

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 1: Executive Management

## 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.

**This Executive Management 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 (this document)

* Board of Directors Guide

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

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

# Introduction: Executive Management Module

This module has been developed for executive staff interested in implementing a community solar program. It provides guidance in establishing the right community solar business model for your cooperative, as well as the staffing, planning, and oversight necessary to realize a successful project.

The sections of this module include the following:

* Executive Management Checklists
  + Chief Executive Officer
  + Legal, Finance, Tax, and Regulatory Staff
  + Board of Directors
* Executive Planning for Community Solar
* Business Case Template
* Developing and Describing a Community Solar Business Case
* Developing a Scope of Work and Staffing Plan
* Resources for Executive Management and Board of Directors
  + Tools and Resources from NRECA
  + Additional Online Training Courses

Community solar planning is an iterative process with no right answers, only trade-offs. This document uses the “Business Case Development” methodology to help executive staff think through goals, options, and challenges, and determine the best course of action. The following sections, Developing and Describing a Community Solar Business Case and Developing a Scope of Work and Staffing Plan, provide insight and reference to assist in this process.

The playbook categorizes the various job-functions under 7 generic titles. These titles are shorthand and do not necessarily apply to specific individuals; they could apply to a team, and individuals could fall into multiple categories.

Primary Contributors ‒ Titles and Functions:

1. Chief Executive Officer (CEO) – Executive staff, including the CEO, is responsible for initiating the planning process and providing programmatic oversight and strategic direction for the project. In a typical planning process, the CEO solicits and receives recommendations from the staff and external resources to determine the overall business model, staffing, and implementation plan. In the planning process provided in this Playbook, 8 key documents will be created by staff to assemble the data needed to finalize the business case.
   * Value Proposition Document (Marketing Manager)
   * Engineering Design and System Configuration Plan (Project Manager)
   * Project Budget and Projected Cash Flow (Project Manager)
   * Siting Options Document (Project Manager)
   * Recommendation of Community Solar Business Model (Business and Finance Manager and staff)
   * Marketing and Communications Plan (Marketing Manager)
   * Information Technology System Integration Plan (IT Manager)
   * Risk Mitigation Plan (staff, including the Business and Finance Manager)

The CEO is responsible for finalizing the business case, which will be used for board approval and policy creation, staffing the program, and is accountable for ensuring legal and regulatory compliance.

1. Project Manager ‒ The business case will be compiled by the Project Manager, with contributions from staff or external consultants. The approach in this document uses 2 phases in the business case development process. The first phase centers on the exploration of options (business models, technology, software needs, and marketing tactics), with suggested approaches for CEO approval. The second phase integrates the selected program structures into a single integrated program plan, with budget, schedule, and projected cash flow, for board approval.

Additionally, the Project Manager is responsible for developing the PV system designs; establishing siting options; and overseeing the procurement, construction, commissioning, and operation of the PV system.

1. Marketing Manager – Marketing and Member-Consumer Services and Communications staff, including the Marketing Manager, are responsible for developing a Marketing and Communications Plan for the community solar program. Included in this effort is the establishment of the consumer value proposition as well as a branding and communications timeline based on market analysis and segmentation of the cooperative’s member-consumership.
2. Information Technology (IT) Manager – The IT Manager is responsible for creating the IT integration plan, which includes recommendation of software products to support marketing and administrative efforts such as consumer information systems (CIS)/billing modification requirements and options and consumer management tools, “self-serve” automation, and data collection service. It is the IT Manager’s obligation to ensure that any software purchased can be integrated into the cooperative’s systems and meets cyber security requirements.
3. Business and Finance Manager ‒ The Business Manager’s duty is to assess potential business model options for a community solar program (considering risk management) and provide a recommended approach to the CEO.

Supporting Contributors – Titles and Functions:

1. Board of Directors – The Board’s role is to review the business case provided by the CEO, determine whether the initiative is within the cooperative’s mission, and whether the cooperative is dedicating appropriate resources within its overall strategic plan. Finally, the Board should consider adopting a policy authorizing the project.
2. Legal and Regulatory Counsel – Counsel’s role is to ensure that recommended approaches are compliant with all relevant enabling statutes, bylaws, federal or state laws, rules and regulations. Counsel should be brought into the process at the beginning of each step to ensure that the plan for accomplishing each step meets legal requirements.

## Executive Management Checklists

The role of the CEO in initiating and overseeing a community solar project (CSP) involves setting program goals, evaluating options, outlining related policies, committing the right staff resources (i.e., the Project Manager) empowered with the appropriate authority, providing timely direction to the relevant departments, and engaging the stakeholders needed to implement the program. Table 1 provides a high-level checklist of key actions that may be taken to develop a successful community solar program. Forthcoming chapters will focus on the specific details of the checklist.

Table 1: CEO Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CHIEF EXECUTIVE OFFICER** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Set goals for the community solar program** |  |  |  |  |  |  |  |
| 🞎 | **Approve Value Proposition Document** |  |  |  |  |  |  |  |
| 🞎 | **Oversee coordination with G&T, statewide, and other affiliated cooperatives** |  |  |  |  |  |  |  |
| 🞎 | **Develop a risk mitigation document** |  |  |  |  |  |  |  |
| 🞎 | **Develop a staffing plan** |  |  |  |  |  |  |  |
| 🞎 | **Select a community solar business model** |  |  |  |  |  |  |  |
| 🞎 | **Approve Marketing and Communications Plan** |  |  |  |  |  |  |  |
| 🞎 | **Select/approve Information Technology System Integration Plan** |  |  |  |  |  |  |  |
| 🞎 | **Approve financial plan** |  |  |  |  |  |  |  |
| 🞎 | **Ensure compliance with applicable federal and state regulatory requirements** |  |  |  |  |  |  |  |
| 🞎 | **Review siting options** |  |  |  |  |  |  |  |
| 🞎 | **Propose business case to Board** |  |  |  |  |  |  |  |
| 🞎 | **Develop PV and community solar policies for Board approval** |  |  |  |  |  |  |  |

In addition to the above tasks, executive staff should be aware of the legal and regulatory concerns (covered in section: Legal, Tax, and Regulatory Overview) as well as the Board’s role in program planning and development. Below are the summarized checklists for both functions.

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| **LEGAL, TAX, & REGULATORY** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Advise regarding applicable legal and regulatory requirements and issues** |  |  |  |  |  |  |  |
| 🞎 | **Review available incentive options and identify those most applicable to your project** |  |  |  |  |  |  |  |
| 🞎 | **Review and assist in the development of the Risk Mitigation Plan** |  |  |  |  |  |  |  |
| 🞎 | **As appropriate, review data and record-keeping requirements** |  |  |  |  |  |  |  |
| 🞎 | **As appropriate, review cost-of-service options and restrictions** |  |  |  |  |  |  |  |
| 🞎 | **Review marketing materials** |  |  |  |  |  |  |  |

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| **BOARD OF DIRECTORS** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Educate themselves on the elements of a solar policy and the key decision factors** |  |  |  |  |  |  |  |
| 🞎 | **Review business case and value statement developed by staff; ensure alignment with cooperative strategic goals** |  |  |  |  |  |  |  |
| 🞎 | **Consider adopting community solar policy** |  |  |  |  |  |  |  |

# Executive Planning for Community Solar

The fundamental role of the CEO is establishing the strategic rationale for the program, setting program goals, committing staff resources, and presenting the business case for Board approval. The Business Case Template provides an outline of the many elements that should be addressed throughout the planning process. It is an iterative process that will require input from different specialists within the cooperative as well as from external resources, such as consultants or developers. Every cooperative has its own goals, skills, and Board approval process; this template should be adapted as necessary.

**Community Solar Planning and Implementation Resources:**

The planning and implementation process described in this Playbook involves a significant workload and requires difficult decisions to be made.

A list of tools and resources to assist in this process, as well as a list of vendors and consultants that specialize in community solar, are included in the Resources Section at the end of this module. NRECA does not endorse or recommend the use of particular vendors, including those vendors named in this Playbook.

The NRECA National Consulting Group (NCG) provides direct community solar consulting services based on this Playbook and other NRECA resources. NCG developed the business case template used in this document. Meister Consulting Group also provides consulting services and contributed to this Playbook.

The financial organizations Cooperative Finance Corporation and CoBank provide planning services in addition to financing. Federated Rural Electric Insurance Exchange offers risk management services. All three organizations contributed to the development of this Playbook.

Finally, NRECA associate members Silicon Ranch and Clean Energy Collective specialize in developing community solar projects. Notably, Clean Energy Collective was essential to the development of this Playbook by providing its experience as a developer.

The business case itself will be compiled by the Project Manager, with contributions from staff or external consultants. The approach in this document uses two phases in the business case development process. The first phase centers on the exploration of options (business models, software needs, marketing tactics) with suggested approaches reviewed with the CEO for approval. The second phase selects a program structure and integrates it into an overall program plan for Board approval.

The finalized business case will contain only the essential elements derived from the overall planning materials acquired during the development process. It will include the detailed financial, engineering, marketing, and IT integration plans that will be used to guide the implementation of the program.

The Business Case Template section below provides an outline and guidance for the development of the business case.

# Business Case Template

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Assignment** | | | | | |
| **Step 1. Do Your Research** | **CEO** | **BOD** | **PM** | **IT** | **MKT** | **FIN** |
| **LEG** |

Take the time to scan and understand the PV basics, industry trends, technology, general economics, market opportunities, and other critical factors for successful community solar programs. It is important to understand the role and qualifications of third-party solar providers, and other external factors such as existing market penetration that may influence the demand for renewable options within your proposed program area. Resource materials, use cases, and guides can be found on the NRECA Business & Technology Strategies site on Cooperative.com.

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| **Step 2. Define the strategic business drivers and rationale** | **CEO** |  | **PM** |  | **MKT** |  |

Describe the potential strategic advantages and related business drivers when considering a community solar program. A program should have a clear rationale aligned with the cooperative’s strategic direction. Possible business drivers may include responding to member-consumer demand by offering competitive renewable energy source options, increasing the cooperative’s bond with its consumers, enhancing economic development, addressing regulatory requirements, gaining experience in renewable technology, and improving public perception of the cooperative.

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| **Step 3. Consider the member-consumer market** |  |  | **PM** |  | **MKT** |  |

Develop the value proposition for consumers. Determine member-consumers’ interests, needs, and motivations for participating in a community solar program. Leverage existing research or initiate targeted market surveys or focus groups. It is important to assess, by member-consumer segments, the potential demand and participation factors for a community solar program offering. Prospective questions to answer include the following:

* What does the existing research indicate about technology choice and consumer trends?
* What are the levels of awareness for solar programs within the co-op’s service territory?
* Who is likely to participate?
* What motivates them to participate?
* How much are they willing to pay?
* What are the service needs and expectations for a solar program?
* What is the competition doing (offerings, cost, sales pitch)?
* What are the market segments to target?
* How can the cooperative differentiate itself from the competition?
* What opposition to the program might arise, and from what entities?

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| **Step 4. Define and map stakeholders** | **CEO** |  | **PM** |  |  |  |

Map the roles, motivations, responsibilities, and degree of involvement of key stakeholders, such as the Board and its role in the program evaluation process; the G&T’s role, guidance, and involvement; and any relevant member-consumer advisory groups with which the cooperative may be engaged. Define the roles of any third parties that may be involved in, or could potentially influence, the CSP. Conducting stakeholder mapping early in the project development process can better position the cooperative to achieve the necessary buy-in for the program.

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| **Step 5. Outline conceptual business model and options** |  |  | **PM** |  | **MKT** | **FIN** |
| **LEG** |

As a starting point to the evaluation, determine the possible program elements and options that would be considered in the evaluation process. These include the following:

|  |  |
| --- | --- |
| **Target Segment** | Residential  Commercial and Industrial (C&I)  Mixed use |
| **Project Scale** | Capacity size of the solar infrastructure |
| **Ownership** | Cooperative-owned (G&T or D-Coop)  Purchase power agreement (PPA) |
| **Electrical Grid** | Substation and Technical Issues |
| **Financing** | Non-Taxable Cooperative:   * Conventional loan * NCREBs (New Clean Renewable Energy Bonds) * REAP grants * Tax-equity flip * Taxable subsidiary   Taxable Cooperative:   * Lease buy-out * NCREBs * Consumer ownership * Tax-based flip   Conduct legal review of options |
| **Member-Consumer Program Offering** | * Lease/sell panel model * Subscription model * Energy block sales * Direct energy purchase * Green energy bill credits   Potential cross-subsidy issues – conduct legal review of options |

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| **Step 6. Gather data and relevant technical and financial information** |  |  | **PM** | **IT** |  | **FIN** |
| **LEG** |

Before doing a detailed economic and financial evaluation, gather and confirm the necessary data. These include the following:

* System configuration
  + Energy output projections, based on scale and location
  + Array and module type and size
  + Capacity factor and related dependent variables impacting capacity
  + Inverter ratings
  + Required land size
  + System life
  + Substation, available capacity, and interconnection requirements
  + Power flow, system protections, voltage regulation, intermittency, harmonics, and islanding
* Capital infrastructure investment
  + Engineering design, hardware, site preparation, construction, installation, and interconnections
  + Land cost
  + Interest during construction
* Operating and maintenance costs
  + Costs for managing, maintaining, and operating the system
  + Member-consumer support and care
  + Replacement and repair
* Marketing costs
  + Time, resources, and materials
  + Software costs
  + Consumer receptivity
* Software costs
  + To support marketing (CIS/CMS systems)
  + To support program administration (billing and record keeping)
  + Costs to integrate and maintain project IT needs into cooperative systems
* Internal costs to outsource discrete work activities
* Possible incentives, including investment tax credits (state and federal), accelerated depreciation, property tax exemptions, renewable energy credits (RECs) (if available), grants and rebates, etc.; have legal counsel review incentive opportunities
* Information on financing alternatives and PPA scenarios

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| **Step 7. Complete an economic and financial evaluation** |  |  | **PM** |  |  | **FIN** |

Outline the related business assumptions, including land availability, capital expenditures (CAPEX) and operating expenditures (OPEX), wholesale power cost, operating management staffing costs, regulatory environment, required internal capital rate of return, escalation rates, etc.

* Ensure involvement of the right personnel to guide, participate, and validate the various analyses.
* Model and analyze the financials and economics. Possible analyses include the following:
  + Perform an initial financial screening to assess and compare the composite unit cost per generation for various financing options (reference: SUNDA Solar Costing Financial Screening Tool, PV Solar, etc.)
  + Perform an economic analysis (pro forma) over the project life to determine net present value, internal rate of return, and payback years
  + Integrate the financial forecast with community solar financials to determine the impacts on key financial ratios
* Model various “what if” case scenarios to assess how key cost drivers and options impact economics. Example use-case scenarios include the following:
  + Economics of the varying scale options for the project
  + Changes in equipment price and related revenue requirements
  + Model of financial impact of varying levels of subscriptions, including a low-level subscription scenario and identifying a break-even subscription point (optimize for both co-op and consumer)
  + Impacts of renewable credits recovery
  + Sensitivity to land costs
* Summarize the key conclusions from the analysis:
  + What are the financial options and factors that optimize financial results for the cooperative?
  + What are the non-economic benefits such a political goodwill, member-consumer engagement, and others?
  + What are the optimum technology and economy-of-scale options?

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| **Step 8. Assess the related risks and outline mitigation strategies** | **CEO** |  | **PM** | **IT** | **MKT** | **FIN** |
| **LEG** |

Analyze the key risk factors and outline possible strategies or attention areas. Assess both the likelihood and impacts. Outline those approaches that minimize or address the most important risk areas.

Examples:

|  |  |
| --- | --- |
| **Possible Risk Area** | **Mitigation** |
| Risk of doing nothing | * Comprehensive scan of the market, competitive environment, trends, and drivers for community solar, and evaluation of appropriate responses to meet member-consumer demand, if needed |
| Financial risk | * Careful modeling and analysis of the financial options and drivers that will impact financial results |
| Lack of participation or underperforming subscriptions | * Clearly describe the overall value proposition * Ensure a comprehensive marketing and communications plan * Model worst-case scenarios * Make adjustments in project scale |
| Solar system underperformance | * Strong vetting process of the selected solar infrastructure design, technology selection, and installation team * Performance guarantees from vendors |
| Land availability and acquisition costs | * Negotiate land acquisition options * Understand advantages/disadvantages of property siting options * Clearly understand siting zoning regulations |
| Environmental, permitting, siting, and decommissioning risks | * Anticipate and consider all related elements, including federal, state, and local requirements; environmental impacts; decommissioning, etc. * Design system to minimize decommissioning costs |
| Cyber security and software interoperability risks | * Identify data that require confidential management * DOE cyber security procurement language * Cyber security risk insurance * MultiSpeak compatibility * Software documentation * Vendor selection, with IT criteria |
| Hidden costs | * Research and learn from other installed systems * Anticipate sources of hidden costs * Ensure comprehensive review of internal resource impacts * Engage subject matter experts to assess the cost elements |
| Project delays | * Establish clear project roles * Ensure comprehensive project and schedule with effective project management controls * Incorporate contingency into schedule |
| Legal and regulatory risks | * Seek legal counsel or CPA firm (as appropriate) with expertise on enabling statutes; bylaws; applicable federal and state environmental, renewable, zoning, and land-use regulations; tax law; SEC regulations; existing funding requirements of entities such as RUS; and utility regulations * Collaborate or contract with third parties that have expertise; although third-party expertise can be valuable, it is not a substitute for legal counsel |
| Staffing risk | * Ensure that assigned Project Manager and other key staff have the right skills, capabilities, and bandwidth * Cost-benefit analysis of insourcing vs. outsourcing various duties |
| Political risk | * Coordinate with political and legal counsel * Contact political stakeholders for insights |

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| **Step 9. Confirm the program objective, value proposition, goals, and success factors** | **CEO** |  | **PM** |  | **MKT** | **FIN** |

Describe the overall purpose (why do this?) and value proposition (a clear and concise statement outlining the value contribution to the member-consumership) of the proposed program.

* Define 2‒4 measured goals for the program. Examples include the following areas:
  + Member-consumer participation
  + Energy output
  + Economic impact on cooperative and consumers
  + Consumer satisfaction with the program offering
  + Mitigating the potential of future regulatory or political risks

Outline the related success factors – what are the elements that will demonstrate success for the program?

|  |  |  |  |  |  |  |
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| **Step 10. Define member-consumer participation and communications strategy and plan** |  |  | **PM** |  | **MKT** |  |
| **LEG** |

Considering the program goals, outline various approaches to market and communicate the solar program. Possible areas include the following:

* Formulate a messaging approach consistent with the overall value proposition statement
* Decide on the name and develop a branding plan for the offering
* Assess the target member-consumer segments
* Distill a clear communication brief on how member-consumers can participate
* Outline various communication channels to reach consumers
* Draft a formal plan and schedule
* Have marketing messaging reviewed by legal counsel

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| **Step 11. Finalize and describe the details of community solar program elements** | **CEO** |  | **PM** |  |  |  |

Building on the research, evaluation, and analysis, refine and describe the details of the proposed community solar program. An outline of the community solar program elements may include the following:

* Strategic rationale
* Program goals, overall value proposition, and success factors
* Proposed scope, scale, and technology infrastructure
* Proposed software strategy
* Proposed financing strategy
* Proposed marketing strategy
* Consumer value proposition, pricing, member-consumer participation and member-consumer care
* Estimated project size
* Regulatory and legal overview undertaken in conjunction with each of the elements listed above
* Next steps

## Business Case Contribution and Planning Overview

The business case itself will be compiled by the Project Manager, with contributions from internal staff or external resources. However, three elements will need direct contributions or oversight from the CEO for their completion.

1. Define the strategic business drivers and rationale for the program. This definition should address how this program supports the cooperative’s strategic direction. For a member-consumer-owned utility, it is important that the consumer value proposition (to be created by the Marketing Manager) is linked to this effort.
2. Define and map stakeholders – A particular focus should be on the development of long-term business relationships that may not be apparent to staff.
3. Develop a staffing plan – The plan should weigh the cost and benefits of bringing in outside specialists, such as developers or consultants, evaluated against the cooperative staff’s current workload and professional development opportunities.

The CEO will also be responsible for finalizing and describing the details of the community solar program to the Board for approval.

**An outline of the community solar program for Board review may include the following:**

* + Strategic rationale
  + Program goals, overall value proposition, and success factors
  + Proposed scope, scale, and technology infrastructure
  + Proposed financing strategy
  + Pricing, member-consumer participation, and member-consumer care
  + Regulatory and legal factors
  + Marketing and communications documents
  + Next steps

**Before finalizing the business case, the CEO will need to review and approve:**

* Value Proposition Document (Marketing Manager)
* Engineering Design and System Configuration Plan (Project Manager)
* Project budget, schedule and cash flow
* Siting Options Document (Project Manager)
* Risk Mitigation Plan (Staff and legal counsel)
* Recommendation of Community Solar Business Model (Business and Finance Manager and staff)
* Marketing and Communications Plan (Marketing Manager)
* Information Technology System Integration Plan (IT Manager)
* Financial Plan (Business and Finance Manager)

Additionally, the CEO must work with legal counsel to ensure compliance with applicable enabling statutes, bylaws, state and federal regulatory requirements, and existing financial requirements of entities such as RUS.

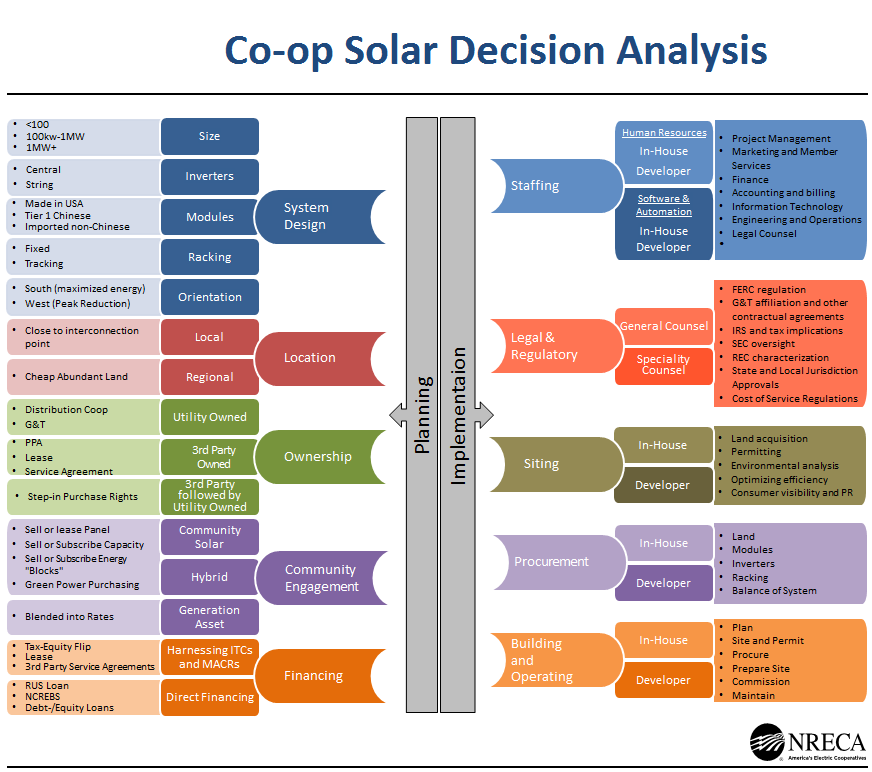
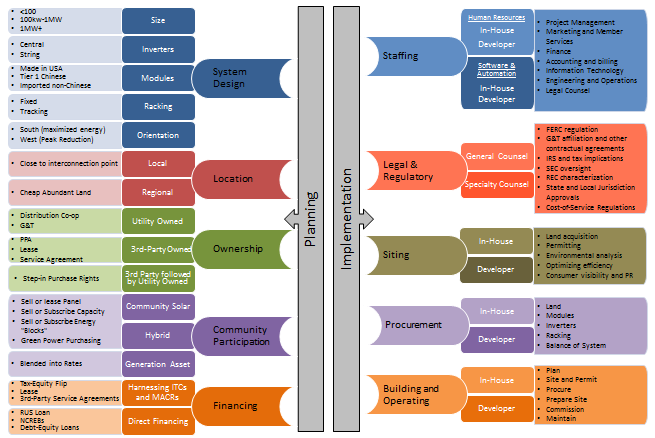
**Three specific considerations that may require additional or specialized counsel include the following:**

1. Securities and Exchange Commission (SEC) regulations related to offering securities
2. Renewable energy credit claims and their impact on marketing messaging, consumer contract language, and record-keeping requirements
3. Internal Revenue Service (IRS) regulations regarding harnessing of production tax credits (PTCs) or investment tax credits (ITCs) and Modified Accelerated Cost Recovery System (MACRS)

The next section provides a high-level view of the various decisions that must be made during the planning and implementation process.

## Overview of the Planning and Implementation Decisions

Figure 1: Decision Analysis



# Developing and Describing a Community Solar Program Model

Although it is the Business and Finance Manager’s role to develop a suggested Community Solar Business and Financing model, it is important that the CEO understands the finance options and uses consistent terminology when advancing the discussion with the Board. The criteria should be designed to ensure the program maximizes value to the consumers and the co-op, and supports the strategic goals of the cooperative.

Community solar programs should be designed to enable cooperative utilities to do what they do best: engage with their member-consumers, provide affordable power, and maintain a safe and reliable grid. Flexible business models allow community solar operators to provide the benefits of solar power to all interested member-consumers equitably, scale programs to fit the cooperative’s needs, and lower costs by taking advantage of tax credits and economies of scale. The goal of community solar programs is to allow cooperatives to provide their member-consumers with reliable, long-term power and offer them the clean energy choices that they are increasingly requesting.

However, these benefits must be balanced against the costs, challenges, and risks that community solar programs can create. Thus, it is essential to begin the program development process with a thorough and honest assessment of the drivers that have led to the decision to implement a community solar program, the goals the cooperative seeks to achieve, and the cost of meeting those goals.

### Identifying Community Solar Program Drivers

The first step in setting goals is to determine why your cooperative is launching a community solar program. Below are three fundamental influences that underlie any programmatic decision.

1. **Member-consumers may want it** – Community solar programs enable cooperatives to provide a clean energy solution that member-consumers want, provide an alternative to rooftop solar, offer new opportunities for consumers unable to obtain rooftop solar, and help create positive public relations (PR) with member-consumers and the community. Consumers who participate in a solar program are usually motivated by environmental concerns, the ability to offset personal electricity used, and to hedge against rising electricity costs. Currently, 74% of people with rooftop solar use self-generation to save money.[[1]](#footnote-2) Community solar programs allow utilities to meet these goals and offer consumers clean energy choices.
2. **Manage distributed solar projects** – A community solar program supports cooperative oversight of distributed resources to optimize the distribution network, ensure safety and reliability, make sure solar programs are in the best interest of the member-consumership, and certify that power generated is delivered to the utility in compliance with current power contracts and policies.
3. **Meet policy and regulatory obligations** – The community solar program structure can enable renewable investment consistent with policy and regulatory considerations; in addition, energy produced by a community solar array can be used to meet renewable portfolio standards (RPS).
4. **Mitigate future statutory and regulatory obligations** – The community solar program can mitigate the likelihood that legislators and regulators may establish future mandates regarding renewables and market participants, including RPS and excess generation compensation mechanisms such as Net Metering.

## Establishing Goals for the Cooperative’s Community Solar Program

Although it is the role of the CEO to determine the cooperative’s goals for a CSP, this document assumes the cooperative will want CSPs to satisfy at least four criteria:

* The program is sustainably subscribed
* The program returns value to member-consumers in an economically balanced and equitable manner
* Subscribers (member-consumers) are satisfied with the program and remain engaged over the long term
* The program meets all legal and regulatory obligations

A community solar program may also help to achieve other goals specific to the cooperative’s particular areas of operations, such as the following:

* The program offers a competitive alternative for member-consumers seeking renewable energy sources
* The program addresses concerns of cross-subsidization by nonparticipating member-consumers
* Political and community goodwill is created
* Cooperative and staff are established as early adopters of solar technology
* Marketing, software, and staff infrastructure are established for future consumer-centric programs

The community solar goals should align with cooperative’s strategic direction and be developed in conjunction with the cooperative Board’s policy on PV and community solar.

## Characterizing A Community Solar Program

The development of a community solar business model is an iterative process. Cooperative goals must be balanced against costs and benefits. This section provides a lexicon and organization framework to help keep track of the various options available throughout the business case development process.

A community solar business model can be characterized by four fundamental elements:

1. How big should the system be?
2. Where should it be located?
3. Who will own the PV system?
4. How will the community be able to invest and participate, and how will the program be priced?

The overall business model will include additional considerations, such as financing options and contractual arrangements to be evaluated by the Business and Finance Manager.

Various program design options are available that impact the cooperative’s ability to achieve the desired outcome with respect to each of these four fundamental elements. This section summarizes the considerations affecting the most suitable choice; however, the relationships are by no means rigid and will depend on the particular circumstances and goals of the cooperative utility.

It should be noted that there are many variants within the four business model elements, and any weaknesses in a project design could be addressed through strategic marketing and appropriate pricing. Furthermore, the foundation of any business model decision should be based on consumer value and the related investment/cost to the member-consumer.

|  |  |
| --- | --- |
| A | System Size |

**Considerations:** The size of the system is often constrained by land availability and consumer interest. A typical PV system needs 5–6 acres per MW. PV system size may also be influenced by the risk threshold for capital investment. A typical utility-scale PV system costs about $2 million per MW (AC). Costs for solar projects continue to decline, but the rate of decline is slowing. The “soft costs” (non-solar panel components) representing the balance of a solar project now make up a major part of a solar project’s cost; these costs are proving more difficult to reduce. Management should also be aware that PV system costs are often quoted in the context of direct current (DC) capacity, rather than alternating current (AC). The conversion through inverters from the panel-generated dc to ac involves efficiency losses that reduce the ac capacity actually deliverable to the grid. Care should be taken to understand and define the actual ac capacity of the system.

Geographic features may also determine PV system size. Interconnection costs to the grid and land development costs, for example, can add significantly to total system costs. Ideally, a level field without trees and adjacent to a substation is optimal in terms of cost. The less ideal the site options, the larger the system will need to be to absorb development costs. Strategically, the ability to gain efficiencies of scale (and potentially more value to the member-consumership) should be balanced with considerations of investment risk and consumer demand.

**Options and benefits:**

|  |  |  |
| --- | --- | --- |
| <100 kW | 100 kW‒1 MW | 1 MW+ |
| * Provides most siting flexibility * Provides experience * Low capital cost * Results in highest cost of power, which can limit attractive pricing options and value to member-consumer | * Increases siting flexibility * Offers potential for strategic placement for local economic development * Offers potential for grid support * Could use site that could result in greater PR value | * Leverages economies of scale * Lowers soft costs * Serves the greatest potential number of member-consumers * Provides greatest value proposition to member-consumers * Optimizes lowest consumer participation costs * Could utilize land suitable for large-scale interconnection |

|  |  |
| --- | --- |
| B | Location |

**Considerations:** Placement is usually determined by land availability, the cost of interconnection, land prices, and various stakeholder demands (both for and against). Strategic concessions must weigh the PR and consumer engagement benefits of a publically visible local system against the flexibility and cost savings that could be gained from locating the PV system remotely.

When PR and consumer engagement have been high priorities, some cooperatives have successfully worked with local municipalities to secure lower-cost land and streamline permitting. Cooperatives may also locate solar projects strategically in areas where local generation could provide targeted grid benefits. The location of a project site can also have significant implications for the marketing, messaging, and communication strategy developed to accompany project roll out.

**Options and benefits:**

|  |  |
| --- | --- |
| Local | Regional |
| * High visibility * Greater consumer engagement * Greater opportunity for localized PR message * Siting closer to the load * Fewer siting options, which can restrict system design flexibility * More expensive land * Higher member-consumer participation costs | * Greater options for designing for lowest installed cost * Lower member-consumer participation costs * Utilization of land suitable for large-scale interconnection |

The Project Manager will be responsible for providing siting options for the PV system. Experience has shown that siting and permitting can pose the greatest risk in launching a program and should be priority activities early in the project development.

Additionally, close coordination with local residents to identify and address any concerns should be undertaken before any site is finalized. Unexpected opposition can disrupt the permitting process, as well as damage the cooperative’s reputation, thus negating the PR value of the project.

|  |  |
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| C | Ownership Model |

**Considerations:** There are a number of strategic considerations a utility must evaluate with regard to ownership. The key question is whether the utility should own the system itself or purchase electricity from a project developed by a third party. Third-party programs can be simpler to implement because they can provide a turnkey solution for system design and implementation. Use of a third-party can also include solutions for consumer marketing and billing and software integration. Further, the benefits of contracting with a third party include risk mitigation, as contracts can be drafted to minimize risk by allocating responsibilities to the third party as well as negotiating appropriate indemnification and limitation of liability clauses in an agreement. Third-party ownership may also provide cost savings if a cooperative cannot take advantage of the federal ITCs, accelerated depreciation (i.e., MACRS[[2]](#footnote-3)), or other tax benefits.

**Organizational Choice**

Linked to ownership choice is organizational choice. PV projects can be implemented by distribution cooperatives, G&Ts, or a developer. The choice of how they are implemented can influence the amount of capacity, how the power output flows contractually, how it is paid for, and who controls it. This decision is mostly predicated on contractual obligations but can also be driven by economic opportunities.

Key questions:

1. What are the co-op’s contractual obligations regarding power supply and owning this generation asset?
2. Can the G&T provide a lower cost of capital?
3. Can the G&T provide additional resources for procurement and project implementation?
4. Is there the potential for consolidation of projects with other co-ops to achieve economies of scale?

Another approach is third-party ownership followed by utility ownership. In this hybrid approach, the utility uses service agreements similar to third-party ownership models but that include utility step-in rights to full ownership after a negotiated time period (typically 7 years, to harness the ITCs and MACRS). The key benefit to this approach is that the cooperative may be able to derive additional value from the PV system beyond the typically contracted 20‒25 years.

Cooperatives, especially those without a tax appetite, may find it difficult to harness ITCs and MACRS for smaller projects (less than 1 MW) due to the high transaction costs. One alternative is to utilize NCREBs, which provide a smaller but still significant financial benefit to cooperatives. Additionally, before selecting the utility-owned option, cooperatives should ensure the organization is comfortable managing risks such as (1) requirements for up-front capital expenditures; (2) potential for unsubscribed capacity; and (3) potential regulatory implications.

**Ownership options and considerations:**

|  |  |  |
| --- | --- | --- |
| Utility Owned | Third Party Owned | Third Party, Followed by Utility Ownership |
| * Allows autonomous design and operation * Allows full control of billing and communications * Fosters increased workforce utilization and development opportunities * May be difficult to harness ITC and MACRS, especially on smaller projects | * Avoids up-front capital costs * Captures ITC and MACRS benefits fully and more easily * Reduces likelihood that project will be subject to SEC jurisdiction; reduces tax implications * Avoids construction risks and ongoing operation and maintenance risks * Avoids technology obsolescence risks * Can provide marketing and IT services * Avoids decommissioning risks * May be considered a lease for accounting purposes | * Avoids up-front capital costs * Captures ITC and MACRS benefits fully and more easily * Provides the lowest cost of asset ownership * May have to pay premium to retain marketing and IT services * Cooperative will assume ongoing operation and maintenance costs * Cooperative assumes environmental and decommissioning risks * Cooperative assumes technology obsolescence risk * May be considered a lease for accounting purposes |

**Note: Some of these benefits are contingent upon the underlying contractual arrangement with third parties.**

|  |  |
| --- | --- |
| D | Community Participation |

**Considerations:** Community participation defines how member-consumers will “buy into” the community solar program. This participation is organized into four categories. The key trade-off to consider is the simplicity of program implementation against the value offered to the consumer. Different participation models can result in legal and regulatory challenges that must be addressed. Additionally, different participation models change the relationship between the consumer and the cooperative, which will impact marketing needs and consumer acquisition and retention.

Community ownership models, wherein the consumer owns some aspect of the PV system, provide the highest level of engagement by the member-consumer. Green power programs, wherein consumers simply purchase renewable attributes provide the least. Decisions about program structure should consider consumer demands, the structure of competitive offerings from third parties, and cooperative goals related to consumer engagement and outreach. This information should be provided by the Marketing Manager in the Marketing and Communications Plan and based on market analysis and segmentation studies.

**Typical options to structure member-consumer participation include the following:**

1. Selling or leasing panels**:** Under this option,consumers purchase one or more panels in a community solar system operated by a cooperative. Consumers own all of the benefits of the panels, including energy output, RECs, and potential tax benefits for the life of the system. Note that for consumers to avail themselves of any tax benefits, they must be the owner of the panel and be able to demonstrate that the solar power is used before other power from the cooperative. The cooperative should refer the consumer to their own tax advisor to make this determination; the co-op should not imply that tax benefits are in any way guaranteed. The cost of maintenance and insurance is included in the purchase price, and the ownership model provides a payback in the form of lower utility bills throughout the lifetime of the array, up to 50 years. Although consumers own their panels, the utility maintains ownership of the common assets, such as land, racking, wiring, and inverters, and performs operation and maintenance services for all system components, including the consumer-owned panels. This model typically requires a PV system sized at 500 kW or above and is the best way to attract commercial and industrial participants. Participation costs are typically quoted on a per-panel or per-kW of capacity basis. Pricing is based on the capital cost of the panels. The cooperative should check with its CPA firm to determine whether a lease for accounting purposes is present for the common assets.
2. Selling or subscribing capacity and attributes: In this arrangement, consumers purchase the output and attributes of solar panels owned by the utility company or a third party that maintains control over the facility. Consumers obtain legally binding conveyance of PV system benefits as determined by the contract and typically receive benefits based on the actual output of their proportional share (percentage) of the community PV system. Typically, the cost of participation takes the form of pre-payment, an ongoing electricity rate, or period subscription payment based on the system output ownership. These costs can be added to a consumer’s monthly electricity bill, subject to state law. Bill credits for the energy produced are then added to the same bill. Capacity can be sold in “blocks” or by the number of panels from which the electricity is purchased. Attributes purchased can include RECs, tax credits, and/or bill credits. Pricing is typically based on the levelized cost of energy, including cost of delivery and overhead. The cooperative should check with its CPA firm to determine whether a lease is present under this scenario.
3. Selling or subscribing energy blocks: In this model, thesubscriber pays a fee to receive PV system benefits as determined by the cooperative. It allows participants to buy blocks of clean power from a shared solar array owned by a utility or third party. The cost of the solar energy block is added to a consumer’s monthly electricity bill, and the value of the clean energy purchased is then deducted from the same bill via a credit. These programs differ from capacity models in that energy blocks are guaranteed and independent from the actual system production. Essentially, subscribers are funding the project by buying power at a different rate. The cooperative should check with its CPA firm to determine whether a lease is present under this scenario.
4. Green power or REC purchasing: In this approach, thesubscriber purchases a portion of the environmentally beneficial solar “non-energy attributes” from the community solar system operated by the utility**.** While technically not “community solar,” this option provides access to the attributes of solar power in the form of RECs. Green power programs tend to be sized at 100 kW or less. RECs sold to consumers cannot be used toward a utility’s RPS.

**Benefits**

|  |  |  |  |
| --- | --- | --- | --- |
| Consumer Ownership | Capacity Purchase | Energy Block Purchase | Green Power REC Purchase |
| * Maintain ownership of common assets * Panels are funded by member-consumers, either up-front or financed * This approach leads to clear and equitable pricing, especially if the project will expand and pricing will change * Maximizes consumer’s pride of ownership * Offers the longest-term consumer engagement * Administers bill credits either in-house or via third-party expertise | * Provides member-consumers with a locked-in discount to their electricity rates * Provides a more direct link between actual system output and energy value * Can help in communicating concepts like intermittency to consumers * Allows for flat or escalating rates for 20–25 years | * Allows for the solar electricity to be paid for on a monthly basis or a one-time, up-front payment * Provides a flexible model for member-consumers to enter and exit * Reduces risk to member-consumer in receiving the value of PV output * Charges a member-consumership or sign-up fee * Implements an early termination fee * Offers consumers immediate or eventual savings | * Reduces contractual and reporting complexity * Allows cooperative to charge a premium for the renewable attributes of the power generated * Manages consumer dissatisfaction |

|  |  |
| --- | --- |
| E | Pricing |

**Considerations:** When establishing a pricing model, consideration should be given to the following key questions:

* Can the cooperative recoup the programmatic costs?
* How important is high subscribership?
* Is the pricing applicable or comparable to third-party offerings?
* What policy, legal, and regulatory restrictions limit pricing options?
* Are consumers looking to hedge long-term power costs?
* What is the appetite for up-front payments? Are lower initial costs more important than long-term value?
* Ease or difficulty for consumers entering and exiting the program?
* How should excess generation be handled?
* Is the cost of starting or maintaining an on-bill financing program worthwhile?

**Options:** The ownership model typically drives the community solar program goals. Unfortunately, there are no simple answers to establishing the optimal pricing model. The choices largely coalesce into three “knobs” to the community solar offering that the co-op can adjust:

* Amount of money provided by member-consumer up front
* Amount of money paid by member-consumer on a monthly basis
* Rate paid for excess energy produced, often but not exclusively based on timing of generation

This decision can be one of the most difficult in this entire process, and will require inputs from all primary contributors. The Business and Finance Manager should develop financial models to provide case scenarios, with the Marketing Manager providing supporting market analysis. Legal counsel and/or the cooperative’s CPA firm will need to establish guidelines to deal with additional SEC or IRS regulations.

# Risk Mitigation Planning

Different community solar models have different advantages and disadvantages that must be explored. A key aspect of developing a business case is to understand the various risks posed by selection of the various business models. This activity is continuous throughout the planning process and should include legal counsel. Below are some highlights of key questions to consider during the planning process. Each should be reviewed periodically:

1. Operations

Insurance Checklist for

Large-Scale Solar Facilities

(not an exhaustive list)

* Property coverage for wind/hail, vandalism, automobiles, natural and man-made disasters, terrorism
* Liability coverage for site visitors, guests, children trespassing, vendor’s employees
* Pollution liability coverage
* Cyber insurance for new software applications
* Directors’, officers’, and managers’ coverage for member-consumer suits alleging wrongful decision making
* Bonds for construction, right-of-way restoration (Insurance typically does not cover defective work, work stoppage, other contract deliverables)
* Workers’ compensation and employers’ liability protection for injured workers
* Review and consultation on insurance provisions in vendors’ contracts (Ask to have co-op named as an additional insured on vendor’s insurance policies)
* Safety and loss prevention consulting services
* Business interruption insurance
  1. Who will do the work? Is it more cost-effective to perform with cooperative staff or outsource?

1. Market
   1. What is the cost of community solar compared to retail power?
   2. What is the competition offering? What are they saying and what is the price?
   3. How much will it cost to get member-consumers to participate in the community solar program?
2. Member-Consumer Engagement
   1. What do your member-consumers want? What does the market research say? How does it line up with the cooperative’s value statement? How does it inform your pricing?
   2. What happens if you do nothing?
3. Finances
   1. Can you harness RECs, ITCs, or MACRS? How does ownership choice affect finances?
   2. What are the non-system costs, such as administration and marketing?
   3. What is your break-even point for subscriptions? What happens if no one subscribes?
   4. Can you structure the program so that participating member-consumers support the full cost of the program and nonparticipating member-consumers are not subsidizing the participants?
   5. Have you considered reserving a portion of solar for low-income participants and waiving the minimum level of participation for these consumers, if legally permitted? Is that cost built into the program?
4. Technology
   1. How does this impact the T&D system? How does it compare to third-party rooftop solar?
   2. What will it take to maintain the system?
   3. What happens if technology changes or the vendor goes out of business?
   4. What data requires confidential management?
   5. Can the solar system software be integrated easily, and does it meet legal requirements and industry cyber security standards?[[3]](#footnote-4)
5. Timing
   1. What are the key timelines?
   2. Is the schedule reasonable?
6. Legal and Regulatory
   1. Do you have the right expertise to consider potential implications regarding enabling statutes, bylaws, accounting, legal (environmental, land-use, zoning, renewable, utility, tax, security), and existing financial issues?
   2. Have you coordinated with your G&T or any other co-ops (in compliance with antitrust law)?
   3. Does the structure meet renewable portfolio requirements?
7. Political
   1. Will this help or hurt your goals?
8. Environmental
   1. What land options are available? Can third parties procure land more easily?
   2. Does the site pose a “glare” problem for a nearby airport?
9. Decommissioning
   1. Does your Project Manager understand documentation and standards requirements for land reclamation?
   2. How will the materials and components be disposed of? Is recycling an option?

This process of risk assessment and mitigation is ongoing and will recur throughout the planning phase. It is intertwined with the scoping of duties outlined in the next section.

# Developing a Scope of Work and Staffing Plan

The executive team is responsible for developing a staffing plan. Sufficient capacity and expertise are essential to ensure the success of a community solar program – most notably the appointment of a dedicated full-time CSP Manager.

**Do you have the bandwidth?**

It is important to note that the steps listed in this document do not need to be performed in house.

Community solar developers, such as the National Renewables Cooperative Organization and Clean Energy Collective, among others, have specialized expertise and can manage most, if not all, of the challenges described in this document.

Although third parties do charge for these services, it can still be less expensive to outsource either all or a portion of these tasks. This decision is largely predicated on the size and complexity of the program, as well as the experience of the cooperative.

Key questions:

Does the co-op have the skills and/or capacity to do the following:

1. Perform adequate market analysis and segmentation?
2. Integrate required software?
3. Understand and address legal and regulatory concerns?
4. Design, procure, and commission the PV asset?
5. Perform the necessary business model analysis?

A list of tools and resources is included in the Resources Section at the end of this module, in addition to a list of vendors and consultants that specialize in community solar. NRECA does not endorse or recommend the use of particular vendors.

The staffing plan must also consider the resources needed from other departments that are critical to the program’s success, as discussed below. This section provides a basic outline for the scope of duties and expertise needed in the planning and operation of a community solar program. It does not explain how to do the work; rather, it provides the scope of what needs to be done.

Note that staffing demands will be highest during initial stages of the project, especially regarding project planning, development, marketing, and commissioning. However, CSPs require administration throughout the life of the project, including areas such as solar operations and maintenance, billing, and managing subscriber turnover.

In addition to selecting a Project Manager to oversee the deployment of a PV system, community solar will require a dedicated person or staff within the cooperative’s marketing and/or communications department for the program to be successful. It is important to note that this is not a part-time effort – market research and consumer support will be needed to ensure consumer subscription and retention. A well-run program also requires IT investments to streamline billing, accounting, and reporting needs, as well as the marketing program. Additionally, legal counsel is necessary to help mitigate risk throughout the project and ensure compliance with IRS, Federal Energy Regulatory Commission (FERC), and SEC rules and regulations. Specific activities required from each of these departments are summarized in Figure 2 below.

Figure 2: Staffing a Community Solar Team

### Project Management

Many programs require a full-time Project Manager during the planning of the community solar program as well as the procurement and construction phases. The tasks listed below can be performed by a combination of staff, contractors, and developers. It is the Project Manager’s job to ensure they have been done.

Table 2: Project Manager’s Planning Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Management Planning** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Develop Engineering Design and System Configuration Plan** |  |  |  |  |  |  |  |
| 🞎 | **Develop the Siting Options Document** |  |  |  |  |  |  |  |
| 🞎 | **Ensure the following planning documents have been submitted to CEO for review/approval:** |  |  |  |  |  |  |  |
|  | 🞎 **Value Proposition Document** |  |  |  |  |  |  |  |
|  | 🞎 **Engineering Design and System Configuration Plan** |  |  |  |  |  |  |  |
|  | 🞎 **Siting Options Document** |  |  |  |  |  |  |  |
|  | 🞎 **Recommendation of Community Solar Business and Financial Model** |  |  |  |  |  |  |  |
|  | 🞎 **Marketing and Communications Plan** |  |  |  |  |  |  |  |
|  | 🞎 **Information Technology System Integration Plan** |  |  |  |  |  |  |  |
|  | 🞎 **Financial Plan** |  |  |  |  |  |  |  |
|  | 🞎 **Risk Mitigation Plan** |  |  |  |  |  |  |  |
| 🞎 | **Consolidate and produce community solar business case that includes the following:**   * **Strategic rationale** * **Program goals, overall value proposition, and success factors** * **Proposed scope, scale, and technology infrastructure** * **Proposed software strategy** * **Proposed financing strategy** * **Proposed marketing strategy** * **Consumer value proposition, pricing, participation, and care** * **Regulatory and legal overview** * **Next steps** |  |  |  |  |  |  |  |

### Project Manager Business Case Contribution and Planning Overview

The business case itself will be compiled by the Project Manager, with contributions from internal staff or external consultants. The approach used in this document uses two phases in the business case development process. The first phase centers on the exploration of options (business models, software needs, marketing tactics), with suggested approaches for CEO approval. The second phase integrates the selected program structures into a single integrated program plan for Board approval. In practice, the business case development process is likely to be far more iterative.

The business case itself will be compiled by the Project Manager, with contributions from internal staff or external consultants. The approach used in this document uses two phases in the business case development process. The first phase centers on the exploration of options (business models, software needs, marketing tactics) with suggested approaches for CEO approval. The second phase integrates the selected program structures into a single integrated program plan for Board approval. In practice, the business case development process is likely far more iterative.

Before creation of the finalized business case, the Project Manager would oversee the development of the following documents by various staff for CEO review and approval:

* Value Proposition Document (Marketing Manager)
* Engineering Design and System Configuration Plan (Project Manager)
* Siting Options Document (Project Manager)
* Recommendation of Community Solar Business Model (Business and Finance Manager and staff)
* Marketing and Communications Plan (Marketing Manager)
* Information Technology System Integration Plan (IT Manager)
* Risk Mitigation Plan (Staff)

In practice, the Project Manager will likely contribute to all of the above documents in some capacity, providing input on the potential system size, configuration, cost, and output developed in the Engineering Design and System Configuration Plan. It should be noted that the Siting Options Document is totally in the Project Manager’s track. Experience has shown that siting can be the most disruptive component in launching a program; it is worth extra time and consideration.

In addition to siting options, the Project Manager should work with the CEO on the development of the staffing scope of work. Experiences from cooperatives have shown that the Project Manager’s duties will be a full-time effort for at least a year for a cooperative’s first project. This is especially true during the construction, procurement, and commissioning of the PV system, which will require significant oversight and during which program infrastructure will be established (setting up billing systems, launching marketing campaigns, securing financing).

#### Project Manager Implementation Duties

The implementation duties of the Project Manager are vast and overlap with the planning duties. This guide assumes that the Marketing Manager will oversee the marketing duties, whereas the IT Manager will handle the software integration, and the Business and Finance Manager will handle the business and administrative work. The Project Manager’s core duties focus on building the actual PV system. It is also likely that the Project Manager will need to retain and manage engineering consultants for much of the project design.

**The Project Manager’s job covers 5 major areas:**

1. Site selection
2. Permitting
3. System design and procurement
4. Site preparation and installation
5. Commissioning

Below are the 5 checklists that will provide a quick summary of the work to be performed. For more information, please refer to the Project Manager’s PV Quick Start Guide, as well as Volumes II and III of NRECA's Cooperative Utility PV Manual, at [www.nreca.coop/solar](http://www.nreca.coop/solar). (Not an exhaustive list. Project Managers should adapt as needed.)

|  |  |
| --- | --- |
|  | Tasks: Site Selection |
| 🞎 | Identify suitable sites |
| 🞎 | Determine land ownership |
| 🞎 | Identify current land use |
| 🞎 | Ask relevant administration having jurisdiction (AHJ) about land use restrictions and permitting requirements |
| 🞎 | Assess solar resource (primarily shading issues) |
| 🞎 | Identify topographic characteristics, including load-bearing properties of soil |
| 🞎 | Assess grid connection and substation load |
| 🞎 | Determine availability of water supply |

|  |  |
| --- | --- |
|  | Tasks: Permitting |
| 🞎 | Survey of land: elevation, grade, ground water management |
| 🞎 | Fire code compliance |
| 🞎 | Compliance with zoning, land use regulations |
| 🞎 | Geotechnical study |
| 🞎 | Soil studies (disturbance, sedimentation, erosion control) |
| 🞎 | Environmental studies (wetlands, endangered and threatened species) |
| 🞎 | Archaeological study |
| 🞎 | Tree shading and vegetation control |
| 🞎 | Conditional use permit |
| 🞎 | FAA ocular impact study |

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|  | Tasks: System Design and Procurement |
| 🞎 | Review decision on division of labor, make any needed changes |
| 🞎 | Identify output goal: maximum power or peak matching |
| 🞎 | Select array tilt angle based on PV system latitude, orientation, and shading conditions |
| 🞎 | Select orientation based on production goal |
| 🞎 | Determine azimuth angle optimal for site |
| 🞎 | Determine height of array to minimize vegetation and other obstructions |
| 🞎 | Evaluate extent of shading using commercially available tools |
| 🞎 | Identify options for eliminating obstructions or offset arrays |
| 🞎 | Assess impact of mounting system on array operating temperatures |
| 🞎 | Identify options for maximizing air flow around arrays |
| 🞎 | Determine AC-DC ratio |
| 🞎 | Estimate energy production of PV system using a tool |
| 🞎 | Conduct costing and economic analyses |
| 🞎 | Consider the impact of clouding and seasonal variations on annual variability in PV output |
| 🞎 | Examine impact of permitting process on design |
| 🞎 | Review the PV system design during and after permitting |
| 🞎 | Select/procure equipment |
| 🞎 | Evaluate module suppliers |
| 🞎 | Coordinate equipment delivery and confirm that equipment meets contract specification upon delivery or shortly thereafter |
| 🞎 | Source balance-of-system equipment |
| 🞎 | Oversee site design modifications |

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|  | Tasks: Site Preparation/Installation |
| 🞎 | Level/grade the land |
| 🞎 | Improve access roads (if necessary) |
| 🞎 | Improve drainage (if necessary) |
| 🞎 | Trim vegetation (as needed) |
| 🞎 | Install perimeter fencing |
| 🞎 | Install site surveillance/security system |
| 🞎 | Install support foundation |
| 🞎 | Install racking structures |
| 🞎 | Install conduits for wiring from combiner boxes to inverter DC switchgear |
| 🞎 | Prepare inverter pad |
| 🞎 | Install grounding system for metal structure and inverter pad |
| 🞎 | Install modules on racking |
| 🞎 | Install combiner boxes on racking structures |
| 🞎 | Install weather/monitoring station to verify proper operation of system |
| 🞎 | Install inverter(s), lightning protection/surge arrestors, and associated DC and AC switchgear |
| 🞎 | Wire modules into series strings and connect to combiner boxes |
| 🞎 | Run DC wires from combiner boxes to inverter DC switchgear |
| 🞎 | Run DC wires from DC switchgear to inverter |
| 🞎 | Connect inverter(s) to interconnection transformer and associated switchgear |
| 🞎 | Connect structure and combiner boxes to grounding |
| 🞎 | Connect inverter and associated equipment to grounding system and protection equipment |
| 🞎 | Install metering cabinet and associated telecommunications |
| 🞎 | Connect monitoring system to co-op’s SCADA system |
| 🞎 | Connect system to electric grid |

|  |  |
| --- | --- |
|  | Tasks: Commissioning |
| 🞎 | Complete final installation details |
| 🞎 | Complete visual inspections |
| 🞎 | Verify compliance with NEC requirements |
| 🞎 | Conduct electrical verification tests |
| 🞎 | Verify system functionality, including start-up, operations, shut-down, and emergency procedures |
| 🞎 | Verify that system power output and energy production meet performance expectations |
| 🞎 | Complete system documentation, including changes for as-built drawings |
| 🞎 | Conduct user orientation and training on system operation and safety |
| 🞎 | Conduct hazard assessment and safety training |
| 🞎 | Verify through thermal imaging that all cabinet connections are appropriately tightened |
| 🞎 | Conduct final inspection |
| 🞎 | Installation contractors completes final checkout |
| 🞎 | AHJ completes final inspection |
| 🞎 | Perform operations and maintenance (O&M) tasks |
| 🞎 | Verify output and performance |
| 🞎 | Confirm system availability and performance on a regular basis |
| 🞎 | Match to predicted performance |
| 🞎 | Institute project-specific maintenance plan, schedules, and responsibilities |
| 🞎 | Inspect components and wiring systems |
| 🞎 | Clean modules |
| 🞎 | Conduct electrical tests, performance verification |
| 🞎 | Conduct visual inspections |
| 🞎 | Perform thermal imaging |
| 🞎 | Inspect for water infiltration |
| 🞎 | Inspect for site erosion |
| 🞎 | Perform calibrations |
| 🞎 | Make repairs |
| 🞎 | Conduct hazard assessment, safety training |
| 🞎 | Create schedule of routine or preventative maintenance, including vegetation management |
| 🞎 | Perform unscheduled maintenance |
| 🞎 | Replace failed component(s) |
| 🞎 | Respond to emergencies or natural disasters |
| 🞎 | Respond to security breaches |

### System Planning Documentation

A significant amount of effort will be dedicated to the creation and maintenance of PV system documentation. Throughout the planning and deployment process, the Project Manager should develop a detailed list of all of the documents needed during the planning, permitting, installation, commissioning, and O&M phases of a PV project. They include the following:

* Site survey study
* Site permits
* System design and equipment specifications
* Electrical and mechanical drawings with connections requirements
* SCADA mapping
* Site layout and equipment locations
* Civil plan (including access roads, water retention basins, storm water runoff)
* Environmental compliance plans, if required in the area
* Vegetation management plan
* Installation and commissioning procedures
* Quality assurance (QA)/quality control (QC) plan (responsibilities, documents control, construction process control, inspections and testing for in-process and completed work, recording of quality information)
* O&M procedures
* Site-specific safety procedures
* Contracts for all external contractors, including engineering, procurement, and construction (EPC) and other consultants
* Project schedule

## Marketing and Member-consumer Services

The Marketing Manager is responsible for developing the Marketing and Communications Plan and ensuring its execution over the course of the program. Given the high costs and importance of consumer acquisition and retention, serious consideration must be given whether to contract with an experienced company that has a dedicated call center, IT platforms, and sales and marketing experience, or rely on in-house talent.

Table 3: Marketing Manager Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MARKETING & MEMBER-CONSUMER SERVICES** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Conduct market research and demand analysis** |  |  |  |  |  |  |  |
| 🞎 | **Develop communications planning timeline** |  |  |  |  |  |  |  |
| 🞎 | **Develop the Value Proposition Document** |  |  |  |  |  |  |  |
| 🞎 | **Create the Sales Onboarding Document, including establishing the application process and enrollment options** |  |  |  |  |  |  |  |
| 🞎 | **Assess the value of online consumer management tools** |  |  |  |  |  |  |  |
| 🞎 | **Develop a detailed Marketing and Communications Plan for CEO approval that includes:**   * **Member-consumer value proposition** * **Market analysis** * **Communications strategy** * **Advertising plan/timeline** * **Personnel time/material requirements** * **Consumer service and sales training program** * **Consumer “self-serve” automation and data collection service** * **Marketing budget** |  |  |  |  |  |  |  |
| 🞎 | **Develop marketing collateral – Ads, online tools, pitch book** |  |  |  |  |  |  |  |
| 🞎 | **Ensure that marketing materials are reviewed by legal counsel** |  |  |  |  |  |  |  |
| 🞎 | **Oversee staff training, including consumer service call center** |  |  |  |  |  |  |  |
| 🞎 | **Execute marketing campaign** |  |  |  |  |  |  |  |
| 🞎 | **Monitor and evaluate effectiveness** |  |  |  |  |  |  |  |

### Marketing Manager Business Case Contribution and Planning Overview

Market research and outreach planning can make or break a community solar initiative. Developing consistent and comprehensive plans for advertising, budgeting, staffing, and IT communications – and properly implementing those plans after the project launch – is critical to ensuring success and maintaining a strong and committed stakeholder base. Furthermore, conducting targeted market research and assessing the nature of the demand will not only help in setting achievable targets, it will also help shape the development of the communications and advertising strategies.

The primary planning role of the Marketing Manager is to develop the Value Proposition Document, assess the market for community solar, and develop a Marketing and Communications Plan for inclusion in the business case.

**The Marketing and Communications Plan includes the following:**

* Member value proposition
* Name of the offering or brand strategy
* Communications strategy
  + Messaging approach consistent with the overall value proposition statement
  + Assessment of the target member-consumer segment
  + Suggested consumer management tools, “self-serve” automation, and data collection service (with IT Manager)

**Note on Cost Savings and Environmental Benefit Claims:**

**Cost Savings:** FTC green guide requires that marketers qualify these types of claims to prevent deception about the nature of the environmental benefit being asserted.

**Environmental Benefits:** It can be claimed that community solar allows consumers to participate in the production of renewable energy and it may or may not involve the consumption of renewable energy. Any cooperative pursuing community solar should retain and use legal counsel. In addition to legal counsel, cooperatives may work with a community solar vendor that has REC knowledge to develop marketing guidelines and/or review claims about renewable attributes.

All environmental and cost saving representations be reviewed and approved by legal counsel.

* + Consumer service and sales training program
* Advertising plan/timeline
* Sales Onboarding Document
* Marketing budget
* Personnel time/material requirements

Before developing the Marketing and Communications Plan, the Marketing Manager will craft a consumer-oriented Value Proposition Document, which will clearly state the value of the program to the member-consumers if they participate. The value proposition needs to be clearly understood by everyone who will interface with member-consumers. Cooperatives should establish clear internal guidelines for all communications regarding the solar initiative at an early stage.

**The main points of the Value Proposition Document should include the following:**

1. There will be no solar panels on your roof
2. You may save money on your electric bill
3. It is good for the environment
4. It is easy; there is no maintenance
5. It is local

The Marketing Manager will be responsible for overseeing the market analysis and segmentation for community solar among the member-consumership. The goal is to determine member-consumers’ interests, needs, and motivations for participating in a community solar program. This can be done by leveraging existing research or initiating targeted market surveys or focus groups. It is also suggested that the Marketing Manager research competitors’ sales pitches to better understand what consumers are hearing. It is important to assess, by member-consumer segment, the potential demand and participation factors for the community solar program offering.

**Prospective questions to answer include the following:**

* What does the existing research say about technology choices and consumer trends?
* What are the levels of awareness for solar programs within the co-op’s service territory?
* Who is likely to participate?
* What motivates them to participate?
* How much are they willing to pay?
* What are the service needs and expectations for a solar program?
* What is the competition doing (offerings, cost, sales pitch)?

These data will be used to identify the target market segments critical to the business model assessments being performed by the Business and Finance Manager.

### Summary of Marketing Manager Implementation Duties

The Marketing Manager will need to do the following:

* **Develop a pitch book and marketing materials** compliant with identified legal or regulatory requirements
* **Oversee staff training** to ensure that any person affiliated with the cooperative understands and can clearly explain the value statement of the community solar program
* **Develop member-consumer services training** on the sign-up process, viewed from the consumer’s perspective
* **Launch a community outreach campaign** that includes on-site consumer sign-up
* **Oversee the consumer service call center**

The marketing campaign could include the following:

**Internal project launch**

1. Initiate Board engagement
   * Board presentation
   * Marketing materials, such as brochures, pocket cards, etc.
   * Initial market research and demand analysis
2. Initiate employee engagement
   * Finalize marketing materials, such as brochures, pocket cards, etc.
   * Employee presentation
   * Consumer service relations and member-consumer services training on fielding consumers’ inquiries and marketing the program
3. Schedule project updates
   * Determine ribbon-cutting dates
   * Adjust timeline accordingly

**Initiate member-consumer marketing**

1. Project announcement (6‒9 months before ribbon cutting)

First wave of communication to member-consumers announcing the project

* + Create community solar webpage
  + Disseminate frequently asked questions (FAQs)
  + Introduce project branding

1. Targeted outreach (3‒6 months before)

Robust dissemination of information via newsletters, social channels, and­ – most important – in-person outreach at meetings and events

* + Dissemination through co-op channels, including social media
  + Dissemination through community meetings and events
  + Paid advertising
  + Sponsorship advertising (i.e., sponsor the local weather programs – on sunny days)
  + Follow-up market research to assess changes in demand due to advertising

1. Pulse marketing

Create opportunities to continue the marketing push after the project goes online:

* + Special offers
  + Educational programs and tours
  + Milestone announcements
  + Digital ads on local radio and TV websites – cheaper and effective

1. Final publicity to stakeholders, policymakers, and press
   * + - * Press release announcing the project; should include information about why the co-op is pursuing community solar and how member-consumers can participate
         * Press release announcing the site selection
         * Ribbon-cutting event

* Begin planning about 3 months before
* Invite local government officials, community leaders, and key stakeholders at least 1 month before
* After confirming attendees, invite local media 1‒2 weeks before
  + - * + Press release when the project breaks ground
        + Press release announcing when the array first produces power
        + Public service announcements

## Information Technology

Software support for community solar can reduce costs, increase subscribership, increase retention, and reduce mistakes. In a community solar program, 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, it comes at a cost and few software options are available. The IT Manager will be responsible for the selection and integration of the community solar software.

Table 4: 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** |  |  |  |  |  |  |  |

Note: In practice, it is recommended to treat cyber security as an enterprise-wide risk management issue.

### IT Manager Business Case Contribution and Planning Overview

The primary role of the IT Manager in developing the business case is to provide the IT System Integration Plan, which includes an assessment of software products to support marketing and administrative efforts such as CIS/billing modification requirements and options (with the Business and Finance Manager) and consumer management tools, “self-serve” automation, and data collection service (with Business and IT Managers)

The IT System Integration Plan 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
* Budget and staffing requirements
* Integration of the solar project control and operations software into the cooperative’s IT system

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

* Developing the Sales Onboarding Document outlining the application and enrollment process (with Marketing and Business Managers)
* Developing requirements for program record keeping and adequately securing those records (with Business Manager and legal counsel)
* Performing IT System Options Assessment, including valuation of online consumer management tools and automated record keeping (with Marketing and Business Managers)
* Determining a preference for either a fully automated and secure system or reliance on uploaded files

### Summary of IT Manager’s Implementation Duties

The IT Manager will oversee the procurement and incorporation of software products. These duties fall into two broad categories:

**Working within a Limited software Market**

As of 2016, 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 to integrate the billing, reporting, and marketing 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. (*Disclosure: Clean Energy Collective is a primary contributor to this document.)*
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.

1. Software integration and interoperability oversight to:
   1. Support program administration
   2. Support marketing
   3. Support project systems
2. Cyber security plan implementation

### Implementing Software to Support System Administration, Accounting, and Billing

A typical array provides energy to 250–300 consumers per MW.

**For each consumer, it is necessary to do the following:**

* 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-rated 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 should 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 cooperative to remain in control of billing integration at all times

Maintaining consumer privacy should be a foremost priority. If a third party is managing consumer bill credits, that party should not have access to or control of the cooperative’s billing system. The cooperative should provide files to be imported into a billing system, which then are processed and returned to the cooperative for importing into the existing billing system.

#### IT to Support Marketing

In a community solar program, 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. The most user-friendly approach would use a “single platform” to organize all of the information regarding a participant’s account, enabling consumers to access and understand what they are subscribed and the value they are receiving. A single platform also allows member-consumer service to quickly access accurate consumer information.

**In this role, the ideal software support should 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

**Additional requirements should include the following:**

* Software should be able to aggregate consumer and solar output data every 15 minutes or less
* System users should be able to access data in several different ways: viewed through an administrative platform or a reporting dashboard
* Consumers and utility administrators should have access to the data through a web-based monitoring platform

#### Cyber Security

The times we live in require cyber security risk management on an enterprise-wide basis. It is no longer just an IT issue, but one that requires vigilance from every member-consumer of the organization in every aspect of operations.

**As with all cyber risk management, the basics include the following:**

1. Systematic patch management; regularly schedule patches and keep all software updated.
2. Monitor network traffic in and out-bound; for SCADA/ICS systems, this is one of the ways to identify unauthorized access.
3. Limit system access to those with a legitimate need. Segment duties to keep a rogue employee from complete access to all systems. Restrict vendor access and vet vendors with the same scrutiny you would use for a new employee. Adequate credentialing and authentication for accessing systems is a cybersecurity basic that should be considered.
4. Firewalls and anti-virus software still have their place in a defense-in-depth security protocol. Patch and update them regularly.
5. Educate all employees about proper cyber “hygiene.” Repeat this training often and impose consequences for security violations.

When working with vendors to develop software for utility solar operations, it is imperative that they be made contractually responsible for their part in the development of the cyber risk management process. It is suggested that a co-op require a vendor to provide warranties regarding the services to be provided. At a minimum, a vendor should warrant that the services will be provided in a professional workman-like manner, will meet all requirements, and will constitute an original work product. Additionally, a contract should require a vendor to provide the following indemnities: (1) an intellectual property infringement indemnity to protect against any deliverable that may violate a third party’s intellectual property rights, and (2) a general indemnity to protect against any third party claims arising out of or related to the services. A vendor may try to cap its liability, in what is typically known as a limitation of liability clause; when a vendor tries to do so, it is suggested that the co-op ask the vendor to carve out from the cap on liability any breaches of warranties, breaches of obligations as set forth in the contract, and all indemnity obligations. Finally, requiring the vendor to have adequate insurance in the contract to cover its obligations and liabilities as set forth in the contract is suggested; as a recommended practice, a co-op should include a requirement in the contract to have itself named as an additional insured party on the insurance policy.

To pay for the system’s financial losses, consider cyber risk insurance. It will not prevent a loss but can lessen the financial blow if the worst happens. Cyber risk exposure is not a future concern – it is a real enterprise risk management issue that requires Board, management, and employee involvement. You should work with your insurance broker and risk manager when considering what insurance product covers your co-op’s risks – remembering that not all insurance products are the same and a co-op’s circumstances may be different compared to others. With your team, you should consider whether your cyber insurance will cover data and system loss, business interruption, data breach notification expenses, public relations, crisis response consultants, and expenses, to name a few. Federated Rural Electric Insurance Exchange is one such company that offers a cyber insurance product. More information can be found in the Resources section of this module. *NRECA does not endorse or recommend the use of particular vendors.*

## Business, Finance, and Program Administration

CSPs are significant investments but can also represent a financial opportunity for both cooperatives and participating member-consumers. Despite the long-term benefits of CSPs, the up-front costs of project development can be a substantial and intimidating barrier for cooperatives. Fortunately, many financing options exist that can reduce the scale of the initial investment and make a project more feasible. Cooperatives’ unique organizational status can pose both opportunities and barriers to financing, so it is important for the Business Manager and CEO to understand the many options, and what implications each one may have on project viability and stakeholder returns.

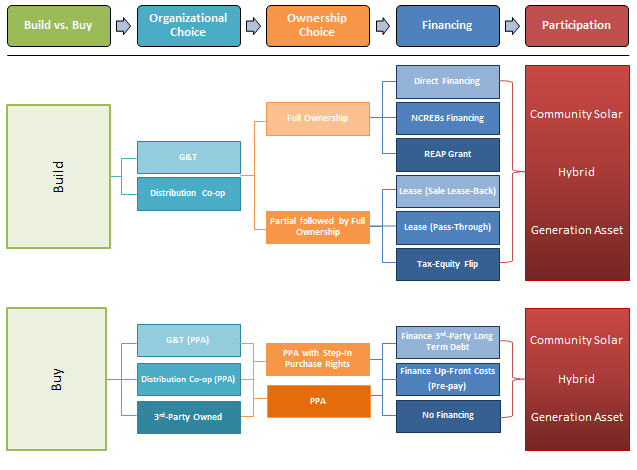
Table 5: Business Manager’s Planning Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **FINANCE, ACCOUNTING, & BILLING** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Consider available incentive options and identify those most applicable to your project** |  |  |  |  |  |  |  |
| 🞎 | **Determine process of recording production of array and information allocation to bills** |  |  |  |  |  |  |  |
| 🞎 | **Develop requirements for billing and record keeping** |  |  |  |  |  |  |  |
| 🞎 | **Identify the value of online consumer management tools and automated billing** |  |  |  |  |  |  |  |
| 🞎 | **Develop a Risk Mitigation Plan, including financial impact scenarios** |  |  |  |  |  |  |  |
| 🞎 | **Create the Sales Onboarding Document, application process, enrollment options, data requirements, and record-keeping requirements** |  |  |  |  |  |  |  |
| 🞎 | **Provide financial analysis for IT system assessment and a suggested integration plan** |  |  |  |  |  |  |  |
| 🞎 | **Develop a Community Solar Financial Planning Document that includes the following:**   * **Cost-of-service study (with legal counsel or other consultants) and discount rate** * **Financial impact assessment of ownership models** * **Applicability of ITCs, MACRS, or renewable energy grants** * **Financial impact of consumer participation options** * **Determination of utility return on investment (ROI)** * **Plan for future rate changes in the event of additional installations** * **Determination of whether the contact contains a lease** |  |  |  |  |  |  |  |
| 🞎 | **Develop Community Solar Business Model to assess the following:**   * **Build or buy** * **Organizational choice** * **Ownership choice** * **Financing choice** * **Participation choice, including pricing options** * **Administrative requirements (accounting and billing) that include staffing requirements and technology needs** |  |  |  |  |  |  |  |
| 🞎 | **Develop Recommendation of Community Solar Business and Financial Model** |  |  |  |  |  |  |  |

### Business and Finance Manager Business Case Contribution and Planning Overview

The primary planning role of the Business Manager is to assess potential business model options for a community solar program to provide an economic evaluation for inclusion in the business case.

Figure 3: Business Model Choices and Options



The Business and Finance Manager will need to develop and compare conceptual business models, and provide staff with relevant financial data to support their contributions, including the following:

* Calculating capital infrastructure investment costs (with Project Manager)
  + Engineering design, hardware, site preparation, construction, installation, and interconnections
  + Land cost
  + CIS/billing interface modifications
* Calculating operating and maintenance costs (with Project Manager)
  + Costs for managing and operating the system
  + Member-consumer support and care
  + Replacement and repair
* Determining internal and outsourcing resource costs (with CEO)

Additional financial planning tasks include the following:

* Perform cost-of-service study.
  + Work with legal counsel to establish what can or cannot be recovered
  + Potential consulting expenses for study
* Determine financial impacts of ownership models.
* Determine if ITCs, MACRS, or renewable energy grants are available to the cooperative. Third-party ownership may provide cost savings if the co-op cannot take advantage of ITCs or MACRS.
* Determine financial impact of consumer participation options.
  + Determine pricing (in conjunction with marketing)
  + Establish goals of the program in its value to rate payers and return on investment (ROI)
* Determine cooperative ROI.
  + Identify break-even subscription point
  + Identify sustainable level of subscriptions
  + Assess the impact of canceled subscriptions
* Create plans for changing rates in the future. For instance, if the project is expanded or another project is installed at a lower cost, should price adjustments for initial member-consumers be considered to avoid subscriber loss?

### Administrative planning tasks include the following:

* Define how member-consumers will “buy into” the community solar program. What enrollment options will the cooperative choose to provide (i.e., single up-front payment, payment spread out on an installment plan, or monthly subscription, and so on)?
* Work with member-consumer services to outline the application process.
* Work with legal counsel to determine how consumers will receive credit for the value of production.
* Determine value of RECs and whether they are assigned to participants, retired on participants’ behalf, or retained by the cooperative.
* Work with IT to identify the needs for and value of automation for billing and record keeping.

### Summary of Business and finance Manager Implementation Duties

* Track participant’s account data to answer questions, identify problems, or change subscriptions
* Input this information into the consumer’s account and bill accurately
* Double check the information for accuracy
* Ensure maintenance of relevant records for reporting purposes
* Track the programmatic cost
* Assess financial viability of qualifying vendors or EPCs

# Legal, Tax, and Regulatory Overview

There are a number of legal and regulatory issues that must be addressed to ensure that a community solar program is compliant with all relevant federal and state legal and regulatory requirements, including cooperative-enabling statutes and bylaws, regulations promulgated by the FERC and the SEC, and issues associated with REC characterization and net excess generation compensation mechanisms such as net metering. In addition, key program design decisions can impact whether the cooperative is able to take advantage of tax (e.g., ITC) and depreciation (e.g., MACRS) benefits. To establish and meet realistic program timelines, goals, and cost estimates, it may be prudent to involve legal counsel throughout the planning process. This step can alleviate the need to make necessary costly and time-consuming changes to the program design at the end of the planning process so as to comply with legal and contractual requirements.

Table 6: Legal, Tax, and Regulatory Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **LEGAL, TAX, & REGULATORY** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Ensure compliance with applicable federal and state regulatory requirements** |  |  |  |  |  |  |  |
| 🞎 | **Review available incentive options and identify those most applicable to your project** |  |  |  |  |  |  |  |
| 🞎 | **Review and assist in the development of the Risk Mitigation Plan** |  |  |  |  |  |  |  |
| 🞎 | **Review data and record-keeping requirements** |  |  |  |  |  |  |  |
| 🞎 | **Review cost-of-service options and restrictions** |  |  |  |  |  |  |  |
| 🞎 | **Review marketing materials** |  |  |  |  |  |  |  |

## Summary of legal and regulatory issues

**Legal counsel or the co-op’s CPA firm, as appropriate, in cooperation with executive staff, must address the following legal and regulatory issues, among others (not an exhaustive list):**

1. FERC regulations
2. G&T affiliation and other contractual agreements between cooperatives
3. IRS and tax implications
4. SEC oversight
5. REC characterization
6. Other federal approvals, if applicable
7. State approvals, if applicable
8. Local jurisdiction approvals
9. Clean power plan, if applicable
10. Summary of required permits and a general overview of permitting applications
11. Cost-of-service options and restrictions for the delivery of program benefits to consumers
12. Lease accounting implications
13. Cooperative-enabling statutes and bylaws
14. Obligations under existing financial contracts, such as RUS loans.

#### Securities and Exchange Commission (SEC)

Participation of member-consumers in cooperative projects, either through pre-payment for the sale of power or sale of ownership shares to consumers, raises potential securities regulation issues that should be evaluated. At the risk of being overly simplistic, federal and state securities laws require registration with the SEC or a state securities regulator if a “security” is offered to the public. Registration with the SEC is costly and time consuming and would create challenges for a sponsoring cooperative; initial and ongoing costs are significant, and additional business transparency is required. What may seem commonplace in word or practice can have SEC legal consequences. Any cooperative pursuing community solar should retain and use legal counsel with SEC expertise. The cooperative may also want to work with a community solar vendor that has knowledge of SEC rules and regulations. For a further illustration of these concerns, cooperatives should review the [CommunitySun No-Action Letter](https://www.sec.gov/divisions/corpfin/cf-noaction/2011/communitysun082911-2a1-incoming.pdf) (<https://www.sec.gov/divisions/corpfin/cf-noaction/2011/communitysun082911-2a1-incoming.pdf>).

This is an example in which the SEC determined that an interest in a “SolarCondo” was not construed as a security. CommunitySun, a renewable energy developer, was successful in obtaining a no-action letter from the SEC. Factors applicable in the CommunitySun case may not be present in your particular case, and you should consult legal counsel to advise you about your particular situation.

#### Renewable Energy Credit (REC) Claims

Renewable generation can result in the creation of RECs. These RECs can be sold to member-consumers or in the wholesale market, used for compliance with state requirements where applicable, or for other purposes. RECs represent a unit of renewable energy with one (1) REC typically representing the environmental attributes of 1,000 kilowatt-hours or one (1) megawatt-hour of renewable energy. The box below summarizes the different ways RECs can be distributed and used in community solar.

|  |  |  |
| --- | --- | --- |
|  | Owner | |
| Use of RECs: | **Utility** | **Consumer** |
| Sell into local/regional REC markets | Sell to offset program costs | Sell for financial benefit |
| Use to meet regulatory compliance obligation | Use to meet regulatory requirements | Sell to co-op for use to meet regulatory requirements |
| Retire | Retire on behalf of consumer | Consumer retires the RECs to make green claims |

**Below are brief points to remember regarding RECs:**

The Federal Trade Commission and states, as well as the National Association of Attorneys General, have guidelines and requirements about entities’ (including utilities’) marketing claims about the environmental attributes of power. Generally speaking, practice in the industry 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 (e.g., 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.

It can be claimed that community solar allows consumers to participate in the production of renewable energy and it may or may not involve the consumption of renewable energy. Any cooperative pursuing community solar should retain and use legal counsel. In addition to legal counsel, cooperatives may work with a community solar vendor that has REC knowledge to develop marketing guidelines and/or review claims about renewable attributes.

***“If a third party is taking the tax credits, then what is being offered to the cooperative and its subscribers?”***

Typically the value of the tax benefits is reflected in a decrease in the PPA or lease price for solar generation that the co-op and its members will pay to a third-party system owner.

#### Harnessing ITCs and MACRS

The federal ITCs and MACRS depreciation are important cost drivers for solar projects. An ITC is a 30% tax credit for solar systems on residential (under Section 25D) and commercial (under §48) properties. Under current tax law, ITC declines over time. MACRS is a tax system in which the capitalized cost (basis) of tangible property is recovered over a specified life by annual deductions for depreciation. Accessing these benefits for CSPs can be challenging, as tax-exempt electric cooperatives are not eligible for tax benefits such as accelerated depreciation or the solar ITC. Cooperatives pursuing community solar should consult a tax advisor.

**There are two different ways to monetize these incentives: *for* the consumer or *by* the consumer.** Each has its own issues that need to be addressed.

When the tax credit is **monetized for the consumer**, a cooperative will establish some form of arrangement with a for-profit entity that can harness the credits and compensate the electric cooperative, which in turn can offer lower-cost subscriptions to its member-consumers. There are three main approaches: third-party ownership, third-party ownership followed by cooperative ownership, and cooperative ownership.

**Passing Tax Credits to Consumers**

The IRS has previously ruled that a community solar participant is able to claim the investment tax credit against investment in a community solar project. However, it was delivered through a private letter ruling to an individual community solar participant in Vermont, meaning that the IRS ruling only applied to that entity specifically. Nonetheless, it provides an indication of the eligibility of community solar ownership for tax benefits. Note that net metering was an important aspect of this private letter ruling – it enabled the IRS to determine that the consumer used the solar power directly, as if the panel were on the residence. In the absence of net metering, it may be possible to accomplish the same thing through contracts. This approach would have to be reviewed carefully.

Citation: PLR-111860-15

**Third-party ownership** of the CSP is often the most direct way to finance the project and monetize the financial benefits of the ITCs and MACRS. Most common is the purchase of energy through power purchase agreements, a lease, or service agreements. It is important to note that there are rules and restrictions that govern the application of the ITCs. Community solar developers like NRCO, CEC, and SoCore Energy, other finance organizations such as NRUCFC and CoBank, and other NRECA member offerings can provide detailed information to the cooperative so it can better understand the capital structures used to finance CSPs and efficiently monetize the tax benefits.

**Third-party ownership followed by utility ownership** utilizes similar power purchase agreements, leases, and service agreements, but is structured to include cooperative step-in rights to full ownership upon the exercise of a “fair market value buy-out” of the third party’s ownership interest(s) after a negotiated time period (typically 7 years to harness the ITCs and MACRS).

A cooperative can still harness the ITCs and MACRS without the help of third-party developers by utilizing a **tax-equity flip structure**. This ownership structure requires a partnership between the cooperative and tax-equity investors capable of monetizing the tax incentives. A special purpose entity (SPE) is formed for the partnership arrangement that constructs, owns, and operates the project. Additionally, an intermediate cooperative blocker corporation will need to be formed to insulate the cooperative from various tax restrictions. In this structure, the cooperative blocker corporation typically is given a buy-out option in the operating agreement. The cost of developing the documents involved in the tax-equity structure can be prohibitive – ranging from $250,000 to $500,000 – depending on the size and complexity of the project. If pursuing a tax-equity flip model, the financing plan must address how the cooperative will identify a tax-equity investor.

In all of these options, the cooperative should determine whether the contract contains a lease for accounting purposes.

**Direct ownership options** that enable harnessing the ITCs and MACRS are limited. Some cooperatives may be able to receive tax benefits by developing CSPs through a subsidiary organization. Deploying this strategy requires legal assistance to ensure that the subsidiary is eligible for project ownership, and the co-op must ensure that the subsidiary has an adequate tax appetite to fully utilize the tax benefits. Tax advisors will want to ensure that the subsidiary is not created solely for the purpose of the CSP.

An alternative approach is to **pass the tax credits directly to the consumer**. The contract must be structured for the consumer to own the panels, yet allow for common operation of the array by the cooperative. Contracts that support direct consumer ownership must be written knowledgeably to minimize regulatory implications such as SEC regulation. Cooperatives should not imply or guarantee any particular tax outcome but should instead refer consumers to their own tax advisor. An important consideration for this model is the perceived value for consumers if they are required to make a significant up-front payment to participate in the program. On-bill financing can address this issue but will also add state and federal regulatory complications. Any co-op pursuing community solar should retain and use legal counsel or work with a CPA firm that has expertise in this area.

## State Policy Checklist

* Utility Commission provisions on solar

o Renewable Portfolio Standards with solar or “Community Shared Solar” provisions

o System size and enrollment limits

* Policies on rates, tariffs, and valuation of solar benefits

o Net metering and treatment of excess generation

* Interconnection policies and procedures

o Status of electricity restructuring/utility ownership of generation assets

o Third-party purchase agreement and solar financing policies

o Local siting and permitting, property rights, and authorities having jurisdiction requirements

o State PURPA interconnection standards

* Incentive programs and their interaction with federal incentives

o State and local tax considerations, including income tax, sales and use taxes, property taxes, and excise taxes

* Customer data standards with provisions for metering data availability and personally identifiable information provisions
* Consumer lending and utility billing laws and regulations

o Treatment of on- or off-bill voluntary tariffs and credits

o Additional state lending and credit reporting laws

* Criteria for determining the existence of securities (beyond federal consumer lending requirements)

**Note: This list is only representational. Individual cooperatives will need to perform their own due diligence.**

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."

Module 1a: Board of Directors Guide

## 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.

**This Board of Directors Guide is an appendix to the Executive Management Module, the first 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

* Board of Directors Guide (this document)

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

Section 2: PV System Engineering, Commissioning, and Operations

# Governance and Policy Creation

One role of the Board of Directors (Board) is to collaborate with management in developing the cooperative’s strategic plan and determine if the cooperative is dedicating appropriate resources within its overall strategic plan. The goal is to ensure alignment of the resources with the strategic plan. For community-based solar program (CSP) policy development, the primary consideration is whether the resources required for this program will take time and effort away from other priorities.

A second consideration is adopting a Board policy. A Board policy for a CSP could establish the purpose, objectives, responsibilities, and guidelines for how the program will be financed, supported, and operated. With an emphasis on transparency and recognizing the interest of the cooperative’s consumers-members, the Board policy could be stated in broad terms related to the essential requirements of the CSP, including the terms and benefits for consumer participation.

Table 7: Board Checklist

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BOARD OF DIRECTORS** | | **CEO** | **LEG** | **BOD** | **MKT** | **IT** | **FIN** | **PM** |
| 🞎 | **Educate themselves on the elements of a solar policy and the key decision factors** |  |  |  |  |  |  |  |
| 🞎 | **Review business case and value statement developed by staff; ensure alignment with cooperative strategic goals** |  |  |  |  |  |  |  |
| 🞎 | **Consider adopting community solar policy** |  |  |  |  |  |  |  |

# Getting Started: Understanding the Community Solar Option

Many factors influence a well-informed decision to undertake a solar project. Thus, it is important to **consider all the variables.** A serious conversation about solar energy should begin with the Board evaluating the typical drivers of solar projects, an approach that applies equally to most types of distributed energy resources.

**Five Initial Steps Cooperative Staff Should Take:**

1. **Talk to your G&T** – Find out what is being offered and what opportunities are available. This step is your first resource.
2. **Knowledge and familiarity** **‒** Be familiar with the terms, technology, methodologies, and basic business models of community solar. Staff should review this Playbook and SUNDA documents, and contact cooperatives that have already developed a CSP.
3. **Assess the market** ‒ Understand at a high level what member-consumers want and what interest exists. It is important to understand what consumers are already being offered and what is standard in the sales pitch and pricing. This can be achieved by getting and comparing a proposal from a third party.
4. **Determine the value** – Discuss with the Board the potential “advantages” of a program offered by the co-op and come up with some initial value statements.
5. **Create initial program framework** – Staff should begin developing a basic business case for the project.

#### Drivers

Typical drivers influencing a co-op’s solar strategy:

* Member demands
* Power supply needs
* Management of PV-related cross-subsidies
* The current demand for renewable energy generation
* State policies, laws, and regulations
* Industry evolution of consumer-centric model
* Member engagement
* Staying current with evolving technology

#### Making the Decision

For co-op Boards that lack experience with renewable and distributed energy, the decision to invest resources in a solar strategy can be difficult. Questions the Board and leading staff should consider are the following:

* What are the real and perceived risks of moving ahead?
* What is the cost of inaction?
* How will the decision affect the co-op’s reputation as a trusted energy adviser?
* In an evolving energy market, will the addition of solar create benefits for the whole member-consumership?
* What are the regulatory implications?

#### Know the Options

There is no one-size-fits-all solar program. Through market research and initial member-consumer communications, the co-op Board should be able to determine which of the following program designs best fits its particular region or needs. *(This is a high-level summary, and many of the pros and cons listed can be superseded through sound program design and execution.)*

**Renewable Power Purchase Agreement (PPA)**

How it works: The co-op purchases power from a third-party developer that owns and operates the PV system. The co-op then adds the power to its overall generation mix and sells it to member-consumers. A proportionate share of the delivered power can be claimed as renewable energy if the RECs are retained.

|  |  |
| --- | --- |
| Pros | Cons |
| Quick to execute | Co-op owns only the generation output for the duration of the PPA |
| Often the lowest-cost option | If you do not contract to own the RECs, it is *not* “renewable” power. |
| No technology risk, as no equipment is owned by the co-op | Lower level of member-consumer engagement |
| Fewer benefits to the community  May be a lease for accounting purposes |

**Green Power Purchase Program**

How it works: The co-op adds renewable assets to its power portfolio and sells “renewable attributes” (RECs) to member-consumers through a green power rate.

|  |  |
| --- | --- |
| Pros | Cons |
| Quick to execute | Requires commitment to communicate the green rate |
| Easy to set up and administer | Consumer participation often is low |
| Does not require new competencies at the co-op | Lower level of member-consumer engagement |
| Retention of consumers can be challenging |

**Community Solar – Lease**

How it works: The co-op owns or leases a solar array and leases shares of the panel production to member-consumers.

|  |  |
| --- | --- |
| Pros | Cons |
| Takes advantage of economies of scale of larger PV systems over rooftop systems | Length of member-consumer benefits limited by lease period |
| Can build out in stages to reduce subscription risk | Must manage risk of lower-than-expected subscription rate |
| Enables placement of array for maximum value to the cooperative | Requires effective marketing and sales |
| Can enable equitable pricing | May require new skill sets within the co-op |
| Engages consumers directly | If a lease for accounting purposes, the present value of the lease payments will have to be capitalized as an asset and liability on the balance sheet; if the transaction is a finance lease, income statement impacts include additional interest expense, with implications for mortgage covenants and rates |
| Directly comparable to leasing offers sold to consumers by third parties |
| Enables everyone interested in PV to participate |
| No new contracts for member-consumers |
| Lower up-front costs for consumers |
| Money and assets stay in local community |

**Community Solar – Sale of Panels**

How it works: The co-op constructs, maintains, hosts, and operates a solar array. The co-op sells panels to its member-consumers.

|  |  |
| --- | --- |
| Pros | Cons |
| Takes advantage of economies of scale of larger PV systems over rooftop systems | Poses the risk of lower-than-expected subscription rate |
| Can build out in stages to reduce subscription risk | Highest up-front cost to the member-consumer |
| Enables placement of array for maximum value to the cooperative | Requires effective marketing and sales |
| Directly competes with full range of third-party offerings | May require new skill sets within the co-op |
| Asset ownership creates highest level of member-consumer engagement | Additional legal and regulatory requirements, including SEC, IRS, and state agency requirements |
| Lower cash flow risk to the co-op, as funds are not tied up in long-term assets |
| Eliminates need for retention campaigns |
| Greatest flexibility to scale up to meet community interest |
| Enables equitable pricing |
| No new contracts for consumers |

#### Choosing the model that works for your co-op

**Scaling Up Can Drive Costs Down**

The size of a PV system affects its cost. The table below assumes a typical location (Kansas City, MO) in the continental United States, a 25-year useful life, and an average cost of financing. Depending on specific location, details of financial costs, and expected useful life, levelized energy costs could be 30% lower or 50% higher based on scale alone. *Note: Land acquisition costs are not included.*

(Output based on NRECA’s Solar Cost and Financing Screening Tool, available at: [www.nreca.coop/SUNDA](mailto:Andrew.cotter@nreca.coop).)

|  |  |  |
| --- | --- | --- |
| Scale Matters (Sample System Costs) | | |
| Array Size (AC) | **Installed Costs** | **Levelized  Cost of Energy** |
| 50kW | $3.79/Wdc | 16.4 ¢/kWh |
| 100kW | $2.73/Wdc | 12.0 ¢/kWh |
| 250kw | $2.00/Wdc | 9.0 ¢/kWh |
| 500kW | $1.76/Wdc | 8.0 ¢/kWh |
| 1,000kW | $1.64/Wdc | 7.5 ¢/kWh |
| 2MW | $1.58/Wdc | 7.3 ¢/kWh |
| 5MW | $1.55/Wdc | 7.1 ¢/kWh |

Work with staff to select the criteria that will drive this decision. It should reflect the rationale, intent, and value proposition to the member-consumership.

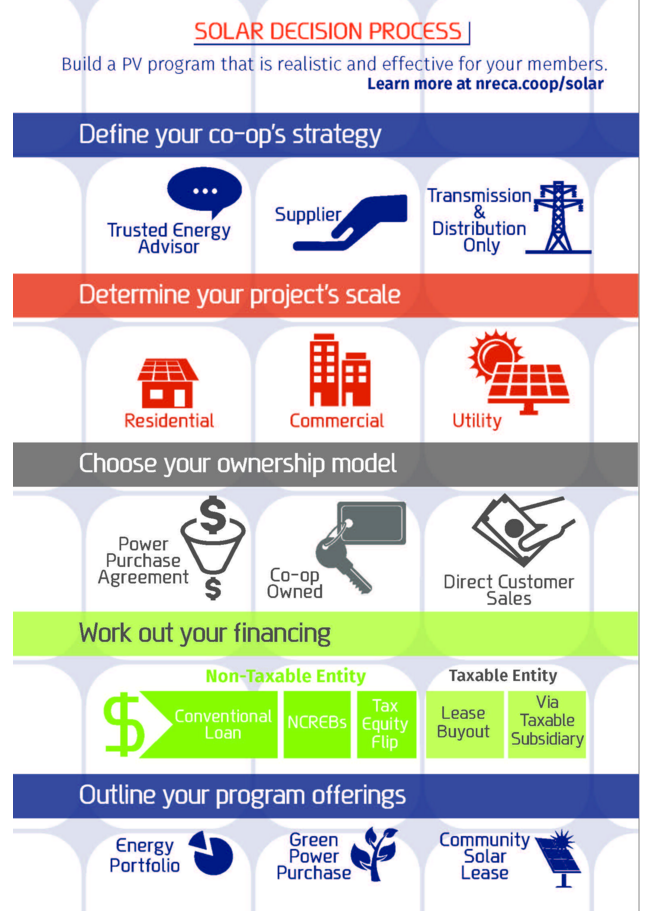
Consider the following factors in the selection of a model:

* 1. Will your project involve third parties?
  2. What best serves the member-consumership?
  3. What is the tolerance for financial or reputational risk?
  4. Do you already have land available?
  5. How many financial and/or human resources are you willing to dedicate to this program?

Additional considerations staff should address include the following:

* Output measurement and verification requirements for CSPs
* Compliance with state or federal requirements
* Sales, marketing, and member-consumer service training and staffing
* Operations and maintenance plan
* Cyber security
* Insurance requirements

Solar Board Decision Process

While the final policy document may be specific to a community solar program, the Board should consider all alternatives.

# Guidelines for Developing a Board Policy for a Community Solar Program

The Board policy for a CSP establishes the purpose, objectives, responsibilities, and guidelines for how the program will be financed, supported, and operated. With an emphasis on transparency and recognition of the interests of the cooperative’s member-consumers, the CSP board policy should be stated in broad terms related to the essential requirements of the CSP, including the terms and benefits of member-consumer participation. Finally, the Board policy should reference the cooperative’s obligations to comply with any legal, safety, regulatory, and contractual mandates related to the participation and operations of the CSP program. The following outlines the possible elements of the CSP board policy:

**NRECA’s courses and NCG’s consulting engagements follow a fairly standard template with which many cooperatives are familiar:**

I. OBJECTIVE or PURPOSE (what is the policy about)

II. POLICY (a brief summary, usually not more than a paragraph, which summarizes the policy positions or decisions being made)

III. EXPECTATIONS (what is it that the policy is trying to accomplish; what actions are to be taken by the Board; what is staff being directed to do?)

IV. RESPONSIBILITIES (who is responsible for seeing that the policy is carried out and/or major tasks are being performed?; this is often where a synopsis of Board vs. CEO roles is articulated)

* **Describe the overall purpose and objectives for the program.** The purpose should reflect the rationale, intent, and value proposition to the member-consumership. The objectives refer to the initial goals and/or benefits expected to be achieved from the program. These stated objectives provide the context for evaluating the success of the program over time.
* **Describe the CSP program.** In general terms, describe what the program is, how member-consumers participate, how it will work, and on what size scale. This may include referencing the subscription model to be applied, the size of the CSP offering, and the general expected ranges or limits of CSP energy production.
* **Outline the role of the cooperative, G&T, or any other third-party involvement.** This outline may include a statement of beneficial use, ownership, and responsibility of care of the community solar facility. Note that the cooperative’s role is to oversee and evaluate the program’s performance. Explain the relationship involvement with any third-party entity for financing, purchased power, or shared ownership. In addition, reference the cooperative’s role (or that of a contracted third party) to maintain the infrastructure to ensure safe operations and expected energy production levels.
* **Describe the broad terms for member-consumer participation.** This description includes outlining the application process, subscription rates, financing of up-front costs, energy or bill credits, eligibility requirements, account transfers, and/or discontinuation terms. Consider referencing the approved details of the related consumer terms and conditions for the program as part of a companion document, similar to an approved tariff offering.
* **Outline a statement of obligation to comply with industry standards and contract terms.** This statement should reflect the cooperative’s intention to ensure that the solar facility meets standards related to safety, system interconnection, facility metering, and any regulatory requirements. Further, the statement should reference any contractual obligations.
* **Outline definition of terms.** To ensure the clarity of the related CSP Board policy, include or reference brief definitions of key terms used within the policy or to describe the program.

## Do’s and Don’ts When Developing a Board Policy

|  |  |
| --- | --- |
| **Do** | **Don’t** |
| 1. State the policy in broad yet comprehensive terms to direct the Board’s intent, guidelines, and parameters for how the program is financed, supported, and operated. 2. Be clear about the cooperative’s role and obligations related to the CSP offering. 3. Be clear about the CSP’s purpose, rationale, and expected member-consumership benefits. 4. Develop a flexible policy recognizing the possibility of future changes or program updates. 5. Develop the policy keeping in mind the mutual interests of the cooperative and consumers. | 1. Overlook or be vague on the critical roles and responsibilities for the cooperative, including the Board and management’s role, and any outside party involvement. 2. Be too narrow and restrictive, or too general, as both can limit understanding and transparency for future considerations. 3. Pursue the development of a policy without a clear business case, program details, and planned roll out. 4. Have a policy that is unclear regarding the oversight role, objectives, or success factors for the CSP. |

## Sample Community Solar Board Policy

**(ABC Cooperative – Power Program)**

The following is provided as a sample policy. If used, it should be modified based on an electric cooperative’s legal and regulatory, financial, operational, policy, political, and other considerations.

1. Statement of Purpose

In alignment with our environmental stewardship commitment, and with the intention to fulfill member-consumers’ interest in renewable energy source options, ABC Cooperative (Cooperative) is establishing a Community Solar Power Program (CSPP), a consumer-based community solar program offering. The program enables the Cooperative to offer an affordable option for member-consumers to offset their energy usage from a local solar power source while expanding the Cooperative’s knowledge base for distributed renewable technologies.

1. Program Objectives
   1. As part of our member-consumer loyalty strategy, expand the cooperative’s opportunities for consumers to participate in a local solar generation facility without subsidization by consumers who choose not to participate in the program.
   2. Provide an economically viable option to meet member-consumer demand for generation from renewable sources.
   3. Increase the cooperative’s knowledge level on the growing trend toward distributed renewable technologies and the related distribution service factors.
   4. Enhance our community standing regarding environmental stewardship.
2. Program Description

The program offering is derived from the approved CSPP business case and project plan. As outlined in the approved Solar Service Agreement with XYZ G&T Cooperative, a 0.5-MW solar generating facility located on Cooperative-owned land to produce solar power for use within the Cooperative distribution grid is authorized. The solar facility comprises 4,200 solar panel panels, each expected to produce approximately 470 kWh of power per year. Member-consumers who choose to participate in the program purchase a subscription unit equivalent to the investment of one solar panel. Participating member-consumers’ monthly bills are credited based on the average amount of energy production for each subscription unit. Those choosing not to participate will not see any change in their power bills resulting from this program.

1. Policy Content and Provisions
   1. As outlined in the Solar Service Agreement, XYZ G&T Cooperative finances, owns, and maintains the solar generating facility for the CSPP, and takes ownership of the resultant RECs in accordance with legal and regulatory requirements.
   2. The Cooperative owns the site land for the CSPP’s solar generating facility.
   3. Member-consumers purchase the production output of a solar panel as a subscription unit equivalent to the investment cost of a single solar panel. The total revenues received from the subscription units sold are projected to recover the total investments costs of the CSPP solar generating facility. The consumer subscription unit price for one solar panel is calculated based on the total investment and operating cost for similar-sized solar generating facilities over a 20-year lifespan. Any available investment tax credits applied are used to offset the initial investment in the project and reflected in the resultant up-front member-consumer subscription unit price.
   4. Each month the Cooperative meters the total energy produced by the entire CSPP solar generating facility. Each participating member-consumer's bill will be reduced by the average number of kWhs for each equivalent subscription unit(s) purchased, priced at the current energy component of a member-consumer account's retail rate.
   5. Eligible Cooperative member-consumers include residential and commercial accounts with monthly demand levels of less than 1,000 kV. Eligible Cooperative member-consumers complete an application to the Cooperative with the intent to purchase from 1 up to a maximum of 200 subscription units. Formal enrollment in the CSPP is initiated with a signed member-consumer agreement outlining the CSPP terms and payment received for the stated up-front subscription unit(s) total price. Non-deposited member-consumer accounts are eligible to pay the subscription unit price under an optional 24-month payment plan.
   6. Member-consumers agree to participate in the program over the 20-year life of the solar generating facility. The CSPP is transferable if a member-consumer moves to different premises within the Cooperative’s service territory. If a CSPP participating member-consumer chooses to discontinue the program, the Cooperative will repurchase the subscription unit on a determined declining percentage basis per year.
   7. CSPP terms, price details, and operating procedures will be documented and maintained by the Cooperative Member-consumer Service Department.
   8. The CSPP program objective achievements, measures of effectiveness, and overall results will be formally reviewed annually with the Board. Any material changes to the CSPP shall be recommended and proposed by staff to the Board for their approval.
   9. The installation and operations of the CSPP solar generating facility shall meet all local, state, federal, and industry requirements, including, but not limited to, the Standard for Interconnecting Distributed Resources with Electric Power Systems, National Electrical Safety Code, and all related compliance regulations.
2. Responsibility
   1. The Chief Executive Officer is responsible for the execution of this policy.

## Notes on Policy Content and Provisions

It is important to be aware of the balance between providing so much detail that it limits the flexibility of the program design and the need for clear descriptions of the various roles and responsibilities. Below is a good starting point for the key roles and responsibilities that should be reflected in this section of the CSP policy:

1. Who owns each aspect of the program/PV system?
   * Generation asset(s)
   * Land
   * Energy output
   * RECs
2. Who operates and maintains the system?
3. Who is responsible for decommissioning?
4. How is it being financed, and what are the financial obligations/responsibilities?
5. What are the terms for member-consumer eligibility and participation?
   * What is the subscription model?
   * How are bill credits applied?
   * What are the costs/rates of this program?
   * What are the eligibility terms and conditions?
6. Who has responsibility for maintaining the policy documents?
7. Are non-participating consumers subsidizing participating consumers?
8. What are the Board oversight plans?

As much as possible, the policy document should refer directly to service agreements, business plans, and contracts developed by staff and third-party contractors.

# Resources for Executive Management and Board of Directors

## Tools and Resources from NRECA

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

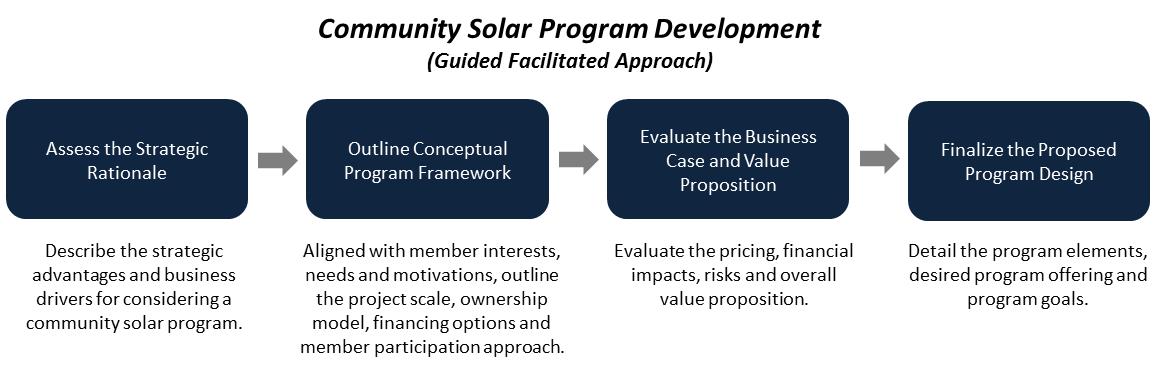
As interest in solar energy grows and the cost of deploying photovoltaic arrays becomes less prohibitive, many electric cooperatives are evaluating the feasibility of establishing CSPs. To assist with that process, NRECA is offering a suite of consulting services designed to help its co-op members deploy 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
3. **Project Managers Quick Start Guide** – Summary and checklist of Project Manager tasks and documentation requirements
4. **Cost and Financing Screening Tool for Utility-Scale Solar Projects** – Open and editable spreadsheet for project financial examination
5. **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)

## 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.

Contact: Mark W. Wilkerson, VP Strategic Partnerships

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

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### 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.

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**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

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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.

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### 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)

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**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

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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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Phone: +1.800.356.8360

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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.

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**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.

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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.

Contact: Eric Luesebrink, SVP Development

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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.

Contact: Bill Schupple, General Manager

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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: Clean Energy Collective 2016. [↑](#footnote-ref-2)
2. Modified Accelerated Cost Recovery System. [↑](#footnote-ref-3)
3. The only mandatory and enforceable cyber security standards are the NERC standards. The term “standards” is often used to refer to cyber security practices that are not mandatory and enforceable. [↑](#footnote-ref-4)