

To: Mayor McAdams and Assembly Members
Jim Dinley, Municipal Administrator

Through: Michael Harmon, Public Works Director

From: Gary E. Baugher Jr., Buildings/Grounds Manager

cc: Dave Wolff, Finance Director

Date: September 6, 2010

Subject: Resolution 2010 – XX Sitka Maritime Heritage Society “Japonski Island Boathouse Pump”

The Sitka Maritime Heritage Society is requesting an Assembly resolution committing the City and Borough of Sitka to submitting an Alaska Energy Authority Renewable Energy Grant on behalf of the SMHS for a Ground Source Heating Pump for the purpose of heating the Japonski Island Boathouse.

Background

The Sitka Maritime Heritage Society is proposing the design and construction of a ground source heat pump system to serve the heating needs at the City and Borough of Sitka's Japonski Island Boathouse Historical Rehabilitation Project. The Sitka Maritime Heritage Society, a 501-c-3 nonprofit based in Sitka, has a lease of the property from the City and Borough of Sitka to rehabilitate and manage the boathouse as a public facility. The Japonski Island Boathouse Historical Rehabilitation Project is a historically accurate renovation of the small boat repair and launch facility originally constructed by the U.S. Navy in 1941. It will include a working boat haul-out and repair facility as well as maritime history exhibits. The project has received support from Save America's Treasures, National Scenic Byways, the Historic Preservation Fund, the Rasmuson Foundation, and other private funds, and is currently at the 95% design phase, with the first phase of construction scheduled for 2011.

Analysis

When the Japonski Island Boathouse Rehabilitation Project was first developed it was assumed that the facility would use a conventional oil or electric heat system. However, during schematic design, it became apparent that the replacement of the marine railway tracks in the tidelands presented an opportunity to lay heat exchange tubing in the tidelands adjacent to the tracks. As a result of these findings the following research was conducted by SMHS and concluded that a Hybrid Ground Source Heat Pump is a viable option to pursue.

A ground source heat pump (GSHP) is a central heating and/or cooling system that

pumps heat to or from the ground. It uses the earth as a heat source (in the winter) or a heat sink (in the summer). The core of the heat pump is a loop of refrigerant pumped through a vapor-compression refrigeration cycle that moves heat. Heat pumps are always more efficient at heating than pure electric heaters, even when extracting heat from cold winter air. But unlike an air-source heat pump, which transfers heat to or from the outside air, a ground source heat pump exchanges heat with the ground. This is much more energy-efficient because underground temperatures are more stable than air temperatures through the year.

Low operating costs are important to public facilities. While the initial construction cost is higher, the ground source heat pump system is projected to reduce annual energy expenditures approximately \$4700 to \$6800 when compared to oil and electric systems respectively. SMHS states that the operational savings will enable the Sitka Maritime Heritage Society to offer more programs and services, and lower fees for haul-outs and visitors, a direct benefit to all users.

When compared to a traditional oil-fired heat system the ground source heat pump has shown that it reduces the environmental footprint.

It is the goal of SMHS that the use of a hybrid ground source heat pump system at such a visible, publicly accessible, and historically significant Sitka building will increase public awareness of renewable energy alternatives within the community and possibly on a larger scale.

In addition, this system makes use of the tidal zone for heat exchange tubing, and so is of extreme interest to communities throughout the temperate coastal region. Other GSHPs in the region, including the Juneau airport and a Juneau swimming pool and a private home in Sitka, use deep wells for the heat exchange tubing. This is expensive in our region because the specialized drilling rigs have to be brought in, and the drilling itself is expensive. This proposed project would be the first to use a horizontal field in the tidelands, taking advantage of the ocean's relatively stable and warm temperatures here, slightly warmer in winter than the ground. The field can be put in by local contractors. Costs and efficiency will be monitored to make this project a useful model. If the use of the ocean yields good efficiency at a lower cost, this project could be of enormous benefit to individuals and communities throughout coastal Alaska, particularly the many coastal communities relying on diesel for their power generation. Many waterfront homes and businesses, as well as city buildings, could be heated with this technology, potentially saving enormous amounts of energy, with all the benefits of a lighter load on the city's hydro or less oil burned depending on the system displaced. As a public facility, a display can be made of the heating system for education of locals and visitors.

There are a lot of potential benefits that could be realized from trying to secure the tidelands for this project. The tidelands will have to be conveyed or leased in order for this project to move forward. The tidelands will be addressed at a later date by SMHS and CBS.

Fiscal Note

The SMHS is committed to funding the cost of the Japonski Island Boathouse Heat Pump Project (ground source heat pump system) and it has been estimated at a materials and installation hard cost of \$150k. This cost includes design, permitting, construction management, and construction, including heat distribution system in the building.

Design and Construction Administration by Consultants	\$ 25,000
Design Review & Construction Management by Consultant	\$ 15,000
Construction Cost	\$100,000
Tidelands conveyance and permitting	<u>\$ 10,000</u>
<u>Total Cost of Ground Source Heat Pump System</u>	<u>\$150,000</u>

Recommendation: Pass resolution 2010- XX and authorize the Administrator to apply for an AEA Renewable Energy Grant for the SMHS Japonski Island Boathouse Project.

Attachments:

Resolution 2010 - XX

Conceptual Drawing of Project Location

AEA Renewable Energy Grant Application

RESOLUTION 2010-26

A RESOLUTION OF THE CITY AND BOROUGH OF SITKA APPROVING CBS TO SUBMIT AN ALASKA ENERGY AUTHORITY RENEWABLE ENERGY GRANT FOR A GROUND SOURCE HEAT PUMP FOR THE PURPOSE OF HEATING THE JAPONSKI ISLAND BOATHOUSE

WHEREAS, the Sitka Maritime Heritage Society (SMHS) through the City and Borough of Sitka (CBS) will submit an Alaska Energy Authority (AEA) Renewable Energy Grant for a Ground Source Heat Pump; and

WHEREAS, the Ground Source Heat Pump will be utilized for the heating of the Historical Japonski Island Boathouse; and

WHEREAS, the SMHS will be responsible for overseeing the management of the Design and Construction phases of the Ground Source Heat Pump Project along with support from the CBS staff; and

WHEREAS, the use of a Ground Source Heat Pump System in lieu of conventional oil or electric heat system at the Japonski Island Boathouse is supported by the Sitka Maritime Heritage Society, the City and Borough of Sitka Engineer, Electrical, and Buildings/Grounds Departments, and the City and Borough of Sitka Assembly and Administration.

THEREFORE, BE IT RESOLVED, that the Assembly of the City and Borough of Sitka, Alaska, by this resolution, affirms and supports the request from SMHS to submit an AEA Renewable Energy Grant for a Ground Source Heat Pump for the purpose of heating the Japonski Island Boathouse.

PASSED, APPROVED, AND ADOPTED by the Assembly of the City and Borough of Sitka, Alaska on this 14th day of September 2010.

Jack Ozment, Deputy Mayor

ATTEST:

Colleen Ingman, MMC
Municipal Clerk

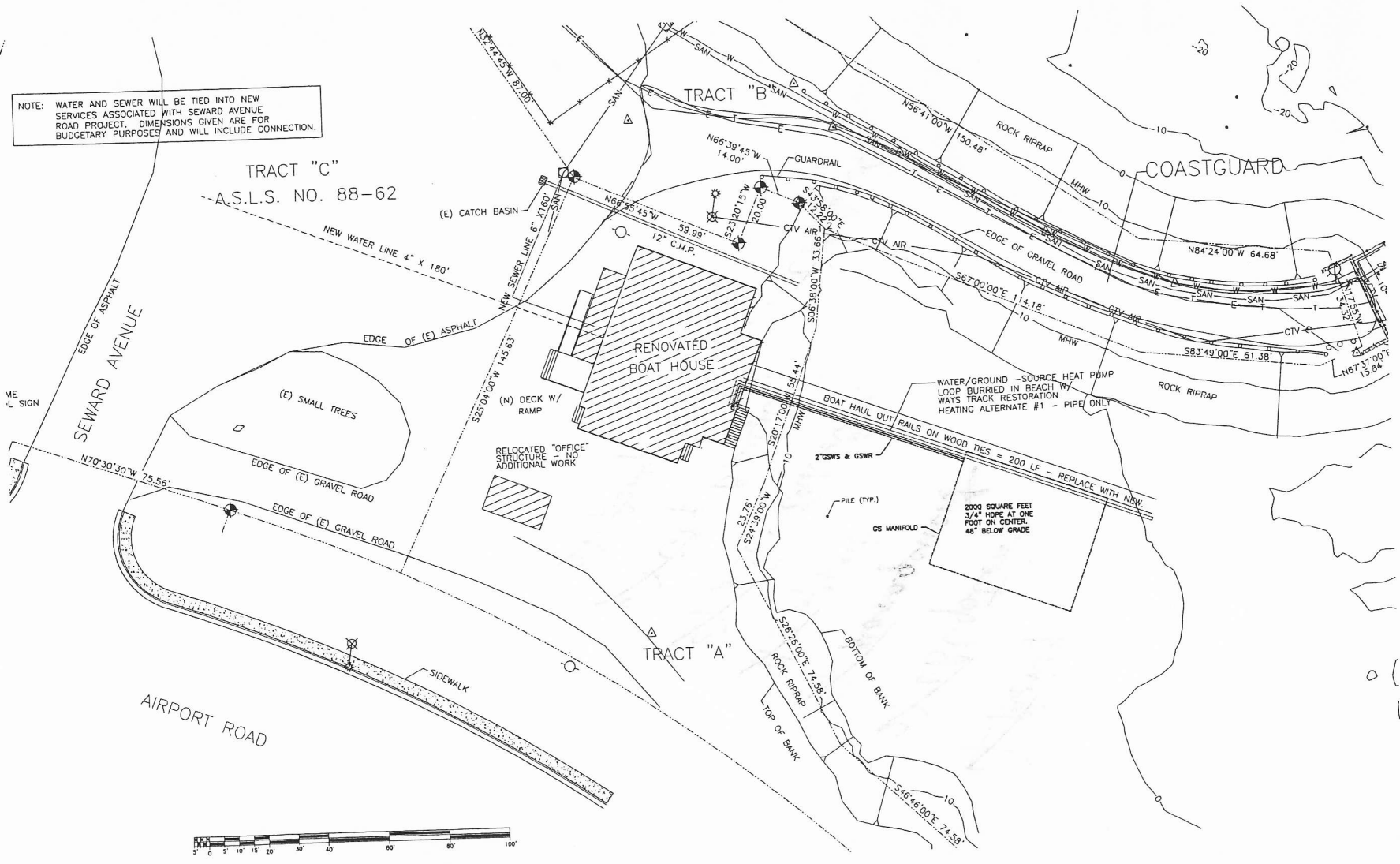
JAPONSKI ISLAND BOATHOUSE
PHASE I ADAPTIVE RE-USE
SITKA MARITIME HERITAGE SOCIETY
SITKA, ALASKA

SHEET TITLE
SITE PLAN

DATE FEB 22, 2010
DESIGNER
CHECKED BY DM
DRAWING BY KB

SHEET #
M3.0

NOTE: WATER AND SEWER WILL BE TIED INTO NEW SERVICES ASSOCIATED WITH SEWARD AVENUE ROAD PROJECT. DIMENSIONS GIVEN ARE FOR BUDGETARY PURPOSES AND WILL INCLUDE CONNECTION.



SECTION 1 - Applicant Information

Name: City and Borough of Sitka
Type of Entity: Local Government
Mailing Address: 100 Lincoln Street, Sitka, AK 99835
Physical Address: 100 Lincoln Street, Sitka, AK 99835
Tel: (907) 747-1829 Fax: (907) 747-
E-mail: garyb@cityofsitka.com

1.1 APPLICANT POINT OF CONTACT

Name: Gary Baugher - Buildings/Grounds Manager
Mailing Address: 100 Lincoln Street, Sitka, AK 99835
Tel: (907) 747-1829 Fax: (907) 747-
E-mail: garyb@cityofsitka.com

1.2 APPLICANT MINIMUM REQUIREMENTS

X A local government

YES **1.2.2** "Attached to this application is formal approval and endorsement for its project by its board of directors, executive management, or other governing authority. If a collaborative grouping, a formal approval from each participant's governing authority is necessary."

YES **1.2.3** "As an applicant, we have administrative and financial management systems and follow procurement standards that comply with the standards set forth in the grant agreement."

YES **1.2.4** "If awarded the grant, we can comply with all terms and conditions of the attached grant form. (Any exceptions should be clearly noted and submitted with the application.)"

SECTION 2 - PROJECT SUMMARY (1-2 page brief overview)

2.1 Project Title - 4 TO 5 WORD TITLE

"Japonski Island Boathouse Heat Pump"

2.2 Project Location - *Include the physical location of your project and name(s) of the community or communities that will benefit from your project*

The Japonski Island Boathouse Heat Pump project is located on the waterfront in the heart of downtown Sitka, Alaska. This project will utilize a horizontal ground source heat field buried in tidelands adjacent to the building. Sitka is on the outer coast of central southeastern Alaska at latitude 57 degrees. Japonski Island is connected to downtown Sitka proper by the O'Connell Bridge. The historic Boathouse, which will be operated as a public facility, is adjacent to the bridge and to the U.S. Coast Guard Cutter Maple dock.

The site is also near the University of Alaska Southeast campus and to the State of Alaska's Mt. Edgecumbe High School. The Southeast Alaska Regional Health Consortium Hospital and associated facilities is 1/4 mile away, and Sitka's International Airport is 1/2 mile away, all on Japonski Island, and all with adjacent tidelands. Much of Sitka's industrial waterfront is just across Sitka Channel. The Japonski Island Boathouse Heat Pump project is uniquely situated to provide a prominent and accessible example of the benefits of a ground source heat pump system, and in particular one utilizing a horizontal field in the tidelands.

Drilling deep wells for ground source heat is not practical for smaller projects in southeastern Alaska due to the high costs of bringing in a drill rig and the specialized drilling involved. Many buildings in the region however are located on the water, where a horizontal field can be placed by local contractors, at much less cost. The Japonski Island Boathouse Heat Pump project is ideally situated as a demonstration project of a ground source heat pump, and also for an installation utilizing the tidelands. Efficiency and costs will be monitored to maximize the information available for all the institutions listed above, as well as any building, private or commercial, in our climate zone, and particularly those on the waterfront. These institutions referenced will have a working example of the potential benefits to their much larger infrastructures. The institutions, and the people they serve from Sitka, and around Alaska, will stand to benefit from this project for the future implementation of ground source heat pump systems of their own, and in particular ones using the tidelands.

2.3 PROJECT TYPE - *Put X in boxes as appropriate*

2.3.1 Renewable Resources Type: 'X' in Geothermal, including Heat Pumps box

2.3.2 Proposed Grant Funded Phases(s) for this request (*Check all that apply*)

'X' in Design and Permitting box

'X' in Construction and Commissioning box

2.4 PROJECT DESCRIPTION *Provide a brief one-paragraph description of*

your proposed project

The City and Borough of Sitka is proposing the design and construction of a hybrid ground source heat pump system to serve the heating needs at the City and Borough of Sitka's Japonski Island Boathouse Historical Rehabilitation Project. The Sitka Maritime Heritage Society, a 501-c-3 nonprofit based in Sitka, leases the property from the City and Borough of Sitka in order to rehabilitate and manage the boathouse as a public facility. The Japonski Island Boathouse Historical Rehabilitation Project is a historically accurate renovation of the small boat repair and launch facility originally constructed by the U.S. Navy in 1941. It will include a working boat haul-out and repair facility as well as maritime history exhibits. The project has received support from Save America's Treasures, National Scenic Byways, the Historic Preservation Fund, the Rasmuson Foundation, and other private funds, and is currently at the 95% design phase, with the first phase of construction scheduled for 2011.

The Japonski Island Boathouse Heat Pump project hybrid system will consist of a ground source heat pump system that will meet approximately 81% of the facility's heating needs, with a supplemental electric heat system to make up the difference during periods when the facility's heat loads exceed the capacity of the ground source heat pump system. A hybrid system was selected over a stand-alone ground source heat pump system sized for 100% of the facility's heating loads because the decrease in well field size for the hybrid system significantly reduces initial construction costs, while increasing annual energy expenditures only fractionally over a stand-alone ground source heat pump system, and so gives a significantly lower life-cycle cost.

The Renewable Energy Grant Fund request herein is for the additional design and construction costs for the hybrid ground source heat pump system. The grant funding requested is only for the costs associated with the ground source heat pump system portion of the hybrid system; the costs associated with the supplemental boiler and water heater are excluded from this request. The large open work bay, which will have only a fabric curtain over the opening, will be heated as needed with a waste oil burner, since the heat pump system would have to be dramatically increased in size, for what would be a very intermittent load.

The proposed hybrid ground source heat pump system at the Japonski Island Boathouse Historical Renovation Project is to be located on Japonski Island, which is part of Sitka's downtown waterfront district, and will be installed in tidelands adjacent to the Boathouse. The facility will primarily serve Sitka residents, but will also serve visitors from nearby southeast Alaska communities, and other tour and independent visitors to Sitka, contributing to Sitka's economic development. The City and Borough of Sitka Engineering, Electrical, and Buildings/Grounds Departments are directly involved with review and oversight of the design and renovation-construction of the facility. A professional design team led by local architectural firm NorthWind Architects is responsible for the project design and construction oversight. While the Sitka Maritime Heritage Society is responsible for reporting and management of grants received directly, the City and Borough of Sitka Building/Grounds Department is responsible for confirming design and construction management practices, and progress reports to grant agencies for project grants it receives. The City and Borough of Sitka Finance

Department is responsible for financial reporting to grant agencies as required. The Sitka Maritime Heritage Society and its agent are participating in oversight of the project design and are responsible for managing the overall rehabilitation project. The project's construction contractor will be selected by competitive bid per the City and Borough of Sitka's ordinances and is not known at this time.

The use of a hybrid ground source heat pump system in lieu of conventional oil or electric heat systems at the Japonski Island Boathouse is supported by the Sitka Maritime Heritage Society, the City and Borough of Sitka Engineer, Electrical, and Buildings/Grounds Departments, and the City and Borough of Sitka Assembly and Administration.

2.5 PROJECT BENEFIT Briefly *discuss the financial and public benefits that will result from this project (such as reduced fuel costs, lower energy costs, etc.)*

When the Japonski Island Boathouse Renovation Project was initially designed it was assumed that the facility would use a conventional oil or electric heat system. However, during schematic design, it became apparent that the replacement of the marine railway tracks (boats are brought into the building on a cradle that rides on the tracks) in the tidelands presented an opportunity to lay heat exchange tubing in the tidelands adjacent to the tracks.

Ground-source heat pumps offer a significant advantage over conventional heating systems, with the higher design and construction expense compensated for by long-term fuel/electricity savings. Low operating costs are important to public facilities. While the initial construction cost is higher, the hybrid ground source heat pump system is projected (conservatively) to reduce annual energy expenditures approximately \$4700 to \$6800 when compared to oil and electric systems respectively. The operational savings will enable the Sitka Maritime Heritage Society to offer more programs and services, and lower fees for haul-outs and visitors, a direct benefit to all users. It will also facilitate discounted or free use by disabled or youth groups.

The site-specific nature of the hybrid ground source heat pump system reduces the environmental footprint of the Japonski Island Boathouse. When compared to a traditional oil-fired heat system, the hybrid ground source heat pump system eliminates oil combustion exhaust fumes, the hazards associated with transportation and storage of fuel oil, and the pollution and energy expenditure associated with shipping of fuel oil. When compared to a traditional electrical heat system, the hybrid ground source heat pump system places a lighter burden on the community's overtaxed electrical infrastructure and capacity, thus creating more time for new development of the region's hydro-electric resources.

The use of a hybrid ground source heat pump system at such a visible, publicly accessible, and historically significant Sitka building will increase public awareness of renewable energy alternatives within the community and throughout the region. The construction and operation of the hybrid ground source heat pump system will provide experience to local engineers, contractors and City and Borough of Sitka maintenance staff that will translate to reduced design, construction and maintenance costs for future

ground source heat pump systems.

In addition, this system makes use of the tidal zone for heat exchange tubing, and so is of extreme interest to coastal communities throughout the region. If the use of the ocean yields good efficiency at a lower capital cost, this project could be of enormous benefit to individuals and communities throughout coastal Alaska, particularly the many coastal communities relying on diesel for their power generation.

There are special costs in coastal Alaska with drilling the deep land wells for ground source heat pump systems, because the drill rig has to be brought up and the specialized drilling is expensive. This limits the use of wells to larger facilities and to certain types of lots. Laying a horizontal field, in the tidelands, can be done easily by local contractors. There is a lot of interest in this, but private property owners are understandably loathed to be the first to try it. This project will “test the waters” and establish costs for design, permitting, and construction, as well as efficiency. This could lead to huge energy savings down the road by the municipality and other property owners who make use of this information to put in their own systems.

2.6 PROJECT BUDGET OVERVIEW - *Briefly discuss the amount of funds needed, the anticipated sources of funds, and the nature and source of other contributions to the project.*

The Sitka Maritime Heritage Society has used over \$200,000 in private and federal grants, with in-kind matching of labor and professional services worth another \$50,000, for: structural survey, building stabilization, foundation replacement, and a complete build-ready design, now at the 95% stage. The SMHS has also had \$10,000 of work done toward tidelands lease or conveyance and permit applications.

Construction is expected to cost \$1.6 million, for a complete historical rehabilitation includes all new mechanical and electrical systems, new roof, repairing siding and windows and doors, and a small addition with a handicapped-accessible entry and toilet. A professional cost estimate is attached.

The SMHS has \$380,000 secured toward construction and is actively pursuing the remaining funding. The roof, a \$150,000 project, will be replaced in 2011. The cost of the Japonski Island Boathouse Heat Pump project ground source heat pump system has been estimated at a materials and installation hard cost of \$150,000. This cost includes design, permitting, construction management, and construction.

Design and Construction Administration by Consultants	\$ 25,000
Design Review & Project Management by Consultant	\$ 15,000
Construction Cost	\$100,000
Tidelands conveyance and permitting	<u>\$ 10,000</u>
<u>Total Cost of Ground Source Heat Pump System</u>	<u>\$150,000</u>

This compares to approximately \$65,000 for design and installation of an oil-fired

heating system.

2.7 COST AND BENEFIT SUMMARY - *Include a summary of grant request and your project's total costs and benefits below.*

Grant Costs - *(Summary of funds requested)*

2.7.1 Grant Funds Requested in this application.	\$125,000
2.7.2 Other Funds to be provided (Project match)	\$ 25,000
2.7.3 Total Grant Costs (sum of 2.7.1 and 2.7.2)	\$150,000

Project Costs & Benefits - *(Summary of total project costs including work to date and future cost estimates to get a fully operational project)*

2.7.4 Total Project Cost (Summary from Cost Worksheet including estimates through construction)	\$ 150,000
2.7.5 Estimated Direct Financial Benefit (Savings)	\$ 5,000/year
2.7.6 Other Public Benefit (If you can calculate the benefit in terms of dollars please provide that number here and explain how you calculated that number in your application (Section 5.)	\$

SECTION 3 - PROJECT MANAGEMENT PLAN - *Describe who will be responsible for managing the project and provide a plan for successfully completing the project within the scope, schedule and budget proposed in the application.*

3.1 Project Manager - Tell us who will be managing the project for the Grantee and include contact information, a resume and references for the manager(s). If the applicant does not have a project manager indicate how you intend to solicit project management support. If the applicant expects project management assistance from AEA or another government entity, state that in this section.

Fred Knowles - Sitka Maritime Heritage Society Project Manager will oversee design and construction of the project. His resume and references are attached.

Gary Baugher - City and Borough of Sitka Buildings/Grounds Manager is overseeing the design of the project for the City and Borough of Sitka. His resume and references are attached.

Stephen Weatherman - City and Borough of Sitka City Engineer will oversee the construction of the project for the City and Borough of Sitka.. His resume and references are attached.

3.2 Project Schedule - *Include a schedule for the proposed work that will be funded by this grant. (You may include a chart or table attachment with a summary of dates below.)*

Project design is to be completed by January 2011.

Project will be advertised for bid February 2011.

Bids will be opened for the project March 15, 2011.

Barring unforeseen circumstances, Notice to Proceed with construction should be issued by April 22, 2011.

Construction is expected to begin in May 2011. It is anticipated that the ground source heat pump system field will be installed in conjunction with the building site work in the summer of 2011.

Construction completion is expected in November 2011.

3.3 Project Milestones - Define key tasks and decision points in your project and a schedule for achieving them. The Milestones must also be included on your budget worksheet to demonstrate how you propose to manage the project cash flow. (See Section 2 of the RFA or the Budget Form.)

- Submit AEA Renewable Energy Fund Grant Application - September 15, 2010
- Receive feedback from AEA regarding GSHP grant request - November 1, 2010
- Complete applications for tidelands permitting and conveyance November 2010
- Submit 95% construction documents and specifications to AEA for review - November 5, 2010 (if necessary)
- Receive feedback from other granting agencies regarding GSHP grant request - November 8, 2010
- Complete review of 95% construction documents and specifications - November 15, 2010
- Complete review of 95% construction cost estimate and review feasibility - November 18, 2010
- If necessary, based on results of grant request and cost estimate, begin redesign or seek additional funding from different sources - November 19, 2010
- Submit signed construction documents to CBS Building, Electrical, and Fire Marshal Departments - January 5, 2011
- Advertise for construction bids - February 1, 2011
- Open bids and issue Notice of Intent to Award construction contract - March 15, 2011
- Issue Notice to Proceed with construction - April 22, 2011
- Receive construction permit from CBS - April 22, 2011
- Permit approvals received, tidelands conveyance process begun May 2011
- Begin construction - May 1, 2011
- Substantial Completion of Construction - November 1, 2011
- Final Completion of Construction - November 15, 2011
- Begin Facility Commissioning - November 15, 2011
- Certificate of Occupancy - November 22, 2011
- Grand Opening - November 29, 2011

Please note that most of the decisions involving the use of a hybrid ground source heat pump system rather than conventional oil or electric heat systems have already been made. The City and Borough of Sitka is committed to the use of hybrid ground source heat pump system for the Japonski Island Boathouse Heat Pump project at the Japonski Island Boathouse Renovation Project due to the many benefits previously identified in this application. The only major decision that remains is how to fund construction of the

hybrid ground source heat pump system.

3.4 Project Resources - Describe the personnel, contractors, equipment and services you will use to accomplish the project. Include any partnerships or commitments with other entities you have or anticipate will be needed to complete your project. Describe any existing contracts and the selection process you may use for major equipment purchases or contracts. Include brief resumes and references for known, key personnel, contractors, and suppliers, as an attachment to your application.

The Sitka Maritime Heritage Society has contracted with NorthWind Architects for the design of the Japonski Island Boathouse Renovation Project, of which the Japonski Island Boathouse Heat Pump project is an integral portion. NorthWind Architects project design team is led by Sean Boily, AIA, and the team is comprised of the following individuals and firms:

- Civil and Structural - PND Engineers, Inc. - Chris Gianotti, P.E.
- Mechanical - Murray & Associates, P.C. - Doug Murray, P.E.
- Electrical - Haight & Associates, Inc. - Barry Begenyi, P.E.
- Marine Railway Structural – William J. Nelson P.E. Associates
- Cost Estimator - Estimations, Inc.

In addition, Sitka Maritime Heritage Society has contracted with Orion Pacific, principal Fred Knowles, of Sitka, Alaska as the Construction Project Manager for this project.

The construction contractor and subcontractors will be selected through the competitive bid process per the City and Borough of Sitka's procurement regulations; therefore, information regarding the construction contractors who will undertake the work is not available at this time. Major equipment purchases are to be included in the construction contract.

3.5 Project Communications - Discuss how you plan to monitor the project and keep the Authority informed of the status.

Fred Knowles of Orion Pacific has his office a short distance from the project site. He will monitor and record project progress for the duration of the project. Both Gary Baugher and Stephen Weatherman of the City and Borough of Sitka have offices in the City Office Building just across the bridge from the project site. They will monitor and record project progress for the duration of the Japonski Island Boathouse Renovation Project construction. All three men will provide one or two page monthly status reports by e-mail to the Alaska Energy Authority that identify project progress, regulatory and compliance issues, possible delays, and pictures of the work. They will work with Dave Wolff of the City and Borough of Sitka Finance Department to include an accounting of the monthly and overall project grant income and expenditures in the monthly report. Quarterly reports will also be furnished that summarize the same project information on a quarterly basis.

Gary, Stephen, and Fred will also be responsible for providing additional submittal items as defined in the Authority's project agreement.

3.6 Project Risk - Discuss potential problems and how you would address them.

Lack of sufficient funding for the construction of the hybrid ground source heat pump system is a potential problem for the project. In addition to needing to garner financial assistance from the Alaska Energy Authority, the City and Borough of Sitka needs to have favorable construction bids for the work. If sufficient funding is not secured through the City and Borough of Sitka and Sitka Maritime Heritage Society grant requests, given the estimated long term benefit of the hybrid ground source heat pump system, the project could be put off for the future, but the public will lose this opportunity to learn from a trial at this time, which will immediately open the door to new projects by others.

Another potential problem is the heat exchange field. Unforeseen subsurface conditions could be encountered that could impact the depth or layout. The Juneau International Airport GSHP project was also designed by the same designers that will be used for this project. Their experience in comparable design circumstances and similar on-site conditions will prove invaluable. Design parameters for the Japonski Island Boathouse Heat Pump project will benefit greatly from what has been learned in design and implementation on the AEA -funded ground source heat pump projects in Juneau. Assuming funding is available; the Sitka Maritime Heritage Society intends to bid the Japonski Island Boathouse Heat Pump project as part of the greater overall Japonski Island Boathouse Rehabilitation Project. Relocation or changing the layout of the field is potential mitigation strategies should the field construction encounter subsurface problems.

Another potential problem is generating the anticipated design heat transfer rates from the ground source heat pump system. However, conservative estimates based on the efficiency of a GSHP in the ground in Sitka, and the fact that water is a much better heat carrier than dirt and rock, and the fact that ocean temperatures at Sitka are warmer in winter than ground temperatures, this is unlikely to happen. However in the case less heat is gained in the system greater reliance on a back-up boiler, or increasing the size of the well field, are potential mitigation strategies should the heat transfer rates generated by the ground source heat pump system prove to be below design expectations.

SECTION 4 - PROJECT DESCRIPTION AND TASKS

- Tell us what the project is and how you will meet the requirements outlined in Section 2 of the RFA.*
- The level of information will vary according to phase(s) of the project you propose to undertake with grant funds.*
- If you are applying for grant funding for more than one phase of a project provide a plan and grant budget form for completion of each phase.*
- If some work has already been completed on you project and you are requesting funding for an advanced phase, submit information sufficient to demonstrate that the preceding phases are satisfied and funding for an advanced phase is warranted.*

4.1 Proposed Energy Resource

Describe the potential extent/amount of the energy resource that is available. Discuss the pros and cons of your proposed energy resource vs. other alternatives that may be available for the market to be served by your project.

Due to Japonski Island's high water table, in this case the ocean, the amount of potential energy that can be extracted utilizing a ground source heat pump system is virtually limitless. The initial capital investment required for a heating loop and well field has limited the use of ground source heat pumps in southeast Alaska. Several large ground source heat pump projects in Juneau have recently been funded and implemented because energy costs have risen in recent years, and the anticipated payback period for the investment of initial construction capital for a ground source heat pump system has decreased to the point where ground source heat pump systems are economically viable.

While ground source heat pumps make sense in our climate, a limiting factor is the cost of drilling wells. The types of drilling rig used are not located in southeastern Alaska, so they have to be brought in and the cost is high due to the specialized nature of the work. In addition, some locations are not suitable for drilling deep wells, due to bedrock etc.

This GSHP will use a horizontal field in the tidelands, taking advantage of the relatively warm, stable temperature of the ocean at Sitka, which ranges from 47 to 53 degrees, with wintertime temperatures actually a few degrees warmer than those in the ground. In addition, water is much better at holding heat, making for efficient heat transfer, than is dirt, rock or air.

Construction of a horizontal field can be done by local contractors, and so is much less expensive. There is an additional cost for design, and for permitting in the tidelands.

The primary downside of the ground source heat pump system is the initial capital investment required to construct the system. This factor has limited the use of ground source heat pumps in the Sitka area. Another downside of the ground source heat pump system is the very slightly higher annual maintenance expenditures required to operate the system when compared with electric heat systems, but it is quite a bit lower than the cost of maintaining an oil-fired system. Unfamiliarity with ground source heat pump systems could pose a minor drawback as compared to traditional heat systems until the City and Borough of Sitka's maintenance staff becomes accustomed to the maintenance and repair activities associated with the ground source heat pump system.

The primary positive benefit of the hybrid ground source heat pump system is the very high efficiency gained from energy consumed. The hybrid ground source heat pump system is projected to reduce annual energy expenditures approximately \$4700 to \$6800 when compared to oil and electric systems respectively. A reduction in energy consumption is especially important in a public facility, in which cost savings will be translated directly into increased public services.

Another positive aspect of the hybrid ground source heat pump system at the Japonski Island Boathouse Heat Pump project site is the public acceptance and recognition that

will be brought to sustainable alternative energy technologies that could lead to broader use of similar heat systems in the region. Such a trend could significantly reduce the import of fuel oil for heating and the exhaust associated with its combustion. A reduction in electrical consumption resulting from more and larger facilities and homes using geothermal energy would allow the City and Borough of Sitka Electric Department to prolong the time before needing to use diesel-generated power and the need to build another hydroelectric dam.

Some consideration was also given to other renewable energy technologies, in particular biomass energy. Due to the project's site location (adjacent to two schools and in proximity to the downtown core and adjacent residential areas) and the winter air quality issues present in downtown Sitka, the construction of an onsite biomass incinerator was not practical. Fuel is also a problem in Sitka. An electricity-generating windmill is going in at the U.S. Coast Guard Maple Support Building next door, a project of Mt. Edgecumbe High School, but the downtown topography would not allow such a project to cover much of the boathouse energy or heating needs.

4.2 Existing Energy System

4.2.1 Basic configuration of Existing Energy System

Briefly discuss the basic configuration of the existing energy system. Include information about the number, size, age, efficiency, and type of generation.

The existing heating system is defunct due to age and long-term deferred maintenance prior to the system being abandoned. The abandoned oil burning boiler heated water for a limited hot water circulation system via standard room radiators and heated air. For comparison purposes, we are hypothesizing an oil-fired boiler, and in-floor radiant heat.

4.2.2 Existing Energy Resources Used

Briefly discuss your understanding of the existing energy resources. Include a brief discussion of any impact the project may have on existing energy infrastructure and resources.

The proposed hybrid ground source heat pump system will use more electricity than an oil-fired heat system, but only a third of the electricity used in a resistance electric heating system. The City and Borough of Sitka owns the electrical generating facilities and the distribution grids in Sitka. Currently, the City and Borough of Sitka generates hydroelectric power at the Blue Lake and Green Lake dams, and provides the power to Sitka via suspended and underwater transmission lines. Diesel generators provide additional power to Sitka in periods of outage or when demand exceeds supply, at times of low water for example. The City and Borough of Sitka is currently in the design phase of adding height to the face of the Blue Lake dam to increase water storage and generating capacity. Currently, the City and Borough of Sitka occasionally uses diesel generators during the winter to supplement hydroelectric supply. This will most likely increase in the future as the high cost of heating oil has driven residents to install electrical heat in lieu of oil. The City and Borough of Sitka's hydroelectric capacity is currently being utilized to close to maximum production. Due to the small size of the Japonski Island Boathouse Heat Pump project, and the authorized increase in the dam face height of the Blue Lake dam, the electrical power consumption by the ground source heat pump project for the Boathouse should not adversely impact the City and

Borough of Sitka's power distribution throughout the community.

This GSHP project, and especially in demonstrating a horizontal field in the tidelands, has the potential to greatly reduce the demand for electrical power in Sitka, as residents, and public and private building owners can learn the actual costs and savings of such a system, and switch from electric resistance heat.

4.2.3 Existing Energy Market

Discuss existing energy use and its market. Discuss impacts your project may have on energy customers.

The City and Borough of Sitka's Electrical Department is a publicly owned, publicly regulated utility that provides power to Sitka. Due to the additional face height authorized for the Blue Lake dam, the use of hybrid ground source heat pumps at the Japonski Island Boathouse is projected to have little or no impact on the City and Borough of Sitka's customer rates. The use of hybrid ground source heat pumps at the Boathouse will have a positive impact on facility users and visitors and on the City and Borough of Sitka by keeping operating costs low.

If this GSHP project can pave the way for others, who switch from electric resistance heat, it actually has the potential to dramatically reduce costs to electrical energy customers: When use of electricity in Sitka outpaces what is available, energy must be generated using diesel, at many times the cost of hydro, which goes on the electric bills. Already forecasts for energy use in the future are forcing the City and Borough of Sitka to begin developing additional hydroelectric sources, the cost of which, with transmission over the rugged peaks of Baranof Island, is staggering. These costs would also have to be partly borne by Sitka's energy customers.

4.3 Proposed System

Include information necessary to describe the system you are intending to develop and address potential system design, land ownership, permits, and environmental issues.

4.3.1 System Design

Provide the following information for the proposed renewable energy system:

- A description of renewable energy technology specific to project location
- Optimum installed capacity
- Anticipated capacity factor
- Anticipated annual generation
- Anticipated barriers
- Basic integration concept
- Delivery methods

This project proposes the design and construction of a hybrid ground source heat pump system to serve the heating needs at the Japonski Island Boathouse. A ground source heat pump (GSHP) is a central heating and/or cooling system that pumps heat to or from the ground. It uses the earth as a heat source (in the winter) or a heat sink (in the summer). The core of the heat pump is a loop of refrigerant pumped through a vapor-compression refrigeration cycle that moves heat. Heat pumps are always more efficient

at heating than pure electric heaters, even when extracting heat from cold winter air. But unlike an air-source heat pump, which transfers heat to or from the outside air, a ground source heat pump exchanges heat with the ground. This is much more energy-efficient because underground temperatures are more stable than air temperatures through the year.

The proposed system is a hybrid of ground source heat pump and electricity with electric boilers supplementing the ground source heat pump system in times of high demand. It is anticipated that the ground source heat pumps in the hybrid system will produce 81% of the facility's heating load. Thus, the electric water boiler will only be utilized when the facility's heating load exceeds the maximum capacity of the ground source heat pump system, which is projected to occur only during colder winter temperatures. The hybrid system (as opposed to a system that would supply 100% of the heating needs even at peak demand) allows the capacity of the well field to be reduced substantially, thus significantly reducing the initial construction cost of the system while negligibly impacting the operational cost savings of the system. The silty, sandy, gravelly soil and the high water table (the ocean) at the site, make the site naturally suited to the use of ground source heat pump fields.

The proposed system, for which AEA Renewable Energy Fund Grant funds are being applied for herein, is a ground source heat pump system comprised of a well field, a closed loop piping system, and heat pump equipment to extract heat from the circulating field. The field will be comprised of a field of 2000 square feet, 48 inches below grade in the tide zone, with $\frac{3}{4}$ inch diameter heat exchange tubing laid on one foot centers. The well field will be connected to the building mechanical room by a 2" diameter piping loop. Heat will be extracted from the fluid in the piping loop by a single water-to-water heat pump in the building's mechanical room, to heat the workshop, entry/toilet, and exhibit area and office of the building. The heat pump equipment will be provided with electrical back-ups to supplement the system during high demand events, such as cold weather, and when the ground source heat pump system is shut down for maintenance. The efficiency of the heat pumps is expected to be in the range of 300%, which is the efficiency of an existing GSHP in Sitka. So - for each purchased BTU, 3 BTUs will deliver to the building. This compares to 95% efficiency for electric and 77% efficiency for oil systems.

As part of the design process a heating-need analysis will be done of the building. The roof and floor will be insulated, and the building will get infiltration barrier and restored doors and windows, but will not have wall insulation in this phase. Insulating the walls will be done from the inside and entails removing all the interior sheathing, so will wait for a next phase. The analysis of heating needs will allow the heat pump and field to be designed for maximum efficiency.

Domestic hot water will be heated in an electric hot water heater. The central work bay, where boats are brought in for repair, has only a fabric curtain for the opening. Because the heating needs in this space are so sporadic and so large, this space will be heated when required using a waste oil burner, rather than designing the heat pump system large enough to cover this sporadic demand.

The heating needs of the rest of the building are estimated at 375 MMbtu/year, and the GSHP system is expected to supply nearly all of that.

There are no barriers anticipated, as all parts are “off the shelf.”

Heat from the GSHP and from back up electric boiler will be distributed via hot water through in-floor heating. This is a very popular heat delivery method in Sitka and there are experienced local contractors.

4.3.2 Land Ownership

Identify potential land ownership issue, including whether site owners have agreed to the project or how you intend to approach land ownership and access issues.

The Japonski Island Boathouse Heat Pump project, part of the Japonski Island Boathouse Historical Renovation Project is located on land owned by the City and Borough of Sitka. The facility fits within the scope of the master plan for the immediate area which accommodates practical, educational, mixed density, waterfront, and light industrial uses. The footprint of the entire Boathouse project, including the well field, is less than .5 acres. There is strong public support in Sitka for historical preservation and for responsible energy use.

The Boathouse will be a public facility, with ADA compliant access, for boat repair and maintenance but also for education about our maritime heritage, with exhibits and classes. The heat pump system could even be made into a display, with cost and efficiency information for the public from near and far away. This site is perfectly suited for an energy project making use of the ocean.

4.3.3 Permits

Provide the following information as it may relate to permitting and how you intend to address outstanding permit issues

- List of applicable permits
- Anticipated permitting timeline
- Identify and discussion of potential barriers

Rehabilitation activity and associated hybrid ground source heat pump system will require the following permits and approvals:

- Building Permit from City and Borough of Sitka
- Alaska State Historic Preservation Office

Laying new railway tracks and the heat field in the tidelands will also require approval from:

- Alaska Department of Environmental Conservation
- U.S. Army Corps of Engineers
- Alaska Department of Fish and Game
- Alaska Department of Natural Resources lease or conveyance of tidelands

Approval from the SHPO and City of Sitka Building Department are expected to move fairly quickly. Completing applications for the environmental permits and for conveyance of tidelands is expected to take a month, but receiving those permits, and initial

permission to use the tidelands, is expected to take another six months.

Currently the State of Alaska Department of Natural Resources has only one staff person processing tidelands lease applications, and no one processing conveyance applications. This situation means that currently there is a time lag of eight months for lease applications to even be processed, which is hampering development of the waterfront, both public and private projects. This is a significant potential barrier, but the City and Borough of Sitka will be joining municipalities and industry from across the state to get adequate staffing for tidelands leasing and conveyance.

4.3.4 Environmental

Address whether the following environmental and land use issues apply, and if so how they will be addressed:

- Threatened or Endangered species
- Habitat issues
- Wetlands and other protected areas
- Archaeological and historical resources
- Land development constraints
- Telecommunications interference
- Aviation considerations
- Visual, aesthetics impacts
- Identify and discuss other potential barriers

The Japonski Island Boathouse Project site is already fully developed, and was an industrial area of the Sitka Naval Operating Base during World War II.

The overall project is a historical preservation project, and so has been developed through working closely with the state of Alaska Historic Preservation Office, the State Office of History and Archaeology, and the National Park Service. The entire project site is within a National Historic Landmark, and so excavation will be monitored, but since it is under the beach, historic resources are unlikely to be found. This project will be submitted for approval to the SHPO. The overall project has been developed in close association with SHPO and approved at every stage.

The scope of the field for the hybrid ground source heat pump installation will be within the existing marine railway area. Environmental or land use conflicts with threatened or endangered species and habitat issues should not arise due to the developed nature of the site. Wetlands delineation was performed on the site and no wetlands were present. Since the majority of the proposed hybrid ground source heat pump system at the Japonski Island Boathouse is concealed below grade or within the existing building, there will be no visual or aesthetic impacts. The proposed hybrid ground source heat pump system is a closed loop system so environmental impacts are minimal. Any subtidal excavation in this area will avoid herring spawn season in early spring.

4.4 Proposed New System Costs and Projected Revenues

(Total Estimated Costs and Projected Revenues)

The level of cost information provided will vary according to the phase of funding requested and any previous work the applicant may have done on the project. Applicants must reference the source of their cost data. For example: Applicant Records or Analysis, Industry Standards, Consultant or Manufacturer's estimates.

4.4.1 Project Development Cost

Provide detailed project cost information based on your current knowledge and understanding of the project. Cost information should include the following:

- Total anticipated project cost, and cost for this phase
- Requested grant funding
- Applicant matching funds - loans, capital contributions, in-kind
- Identification of other funding sources
- Projected capital cost of proposed renewable energy system
- Projected development cost of proposed renewable energy system

Total Anticipated Project Cost = \$150,000

Total Project Cost through Design and Permitting = \$ 40,000

Total Project Cost for Construction, Commissioning, Operating = \$110,000

Requested Grant Funding = \$125,000

Applicant Matching Funds = \$25,000

Other Funding Sources = grants and private fund raising by Sitka Maritime Heritage Society

Projected Capital cost of Proposed Renewable Energy System = \$150,000

Projected Development Cost of Proposed Renewable Energy System = \$_____

4.4.2 Project Operating and Maintenance Costs

Include anticipated O&M costs for new facilities constructed and how these would be funded by the applicant.

(Note: Operational costs are not eligible for grant funds; however grantees are required to meet ongoing reporting requirements for the purpose of reporting impacts of projects on the communities they serve.)

The projected operating and maintenance costs for the proposed hybrid ground source heat pump system at the Japonski Island Boathouse are \$_____; \$3380 for electricity and \$_____ for routine maintenance.

4.4.2 Project Operating and Maintenance Costs continued

Heat pump system is projected to decrease annual energy costs 118% and 164% when compared with electric and oil heat systems, respectively. Grant funding for operations and maintenance of the hybrid ground source heat pump system at the Japonski Island Boathouse is not requested. Operations and maintenance of the system will be funded

from facility revenue.

4.4.3 Power Purchase/Sale

The power purchase/sale information should include the following:

- Identification of potential power buyer(s)/customer(s)
- Potential power purchase/sales price - at a minimum indicate a price range

Proposed rate of return from grant-funded project

This project does not provide the opportunity to purchase or sell electrical power.

4.4.4 Project Cost Worksheet

Complete the cost worksheet form which provides summary information that will be considered in evaluating the project.

Download the form, complete it, and submit it as an attachment. Document any conditions or sources your numbers are based on here.

See attached cost worksheet. Numbers are based on estimates by engineers and contractors in southeastern Alaska who have experience with GSHPs and other heating installations.

SECTION 5 - PROJECT BENEFIT

Explain the economic and public benefits of your project. Include direct cost savings, and how the people of Alaska will benefit from the project.

The benefits information should include the following:

- Potential annual fuel displacement (gal and \$) over the lifetime of the evaluated renewable energy project
- Anticipated annual revenue (based on, i.e., a Proposed Power Purchase Agreement price, RCA tariff, or cost based rate)
- Potential additional annual incentives (i.e., tax credits)
- Potential additional annual revenue streams (i.e., green tag sales or other renewable energy subsidies or programs that might be available)
- Discuss the non-economic public benefits to Alaskans over the lifetime of the project

The proposed hybrid ground source heat pump system is projected to save \$117,500 to \$170,000 in energy costs when compared with conventional electric and oil heat systems over a 25 year period. It is projected that a conventional oil heat system will require 67,500 gallons of fuel oil to meet the Japonski Island Boathouse's annual heating load.

Over a 25 year period, the proposed hybrid ground source heat pump system will eliminate the consumption of 67,500 gallons of fuel.

The proposed hybrid ground source heat pump system is projected to reduce annual energy expenditures approximately \$6761 to \$4720 when compared to conventional electric and oil heat systems, respectively. While the project does not generate revenue through the generation of electrical power, the ability of the ground source heat pump

system to meet the heating needs of the Japonski Island Boathouse utilizing an inexpensive renewable energy resource will save the City and Borough of Sitka and local residents a considerable sum.

In the best case scenario, if this project proves economical and efficient and many homeowners, businesses, and public infrastructure switch to tidelands GSHP instead of electric resistance heat, we will extend the time before the city has to go to diesel augmentation of its hydro-electric generation. If more buildings switch from oil heat, it will save tons of pollution and expense.

The City and Borough of Sitka is not aware of additional annual incentives or revenue streams that might be available due to the use of the proposed ground source heat pump system, but with the increasing focus on energy independence, such additional benefits may soon become available. As owner of the Japonski Island Boathouse, the City and Borough of Sitka will continue to monitor these opportunities in an effort to enhance the facility's cost recovery efforts.

Monitoring equipment will be installed to monitor efficiency, and a thorough accounting will be made of all costs of the project. This project provides an opportunity for the City and Borough of Sitka staff and public to learn a great deal about the economic sustainability and viability of ground source heat pumps and particularly ones using a horizontal field in the tidelands. This project could help change the way the City and Borough of Sitka and the private sector address the heating needs of future facilities. The renewable nature of this plentiful energy resource is especially attractive to Sitka residents who periodically experience, albeit temporarily, economic hardship due to the loss of inexpensive hydroelectric power. Likewise, the recent experiences of nearby Juneau, which temporarily lost its hydroelectric power, and had to absorb and pass on the costs of diesel power to generate electricity, have served to emphasize the importance of developing resources like the hybrid ground source heat pump system. Just as those hardships brought greater awareness among all ages as to the importance of energy conservation, the use of ground source heat pumps at the Japonski Island Boathouse could bring greater enlightenment regarding alternative renewable energy sources. The lessons learned from the construction and operation of the proposed hybrid ground source heat pump system will invariably increase local familiarity with the technology and should reduce construction costs of future projects.

In addition to the great educational benefit to be derived from the proposed project, the environmental benefit of eliminating the consumption of 67,500 gallons of fuel oil over 25 years of facility operation are staggering. From the elimination of environmental hazards associated with oil extraction, to elimination of the environmental hazards associated with transporting refined product and then storing it on-site, to the elimination of the air pollution associated with its combustion, it makes the project worthwhile even if the ground source heat pump system wasn't providing an economic benefit.

If this project shows that this type of installation is indeed economical it could dramatically reduce energy needs in the region, saving money and the environment.

SECTION 6 - SUSTAINABILITY

Discuss your plan for operating the completed project so that it will be sustainable. Include at a minimum:

- Proposed business structure(s) and concepts that may be considered.**
- How you propose to finance the maintenance and operations for the life of the project**
- Identification of operational issues that could arise.**
- A description of operational costs including on-going support for any back-up or existing systems that may be required to continue operation**

Commitment to reporting the savings and benefits

The Japonski Island Boathouse is being rehabilitated and will be run by the non-profit group Sitka Maritime Heritage Society, which has developed an in-depth analysis of potential operating strategies to maximize cost recovery at the renovated facility. The use of a hybrid ground source heat pump system to meet the heating needs of the facility dovetails with the Sitka Maritime Heritage Society's analysis by substantially reducing the energy costs associated with operation of the facility. A copy of the Sitka Maritime Heritage Society's operational analysis for the Japonski Island Boathouse is attached to this application.

In brief, operational costs will come from rental of the haul out and use of the workshop, classes, an entry fee for visitors, a future kayak storage and launching float revenue, a sublease to Delta Western for a marine fuel dock (at \$50,000 to \$75,000/annually), other space rentals.

The remainder of construction, which includes many elements essential to this heating system, will be funded through grants and fund raising. The SMHS has already raised about a third of the estimated \$1.6 million for complete rehabilitation. These elements include insulation and infiltration barrier, replacing and repairing walls doors and windows, and all new electrical and mechanical systems, including sprinklers and ventilation.

SECTION 7 - READINESS & COMPLIANCE WITH OTHER GRANTS

Discuss what you have done to prepare for this award and how quickly you intend to proceed with work once your grant is approved.

Tell us what you may have already accomplished on the project to date and identify other grants that may have been previously awarded for this project and the degree you have been able to meet the requirements of previous grants.

To date the Sitka Maritime Heritage Society has utilized over \$200,000 in grants to survey, plan and stabilize the building, replace the entire foundation, and a complete, bid-ready design, now at the 95% phase. The SMHS board has a business plan for operation. The SMHS has put a lot of effort into designing the building to be historic and interesting, and self-sustaining.

All of the grants to date have been successfully utilized and reported to complete

satisfaction of the grantors.

SECTION 8 - LOCAL SUPPORT

Discuss what local support or possible opposition there may be regarding your project. Include letters of support from the community that would benefit from this project.

Both the overall rehabilitation project and this ground source heat pump project enjoy strong local support, with no opposition we are aware of.

SECTION 9 - GRANT BUDGET

Tell us how much you want in grant funds. Include any investments to date and funding sources, how much is being requested in grant funds, and additional investments you will make as an applicant.

Include an estimate of budget costs by milestones using the form - GrantBudget4.doc

Provide a narrative summary regarding funding sources and your financial commitment to the project.

We are requesting a grant of \$125,000. The SMHS has already invested over \$200,000 in work on the building and for a complete, bid-ready design. The SMHS has also funded \$10,000 for preparing applications for tidelands permits and conveyance.

Funding so far has come from: Certified Local Government and other Historic Preservation Fund grants; the National Trust for Historic Preservation; Save America's Treasures; National Scenic Byways; the Rasmuson Foundation; and Tourism Cares for Tomorrow. Future funding for construction includes the Save America's Treasures grant already secured, and potential funding from the Alaska State Legislature, the federal Department of Agriculture Rural Development Association, and private foundations and individuals.