

Agency: Commerce, Community and Economic Development**Grants to Municipalities (AS 37.05.315)****Grant Recipient: Tenakee Springs****Federal Tax ID: 92-0048310****Project Title:****Project Type: New Construction and Land Acquisition**

Tenakee Springs - Indian River Hydroelectric Project

State Funding Requested: \$312,000
One-Time Need**House District: Juneau Areawide (31-32)****Brief Project Description:**

Construct a new 180 kilowatt run-of-river hydroelectric project on Indian River approximately one mile east of Tenakee Springs. The hydro project will supply approximately 90% of the city's electricity, reducing diesel use by 31,400 gallons annually and lowering electric rates to residents and businesses.

Funding Plan:

Total Project Cost:	\$3,674,000
Funding Already Secured:	(\$354,000)
FY2014 State Funding Request:	<u>(\$312,000)</u>
Project Deficit:	\$3,008,000

Funding Details:

2009 - \$100,000 Denali Commission grant plus \$25,000 city funds for feasibility study and to start permitting.

2011 - \$203,000 Round 4 Renewable Energy Grant Program and \$26,000 city funds to complete permitting and final design.

2013 - Applied for \$2,988,000 in construction funds from Round 6 Renewable Energy Grant Program. AEA recommended full funding (AEA ranked this project #1 state-wide). The city has also committed \$20,000 as in-kind services for the project.

Detailed Project Description and Justification:

A hydroelectric project at Indian River was first studied in the early 1980s, and a city-funded feasibility study was completed in 1993. At the time, the city did not further pursue the hydro project due to the affordability of diesel fuel. In 2008, the city decided to pursue the hydro project to escape spiraling fuel and electricity costs. Since then, the city has completed a new feasibility study, conceptual designs, and will have final designs and all permits for the project in place by April 2013. The 131-person community has spent \$51,000 and committed \$20,000 more to the project.

The run-of-river hydro project will divert up to 50 cubic feet per second (cfs) from Indian River above waterfall #4 at a headwater elevation of 121 feet. The water will be conveyed to the powerhouse via a 1,550 foot long 36-inch penstock. The powerhouse will be located below waterfall #2 with a tailwater elevation of 58 feet for a gross operating head of 63 feet and net head of 56 feet. The rated capacity of the turbine-generator set will be 180 kW. Electricity will be transmitted to Tenakee Springs via a 4,200 foot long mostly underground three phase 7.2 kV power line. The power line will connect to the existing distribution system near the small boat harbor.

The hydro project is co-located with a series of fish passes the U.S. Forest Service (USFS) built in Indian River over the past 15 years to establish a Coho run. The city worked closely with the USFS and Alaska Department of Fish and Game (ADFG) to design the hydro so it is compatible with the fishery. The city designed the hydro diversion structure to enhance

function of the existing fish pass at waterfall #4. The hydro project will maintain in-stream flows in Indian River for fish migration through the bypass reach.

The hydro project will supply approximately 90% of the community's electricity, displacing approximately 31,400 gallons of fuel annually. The existing diesel power plant, upgraded in 2006, will supplement the hydro during low water periods. The hydro project will also provide a significant amount of excess energy that is available for space heating and/or load growth. Space heating of community buildings can displace an additional 6,500+ gallons of heating fuel annually. This project will lower electric rates from current 50 to 60 cents per kilowatt-hour (kwh) down to 20 to 30 cents per kWh. This will encourage economic development in the community, boosting local residency and sustainability by making the community a more affordable and better place to live, work and raise families.

Project Timeline:

2013 - Construct trails and access roads for project. Order long-lead equipment (turbine, generator, etc.)

2014 - Complete balance of construction. Includes diversion structure, 1,550-foot penstock, powerhouse, 4,200 foot power line extension.

Operational date is fall 2014.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Tenakee Springs Electric Department.

Grant Recipient Contact Information:

Name: Don Pegues
 Title: Mayor (ex-officio)
 Address: W. Tenakee Trail (PO Box 52)
 Tenakee Springs, Alaska 99841
 Phone Number: (907)736-2207
 Email: citytke@gmail.com

Has this project been through a public review process at the local level and is it a community priority? Yes No



PROJECT SUMMARY

The City of Tenakee Springs is developing a 180-kW run-of-river hydro project at Indian River, approximately one mile east of the City. The hydro project will meet 86.2% of the City's current electric demand, significantly reducing the community's fuel consumption and lowering electric rates in the community.

A hydroelectric project at Indian River was first studied in the 1980s and 1990s, but it was not pursued because of the availability of affordable diesel for electrical power generation. Increasing diesel costs forced the City to reconsider the project in recent years. A new feasibility study was completed in 2009, indicating the project was technically, environmentally, and economically feasible. Since then, the City has nearly completed permitting for the project, and will have all permits in place and final construction plans ready for the 2013 construction season. Contingent upon receipt of necessary funding, the City plans to construct access roads and trails to the project site in 2013, and construct the balance of the project in 2014.

Work on this project has been funded through a combination of city, state, and federal funds, as well as in-kind labor and services contributed by community members.

- The feasibility study, conceptual design, and initial permitting was funded by a \$100,000 Denali Commission grant and \$25,000 in city funds. The grant was managed by the Alaska Energy Authority (AEA).
- Final permitting and design is funded by a \$203,000 state grant (Round 4 Renewable Energy Grant Program [RE Program]) and \$26,000 in city funds.
- The estimated construction cost of the hydro project is \$3,320,000. The City applied for a \$2,988,000 grant for project construction in Round 6 of the RE Program, with \$332,000 in matching funds. The AEA has recommended the construction grant for full funding, and ranked the project #1 state-wide.
- The City is requesting a \$312,000 municipal grant to provide the matching funds for the City's pending RE Program grant application.

Technical data for the hydro project is summarized in Table 1, and current permitting status is summarized in Table 2. Figure 1 shows the project area and layout.



Table 1: Summary of Project Technical Data

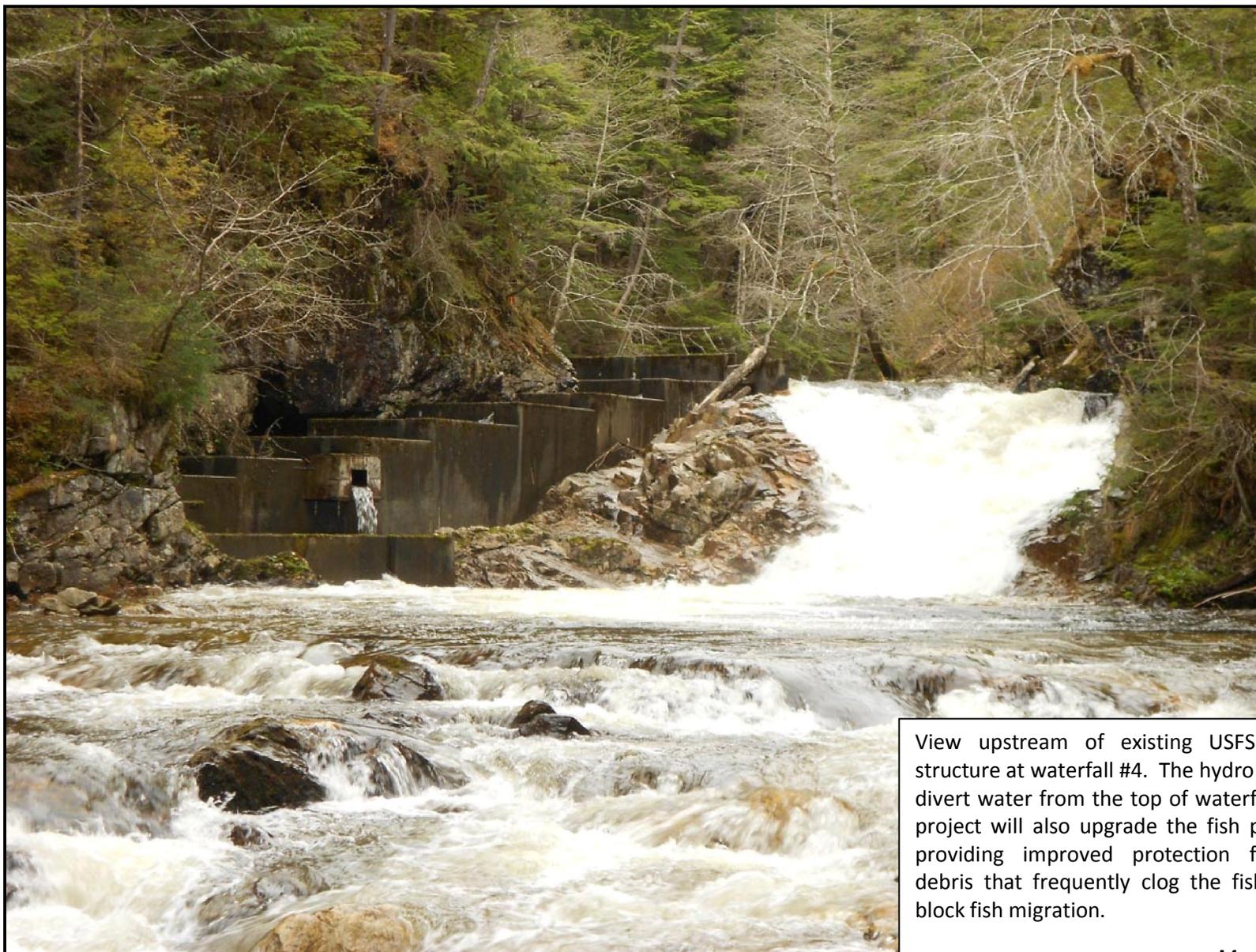
INDIAN RIVER HYDROELECTRIC PROJECT SUMMARY	
Static Head	63 feet
Design Flow	50 cubic feet per second
Penstock	1,534' of 36" Pipe
Total Dynamic Head	56 feet
Turbine Type	Cross-flow Turbine
Installed Capacity	180 kW
Plant Capacity Factor	76.2%
Estimated Annual Hydroelectric Energy Generation	1,169,000 kWh
Existing Typical Annual Utility Energy Demand	433,000 kWh
Percent of Utility Load Supplied by Hydro	86.2%
Transmission	4,014 feet of Three-phase 7.2kV buried cable
Pre-Construction Costs	\$ 354,000
Estimated Direct Construction Cost	\$2,560,000
Estimated Construction Engineering, Administration, Management	\$ 320,000
Contingency (15%)	\$ 440,000
Estimated Total Installed Cost	\$3,674,000
Annual Displaced Diesel Fuel for Utility	31,400 gallons
Continuing Annual Diesel Consumption for Electrical Generation	3,500 gallons
Annual Displaced Fuel for Heating Applications	6,500 gallons
Net Present Value of Displaced Fuel & Project Benefits	\$5,090,000
Net Present Value of Project Capital and Annual Costs	\$3,180,000
Benefit – Cost Ratio	1.60
<i>Calculated with 2012 AEA Renewable Energy Financial Model</i>	

Major permit applications for the project were filed in August 2010, and most major permits have been issued. Issuance of outstanding permits is expected in early 2013. The current status of major permits for the project are tabulated below.

Project maps and photographs of the project site are included on the following pages.

Table 2: Status of Project Permits

INDIAN RIVER HYDROELECTRIC PROJECT PERMITTING STATUS		
Permit / Decision	Status	Schedule
Jurisdictional Determination <i>Federal Energy Regulatory Commission</i>	FERC has ruled that the project is Non-Jurisdictional	FERC Order Issued May 26, 2010
Wetlands Permit <i>U.S. Army Corps of Engineers</i>	Application filed 8/2010, multiple supplemental submittals to clarify project. USACE currently awaiting applicant response to USFWS and SHPO comments.	Expected Issuance first quarter 2013
Easements <i>Alaska Dept. of Natural Resources</i>	Application filed 8/2010. ADNR Case #ADL 108047. Early Entry Authorization issued.	Issued 9/11/2012
Water Rights <i>Alaska Dept. of Natural Resources</i>	Application filed 8/2010. ADNR Case LAS #27836. Water use permit issued.	Issued 8/7/2012
Coastal Zone Consistency Determination <i>Alaska Dept. of Natural Resources</i>	Application filed 8/2010. Coastal Management Program has been terminated, no longer applicable.	Not required
Fish Habitat Permit <i>Alaska Dept. of Fish and Game</i>	Application filed 8/2010. Habitat permit issued, #FH11-I-0125	Issued 12/15/2011
Access Agreement <i>U.S. Forest Service</i>	Coordinating with USFS on legal structure for long term access to project. Road Use Permit will be used in interim.	Expected issuance in first quarter 2013



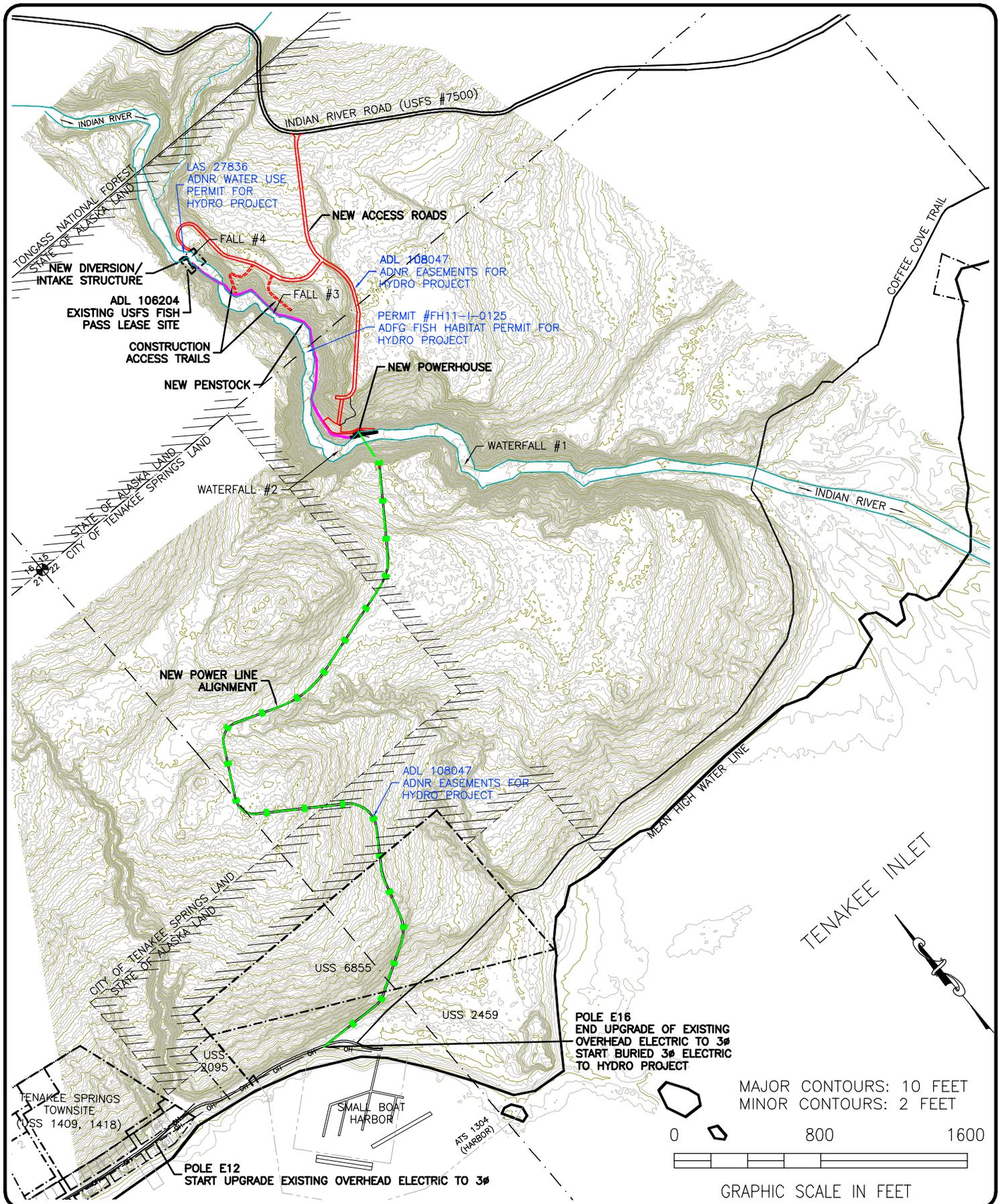
View upstream of existing USFS fish pass structure at waterfall #4. The hydro project will divert water from the top of waterfall #4. The project will also upgrade the fish pass intake, providing improved protection from flood debris that frequently clog the fish pass and block fish migration.

May 17, 2012.



View of the powerhouse site looking upstream. Waterfall #2 is visible in the distance. The powerhouse will be located on the right side of Indian River (red box).

April 20, 2011.



DATE: 1/30/13
 DESIGNED: JDG
 DRAWN: JDG
 CHECKED:
 SCALE: AS NOTED
 FILE: TKEDES2

DRAWING
PROJECT MAP

polarconsult alaska, inc.
 ENERGY SYSTEMS • ENVIRONMENTAL SERVICES • ENGINEERING DESIGN
 1503 WEST 33RD AVE, SUITE 310 PHONE (907) 258-2480
 ANCHORAGE, ALASKA 99503 FAX (907) 258-2419

PROJECT
INDIAN RIVER HYDROELECTRIC PROJECT
CITY OF TENAKEE SPRINGS, ALASKA

FIGURE
1
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**City of Tenakee Springs
RESOLUTION 2013-06**

In the Council
January 26, 2012

Introduced by
Council President

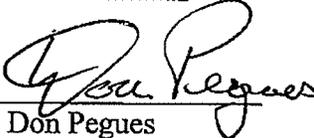
A RESOLUTION FOR THE CITY OF TENAKEE SPRINGS, ALASKA APPROVING
THE ATTACHED LIST OF CAPITAL PROJECTS TO BE SUBMITTED TO THE
LEGISLATIVE CAPSIS PROGRAM FOR FY14.

WHEREAS, The City of Tenakee Springs, Alaska wishes to participate in the FY14
CAPSIS program and;

WHEREAS, The City has conducted public meetings to obtain input on needed capital
projects for the community and;

THEREFORE BE IT RESOLVED that the City Council of Tenakee Springs, Alaska, that
the attached list reflects the approved priority list of the community
projects for FY14.

ADOPTED THIS 5^{days, 0^{mins}} DAY 26th OF 2013


Don Pegues

City Council President
Ex officio MAYOR

ATTEST:


Merri-Grace Allred
City Clerk



F/Y 14 CAPSIS Projects

Tenakee Springs

Project Priorities:

1. \$300,000.00 Grant Matching Funds- Indian River Hydro Project.
2. \$236,000.00 Tenakee Heliport Repair/Replacement
3. 250,000.00 Preliminary Project Costs For Proposed New Public Safety Building.

City of Tenakee Springs

RESOLUTION 2011-02

In the Council
August 26, 2010

Introduced by
Art Bloom

A RESOLUTION FOR THE CITY OF TENAKEE SPRINGS, ALASKA, AUTHORIZING AN AEA GRANT APPLICATION

WHEREAS, the City of Tenakee Springs desires assistance in funding the study, design, development, and construction of a hydroelectric project on Indian River; and

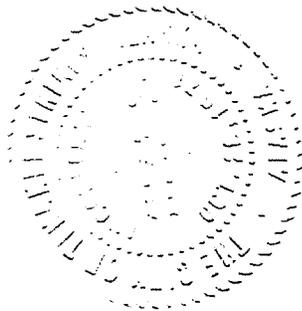
WHEREAS, the Alaska Energy Authority (AEA) is accepting grant applications for the fiscal year 2012 funding round of the Renewable Energy Grant Program, due on September 15, 2010; and

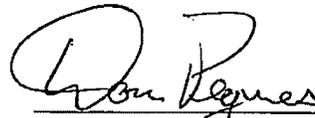
WHEREAS, the City qualifies to receive funding from the Grant Program;

THEREFORE BE IT RESOLVED that the Common Council of the City of Tenakee Springs, Alaska, to agree and affirm the following:

1. The Council commits to providing the matching resources for the project as specified in the grant application, and
2. The Council hereby authorized Arthur Bloom to sign the grant application, and to commit the City to the obligations under the grant,
3. The Council designated Arthur Bloom as the point of contact to represent the City for purposes of the grant application,
4. The Council certifies that the City is in compliance with federal, state, and local laws including existing credit and federal tax obligations.

ADOPTED Four ayes, Three absent THIS 26th DAY OF AUGUST 2010 .




Don Pegues
City Council President
ex officio MAYOR

ATTEST:


Lisa Speno
City Clerk

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City of Tenakee Springs

RESOLUTION 2008-14

In the Council
January 31, 2008

Introduced by
Art Bloom

A RESOLUTION FOR THE CITY OF TENAKEE SPRINGS, ALASKA, IN SUPPORT OF APPLICATION TO THE ALASKA ENERGY AUTHORITY'S ALASKA ALTERNATIVE ENERGY PROJECTS GRANT PROPOSAL PRECONSTRUCTION PROGRAM

WHEREAS, The Alaska Energy Authority has a program entitled the Alaska Alternative Energy Projects Grant Proposal Preconstruction Program; and

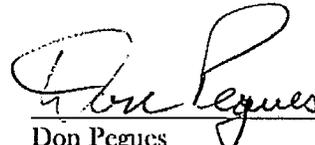
WHEREAS, The City Council authorizes an application for project funding; and

WHEREAS, The City Council authorizes Arthur Bloom to represent the applicant; and

WHEREAS, The City of Tenakee Springs is in good standing with respect to state and federal tax obligations;

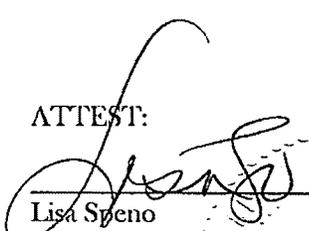
THEREFORE BE IT RESOLVED that the City of Tenakee Springs hereby grants to Art Bloom the authority to represent the City of Tenakee Springs in preparing a grant application for the above mentioned program.

ADOPTED 5 yes 0 nay THIS 31st DAY OF Jan-2008



Don Pegues
City Council President
Ex officio MAYOR

ATTEST:



Lisa Speno
City Clerk

