

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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**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.

For more information, contact Andrew Cotter at [Andrew.Cotter@NRECA.coop](http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/).

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Module 4: Business, Finance, and Program Administration

## About this Guide

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

**This Business, Finance, and Program Administration Module is one of 5 modules developed by NRECA, collectively forming the Community Solar Playbook. Each module is focused on the actions required from a particular division of a cooperative utility to establish a CSP**, **including the following**:

1. Executive Management

* 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 (this document)**
4. Section 1: Project Management and Planning

Section 2: PV System Engineering, Commissioning, and Operations

## Introduction

This module has been developed for use by Business and Project Managers seeking to develop a financial forecast and an economic evaluation of a CSP. It provides guidance on the available incentives for solar projects and the range of commonly used ownership models and financing strategies, and provides tools to use in evaluating the financial impacts of a CSP for utilities and participating member-consumers.

The sections of this module include the following:

* Business and Finance Manager’s Checklist
* Business and Financial Planning for the Community Solar Program
* Selecting the Business Model
* Developing the Financial Business Case
* Recommendation of Community Solar Business and Financing Model
* Program Administration, Accounting, and Billing
* Implementation Duties
* Resources for Business, Finance, and Program Administration
  + Tools and Resources from NRECA
  + Additional Online Training Courses

# Business and Finance Manager’s Checklist

The Business and Finance Manager is responsible for developing the financial plan; considering all lending, grant, and incentive options; and planning for changes in the financial market over the course of the program. Given the high up-front costs and the importance of investment and ownership options, serious consideration must be given to the financial viability and opportunity that the project represents. The market landscape can vary greatly from state to state and region to region, so careful up-front research and consideration of financing options are critical to community solar success. The table below provides a high-level checklist of key actions to successfully evaluate and manage the co-op’s community solar finances.

Table 1: Business and Finance Manager’s 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 if 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 Financial Planning for the Community Solar Program

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.

### Business Case Contribution and Planning Overview

The primary planning role of the Business and Finance manager is to assess potential business model options (see Table 2) for a CSP to provide an economic evaluation for inclusion in the business case. The Business Manager will need to develop and compare conceptual business models, and provide staff with relevant financial data to support their contributions. This includes a financial analysis of software and hardware investments as well as the financial impacts of various risk scenarios.

Table 2: Business Model Assessments

|  |  |
| --- | --- |
| **Target Segment** | * Residential * C&I * Mixed use |
| **Project Scale** | * Capacity size of the solar infrastructure |
| **Ownership/Organization** | * Cooperative-owned (D-Co-op or G&T) * Purchase power agreement (PPA) |
| **Financing** | * Non-taxable cooperative   + Conventional loan   + NCREBs   + Tax-equity flip   + Taxable subsidiary * Taxable cooperative:   + Lease buy-out   + NCREBS |
| **Member-Consumer Program Offering** | * Lease/sell panel model * Subscription model * Energy block sales * Direct energy purchase * Green energy bill credits * Renewable Energy Credits (RECs) |

**Before an economic evaluation, relevant financial data will need to be collected. These data include the following:**

* Capital infrastructure investment, including interconnection costs
* Operating and maintenance cost
* Internal and/or outsourcing resource costs
* Possible incentives
* Financing alternatives and PPA scenarios
* Distribution/transmission losses and wheeling costs

**Additional financial information includes the following:**

* Discount rate
* Cost-of-service study (with legal counsel)
* Financial impact (and goals) of various participation options
* Co-op “hurdle rate” ROI, break-even points
* Plans for changing rates in the future if you install another project
* Financial viability of qualifying vendors or EPCs
* Requirements for record keeping and billing and associated costs
* Cost of required software
* Sales onboarding process (with IT and Marketing Managers)

The data should enable an economic and financial evaluation that identifies key financial options and factors that optimize the economics for the cooperative and participants.

**The economic and financial evaluation includes the following:**

* An outline of the related business assumptions, including land availability, substation interconnection, wholesale power cost, operating management, regulatory environment, internal capital rate of return, escalation rate, etc.
* Analysis of financials and economics; examples include the following:
  + Initial financial screening to assess and compare the composite unit cost per generation for various financing options (reference: SUNDA PV Cost and Financing Screening Tool)
  + An economic analysis over the project life, to determine net present value, internal rate of return, and payback years
  + Financial forecast, integrated with community solar financials to determine the impacts to key financial ratios
  + Effect on financial statements
* Sensitivity analysis: Use case scenarios to assess how key cost drivers and options impact economics. Example case scenarios include the following:
  + Economics on the varying scale of the project
  + Variability in net capacity factor
  + Changes in equipment prices and related revenue requirements
  + Model financial impact of subscriptions, including a low-level subscription scenario and identification of a break-even subscription point
  + Impacts of renewable credits recovery
  + Variability in land cost
* Summary of the key conclusions from the analysis

The Business and Finance Manager will support staff in the assessment of risks and mitigation strategies. Examples include the following:

* Capital investment risks
* Financial sensitivity of the following:
  + Participation
  + PV system performance
  + Land and acquisition costs
  + Project delays
* Legal and regulatory risks
* Viability of developers, vendors, and other third-party consultants

### SUNDA Financial Planning Tools and Resources

NRECA has developed a number of tools and resources to assist in the financial evaluation of a community solar program.

#### Cooperative Utility PV Field Manual: Volume 1

Volume I: Business Models and Financing Options provides a detailed overview of the financial considerations for cooperative utility adoption of a solar PV program. It provides definitions; explanations; diagrams; the most common financing options, such as direct loans, tax-equity flips, and lease arrangements; and business model considerations, such as community participation (i.e., community solar). It enables cooperatives to understand and choose which program design will be most beneficial for their specific needs. It also includes multiple case studies and suggestions for program implementation to demonstrate how the various options affect costs and financial planning.

#### Online Financial Model and PV Cost and Financing Screening Tool

The SUNDA project has developed two tools to assist in financial planning. The Online Financial Model is a web-based resource that can quickly and simply give cooperatives a rough estimate of the costs associated with a SUNDA reference design-based PV system. The PV Cost and Financing Screening Tool is an Excel-based model that provides greater customizability for more precise cost estimates. The online model requires fewer inputs, giving it the benefit of speed, and thus should be used for preliminary cost estimation before continuing to the full model. The standard cost inputs are based on negotiated equipment pricing through NRECA’s National Discounts Program, with construction, design, and labor costs derived from SUNDA deployments, thus offering a high level of accuracy.

These tools enable cooperatives to work with financial or construction partners to compare each financing option (direct loan, lease buyback, NCREBs, and tax-equity flip), allowing them to determine which will be most beneficial for their particular situation. Additionally, the models offer methods to compare financing for a cooperative-owned PV system against third-party PPA offers. Both forms of the model can be found at [www.omf.coop/quickNew/solarSunda](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-tri-county.pdf) or on the SUNDA website at [www.nreca.coop/sunda](http://www.nreca.coop/SUNDA).

#### Instruction Videos

Step-by-step instruction videos are available on the SUNDA website at [www.nreca.coop/sunda](mailto:Henry.Cano@nreca.coop) for both the Online Financial Model and the Excel-based PV Cost and Financing Screening Tool. These videos can aid cooperatives in the typical use of these tools, as well as show the effects that altering inputs can have in a real-time scenario.

For more information on the SUNDA tools, please contact: Paul Carrol, Technical Contractor, at [paul.carrol-contractor@nreca.coop](http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/).

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Complementary Finance Tool

**Meister Consultants Group (MCG)** has developed a customizable financial analysis tool and methodology that supports rural electric cooperatives in their exploration of community solar projects, with a focus on the customer-facing program planning and financial modelling. MCG’s approach is to model both the wholesale- and retail-level impacts of community solar projects to help cooperatives understand the financial impacts of these community solar program offerings on the cooperative utility, on participating members, and on non-participating ratepayers. **The multi-stakeholder nature of this analysis complements the utility-focused economic analysis conducted through NRECA’s SUNDA tools by supporting decision-making on program design elements such as member subscription costs, net metering credit valuation, and related issues.** For more information, **contact Ryan at ryan.cook@mc-group.com.**

Disclosure: Meister Consulting Group is a primary contributor to the community solar playbook. NRECA does not endorse or recommend use of a particular vendor for its solar project needs.

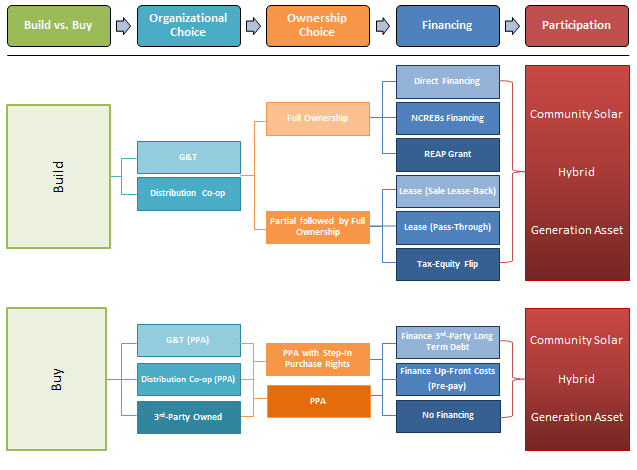
# Selecting the Business Model

Utilities have many options in developing solar generation resources, one of which is community solar. The decision of whether to pursue a CSP or a non-community solar project is tied to other key decisions about the business model. In this section, we present ALL of the primary options of a utility in developing solar with the intention of illustrating the circumstances in which community solar is preferable.

The business models or pathways for implementing a utility-scale solar PV or CSP could be broadly classified based on five program choices that an electric cooperative must make:

1. **Build or Buy** **‒** Should the co-op buy (via a service agreement) or build the PV asset?
2. **Organizational Choice ‒** Should the project be managed, owned, or operated at the distribution co-op, G&T, or by a third party?
3. **Ownership Choice** – What attributes of the PV system should be owned by the cooperative, consumer, or a third party?
4. **Financing Choice** – How will the project be financed?
5. **Participation Choice** – What is the offering to the member-consumer?

Figure 1: Business Model Choices and Options



### Determine key drivers

The answers to the following four questions will help narrow down the various options the financial team should explore.

#### Key Questions to Get Started

1. **What is the cooperative’s strategic goal in relation to this PV program?**

There are many choices to make in a community solar business model, so it is critical that all decisions end up supporting the strategic goal of the co-op and the value proposition of the project. The marketing team, Project Manager, and CEO should come up with a clear value proposition to drive the project and the goals for community participation. Further, the cooperative should determine whether its solar goals are best met via a utility-owned solar project to be used as a generation asset or by a CSP involving substantial member-consumer participation.

1. **Is the co-op affiliated with a G&T?**

Utility-scale solar PV projects can be implemented by distribution cooperatives or G&Ts. The choice of where it is implemented can influence how much capacity can be implemented, how the power output flows contractually, how it is paid for, who controls it, and whether community participation can be implemented. Beyond G&T contractual obligations, it is important to know how or if the G&T can provide resources, such as access to a lower cost of capital, access to larger programs, or engineering procurement and implementation support.

1. **How experienced is the co-op in developing or running a community solar program?**

This knowledge might determine to what extent the cooperative is willing to contract out for the building, operating, and maintenance of the PV system. Any or all CSP planning or implementation can be outsourced. Co-ops must consider whether they have the skill sets to issue and administer needed contracts (RFPs, PPAs, etc.?), oversee marketing efforts, integrate software, and build the PV system. Although it may cost more to outsource setting up and even administering the CSP, it may make sense in lowering the project risk and co-op staffing requirements.

1. **How important is harnessing ITCs and MACRS to the viability of the project?**

TIP: Tax Incentive Overlap

*For co-ops qualified for both ITCs and MACRS, it is important to note that when determining the amount eligible for accelerated depreciation, approximately 50 percent of the ITC claimed will be netted out of the total investment.*

Because many electric cooperatives are tax exempt and thus unable to monetize tax incentives like the ITC and MACRS, a co-op may need to utilize a taxable subsidiary or bring in a third party with a tax liability to efficiently monetize all or a portion of the available tax incentive and lower capital costs, and thus the cost of energy produced from the project. The size of the project will be an important consideration, as the legal and administrative cost of a program may not scale with the size. It also is important to consider taking advantage of NCREB financing in combination with REAP grants as an alternative to tax-advantaged leases or third-party equity-flip deals. For small projects, the simplicity of foregoing the incentives may make the most sense.

Solar projects are eligible for a variety of valuable incentives that could influence the cooperative’s business model choice. The financial team should have a command of the following incentives:

1. Federal Investment Tax Credits (ITCs)
2. Modified Accelerated Cost Recovery System (MACRS)
3. New Clean Renewable Energy Bonds (NCREBs)
4. Renewable Energy Certificates/Credits (RECs)
5. State Incentive Programs
6. Rural Energy for America Program (REAP) Grants

Two of these – the ITC and MACRS – are based on reducing the tax liability of solar project owners. As many electric cooperatives are tax exempt, it can be difficult for them to monetize tax incentives directly. However, a number of project ownership options allow cooperatives to benefit from tax incentives. They are discussed in the Ownership and Organizational Choice sections. In addition to tax incentives, a number of other direct incentives are available at the state level in jurisdictions across the country. The finance team will need to collaborate with its legal counsel or CPA firm to ensure compliance.

##### Federal Investment Tax Credit (ITC)

Under §48 of the Internal Revenue Code of 1986, commercially sited (non-residential) solar PV arrays qualify as renewable energy property eligible for the ITC. The ITC is available as a direct offset to federal tax liability for an amount equal to 30% of the qualifying basis of solar PV. This incentive recently was extended to include projects under construction by December 2019 at the 30% level. Projects started in 2020 and 2021 will be eligible for 26% and 22%, respectively, though all projects must be **in service by 2023** to obtain these incentive levels.

To fully monetize the value of the tax credit, the taxpayer claiming the credit must have federal tax liability in an amount larger than the ITC. In general, a high percentage of solar construction costs will probably qualify for the ITC; only those project costs related to land and land improvements would likely be excluded. Unused credits may be subject to carryback and carryforward – consult your tax advisor for specific details.

##### Modified Accelerated Cost Recovery System (MACRS)

In addition to the ITC, a properly structured solar project is eligible for the MACRS system of depreciation. MACRS’ depreciation rates allow for deduction of the eligible amount of the investment for tax-reporting purposes over the first six years of project life, accelerating the time in which tax losses may be claimed as a deduction to taxable income and increasing the value proposition to solar project owners.

##### New Clean Renewable Energy Bonds (NCREBs)

Now called NCREBs (formerly CREBs), enables electric cooperatives to capture finance-related benefits, once available only to taxable private sector entities, for the construction of utility-scale solar PV installations. NCREBs provide direct subsidy bonds to credit issuers. The issuer makes an irrevocable election to receive a direct payment (a refundable tax credit) from the Treasury, equivalent to and in lieu of the amount of the non-refundable tax credit that otherwise would be provided to the bondholder. In this case, an issuer (an electric cooperative) pays a lender an interest rate on an NCREB-related loan and receives a direct payment from the Treasury to offset a portion of the interest expense. The value is comparable to the incentive of production or investment tax credits for renewable energy projects offered by the federal government to for-profit ventures.

##### Renewable Energy Certificates/Credits (RECs)

Generation of electricity from renewable energy resources enables a cooperative to obtain RECs to sell to member-consumers, resell in the wholesale market, comply with state requirements where applicable, or for other purposes. RECs represent the environmental attributes of a block of renewable energy, with one (1) REC typically equal to 1,000 kilowatt-hours or one (1) megawatt-hour of renewable energy. Table 3 below summarizes the different ways RECs can be distributed and used in a CSP.

Table 3: REC Distribution Options

|  |  |  |
| --- | --- | --- |
|  | **Owner** | |
| **Use of rec** | **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 in meeting regulatory requirements |
| **Retire** | Retire on behalf of consumer | Consumer retires the RECs to make green claims |

When considering RECs, it is important to remember the following:

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 industry practice 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 may or may not involve the consumption of renewable energy. Any cooperative pursuing community solar should retain and use legal counsel or work with a community solar vendor that has REC knowledge to develop marketing guidelines and/or review claims about renewable attributes.

The co-op should use legal counsel to ensure that the REC program is compliant with all applicable laws and regulations. In addition to counsel, the co-op may work with a community solar vendor that has REC knowledge to develop marketing guidelines and/or review claims about renewable attributes.

##### State Incentive Programs

Some states offer their own incentives for solar projects, whether through the tax code or via direct payments. Cooperatives should investigate whether their state offers tax credits or other incentives for solar energy and consult their tax advisor regarding the applicability of such benefits. Cooperatives should also determine whether available state incentives for solar would apply specifically to CSPs as well. In no instance should a cooperative promise its member-consumers that they would qualify for any tax benefit; instead, the cooperative should advise the member-consumer to consult their individual income tax advisor. Researching individual state incentive options can be done at [www.Dsire.org](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-green.pdf).

##### Rural Energy for America Program (REAP) Grants

REAP Renewable Energy Systems and Energy Efficiency Improvement Loans and Grants provide guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems, or to make energy efficiency improvements. These grants are typically used in commercial applications; however, cooperative businesses in areas with a population of less than 50,000 inhabitants are eligible for these grants as well. More information can be found at [http://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-smeco.pdf).

# Buy or Build

The first choice in developing a prospective community solar business model is the decision to build the system or secure generation through a PPA. Although this decision will impact all the other choices, it should be noted that the final participation model (how individual member-consumers participate) is for the most part independent of this decision. The primary drivers to this decision are the project economics (i.e., what is the best deal?), risk factors, and the strategic goals of the cooperative. One key driver to consider is how difficult it may be for staff to develop the required skill set in developing a project, or planning and implementing a consumer-facing program like community solar.

### Summary of “Build vs. Buy” Decision

|  |  |
| --- | --- |
| Build | **Co-op built, owned, and operated:**   * Requires up-front capital and/or financing * Allows project to be hosted by the co-op, allowing autonomous design and operation * Allows full control of billing and communications * Increases workforce development opportunities * Bears operational risks * May be difficult to harness ITCs and MACRS, especially on smaller projects * Can still purchase community solar services such as marketing and software |
| Buy | **Third-Party Service Agreement:**   * Avoid up-front capital costs * Avoid operational risks * ITC and MACRS tax compliance assumed by third party * SEC and IRS regulatory risk assumed by third party * Avoid ongoing operation and maintenance risks * A third party may provide marketing and IT services * May avoid decommissioning risks * May lose out on residual plant productivity beyond the terms of the PPA * Can contract for step-in rights for ownership at a later date |

### Key “Build or Buy” Questions:

1. **What is the lifetime cost of the service agreement compared to building and operating a PV system yourself?**

Often, a third party can monetize tax incentives and pass them through to the cooperative via a lower-cost service agreement. These savings can exceed the additional cost of contracted services. The SUNDA Solar PV Cost and Financing Screening Tool can be used to run a comparison of a PPA against the projected cost of building a system.

1. **What resources and skill sets are needed to issue the RFP and negotiate and administer the installation contract? Does the co-op have that capability?**

Although building a PV system is within the capabilities of most cooperative utilities, somebody still needs to be in charge of this effort and oversee the entire process, even if the co-op hires a firm to deliver a turnkey solar PV plant. The more components of the project the co-op determines to do in house, the more skill and staff time will be required.

1. **Long term, can the co-op market and administer a CSP?**

Beyond procuring and installing the physical solar PV system, careful consideration must be given to the marketing and member-consumer service capabilities of the cooperative. As with any consumer-facing program, short-term success requires good marketing; long-term success is incumbent on delivering on promises.

Community solar vendors offer full suites of services that range from just construction or just program administration to providing full-service programs that will build, market, and administer the entire CSP. It is important to balance the cost of these services against the potential cost of running a program with either inexperienced or insufficient human resources.

1. **Can the co-op finance a developer’s construction or long-term debt to reduce rates and costs?**

Typically, cooperatives have a lower cost of capital than an independent power provider or project developer. Thus, they should explore opportunities to work with PV project developers to leverage that advantage in exchange for lower-cost PPA rates. For example, a co-op may be able to finance the project’s debt or some portion of its up-front costs with assistance from its lender, or may be able to buy down the PPA rate by way of a pre-payment.

1. **What is the credit history of the developer?**

PPAs are only as strong as the company providing the service. The finance team needs to be confident in the performance capability of the seller. The team should develop a fallback position should the vendor not be able to deliver. Typically, financials for any individual project are not public, as they are typically structured as individual LLCs, so it is important to research the history of the company. It is possible to leverage construction financing by the co-op to gain access to project financials. Construction and/or performance bonds may be feasible for some components of the project – particularly the construction of the solar arrays, which is the greatest part of the capital expenditure (CAPEX).

1. **Does the co-op have land available?**

Land acquisition and permitting are often the tasks that create the most disruption to a project timeline. Third-party PPAs can help avoid this issue by placing the risk on the developer. Conversely, should a parcel of land be available, a co-op may consider offering it to developers in exchange for lower up-front costs or rates.

# Organizational Choice

Solar projects can be implemented by distribution cooperatives, G&Ts, or a developer. Organizational choice can influence the size of the system, contractual requirements, payments, and who is responsible for maintenance. This decision is mostly predicated by contractual obligations of the co-op but can also be driven by economic opportunities.

## Summary of Organizational Options

|  |  |
| --- | --- |
| G&T Involvement | * Potential for solar to be part of the wholesale power contract * Potential for a larger-scale program with lower unit costs and the greatest potential to serve member-consumers * Potential for lower cost of capital * May provide design, legal, procurement, and construction services * Bears operational risks (i.e., system performance) * May be better positioned to address grid interconnection and distribution of power from a larger solar project * Community participation can be more difficult to implement; may require consensus of/participation by all member-consumers or rate mechanisms to allocate costs to participants |
| Distribution Co-op Ownership | * Local visibility and ability to offer participation directly to member-consumers * Potentially greater opportunities for localized PR messaging, direct consumer engagement * Bears operational risks (i.e., system performance) * Smaller systems have higher relative soft costs that will increase the cost to consumers * May need to address issues with the all-requirements contract |
| Third-Party Owned | * Avoids up-front capital costs and financing issues * Lowers project risk to co-op * Avoids operational and performance risk * A third party may provide marketing and IT services * Co-op often has option to buy out a third party at end of the PPA * Avoids decommissioning risks * Avoids tax incentive risks |

### Key Organizational Questions

1. **What are the co-op’s contractual obligations vis-a-vis owning this generation asset?**

Distribution cooperatives affiliated with a G&T should work together to determine the optimal business model. There are many options for a partnership. Some common approaches include the following:

* A PV array is owned by the G&T but sited, maintained, and operated by the distribution cooperative.
* A PV array is owned and operated by a distribution cooperative, but *all* of the output from the PV system goes to/through the G&T. The distribution co-op would then buy the equivalent power back.

1. **Can the G&T provide a lower cost of capital?**

Making the G&T the implementing entity has some advantages that are worth considering. Interest coverage ratios required by lenders are typically lower at the G&Ts and higher at distribution cooperatives. In addition, the credit strength of the G&T may allow for lower borrowing costs.

1. **Can the G&T provide additional resources for procurement and project implementation?**

The finance team should explore with the Project Manager whether an affiliated G&T can provide engineering, legal, marketing, program management, or procurement support. Taxable G&Ts may also have a tax appetite that might be used to harvest the tax incentives.

1. **Is there the potential for consolidation of projects with other affiliated co-ops?**

Scale can have a major impact on the levelized cost of electricity produced by a PV system. The Business and Finance Manager should explore any options for taking part in a larger project. Although PV projects are subject to a variety of local pricing drivers, competitive price points for PV systems begin at the 1-MW threshold. A second price point, approximately 20% lower, can typically be found at the 25-MW scale.

In addition to the savings from “scaling up,” there could be a number of cost savings through using standardized contracts, templates, RFPs, and marketing materials developed at other distribution cooperatives or by the G&T.

Beyond joining a large PV project at a remote G&T location, most solar development firms will often give a better price per system to implement 10 1-MW PV systems one after another in a G&T’s territory than for a single 1-MW system.

# Ownership Choice

The choice of ownership falls into three categories.

1. Full ownership, wherein the cooperative is the exclusive sole owner of the installation from inception through the life of the project.
2. No ownership, wherein assets are owned and operated by a third party, with the generation sold to an electric cooperative.
3. Partial ownership followed by full ownership, wherein the PV assets are totally or partially owned by a project partner, but with a contracted right to full ownership after a certain specified period (typically 7 years) or upon the occurrence of a specific event (ITC and MACRs have been fully monetized or certain return requirements met).

The nature of ownership has implications for a cooperative regarding the control it can exercise on project operation as well as the economic benefits. This decision is most likely driven by the desire or ability of a co-op to harness ITCs and MACRS as well as its desire for ownership of an asset.

## Summary of ownership options

|  |  |
| --- | --- |
| Full Ownership | Full Utility Ownership   * Allows project to be hosted by the co-op, thus allowing autonomous design and operation * Allows full control of billing and communications * Increased workforce development opportunities * May be difficult to harness ITCs and MACRS, especially on smaller projects |
| PPA | Third-Party Ownership (PPA)   * Avoid up-front capital costs * Fully and more easily capture ITC and MACRS benefits * Reduced SEC and IRS regulatory implications * Avoid ongoing operation and maintenance risks * Avoid technology obsolescence risks * Can provide marketing and IT services * Must review to determine if a lease for accounting purposes |
| Partial Followed by Full Ownership | Third-party ownership followed by utility ownership (lease-back, tax-equity flip, purchase rights)   * Reduce up-front capital costs * Fully and more easily capture ITC and MACRS benefits * Can be the lowest cost of asset ownership * Difficult contracting needs and “equity partner” requirements may increase project costs significantly * Life-extension opportunities may provide the lowest cost of electricity * Must review to determine if a lease for accounting purposes * Cooperative will assume ongoing expenses |

## Ownership Options

##### Full Ownership – Cooperative Ownership

**IRS Private Letter Ruling: 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 applied to that case specifically but not necessarily to all community solar participants nationwide. 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. Consult your tax advisor for more information.

Citation: PLR-111860-15

**Direct cooperative ownership** is conceptually the simplest means of structuring a CSP and avoids the expense and complication of involving external ownership partners; however, it can have significant downsides, as cooperatives typically cannot monetize tax incentives such as the ITC and MACRS. Some cooperatives may be able to monetize the tax benefits by developing CSPs through a for-profit subsidiary organization (such as a broadband communications or propane delivery subsidiary). Deploying this strategy requires legal assistance to ensure that the subsidiary is eligible for project ownership; also, the co-op must ensure that the subsidiary has an adequate tax appetite to fully utilize the tax benefits and that the subsidiary is not organized for the single purpose of the CSP.

**Consumer-Cooperative Partnership –** This alternative involves a cooperative selling ownership of the PV system to member-consumers as the consumer participation option (see Section: Participation). A tax-exempt electric cooperative enters into a partnership agreement with member-consumers who want community solar. As long as the exempt cooperative owns less than 50% of the venture, the partnership may allocate the tax benefits to the participating member-consumers. Before pursuing either of these two options, the cooperative should review the IRS Private Letter Ruling (see text box) and consult with its tax advisor.

##### Third-Party Ownership

**Third-party ownership** of the CSP is the most direct way to finance the project and monetize the financial benefits of the ITC and MACRS. Most common is the purchase of energy through PPAs, a lease, or service agreements. It is important to note that there are rules and restrictions that govern the application of the ITC in third-party ownership scenarios, and that such ownership may not be permitted in some states. Community solar developers like NRCO, CEC, and SoCore energy, as well as finance organizations such as NRUCFC and CoBank, can provide detailed information to the cooperative regarding the capital structures used to finance CSPs and how to efficiently monetize the tax benefits.

##### Partial Ownership Followed by Co-op Ownership

**Third-party ownership followed by co-op ownership** utilizes PPAs, leases, and service agreements similar to the third-party ownership options, but agreements are structured to include utility step-in rights to full ownership upon the exercise of a “fair market value buy-out” of the other owners’ interest(s) after a negotiated time period (typically 7 years, to harness the ITCs and MACRS). Financing structures that fall under this category include the following:

1. Tax-equity flip
2. Sale lease-back
3. Pass-through lease

Descriptions of these financing structures can be found in the next section.

##### Third-Party Ownership with Step-In Rights

One approach is to establish a PPA arrangement with a solar power provider that includes step-in purchase rights after the ITC and MACRS are harnessed. This approach closely mirrors the lease-back arrangement, wherein a third-party owns the system until the tax incentives are harnessed (typically 7 years), and then sells the system to the cooperative at a reduced cost by way of step-in purchase rights.

This approach is subject to compliance with IRS requirements so tax benefits are not negated. To receive the tax benefits, an investor with a tax appetite sufficient to monetize the tax benefits must own the project. The costs are carried by the third party, ITCs and MACRS are monetized by the third party, and some portion of the tax benefits are passed through to the cooperative by way of a lower-cost PPA. The cooperative should consult its tax advisor and legal counsel before undertaking this form of transaction.

The main difference between this option and a lease-back is that the co-op would use a PPA instead of a lease agreement to compensate the system owner during its time of ownership. Currently, it is typical in this arrangement for the PPA period to be longer – commonly 20 years – with the option to purchase at year 15. However, there are no hard economic limits. Once the tax benefits are realized after 6 years, in determining the length of the PPA term, the ownership option can be exercised at any point. Furthermore, the amount of benefits passed through to the off-take party depends on the return needed and the price of the PPA. The cooperative should be cautious about guaranteeing any particular return or tax benefits to the solar power provider, and the buy-out amount must meet the fair market value requirement.

### Key Ownership Questions

**If building: Full ownership, or partial ownership followed by full ownership.**

1. **Does the co-op have a wholly owned subsidiary?**

A wholly owned subsidiary may be used as a means of accessing non-recourse debt and facilitating financing of the asset without encumbering the legacy assets of the cooperative. Depending on lenders’ debt-service covenants, such an arrangement with a wholly owned subsidiary could reduce the revenue requirements to service the debt.

1. **Does the subsidiary have a tax appetite?**

If a taxable subsidiary has and expects to continue to have tax liabilities, those liabilities can be shielded by capturing tax incentives available for utility-scale solar PV projects. Additionally, lease-back models can be accessed through a taxable subsidiary, if it has any tax appetite.

1. **Is the co-op willing to create a new wholly owned subsidiary or special purpose entity for this project?**

Almost all of the financial advantages to harnessing ITCs and MACRS via a subsidiary can be attained through the creation of new entities. It is important to understand the cost of such an endeavor and work with legal counsel to ensure IRS compliance, which may include the requirement that a new subsidiary must have functions other than just the CSP.

1. **Can you find tax-equity investors?**

A co-op can do a tax-equity flip on a project of any size as long as it is able to find tax-equity investors. It can be difficult to find investors on single smaller projects due to the transaction costs. One option is to take part in an aggregated deal, in which multiple smaller projects are combined to make a single more attractive tax-equity investment. The finance team should discuss this possibility with their preferred lending institution.

If buying: PPA or PPA with a buy-out clause?

1. **What is the term of the PPA?**

The finance team must determine the expected value of the system after the term of the PPA has concluded or the buy-out clause has been exercised. Assuming high-quality modules and proper maintenance of inverters, the life of a PV system should be 30 years or more. However, the efficiency of the panels will slowly degrade over time at a rate of 0.5 to 0.8% per year.[[1]](#footnote-2)

1. **Is your co-op willing to assume the technology obsolescence risk and O&M responsibility?**

By exercising step-in rights, the cooperative assumes the responsibility for procuring and installing any parts needed to keep the system running. PV modules typically have a warranty for 25 years to 80% of original output. As solid-state devices, they may continue to provide power for many years after that. Some sources contend that they will produce power for 100 years or more, although mechanical failures such as cell interconnections or encapsulant aging could cause the panel to fail sooner. The inverter is the other major failure point for a PV system; typically it has a much shorter life cycle. The finance team should work with the engineering team to determine the risk of being able to secure parts or the possibility of scaling back system strings as components age and fail.

# Financing Choice

Financing choices available to cooperatives are shaped by the ownership choice made. The driver of this decision is purely economic.

### Summary of Financing Options:

|  |  |  |
| --- | --- | --- |
| Full Ownership | Direct Financing | * If tax benefits are not harnessed, more costly than most business models * Simplicity of implementation; based on bilateral relationships with lenders * NCREBs and RUS financing, especially when combined with REAP grants, can be a very low-cost options, especially for smaller projects |
| CREBs Financing | * Tax benefits not harnessed * Lower cost than direct financing * Requires navigation of governmental requirements; application, documentation, and monitoring requirements need to be met * Specifically, project timeline needs to be firm, but requirements not so strict as to require third-party construction and commissioning |
| REAP Grant | * When combined with CREBs financing, may be the lowest-cost option * Typically used in commercial applications; need to consider optics of “using up” REAP grants in a state |

|  |  |  |
| --- | --- | --- |
| Partial Followed by Full Ownership | Leasing | Pass-Through Lease and Sale Lease-Back Agreement   * Harnesses ITCs and MACRS * Simpler if the co-op has an existing taxable subsidiary, but co-op could still establish one * Can be one of the lowest-cost options * Lease stipulations can be onerous; lessee must meet lessor’s requirements * If tax benefits are not harnessed, more costly than most business models |
| Tax-Equity Flip | * Harnesses ITCs and MACRS * Available to all cooperatives; if the cooperative is nontaxable, it will need to set up a taxable blocker entity * Can be the lowest-cost option, especially for larger projects (< 1 MW) * Challenges in locating tax-equity investors for small projects * Transaction costs for one-off implementation very high for small projects |

|  |  |  |
| --- | --- | --- |
| PPA | No Financing | * Simplicity of implementation * Review to determine if a lease is present for accounting purposes |
| PPA with Step-In Purchase Rights | Financing Up-Front Costs  (Pre-pay) | Finance Third-Party Debt or Finance Pre-Payment   * Uses lower cost of capital from co-op to lower PPA cost * Harnesses ITCs and MACRS * Avoids some of the tax restrictions that may preclude a co-op from accessing a lease arrangement * Far less construction/execution risk for utilities unfamiliar with planning, design, and construction or utility solar * Step-in rights provide the opportunity for long-term cooperative ownership, but co-ops will assume O&M and retirement risks * Can be combined with NCREBs, RUS financing, and/or REAP grants to provide lowest-cost options * Review to determine if a lease is present for accounting purposes |

Regardless of the form of transaction, it is important that the cooperative review or engage its CPA firm to review any contracts to determine whether such contracts would create sufficient rights of control by the cooperative that would create a lease for accounting purposes. Accounting Standards Update 2016-02, Leases, was issued on February 25, 2016 and will be effective for the calendar year for private companies in 2020. If a contract is a lease under the new standard, the present value of the contract will be required to be capitalized on the cooperative’s balance sheet as a right-of-use asset and a lease liability. Also, if the contract is a finance lease, income statement impacts for the cooperative lessee may include interest expense, which could affect mortgage covenants and rates.

## Financing Options

### Direct Financing

##### Up-Front Payment (No Lending)

Cooperatives with substantial balance sheet resources may find it most attractive to avoid interest payments and pay the up-front cost of solar. Doing so may reduce the lifetime costs of solar project financing, but would require access to and use of substantial liquid resources. The obvious benefit of this approach is that it can increase the rate of payback, as 100% of the savings and profits generated go directly to the co-op; however, it is important to maintain sufficient cash flow for ongoing maintenance and unforeseen expenditures.

##### Private Lenders

Traditional lenders are increasing their solar project portfolios as the benefits and stability of the technology become more widely known. There are numerous private lenders for cooperatives to work with. As with all private loans, interest rates can vary widely and may or may not be fixed for the life of the loan. Before committing to a private loan lending option, the co-op Board should determine what level of risk it is willing to take on, and the Business and Finance Manager should outline a clear and feasible repayment plan to ensure project success.

##### USDA Rural Utilities Service Lending

The USDA Rural Utilities Service (RUS) offers low-cost financing to cooperatives through a variety of lending pathways. One lending option well-suited to CSPs is the Energy Efficiency and Conservation Loan Program (EECLP), which can be used to finance a variety of clean energy improvements (including renewable energy projects). This funding can also be re-lent by the cooperative to individual member-consumers. As RUS loans are based on the U.S. Treasury rate, they provide a low-cost source of funding to cooperatives. USDA Rural Development General Field Representatives (GFRs) are available to help cooperatives navigate RUS lending programs. As an alternative to relending EECLP funds to its member-consumers (which comes with additional federal and perhaps state regulatory requirements, such as truth in lending provisions), the cooperative may use the EECLP funds to make the investment in community solar and charge the participating member-consumers an add-on to their monthly bills to recover the cost of the project, including the cost of the EECLP loan.

##### New Clean Renewable Energy Bonds (NCREBs)

NCREBs provide another low-cost financing source for cooperatives, which are supported by interest rate subsidies from the federal government. An electric cooperative is able to raise funds for renewable energy project construction by issuing NCREBs (i.e., loans from eligible lenders). Co-ops pay interest to bondholders (lenders), which can be subsidized partially through direct subsidy payments that the co-op receives from the federal government. NCREBs can be a lower-cost option than direct conventional loans for solar PV projects because of the lower borrowing costs and relatively low transaction costs.

Renewable Energy for America (REAP) Grants and Energy Efficiency Improvement Loans and Grants

REAP Grants provide guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems, or for making energy efficiency improvements. Typically, these grants are used in commercial applications and are finite resources. Cooperative businesses in areas with a population less than 50,000 inhabitants are eligible for these grants. Some thought should be given to the optics of a power provider “using up” these grants instead of a commercial business. More information can be found at [http://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-san-miguel.pdf).

### Partial Ownership Financing

##### Tax-Equity Flip

This ownership structure requires a partnership between a blocker corporation and tax-equity investors capable of monetizing the tax incentives. The blocker entity may be a corporation or a single member LLC. A special purpose entity (SPE) is formed for the partnership arrangement; it constructs, owns, and operates the project. The taxable blocker corporation, wholly owned by their cooperative, is needed to meet the requirements of the tax regulations and harness the tax benefits available for the project. In this structure, the blocker corporation is typically 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. Given the higher transaction costs, the tax-equity flip approach may be feasible only for larger CSPs. The cooperative should be aware that there are ongoing administrative costs to the tax-equity flip approach; the transaction risks and costs should be evaluated carefully. Cooperatives should consult with their tax advisors and CPA firms before proceeding with this approach.

##### Sale Lease-Back

In this structure, the project developer (the cooperative may take the role of developer) builds the solar facility (using construction financing); upon completion of construction, but before placing the project into service, the developer sells the entire project to a tax investor (TI)/lessor. Simultaneously, the developer and lessee enter into a long-term lease agreement to use the assets. If the lease is treated as an “operating lease” or “true lease” for tax purposes, the TI will be treated as the owner of the property and should be entitled to the tax benefits. However, if the lease is treated as a capital lease for tax purposes, the developer should be treated as the owner of the property and consequently entitled to the tax benefits; in other words, the lease would be viewed as a financing transaction. In the case of a true lease, the expectation is that the developer would benefit through lower lease payments than otherwise would be required if the ITC and MACRS were not available to the TI. Because of the potential complications in dealing with tax-exempt entities, the cooperative should consult its tax advisor for the optimum way to structure a sale lease-back. Additionally, the cooperative must be cautious about indemnifying the tax investor/lessor since such provisions can be very costly. This transaction structure should be reviewed by the cooperative’s tax advisor as well as its CPA firm to determine whether a lease is present for accounting purposes.

CoBank has configured a leasing structure like this one for co-ops through its Farm Credit Leasing program, and has structured it to comply with legal and tax regulations.

##### Pass-Through Lease

In a pass-through lease structure, the roles of the lessor and lessee are reversed. In this case, the developer or taxable subsidiary (blocker) retains ownership of the assets (as lessor) and leases them to the tax investor (lessee). The ITC benefits may be passed through to the TI that claims them against taxable income. Note that the MACRS does not pass through to the TI, but instead remains with the developer. As noted above, the accounting implications of this structure need to be considered. The cooperative should be aware of the potential cost of tax indemnification provisions and should have its tax advisor review the transaction.

#### Online Financial Model and PV Cost and Financing Screening Tool

The SUNDA project has developed two tools to assist in financial planning. The Online Financial Model is a web-based resource that can quickly and simply give cooperatives a rough estimate of the costs associated with a SUNDA reference design-based PV system. The PV Cost and Financing Screening Tool is an Excel-based model that provides greater customizability for more precise cost estimates.

These tools enable cooperatives to work with financial or construction partners to compare each financing option (direct loan, lease buyback, NCREBs, and tax-equity flip), allowing them to determine which will be most beneficial for their particular situation. Additionally, the models offer methods to compare financing for a cooperative-owned PV system against third-party PPA offers. Both forms of the model can be found at [www.omf.coop/quickNew/solarSunda](mailto:Mark.Wilkerson@easycleanenergy.com) or on the SUNDA website at [www.nreca.coop/sunda](http://www.nreca.coop/nreca-on-the-issues/energy-operations/distributed-generation/).

### Key Financing Questions

If building, direct finance, lease, or tax-equity flip financing are the choices available to the cooperative:

1. **How do traditional loans and RUS loans compare to lease and tax-equity flip options?**

This question is purely economic. The Business and Finance Manager can use the SUNDA screening tool (see text box) as a resource to help make this comparison. The Financial Calculator can be found at www.nreca.coop/Solar.

1. **What financing programs is your co-op eligible for?**

Certain IRS regulations may preclude your co-op from accessing certain financing structures. It is important to work with your legal counsel and tax advisor as well as your preferred lending provider to determine the financing programs for which you may be eligible.

1. **Are REAP grants available?**

When combined with NCREB loans, REAP grants can provide the most advantageous financing vehicle for utility-owned PV systems and impose fewer restrictions in minimum size, investor requirements, or tax appetite. Co-ops should contact their local State Rural Development Energy Coordinator to get more information at [http://www.rd.usda.gov](mailto:ryan.cook@mc-group.com)[/files/RBS\_StateEnergyCoordinators.pdf](mailto:Henry.Cano@nreca.coop)

If buying:

1. **Can the co-op finance a developer’s construction or long-term debt to reduce rates and costs?**

The finance team should explore opportunities to lower the rate associated with a PPA. Typically, cooperatives have a far lower cost of capital than an independent power provider or project developer. Opportunities may be available for the co-op to have its lender finance the developer’s debt or some of the up-front costs. The co-op may also be able to buy down the PPA rate through a pre-payment, which the cooperative can also finance. One can compare a quote with and a quote without the co-op financing to derive the possible benefit to the member-consumer.

# Community Participation

|  |  |
| --- | --- |
| Community Solar | Community Participation: Consumer Ownership, Capacity Subscriptions, Energy Block Subscriptions, and Green Power Purchase models   * Provides access of PV attributes directly to member-consumers * Can reduce up-front financing needs * Can reduce financial risks * Can increase member-consumer engagement; meet member-consumer needs * Help gain control of distributed solar projects * Can result in additional SEC and IRS regulatory risks |
| Hybrid | Partitioning a Portion of a PV system to Community Participation   * Enables scaling up project size while mitigating subscription and marketing risks |
| Generation Asset | PV generation becomes part of the co-op’s portfolio   * Simpler to deploy * Fewer program administration needs and costs incurred |

Community participation defines how member-consumers will buy into the CSP. There are three primary considerations for the Business and Finance Manager. First, how many, if any, of the PV system’s attributes will be allocated to consumer participation? Second, what will the consumer participation look like? Third, how will it be priced?

## Community Participation Options

Selling or leasing panels

Consumers purchase or sign up for a long-term lease on 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 potentially the tax benefits, for the life of the system. Under this option, 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 member-consumers own their panels, the utility maintains ownership of the common assets, such as land, racking, wiring, and inverters. This model typically requires a PV system sized at 500 kW or above and may be the best method to attract C&I participants. Participation costs are typically quoted on a per-panel basis. Pricing is based on the capital cost of the panels. Any such contract should be reviewed by the cooperative or its CPA firm to determine whether a lease is present for accounting purposes.

Selling or subscribing capacity and attributes

In this arrangement, consumers purchase the output and attributes of solar panels owned by the co-op 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 percentage of the community PV system. Typically, the cost of participation takes the form of pre-payment, an ongoing electricity rate, or periodic subscription payment based on the system output. These costs can be added to a consumer’s monthly electricity bill, subject to state law. Bill credits for the energy produced are then subtracted from the same bill. Capacity can be sold in blocks of KWs or in 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. Any such contract should be reviewed by the cooperative or its CPA firm to determine whether a lease is present for accounting purposes.

Selling or subscribing energy blocks

In this model, the subscriber pays a fee to receive PV system benefits as determined by the cooperative. This allows participants to buy blocks of clean power from a shared solar array, which is 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 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 buying power at a different rate. Any such contract should be reviewed by the cooperative or its CPA firm to determine if a lease is present for accounting purposes.

Green power purchasing

In this approach, the subscriber purchases a portion of “solar benefits” from the utility. While technically not community solar, this option provides access to the attributes of the 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.

### Overview of Participation Models

|  |  |  |  |
| --- | --- | --- | --- |
| Consumer Ownership | Capacity Model | Energy Model | Green Power Purchasing |
| * Maintains ownership of common assets * Offers panels to be purchased by member-consumers, either up-front or financed * 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 * Implements bill credits administered either by in-house or third-party expertise | * Provides 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 consumers to enter and exit * Reduces risk to consumers in receiving the value of PV output * Charges a membership or sign-up fee * Implements an early termination fee * Offers consumers either immediate or eventual savings | * Reduces contractual and reporting complexity * Allows cooperative to charge a premium to the consumer to use electricity generated by the array * Manages consumer dissatisfaction |

It should be noted that long-term consumer behavior shows a higher retention rate in the selling or leasing of panels versus subscribing to capacity or purchasing energy blocks. This may have a significant impact on the long-term financial viability of one participation model over another.

# Pricing

The ownership model typically drives the CSP’s financial 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:

1. Amount of money provided by consumer up-front
2. Amount of money paid by consumer on a monthly basis
3. Rate paid for excess energy produced, and when paid

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

1. Can the cooperative recoup the programmatic costs?
2. How important is high subscribership?
3. Is the pricing applicable or comparable to third-party offerings?
4. What policy, legal, and regulatory restrictions limit pricing options?
5. Are consumers looking to hedge long-term power costs?
6. What is the appetite for up-front payments? Are lower initial costs more important than long-term value?
7. How easy or difficult should it be for consumers to enter and exit the program?
8. How should excess energy generation be handled?
9. Is the cost of starting or maintaining an on-bill financing program worthwhile?

## Key Community Participation Questions

How much of the PV system or its environmental attributes should be allocated for consumer participation? All, some, or none?

1. **What are the cooperative’s stated goals for this PV program?**

Effectively, with the right pricing and marketing, there are no physical limitations for consumer participation. A PV farm could be a 500-KW block out of a 5-MW project in a different county or a 125-KW system located outside of the co-op headquarters and fully dedicated to community solar. Larger systems tend to produce lower-cost power but can pose other issues in investment risk and undersubscription due to lower consumer interest.

1. **What will happen if no one subscribes?**

The Business and Finance Manager should understand the financial impacts of a worst-case scenario, in which no one subscribes to the community solar program. This scenario should include the cost of setting up and administering the program as well as the cost of the PV system. Additionally, the Business Manager should know about any break-even points for the various program concepts.

1. **Can you structure the program so that participating consumers support the full cost of the program and non-participating consumers are held neutral?**

The Business Manager should also consider how to address potential changes in costs and member-consumer equity should subsequent systems go online and the community solar program expand.

1. **How will consumers participate? (1) Selling or leasing panels, (2) selling or subscribing capacity, (3) selling or subscribing energy blocks, (4) green power purchasing. What is the trade-off between simplicity and consumer value?**

Green power programs provide the easiest access to the “environmental attributes” of PV power by way of purchasing RECs. Conversely, a CSP that sells all of the panels, including tax credits and the power produced by the panels’ portion of the system, most resembles the residential rooftop system value statement and tends to have the highest retention rates. The Business and Finance Manager must consider the long-term retention of subscribership and should work with the Marketing Manager in this regard.

1. **To what extent do you want to guarantee energy production?**

When selling or leasing panels or capacity, the subscriber typically receives a credit based on the actual output of the panels. Conversely, energy blocks are guaranteed and independent of actual production, and must be accounted for.

1. **Can your co-op offer retail financing?**

Often called on-bill financing, this approach can provide some notable strategic benefits as well as solutions for a number of issues related to pricing. First, on-bill financing is a service enabling co-op member-consumers to access their cooperative’s lower cost of capital. Second, it can greatly lower barriers to entry for co-ops interested in selling panels or capacity to consumers. Alternatively, emphasizing pre-payment to cover the expected cost of the system in the pricing model can simplify member-consumer cross-subsidization concerns as well as handle changing costs in the event of program expansion. Finally, it is worth noting that retail financing also can be a revenue stream. Most co-ops will find that they can build in a small margin and still provide better financing than a consumer could otherwise attain. Moreover, a CSP can assist the viability of retail financing programs for other consumer-centric programs for energy efficiency or smart homes by anchoring the program with a high capital (5 KW of solar could cost upward of $10,000) and lower-risk (the co-op operates and maintains the actual asset) program. Note, however, that retail financing by the cooperative may subject it to various federal and state laws including truth in lending which may increase compliance and administrative costs.

1. **Have you considered reserving a portion of a CSP for low-income participants or charitable donations?**

One of the biggest benefits of community solar is that it is accessible to anyone. One of the most effective ways to extend the benefits to low-income participants is to waive minimum requirements, such as blocks of capacity or entire panels. Other programs provide different rate structures or remove down payments. Some programs are finding great success with charitable donations of panels or energy blocks to schools, churches, and other organizations. The finance team should work with legal counsel to ensure compliance with applicable tax regulations, especially if selling or donating partial panels.

# Developing the Financial Business Case

Business Managers are responsible for determining the financial impact that the project would provide, both for the cooperative itself and participating member-consumers. This document uses a four-step process:

1. Determine business model options (see previous section)
2. Gather relevant data on the various options
3. Perform an economic analysis of the business model options
4. Summarize results and provide a recommended approach

In evaluating the costs and benefits of a CSP to the cooperative, Business Managers should consider the following:

* The selected ownership and financing pathway, and the cost structure of the project
* The savings provided to the utility through avoided wholesale energy and demand purchases
* The costs of operating and maintaining the project if it is the co-op’s responsibility
* Any expected programmatic costs related to managing a CSP
* Any available incentives (such as RECs or federal or state-level incentives or tax credits)
* The payments the co-op would receive from participating businesses and residents, either on an up-front or ongoing basis, as well as the value of any bill credits provided to consumers
* The regulatory and administrative (including IT, legal, and accounting) costs of the project
* In evaluating the costs and benefits of the project for a consumer, Business Managers should consider the following:
* The cost to participating in a CSP, either on an up-front or ongoing basis
* The value of the bill savings that a participant would receive through the project

## GAther RELEVANT technical Data

Once a business model has been chosen for further exploration, relevant financial data will need to be collected. These include the following:

|  |  |
| --- | --- |
| **Capital infrastructure investment** | * Engineering design, hardware, site preparation, construction, installation, and interconnections * Land cost * CIS/billing interface modifications * Current cost of capital |
| **Operating and maintenance costs** | * Costs for managing and operating the system * Member support and care * Replacement and repair |
| **Staffing costs** | * Internal and/or outsourcing resource costs |
| **Investment options** | * Possible incentives, including ITCs (state and federal), accelerated depreciation, property tax exemptions, RECs (if available), grants and rebates, etc. * Information on financing alternatives and PPA scenarios |
| **Cost-of-service comparison** | * Cost of power from PV system compared to current cost of service * Cost of delivery; margin needed |

Additional financial information helpful to the planning and evaluation process includes the following:

* Discount rate
* Cost-of-service study (with legal counsel)
* Financial impact of various participation options; goals/benchmarks
* Program pricing (with marketing), value to member-consumers, ROI
* Utility ROI
* Break-even subscription point, sustainable level of subscriptions, impact of canceled subscriptions
* Plans for changing rates in the future if co-op installs another project (how do you – or should you – compensate the first round of consumers should prices decrease?)
* Financial viability of qualifying vendors or EPCs
* Requirements for record keeping and billing (with IT Manager)
* Cost of required software (with IT Manager)
* Sales onboarding process (with IT and Marketing Managers)

## Economic Analysis of Prospective Community Solar Business Models

Understanding the economics of a CSP is an important part of the evaluation process. New projects involving major investments, such as community solar, typically involve performing an economic analysis, which models the capital investment compared to the timing of the expenditures, benefits, and/or revenues recovered.

The economic analysis described here builds on the Cost and Financing Screening Tool to estimate the levelized energy cost for a CSP. Performing an economic analysis provides the basis for the business case, as it helps to answer fundamental questions regarding how the program recovers the investment over time, based on the community solar business model. The key results of the economic evaluation model will include the following:

* The net present value over the life of the project
* The break-even year – the future year the project recovers all of its investment
* The cash flow timeline of when the capital expenditures, offsets or credits, operating cost, and revenues received are to occur
* ROI or internal rate of return (IRR)
* Potential decommissioning costs at the project’s end of life

There are several reasons for performing a community solar economic analysis. Done through a collaborative process, the analysis provides a strategic and structured approach to consider all costs, revenues, and associated timing, including the following:

* Understanding how key assumptions affect the investment recovery
* Examining potential indirect costs, such as marketing and communication
* Assessing the related resource costs to support the program

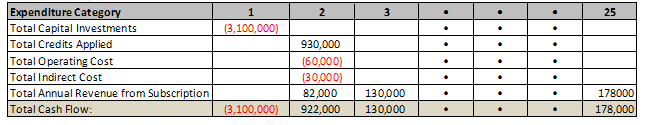
The resulting analysis serves as a decision planning tool for performing a sensitivity analysis for various deployment and operating scenarios. For example, modeling can show how investment recovery is influenced by different consumer pricing and participation models, and the associated subscription fulfillment rates. Finally, the economic model quantifies program expectations based on the overall CSP size, design, and financing – all foundational for the comprehensive business case development process. These results provide a decision-making framework to determine the value of proceeding with the CSP investment.

### Steps for Performing an Economic Evaluation

1. Determine the initial scale, financing alternatives, and consumer participation model for the CSP.
2. Confirm the analysis assumptions, including the following:
   * System life
   * Depreciation
   * Cost of capital
   * System production rates
   * Timing of fulfillment rates
3. Gather relevant data under each associated major category, including the following:
   * System configuration, such as size, energy output, and capacity
   * Capital infrastructure investment, including land acquisition, engineering, design and installation, and substation interconnection
   * Options to buy, lease cost, credits, and/or capital offset costs based on the financial option considered
   * Determine whether a lease is present for accounting purposes and the financial implications if so
   * Operating, repair, and maintenance costs
   * Internal process costs, including metering, billing, member-consumer care, and technology support
   * Consumer participation, subscription pricing, and fulfillment rates
   * Indirect costs, such as project management, marketing, communications, and program oversight
4. Apply the SUNDA Cost and Financing Screening Tool for Utility-Scale Solar Projects to estimate the related levelized energy cost. Doing this analysis first allows for initial analysis based on the determinants for the scale and financing options for the CSP.

Available at: [www.nreca.coop/SUNDA](http://www.nreca.coop/nreca-on-the-issues/energy-operations/distributed-generation/)

1. Using a spreadsheet tool, build the cash flow timeline model, outlining the timing of when the capital expenditures, operating cost, and revenues are to occur.



1. Based on the organization’s cost of capital, calculate the net present value for the total cash flow for the life of the project and determine the break-even years.
2. Confirm the results for completeness and accuracy.
3. Perform a sensitivity analysis, modeling and analyzing the results over various use-case scenarios.
4. Summarize the results and conclusions.

### Sample Output of Economic Evaluation



For more Information on building an economic analysis using a standard template, contact the NRECA National Consulting Group.

Contact: Henry Cano

Email: [henry.cano@nreca.coop](http://www.nrco.coop)

Phone: +1.602.621.3905

# Recommendation of Community Solar Business and Financing Model

The results of the economic analysis should be summarized and provided to the Project Manager for inclusion in the business case. This document should include the following:

|  |  |
| --- | --- |
| **Target Segment** | * Residential * C&I * Mixed use |
| **Project Scale** | * Capacity size of the solar infrastructure |
| **Ownership/Organization** | * Ownership structure key contractual terms and conditions * Project relationship with G&T, if applicable |
| **Financing** | * Non-taxable cooperative:   + Conventional loan   + NCREBs   + Tax-equity flip   + Taxable subsidiary * Taxable cooperative:   + Conventional loan   + Lease buy-out   + NCREBs |
| **Member-Consumer Program Offering** | * Lease/sell panel model * Subscription model * Energy block sales * Direct energy purchase * Green energy bill credits |

# Program Administration, Accounting, and Billing

## Planning Tasks

As part of the planning process, the Business and Finance Manager will need to coordinate with IT, accounting, billing, and other administrative staff. These duties include the following:

Member-Consumer Application and Buy-In

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

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

Legal, Billing, and Record Keeping

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

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

## Sales onboarding document

Typically, the sales onboarding process will document the entire consumer acquisition life cycle, from pitching the product to receiving payment. It will ensure an understanding of how the process works, so that when a potential candidate is located by way of in-person communications, newsletters and other media, or online “self-service,” the sales team can close the deal quickly. Automation can play a key role in this process.

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

The document should capture the following:

|  |  |
| --- | --- |
| ✓ | How consumers can communicate their interest to the co-op |
| ✓ | The documentation required for subscribing |
| ✓ | Where the documents reside |
| ✓ | How the consumer is charged/how the subscription information is integrated into billing |
| ✓ | How consumers receive information regarding their pro-rated share of community solar benefits |
| ✓ | How consumers can ask questions and change subscriptions |
| ✓ | What information is considered PII, payment information, or consumer usage data that would be sensitive if released to the public, and how confidentiality for that subset of information will be managed |

## Record-Keeping Considerations

**Retention of billing data is needed for a minimum of 7 years for federal accounting compliance rules. Below is a quick checklist of the types of record keeping that should be strongly considered.**

Records to Keep:

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

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

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

## Implementation Duties

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

* 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

Additionally, the Business and Finance Manager will need to do the following:

* Track the programmatic cost
* Assess the financial viability of qualifying vendors or EPCs

# Resources for Business, Finance, and Program Administration

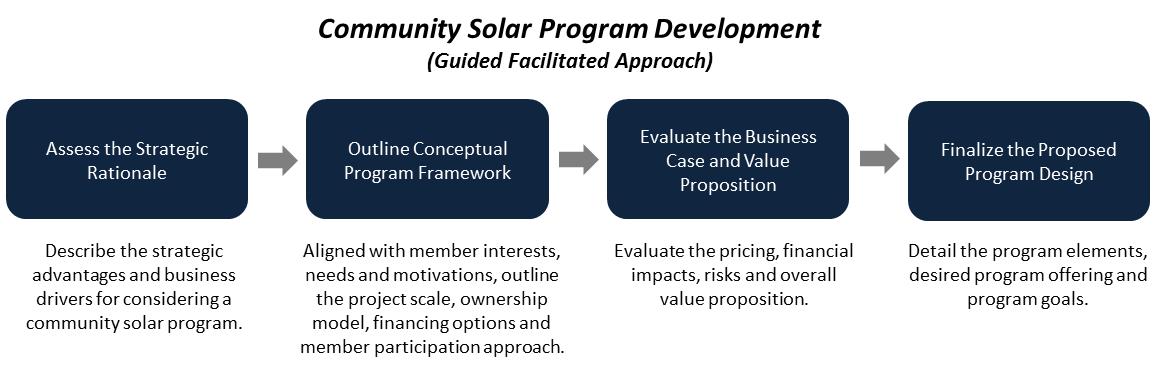
### National Consulting Group Policy Development Services for Community-Based Solar Projects

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 offers 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 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.

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 provides the best solution to each.

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

Contact: [Henry.Cano@nreca.coop](http://www.nreca.coop/SUNDA), 602-621-3905.

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

This project creates tools and resources to enhance the ability of co-ops to design, deploy, and operate utility-scale solar PV systems.

* **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
* **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
* **Project Managers Quick Start Guide** – Summary and checklist of Project Manager tasks and documentation requirements
* **Cost and Financing Screening Tool for Utility-Scale Solar Projects** – Open and editable spreadsheet for project financial examination
* **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](http://publish.prod.cooperative.nreca.org/conferences-education/web-conferences/Pages/Solar-Tools-Getting-Co-ops-Up-to-Speed-on-Their-Solar-Options.aspx)

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](http://www.nreca.coop/what-we-do/bts/solar-utility-network-deployment-acceleration-project/comprehensive-course/)
* [Southern Maryland Electric Cooperative](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-okanogan.pdf)
* [San Miguel Power Association](http://www.rd.usda.gov)
* [Okanogan County Electric Cooperative](http://www.Dsire.org)
* [Green Power Electric Membership Cooperative](http://www.omf.coop/quickNew/solarSunda)
* [Cherryland Electric Cooperative](http://www.nreca.coop/solar-case-studies/)
* [Kit Carson Electric Cooperative](http://publish.prod.cooperative.nreca.org/conferences-education/Lists/Courses/DispForm.aspx)
* [Great River Energy](mailto:mark.wilkerson@easycleanenergy.com)

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

#### Comprehensive Web-Based Courses

This series of online webinars is offered 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://nreca.coop/sunda)

#### Distributed Generation (DG) Toolkit

NRECA created the DG toolkit to help electric co-ops address the legal, economic, and technical issues raised by consumer-owned generation. With this toolkit, each co-op should be able to draft the rules, policies, tariffs, contract documents, and retail rates required to respond to member-consumer requests for interconnection.

Available at: [http://www.nreca.coop/nreca-on-the-issues/energy-operations/distributed-generation/](mailto:Andrew.Cotter@NRECA.coop)

**NOTE:** Complementary Finance Tool

**Meister Consultants Group (MCG)** has developed a customizable financial analysis tool and methodology that supports rural electric cooperatives in their exploration of community solar projects, with a focus on the customer-facing program planning and financial modelling. MCG’s approach is to model both the wholesale- and retail-level impacts of community solar projects to help cooperatives understand the financial impacts of these community solar program offerings on the cooperative utility, on participating members, and on non-participating ratepayers. **The multi-stakeholder nature of this analysis complements the utility-focused economic analysis conducted through NRECA’s SUNDA tools by supporting decision-making on program design elements such as member subscription costs, net metering credit valuation, and related issues.** For more information, **contact Ryan at ryan.cook@mc-group.com.**

## 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.greentechmedia.com/articles/read/IRS-Guidance-Finds-Individual-Community-Solar-Investor-Qualifies-for-the-Fe)

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/wp-content/uploads/2016/02/Project-Managers-PV-Quick-Start-Guide.pdf)

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](http://www.nreca.coop/SUNDA)

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)

Phone: +1.815.549.6051

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Contact: Ryan Cook, Consultant

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Phone: +1.617.209.1990

### Information Technology

**Clean Energy Collective**

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

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Email: [mark.wilkerson@easycleanenergy.com](http://www.omf.coop/quickNew/solarSunda)

Phone: +1.815.549.6051

**Federated Rural Electric Insurance Exchange**

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

Contact: Bill West

Email: wcw@federatedrural.com

Phone: +1.800.356.8360

**National Information Solutions Cooperative (NISC)**

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

Based on iVUE, its enterprise software solution, NISC offers accounting, consumer care solutions, and a suite of Smarter Grid solutions, which include meter data management systems (MDMS); prepaid metering; web-based and mobile consumer presentment, reporting, and payment tools; mobile workforce automation; mapping; outage management; and distribution analytics solutions. Additional information can be found at [www.nisc.coop](mailto:jbachmann@veic.org).

Contact: Susan Imm

Email: susan.imm@nisc.coop

Phone: +1.866.999.6472

**N-Dimension Solutions**

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

Contact: Brad Luna, Senior VP

Email: [brad.luna@n-dimension.com](http://www.omf.coop/quickNew/solarSunda)

Phone: +1.905.707.8884

**MultiSpeak**

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

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

Contact: Alvin Razon

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Phone: +1.703.907.6843

### Finance and Program Administration

**Clean Energy Collective**

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

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Phone: +1.815.549.6051

**CoBank**

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

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

Email: treynolds@cobank.com

Phone: +1.303.740.4034

**Federated Rural Electric Insurance Exchange**

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

Contact: Bill West

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Phone: +1.800.356.8360

**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](file:///C:/Users/axc3/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.Outlook/P7BLEUVR/www.nreca.coop/sunda)

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/wp-content/uploads/2015/10/solar-case-study-smeco.pdf).

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

Email: krishna.murthy@nrucfc.coop

Phone: +1.703.467.2743

**RUS Electric Program**

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

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

Phone: +1.202.720.6436

### Project Management Planning

**Clean Energy Collective**

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

Contact: Mark W. Wilkerson, VP Strategic Partnerships

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

Phone: +1.815.549.6051

**Cross-Discipline Technology Limited**

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

Contact: Jerimiah Bridges, P.E.

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

Contact: Chad Beardslee, P.E.

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

Phone: +1.417.859.4441

**SoCore Energy**

SoCore Energy ([www.SoCoreEnergy.com](http://www.farmcreditnetwork.com)) 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: +1.773.897.5782

**Meister Consultants Group (MCG)**

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Contact: Ryan Cook, Consultant

Email: [ryan.cook@mc-group.com](http://www.nreca.coop/wp-content/uploads/2015/10/solar-case-study-great-river.pdf)

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](http://publish.prod.cooperative.nreca.org/conferences-education/courses/multispeak/Pages/default.aspx)

Contact: Irby Utilities, Eddie Moak

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

**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](http://publish.prod.cooperative.nreca.org/conferences-education/web-conferences/pages/state-of-renewable-impact-analysis-software.aspx).

Contact: Todd Bartling, VP, Renewables Development

Phone: +1.317.344.7900

**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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Phone: +1.602.621.3905

**Renewable Energy Integration**

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

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Phone: +1.866.644.0950

**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.

Contact: Matt Kisber, President and CEO

Email: [matt.kisber@siliconranchcorp.com](http://publish.prod.cooperative.nreca.org/conferences-education/Lists/Courses/DispForm.aspx)

Phone: +1.615.577.4606

**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.

Contact: Dan Lieberman, Senior Marketing Manager

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Phone: +1.510.703.6085

**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. Available at: [www.nrel.gov/docs/fy12osti/51664.pdf](http://www.nrel.gov/docs/fy12osti/51664.pdf) [↑](#footnote-ref-2)