

As the price of renewable energy continues to drop and regulations on fossil fuel-fired generators tighten, renewable energy sources are increasingly a financially attractive option for many municipalities. Solar power in particular is a growing part of the clean energy solution for many municipalities, with prices falling substantially in the last five years. This brief highlights two very different financing mechanisms used by local governments to increase their renewable energy. Additional examples of cities committing to renewable energy are provided in Table 1 at the end of the brief.



GEORGETOWN, TX

POPULATION: 55,000

SOLAR ENERGY: 380,000-
420,000 MWh per year

The City of Georgetown, Texas and its residents will get 100% of their electricity—at all times of the day and seasons of the year—from renewable energy sources by 2017, making the municipality a trailblazer and exemplar for cities around the world. Perhaps most surprising about this case study is that solar and wind power were chosen by city decision-makers based primarily on economic considerations, highlighting how price-competitive renewable energy options have become.

PROCURING POWER

The city's municipal utility, Georgetown Utility Systems, provides electricity to its 42-square-mile electric service territory through wholesale power contracts. For decades, Georgetown maintained power contracts with the Lower Colorado River Authority (LCRA), which relied primarily on coal and natural gas generation sources. When its power contract with LCRA ended in 2012, the city elected to procure power through a request for proposals (RFP) process.

"The lowest cost options were all wind farms," says Chris Foster, the city's Manager of Resource Planning and Integration. After comprehensively evaluating different wind projects, Georgetown

signed a 20-year power purchase agreement (PPA) with EDF Renewable Energy in 2014 for 144 MW of capacity from their Spinning Spur 3 wind farm. The windfarm started providing power in late September 2015 and is expected to save Georgetown 8.2% in power costs in 2016 compared to 2015.

With wind energy meeting the demand of electric customers during nights, mornings, and shoulder months of the year, the city's focus shifted to meeting peak electricity demand – daytime hours and the hot Texas summer months. The city issued a second RFP in 2014 specifically requesting power for those peak periods. Solar won out purely on financial merits: the price per kWh, which is guaranteed over 25 years, and lower risk of regulation compared to conventional fuels made it the most attractive option. In 2015, Georgetown finalized a 25-year PPA with SunEdison for 150 MW of solar capacity, which will come online in early 2017.

OVERCOMING CHALLENGES

With these two commitments, Georgetown will be providing its residents with 100% renewable energy until at least 2030, even with expected growth, at every hour of the day, every day of the year.

"The real challenge is the daily management of power," Foster says. Wind and solar photovoltaics (PV) are both variable renewable energy sources and are not dispatchable—that is, able to be turned on or off or adjust their power output to meet demand—unless coupled with technologies like

energy storage. This makes accurate forecasting of both supply and demand critical. “It’s the most complex and difficult thing to do. But we’ve nailed forecasts for years and have the expertise to do it,” Foster added.

The city has a peak demand of 150 MW and annual electricity usage of approximately 600,000 megawatt-hours (MWh) per year. According to Foster, the PPAs for wind and solar power will provide approximately 600,000-620,000 MWh per year and 380,000-420,000 MWh per year, respectively, meaning the city will be able to sell excess renewable power on the Texas wholesale market in addition to meeting all of its own needs. Foster’s analysis indicates only about a 2% chance the city will need to buy any power on the Texas spot market given the complementary generation profiles of the wind and solar farms.

Financing through PPAs has historically been a common strategy for municipal utilities to provide electricity to residents, but Georgetown is one of the first to leverage PPAs to reach 100% renewable energy. In addition to favorable economics, this achievement is in part enabled by the Texas Competitive Renewable Energy Zone, which funds the construction of long-range transmission lines to deliver electricity from west Texas, where the solar and wind resources are high, to east Texas, where demand is high.



ROCKFORD, MN

POPULATION: 4,300
SOLAR ENERGY: 300,000
kWh per year

The City of Rockford, Minnesota worked with its local utility, the Wright-Hennepin Cooperative Electric Association (WH), to develop an innovative model for siting solar on city-owned property.

According to Dan Madsen, City Administrator and Special Council, “The City wanted to both physically and proactively integrate solar energy into our community and was looking for a cooperative agreement that met our shared goals in a creative, yet practical, way.”¹

WH has pioneered several other solar projects in Minnesota, including developing the state’s first community solar garden, and was interested in piloting a new collaborative solar model with the city. As Rod Nikula, COO Power Supply at WH summarizes it, “We’re in the solar business.”



Image source: City of Rockford website

WH is installing one 60-panel rooftop system at the city-owned Rockford City Center Mall and one 271-panel ground-mounted system on city property near its water tower. The two systems will generate

¹ City of Rockford, Minnesota. “The City of Rockford and Wright-Hennepin Cooperative sign agreement for state’s first Bantam solar

project.” July 14, 2015. <http://www.cityofrockford.org/wp-content/uploads/Rockford-Bantam-Solar-Project-Press-Release.pdf>

approximately 300,000 kWh per year. Rockford nicknamed the small-scale pilot project “Bantam Solar,” after the junior-level hockey category.

INNOVATIVE FINANCING SOLUTIONS

Working with the city and a lending institution, WH applied an innovative solar financing model from its lender that can benefit local governments interested in hosting solar energy systems on otherwise unusable land. Rockford pays no upfront costs for hosting the solar energy systems, and it receives a 7% electricity discount from WH in exchange for a no-cost land lease.

The project is financed by the nonprofit cooperative lender CoBank, and its for-profit subsidiary Farm Credit Leasing purchases and owns the solar system equipment, allowing it to take advantage of federal tax benefits. Farm Credit Leasing leases the equipment to WH Solar, a for-profit subsidiary of WH. WH Solar builds the system and sells the energy to WH (See Figure 1 for more details.)

WH, as a member-owned, nonprofit, distribution electric utility, procures power through wholesale power contracts with generation and transmission cooperatives. WH therefore worked with its suppliers to ensure the arrangement would work under their wholesale power contracts.

REPLICATING “BANTAM SOLAR” MODELS

The bantam solar model illustrates one of many creative solar financing options available to smaller communities and electric cooperatives. The model is specifically designed to allow all of the tax and other incentives associated with a solar project to be used while minimizing both financial risk and operations and maintenance burdens on a local government.

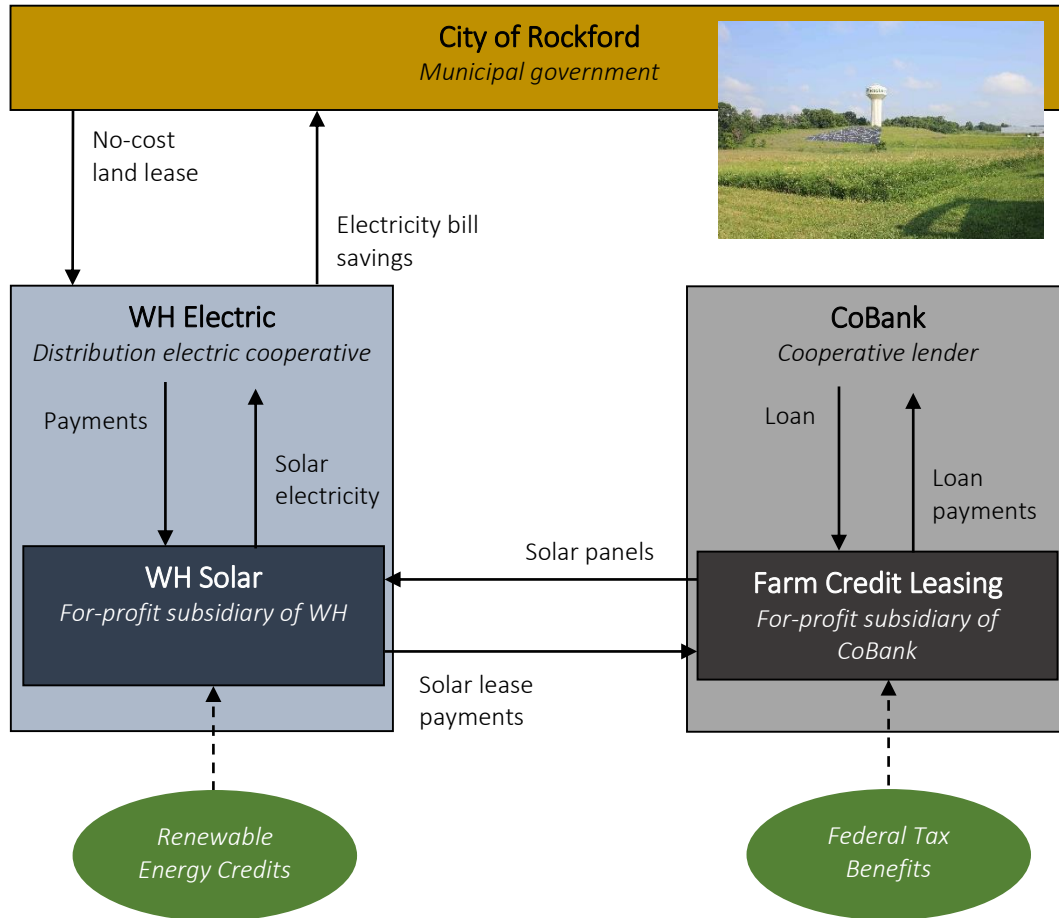
Steve Nisbet, Vice President for External Relations and Power Solutions at WH, sees a natural fit between local governments and electric

cooperatives on solar. “Solar is a long-term commitment, so you’ll want a long-term partner,” he points out. Nisbet says co-ops have the flexibility to work with local governments to make solar an attractive option. “Just as the city exists to help its people, co-ops exist for the same reason: to help the community.”

Interested cities and electric cooperatives should also consider their existing power contracts, which may prevent the development of generation capacity like larger solar energy systems.

Nikula also notes that WH, as a holding company with several for-profit subsidiaries, is in a position to take advantage of solar financing models like this. Nonprofit cooperatives without a for-profit subsidiary may not be able to replicate this model successfully, as the 30% federal investment tax credit for solar generally cannot be claimed when the equipment is used by a nonprofit electric cooperative.

Figure 1. The “Bantam Solar” Model



DISCLAIMER

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Table 1. Examples of Communities Committed to 100% Renewable Electricity

Location	Scope	Timeline	Renewable Energy Sources	Financing/Policy Mechanisms
Aspen, CO	Citywide	2015	Hydropower, Wind, Solar, Biogas	RPS, PPA, municipally-owned generation
Austin, TX	Municipal facilities	2011	Wind, Landfill Gas	RPS, REC Purchase, municipally-owned generation
Burlington, VT	Citywide	2015	Hydropower, Biomass, Wind, Solar	Joint ownership of generation assets; PPA
Cologne, MN	Municipal facilities	2016	Solar	Community solar garden subscription
East Hampton, NY	Citywide	2020	Wind, Solar	RPS, PPA
Evanston, IL	Citywide	2014	Wind	CCA, REC Purchase
Greensburg, KS	Citywide	2012	Wind, Geothermal, Hydropower	Master Sustainability Plan; PPP; U.S. Department of Agriculture loan through Rural Development Program; PPA
Lancaster, CA	Citywide	2020	Hydropower, Solar, Wind	PPP, PPA, CCA Ordinance requiring all new homes to have solar
Marin County, CA	Countywide	2020	Hydropower, Biogas, Wind, Solar	CCA, REC Purchase
Palo Alto, CA	Citywide	2017	Hydropower, Solar	PPA, REC Purchase
San Francisco, CA	Citywide	2020	Hydropower, Solar, Biogas	RPS, PPA, CCA
Scituate, MA	Municipal facilities	2013	Wind, Solar	PPA

Table refers to electricity use only. Acronyms: CCA = Community Choice Aggregation; PPA = Power Purchase Agreement; PPP = Public-Private Partnership; REC = Renewable Energy Certificate/Credit; RPS = Renewable Portfolio Standard or goal specific to the local government. Sources: Go100Percent.org, EPA Green Power Partnership