

## Renewable Energy for Cooperatives: Ownership vs. Power Purchase Agreements

BY **RON REBENITSCH**  
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### ARTICLE SNAPSHOT:

#### *What changed in the industry?*

The wind and solar industries are maturing, with energy costs that are becoming competitive with energy (not capacity) from conventional generation resources. These resources have become mainstream, and represent two-thirds of new U.S. generation installed in 2015. At the same time, regulatory pressure to reduce carbon from power generation is increasing, while retirement of many older fossil plants is accelerating.

#### *What is the impact on cooperatives?*

Cooperatives are losing older, fully-depreciated generation resources due to retirements and need to replace those resources. At the same time, they are under pressure to reduce environmental impact from power generation, while keeping rates affordable and power supply reliable.

#### *What do cooperatives need to know?*

In moving to renewable resources, cooperatives need to understand the basic fundamentals of renewable energy costs, tax impacts, and the various options for obtaining renewable energy. Equally important is how those renewable energy resources will integrate into their power supply portfolio and how to manage the inherent risks of investing in or committing to new generation.

### INTRODUCTION

Electric cooperatives exist to support their member-consumers' quality of life by developing cost-effective sources of clean energy. As a result, the decision to own a renewable energy resource, rather than purchasing that resource from a third-party involves many factors, including the effects of that decision on the local community. In addition to considering price, the decision needs to address risk management, community issues, regulatory issues, and environmental goals.



**Environmental needs and technology advancements are bringing new challenges that must be met, if cooperatives are to survive in a rapidly changing industry.**

Advances in technology and changing societal goals are further complicating this decision process. Until recently, the power industry has benefited from a century of steady growth and advancing technologies that brought increasing efficiencies and economy of scale, enabling cooperatives to provide a reliable power supply at a reasonable cost for the nation's consumers. That model is now facing disruption — environmental needs and technology advancements are bringing new challenges that must be met, if cooperatives are to thrive in a rapidly changing industry.

Cooperatives that intend to bring on new renewable resources will face a “buy or build” decision point — whether to purchase the resource from a third party through a Power Purchase Agreement (PPA), or leverage the cooperative's abilities and balance sheet to own that resource. This decision is complicated by tax incentives that strongly affect the economics of renewable energy.

In addition, new renewable project requires close coordination with the local affected communities. Whether or not the cooperative owns the renewable project or simply enters into a PPA, the cooperative will be seen as the project sponsor, and community perception and support will be important to the success of a project and its effects on the cooperative.

In particular, if a PPA is selected as the preferred option, any developer should be vetted for more than just price. The developer's ability and willingness to establish and maintain a good community relationship will reflect on the cooperative, and these considerations should be part of the selection process.

As part of its prudent due diligence in evaluating the decision to buy versus build, a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) is recommended. The SWOT analysis should address each option — to buy

or to build — independently, and involve the various stakeholders in the project. The scope of this analysis should be broad and address technical, financial, legal, public, and environmental issues. Forecasting of future rates and power supply costs, market dynamics, and technology trends should be included.

## **ECONOMICS**

One of the first steps in evaluating the decision to own versus buy should be a side-by-side comparison of the project's economics of each option. The evaluation should include all costs for each option, as well as projections for the effects of escalation of those costs over the life of the project or term of the PPA. A proforma (future projection of the project's economics) should be developed for each case, which includes some or most of the following factors for each case:

### **Project Ownership Case**

- Project size (nameplate generation capacity)
- Estimated project cost including:
  - Construction costs
  - Soft costs, such as legal, permitting, accounting, and project overheads
  - Spare parts inventory
  - Management time/overheads
  - Cost to interconnect project to the grid
- Expected financing sources and debt/equity ratio
- Financing costs (interest rate, term, principal)
- Estimated operations and maintenance costs
  - In-house staffing, including benefits and expected out-sourced contracting costs
  - Accounting/management overheads
- Transmission wheeling costs, if applicable
- Land leases (particularly for wind projects)
- Insurance on project
- Applicable Federal/State/Local Taxes on project

**Whether a co-op owns or enters into a PPA, they will be seen as the project sponsor and community perception and support will be important.**

**NRECA offers a tool to help analyze economics of project ownership versus PPA: SUNDA Business and Financial Models.**

**As in all investment decisions, a cooperative needs to assess its tolerance of risks, its ability to manage risk, and its ability to absorb the impact of such risks, if they occur.**

- Applicable Federal/State/Local Tax incentives
- Projections of inflation or escalation on any of the above
- Depreciation accounting treatment
- Decommissioning cost
- Revenue from surplus sales

#### **Power Purchase Agreement (PPA) Case**

- Price of power
- Contract escalation
- Grid interconnection costs not borne by developer
- Transmission wheeling costs, if applicable
- Potential curtailment costs, if not borne by the developer
- Compare cooperative standard PPA Terms and Conditions to those available from the renewable energy developers
- Determine what Terms and Conditions are needed to make a project financeable by the renewable energy developers

Due consideration must also be given to the term commitment over which the economics should be compared, including decommissioning costs. PPAs may be offered for a limited terms, while the ownership will entail the life of the project. Note that under a new lease accounting standard, effective in 2020 for private companies such as most electric cooperatives, a PPA may be a lease and have to be added to the balance sheet. The PPA contract should be reviewed to determine if the cooperative has sufficient control over the asset to have it constitute as a lease for accounting purposes.

The comparison must also be based on chosen key metrics, such as life cycle cost of power from the project, integration costs into the overall portfolio, etc. Additionally, the proforma for each option should be subjected to a sensitiv-

ity analysis, “stress-testing” assumptions for key drivers, such as labor and materials escalation, and net capacity factor. If the PPA involves a buyout option — at the end of a certain time period — the analysis should compare economics of the PPA, including the buyout provision.

NRECA has developed a spreadsheet based tool to help analyze the economics of the project ownership versus PPA case that incorporates all these issues mentioned above. This can be downloaded from the NRECA website through the following link: [SUNDA Business and Financial Models](#). While this tool is specific to solar PV in the 0.25 to 5MW size range, it is illustrative of the analyses required regardless of the generation source.

In comparing the two options, the bottom line economics are only part of the decision. Consideration also needs to be given to distinguishing qualitative factors and risk of each option, and how the cooperative can manage the risks and the relative return projected as a result of taking on those risks.

#### **RISK MANAGEMENT**

The development and operation of a renewable project entails various risks which need to be taken into account when determining the “buy vs. build” option. For example, the economic analysis may show that ownership costs are lower than a PPA. However, in assessing the associated risks of project ownership and operations, the cooperative may determine that a PPA represents lower risk which more than off-sets the cost savings. As in all investment decisions, a cooperative needs to assess its tolerance of risks, its ability to manage risk, and its ability to absorb the impact of such risks, if they occur.

Whether the decision is to buy or build, management of those risks is necessary and each needs to be weighed in the final decision. Recognize that project risk is not eliminated; it is



allocated to either party, with benefits usually corresponding to the risk assumed by each party. Finding a balance in allocating the various project risks is an important part of negotiation.

More broadly, the choice of the “path” for long-term resource acquisition may be a matter of apportioning the risks and returns appropriately. If a co-op structures the resource acquisition in such a way that risks and rewards are allocated equitably to those that can deal with them the best, it may eventually turn out to be the ideal way to pursue a project.

For example, if a co-op is better suited to acquire the land, arrange for interconnection, mobilize the resources to build a project, or even to arrange the debt financing, the co-op may then be the best entity to take on those tasks and obtain concessions in the PPA rate. Likewise, if a developer is best positioned to extract/harness the tax benefits and the economies of scale, etc., it may well be that those parts of the project implementation be borne by the developer and the developer is adequately compensated for that activity.

It is also conceivable that a PPA may be a good route for the co-op to “learn the ropes” to implement an unfamiliar project/technology, etc., with a view that the “next” project would be done in-house.

Another opportunity for a cooperative to learn about solar is to install a small grid tied project

at one of their facilities to learn firsthand without a large capital commitment.

An overview of risks to consider should include the following, with many other potential risks that may be unique to each project:

- Resource Risk: Production variation due to weather
- Permitting Risk: Environmental (i.e. bird impacts), view shed issues, regulatory issues, unanticipated compliance requirements, etc.
- Siting Risk: NIMBY (“not in my backyard”) opposition, availability of optimal lands, etc.
- Equipment Purchase Cost Risk: Prices for equipment can vary widely
- Equipment Performance Risk: Equipment failure, design deficiencies, materials failures, installation errors, mismatch of technology to the local conditions, etc.
- Construction Risk: Cost over-runs, weather, contractor problems (i.e., failure to perform, bankruptcy), schedule delays, etc.
- Grid Interconnection Risk: Inability to interconnect, cost over-runs, curtailments, etc.
- Operational Risk: Equipment failures, personnel issues, strikes, weather, etc.
- Third Party Impacts: Airport issues, such as reflected glare from solar panels, vertical hazards of wind turbines to low-flying aircraft
- Tax Risk: Changes in project property taxes, failing to meet criteria to qualify for incentives, etc.

### **TAXES — A CRUCIAL FACTOR**

Tax considerations will play a major role in determining whether to buy or build, since tax incentives can have a large impact on the economics of a renewable energy project. The incentives will vary depending on whether the technology is a solar project or a wind project.

**Generally, the production tax credit is more suitable to wind, while the investment tax credit is more suitable to solar.**

For wind energy, the available incentive is the production tax credit (PTC) that is based on production, and is currently set at \$0.023 per kWh. This incentive is applicable to the power produced by the project for a period of ten years after commissioning. Recent legislation extended this \$0.023/kWh incentive through 2016, with a scheduled phase-down of the incentive to 80 percent of its present value in 2017, 60 percent in 2018 and 40 percent in 2019.

For example, a project commissioned in 2016 receives full value of the \$0.023/kWh for the full 10 years, but a project starting in 2017 would only receive 80 percent of that value for its 10 years. As with previous extensions, the rules will allow wind projects to qualify, as long as they start construction before the end of the period.

The same legislation extended the solar investment tax credit (ITC), which applies to the capital cost of a solar project, with a similar phase-out approach. Solar projects that are under construction by December 2019 will fully qualify for the 30 percent ITC. The investment credit will fall to 26 percent for projects starting construction in 2020, and 22 percent for projects starting construction in 2021.

The solar and wind tax credits extension was communicated to NRECA members in two recent Technology Advisories:

- **Extension of the Solar and Wind ITC — April 2016**
- **Solar ITC and Wind PTC Extension — January 2016**

Generally, the PTC is more suitable to wind, due to its lower capital cost and higher capacity factor. Conversely, the ITC is more suitable to solar, due to its higher capital cost and lower capacity factor.

To take advantage of either incentive, the owner must have a tax appetite against which to apply these incentives. Given the typical cooperative's tax-exempt status, the inability to benefit directly from these incentives presents an economic hurdle, increasing the cost of the renewable resources unless the co-op has taxable, profit-making subsidiaries that can absorb the tax incentives as noted below. That said, the economic effect of the tax incentives can be available to the purchasing co-op, provided the seller is able to monetize the incentives AND pass on a portion of the incentives, which should flow through to the cooperative, in the form of a lower PPA price. Typically, developers are willing to reduce the cost of the PPA by 10 to 15% when passing on thorough the contract some of the tax benefits they may realize.

In all cases, great care must be taken to avoid disqualification, since the tax rules have some detailed provisions that could disqualify the incentives.

Analysis of the value of the tax credits for a wind energy project might start with the 2.3¢/kWh production tax credit (PTC). The PTC is based on the number of kWhs actually produced and delivered to the grid in the first 10 years of a project life. Depending on discount factors assumed, the levelized value of the PTC over a typical 20 year project life can be viewed as roughly equivalent to 1.2¢/kWh for all the kWhs generated over that life of the project, assuming annual generation remains relatively constant over the 20 years.

Another way of looking at this value is that a production tax credit is unique, in that it is an "after-tax" value, which is greater than simply a deductible expense. Assuming a taxable entity has a 39 percent marginal tax rate, a wind developer receiving 3.3¢/kWh in taxable income would pay 1.0¢/kWh in income taxes, leaving a net after-tax income of 2.3¢/kWh.

**Renewable energy tax laws are complex; consultation with knowledgeable tax professionals is important.**

Thus, a 2.3¢/kWh PTC is roughly equivalent to 3.3¢/kWh in taxable income during the first 10 years. In other words, without the tax credit, a developer would need to charge a 3.3¢/kWh markup over its costs for the first 10 years of a PPA to break even, since the developer would have to pay income taxes on the revenue received from the cooperative. Such a price markup (in the absence of tax credit) could make a wind project uneconomical.

For a solar project, the 30 percent investment tax credit (ITC) has a more immediate effect in that the benefits of this incentive are received by the project owner almost immediately. Since the majority of cost for solar energy is driven by its capital expense, the ITC reduces the cost per kWh by almost 30 percent.

Finally, both wind and solar qualify for a five year MACRS (Modified Accelerated Cost Recovery System) depreciation treatment, which allows the project owner to quickly recover a portion of its investment through rapid recovery of the depreciation deductions against income. The cost impact of the accelerated depreciation recovery is significant and should not be overlooked in evaluating whether to build or buy.

For instance, assuming a 35 percent tax rate, and a 5 percent discount rate for the recovered depreciation, the net present value of the accelerated tax deductions can be as much as 30 percent of an initial investment. This tax treatment can further reduce the cost of power from a renewable project, if the project owner has sufficient tax appetite. When the solar ITC is considered, the net present value of tax benefits may exceed 50 percent of the total project cost.

In comparing a PPA versus ownership, some portion of the economic effect of these tax incentives can (and should) flow through to the cooperative, in the form of a lower PPA price.

Also, the cooperative can lower the PPA cost by prepaying a portion of the PPA up front.

A final note of caution — the tax laws regarding renewable energy are very complex and care must be taken to avoid disqualifying events. Consultation with tax professionals knowledgeable in renewable energy is important.

### **THE OWNERSHIP OPTION**

If a cooperative determines that ownership is the desired path, the cooperative should begin by assessing its internal management resources. Developing and operating an owned project requires more time and staff resources than negotiating and monitoring a PPA.

While consultants can provide technical expertise and contractual support, the overall project management will be the responsibility of the cooperative and is critical to the success of a project. Management needs to consider the respective demands on staff resources and its respective skillsets. This review should also include the financial staff, due to the potential impact on the cooperative's balance sheet and financial statements.

The cooperative should develop and integrate a multi-disciplinary team approach to the buy versus build decision process. A joint evaluation process should include both an engineering-centric and finance-centric perspective in the decision-making analysis.

It is important at this stage to recognize that the bulk of the new resource cost will be defined by a few basic parameters decided at the beginning. Those decisions include:

- The type of technology (i.e., wind, solar, etc.) to be acquired
- The size of the new resource
- Location and interconnection
- Required characteristics of the new resource with other power supply resources

**The cost of energy from renewable resource is driven by economy of scale — larger projects generally provide lower energy costs.**

**Permitting renewable projects often requires a different range of skills and knowledge than typical cooperative environmental permitting efforts.**

These early decisions will have a much greater effect on final cost than the actual design and execution of the project construction. Thus, the importance of these early decisions should be emphasized and the resulting parameters then clearly defined and communicated to the project team.

### **Economy of Scale Considerations**

In making the decision to own a renewable energy project, a cooperative needs to understand the economies of scale for the selected technology, since the cost of energy from renewable resource is driven by economy of scale — larger projects generally provide lower energy costs. The factors driven by economy of scale will influence the desired size of a project, and whether the cooperative will seek partial ownership in a larger project or go it alone on a smaller project. Participating in a larger project, whether through partial sharing or a PPA, can offer significant savings. As an example, the National Renewables Cooperative Association (NRCO) aggregates cooperatives' needs and commitments into a larger project to develop economy of scale projects. This approach offers cooperatives the ability to participate in those larger projects, while reducing costs, leveraging management expertise, and spreading project risks. Several generation and transmission companies (G&Ts) are offering similar aggregation services for their members.

For a wind energy project, the economies of scale are generally considered to begin leveling out at 80 to 100 MW in size. The large mobilization cost for a wind project is one of the main drivers that underlies this scaling effect. Wind projects require large erection cranes, substantial amounts of concrete in often remote areas, and other heavy equipment. The mobilization costs for the equipment and materials to build a wind project result in a very high, fixed cost that needs to be spread over a large number of turbines, in order to reduce the installation cost per turbine and its resulting cost/kWh.

For example, to mobilize just one large erection crane can require over 20 truckloads of crane components, along with a separate smaller crane to assemble the big crane. That crane assembly can require several days of effort before placing into operation. However, once assembled, that crane can erect one wind turbine or many turbines on the site. As a result, as more turbines share that mobilization cost, the cost for each turbine becomes smaller. Then, at the end of the project, demobilization is required; again, a major cost that is again spread over the number of turbines in a project.

In contrast, solar energy projects reach economy of scale at a much lower threshold, since the construction equipment and mobilization costs are much lower (typically around 5 to 10 MW).

### **Environmental Permitting**

Most cooperatives have in-house staff or consultants with experience in environmental permitting. However, permitting of renewable projects often requires a different range of skills and knowledge. Compliance with a Federal, State, and Local requirements requires substantial effort and cost. For example, Federal legislation affecting project permitting might include the following:

- National Environmental Policy Act
- Endangered Species Act
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- Clean Water Act
- National Wildlife Refuge System
- Native American Consultation
- National Historical Preservation Act

Even after initial permitting and construction, a project will likely require ongoing compliance measures that will continue after completion of construction. When undertaking project development and ownership, the cost, effort and time involved in environmental compli-

**Outsourcing some or all of the operations and maintenance of a project will still require staff time for managing the outsourcing contract.**

ance can be demanding, so a cooperative needs to plan for adequate resources to address these issues.

Additionally, the cooperative should be aware of the strict liability provisions in such laws as the Migratory Species Act and the Endangered Species. Consultation with such entities as the U.S. Fish & Wildlife Service should be performed early in the process. Such consultation, if performed in good faith and done properly, may mitigate some of this risk.

#### **Staffing for Operation**

Ownership of any power supply resource, including renewable projects, requires staffing to operate the projects. Operations and maintenance can be done with in-house personnel, out-sourced to contractors or some combination of the two, wherein some tasks are performed by cooperative staff and other tasks are outsourced to specialty contractors.

Adding in-house staff will involve wages and benefits (such as pension, medical, vacation) and personnel policies that might conflict with cyclical maintenance needs. Conversely, the project might offer better utilization of existing personnel, which could benefit the cooperative in other ways. Fortunately, most renewable energy resources require significantly less O&M per watt than most combustion resources.

In deciding the balance of in-house and outsourcing, the cooperative should consider the following:

- The need for occasional specialized skills and expertise, and the ability to obtain those resources in a timely manner.
- A contractor may be better able to provide staff trained in the most current technology, or have access to specialized tools, equipment, and technology.

- Cooperative employees are more likely to maintain long-term institutional knowledge and skills, which would be lost with contractor employee turnover or changing contractors.
- Redundancy in management roles for the cooperative and contractor organizations.
- Response time of in-house versus contractors that may not be located onsite.

Recognize that even if the decision is made to outsource some or all of the operations and maintenance, the outsourcing contract will still require a certain amount of staff time for monitoring, management, accounting, and billing.

Another potential path to ownership of a project is the Tax-Advantaged Lease or the Tax Equity “Flip” or Partnership “Flip” which is commonly used for renewable energy projects as a way of attracting equity investment and maximizing the value of the ITC and accelerated depreciation.

In these scenarios, the cooperative typically sets up a for-profit subsidiary, and that subsidiary will partner with an outside investor with a tax appetite to develop, build, operate, and maintain a renewable project. For the tax-equity flip model, the cooperative needs to create a taxable special purpose entity (SPE) which then enters into a PPA, with a power price established to provide adequate coverage for the project debt.

Within the tax-equity flip partnership agreements, the various tax incentives and profits could then be distributed disproportionately — for example, the tax equity investor might initially receive 99 percent of the tax incentive (which it can monetize), with the remaining 1 percent going to the cooperative’s for-profit subsidiary. After a period of time, typically six years, during which the tax incentives are

**Price alone should not be the only consideration in the PPA evaluation.**

“harvested,” the distributions are then reversed (flipped), with the cooperative then receiving most of the distributions from the SPE through its for-profit subsidiary. After the flip, the cooperative will usually receive 95 percent of the benefits with 5 percent reserved for the tax equity investor.

The Tax-Advantaged Lease arrangement is offered by CoBank, Key Bank, and others. In this scenario, the banking partner provides the tax appetite to take advantage of the ITC and accelerated depreciation tax benefits and rolls those cost reductions into a lease with an option to buy out the project at the end of the lease term (usually 7, 10 or 12 years). Often the tax advantages rolled into the lease terms allow an effective negative interest rate lease in the –5 percent range.

In effect, these financing structures allows the tax partner to more efficiently use the tax incentives, while the cooperative is able to utilize its balance sheet and staff to build and eventually own the project (or most of it).

Any consideration of this structure should involve consultation with accounting, tax, and legal professionals familiar with this structure. NRECA has developed a webinar, **Financing Options and Cost Estimates: Utility Scale Renewables**, which illustrates the typical accounting and Form 990 tax reporting information to be used by the cooperative for the NRCO tax equity flip model.

For more information on finance options, please see NRECA’s related *TechSurveillance* article, **The Changing Cost of Solar Power — Financing Options for Electric Cooperatives**.

#### **THE POWER PURCHASE OPTION**

To develop the option of purchasing the resource from third parties, the typical process involves testing the market through a Request for Pro-

posal (RFP). A well-run process should provide some assurance that prices received are within a reasonable range of the current market. Cooperatives should also consider the possibility that the developer may have a longer term strategy that anticipates capturing profits down-stream in terms of the residual value of the project at the end of the PPA, carbon credits, the opportunity to land the next big deal, etc., and establishing a “footprint” or base project in an area. Such market intelligence can be useful in negotiation of the PPA.

Cooperatives should also find out if the developer offers an option to “buy-out” the system at an agreed upon point. Developers routinely offer buy-options after tax credits and accelerated depreciation have been monetized by third parties. Such options are subject to IRS guidelines, but can offer a middle-ground option between full ownership and a PPA.

Price alone should not be the only consideration in the PPA evaluation. The credibility of the developer should near the top of any list of selection criteria. Developing and operating a renewable energy project is a complex endeavor, involving major financial investment, and in selecting and evaluating a developer, the creditworthiness of the developer should be done early in the process.

The financial demands in building and operating a project require the developer to have substantial financial resources, and the developer’s creditworthiness is a strong indicator of the developer’s ability to perform. The creditworthiness of the developer is a good indicator of long-term performance and may even reflect onto the cooperative’s financial statements and ratings. The developer’s creditworthiness is important, because the cooperative is entering into a long-term contract for a power supply resource and is relying on that resource to serve its long-term needs.

**Clear definitions in PPA contracts will simplify the drafting and provide clarity for future interpretations.**

The cooperative should expect that the developer's financing may rely on the cooperative's balance sheet, so the developer may require PPA clauses requiring the buyer to maintain minimum financial ratings, or to post security should ratings not be met. The cooperative may also be asked to certify to certain lender requests.

A developer leaving unpaid bills or conflicts in the local community will reflect badly on the cooperative. Since the cooperative will be viewed as the sponsor of the project, the relationships of the developer with the local communities on past projects should be explored before committing.

#### **PPA Terms and Conditions to Consider**

When evaluating PPA developers/contractors, determine early in the process if the cooperative's standard PPA terms are compatible with the developer's standard PPA terms. This can dramatically affect the developer's ability to finance a project. Upon tentative selection of the contractor, the cooperative will need to negotiate the final details of the terms and conditions of the PPA. In the PPA, a "Definitions" section should clearly define as many terms as possible, since the original negotiators may not be present for issues and questions that may arise many years later. From a practical matter, clear upfront definitions will not only simplify the drafting of the contract, but provide clarity for future interpretations.

#### **Definitions List**

A list of terms to define in the PPA should include:

- The Project (i.e., Name, Technology, Site, Size)
- Capacity and Energy
- Term of Agreement (Start Date/End Date)
- Point of Delivery (Where does Title to the power pass from developer to cooperative?)

- Maximum or Minimum Quantities of Power Delivery
- What constitutes Commercial Operation (When do deliveries begin?)
- Transmission (Provider and interface responsibilities)
- Renewable Energy Credits, aka Green Tags (Who owns?)

#### **Pricing and Cost Assignment**

The PPA pricing should define the energy and capacity pricing rates and any escalation for each year of the agreement, as well as the projected production levels. Economic issues to negotiate include:

- Which party absorbs transmission and substation transformer losses
- Which party absorbs transmission curtailment risk
- Definition of conditions and costs to allow the cooperative to decline delivery for economic purposes
- A minimum and maximum range of power deliveries with separate rates for energy for surplus or shortfalls. Surplus power may have lesser value, while shortfalls might require replacement power purchases by the cooperative.
- Clarification of such items as:
  - Delivery and pricing of pre-commercial ("test") energy generated during the start-up phase before the contract start date
  - Ownership of the Production Tax Credits
  - Any ancillary services (i.e., regulation, power factor correction) that might have value in the market

#### **Interconnection Costs**

The PPA should clearly identify who is responsible for the cost to interconnect to the cooperative or their transmission provider and the timeline for any interconnection studies.

**Transmission**

The PPA should also define which party is responsible for transmission interconnection costs and transmission service. The party signing the transmission service agreement will be subject to and receive directives from the Transmission Provider, so that responsibility needs to be assigned in the PPA. If the cooperative is responsible for the transmission interconnection, the PPA should require the developer to meet all requirements of the transmission provider. That responsibility should address such criteria as:

- Maximum generation delivered to the interconnection
- Ancillary service costs
- Fault ride through
- Remote monitoring
- Metering

**Permitting**

The PPA terms and conditions should also define responsibilities for permitting and address the potential for delays. Interaction with regulatory agencies, such as the State utility commissions or environmental agencies should be addressed as well.

**Performance and Operation**

Performance requirements (i.e., minimum capacity factor, operation using “utility practice,” etc.) need to be established, along with procedures to monitor performance. Operating procedures should also be established with an operating committee containing representatives of both parties, their responsibilities, and operating criteria and protocols. This group may also be assigned the responsibility of planning and reporting of outages.

**Legal & Administrative**

Some of the legal and administrative requirements to be addressed should include:

- Invoicing & Billing
- Termination Provisions
- Defaults & Remedies
- Specific performance
- Force Majeure
- Bankruptcy
- Assignability of the contract
- Confidentiality terms defining what can be released publicly by either party
- Liquidated or consequential damages
- Indemnification requirements
- Liability Insurance requirements
- Responsibility for changes in federal, state, and local taxes, environmental requirements, and regulatory requirements
- If the array is on cooperative land, is a land lease needed?
- Does the cooperative and the developer need an interconnection agreement and/or an operating agreement?

**Termination and Cancellation**

Other issues the cooperative may want to establish up front could be:

- The right to buyout the project after tax benefits are exhausted
- A right of first refusal, if the project is sold
- A cancellation schedule defining cost responsibilities, if the project is terminated or fails

**Miscellaneous**

Within the PPA terms, the cooperative may want to require the project to supply its station service from the cooperative. In effect, this ensures the project becomes a customer of the cooperative and avoids “utility shopping” by the developer.

**SAMPLE SCENARIOS****Scenario 1:**

A cooperative is seeking renewable energy for its portfolio. As a tax-exempt entity, it is unable to take advantage of the tax incentives. Given the large investment, a PPA with a developer is likely the better choice. The developer will monetize those tax incentives (or partner with entities having large tax appetites), to reduce the cost of power from the project, with that cost savings reflected in a lower power price to the cooperative.

**Scenario 2:**

In the same scenario as above, if the cooperative has a taxable subsidiary with adequate tax appetite to monetize the tax incentives, the cooperative may find the cost of an owned project to be lower than a PPA. However, before proceeding, other considerations need to be identified, such as risks involved in the project, staffing skills, and even the cooperative’s ability to obtain turbines or solar panels at a price comparable to the volume pricing that a large developer could obtain.

**SUMMARY**

The overall goal of this decision-making process is to determine the most economical approach to developing new resources. In addition to the

direct economics, cooperatives should look at all options objectively, in keeping the cooperative’s objective of providing reliable, affordable, safe, and environmentally-responsible power to its members.

A brief outline of the process would be:

1. Determine the type and amount of renewable resources required
2. Evaluate the cooperative’s ability to monetize the renewable energy tax incentives
3. Issue an RFP to solicit PPA pricing
4. Develop cost estimates for developing an internal project
5. Establish a cross-sectional evaluation team including legal, accounting, public relations, environmental, and engineering representation to evaluate the RFP responses against the ownership option
6. Develop proforma economics for both “buy vs. build” options to evaluate the economics and incorporate those results into a weighted evaluation sheet summarizing key considerations
7. Develop a consensus recommendation for the cooperative’s board to consider
8. If the final decision is to own the project, a new series of decisions lies ahead, including:
  - a. Permitting, design and construction of the project
  - b. Financing needs
  - c. Operations and Maintenance staffing

### About the Author

**Ron Rebenitsch, PE, MBA**, is founder and CEO of Energy Engineering, Inc. and began independent consulting in 2011 after a 35-year career with Basin Electric Power Cooperative. As Basin's Manager of Alternative Technologies, he also held a dual role as project manager for the development of \$600 million of Basin-owned wind generation and 44 MWs of waste heat recovery projects. He was also the project manager for the Department of Energy's "Wind-to-Hydrogen" R&D project near Minot, ND.

Since leaving Basin Electric, Ron served for 2 years as Executive Director for the South Dakota Wind Energy Association, and has provided consulting services for a number of projects involving wind, solar, hydro and biomass.

Ron has a civil engineering degree from North Dakota State University (NDSU) and an MBA from the University of North Dakota (UND). He is a Registered Professional Engineer in the states of North Dakota, South Dakota and Colorado.

### Questions or Comments

- Andrew Cotter, Program and Product Line Manager – Renewable and Distributed Generation Technology, Business and Technology Strategies, NRECA, [Andrew.Cotter@nreca.coop](mailto:Andrew.Cotter@nreca.coop)
- Thomas Kirk, Technical Research Analyst, Business and Technology Strategies, NRECA, [Thomas.Kirk@nreca.coop](mailto:Thomas.Kirk@nreca.coop)
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