

Renewable Energy Standard Offer: A Tennessee Valley Authority Case Study

Introduction

The feed-in tariff (FIT)¹ is a financial tool to support the rapid deployment of renewable energy resources. One form of FIT is the Renewable Energy Standard Offer (RESO). A RESO consists of a standing offer from a utility to enter into a long term contract with eligible renewable energy generators. This offer provides a non-negotiable price and defines fixed terms. The generator is guaranteed payment based on energy delivered to the system for the term of the contract. The terms of the standard offer may include payment for energy consumed on site, disposition of non-energy assets (e.g., Renewable Energy Credits) and nonperformance penalties.

To date, the only large Southeastern utility making a RESO available is TVA.

TVA RSO Background

In October 2010 the Tennessee Valley Authority (TVA) issued a Renewable Standard Offer (RSO) program for mid-sized renewable energy projects. The RSO was put in place to encourage more renewable development within the region. A centerpiece of the RSO is long-term contracts with fixed prices based on the time of day that energy is available to the TVA system. According to TVA's announcement, the long-term contracts would help TVA avoid rising purchased power prices, keep consumer prices down and ease financing for participating developers. The program opened to energy generation from solar, wind, methane and biomass projects ranging from greater than 50 kilowatts to 20 megawatts. TVA offered to buy the energy at fixed rates from 4 to 16 cents per kilowatt-hour, averaging 5.5 cents per kilowatt-hour.

Recognizing the need for increased incentives to encourage interest in solar generation, in February 2012 TVA began a pilot program known as the Solar Solutions Initiative. This pilot provided additional incentives to solar projects participating in the RSO. The SSI offered four to six cents per kWh, in addition to the rates paid under the RSO program, for solar projects in the Tennessee Valley.

As of August of 2012 the TVA RSO had enrolled four projects: two solar projects and two landfill gas projects amounting to 7.6 megawatts of renewable generation. TVA staff has characterized this as a successful program; yet TVA's program for mid-sized, in-Valley renewable energy programs currently represents only 0.2% of what are arguably very modest renewable energy goals.

Lessons Learned

TVA received relatively few applications in response to the RSO. Based on this limited response, SACE interviewed renewable energy developers seeking their perspectives on this offering. This developer feedback suggests that both the prices and design of an RSO are critical to market interest.

¹ Southern Alliance for Clean Energy, [Recommendations For Feed-In-Tariff Program Implementation In The Southeast Region To Accelerate Renewable Energy Development](#), p. 3, Mar. 1, 2011.

The RSO rate offer was set too low. The most often cited single barrier was that of the average rate paid. The RSO offers variable rates depending on the time of day the energy is available to the TVA grid. The annual average of these rates is \$.0561 per kWh (calculated on a 24-hour basis as if the resource was a baseload power plant). TVA has not described how it determined the offered rates. All renewable energy developers we contacted indicated that the rates did not reflect the actual development costs of renewable energy technologies.

In addition to not supporting the project finances, developer comments indicated a perception that TVA's offer was not fair because it fell short of TVA's costs to develop other new, non-renewable generation resources. Developers observed that TVA is pursuing construction of new nuclear generation facilities that will cost far more than the RSO offer price of \$.0561 per kWh to produce electricity

- There is across-the-board agreement that the \$.0561/kWh average offered price is not enough to develop renewable energy technologies at any significant level in the TVA service territory.
- The offered price does not take in to account the potential value of the Renewable Energy Credits that TVA retains ownership of under the current RSO contract. In particular, solar RECs are particularly valuable in markets throughout the U.S. Current estimates of solar REC pricing that may be available in the TVA service territory range from approximately \$80 per MWh to more than \$200 per MWh.
- Developers of wind-generated resources cited a necessary minimum price of \$0.09/kWh to make a 20MW-sized wind farm in the TVA service territory economically feasible.
- The RSO disregards any power peaking that occurs during winter, further limiting the economics for wind generation.
- TVA's unilateral ability to modify the rate during the contract was cited as a barrier to financing. Base rate should be locked in for the term of the contract.

The RSO's program size limit is unnecessarily constraining. The RSO's program size and scope was another commonly identified barrier. Given the size of the TVA system, 100 MW is hardly a significant amount of generation capacity, nor is it enough to spur interest in renewable energy developers. Wind energy in particular benefits greatly from the economies of scale, with wind farms rarely being developed smaller than 100 MW.

- The program size cap was cited as being too small to attract any significant interest in developing the Valley renewable energy resources.
- The restriction of wind projects to 50 MW (since no technology can make up more than 50% of the total) is almost a non-starter because economy of scale is needed for development.
- Program limit precludes stand-alone bio-power.
- There is no provision for valuing thermal renewable energy credits. Expanding RECs to include thermal generation that offsets electrical load could attract more interest.

The RSO's credit requirements are unreasonable. Several of the credit requirements were cited as unreasonable and would immediately disqualify most developers from seriously considering a project under the RSO.

- Nonrefundable Application Fee: A 20 MW project, for example, would require a \$10,000 up-front fee, yet the process provides the applicant no confidence that the proposal will be accepted.

- Contract Credit Requirement: A second credit requirement of \$15,000 per MW is also considered onerous and overly burdensome. A 20 MW plant, for example, would require payment of \$300,000 to accept a non-negotiable contract before having any permits, interconnection study or financing.
- Performance Assurance Requirement: The credit requirement of \$125/kW for the first two years is too high. Developers viewed this requirement as burdensome in the early years of a project since non-performance is more likely in later years of a project. One comment cited a specific contract example of \$66/kW as being reasonable.
- Alternative Compliance Payment: TVA's required contract puts the developer at risk to pay TVA potentially more than the REC's value should the developer become subject to an RES that disallows the REC transfer to TVA. This term places undue risk and cost on the project developer.

The RSO's timeline is overly prohibitive. In many ways it appears that TVA did not consider the length of time to develop any of the allowed technologies. Some of its own requirements are not likely to be accomplished within the time constraints it imposes on developers. For example, because TVA is a federal agency subject to NEPA, projects would have to conduct, at a minimum, an environmental assessment and perhaps a full-blown environmental impact statement. This alone could take between 12 and 18 months to complete under the best of circumstances.

- Too many tasks must be accomplished prior to submitting an application.
- Requirements for an Environmental Impact Statement are unclear. The closest mention is in Section 3.1 (g) "The determination of "environmentally acceptable" shall be at TVA's sole discretion and shall take into account said applicable Federal environmental laws and regulations..."
- Failure to meet the deadlines leaves only one option, termination of contract.
- There is no remedy for delays caused by events out of developer's control. (It was suggested that a timeline with developer milestones could be a proper alternative.)
- The RSO allows TVA approval of project components at TVA's discretion, an untenable level of risk for a developer. If this is because TVA is a federal agency, clarification should be made as to how this will work to mitigate the risk.

The RSO places nearly all risk on renewable energy developers. Perhaps most burdensome of all is that acceptance of all contracts are at TVA's discretion and TVA retains the right to alter key contract terms at their discretion. Based on the terms of the RSO, a developer could meet all requirements yet still be denied a contract, imposing significant risk on developers with no opportunity for commensurate financial opportunities based on currently offered prices. This one-sided allocation of risk will limit not only developers' interest in the RSO, but will also impact a potential developer's ability to secure financing for projects.

Moving Forward

In order to encourage the development of renewable generation, a Renewable Energy Standard Offer needs to take into account lessons learned from TVA's RSO.

- Offered rates per kWh must reflect the value of the resource to the utility and to the electricity market in general, including the value of the associated Renewable Energy Credits.
- Project size limits should reflect typical development practices for resources that the utility wishes to solicit.

- Programs fees, credit requirements, performance guarantees, while appropriate, should be set high enough to discourage frivolous or risky project, but not so high that program participation is impractical. Similarly, terms under which the contract may be accepted or modified by the utility should be reasonable, transparent and reliable.
- Time constraints should be practical and reflect consideration of circumstances that may affect project development.

Conclusion

TVA's Renewable Standard Offer demonstrated that Southeastern utilities are interested in soliciting renewable energy development activity. However, considering the limited response, improvements on this model are needed for any utility that wishes to actively engage private sector investment in renewable energy development.

A successful RSO should balance allocation of risk and reward between the utility and the renewable energy project developer. Program participation barriers such as unreasonably low offered prices, burdensome credit terms and program participation caps should be eliminated or reduced as much as possible. The utility should not be allowed to maintain unilateral authority to modify or cancel contracts. These are all factors that will severely limit the ability of developers to successfully participate in the RSO program.

In spite of the shortcomings of this program, developers still show interest in pursuing renewable energy projects in the region. SACE recommends that utilities continue to work with stakeholders to revise and reform programs so that the potential for midsize renewable generation in the Southeast can be fully realized.