Case Study: Town of Stafford, CT

The town of Stafford has followed an ambitious plan to rely on renewable energy to meet close to 100% of its energy needs for municipal buildings. The result has been an impressive amount of solar power, paired with geothermal ground source heat pumps, which provide a significant amount of the heating for three schools and the town library. The town expects to save approximately $24 million over 25 years on energy costs.

Carport Behind the Stafford Middle School

Solar installations include a 2.0 MW array behind the middle school, which will meet 60% of the town's electrical needs; an 848 KW array on the town landfill, which will meet 20% of the town's needs; and another 1.5 MW spread among 10 town buildings. Stafford is benefiting from the Connecticut's virtual net metering program, which allows the output of the large arrays to be credited against the accounts of a number of town buildings in other locations.

The town took a different approach than most in paying for all this work. Most towns have opted for power purchase agreements (PPA), whereby a solar company builds, operates, and maintains the solar array and is paid over a 15 or 20 year period based on the output of the system. Stafford chose to own its solar and geothermal systems, taking out a $17 million loan to pay for much of it. They employed a tax-exempt lease purchase to take advantage of the benefits of ownership, which allowed them "to eliminate the overhead of a third party developer" and receive payments directly through the state's ZREC (zero renewable energy credits) program.

Stafford began its foray into clean energy by first looking at energy efficiency. According to one member of the Stafford Energy Advisory Committee, the town, "*...did a comprehensive town wide energy audit of all municipal buildings, and entered into an Energy Savings Performance Contract with Honeywell in 2012. The $1.6 million project resulted in more than $150,000 annual energy savings since*

being completed. This represents about a 24% savings as confirmed by a recently completed energy benchmarking project with Eversource".

To accomplish all this, it required town officials who were supportive of the town's Energy Advisory Committee. The committee was composed of town residents who had solar, geothermal, or both at their own homes and included people with backgrounds in engineering and finance. Town officials, including the town engineer, were supportive of the ambitious program and the decision to own the system.

The same committee member advised that, "*Any town energy task force should start with small projects as we did. It was important to prove to the town leaders and various town committees and commissions that the projects are financially viable to gain their trust to do other larger more expensive projects. Extensive research to find grants and financial incentives is crucial to make these projects financially viable. Any town task force considering projects of the size and scope of the projects we undertook must be very persistent and well prepared, as you will run into sceptics who don't believe solar works in Connecticut, or that geothermal is too expensive".*

Stafford	
Population	12,192 (2010)
Energy Efficiency	Entered into a performance contract with Honeywell for about $1.6 million worth of work, resulting in a 24% decline in energy used.
Renewable energy project(s)	Solar PV and/or hot water on town fire dept, library, community center and 3 schools. 2.0 MW solar array (60% of town's use) next to middle school and 848 KW array (20% of town's use) on landfill, plus another 1.5 MW spread over 10 municipal buildings .
Own or Power Purchase Agreement (PPA)	Owned. Town took out $17 million loan for large solar arrays and geothermal. For other projects, used performance contracts.
If PPA, price per kWh	NA
Virtual net metering (VNM)	Yes
● Beneficial accounts	?
● Income from VNM	?
Geothermal or Heat Pumps	Yes, to heat and cool 3 schools and town library.

Solar carport(s)	Yes, one at town hall and the other behind the middle school
% Municipal Electricity from Renewables	Between 90-100%
Annual or cumulative savings	Expect to save about $8.7 million over 15 years, $24 million over 25 years.
Solar contractor(s)	Standard Solar, Inc., Encon
For more information	Gary Fisher, gpfisher@cox.net

Sources and Links:

Stafford Solar and Geothermal Presentations (2014)
Connecticut Town Opts For Novel Finance Plan To Build 3.6 MW Municipal Project
Standard Solar Completes 3.4 MW For Town Of Stafford
Stafford eyes energy-saving plan

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