

**AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
TOWN COUNCIL WORKSHOP WITH
AD-HOC ANIMAL CONTROL COMMITTEE – 6:00 P.M.
REGULAR MEETING – 7:00 P.M.**

NO NEW BUSINESS SHALL BE TAKEN UP AFTER 10:00 P.M.

- Item 1.** Call to Order.
- Item 2.** Pledge of Allegiance.
- Item 3.** Roll Call.
- Item 4.** General Public Comments.*
- Item 5.** Minutes: February 12, 2014 – Regular Meeting and February 13, 2014 – Special Meeting.
- Item 6.** Adjustment to the Agenda.
- Item 7.** Items to be signed: a. Treasurer's Warrants.
- Item 8.** Non Action Items.
 - a. Update from the Historic Preservation Committee.

***Procedure for Addressing Council** [Posted in Chambers.]

OLD BUSINESS:

Order No. 14-19. Act on the name posted to the Personnel Appeals Board by the Appointments Committee on February 12, 2014.

NEW BUSINESS:

Order No. 14-20. Act on the request to authorize the Town Manager to sign any and all documents for the Tri Gen Project and authorizes the reallocation of monies from FY2009 Sawyer Road CIP Account [\$65,972] and the remaining balance [\$91,213] from the Public Safety Building Reserve Account.

Order No. 14-21. Act on the request to authorize the Town Manager to sign any and all documents for the Power Purchase Agreement with Scarborough Solar, LLC.

Order No. 14-22. Act to authorize the Town Manager to sign the Purchase Option Agreement with Habitat for Humanity for property located at 75 Broadturn Road.

Order No. 14-23. Act on the request from the Ad-Hoc Animal Control Advisory Committee to accept its report and start the process to implement its recommendations.

Item 9. Standing and Special Committee Reports and Liaison Reports.

Item 10. Town Manager Report.

Item 11. Council Member Comments.

Item 12. Adjournment.

Item 8. Non Action Items.

- a. Update from the Historic Preservation Committee.**

PRELIMINARY LIST OF PLACES OF SIGNIFICANCE IN SCARBOROUGH

CURRENTLY ENDANGERED

*Benjamin barn (TOO LATE)	BeechRidge School (N. Scarborough)[circa 1880s]
Dr. Bacon/Roy house (Dunstan)[1798] early	Ralph Temm place (N. Scarborough) [circa late 1700s-1880s]
Mulbery Milliken barn (Dunstan)[1815]	Southgate House [1805] & meteorite [early 1930s] (Dunstan)
Danish Village fountain & arch [-1929] Point	old Dunstan School / Amvets (corner of Old Blue Rd.) [1860]
Dunstan School Restaurant (Dunstan) [1944]	

FUTURE ENDANGERED (probably ok until ownership change)

North Scarborough Grange (N. Scarborough)[~1913]	The Breakers Inn (Higgins) [1900]
Ezra Carter farm (Dunstan)[1815]	Higgins Beach Inn (Higgins)[1923]
Southgate house barn (Dunstan)[~1805]	Foss place (319 Black Pt. Rd.) [1800s]
Pearson farm (N. Scarborough) [circa 1800s]	The Pines (N. Scarborough) [circa 1800s]
Wayland/St. Louis home (Dunstan)[1912]	BeechRidge Speedway [circa 1949]

HISTORIC HOUSES

Benj Chadwick house (Dunstan) {circa1776]	1840 House (Blue Point)[1840]
Lancaster House (Black Point) [1763]	Maine House (Blue Point)[~1880s]
2nd Hunnewell house (OakHill) [circa1731]	Abraham Plummer house (Black Point)[~1750]
Causeway Meetinghouse (Black Point)[1844]	Black Point Inn (Prouts)[1878]
Old Blue Point church (Blue Point)1886]	Bessey School (OakHill)[1927]
Scottow Hill Schoolhouse[1898]	Dr. Haigis house (Haigis& Rte One) [1930s]
Delaware house (prior to 1690)	Hunnewell House (1684)

SITES THAT ARE UNMARKED

Great Grave at Massacre Pond (Prouts) [1702]	Center of town (first town hall) (Bridges Drive) [early 1800s]
Indian Jane site (Blue Point) [1600s]	The canal (New River) [1700s]
Boundary markers (town markers)	Cumberland Turnpike (Route One marsh) [1805]

Woolly mammoth site (Mitchell Hill) [???

Soldiers Monument (Dunstan) [1913]

Rye Field (Old Blue Point Rd) [1770s]

** Boston Post marker (Maine Med Campus 5)

2

[mid 1700s]

CEMETERIES AT RISK [all are 1700-1800s]

Larrabee (Beech Ridge)

Libby (old Eastern)

Hasty (Arbor Lane)

Plummer (Winnocks Neck)

**stone has been broken off.but plaque is still there.

**AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
REGULAR MEETING – 7:00 P.M.**

Order No. 14-19. Move approval on the name posted to the Personnel Appeals Board by the Appointments Committee on February 12, 2014, as follows:

Re-appoint Penny Asdourin-Whitney to the Personnel Appeals Board,
with a term to expire in 2016;

AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
REGULAR MEETING – 7:00 P.M.

Order No. 14-20. Move approval on the request to authorize the Town Manager to sign any and all documents for the Tri Gen Project and authorizes the reallocation of monies from FY2009 Sawyer Road CIP Account [\$65,972] and the remaining balance [\$91,213] from the Public Safety Building Reserve Account, as follows:

EXECUTIVE SUMMARY / REPORT:

HISTORICAL (FROM BUSINESS CASE):

As a member of the Ad-Hoc Energy Committee, Self-Gen's principal was able to present energy initiatives that could be employed to assist the Town of Scarborough in managing their energy costs both in the short-term and also for the long-term. Throughout these meetings the committee was provided with overviews of many successful energy initiatives already implemented by the various departments of the Town. A final report was created by the Ad-Hoc committee for the town council, which included a vision for developing a comprehensive energy plan as a roadmap for strategic energy initiatives into the 21st century. The Tri-Generation Energy Model was one of the initiatives the committee included in their report to the council.

Self-Gen believes in a holistic and practical approach to energy strategies by looking first at the overall existing energy model for each customer, this is achieved by defining their energy metrics and how all forms of energy are utilized at each facility. The next step is to develop a strategic energy plan and then implement concrete initiatives for meeting the goals of the defined plan. For this fiscal-grade pre-engineering we looked at Steps 2 & 3 of Self-Gen's Five-Step program for controlling energy costs.

- STEP 1:** Wholesale Energy Supply Procurement (Natural Gas and Electricity)
(includes bilateral procurement and distribution from strategically located generation assets)
- STEP 2:** Tri-Generation (Combined Cooling, Heating & Power = C-CHiP)
(Tri-Generation Energy Model can integrate alternative energy technologies & renewable bio-fuels)
- STEP 3:** Tri-Generation Revenues & Energy-Eco-Park-Models
(Excess Power & Thermal Sales to Energy-Eco-Park Tenants, Neighbors and Municipal Energy Model)
- STEP 4:** Self-Gen's Energy Optimization Programs. *(Recycled-Energy = Energy Optimization)*
(includes facility-wide energy automation, monitoring & optimization, energy recovery strategies)
- STEP 5:** Energy Conservation Programs and Technologies.
(Lighting, Variable Frequency Drives, Facility Automation, Efficient motors, HVAC, Bldg. Envelope, ...)

For the fiscal-grade pre-engineering we performed a detailed analysis of the Tri-Generation Energy Model for the Town Hall operations in order to reduce existing energy costs, while simultaneously creating revenues from excess electricity from the Tri-Generation system. The results of this fiscal-grade pre-engineering are presented as an example of how the proposed Tri-Generation Energy Model would benefit the Town of Scarborough, starting with the Town Hall.

Self-Gen performed an initial Business Case for the Tri-Generation Energy Model which was issued on May 25th, 2012. Subsequent to the Business Case, Self-Gen was engaged to perform Fiscal-Grade Pre-Engineering for Tri-Generation Energy Model presented in the Business Case. The following report defines the findings from fiscal-grade Pre-Engineering.

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
Pre-Engineering -- Executive Summary / Report

TRI-GENERATION FISCAL-GRADE PRE-ENGINEERING CLARIFICATIONS:

Fiscal-grade pre-engineering expands on the business case metrics and performs enough engineering to develop a fiscal-grade project scope, budget and savings-revenues. At the start of this pre-engineering, Self-Gen was requested by the Town to expand our scope-of-work to include accommodating the energy needs of the future Public Safety Building in our re-engineering efforts. The inclusion of the Public Safety Building encompassed sizing the Town Hall Tri-Gen Systems to accommodate the future Public Safety Building electric and thermal (heating & cooling) energy needs. Self-Gen did not request a change-of-scope for additional funds. Inclusion of the Public Safety Building into the Town Hall Tri-Generation pre-engineering efforts did not seem excessive initially, but in the end resulted in a significant non-billable investment on behalf of Self-Gen. However, as the owner of two businesses in Scarborough and a resident of Scarborough the principal, Paul D. Aubrey took on this investment for the greater good of the community.

This pre-engineering report includes two (2) designs, scopes, estimates and savings:

- 1.) Scarborough Town Hall and future Public Safety Building.
- 2.) Scarborough Town Hall Only with no accommodations for future expansion.

TRI-GENERATION ENERGY MODEL OVERVIEW – TOWN HALL ONLY VS. TOWN HALL & P.S.B.:

Tri-Gen System Item:	Town Hall Only	Town Hall & Public Safety Bldg.:
Generator Paralleling Switchgear:	Sized for Town Hall Only	Sized for Future P.S.B. Electricity Needs
Main Transformer Feeder Cables:	Sized for Town Hall Only	Sized for Future P.S.B. Power Needs
Primary 15 kV Switch (CMP-side):	Sized for Town Hall Only	Sized for Future P.S.B. CMP Interconnection
Tri-Gen Hot Water Piping Systems:	Sized for Town Hall Only	Sized for Future P.S.B. Heating Needs
Tri-Gen Chilled Water Piping Systems:	Sized for Town Hall Only	Sized for Future P.S.B. HW Cooling Needs
Engine Exhaust / Silencer Piping:	Sized for Town Hall Only	Sized for Future P.S.B. E/G #2 Exhaust
Engine Ventilation (Inlet/Outlet Air):	Sized for Town Hall Only	Sized for Future P.S.B. E/G #2 Ventilation
Tri-Gen Plant – Equipment Layouts:	Sized for Town Hall Only	Sized for Future P.S.B. Tri-Gen Equipment
Tri-Gen Fire Detection / Suppression:	Sized for Town Hall Only	Sized for Future P.S.B. Fire Detection/Sprn.
Tri-Gen Automation System Infrastructure:	Sized for Town Hall Only	Sized for Future P.S.B. Automation Needs
Tri-Gen SCADA System Infrastructure:	Sized for Town Hall Only	Sized for Future P.S.B. SCADA Needs
Natural Gas Supply:	Sized for Town Hall Only	Sized for Future P.S.B. NG Supply
Instrumentation & Controls (I&C):	Sized for Town Hall Only	Sized for Future P.S.B. I&C Needs
Existing 150 kW Back-up Generator:	Remains As-Is, on ATS	Connected to new Paralleling Switchboard

~ Pay Some Now OR Pay More Later ~

Public Safety Building project cost mitigation/savings by inclusion in Town Hall Tri-Gen:

1. No Boilers required for new P.S.B. – Hot Water Heating from TH Tri-Gen & Boilers.
2. No Primary Switchboard for P.S.B. – Main Power from Tri-Gen Switchboard.
3. No CMP Utility Interconnection costs / fees – Upsized Town Hall Transformer Only.
4. Cables, metering, protection and switchboard already sized for P.S.B. Power needs.
5. Low-cost electricity and thermal energy from Town Hall Tri-Gen for new P.S.B.
6. 2nd engine-generator interconnections already in place for P.S.B. Tri-Gen needs.
7. Automation, SCADA and Instrumentation Infrastructure in place for future P.S.B.

TRI-GENERATION ENERGY MODEL OVERVIEW:

Tri-Generation is defined as ***“the simultaneous on-site generation of Electricity, Heating and Cooling from one energy source”***. This model is highly efficient and is considered **Green-Energy** by the U.S. EPA, even when using natural gas as a fuel source. Per the U.S. EPA CHP Partnership the Tri-Generation energy model produces ***25% less harmful emissions per unit of energy generated than using the current model***. This model, Tri-Generation, can be deployed on an individual basis, like the Town Hall, or as part of a central-energy plant for a campus complex, defined as Self-Gen's Energy-Eco-Park Model. A Town Energy-Eco-Park would include a Tri-Generation Energy System that provides electricity, heating and cooling for the Town Hall, High School, Intermediate School, Middle School, Library and Public Safety Complex. The campus-wide model can be explored after the initial successful installation of the Tri-Generation energy system at the Town Hall.

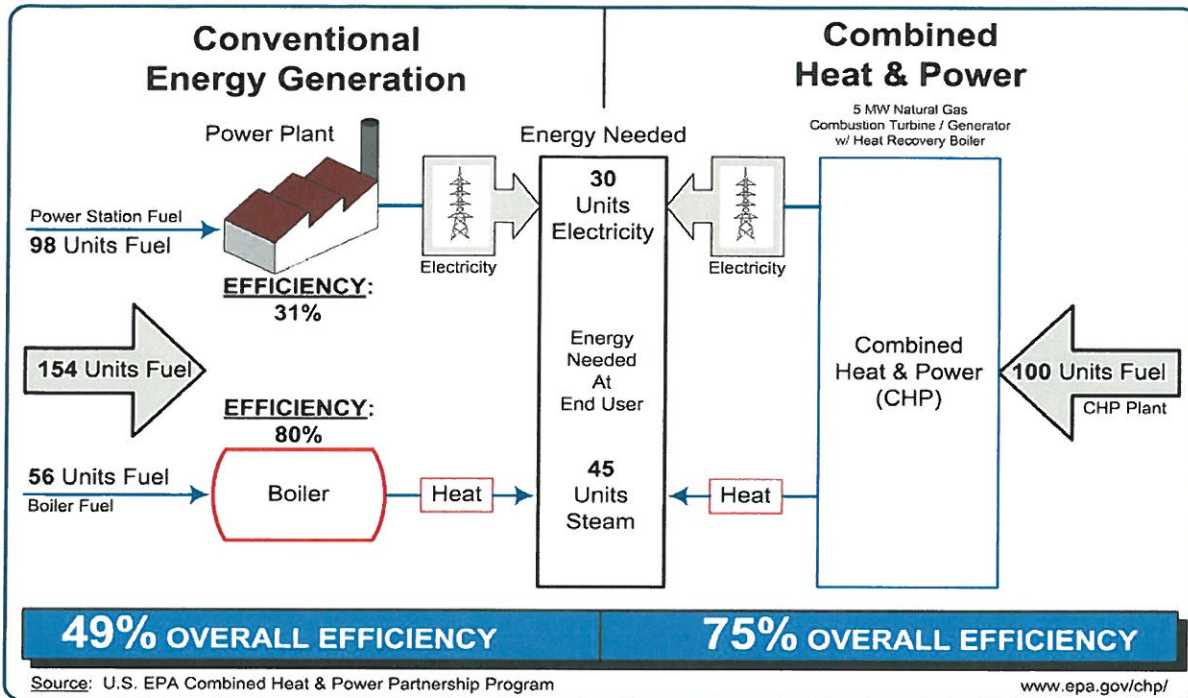
The proposed Town Hall Tri-Generation System will utilize a natural gas fired engine-generator to create electricity first and then recover the waste high temperature exhaust gases in an integrated exhaust gas heat recovery system. Waste thermal energy is also recovered from the engine jacket water and lube oil cooler. The waste heat recovery system will produce hot water for domestic heating and for domestic cooling with hot water absorption chillers. The electricity produced will be utilized behind-the-meter, on-site, at the Town Hall and also net-metered with the High School. The hot water produced will be used for domestic heating, domestic hot water and domestic cooling for the Town Hall. The Tri-Gen systems are installed so that existing systems (boilers, chillers, CMP utility connection) remain in-place as back-up or for handling spikes in demand for energy (electricity, heating & cooling).

For most Tri-Generation Systems excess electricity is created while simultaneously meeting the entire thermal energy needs of the host facility (heating & cooling). For the Town Hall Tri-Gen the excess electricity will be net-metered (both Supply and T&D) with other Town Facilities (the High School) in the area. Net-Metering does not require the formation of an ISO-NE wholesale end-user account. Net-Metering regulations allow up to ten meters / accounts to be net-metered per generation site.

As part of the original analysis we also looked at a big-picture model for the Scarborough Campus which included a central Tri-Generation plant located behind the Town Hall. Under this model the central Tri-Generation plant becomes the Energy-Hub for the entire campus including the Town Hall, Schools and Library campus as well as abutting neighbors (Maine Health, Car Wash, etc.); otherwise known as Self-Gen's Energy-Eco-Park Model. The central Tri-Generation energy plant would provide low-cost on-site energy in the form of electricity, heating and cooling for the host facilities. The Tri-Generation equipment installed in the Town Hall could eventually be re-located to the future campus-wide central Tri-Generation Plant or integrated are part of several micro-grid campus-wide installations where electric and thermal energy is supplied at the host building and excess electricity is distributed campus-wide.

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
Pre-Engineering -- Executive Summary / Report

U.S. EPA Combined Heat & Power – Energy Balance Model



The Tri-Generation model is a thermal energy driven model; the greater the thermal energy needs of a facility, the greater the efficiencies, savings and revenues. Again, under the Tri-Generation model, the system simultaneously generates three forms for energy at the point-of-use (on-site) from one energy source (dual fuels can be utilized). This model is significantly more efficient, has less transmission losses and is considered **Green Energy** by the U.S. EPA because ~25% less harmful emissions are produced per unit of energy created at the host facility.

At the core of designing and sizing a Tri-Generation Energy System is the Energy-Balance that is performed for each site-specific application. The energy-balance first determines all thermal energy sources including heating, hot water and cooling. The energy required to meet the heating, hot water and cooling needs of the host facility determines the electrical output size of the Tri-Generation System. Electricity is a by-product of this model and in nine out of ten projects, excess electricity is created in order to meet the year-round thermal needs of the host facility.

For the Town Hall Tri-Generation fiscal-grade pre-engineering we performed a detailed energy-balance using existing energy metrics and an hour-by-hour thermal demand profile analysis. The Town Hall final Tri-Generation Energy-Balance metrics:

Tri-Gen Electricity Produced:	1,269,460 kWh / yr
Tri-Gen Thermal MMBtu's Produced (recovered thermal):	6,635 MMBtu / yr (M = __ x 1000)
Tri-Gen Electric Chillers kWh Reduction:	271,902 kWh / yr

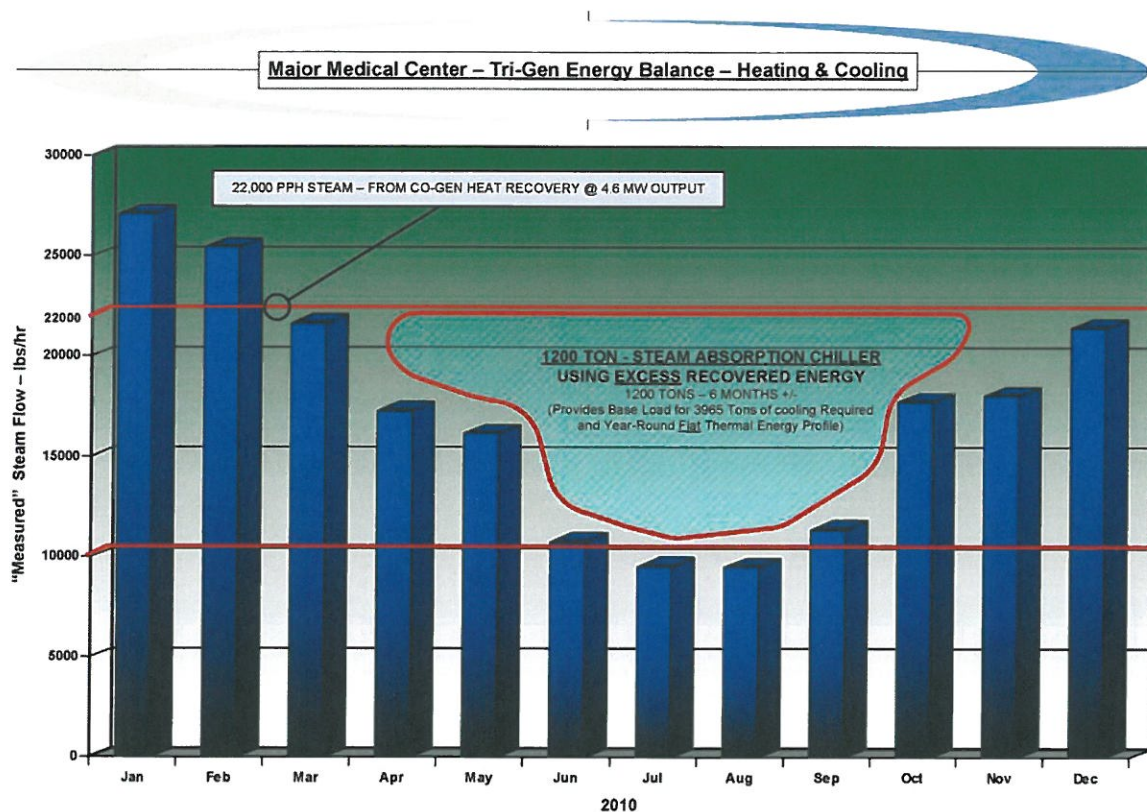
(Note: Excess electricity will be Net-Metered with the High-School or other Town accounts)

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
Pre-Engineering -- Executive Summary / Report

The excess electricity produced while meeting the thermal energy needs of the host facility becomes a revenue source for the Tri-Generation Model. Also, in some cases thermal energy can be provided to neighboring facilities, like the high-school or credit union as other revenue sources.

The diagram below for a typical Tri-Gen installation illustrates how the energy-balance is achieved between heating and cooling loads resulting in a steady, efficient and year-round operation of the Tri-Generation systems.

The Tri-Generation - Energy Balance – Heating & Cooling



Tri-Generation is truly a thermal energy model where the electricity is conceptually free, while meeting the thermal energy needs of the host facility. For a hospital, like EMMC in Bangor the thermal energy balance, as shown above, between heating and cooling allows for consistent year-round operation of the Tri-Generation plant enabling steady energy output in the form of recovered thermal energy and electricity.

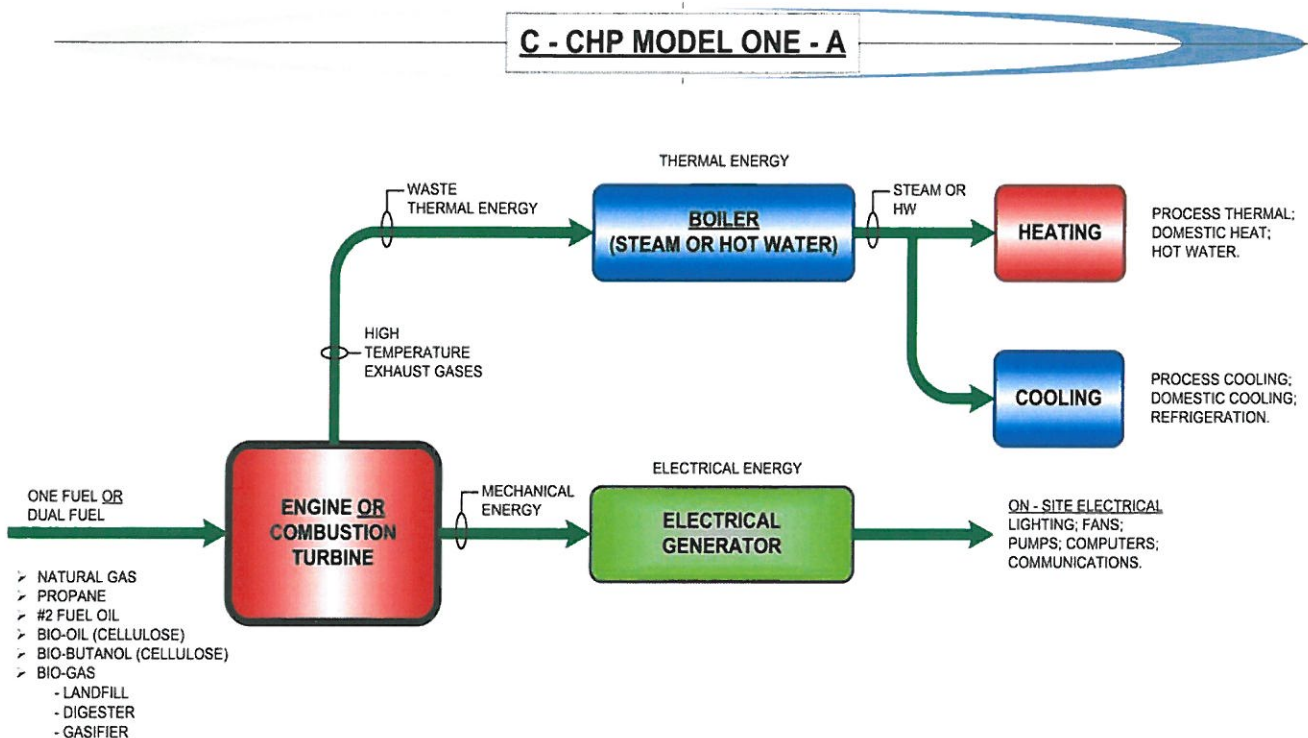
As stated in the last section, the thermal energy for the Town Hall consists of:

- Domestic Heating
- Domestic Hot Water
- Domestic Cooling (the current Town Hall 60 R-Ton Chiller runs year-round)

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
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The Tri-Generation Energy Model will provide thermal energy for these loads while simultaneously generating on-site Green Electricity (per U.S. EPA CHP Partnership).

There are three (3) core Tri-Generation or C-CHP Models which all have their own various configurations, fuel sources and technologies that are defined by the suitability-to-application approach.

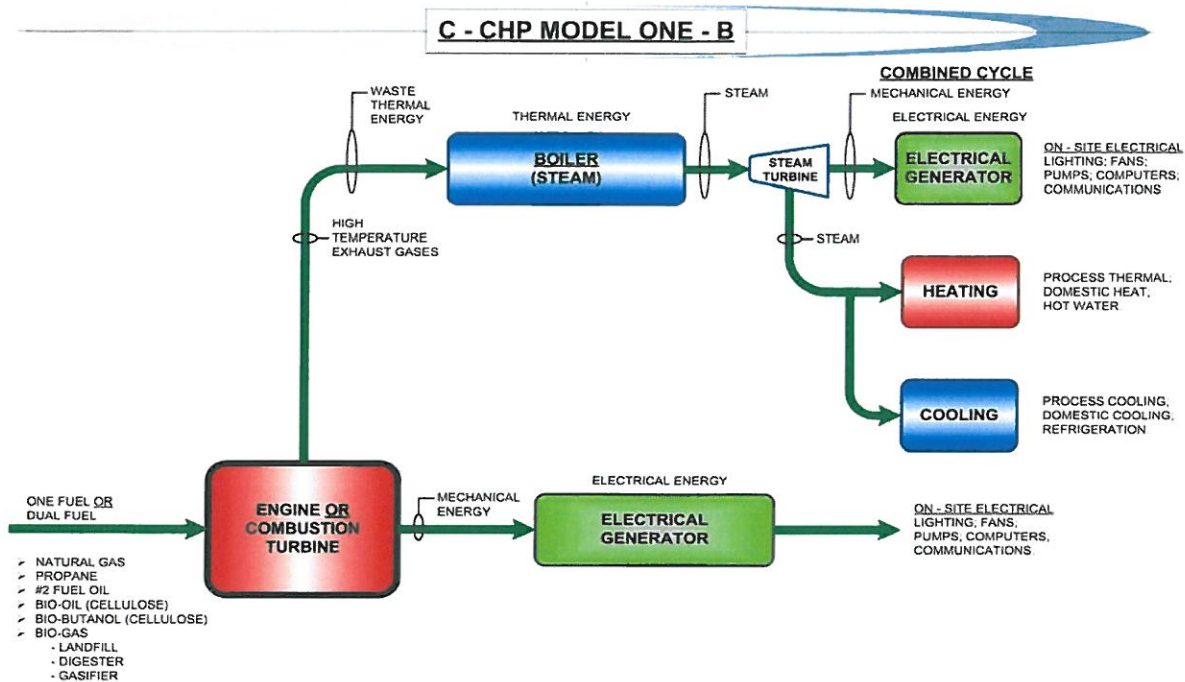


For the Tri-Generation (C-CHP) Model One-A the energy conversion process first produces electricity from the fuel source using a reciprocating engine/generator or combustion-turbine/generator. The electricity is first used by the host facility and any excess is distributed to the grid for sale or use by other remotely located host facilities.

For this model the high-temperature waste exhaust gases (*and jacket water for engines*) is used to create steam or hot water from an exhaust gas waste heat recovery steam generator or boiler (HRSG). For this model the recovered waste thermal energy is then used by the host facility for process heat, domestic heat, domestic hot water, process cooling and domestic cooling depending on the host facility needs.

Cooling is achieved by the use of steam or hot water absorption chillers as well as steam turbine-driven chillers for sub-zero cooling needs. Cooling can be performed at the point-of-use by using the steam or hot water distribution system for the facility.

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For the Tri-Generation (C-CHP) Model One-B the energy conversion process first produces electricity from the fuel source using a reciprocating engine/generator or combustion-turbine/generator. The electricity is first used by the host facility and any excess is distributed to the grid for sale or use by other remotely located host facilities.

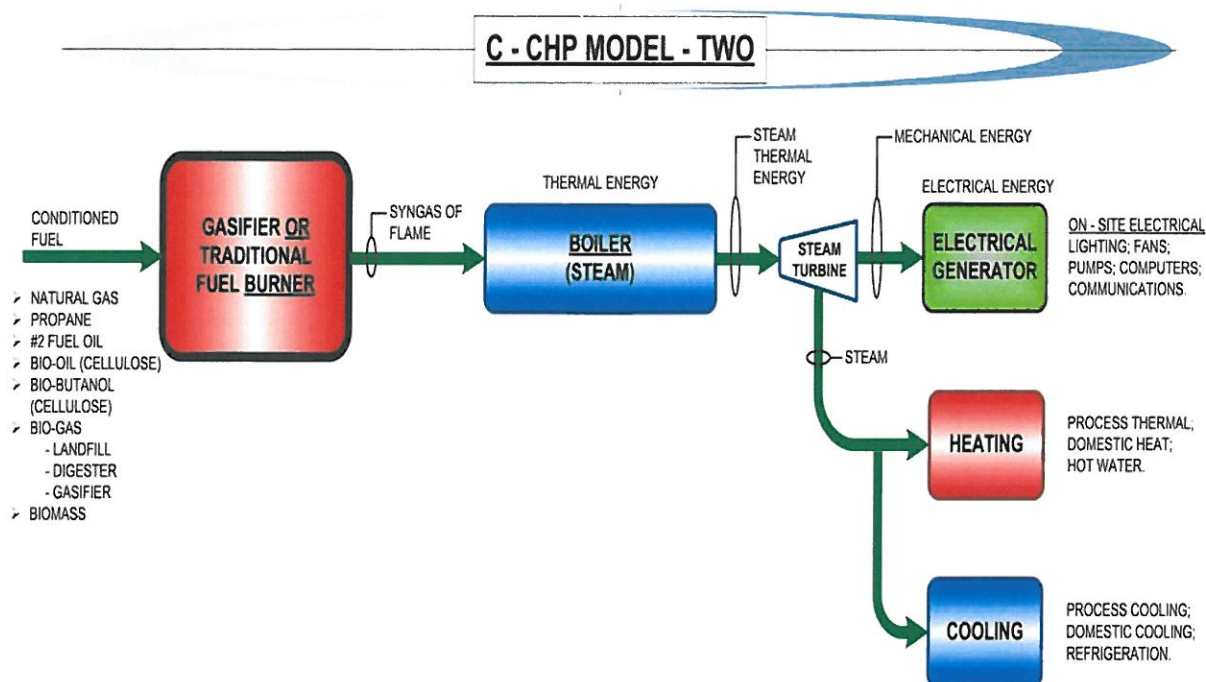
For this model the high-temperature waste exhaust gases (*and jacket water for engines*) is used to create steam or hot water from an exhaust gas waste heat recovery steam generator or boiler (HRSG). However, unlike Model One-A this model uses the steam to generate more electricity by utilizing a steam-turbine/generator. The exhaust steam or hot water (condensate) from the steam-turbine exhaust is then used by the host facility for process heat, domestic heat, domestic hot water, process cooling and domestic cooling depending on the host facility needs.

Cooling is achieved by the use of steam or hot water absorption chillers as well as steam turbine-driven chillers for sub-zero cooling needs. Cooling can be performed at the point-of-use by using the steam or hot water distribution system for the facility.

This model is traditionally defined as a **Combined-Cycle Model** because electricity is generated twice, once from the fuel conversion and once from steam conversion. We recommend exploring this model for the campus-wide Tri-Generation Energy-Eco-Park model to see if the combined cycle model enhanced the overall project metrics.

The campus-wide model would have a much large thermal energy load for heating and cooling, justifying a first look at the combined-cycle model.

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
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For the Tri-Generation (C-CHP) Model Two the energy conversion process first produces steam, instead of electricity, from a boiler fueled by various fuel sources and/or technologies (gasifiers, etc.). The steam from the boiler is then used to generate electricity by using a steam-turbine/generator. The exhaust steam or hot water (condensate) from the steam-turbine-generator is then used by the host facility for process heat, domestic heat, domestic hot water, process cooling and domestic cooling depending on the host facility needs. The electricity is first used by the host facility and any excess is distributed to the grid for sale or use by other remotely located host facilities.

This model is not as efficient as Model One-A&B; However, the fuels used for this model are sometimes less costly on a dollars-per-Btu basis offsetting the inefficiencies. Typically this model is utilized for Biomass-to-Energy Systems.

Cooling is achieved by the use of steam or hot water absorption chillers as well as steam turbine-driven chillers for sub-zero cooling needs. Cooling can be performed at the point-of-use by using the steam or hot water distribution system for the facility. Cooling under this model may not be economical since the thermal energy being utilized is **NOT** recovered waste-thermal-energy, but rather is created as the primary energy source. Chiller efficiency comparisons should be considered with attempting absorption cooling for this model.

For the Town Hall Tri-Generation Energy System we completed an energy-balance that combined all electrical and thermal energy usage into the proposed Tri-Generation plant. The selected Tri-Gen (C-CHP) model for the Town Hall is Model One-A.

TOWN HALL TRI-GENERATION ENERGY SYSTEM OVERVIEW:

The Tri-Generation energy system defined for the Town Hall will consist of a 150 kW Engine-Generator with integrated waste heat recovery system. The engine/generator will produce 150 kilowatts of electricity at three phase 208 Volts. The electricity will be stepped up to 12.47 kV via the existing Town Hall 225 kVA step-up transformer. The existing 150 kW backup generator will be reconnected in parallel with the new generator and serve as a back-up during routine Tri-Gen maintenance or unscheduled shutdowns. This reconfiguration will mitigate any standby fees from the utility during these Tri-Gen system downtimes. Also, the 150 kW standby generator can create revenues from the utility demand response program. The Tri-Generation system electricity output will be 1,269,460 kWh / yr. The waste-heat recovery system will produce 6,635 MMBtu's per year of hot water for distribution throughout the Town Hall for domestic heating & hot water and domestic cooling.

A new generator bus electrical switchgear line up will be installed to become the common point of interconnection to the utility as well as the internal distribution point for the existing 208Y/120V power distribution system. A determination will be made during the detailed design regarding a separate generation paralleling bus versus utilization of the existing main switchboard (for Town Hall Only model). The core issue is the ability to automate the power breakers for the generation bus and main connection to the utility. For the fiscal-grade pre-engineering a new paralleling switchboard was specified for both the Town Hall Only and Town Hall & Public Safety Building models.

The existing systems will remain in place and the Tri-Generation energy system will be integrated in parallel with these systems including electrical, heating and cooling.

The New Town Hall boilers installed in 2012 will function as backup to the Tri-Generation system waste heat recovery system. Larger Tri-Generation systems have heat recovery boilers that have supplemental burners for direct firing the boiler during turbine or engine maintenance. The Town Hall Tri-Gen system is too small to allow for supplemental natural gas burners in the waste heat recovery system.

The High School has electricity, heating and cooling loads such that if the sizing for the future Public Safety Building is not realized the High-School could utilize the Public Safety Building capacity to provide on-site electricity, heating and cooling from the Town Hall Tri-Generation System infrastructure. The 2nd engine-generator would be sized for the High-School thermal energy needs. Hot water piping would be installed from the Town Hall Tri-Gen plant to the High School for heating and cooling. Cooling would be preformed with point-of-use hot water absorption chillers. There are several electric chillers for domestic cooling located throughout the High School complex. A new electrical connection would be installed from the Town Hall Tri-Gen plant to the High School. This is an alternative to the Public Safety Building investment in the approach that includes sizing the Tri-Generation infrastructure for the future Public Safety Bldg.

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
Pre-Engineering -- Executive Summary / Report

The Fiscal-Grade Pre-engineering metrics for the proposed Tri-Generation plant are summarized on the following pages.

TRI-GENERATION – SCARBOROUGH TOWN HALL “ONLY”

One - 150 kW Engine/Generator w/ Heat Recovery System w/ Absorption Chillers

Energy Category	<u>Existing Energy</u> "Debits"	<u>Tri-Gen Energy</u> "Debits"	<u>Tri-Gen Energy</u> "Credits"	Notes
Thermal 1 - Existing Thermal & Tri-Gen Thermal Required:	- \$ 19,511.20	- \$ 84,952.28		
Thermal 2 - "Excess Energy" Required or Saved:		- \$ 15.40		Thermal Sales / Costs
Thermal 3 – Steam Absorption Chiller Electrical Savings:			\$ 39,297.99	Chiller kWh Reduction Net-Metered
Plant Electric & Tri-Gen Electric:	- \$ 69,599.87	- \$ 00.00	\$ 113,875.23	Excess kWh Net-Metered
2013 Totals Projected:	- \$ 89,111.07	- \$ 84,967.68	\$ 153,173.22	
Equipment Maintenance / Year (\$ 0.009 / kWh Generated):			- \$ 11,424.14	
Energy Difference Adjustment "+" or "-" (between Existing and Tri-Gen):			\$ 4,143.39	
ISO-NE Capacity Revenues (~\$ 0.015 / kWh):			\$ 19,041.90	
ME-PUC LTC Capacity Credits (~\$ 0.020 / kWh):			<u>25,389.21</u>	
Total Savings-Revenues / Year:			\$ 190,322.57	
Estimated Cost:			\$ 797,688.38	
Simple Payback:			4.19 Years	
Simple Payback with 10% CHP Tax Credit:			3.77 Years	
Simple Payback with Efficiency Maine Grant:			2.64 Years	

Key Assumptions:

1. Electrical Load is the Combination of Campus Loads Including Cooling at Burdened Rate of \$ 0.14453 / kWh.
2. Piped Natural Gas Long-Term High-Volume Year-Round Pricing of \$ 0.70 / therm, current Nat. Gas Pricing at \$ 1.853 / Therm avg.
3. Net-Metered Excess Electricity with Other Town Facilities @ \$ 0.14453 / kWh.
4. Assumes \$ 0.009 / kWh Generated Maintenance Cost
5. Assumes Approximately 60 R-Tons of Absorption Cooling.
6. Assumes Moderately Maintained Electrical Chiller Efficiency at 0.92 kW / Ref. Ton (per U.S. EPA Tables).
7. Tri-Gen Plant is sized for Thermal Loads (Heating & Cooling); Excess Electricity will be Net-Metered with other Town Facilities, starting with the High School.
8. Assumes Approximately ~17,720 Btu/hr required per Ton of Absorption Chiller Cooling.

Town of Scarborough – Town Hall -- Tri-Generation Energy Model
Pre-Engineering -- Executive Summary / Report

TRI-GENERATION – SCARBOROUGH TOWN HALL & P.S.B. ACCOMMODATION

One - 150 kW Engine/Generator w/ Heat Recovery System w/ Absorption Chillers

Energy Category	<u>Existing Energy</u> "Debits"	<u>Tri-Gen Energy</u> "Debits"	<u>Tri-Gen Energy</u> "Credits"	Notes
Thermal 1 - Existing Thermal & Tri-Gen Thermal Required:	- \$ 19,511.20	- \$ 84,952.28		
Thermal 2 - "Excess Energy" Required or Saved:		- \$ 15.40		Thermal Sales / Costs
Thermal 3 – Steam Absorption Chiller Electrical Savings:			\$ 39,297.99	Chiller kWh Reduction Net-Metered
Plant Electric & Tri-Gen Electric:	- \$ 69,599.87	- \$ 00.00	\$ 113,875.23	Excess kWh Net-Metered
2013 Totals Projected:	- \$ 89,111.07	- \$ 84,967.68	\$ 153,173.22	
Equipment Maintenance / Year (\$ 0.009 / kWh Generated):			- \$ 11,424.14	
Energy Difference Adjustment "+" or "-" (between Existing and Tri-Gen):			\$ 4,143.39	
ISO-NE Capacity Revenues (~\$ 0.015 / kWh):			\$ 19,041.90	
ME-PUC LTC Capacity Credits (~\$ 0.020 / kWh):			25,389.21	
Total Savings-Revenues / Year:			\$ 190,322.57	
Estimated Cost:			\$ 1,311,925.29	
Simple Payback:			6.89 Years	
Simple Payback with 10% CHP Tax Credit:			6.20 Years	
Simple Payback with Efficiency Maine Grant:			5.07 Years	

This model includes sizing the Tri-Generation system infrastructure for the Future Public Safety Building and includes project cost mitigation / savings for the future Public Safety Building project budget by providing energy from the Town Hall Tri-Generation Energy System.

Key Assumptions:

1. Electrical Load is the Combination of Campus Loads Including Cooling at Burdened Rate of \$ 0.14453 / kWh.
2. Piped Natural Gas Long-Term High-Volume Year-Round Pricing of \$ 0.70 / therm, current Nat. Gas Pricing at \$ 1.853 / Therm avg.
3. Net-Metered Excess Electricity with Other Town Facilities @ \$ 0.14453 / kWh.
4. Assumes \$ 0.009 / kWh Generated Maintenance Cost
5. Assumes Approximately 60 R-Tons of Absorption Cooling.
6. Assumes Moderately Maintained Electrical Chiller Efficiency at 0.92 kW / Ref. Ton (per U.S. EPA Tables).
7. Tri-Gen Plant is Sized for Thermal Loads (Heating & Cooling), Excess Electricity will be Net-Metered with other Town Facilities, starting with the High School.
8. Assumes Approximately ~17,720 Btu/hr required per Ton of Absorption Chiller Cooling.
9. This Tri-Gen Design - Assumes Sizing Paralleling Switchboard to Supply Electricity to the New Public Safety Building at 208Y / 120 Vac, 3 Ph, 4 Wire.
10. Assumes constructing a building extension to house the new Tri-Generation Systems.

OUTSTANDING CONSIDERATIONS:

- A. During the final Detailed Design the project scope and budget can be refined:
 - 1. Competitive bidding for equipment and materials (funded projects = sharper pencils).
 - 2. Competitive bidding for construction labor (funded projects = sharper pencils).
 - 3. Value-added design – cost savings.
 - a. For Town Hall Only model, determine if existing switchboard can be used instead of a new paralleling switchboard replacing exiting fused disconnect.
 - b. For Town Hall Only model, re-specify engine-generator with all protection, relaying and power controls integrated into engine-generator controls package.
 - c. For Town Hall Only model, evaluate if balance of plant automation can be integrated into existing Honeywell Building Automation System and define cost benefit.
- B. Utility Stand-by Fees will be negotiated and added to the financial model during the detailed design phase of the project. The 150 kW standby generator will mitigate any potential demand and standby fees since it will be utilized for on-site power during planned and unplanned downtime of the Tri-Generation system.
- C. Other incentives are available and will be identified during the project detailed design phase and added to the financial models.
- D. Demand Response incentives for the back-up generator are not included in the project fiscal metrics.
- E. Net-Metering will allow for distributing savings to other Town facilities but would diminish the direct savings for the Town Hall. The Town Hall Tri-Gen would not have to take all of the net-metering credit from the other Town facilities.

The Town may wish to fund this project on their own based on the potential savings presented, however Self-Gen is willing to offer our Open-Book Mutual Energy Agreement Model as presented for project funding at no cost to the Town of Scarborough.

The Goals of this Project are:

- 1. **Reduce Energy Costs by 20 to 30%.**
- 2. **Create a Revenue Stream from Energy Initiatives & Assets**
- 3. **Enhance Municipal Growth by Controlling Energy Costs.**
- 4. **Protect the Environment with Energy Initiatives.**

~ Tri-Generation ~

“The on-site simultaneous production of Electricity, Heating and Cooling from one energy source.”

~ End of Summary / Report ~

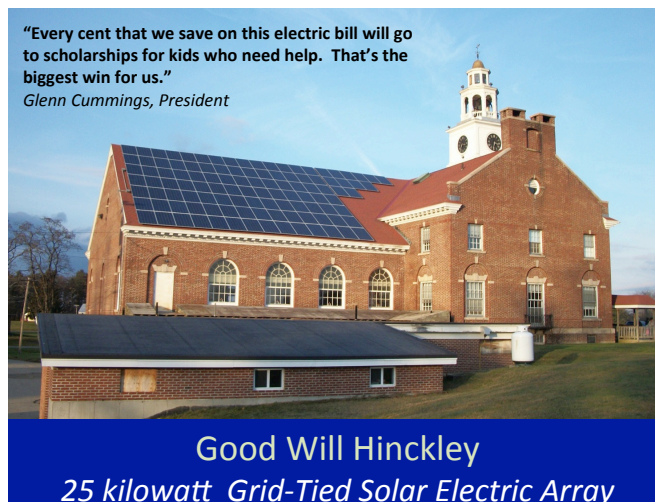
**AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
REGULAR MEETING – 7:00 P.M.**

Order No. 14-21. Move approval on the request to authorize the Town Manager to sign any and all documents for the Power Purchase Agreement with Scarborough Solar, LLC, as follows:

Solar PPAs – Using Public-Private Partnerships to Solve Maine’s Energy Crisis

PV Solar is the fastest growing new source of electrical generation in the US and globally. With 20-year lifecycle costs in the 2-3 cents/kWh range, PV solar is also among the cleanest and most cost effective sources of new power.

For Maine towns and schools interested in solar, the challenge is financing. Federal renewable energy tax credits are not available to municipal and other non-profit entities. By establishing public-private partnerships, ReVision Investments can help communities overcome these barriers and build solar energy projects at a fraction of the cost they would pay on their own.



The process works by recruiting for-profit companies willing to partner with their local communities and schools in a collaborative approach known as the Solar PPA model. (PPA stands for a power purchase agreement.) Under this model, the for-profit partner forms a special purpose entity – i.e., Community Solar, LLC – to build, own and operate the solar project. The investor will recoup the bulk of their investment through guaranteed federal grants, tax credits, accelerated depreciation and sale of renewable energy credits (RECs).

The host town or non-profit provides roof space for the solar array and buys all power generated at a fixed (or discounted) rate – thus protecting the host from rising energy prices. At the end of year six, once the tax incentives are exhausted, the project is flipped to the host at a significantly reduced cost. Thereafter the solar system will provide several more decades of essentially no-cost, carbon-free electricity to the host town or non-profit.

The PPA model is a highly flexible tool. When combined with low interest capital, PPAs are far and away the lowest price option to build solar in your community and to lock in long-term prices for solar power at rates well below the current price of electricity from conventional sources.

ReVision Investments is a Maine-based partnership founded by some of the state's leading solar energy installers and a long time energy and environmental attorney with a background in state and federal renewable energy incentives. RI can not only provide non-profits with the most advantageous business structure for renewable energy development, but – using its unique relationship with ReVision Energy, LLC – RI can also provide design-build installation services that annually rank as the most competitive in the state.



In accordance with Internal Revenue Service Circular 230, you are hereby advised that if this document or any attachment hereto contains any tax advice, such tax advice was not intended or written to be used, and it cannot be used, by any taxpayer for the purpose of avoiding penalties that may be imposed on the taxpayer by the Internal Revenue Service.

Memorandum

To: Tom Hall, Scarborough Town Manager

From: N. Joel Moser, Esq.

Date: February 14, 2014

Re: Proposed Power Purchase Agreement with Scarborough Solar, LLC

Scarborough Solar, LLC¹ (“Scarborough Solar”), has proposed to the Town a unique project involving the installation of solar panels on the roofs of the Town’s Fire Station and the Community Building. Under the terms of an agreement called a Power Purchase Agreement (“PPA”), Scarborough Solar will install, own, and operate the solar panels, and the Town will buy all the power generated from the project at a fixed or discounted rate.

The key parts of the PPA are as follows:

- The PPA lasts for 20 years.
- Scarborough Solar will develop, design, construct, own, and operate the project.
- The Town will purchase from Scarborough Solar all of the electricity produced from the project.
- For the entire 20-year PPA, the price of the electricity is tied to what the Town would ordinarily pay for electricity without the project. The Town will pay the same price for electricity that it would have paid to an energy supplier and/or local electric utility, such as CMP.

¹ Scarborough Solar is a wholly-owned subsidiary of ReVision Energy, LLC, a Maine-based company founded by local solar energy installers and an attorney with a background in state and federal renewable energy incentives.

- For the first six (6) years only of the project, the Town also will receive a two cent reduction per kilowatt hour for the cost of the electricity generated from the project.
- In years 7-20, the Town has the option to purchase the project at its fair market value.
- If the Town purchases the project in year 7, Scarborough Solar has pledged to donate to the Town any portion of the fair market value sale price that exceeds \$72,000.
- Scarborough Solar will receive all guaranteed federal grants, tax credits, accelerated depreciation, and proceeds from the sale of renewable energy credits (“RECs”).

In short, the project is an innovative public-private partnership with a Maine-based company that will allow the Town to install and purchase on-site renewable energy at low-cost and with minimal risk to the Town. Similar projects have been installed at other public entities across Maine, including at the Good Will Hinckley School and numerous other towns and cities.

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AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
REGULAR MEETING – 7:00 P.M.

Order No. 14-22. Move approval to authorize the Town Manager to sign the Purchase Option Agreement with Habitat for Humanity for property located at 75 Broadturn Road, as follows:

2014 AMENDED AND RESTATED
PURCHASE OPTION AGREEMENT

THIS AGREEMENT made and entered into as of this _____ day of _____, 2014⁴³ by and between the **Town of Scarborough**, a municipal corporation with a mailing address of P.O. Box 360, Scarborough, Maine 04070 ("Seller") and **Habitat for Humanity/Greater Portland, Inc.** a Maine non-profit corporation with a mailing address of P.O. Box 10505, Portland, Maine 04101 ("Buyer").

WHEREAS, Buyer and Seller are working together, pursuant to a certain non-binding Memorandum of Understanding 75 Broadturn Road Housing Initiative dated February 20, 2013, as amended by a March 28, 2013 letter (together, the "MOU") to make affordable housing available in Scarborough, Maine;

WHEREAS, the MOU describes a certain housing project that is planned to be located on the Premises described herein and the anticipated processes and prerequisites to the commencement, construction and completion of such project; the MOU at section 3.d. originally contemplated 17 affordable homes, but Buyer now contemplates 13 affordable homes (but still never fewer than 5 shall be Alliance Homes) and as such the estimated mortgage reduction amount set out in 3.e. of the MOU will be adjusted from \$15,000 to \$19,615 (such project now with the fewer number of homes and resulting adjustment, (the "Project"));

WHEREAS, the parties ~~wish to execute~~ a this Purchase Option Agreement dated September 12, 2013 to document Buyer's right to obtain the Premises, as defined herein (the "2013 Option Agreement");

WHEREAS, Buyer has encountered changed circumstances in financing resources, scheduling and scope of the Project, and as such has requested that there be modifications to the Purchase Option Agreement in order reflect the changed circumstances;

WHEREAS, the Project remains viable and the Seller wishes to continue the relationship with Buyer and as such is willing to enter into this Amended and Restated Purchase Option Agreement containing modifications and changes necessary to reflect the changed circumstances and ,and subject otherwise subject to the conditions and terms hereof.

NOW THEREFORE, IN CONSIDERATION of the mutual promises and covenants contained in this Agreement, and other good and valuable consideration, the receipt of which is hereby acknowledged by Seller, and of the mutual covenants and promises hereinafter set forth, Seller and Buyer agree as follows:

1. _____ 1. AMENDED AND RESTATED AGREEMENT. The parties intend and agree that this Agreement shall amend and restate and replace in its entirety as of the effectiveness of this Agreement the 2013 Option Agreement.

2. GRANT OF OPTION. Seller hereby grants to Buyer the option and right to purchase (the "Option"), on the terms and conditions contained in this Agreement, the approximately 5-acre parcel located at 75 Broadturn Road, Town of Scarborough, State of Maine, which is described as the "Project Property" in the MOU, and which is a portion of the property described in that certain deed to Seller dated April 20, 2007 and recorded in the Cumberland County Registry of Deeds in Book 25002, Page 290; the final configuration and description of the Project Property shall be mutually agreed upon as the permitting process for the Project proceeds and the final configuration and legal description must be completed and agreed upon as a condition to Seller's obligation to perform hereunder (the final Project Property, the "**Premises**"). The terms and conditions of the MOU as modified by the recitals above are hereby incorporated by reference as if more fully set forth herein. In the event the terms of this Purchase Option Agreement conflict with the terms of the MOU, the terms of the MOU shall control.

2. EXPIRATION. This Option shall continue in full force and effect until December 31, 20—September 30August 31, 2014.

3. NOTICE OF EXERCISE. This Option may be exercised only by Buyer giving written notice of election to exercise to Seller in the manner set forth in Paragraph 8 below.

4. FAILURE TO EXERCISE. In the event that Buyer fails to exercise this Option before its expiration, neither Seller or Buyer shall have any further rights or claims against the other and this Option shall terminate automatically.

5. EXERCISE. Upon the giving of written notice of election to exercise, there shall automatically arise between the parties hereto a binding and bilateral agreement of purchase and sale of the Premises on the terms hereinafter set forth as subsections (a) through (h):

(a) Purchase Price. Subject to any adjustments and prorations hereinafter described, the purchase price for the Premises shall be Two Hundred Fifty-Five Thousand Dollars (\$255,000.00). At closing Buyer shall deliver to Seller a commercial note and mortgage and any other required or desired documents related to such loan arrangement in the full amount of the purchase price, on normal and customary commercial terms and containing the special terms and conditions as are more particularly described in Section 3(e) and other provisions of the MOU, including without limitation terms concerning the partial release of principal amount of the loan (the "**Loan Documents**").

(b) Title. Seller shall convey the Premises to Buyer at the closing in fee simple with good and marketable title, free and clear of liens and encumbrances, other than those that do not adversely affect Buyer's intended use of the Premises and the particular matters described herein. In the event that Buyer discovers any title defects, Seller shall be given a reasonable period of time after notice from Buyer, not to exceed thirty (30) days, in which to elect to remedy any such title defects. In the event that Seller elects not to remedy same or if Seller elects to remedy same and said defects cannot be corrected or remedied within sixty (60) days after such election, then this Agreement shall

terminate. Buyer may, however, elect to close notwithstanding such defects as may exist.

(c) Closing. The closing date shall be the date that is forty five (45) days after the date of Buyer's exercise of this Option at 1:00 p.m., local time, at the offices of Bernstein, Shur, Sawyer and Nelson, 100 Middle Street, Portland, Maine, or at such other time and place as Seller and Buyer shall mutually agree upon in writing. At the closing, Seller shall execute and deliver to Buyer, against payment of the purchase price, a Quitclaim With Covenant Deed in accordance with the Short Form Deeds Act, 33 M.R.S.A. 761 et seq. (the "Deed").

(d) Adjustments, Prorations and Closing Costs. (1) Real estate taxes and assessments (if any) shall be prorated as of the closing on the basis of the latest available tax bill; (2) The Maine real estate transfer tax shall be paid by Seller and Buyer in accordance with 36 M.R.S.A. 4641-A; (3) The recording fee for the deed of conveyance and any expenses related to any mortgage shall be paid for by Buyer; (4) A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A.

(e) Possession. Seller shall deliver possession of the Premises to Buyer at the closing, free of all leases and tenancies by any person, except as otherwise agreed to by the parties in writing.

(f) Risk of Loss, Damage, Destruction and Insurance. All risk of loss to the Premises prior to the closing shall be on Seller.

(g) Default; Remedies. In the event that Buyer fails to close hereunder for a reason other than the default of Seller, Seller shall have all remedies available at law and equity including the right to terminate this Agreement by written notice to Buyer. In the event that Seller fails to close hereunder for a reason other than the default of Buyer, Buyer shall have, in lieu of all remedies available at law and equity, the right to enforce this Agreement by specific performance.

(h) Conditions Precedent to Seller's Obligation to Close. Seller's obligation to close is, in addition to the other conditions and contingencies set out herein, subject to the satisfaction in Seller's sole discretion at or before the closing of all of the following conditions:

i. Buyer's receipt of ~~Federal Home Loan Bank of Boston's (FHLB) Gorham Savings Bank construction loan Affordable Housing Program funds with matching loan funds from a local, FHLB-participating bank and funding and~~ the Genesis Fund-Fund bridge loan and other commitments, grants and other funding sources (including CDB grants for infrastructure) in amounts and upon terms sufficient and satisfactory in the sole opinion of Seller for Buyer to complete the Project timely and otherwise in accordance with all requirements hereunder and of all permits and approvals ~~and on terms satisfactory to Seller;~~

ii. Buyer's receipt in final and unappealable form of all required permits and approvals to begin construction as contemplated in the MOU;

- iii. Buyer and Seller's agreement regarding the terms of Seller's reserved vehicular, pedestrian and utilities easement over the Premises for the benefit of Seller's remaining land;
- iv. Seller's receipt of an affirmative vote of the Town Council of the Town of Scarborough authorizing this transaction prior to the closing date hereunder;
- v. The parties' written mutual agreement as to the final configuration and description of the Project Property.
- vi. Seller's satisfaction with the form and content of the Loan Documents.
- vii. Satisfaction of all additional terms and conditions contained in the MOU (as modified herein) relating to Buyer's obligations as to the Project.

In the event these contingencies have not been satisfied on or before the date set for Closing, Seller shall have the right to terminate this Agreement. The foregoing conditions are for the benefit of Seller only and may be waived in whole or in part by Seller in Seller's sole discretion.

6. BROKERAGE. Each of the parties hereby represent to the other that neither has dealt or had contact with any broker in connection with this transaction.

7. **RECORDING OF OPTION.** Seller and Buyer agree that this Option shall not be recorded. Seller agrees, if requested by Buyer, to execute and acknowledge before a notary public, in recordable form under Maine Law, a Memorandum of Option, and to deliver the same to Buyer for recording at the Cumberland County Registry of Deeds.

8. MISCELLANEOUS.

- (a) Time. Time is of the essence to this Agreement.
- (b) Notices. All notices, demands and other communications hereunder shall be in writing and shall be given either (i) by first class mail, postage prepaid, registered or certified, return receipt requested, to Seller at the address set forth below; (ii) by hand delivery to Seller's address set forth below; (iii) by Fed Ex, or similar overnight express mail, prepaid, to Seller's address set forth below; or (iv) by electronic mail ("E-Mail") transmission to the address below. All notices shall be deemed to have been duly given if postmarked prior to the expiration date and time specified herein (in the case of mailing) or upon delivery (if hand delivered) or when delivered to a Fed Ex (or similar overnight delivery service) courier or office at the time indicated on the proof of delivery (if sent by overnight delivery service) or upon time of confirmed receipt by the primary addressee in case of E-Mail.

TO SELLER: Town of Scarborough
c/o Thomas Hall, Town Manager
259 U.S. Route 1

P.O. Box 360
Scarborough, ME 04070-0360
E-Mail: Thall@ci.scarborough.me.us

WITH A COPY TO: Bernstein Shur
c/o Jaimie Schwartz, Esq.
100 Middle Street
P.O. Box 9729
Portland, ME 04104-5029
E-Mail: jschwartz@bernsteinshur.com

TO BUYER: Habitat for Humanity of Greater Portland
c/o Godfrey Wood~~Jonathan Campbell~~, President

P.O. Box 10505

Portland, ME 04104

E Mail: _____

WITH A COPY TO: William Leete, Esq.
Box 7740
Portland ME 04112
E-Mail: wleete@leetelem.com

Either party may change its address for purposes of this subparagraph by giving the other party notice of the new address in the manner described herein.

(c) Assignment. Buyer's rights under this Agreement may not be assigned without the prior written consent of the Seller.

(d) Entire Agreement. This Agreement constitutes the entire agreement between Seller and Buyer and there are no agreements or understandings between the parties except as set forth herein.

(e) Binding Effect. This Agreement will inure to the benefit of and bind the respective successors and permitted assigns of Seller and Buyer.

(f) Construction. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. This Agreement constitutes the entire agreement between Seller and Buyer and there are no other agreements, understandings, warranties or

representations between Buyer and Seller. Nothing herein is intended to or should be construed to render the MOU a binding contract or agreement.

(g) Attorney's Fees. If any legal action is brought by either party to enforce any provisions of this Agreement, the prevailing party shall be entitled to recover from the other party its reasonable attorneys' and paralegals' fees and court costs in such amounts as shall be allowed by the court.

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement as of the date first above written.

WITNESS:

SELLER: Town of Scarborough

By _____
Thomas Hall, Its Manager

BUYER: Habitat for Humanity/Greater Portland, Inc.

| _____

By _____
~~Jonathan Campbell~~ Godfrey Wood, Its
Executive Director

AGENDA
SCARBOROUGH TOWN COUNCIL
WEDNESDAY – FEBRUARY 19, 2014
REGULAR MEETING – 7:00 P.M.

Order No. 14-23. Move approval on the request from the Ad-Hoc Animal Control Advisory Committee to accept its report and start the process to implement its recommendations, as follows: