



RURAL INFRASTRUCTURE BRIEFINGS

Banking on Renewables

These Briefings showcase different facets of the rural infrastructure industries: power, energy, and utilities; water utilities; and communications.

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Introduction

Renewable energy has taken center stage in the ongoing evolution of the U.S. electric industry. Declining installation costs, growing consumer demand, strong financial incentives, and environmental regulations will support the build out of renewable energy through the end of this decade and beyond.

Interest in renewable energy is growing among electric cooperatives and other utilities around the nation. CoBank is attuned to the needs of its customer owners, and provides tailored financing solutions to its electric cooperative and utility customers for the development of renewable energy projects.

The Growth of Renewable Energy

Governmental regulation and policies heavily influence the nation's generation portfolio by incentivizing investments in certain power generation technologies over others. Today, policy-makers and regulators are focused on reducing carbon dioxide emissions and other greenhouse gases by directing investments towards clean, renewable energy.

Federal tax credits for wind and solar projects substantially improve the economic competitiveness of these technologies, accelerating the ability for wind and solar to compete on equal footing with conventional sources of power generation, also known as grid parity.

- The solar investment tax credit (ITC) provides a tax credit equal to 30 percent of the installed cost of a solar project. The full credit is available through 2019, and will step down annually through 2021, with a permanent 10 percent credit for commercial and utility systems thereafter.
- Wind developers have through December 2016 to start construction on new wind farms to qualify for 10 years of production tax credits at \$0.023 per kilowatt-hour (kWh). Projects that start construction in 2017, 2018 or 2019 will qualify for 10 years of tax credits at reduced levels.

Additionally, state-level regulations such as renewable portfolio standards have been a major driver of the demand for renewable energy projects, particularly wind and solar. To date, 29 states plus the District of Columbia have implemented renewable portfolio standards, which require utilities to generate a certain portion of their energy from renewable resources. All investor-owned utilities located in

states that have adopted renewable portfolio standards must comply with the mandates, while only a handful of states with renewable portfolio standards also require electric cooperatives to comply. Nonetheless, electric cooperatives remain heavily involved in the development of renewable energy projects based largely on growing interest among members at the end of the line.

American households represent another driving force behind the nation's shift toward renewable energy. Consumer demand for clean, renewable energy is fueling the procurement of solar- and wind-powered energy among electric cooperatives and other utilities. Changing consumer behavior with respect to renewable energy is evident by the growth in distributed generation in recent years, specifically residential solar. The latest data reports rooftop solar generated 5,111 thousand megawatt-hours during the first ten months of 2015, up 42 percent from what it was over the first ten months of the prior year.

However, energy produced from rooftop solar represents only one tenth of one percent of the nation's electricity

output. The share claimed by utility-scale solar is now six tenths of a percent, and the share by wind is well over four percent. Although their share of total energy produced is small, the growth in solar and wind generation has been phenomenal. Utility-scale solar projects in the U.S. produced 22,900 gigawatt-hours (GWh) of energy through October 2015, up from only 490 GWh in 2006. Cumulative wind generation grew from 21,500 GWh to 150,900 GWh over the same period. (See *Exhibit 1*.)

This demand growth has created a virtuous cycle – as demand rises, the installed costs of renewable energy projects fall. Today, utilities can buy power from a wind facility for \$20 a megawatt hour (MWh), and output from a solar array is priced around \$40/MWh in areas with strong solar resources. These prices represent significant progress considering that in 2009 wind prices averaged \$60/MWh and solar was around \$150/MWh.

Promoting the development of renewable energy remains a top priority for the U.S. government. Its importance is revealed by recent legislation whereby Congress extended the deadlines for both wind and solar tax credits. Furthermore, the Environmental Protection Agency enacted the Clean Power Plan in 2015, which requires the power sector to reduce carbon dioxide emissions by an estimated 32 percent below 2005 levels by 2030. These actions clearly indicate public policy incentives aimed at the continued expansion of renewable energy in the U.S.

To remain responsive to members' demand and environmental regulations, electric cooperatives and other utilities must have unimpeded access to sources of renewable energy.

Drivers of Growth in the U.S. Renewable Energy Industry

- Federal tax credits provide economic benefits that are critical to the development of wind and solar projects.
- State-level regulations, namely renewable portfolio standards, drive significant demand for renewable energy among regulated utilities.
- Interest among consumers in renewable energy continues to increase, which is reflected in growing rooftop solar installations.
- The rapid pace of demand growth continues to bring down the cost of renewable energy, fueling greater adoption.
- Government regulations aimed at reducing greenhouse gas emissions force utilities to diversify their generation portfolios to include more renewable energy.

CoBank's Role as a Renewable Energy Financier

Congress granted CoBank the authority to provide loans for renewable energy projects located anywhere in the U.S. CoBank is proud to serve as the financial partner to electric cooperatives and other rural power providers all across the U.S. Many of these progressive organizations are making forward looking investments in renewable

energy generation systems, including wind, solar, hydropower, geothermal and land fill gas.

As of 2014, CoBank’s energy portfolio included more than \$983 million in outstanding loans and leases for renewable projects, making it one of the largest underwriters of renewable energy in the country—a leadership position CoBank is committed to maintaining in the future. CoBank finances renewable energy projects for a diverse set of customers through four distinct divisions – Power Energy and Utilities, Electric Distribution, Project Finance, and Farm Credit Leasing.

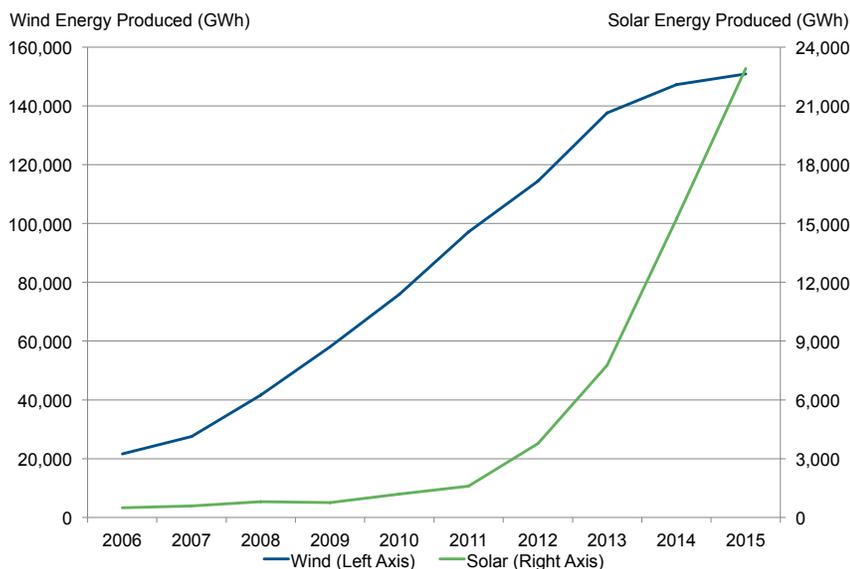
Power, Energy and Utilities Division

CoBank’s Power, Energy and Utilities Division provides financing to generation and transmission (G&T) cooperatives and regulated utilities across the country. Utilities in this space are heavily involved in renewable energy, and invest broadly in renewable energy, including wind, solar, hydropower, landfill gas, and some biomass in their overall generation portfolios.

“*Low-cost wind generation ensures competitive electricity rates for consumers, provides portfolio diversification and a hedge against volatile fuel prices, and allows regulated utilities to meet their renewable portfolio standards.*”

G&T cooperatives and other utilities have many options when it comes to procuring utility-scale renewable energy. In some cases, they finance, build, and retain total ownership of a power plant. In other cases, G&Ts can enter into joint ownership agreements with other utilities to share in the costs and benefits provided by building and owning a power plant. Alternatively, utilities can lease renewable energy systems, or enter into power purchase agreements to buy power from an independent power producer.

Exhibit 1: Utility-Scale Wind and Solar Generation 2006-2015



Source: Energy Information Administration

Wind generation was the first renewable resource to experience widespread adoption among G&T cooperatives and other utilities. Low-cost wind generation ensures competitive electricity rates for consumers, provides portfolio diversification and a hedge against volatile fuel prices, and allows regulated utilities to meet their renewable portfolio standards.

Utility-scale solar generation offers the same benefits as wind, with the added benefit of enhanced customer relations. Deploying solar assets allows G&T cooperatives to be highly responsive to their members’ desires for a greener generation footprint. Furthermore, with solar power priced around \$40/MWh, cooperatives and other utilities are choosing solar power based on project economics that make sense.

Electric Distribution

CoBank's Electric Distribution Division provides financing to rural-based electric distribution (ED) cooperatives across the country. The majority of ED cooperatives buy power from G&T cooperatives and sell it to retail members located predominantly in rural areas. This places ED cooperatives at the frontline of member engagement and community development.

“To offer their customers the opportunity to buy clean, renewable energy, many electric utilities and some ED cooperatives are building community solar gardens.”

Changing consumer preferences that continue to lean more towards clean, renewable energy are a major growth engine for renewables. Higher penetration rates of rooftop solar among residential consumers illustrate this shift in consumer behavior. Rooftop solar is a particularly salient issue for ED cooperatives that face lost electricity sales with every solar panel installed on a customer's home or business. Approximately half of all rooftop solar capacity is located in California, Arizona, and Colorado, largely in urban areas. However, rooftop solar is expanding in a number of states, including some rural areas.

To offer their customers the opportunity to buy clean, renewable energy, electric utilities and some ED cooperatives are building community solar gardens, which allow customers to purchase individual panels or a certain amount of output. Community solar gardens are small utility-scale solar arrays that range in size, typically from 0.25 – 1.0 megawatt (MW). Solar arrays within this range are large enough to provide economies of scale, making them cheaper than rooftop solar on a per watt basis. The availability of land is also less of a constraint, given the smaller footprint of community solar gardens compared to larger utility-scale solar arrays.

CoBank's Electric Distribution Division has responded to growing interest in solar installations among ED cooperatives by providing innovative financing solutions. Today, leasing represents the most popular financing option among ED cooperatives that are seeking to own a community solar garden or other utility-scale solar arrays.

CoBank's keen understanding of the credit risks associated with underwriting rural electric distribution cooperatives makes it easy for the bank to provide long-term solar leases. In turn, the ability for rural cooperatives to finance and build solar arrays helps them maintain superior customer relations, and comply with existing and future environmental regulations.

Project Finance Division

CoBank's Project Finance Division works with independent power producers to finance standalone power generation assets. Sales of energy from each power plant support the financing of these projects. The energy produced from the majority of power plants financed by CoBank's Project Finance Division is sold to G&T cooperatives or other utilities through long-term contracts (typically 20 years or longer).

As they seek power projects to develop, independent power producers remain responsive to utilities' needs for the type of technology, the size of the project, and its location. For example, the implementation of renewable portfolio standards has driven up demand for renewable energy from regulated electric utilities. Independent power producers have responded to this need by developing renewable energy assets and selling this energy via long-term power supply contracts to the utilities. Moreover, as consumer demand for renewable energy increases, and installation costs fall, both regulated and unregulated utilities will procure even greater amounts of renewable energy. With project financing from CoBank, independent power producers will be able to meet this need and take on the burden of developing utility-scale renewable energy assets.

When a utility purchases power from an independent power producer through a long-term contract, the utility itself does not build, own, or operate the power plant. Rather, the independent power producers take on these

roles, thereby assuming all the development and balance sheet risk associated with the project. Furthermore, project finance transactions are inherently complex and tend to create greater financing risk for independent power producers.

The different types of risk taken on by independent power producers reinforce their need to partner with lenders that have a very clear understanding of what needs to be delivered and how. Since 1996, CoBank's Project Finance Division has led a significant number of transactions, and in the process has developed deep relationships with a core group of experienced independent power producers. This knowledge and familiarity create a high level of comfort for the independent producers around the ultimate execution of a deal and the terms upon which that deal will close.

Furthermore, the ability of independent power producers to secure long-term financing (20 to 30 years) for projects that sell power to electric cooperatives can often be challenging, particularly if the cooperative is small and not well known to the commercial bank community. CoBank's Project Finance Division fills this void by taking a leading role in these transactions.

CoBank's willingness to underwrite credit risk associated with selling power to an electric cooperative supports the bank's independent power customers, and also enhances the bank's relationship with the rural-based electric cooperatives that are able to secure a much-needed source of renewable energy – creating a win-win for both the cooperative and independent power producer.

Farm Credit Leasing

Farm Credit Leasing (FCL) is a wholly owned subsidiary of CoBank that delivers the benefits of leasing to rural businesses throughout the United States.

FCL began leasing solar arrays to California agriculture producers in 2006. At that time, California was on the forefront of having aggressive state rebates that incentivized individuals and businesses to generate a portion of their own energy through renewable sources, such as solar. Most solar rebates in California have since expired; however, the economic benefits provided by the

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ITC are adequate enough to fuel interest in solar arrays among agriculture producers in California and many other states.

Solar leases provided by FCL include competitive financing rates and lease terms that extend out 10-years or longer, making them a very attractive financing option for all types of customers.

Benefits Provided to Rural Communities by Renewable Energy

Rural communities figure importantly in the development and deployment of renewable energy. Many rural regions across the U.S. offer abundant solar and wind resources, which, when harvested, provide clean and renewable energy.

The nation's highly interconnected electric grid allows utilities and developers to site renewable energy projects where the best resources exist. These projects drive significant value for rural communities by providing jobs, which are created during the construction phase of these projects. Furthermore, it is typical for the local rural communities to provide the skilled workers who are required for the long-term operation and maintenance of these power generation assets.

Having access to low-cost, renewable energy provides a competitive advantage to rural communities, making it easier to attract industrial and commercial consumers that require a significant amount of energy for their operations and that employ corporate social responsibility

initiatives. For example, both Amazon and Google have pledged to power at least 40 percent of their operations with renewable energy by the end of 2016. As more blue chip companies promote the use of renewable energy, rural communities will be there to welcome them.

Furthermore, taxes on the land used to site projects and the assets used to generate renewable energy provide a steady stream of revenue for local and state governments. Additionally, the private landowners who allow developers to build a renewable energy project on their land are the beneficiaries of royalty or lease payments.

As many rural communities struggle to regain their footing following the 2009 recession, the development of renewable energy often provides a much-needed injection of economic activity. CoBank readily supports this activity through its lending authority and by offering financing solutions tailored to meet the needs of a small agriculture producer or the nation's largest G&T cooperative.

Concluding Thoughts

Rural communities rely on electric cooperatives not just for electricity, but also for support in community development and economic expansion. Given the benefits provided by renewable energy, the ability of rural electric cooperatives to procure renewable energy enhances the long-term economic viability and sustainability of rural communities.

CoBank possesses a deep understanding of rural infrastructure and the expertise required to assess the economic drivers of rural communities. This institutional knowledge makes CoBank a critical financial partner for its customers. Furthermore, CoBank's expertise in rural infrastructure is recognized by the broader financial community; as a result, CoBank and the Farm Credit System can partner with commercial banks, both U.S. and foreign, to provide vital short- and long-term capital to rural communities. This capital helps ensure that rural electric cooperatives remain competitive and have the necessary tools to enhance the communities they serve. ■

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