

**Request for Grant for the Environmental Protection Administration's
"CLIMATE SHOWCASE COMMUNITIES" program**

RFA No: EPA-OAR-CPPD-09-08

Submitted by: The Town of Cortlandt, New York

Date: July 15, 2009

1. Summary Information Page

Project Title: Geothermal technology replacement for HVAC system

Applicant Information

Town of Cortlandt, New York

Cortlandt Town Hall
1 Heady Street
Cortlandt Manor, NY 10567
Att: Councilman John Sloan
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Funding Request

Federal (EPA) funding sought: \$500,000

Total Project Cost

| | |
|-----------|--------------------------------------|
| EPA | \$ 500,000 |
| Cortlandt | \$ 513,100 (cash & \$50,000 in-kind) |
| Total | \$1,013,100 |

Project Period

February to November 2010

Potential GHG Reductions

| | <u>Current System</u> | <u>Proposed System</u> | <u>Difference</u> |
|-----------------------|-----------------------|------------------------|-------------------|
| CO₂ | 2,894,371 lbm/yr | 1,256,898 lbm/yr | -1,637,473 lbm/yr |
| SO₂ | 12,212 gm/yr | 5,303 gm/yr | -6,909 gm/yr |
| NO_x | 4,307 gm/yr | 1,870 gm/yr | -2,437 gm/yr |

2. Narrative Proposal Work-Plan

i. Project Summary/Approach

The Town of Cortlandt is applying for an EPA grant under the Climate Showcase Communities program to design and implement a Geothermal system for Town Hall. This technology will replace an outdated HVAC system – but more significantly it will support the town’s strategic goal of reducing Green House Gas emissions and serve as the centerpiece for a spectrum of environmental initiatives aimed at lowering energy consumption to sustainable levels.

Cortlandt is not a newcomer to this effort. For the past 20 years the Town of Cortlandt has been a regional leader in protecting the environment. Through a variety of initiatives and projects such as:

- The Town’s Open Space Initiative, a winner of the 2006 NYS Department of Environmental Conservation Environmental Excellence Award, a program that has led to an over 100% increase in the amount of protected Open Space since 1991.
- The Steamboat Riverfront Park, a passive 30 acre park along the Hudson River that reclaimed a former oil distribution facility and won the 2001 Governor’s Waterfront Re-Discovery Award
- The new Town of Cortlandt Youth Center a 6,000 square foot facility built with green & energy star components such as specified parking for hybrid cars, pervious parking areas, photovoltaic panels, solar tunnels for natural light, environmentally friendly low-emitting building materials.

Continuing this trend, we have recently launched several major initiatives to reduce our energy consumption. The center piece of this program is 25x12, whereby we will curtail energy usage to a sustained level 25 percent lower than our 2008 based by the year 2012. The core component is the replacement of an antiquated HVAC system with Geothermal technology. We plan to employ both debt funding and in-house capabilities to fulfill the project’s goal. A grant through the EPA Climate Showcase Communities program is vitally important for the Town of Cortlandt in achieving the following:

- ❖ Drastically reducing our GHG emissions
- ❖ Considerably lowering our operating expenses
- ❖ Taking a leadership position in the community
- ❖ Serving as model and spokesperson to sister municipalities who may be hesitant about the technology, politics, and management that this opportunity entails

Detailed Description

In 1991, the Town of Cortlandt (“Cortlandt”, “the Town”) acquired and refurbished a decades-old school building to serve as a new Town Hall. Despite investments made at the time, the HVAC systems have deteriorated substantially. The result is an environmentally-inefficient system that compels employees in some offices to install fans in the winter and heaters in the summer. The Court Room and main meeting room require excessive energy to maintain an ambient temperature for residents attending functions and public hearings. In 2008 the Town paid approximately \$63,000 to maintain the inefficient system. However, now given the prevailing local and national mood that “waste is wasteful” employees,

management, and environmentally-concerned citizens strongly feel the inefficiency should be halted and has determined that a complete system change is required.

The Town has contracted with an Engineering firm, NLG Engineering, PC to investigate the potential for a Geothermal System. The current energy source for the HVAC system is Natural Gas, consuming 32,500 therms annually. In addition, the Town estimates that 10,000 kwhs of electricity are used in patch-work arrangement to compensate for inefficiencies.

Interest in Geothermal technology has grown considerably, as the long-term benefits of reduced costs and GHG emissions are extraordinarily attractive. As a result the Town has conducted preliminary assessments across a spectrum of issues. It has concluded:

- ❖ Geothermal is an obvious, near-term alternative
- ❖ The town has political will and management capability to see the project completed
- ❖ The town has a supportive citizenry that is environmentally conscious
- ❖ Available land exists immediately adjacent to Town Hall that could accommodate either a horizontal or vertical Geothermal system (see Fig 1)

In addition, Cortlandt has completed a feasibility review regarding Geothermal applicability, field's placement, internal duct runs, and overall prognosis for success (with success defined as a highly-cost effective HVAC that substantially reduces GHGs and provides a comfortable, year-around environment for employees and visitors to town hall).



Fig. 1 Town Hall campus with Geothermal grid area

Actions and methods

The existing HVAC system consists of several different systems: the Court room, corridor, meeting room and Purchasing utilize several gas fired roof-top units and split systems. The older portion of the building employs an air cooled liquid chiller with constant speed chilled water pumps. The building also houses a gas fired boiler system to provide perimeter heating and Hot Water to heating coils located in the Air Handling System. The system is in poor condition several steam pipes are un-insulated; a few of the supply piping appear to be undersized. The effects of un-insulated steam piping which passes through un-conditioned space will cause the steam to condensate prior to reaching the radiators or heating units, thereby requiring additional steam to provide the required heating. The Air Handler Units located in the attic supply conditioned air to the occupied spaces. Several of these supply ducts have leaks and are un-insulated, which decreases the efficiencies of these systems. The result is un-even heating and cooling of the occupied space leading to the occupants utilizing supplemental devices to bring the space into an environmentally acceptable conditioned space.

The town will implement corrective measures to help increase the overall efficiency of the HVAC Systems. These corrective measures will include building envelope improvements, building lighting upgrades including lamping and controls, and operational improvements. Finally, the HVAC system will be replaced with a Geothermal system and an on-campus grid

All of these corrective measures will reduce the energy consumption; however, in order to drastically reduce GHG emissions, the base system, Gas Fired Boilers/Air Cooled Chillers, will need to be replaced with a system that virtually eliminates the emissions due to burning of fossil fuels.

Work products and time line

1. Evaluate the Building overall efficiencies and envelope. [July 2009]
2. Develop Energy Conservation Measures (ECMs) including building insulation, lighting upgrades and operational improvements. [August to October 2009]
3. Prepare Construction Documents to implement the recommended ECMS and HVAC Upgrades including the installation of a Geothermal Heating/Cooling System. [November 2009 to January 2010]
4. Award contract [April 2010]
5. Phase Construction of the HVAC System Upgrade.
 - a. Phase I install Geothermal field [May – August 2010]
 - b. Phase II demolition of existing system and phased installation of new system [July – December 2010]
 - c. Phase III commissioning of Geothermal system [January – March 2011]

ii. Priority Areas

The project addresses the EPA's priority of improving energy performance in municipal operations and the use of on-site renewable sources.

We estimate a 97 percent reduction in current natural gas consumption and a reduction of approximately 30% of electricity. These translate into a composite reduction of GHGs of over 40% (**CO₂-44%, SO₂-43%, NO_x-43%**). Moreover, the new consumption levels are sustainable. In addition, the town

supports the EPA goal of “Clean Air and Global Climate Change”; indeed it tracks congruently with the town’s own goal of GHG reductions by 2012.

iii. Priority Elements

Reduced emissions

A Geothermal Heating Cooling system will effectively reduce the GHG emissions. The system will be designed to provide 100% of the cooling during the cooling season and approximately 97% of the heating during the heating season. The systems will utilize a gas fired hot water boiler to provide supplemental heating during peak heating days. This HWB will only be activated at times when the space temperature is not maintained with the Geothermal Heat Pumps.

The following table represents an estimated reduction in Green House Gasses and Energy Consumption based on ECMs and building envelope improvements. The building was modeled and energy consumption estimated with Trane Trace Load Analysis Program. Summary Sheets are attached for reference.

| | Current System | Proposed System | Energy Reduction |
|-----------------------|------------------|------------------|-------------------|
| Elec. Cons. | 466,714 KWH/yr | 370,862 KWH/yr | -95,852 KWH/yr |
| CO₂ | 2,894,371 lbm/yr | 1,256,898 lbm/yr | -1,637,473 lbm/yr |
| SO₂ | 12,212 gm/yr | 5,303 gm/yr | -6,909 gm/yr |
| NO_x | 4,307 gm/yr | 1,870 gm/yr | -2,437 gm/yr |
| Gas Cons. | 31,029 Therms/yr | 1,037 Therms/yr | -29,992 Therms/yr |

The reduction of Carbon Dioxide, Sulfur Dioxide, and Nitrogen oxide represents the reduction of green house gases projected based on the implementation of the Geothermal HVAC system. Gas consumption and electrical consumption are reduced as well. The gas usage is limited to supplemental heating. The reduction of electrical consumption is based on implementing the energy conservation measures including automatic temperature controls, set point set-backs, and lighting upgrades/controls.

Based on the building parameters, occupant load and equipment loading, it has been estimated that the building requires approximately 75 Tons of Cooling and 500 MBh of heating. The current system is significantly oversized, which reduces the overall efficiency of the system. The system efficacies are maximized when the systems are operating at or slightly below their capacities, therefore a system operating at 50% of its rated capacity may be operating at a much lower efficiency, thereby utilizing more energy than is required for the load of the system.

The modeling of the building and its systems was compared to actual gas and electrical. Please refer to the attached HVAC load calculations. The nomenclature used in the calculations is as follows: Alternative No. 1 is the base building, existing condition model; Alternative No. 2 represents the proposed geo thermal system. The utility rates and schedules of occupancy are based on actual utility bills.

Capacity building

Cortlandt's various initiatives have a twofold benefit: one, they will benefit the taxpayer and the environment simultaneously, and without compromising one for the other. Two, the town is acquiring the skills and infrastructure necessary to further reduce GHG emissions in the years to come. The town anticipates that these capabilities will enable it to educate and inspire that greater community to achieve similar successes in home and business.

Ongoing reductions and broader environmental, economic, health, and social benefits

Implementation of a Geothermal system will not show a phased benefit in regard to a diminution of GHGs; the impact will be immediate. Cortlandt's reliance on natural gas will be virtually eliminated. A substantial amount of electricity consumption (documented elsewhere) will also disappear. This reduction reflects the various individual heaters, fans, and cooling equipment that now compensate for a defective system. These household items should not be discounted. If a sea-change is to occur in American thinking about what is wasteful and what should be saved, that change must be inculcated on the personal level. Removal of the desk fan or the area heater very incrementally raises the bar on what is acceptable in terms of one's individual comfort and environment. However, the bar is raised.

"EPA's participation is critical to Cortlandt's achieving the single goal of Project 2512: a sustained reduction of energy consumption by 25% by January 2012"

-Supv. Linda D. Puglisi

Thus, Cortlandt believes that the combined leadership of the town and the EPA sets a model for our community and endorses the notion that it practices what it preaches. The Geothermal system is a core part – but only a part – of the broader effort to educate the community in embracing new ways of living with the environment.

Partnerships

The EPA is Cortlandt's partner in the conversion. The project is local to Town Hall, thus has no ability to share functionality with other municipalities.

Replicability

Municipalities reflect each other's organization to a significant degree. They have similar responsibilities to protect the health, safety, and welfare of the public, follow the same state laws, and maintain comparable departments. Moreover, each town or village has a public hall. This commonality provides an ideal opportunity to leverage Geothermal technology. But perhaps the most significant factor is that while municipalities are corporations in the legal sense, they are not in terms of profits. Thus, a town like Cortlandt can prudently make long-term investments in infrastructure, in fact it does this routinely, with breakeven points that may span 5, 10, or 15 years, and do so with the best interests of the citizenry.

If successful the Town will be the only municipality in the area using Geothermal technology, and it is anticipated the project will become a well-publicized regional model.

Complementary activities

Cortlandt has an impressive track record of launching environmental programs, which was noted earlier. Activities complementary to the Geothermal conversion are as follows:

- ❖ Go For The Green – through 2008 the town board presented short, tactical tips for the homeowner to save money by making small changes to their habits and home, specifically in terms of energy savings. The town published and web-listed a pamphlet incorporating these suggestions.
- ❖ 25x12 – see below
- ❖ Lighting upgrade – The town has solicited bids and is currently reviewing vendors to reduce the luminescence of town hall offices. Simply put, the building is too bright and inefficient.
- ❖ Street Light upgrade – The town is exploring the promising technology of LED for its street lights and traffic signals.
- ❖ Web enhancement – Cortlandt will have a revised Green web site available to the public in September. It will contain up to date body of literature aiding residents, business, and students in ways they may improve their efficiency in utilizing energy. The town plans to have an interactive quiz, making the learning of environmental issues more entertaining.
- ❖ Heavy Duty Truck engine conversion – The town is analyzing the capability of supplementing existing diesel engines with electric motors. As sanitation and snow removal trucks always return to the garage from which they started, the town in effect can be treated as a large campus – with little concern that current mileage limitations on electric motors will be an obstacle. Of course, such an addition would have a dramatic effect on the emission reduction of GHGs.
- ❖ Sanitation and Snow removal route evaluation. In the fall of 2009 the town will use software analysis to determine optimal routing for these functions. Municipal routes hardly change over decades, but with the maturation of GIS and related software, the town has the opportunity to reduce the number of ‘rolling miles’ the truck fleet must travel.
- ❖ The Town Purchasing Department has implemented a green procurement policy.

iv. Communications of benefits to the Public

Cortlandt understands that it holds dual responsibilities in communicating the benefits of a Geothermal system within a municipal context. Certainly, the local taxpayers will bear a direct burden for substantial costs associated with the transition to an environmentally-friendly technology. Tax payers have been supportive in the past of such projects. The town built a State Police barracks through this kind of financing, and will shortly dedicated a new \$2 million youth center.

The Town currently enjoys an AAA credit rating from Moody’s Investment Service.

Cortlandt recognizes that if its project merits major funding by the EPA, that it has an obligation to foster the primary goal of the “Climate Showcase Communities”, namely, to be a model for other municipalities to adopt a similar approach for themselves. Consequently, Cortlandt envisions the following:

- ❖ Assigning a portion of its official web site devoted to economic, social, and environmental benefits of the Town/EPA partnership

- ❖ Creating of a PowerPoint presentation, in conjunction with the EPA project manager, to illustrate the background analysis, system selection, and implementation management that went into the Geothermal installation. The target audience would be other elected officials and decision-makers within local government.
- ❖ Participating in conference calls and video conference calls as requested by the EPA and appropriate governmental groups.
- ❖ Authoring of a white paper describing the adaption of a Geothermal system for municipal use. The theme would be that “you too” can overcome hesitation about embracing new technology and dramatically reduce both operational expense and GHG emissions.
- ❖ Conducting on-site tours of Geothermal systems
- ❖ Attending EPA workshops and convention if our grant application is funded.

Cortlandt is an active member of the Westchester Municipal Officials Association, comprising elected officials of the 52 villages and towns in the County of Westchester. This Association is a forum to exchange opinion and innovation among the participants. Over the past year two trends have dominated the agenda: the desire to save tax dollars in the Recession, and an almost ‘born-again’ enthusiasm to be Green. The latter is reflected in a number of consortia formed ad hoc to petition for Stimulus funding for a spectrum of environmental projects. Cortlandt is a member of one such, the Northern Westchester Energy Action Coalition, which is active in promoting a “smart grid” system of energy reductions in the communities.

The above illustrates Cortlandt’s activism in Green initiatives and in the willingness and ability to communicate with other organizations. It believes that a successful implementation of Geothermal technology to replace traditional HVAC systems will have wide-spread interest. This interest will solidify into actual projects impacting not only town halls, but large community centers, senior centers, libraries, and the like. That Cortlandt’s would be the first town hall would stimulate other municipalities to analyze their projects in light of Cortlandt’s achievement.

v. Town of Cortlandt organization and experience relative to project

The Town is organized in a similar structure to the other 931 municipalities within New York State. Situated in the North West corner of Westchester County, it is lead by a full-time Supervisor, and four part-time board members. It administers a \$36 million budget and has 194 full-time employees. The population, including two villages, is approximately 38,000.

The proposed project has two aspects:

- An HVAC system, which has been maintained but not changed in years.
- A Geothermal system, which is still considered-leading edge technology, with great promise that once employed, would drastically reduce GHGs, on-going energy consumption, and operating expense. Should the project proceed this effort would be the town’s first using this technology.

However, the town has enormous experience with environmental project management, joint implementation with other communities, legislation, and preservation. Some examples are as follows:

- ❖ Hillpoint Park – The town was able to form a coalition comprised of itself, the Governor’s Office, Scenic Hudson, the County of Westchester, and local citizens to acquire a 352 acre plot of land at the base of the Hudson Highlands that was slated for development of 386 houses. The town established an advisory task force to manage the park.
- ❖ Northern Westchester Joint Water Works. A \$16 million (1995) project to filtrate water for the communities of Somers, Yorktown, and Cortlandt. The town purchases over 1 billion gallons annually from the Joint Water Works and provides financial and legal services; its Supervisor is one of three trustees that serve as governing body.
- ❖ Over the past 15 years Cortlandt has acquired through purchase or conservation easement 2640 acres of open space to be used exclusively for passive recreation. The town believes that such acquisition is akin to corporations buying back its own stock. Future generations of residents will not only have local natural settings, but also be free of GHGs that development of such parcels would have produced.
- ❖ Tree preservation ordinance – In 2008 the Cortlandt adopted a town-wide law on the unlicensed removal of trees from residential and commercial properties. Before the cutting of three or more trees, an individual must obtain a permit, which is granted only after review of the reasons for the removals
- ❖ Recycling – Cortlandt houses a recycling transfer station that operates in conjunction with Westchester County for the benefit of five neighboring towns.

vi. Staff Qualifications

As noted, Cortlandt has a long history of protecting the environment and promoting environmental causes. Moreover, it has Town recognized that statement of principle alone would not suffice. It has added personnel and tasked them with a wide variety of responsibilities all pertaining to improving the town’s environment. Cortlandt has also launched a number of committees and initiatives that combine talents of both paid staff and enthusiastic local volunteers. The following highlights some of these efforts.

Staff and Volunteers involved in GHG reductions:

Open Space Coordinator/Environmental Monitor – This full time person is responsible for site inspections of environmentally sensitive sites (wetlands, steep slopes, etc.) that are privately owned, being developed, or that are owned by the municipality and preserved for open space purposes.

Energy Alternatives Coordinator -- The position of Energy Alternatives Coordinator is to research, seek viable alternatives, and provide initial analysis of alternative energy sources; renewable forms, wind, solar, and alternative fuel sources and vehicles. He assists in the development of a climate change action plan, and the energy management strategic plan for the delivery of municipal services.

Engineering Staff – The town has three full time NYS Licensed Professional Engineers who are knowledgeable in a range of heating, hydrology, and structural issues, including Geothermal design. As required they will work closely with the town’s retained consultants and construction personnel.

Executive Sponsor –The elected Town Board member sponsoring the project is a certified Project Management Professional and has many years experience with implementation of large-scale network

systems. He has also approved, as chair of the Planning Board, many commercial development projects within the town, including sub-divisions, shopping malls, and office buildings.

Cortlandt Conservation Committee -- The mission of the Cortlandt Citizen Advisory Committee is to empower and encourage the Town of Cortlandt government, businesses and its residents to use resources efficiently and a focus toward long-term sustainability and stewardship of the local and global environments.

Town of Cortlandt Global Warming Citizen Advisory Committee – The mission of the Board is to promote local and regional collaborative efforts to conserve energy and reduce greenhouse gas emissions in Town delivery of municipal services. The committee also assists in the development of sustainability action plan for the Town.

New York State Department of Environmental Conservation Climate Smart Community Pledge – By Town Board resolution adopted in 2009 the Town of Cortlandt became one of 39 communities in New York State to pledge to combat climate change.

25x12 Initiative – A town board directive established the 25x12 working group of staff and citizen volunteers to oversee the reduction of energy consumption within Town of Cortlandt Operations. This effort is the largest environmental project in the town. Specifically, the group will achieve the goal of a 25 percent reduction in energy usage by the year 2012 in the following sources:

| <u>Energy Source</u> | <u>Units</u> | <u>2008 Consumption</u> | <u>2012 Goal</u> |
|----------------------|--------------|-------------------------|------------------|
| Unleaded Gasoline | Gallons | 46,322 | 32,000 |
| Diesel Fuel | Gallons | 87,415 | 66,000 |
| Natural Gas * | Therms | 29,430 | 22,000 |
| Electric | Kilowatts | 544,200 | 400,000 |
| Heating Oil | Gallons | 29,836 | 22,000 |

* 100 % eliminated if Geothermal technology is employed.

In addition, the 25x12 Initiative is part of a broader effort to promote sustainability throughout the town, not just in municipal operations, but in the residential and business communities as well. As part of the initiative the town held an employee ‘kick-off’ meeting to emphasize the program as a multi-year effort taken seriously by the Town Board. It also sought their active participation. As a conduit for any volunteers, the town’s consultant set up a “Green Team” that garnered 25 members. This team is different than the standing committee that is analyzing a variety of environmental improvements, such as LED street lamps, upgraded lighting for town hall, outsourcing of maintenance, and heavy duty truck replacement engines.

This committee plans to expand its reach next year by moving from focus on just town Operations to the community as a whole. Such an effort would be primarily educational, emphasizing that the success of the town's own efforts demonstrates what businesses and citizens can do to improve both their own synergy with the environment and their own bottom line.

vii. Budget

| Geo Thermal Scheme Preliminary Budget Estimate | |
|---|------------------|
| | |
| Demolition | \$21,000 |
| Plumbing | \$17,750 |
| Electrical | \$37,500 |
| Mechanical | \$751,828 |
| | |
| Scheme Sub-Total | \$828,078 |
| | |
| Overhead 8% | \$66,246 |
| Profit 7% | \$62,602 |
| Total Budget | \$956,926 |

B. Environmental Results – Outcomes, Outputs and Performance Measures

The impact of green house gasses on our environment has been well documented. The introduction of CO₂, SO₂ and NO_x into the atmosphere has a detrimental effect causing a wide range of climate changes. Cortlandt is dedicated to the reduction of these GHGs as shown by several of the recent projects and programs. The environmental impact of these projects is in the forefront of their decision making process. This project will reduce the GHG emissions by over 40%. This will be documented over the coming years by the reduction of energy usage in Town Hall. The most straightforward way is by comparing consumption to the 2008 baseline. Use of a separate electric meter is also feasible.

Some of the Energy Conservation Measures (ECM) included in this project is lighting upgrades, lighting Occupancy Controls, Building Envelope improvements, and Occupancy Scheduled Thermostatic Set-Point set-backs. Some of the more advanced ECMs, such as Day-light harvesting, grey water recovery and PV panels will be considered based on budgetary restrictions.

C. Programmatic Capability and Past Performance

The Town of Cortlandt does not have any EPA Agreements in the past five (5) years to show programmatic capability. However the Town of Cortlandt has successfully implemented dozens of federally funded projects through the professionally staffed Departments of Technical Services and Environmental Services. Examples include:

- Community Development Block Grant (CDBG) projects funded by HUD, through Westchester County but locally administered by the Town Department of Technical

Electrical Preliminary
Budget

| Description | Quantity/ Capacity | Unit | Unit Material | Unit Labor | Total Material | Total Labor | Overall Total |
|------------------|-----------------------|------|---------------|------------|-------------------|----------------|------------------|
| Mechanical Power | 1 | lump | \$30,000.00 | | \$30,000.00 | \$0.00 | \$30,000.00 |
| Misc | 1 | lump | \$7,500.00 | | \$7,500.00 | \$0.00 | \$7,500.00 |
| Total | | | | | | | \$37,500.00 |

Mechanical Preliminary
Budget

| Description | Quantity/ Capacity | Unit | Unit Material | Unit Labor | Total Material | Total Labor | Overall Total |
|------------------------------------|-----------------------|--------|---------------|------------|-------------------|----------------|------------------|
| Geothermal Wells | 9600 | lf | \$6.00 | \$15.50 | \$57,600.00 | \$148,800.00 | \$206,400.00 |
| Make-up Air | 2 | each | \$8,500.00 | \$4,500.00 | \$17,000.00 | \$9,000.00 | \$26,000.00 |
| Geo-Water Source HP | 75 | Ton | \$1,550.00 | \$1,250.00 | \$116,250.00 | \$93,750.00 | \$210,000.00 |
| Sheetmetal | 3500 | lbs | \$18.50 | | \$64,750.00 | \$0.00 | \$64,750.00 |
| HRV MU air | 4 | each | \$7,500.00 | \$2,200.00 | \$30,000.00 | \$8,800.00 | \$38,800.00 |
| Piping w Insulation | 1250 | lf | \$22.50 | \$12.50 | \$28,125.00 | \$15,625.00 | \$43,750.00 |
| Geo-Pumps | 4 | each | \$3,707.00 | \$1,200.00 | \$14,828.00 | \$4,800.00 | \$19,628.00 |
| Automatic Controls | 40 | Points | \$1,500.00 | \$850.00 | \$60,000.00 | \$34,000.00 | \$94,000.00 |
| Rigging | 1 | lump | \$8,500.00 | | \$8,500.00 | \$0.00 | \$8,500.00 |
| Misc Fittings, Equip, Hangers Etc. | 1 | lump | \$40,000.00 | | \$40,000.00 | \$0.00 | \$40,000.00 |
| Total | | | | | | | \$751,828.00 |

All questions while this funding opportunity is open should be e-mailed to:

ClimateShowcaseInquiries@epa.gov. Answers will be posted bi-weekly until the closing date for this announcement at the OAR Grants/Funding website: http://www.epa.gov/air/grants_funding.html.

VIII. Other Information

None.

APPENDIX A

A. Geothermal Budget -

| | Total Federal Funding | | Total Cost Share | | Grand | |
|--------------------------|-----------------------|---------|-----------------------|---------|---------------|---------------|
| | <u>Requested:</u> | | <u>or Cost Match:</u> | | <u>Total:</u> | <u>Total:</u> |
| | Year 1 | Year 2 | Year 1 | Year 2 | Year 1 | Year 2 |
| Personnel | | | | | | |
| - Salary | | | 40,000 | | 40,000 | \$40,000 |
| - Fringe Benefits | | 10,000 | | 10,000 | | \$10,000 |
| Contractual Costs | 500,000 | 457,000 | | 957,000 | | \$957,000 |
| Training Expenses | | | | | | |

| | | | | |
|---|------------------------------|----------------|----------------------|--------------------|
| Travel Expenses | | 2,600 | 2,600 | \$2,600 |
| Equipment (\$5,000 or more) | | | | |
| Supplies | | | | |
| Other Direct Costs | (Public Info/ WEB Design) | 3,500 | 3,500 | \$3,500 |
| Indirect Costs (include Federally approved IDC rate) | | | ** See Line 6 | |
| TOTAL COSTS: | 500,000 | 513,100 | 1,013,100 | \$1,013,100 |
| (federal and match) | | | | |

1. Personnel:

Indicate salaries and wages by job title of all individuals who will be supplemented with these funds.

| | <u>EPA Grant</u> | <u>Applicant</u> |
|--------------------------|------------------|------------------|
| Town Engineer | | \$20,000 |
| Deputy Planning Director | | \$13,000 |
| Town Comptroller | | \$ 7,000 |
| Total: | | \$40,000 |

2. Fringe Benefits:

Indicate all mandated and voluntary benefits to be supplemented with these funds.

| | <u>EPA Grant</u> | <u>Applicant</u> |
|--------------------------|------------------|------------------|
| Town Engineer | | \$ 6,500 |
| Deputy Planning Director | | \$ 2,000 |
| Town Comptroller | | \$ 1,500 |
| Total: | | \$10,000 |

3. Contractual

Indicate any proposed contractual items that are reasonable and necessary to carry out the workplan objectives. Please note that contracts must be completed in accordance with 40 CFR 30.44 or 31.36, as applicable.

| | | <u>EPA Grant</u> | <u>Applicant</u> |
|--|------------------|------------------|------------------|
| Hire contractor to install geo-thermal system at Town Hall | \$500,000 | \$457,000 | |
| Total: | \$500,000 | \$457,000 | |

4. Travel:

Indicate number of individuals traveling, destination, number of trips, and reason for travel.

| | <u>EPA Grant</u> | <u>Applicant</u> |
|---|------------------|------------------|
| Travel for 2 staff to attend Climate Showcase Communities Training Conference | | |
| Amtrak train fare, 2 staff x 1 round trip @250/trip x 2 years | \$0 | \$1,000 |
| Per Diem: 2 staff x 4 days @ \$50/day | \$0 | \$ 400 |

| | | |
|---|-------------------------|-------------------------|
| Hotel: 2 staff x 6 nights @ \$200/night | \$0 | <u>\$1,200</u> |
| Total: | \$0 | \$2,600 |
| 5. Public Information/Web Design: To showcase geothermal system. | \$0 | <u>\$3,500</u> |
| Total: | \$0 | \$3,500 |
| Total Direct Charges: Summary of all costs associated with each object-class category. | | |
| Total: | <u>\$500,000</u> | <u>\$513,100</u> |
| 6. Total Indirect Costs: Organization must provide documentation of a federally approved indirect cost rate (percentage) reflective of proposed project/grant period. If the organization has no approved rate, the applicant should indicate if organization is in negotiations with their cognizant federal agency to obtain a new rate. | | |
| *IDC Rate is 0% of total direct charges | <u>\$0</u> | <u>\$0</u> |
| Total: | \$0 | \$0 |
| ** Included in Lines 1 & 2 | | |
| 7. Total Cost: Indicate overall figure of all direct and indirect costs. | | |
| Total Direct Costs | <u>\$500,000</u> | <u>\$513,100</u> |
| <u>TOTAL BUDGET:</u> | \$500,000 | \$513,100 |

4. Optional Documentation

HVAC Calculations

1. Title Sheet
2. System Checksums – Alternative 1 – Existing Baseline System
3. System Checksums – Alternative 2 – Proposed Geothermal System
4. Monthly Energy Consumption – Alternate 1
5. Monthly Energy Consumption – Alternative 2
6. Energy Consumption Summary Alternative 1
7. Energy Consumption Summary Alternative 2
8. Monthly Utility Cost Comparison