

Cape Elizabeth Responds to our Citizens

- Formed Ad Hoc Alternative Energy Committee in early 2016.
- Experts, selected from various fields, form a team, a plan, and proceed to execute the Mission Statement: To facilitate delivery of the best available decision-making information to empower the town council and inspire the community to engage in low risk/high reward projects that capture immediate and long-lasting benefits from energy efficiency and renewable energy technology by significantly reducing our energy costs and carbon emissions. (Adopted 7.16)
- Mr. Wes Doane
- Dr. James Masi
- Mr. Laurenz Schmidt
- Ms. Julia Bassett Schwerin (Chair)
- Mr. Richard Smith

Local Towns with Active Standing Energy Committees

We studied all our neighbors to learn from them:

- Saco
- Scarborough
- Portland
- South Portland
- Etc.

Types of renewable energy activities they reported:

- Solar on rooftops for the town and schools
- Solar on landfills for the town, schools and community
- Electric car charging stations
- Wind mills for the town
- Major geothermal installation for the Jetport terminal expansion

Types of Renewable Energy



The Town already has two arrays of Solar Thermal for Hot Water



We also studied the town's energy usage patterns and existing systems.



Solar Photovoltaic

Maine city reaches deal to establish
New England's largest solar farm

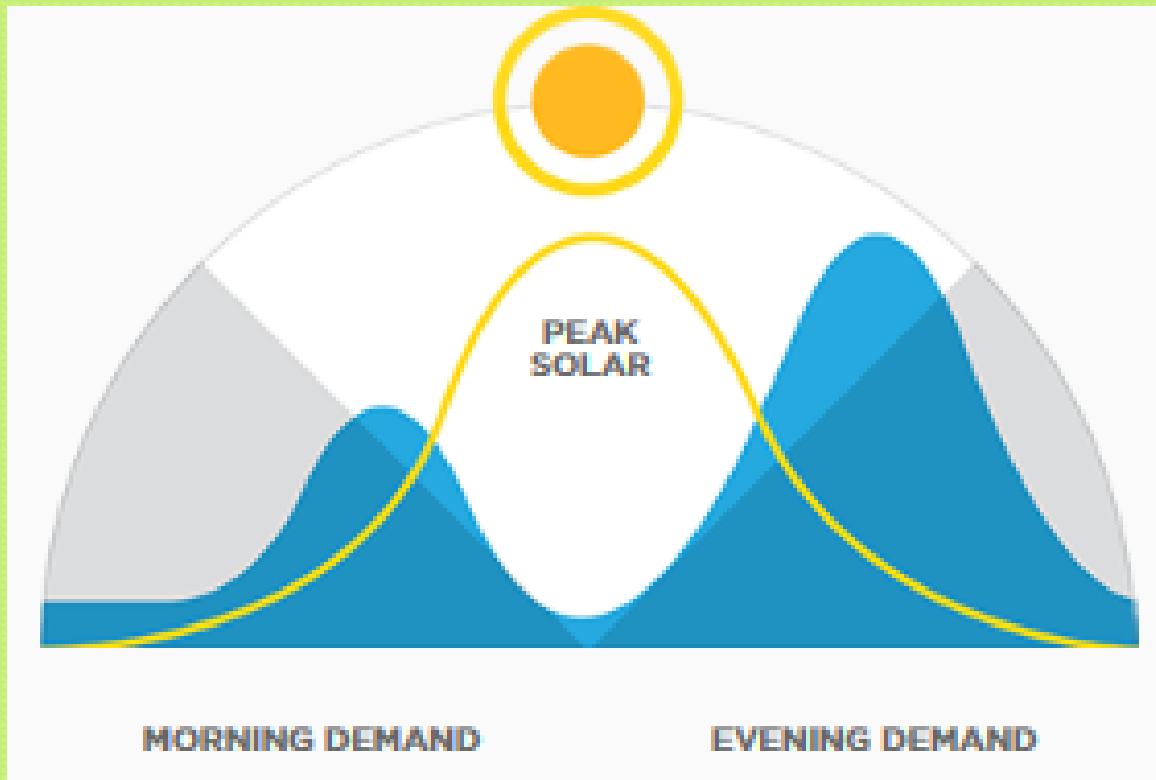


Tim Dominick | MCT

Antonio Hope installs the solar panels in the solar farm in St. Paul, North Carolina. The Sanford City Council on Tuesday voted unanimously to authorize City Manager Steve Buck to execute a land lease for 226 acres at Sanford Regional Airport to Ranger Solar LLC for a 50-megawatt solar farm there.

Schools use by far the most energy of all town buildings

Solar energy produces the most energy during the hours when schools use the most energy, so we do not have to involve net metering, i.e. sell back excess energy to the utility.



Investors leverage Solar Investment Tax Credits

- The ITC is a 30% Federal tax credit for solar systems on residential and commercial properties. This has enabled solar installations to grow by over 1,600% since 2006 – a compound annual growth rate of 76%!
- As a municipality which does not pay taxes, Cape Elizabeth could not take advantage of the Federal tax credit, and there are no current state incentives for solar energy in Maine.
- However, investors exist that are willing to set up a Power Purchase Agreement with municipalities, businesses and home owners, whereby they use the tax credits and give a guaranteed electricity rate for a period of time. Typically after 7 years, the entity can purchase the solar array at a very discounted price and use it for 20+ years into the future with an attractive payback period. These agreements are widely used to finance projects large and small.

Solar Installations in Maine are numerous and low risk

- In 2015, 6.7 megawatts of solar were installed in Maine, and 86% increase over 2014. However, Maine lags behind other New England states, and ranks 33 in installed capacity among states nationally.
- The breakdown of solar installations in 2015 is 3.3 MW in residential property and 3.4 in commercial property.
- The total installed capacity in Maine is 19.4 MW, enough to power 3.520 homes.
- The value of the solar installations in 2015 was \$19 million.
- Average installed system prices have dropped 6% from last year and 48% from 2010.
- Source: Solar Energy Industries Association

Recommended Projects (in Blue)

Project Reference Guide	1. Thermal Solar w/ Solar PV for Pool	1b. Thermal Solar w/out Solar PV for Pool	2. Solar PV PPA (Power Purchase Agreement) w/ buy-out	2b. Solar PV PPA w/out Buy-out
Upfront Cost Investment	\$184,000	\$62,000	n/a	n/a
Payback Period	11 years	4 years	7 years after PPA buy-out	n/a
Life Cycle	20 – 25 years	20 – 25 years	30 – 35 years	30 – 35 years
Buy-out price	n/a	n/a	\$515,000 after year 7	n/a
Projected Savings over life cycle	\$340,000 heating + electricity	\$225,000 heating only	\$1,700,000 over life cycle + 1.5% /year	\$107,000 over life cycle + 1.5% /year

Going Forward

- Using the best numbers available at the time of creation, the committee recommends two projects with very good economics for saving energy costs for the town.
- We chose a modest solar thermal project for the Richardson pool that has an 11 year payback for the energy-intensive heating of pool water using a solar thermal system, coupled with a small solar photovoltaic system for operating the pumps. This system is highlighted in blue as Project #1, Thermal Solar with Solar PV, or PhotoVoltaic, above.
- This project we believe can be designed by the facilities department and paid for out of the town budget due to its low cost and attractive payback. We recommend an RFP be created for this project in the very near term.
- The second project we recommend is a large scale solar array to be located on town land near Gull Crest (called a Greenfield as it uses land that is open and vacant) and which would initially be funded through a power purchase agreement to be negotiated. We recommend creating an RFP for engineering and design services that exceed the ability of the facilities department due to its complexity and permits required, to be put out to a competitive bid process. The engineering and design phases would also include any permitting, regulatory processes, and governmental regulations. The cost for the engineering could run between \$30k to \$50k, a cost that would be upfront and in the near term, and could be deducted from the long term overall savings.
- Note that the \$1.7 million in cost savings for the Solar PV PPA could be slightly less over the term based on actual expenses and uncontrollable factors such as weather conditions. However, numbers are reflective given historical weather data.

Committee Requests

- The committee respectfully requests the opportunity to be continued as a standing committee for the purpose of assisting in the implementation of the proposed projects, and for the purpose of educating the town and schools on the merits of renewable energy in general and these proposed projects in particular, and
- For the current members to be appointed for 2 or 3 year terms to be determined in support of this, and
- that the name of the committee be changed to the Renewable Energy Committee.

Thank you for your consideration...

- And we look forward to providing more detail and answering all your questions during the Town Council Workshop in the very near future.
- Respectfully,
- Mr. Wes Doane
- Dr. James Masi
- Mr. Laurenz Schmidt
- Ms. Julia Bassett Schwerin (Chair)
- Mr. Richard Smith