon

Email: [alvin.razon@nreca.coop](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-cherryland.pdf)

Phone: +1.703.907.6843

### Finance and Program Administration

**Clean Energy Collective**

If a co-op selects CEC’s turnkey community solar option, CEC will finance the array and assume the risk. CEC assists with monetizing the 30% federal investment tax credit via tax-equity partners; resulting savings are passed through to member-consumers, allowing all consumer types to be eligible (residential, commercial, non-profit). CEC always performs extensive due diligence and ensures ongoing compliance with loan terms. CEC assists in finding financing for an array, which can greatly benefit co-ops; even those with a for-profit division will find that the costs, complications, and legal requirements are major hurdles and time requirements—all of which CEC can help the co-op avoid.

Contact: Mark W. Wilkerson, VP Strategic Partnerships

Email: [mark.wilkerson@easycleanenergy.com](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-kit-carson.pdf)

Phone: +1.815.549.6051

**CoBank**

CoBank is a national cooperative bank serving vital industries across rural America. CoBank supports rural communities and agriculture with reliable, consistent credit and financial services in all 50 states—today and in the future. CoBank is a member of the Farm Credit System, a nationwide network of banks and retail lending associations chartered to support the borrowing needs of U.S. agriculture and the nation's rural economy. In addition to serving its direct retail borrowers, the bank also provides wholesale loans and other financial services to affiliated Farm Credit associations serving approximately 70,000 farmers, ranchers, and other rural borrowers around the country. More information is available at [www.farmcreditnetwork.com](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-great-river.pdf).

Contact: Tamra Reynolds, Regional Vice President, Southern Region, Electric Distribution

Email: treynolds@cobank.com

Phone: +1.303.740.4034

**Federated Rural Electric Insurance Exchange**

Federated Rural Electric Insurance Exchange (Federated) is the leading provider of property and casualty insurance for rural electric cooperatives in 43 states. Federated is the only property/casualty insurer owned by rural electric cooperatives. Its primary goal is to offer its members the best insurance value while maintaining a stable, secure insurance market. Since Federated was formed, it has returned $322.6 million in cash and equity to its rural electric member co-ops.

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Contact: Ryan Cook, Consultant

Email: [ryan.cook@mc-group.com](mailto:jbachmann@veic.org)

Phone: +1.617.209.1990

N**ational Rural Utilities Cooperative Finance Corporation (CFC)**

The National Rural Utilities Cooperative Finance Corporation (CFC) is a nonprofit finance cooperative created and owned by America’s electric cooperative network. With more than $22 billion in assets, CFC is committed to providing unparalleled industry expertise, flexibility, and responsiveness to serve the needs of its member-owners. CFC is an equal opportunity provider and employer. More information is available at [www.nrucfc.coop](http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/).

Contact: Krishna Murthy, CFC, Vice President, Energy and Industry Analysis

Email: krishna.murthy@nrucfc.coop

Phone: +1.703.467.2743

**RUS Electric Program**

Under the authority of the Rural Electrification Act of 1936, the RUS Electric Program makes direct loans and loan guarantees to electric co-ops (wholesale and retail providers of electricity) that serve member-consumers in rural areas. The Electric Program helps nearly 700 borrowers in 46 states finance safe, modern, and efficient infrastructure. The resulting loan portfolio of approximately $46 billion is managed by the Electric Program. RUS-financed electrical systems provide service to more than 90% of the nation’s counties identified as suffering from persistent poverty, out-migration, or other economic hardships. The Electric Program also provides financial assistance through its High Energy Cost Grants to rural communities with extremely high energy costs to help them acquire, construct, extend, upgrade, and otherwise improve energy generation, transmission, or distribution facilities.

Contact: Victor Vu, RUS, Deputy Assistant Administrator, Portfolio Management and Risk Assessment

Phone: +1.202.720.6436

### Project Management Planning

**Clean Energy Collective**

CEC’s capabilities in project management, engineering, commissioning, and operations are unmatched in the industry. CEC has extensive solar array construction management experience, which includes program design, supervising the process from start to end, site-specific permitting, land acquisition, and securing necessary permitting and approvals. CEC’s in-house engineering team has expertise in modeling arrays and determining accurate production figures for multiple co-op partner arrays. CEC also provides in-house O&M services, including remote troubleshooting and service dispatch capabilities.

Contact: Mark W. Wilkerson, VP Strategic Partnerships

Email: [mark.wilkerson@easycleanenergy.com](http://www.nreca.coop/nreca-on-the-issues/energy-operations/distributed-generation/)

Phone: +1.815.549.6051

**Cross-Discipline Technology Limited**

Cross-Discipline Technology Limited (Cross-Discipline) can provide project management support to help guide the beginning of project conceptualization through final construction, including providing on-site construction observation/support. Cross-Discipline currently is contracted with Western Farmers Electric Cooperative (WFEC) to handle the engineering and project management required to interconnect 13 new solar farm sites to WFEC’s member cooperatives’ distribution systems. Its team has years of experience in providing project management, design/engineering, and procurement support, including full EPC services for multiple substations, transmission lines, and distribution lines. Cross-Discipline builds on that experience by teaming several strategic affiliates in the solar industry, and can provide project management support for a wide variety of solar projects.

Contact: Jerimiah Bridges, P.E.

Email: [jbridges@crossdiscipline.com](https://www.cooperative.com/conferences-education/web-conferences/pages/state-of-renewable-impact-analysis-software.aspx)

Contact: Chad Beardslee, P.E.

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**SoCore Energy**

SoCore Energy ([www.SoCoreEnergy.com](https://www.cooperative.com/conferences-education/Lists/Courses/DispForm.aspx)) is a market leader in cooperative, commercial and industrial solar portfolio development. With hundreds of solar solutions designed and installed across dozens of states, SoCore offers cooperatives, multisite retailers, REITs and industrial companies portfolio-wide solar and energy storage solutions that provide energy cost savings and carbon reduction opportunities. As a wholly owned indirect subsidiary of Edison International, SoCore combines Edison's Fortune 500 stability with entrepreneurial creativity in order to provide energy solutions that their customers genuinely want and need.

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Phone: +1.773.897.5782

**Meister Consultants Group (MCG)**

MCG provides expert technical and program assistance to rural electric cooperatives on a variety of clean energy programs including community solar projects. MCG works with cooperative leadership to understand, prioritize, and select community solar program design options, with an emphasis on developing community solar projects that are effective, financially sound, and in line with a cooperative’s organizational goals and principles. MCG provides targeted financial analysis that projects the financial impacts of programs on cooperatives and their members and supports rural electric cooperatives with member-consumer engagement and stakeholder education. MCG has worked with leading rural electric cooperative nationwide on community solar issues, and is a member of the White House Community Solar Partnership.

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Phone: +1.617.209.1990

**Mid-South Utility Consultants, Chain Electric Company, and Irby Utilities**

Mid-South Utility Consultants, Chain Electric Company, and Irby Utilities have developed a relationship to pursue EPC opportunities with investor-owned and public power utilities. Their expertise in each aspect of the process is well known to co-ops across the mid-South and greater Southeast United States. They are anxious to develop a program that will provide a broad spectrum of resources to rural utilities and support them as they develop their CSPs.

Contact: Mid-South, Keith Budlong, P.E.

Email: [kjb@msuc.net](https://www.cooperative.com/conferences-education/web-conferences/Pages/Solar-Tools-Getting-Co-ops-Up-to-Speed-on-Their-Solar-Options.aspx)

Contact: Chain Electric, Jason Lee

Email: [jlee@bchain.com](mailto:Henry.Cano@nreca.coop)

Contact: Irby Utilities, Eddie Moak

Email: [moak@irby.com](http://www.farmcreditnetwork.com)

**National Renewables Cooperative Organization (NRCO)**

Cooperatives across the country formed the National Renewables Cooperative Organization (NRCO) to promote and facilitate the development of renewable energy resources for its members. NRCO’s main purposes are to facilitate the cost-effective joint development of renewable resources nationwide for its cooperative owners, helping them meet the requirements of voluntary and mandatory renewable energy standards. For more information, please visit [www.nrco.coop](mailto:mark.wilkerson@easycleanenergy.com).

Contact: Todd Bartling, VP, Renewables Development

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**NRECA National Consulting Group**

Through its National Consulting Group (NCG), and in collaboration with its Business and Technology Strategies (BTS), NRECA is providing a resource to mitigate cooperatives’ risks and costs – and increase the value of successful CSPs. NRECA’s consultants work alongside cooperatives’ personnel to evaluate and plan for the strategic, business, financial, and resource requirements of solar projects. This work includes financial evaluation and business case development services, project planning and management, RFP development and analysis, and safety and technical compliance reviews.

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**Renewable Energy Integration**

Nanogrids by Renewable Energy Integration provide solutions to solar and storage, giving the cooperative complete control of the power. As a turn­key solution, its Nanogrid Program is designed with no money out ­of pocket for the cooperative, benefits for the member-consumers, and a business/finance model that generates new revenue streams, mitigates stress on aging assets, and pays for itself month in and month out.

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**Silicon Ranch Corporation**

Silicon Ranch Corporation (Silicon Ranch) is one of the nation’s leading developers, owners, and operators of solar energy plants. It understands the value that not-for-profit rural electric cooperatives and public power districts bring to their member-consumers across the country. Silicon Ranch is proud to have established positive and productive relationships with prominent local co-ops throughout the United States.

As the partner of choice for a diverse set of forward-thinking companies, Silicon Ranch brings all of the benefits of utility-scale solar energy together in a turnkey model that requires no capital investment from our stakeholders.

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**SunEdison**

SunEdison develops, finances, installs, and operates distributed solar power systems, delivering cost-effective electricity and services to educational, residential, commercial, utility, and government consumers. SunEdison’s 4.0-GW global portfolio spans 23 countries and 28 states, and has generated more than 9,000 GWh.  
  
SunEdison is pleased to offer turnkey community solar options for electric co-ops. SunEdison understands that each NRECA co-op member has its own priorities, competencies, and limits. As such, it is happy to work with co-ops to structure the optimal community solar program based on their executive and member-consumer preferences. SunEdison’s approach is premised upon a low-cost, economy-of-scale model that is simple to implement and tailored to co-ops’ individual needs.  
  
The challenge for co-ops lies in how to offer community solar at the least cost and with maximum benefits to the co-op and its member-consumers. SunEdison works as a partner to design and implement the most effective and efficient full-service community solar solution.

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**Power System Engineering, Inc. (PSE)**

Power System Engineering Inc. (PSE) is a full-service consulting firm for electric utilities. The professionals at PSE include engineers, IT experts, utility strategy experts, economists, and financial analysts. PSE’s team has extensive experience in all facets of the utility industry. PSE services include communications (fixed and mobile), technology work plans, strategic plans, construction work plans, long-range plans, sectionalizing studies, load forecasting, line design, rates and financial planning, substation automation, and many others. For a full list of services, visit the PSE website at www.powersystem.org.

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1. Source: PCI Security Standards Council https://www.pcisecuritystandards.org/documents/PCI%20SSC%20Quick%20Reference%20Guide.pdf [↑](#footnote-ref-2)