

Town of Panton
Town Building Energy Transformation
Term Sheet – February 8, 2017

Green Mountain Power (GMP) and Efficiency Vermont (EVT), under the eVolve Panton program, are pleased to work with the Town of Panton to perform energy transformation on its town buildings. This recommended scope of work would advance the town properties from their current energy state to being highly efficient buildings with new energy technologies. The work will restore the Town Hall space to being a central community resource with additional revenue generating opportunities for the Town.

This proposal summarizes a single transformation project that will include the Town Hall and Town Garage buildings. A detailed description of the full transformation project work can be found at the end of this summary.

Town Hall Building: Town Office (downstairs) & Town Hall (upstairs) Transformation Work

Panton's Town Hall will be insulated and air-sealed to achieve much higher energy performance while also using new and efficient heating and cooling technologies. The scope of the transformation includes:

Building Envelope Improvements:

- Air sealing of all penetrations to reduce air leakage in walls and ceiling
- Spray foam insulation of the basement walls
- Dense-pack foam insulation of all above grade walls
- Cellulose insulation of attic
- Replace six existing windows in upstairs Hall space
- Replace four existing doors in upstairs Hall

Electrical Upgrade Improvements:

- Replacement of all non-grounded, non-shielded wiring
- Replace/upgrade of any outlets and fixtures served by ungrounded or unshielded wiring, as required
- LED Lighting upgrades:
 - Town Office entryway
 - Town Hall entryway and back of building flood
 - LED bulbs in existing Town Hall pendants
 - Install 2 new, closely matching pendant fixtures in Town Hall
- Install hard-wired smoke and CO2 detectors, as required by code
- Install wiring for cold climate heat pump installation

HVAC, Health & Safety Upgrades:

- Install one (1) 18,000BTU Air Source Heat Pump in Town Office
- Install three (3) 18,000BTU Air source Heat Pumps in Town Hall upstairs
- Replace motor on existing propane furnace
- Tape/seal all accessible supply and return ducts of existing furnace system
- Remove existing dehumidification system in Town Office
- Install and vent one (1) High Efficiency Bathroom Fan
- Replace two existing Modine heaters in Town Hall with one Empire space heater

- Replace existing hot water heater in Town Office bathroom with a new 20 gallon tank

Town Park & Ride Lot

- Install a Level 2, Dual Head Electric Vehicle Charging Station (GMP-owned)
- Install an LED Streetlight

Town Garage Building:

Panton's Town Garage Office will be insulated and air-sealed to achieve higher energy performance while also using new and efficient heating and cooling technologies. The scope of the transformation includes:

Garage Office Envelope Improvements:

- Insulate the Office walls and ceiling
- Air Seal penetrations to reduce air leakage

Garage HVAC, Health & Safety Improvement:

- Install one (1) 9,000BTU Air Source Heat Pump for Space Conditioning
- Install and vent one (1) High Efficiency Bathroom Fan
- Replace existing 12 gallon hot water tank with one (1) 50 gallon heat pump water heater for hot water use

Garage Lighting Improvements:

- Garage Office:
 - Install LED lights in existing fixtures
- Restroom:
 - Install LED lights in existing fixtures
- Truck Bay Area:
 - Replace existing twelve fixtures with LED fixtures of higher lumens
 - Re-orient fixtures to project more light into primary working areas

Proposal Project Cost Summary:

	Cost	EVT Incentive	GMP Contribution	Net Cost
Town Hall				
Building Envelope Improvements	\$45,132	(\$12,438)		\$32,694
Electrical Upgrade Improvements	\$13,060	(\$500)		\$12,560
HVAC, Health & Safety Improvements	\$26,137	(\$1,800)	(1) 18,000 MMBTU Air Source Heat Pump (\$3,988)	\$20,349
Town Hall Subtotal	\$84,329	(\$14,738)	(\$3,988)	\$65,603
Town Garage				
Office Envelope Improvements	\$4,008	(\$1,320)		\$2,688
HVAC, Health & Safety Improvements	\$4,069	(\$600)	(1) 9,000 MMBTU Air Source Heat Pump (\$3,319)	\$150
Lighting Improvements	\$10,493	(\$1,500)		\$8,993
Town Garage Subtotal	\$18,570	(\$3,420)	(\$3,319)	\$11,831
Project Total	\$102,899	(\$18,158)	(\$7,307)	77,434

Revised Proposed Draft Terms for Discussion:

Agreement Term:

- Ten (10) year agreement between the Town of Pantton and the eVolve Pantton program, sponsored by Green Mountain Power and Efficiency Vermont.

Town Buildings Transformation Project:

- GMP will fund the full Town Buildings Transformation Project cost, net of EVT incentives and GMP contributions.
- GMP will be responsible for all maintenance and repair costs of installed equipment beyond normal warranty periods for the first six (6) years of the agreement. The Town of Pantton will be responsible for maintenance and repair costs, thereafter.
- At the end of the ten (10) year term, the Town of Pantton will own all building improvements from the Town Buildings Transformation Project.

On-going Energy Costs:

- During the term of the agreement, the Town of Pantton will retain responsibility for paying for its actual energy usage (electric and fossil fuels).
- To deliver the energy savings to the Town of Pantton that are created by the town buildings transformation project (consistent with the MOU), GMP will provide a monthly bill credit to Pantton in the form of a \$390/month GMP bill credit for a period of six (6) years.
 - The \$390/month represents what would have been the estimated, reduced and on-going cost of energy (electric and fossil fuels) after the Town Building Transformation Project is completed exclusive of the additional energy usage by the Town Hall upstairs space, which had not previously been conditioned. This monthly amount represents a 38% energy reduction off of current levels.
 - The credit should offset all or most of the actual electrical usage cost each month plus provide a credit to Pantton to offset a portion of actual fossil fuel costs.

Town of Pantton Payments:

- The Town of Pantton will pay GMP a fixed \$630/month for a period of ten (10) years.
- The monthly payment is based on the Town of Pantton's current, baseline energy (electric and fossil fuel) spend.

Financial Summary	Dollars	Cumulative
Agreement Costs – Paid by GMP		
Town Buildings Transformation Project Cost	\$102,899	
Six Years of Baseline Energy Cost Credit (\$390/mth)	\$28,080	
<i>Costs SubTotal</i>	\$130,979	\$130,979
Agreement Credits – Provided by EVT & GMP		
Efficiency Vermont Project Incentives	(\$18,158)	
Green Mountain Power Heat Pump Contributions	(\$7,307)	
<i>Credits SubTotal</i>	(\$25,465)	\$105,514
Agreement Payments – Paid by Town of Panton		
Town of Panton - \$630/mth for 10 years	(\$75,600)	\$29,914
Agreement Contribution - Paid by GMP		
GMP Charitable Contribution to Town Buildings Transformation Project	(\$29,914)	\$0

eVolve Panton: Panton Town Buildings Energy Transformation

Detailed Description of Project Scope of Work **Town Hall & Town Garage**

Town Hall Building: Town Office Space in Basement & Town Hall Space Upstairs

Building Envelope Improvements:

- **Air Sealing & Insulation of basement attic and walls**
 - All air-sealing and insulation measures to be implemented shall be installed by a Building Performance Institute (BPI) Building Analyst and Envelope Professional certified contractor.
 - Contractor will adhere to the intent and standards of BPI Building Analyst and Envelope Professional Test-in and Test-out requirements:
 - <http://www.bpi.org/files/pdf/Testing%20In%20Testing%20Out%20Requirements%20for%20Certified%20Professionals%20-%20BA.pdf>
 - <http://www.bpi.org/files/pdf/Testing%20In%20Testing%20Out%20Requirements%20for%20Certified%20Professionals%20-%20ENV.pdf>
 - Remove existing wall finishes of below grade masonry walls. Install 3" of 2# minimum density closed cell spray foam (ccsf) to all below grade masonry surfaces, to include sealing the structural sill and foundation intersection. New 5/8" gypsum board to be installed and finished to a grade III surface on existing wall frame upon completion of ccsf installation. All finished gypsum walls will receive 1 coat latex primer, and two coats finish latex paint. All baseboard, window and door trim, and other wooden trim elements removed for installation of ccsf shall be reinstalled or replaced to return space to its original condition.
 - Install air-sealing measures at full perimeter of town office space as identified of leaking air by use of blower door system. Blower door shall be used to guide air-sealing measures and to verify results of isolating office space from town hall space above.
- **Above grade cavity walls:**
 - All above grade exterior walls shall be dense-packed with cellulose insulation to a density of no less than 3.5 lbs. per cubic foot. Installer shall use properly calibrated blowing equipment that has been tested to achieve this minimum cavity density. Installer shall track density within wall cavities by way of recording the number of bags of cellulose calculated to achieve the 3.5 lb. density for the depth of wall cavity and area being insulated. Access to wall cavities will be made from the exterior by removing sections of existing siding and drilling sheathing beneath. All holes made for accessing wall cavities shall be plugged with materials that will fully enclose the cellulose and be bonded to the sheathing. All siding removed shall be replaced with existing clapboards or with new primed pine clapboard. All nail holes shall be filled and clapboards repainted to restore wall appearance to original condition upon completion of insulation measures.
- **Attic Flat Ceiling:**
 - Any and all penetrations to the attic space from conditioned space below shall be sealed with durable materials to serve the purpose of air-sealing. Attic air-sealing integrity shall be verified by use of blower door before installing insulation measures.
 - After completion and verification of air-sealing measure performance, 18" of cellulose insulation shall be installed to achieve a realized R-value of R-60 for the complete attic flat. Insulation shall be continuous and extend fully over exterior wall plates to the full extent possible. The attic hatch shall be insulated to equivalent R-value with rigid insulation material and set within an opening that will allow for an airtight seal when shut by use of weather-stripping gaskets and latches.
- **Windows:**
 - Replace six (6) existing double-hung windows of town hall space.
 - Windows shall be insert replacement units, not full-frame units.
 - Windows shall have the following minimum performance specifications:
 - U-Factor: 0.28 whole unit value, not center of glass

- Solar Heat Gain Coefficient: between 0.24 and 0.40
 - Energy Star: NC, SC, S
 - Full screens
 - Windows will match existing window muntin design and spacing. Muntin design shall be simulated divided light with spacer between glass.
 - Windows will match existing sash division
 - Windows shall be fiberglass or composite exterior clad with wood interiors.
 - Windows shall be painted or finished on the interior to match existing window finish.
- **Doors:**
 - Replace all four existing exterior doors:
 - All new door units shall be out-swinging units.
 - Three (3) Single door units to be replaced will be full frame replacements to match existing sizes; to include jambs, durable air-sealing gaskets at doorstops, aluminum sills.
 - Door panels shall be 6-panel insulated fiberglass, double-bore for handset and deadbolt.
 - All door hardware to be oil-rubbed bronze finish brass components.
 - Handsets for all doors shall be interior and exterior levered handsets, oil-rubbed bronze finish or bar units for ADA compliance*.
 - Replace interior and exterior existing door trim or install new interior and exterior door trim to match existing design at all doors. All trim will be finished with 2 coats of latex paint on interior and exterior to match existing finishes.
 - All doors shall be painted with two coats latex paint to match existing finishes.
 - The double entry door to main meeting hall shall be replaced with new full frame fiberglass doors built to match existing entry doors. The new door panels shall be installed in a new doorframe and jambs that will provide durable weather-stripping at jambs and at junction of the two door units. New hardware shall be installed to match existing as closely as possible. All hardware shall be brass. Hardware will be ADA compliant. All door trim that will be replaced as part of the installation shall receive two coats of latex paint to match existing finishes. Door panels shall receive one coat of latex based primer and two coats of latex finish paint to match existing finishes.

Installed Cost of Building Envelope Improvements:

\$45,132

Electrical Upgrade Improvements:

- **Electrical improvements required for Town Hall insulation measures to be installed:**
 - Any non-grounded and/or non-shielded wiring existing in spaces to be filled with dense-pack cellulose and/or loose blown cellulose shall be removed and replaced with grounded shielded wire for all circuits that exist in these spaces. Outlets and fixtures being served by any ungrounded or unshielded wire shall also be replaced and/or upgraded to meet current electrical code. This includes wiring to the fixture of the existing pendant lamps in the town hall space. This work is a prerequisite to any insulation measures installed in these spaces.
- **LED Lighting Upgrades**
 - Inside entryway light (on side wall)
 - Move motion sensor to ceiling mount style to sense folks before they are in the entry way
 - Install new LED fixture with built in motion sensor
 - RAB wallpacks installed above the front entry way and on the back of the building
 - Install higher lumen level flood wall pack at both locations.
 - Rear wallpack shall have programmable photo-sensor installed
 - Replace existing incandescent bulbs in five (5) existing pendant lamps in town hall with Energy Star qualified LED screw-base bulbs of equivalent lumens.
 - Install two (2) new pendant fixtures to match as closely as possible existing pendant lamps at the front end of the town hall per Town official's discretion. New wiring will need to be installed on the existing circuit to serve these new fixtures. These pendants shall be lamped with equivalent LED screw-base bulbs
- **Smoke & CO2 Dectectors**
 - Install hard-wired smoke detectors and Carbon Monoxide detection system for both the office space and town hall.
- **Wiring for Cold Climate Heat Pumps**
 - Install wiring to (4) split unit condensers. Work to include exterior disconnect, receptacle for service (near outside units), and new subpanel to accommodate loads. Wiring between evaporator and condensers to be performed by plumbing/mechanical contractor. Install (2) bath fans and wire. Venting to be performed by plumbing/mechanical contractor. Install circuit to feed ERV unit.

Total Installed Cost of Electrical Upgrade Scope for Town Hall and Offices: \$13,060

Heating /HVAC & Ventilation Upgrade Improvements:

- Installation of one (1) 18,000BTU Air Source Heat Pump for Space Conditioning (heating & cooling) of Town Office space: Equipment shall be sourced from the list maintained by and meet the performance specifications detailed by the Northeast Energy Efficiency Partnership :
 - Performance Requirements:
 - Compressor must be variable capacity
 - Indoor and outdoor units must be part of an AHRI matched system
 - ENERGY STAR Certified
 - COP @5° F >1.75 (at maximum capacity operation)
 - HSPF >10 for Single-zone systems or HSPF >9 for Multi-zone systems
- Installation of three (3) 18,000BTU Air Source Heat Pumps for Space Conditioning (heating & cooling) of Town Hall space: Equipment shall be sourced from the list maintained by and meet the performance specifications detailed by the Northeast Energy Efficiency Partnership :
 - Performance Requirements:
 - Compressor must be variable capacity
 - Indoor and outdoor units must be part of an AHRI matched system
 - ENERGY STAR Certified
 - COP @5° F >1.75 (at maximum capacity operation)
 - HSPF >10 for Single-zone systems or HSPF >9 for Multi-zone systems
- Seal with duct mastic or tapes specifically designed for forced air system duct sealing all accessible supply and return ducts of existing furnace duct system, including the main trunk and supply plenum. Remove existing dehumidification system installed in return air ductwork. Install new sheet metal ductwork to replace dehumidification system and new ductwork as needed to provide adequate design return airflow to furnace plenum.
- Replace existing furnace blower motor with an ECM motor.
- Provide outdoor combustion air directly to furnace burner motor boot
- Replace two (2) existing Modine direct vent gas heaters in town hall space with one Empire PVS35 direct vent lp fired wall mounted space heater at 91.8% AFUE efficiency.
- Install single unit balanced indoor air ventilation system to be met by following equipment or other equipment of equitable performance specifications:
 - Install two (2) Panasonic FV-04VE1 HRV's
 - <http://shop.panasonic.com/support-only/FV-04VE1.html>
 - Install two (2) Panasonic FV-11VQL6 ventilation fan/light; one in each bathroom, vented directly to exterior with rigid ductwork and durable exterior damper.
- Replace existing 20 gallon electric DHW tank with new tank of equal size or larger.

Total Installed Cost of Heating/HVAC & Ventilation Upgrades: **\$26,137**

Town Hall SubTotal: **\$84,329**

Town Garage:

Garage Office Space Envelope Improvements:

- Air Sealing & Insulation of the Office Space
 - All air-sealing and insulation measures to be implemented shall be installed by a Building Performance Institute (BPI) Building Analyst and Envelope Professional certified contractor.
 - Contractor will adhere to the intent and standards of BPI Building Analyst and Envelope Professional Test-in and Test-out requirements:
 - <http://www.bpi.org/files/pdf/Testing%20In%20Testing%20Out%20Requirements%20for%20Certified%20Professionals%20-%20BA.pdf>
 - <http://www.bpi.org/files/pdf/Testing%20In%20Testing%20Out%20Requirements%20for%20Certified%20Professionals%20-%20ENV.pdf>
 - Identify and seal any penetrations into the office/bathroom space from the garage. These may include plumbing, electrical penetrations, wall top-plates, or any other gaps that are permitting air leakage.
 - Construct an air tight wood framed floor above the office ceiling tiles to function as an air barrier and to hold the added cellulose insulation
 - Construct necessary dams around the perimeter of the office and bathroom walls to hold the added cellulose in place.
 - Install 16 inches of loose fill cellulose insulation to the office and bathroom ceilings to achieve R-60 attic insulation
 - Vent the bathroom fan to outside of the garage with a vent cover and damper
 - Town staff removes storage items from the office attic to provide clear access to perform energy improvements
- Office walls:
 - Drill through the office wall top plates to access the wall cavities.
 - Install 3 ½ inches of dense pack cellulose to the interior partition wall cavities to achieve R-13 wall insulation.
 - Seal holes when dense pack cellulose installation is complete.

Total Installed Cost of Garage Office Space Envelope Improvements: \$4,008

Garage Office Heating/HVAC and DHW Upgrades:

- Install one (1) 9,000BTU Air Source Heat Pump for Space Conditioning (heating & cooling) : Equipment shall be sourced from the list maintained by and meet the performance specifications detailed by the Northeast Energy Efficiency Partnership :
 - Performance Requirements:
 - Compressor must be variable capacity
 - Indoor and outdoor units must be part of an AHRI matched system
 - ENERGY STAR Certified
 - COP @5° F >1.75 (at maximum capacity operation)
 - HSPF >10 for Single-zone systems or HSPF >9 for Multi-zone systems
- Replace existing 12 gallon electric resistance hot water heater with new 50 gallon electric resistance hot water heater.

Total Installed Cost of Garage Heating / HVAC and DHW Upgrades: \$4,069

Garage Lighting Replacement and Upgrades:

- Install LED Lighting in Office and Bay Areas
 - **Bay Area:**
 - Bay lights are 4 lamp T5 fixtures – total of 12 fixtures
 - Replace with LED fixtures with higher lumen output
 - Install additional LED's along the area's the trucks are parked and maintenance work done
 - **Office Space:**
 - Current lighting is 4 lamp T8 system – total of 2 wrap fixtures in office
 - Replace with Lithonia LBL4LP840 in kind
 - **Restroom:**
 - Current lighting is 8' wrap fixture with two (2) T5 lamps installed
 - Replace with Lithonia LBL4LP840 in kind

Total Installed Cost of Garage Lighting Replacement and Upgrades: \$10,493

Town Garage SubTotal: \$18,570

TOTAL PROJECT COST: \$102,899

Panton Town Buildings Energy Transformation Project

Project Financial Timeline

	Paid By	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL	Year 11
One-Time Cost & Funding Elements													
Project Construction Cost		\$ 102,899										\$ 102,899	
Efficiency Vermont Incentives	EVT	\$ (18,158)										\$ (18,158)	
Green Mountain Power Heat Pump Contribution (2)	GMP	\$ (7,307)										\$ (7,307)	
Green Mountain Power Project Charitable Contribution	GMP	\$ (29,914)										\$ (29,914)	
Balance of Project Cost		\$ 47,520										\$ 47,520	
Balance of Project Cost Payment	GMP	\$ (47,520)										\$ (47,520)	
		\$ -										\$ -	
Recurring Cost & Funding Elements													
Repair & Maintenance Coverage on New Equipment^		\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 2,196	\$ 21,960	\$ 2,196
Repair & Maintenance Payments Yrs 1-6 (~\$183/mth)	GMP	\$ (2,196)	\$ (2,196)	\$ (2,196)	\$ (2,196)	\$ (2,196)	\$ (2,196)					\$ (13,176)	
Repair & Maintenance Payments Yrs 7-10*	Panton							\$ (2,196)	\$ (2,196)	\$ (2,196)	\$ (2,196)	\$ (8,784)	\$ (2,196)
Forward Energy Cost Estimate after Transformation (\$390/mth)**		\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 4,680	\$ 46,800	\$ 4,680
Forward Energy Cost Credit to Panton Yrs 1-6 (\$390/mth)***	GMP	\$ (4,680)	\$ (4,680)	\$ (4,680)	\$ (4,680)	\$ (4,680)	\$ (4,680)					\$ (28,080)	
Actual Energy Costs	Panton	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Panton Fixed Project Payment (\$630/mth) based on historical annual energy spend of \$7,560	Panton	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (7,560)	\$ (75,600)	\$ -
Total Recurring Cost Funded by GMP		\$ (6,876)	\$ (6,876)	\$ (6,876)	\$ (6,876)	\$ (6,876)	\$ (6,876)	\$ -	\$ -	\$ -	\$ -	\$ (41,256)	\$ -
Total Recurring Cost Funded by Panton***		\$ (2,880)	\$ (2,880)	\$ (2,880)	\$ (2,880)	\$ (2,880)	\$ (2,880)	\$ (9,756)	\$ (9,756)	\$ (9,756)	\$ (9,756)	\$ (56,304)	\$ (2,196)

^ does not include repair costs on existing equipment

* optional cost to continue at Panton's discretion

** based on modeled energy savings from Town Office & Garage historical usage

*** does not include actual energy costs for electric and fossil fuels