

ALASKA LEGISLATURE COMMITTEE FILES 2007-2008 SRES 12660

Hydroelectric power, Alaska's largest source of renewable energy, supplies 24 percent of the state's electrical energy. Currently, 27 hydro projects provide power to Alaska utility customers, ranging in size from the 105 kW Akutan hydro project in the Aleutians to the 126 MW state-owned Bradley Lake project near Homer, which supplies 8% of the Railbelt's electrical energy. An additional 20 privately-owned hydro projects are catalogued in the Alaska Energy Authority's database.

Most of the state's developed hydro resources are located near communities in Southcentral, the Alaska Peninsula, and Southeast—mountainous regions with moderate to high precipitation. Outside the Railbelt, major communities supplied with hydropower are Juneau, Ketchikan, Sitka, Wrangell, Petersburg, Kodiak, Valdez, Cordova, and Glenallen.

Like Bradley Lake, the 8 MW Blue Lake project near Sitka is an example of a project that stores energy by impounding water in a reservoir behind a dam. The dam is approximately 145 feet high with a spillway 342 feet above sea level. Water travels from the lake through a 1.3 mile tunnel to the main powerhouse, which discharges water near sea level. The project can store over 100,000 acre-feet of water—enough buffer between inflow and outflow to power Sitka for over a month—and supplies 60 percent of Sitka's average annual power requirements.

Other projects provide hydro storage without dam construction through the natural impoundment of an existing lake. The 31 MW Crater Lake project, part of the state-owned Snettisham project near Juneau, includes a "lake tap" 200 feet below the normal level of the lake that supplies water to a powerhouse at sea level through a 1.5 mile tunnel.

In contrast to projects providing storage, smaller "run-of-river" projects use more modest structures to divert a portion of the natural river flow through turbines to make power. An example is the 824 kW Tazimina project near Iliamna. Here water is diverted through an intake 250 feet upstream from a 100 foot waterfall through a steel pipe to an underground powerhouse. Water is released back into the river near the base of the falls.

Many rural communities located on the Yukon and other large rivers are interested in using river current for generating power. In 2002 Alaska Power and Telephone proposed testing UEK Corporation's 90 kW twin propeller system in the Yukon's 5.5 mph flow near Eagle. The propellers resemble underwater wind turbines anchored under the river's surface. Although funding for this demonstration is not yet available, current efforts directed toward developing tidal energy resources may advance this concept.

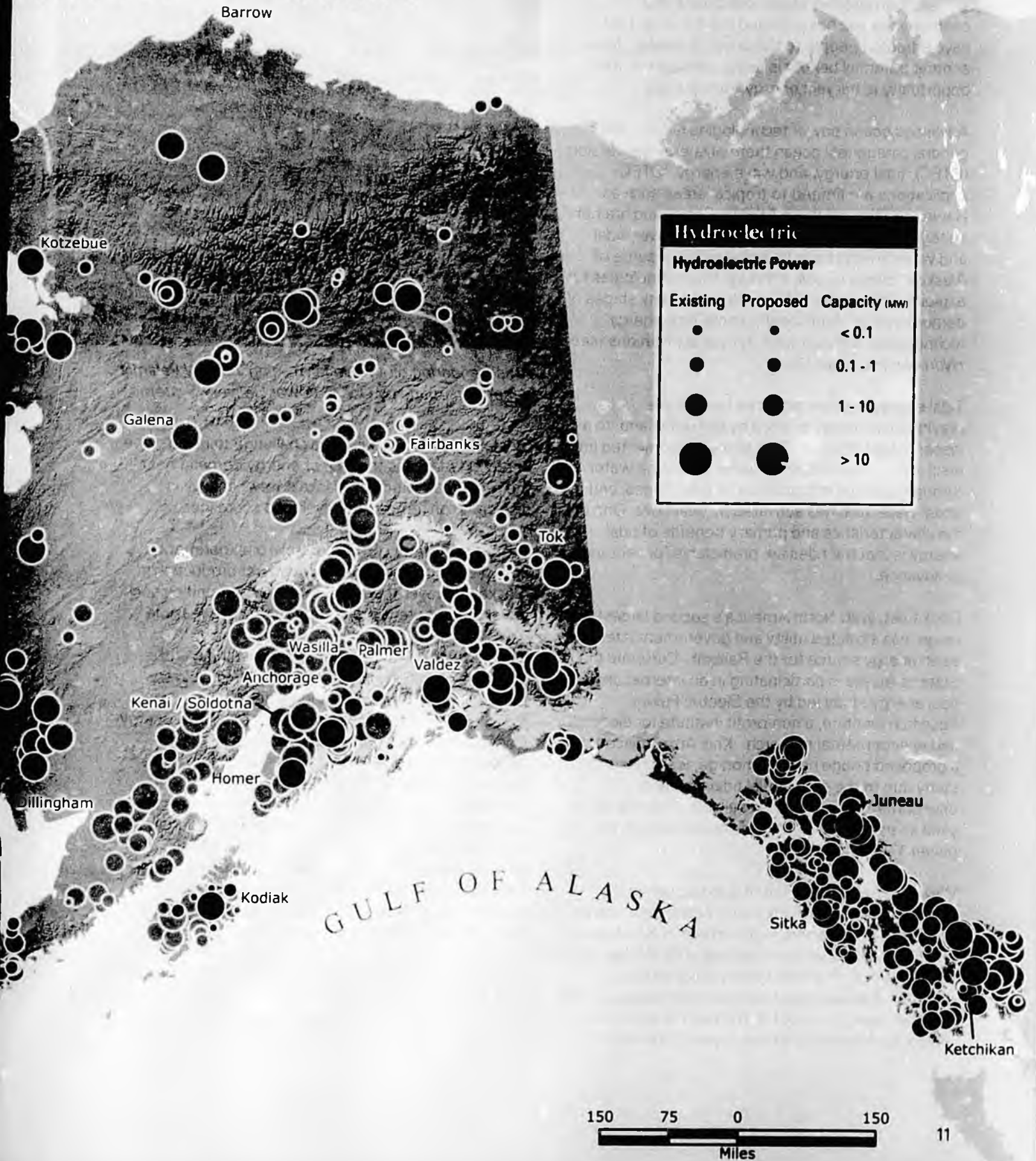


B E R I N G S E A

A L E U T I A N I S L A N D S

Unalaska / Dutch Harbor

ARCTIC OCEAN



Hydroelectric		
Hydroelectric Power		
Existing	Proposed	Capacity (MW)
●	●	< 0.1
●	●	0.1 - 1
●	●	1 - 10
●	●	> 10



Alaska has 34,000 miles of coastline, more than all other states combined. For centuries the sea has provided rich fisheries that have attracted people to the coast of Alaska. Now another potential benefit is being considered: the opportunity to harvest energy from the sea.

Advanced ocean power technologies fall into three general categories: ocean thermal energy conversion (OTEC), tidal energy, and wave energy. OTEC applications are limited to tropical areas such as Hawaii and the southern Atlantic Coast, and are not suited for development in Alaska. However, tidal and wave energy have potential to meet some of Alaska's energy needs, although the technologies for exploiting that potential are still in the early stages of demonstration. Additionally, some tidal energy technologies will also work in river applications (see *Hydroelectric, page 10*).

Tidal energy is a concentrated form of the gravitational energy exerted by the moon and, to a lesser extent, the sun. This energy is converted into electricity in two ways: by dams that force water through turbines at high and low tidal stages, and by underwater turbines activated by tidal flow. One of the characteristics and primary benefits of tidal energy is that the tides are predictable for centuries in advance.

Cook Inlet, with North America's second largest tidal range, has attracted utility and government interest as an energy source for the Railbelt. Currently the State of Alaska is participating in an international tidal energy study led by the Electric Power Research Institute, a non-profit institute for electricity and environmental research. Knik Arm, adjacent to a proposed bridge near Anchorage, was chosen for study due to the substantial tidal flow and environmental data that is available. The site could yield an estimated 17 MW of power, enough to power 17,000 homes.

Wave energy is the result of wind action on the ocean surface. Alaska has one of the best wave resources in the world, with parts of its Southcentral and Southeast coastlines averaging 60 kW per meter of wave front. The total wave power flux on southern Alaska's coast alone is estimated at 1,250 TWh per year, or almost 300 times the amount of electricity Alaskans use every year! Similar to other



Artist rendering of a wave farm using 750 kW Pelamis generators made by Ocean Power Delivery Systems.

renewable energy sources, a challenge to using wave energy in Alaska is the lack of energy demand near the resource. Much of Alaska's wave energy is dissipated on remote, undeveloped shorelines.

There are currently no commercial or experimental applications of wave energy for power production in Alaska, however there are several communities such as Yakutat where wave energy may prove feasible.

One of the first wave power projects in the world is under construction in 2006. Ocean Power Delivery Ltd. of Scotland, an ocean energy device manufacturer, has shipped three Pelamis Wave Energy Converters to Portugal as the first stage in development of a 22.5 MW wave energy farm. The devices are rated at 750 kW each. Once commissioning and testing of the first three devices is complete in the fall of 2006, Portugal plans to order 28 more Pelamis machines to complete the project. The site is 5 kilometers off the coast of northern Portugal, near Povoia de Varzim. Other wave power generation projects are under development off the coasts of Italy, Spain, South Africa and Oregon.

Since most ocean energy technologies are still in the R & D stage, new developments are constantly occurring. While new designs generate electricity, the key to success will be to do so economically.



Marine Current Turbine Ltd

Artist rendering of Marine Current Turbine's tidal energy turbine. This turbine has been tested in saltwater since 2003. A commercial 1MW version is scheduled for installation in 2006 in Britain.



National Geographic Society

Distribution of tidal range. The dark red areas have the highest tidal range and the dark blue areas have the lowest.

Other important issues associated with ocean power development include the ability of state and federal regulators to keep pace with new technology developments, and the inclusion of ocean power in state and federal tax and other incentive programs. Both issues will affect the industry's ability to attract private capital.

Many liken today's ocean power technologies to the wind industry of 25 years ago – the devices "work" but the price of electricity is not yet competitive. However, because the incentives to develop ocean energy are in many ways different than 25 years ago, more investors are betting that the price of ocean energy won't take decades to become competitive.



Lunar Energy Ltd

Artist rendering of Lunar Energy's prototype ducted tidal energy turbine, scheduled for sub-sea testing in 2006.

Although Alaska's northern location presents the challenge of minimal solar energy during the long winter when energy demand is greatest, solar energy fulfills an important role in space heating and off-grid power generation.

Most Alaskans know that careful house design and construction can minimize the use of heating fuel. "Passive solar" design includes proper southern orientation and the use of south facing windows that transfer the sun's energy into the house through natural processes of conduction, convection, and radiation. Passive solar design employs windows, thermal mass, and proper insulation to enable the building itself to function as a solar collector.

"Active solar" heating systems use pumps or fans to move energy to a point of use, such as a domestic hot water tank. A typical home demands a large amount of fuel year-round for domestic hot water, so using the sun to heat water for even seven or eight months a year saves significant amounts of energy. A larger role for active solar hot water systems may emerge as advances in heating

systems allow solar heated fluid to supply in-floor systems currently heated by conventional fuel boilers.

The state's largest utility-connected photovoltaic power system is in the remote community of Lime Village. Placed on line in 2001, the 106-panel hybrid photovoltaic-diesel-battery system can generate up to 12 kW.

Although large utility-scale solar electric projects such as a 64 MW solar thermal plant in Nevada are being built in the Lower 48, significant utility-scale solar generation is unlikely in Alaska due to high capital costs and low yearly solar power output. For off-grid cabin owners, remote government installations, and other places where a relatively small amount of electricity is needed and proven generation options are limited, solar photovoltaics remain an excellent choice. As the price of solar panels continue to drop, more people are likely to consider solar electricity economical, especially if the cost of fossil-fueled electricity continues to rise.



December Average Insolation



June Average Insolation

Nome

Bethel

BERING SEA

Unalaska / Dutch Harbor

ALEUTIAN

ISLANDS

ARCTIC OCEAN

Barrow

Nome

Galena

Ume Village

Wasilla

Palmer

Anchorage

Yakutat

Kenai

Soldotna

Homer

Kodiak

GULF OF ALASKA

Sitka

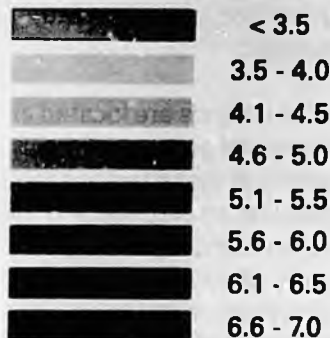
Juneau

Ketchikan

Solar

Annual Average Solar Insolation

kWh/m²/day



Alaska has abundant wind resources suitable for power development. Costs associated with fossil fuels and improvements in wind power technology make harnessing this clean, renewable energy source a growing opportunity for many Alaskans.

The wind map on these pages provides an initial indication of the potential for wind energy development. Wind power density, represented as watts per square meter, is divided into seven power classes. Wind energy feasibility depends on size of electrical load, price of displaced fuel such as diesel or natural gas, foundation cost, and other site-specific variables.

Much of the best winds are located in the western and coastal portions of the state. The winds in these regions tend to be associated with strong high and low pressure systems and related storm tracks. In parts of southwest Alaska, turbines may actually need to be sited away from some of the best winds to avoid extreme gusts and turbulence. In the interior, average wind speeds tend to be much lower, although localized wind resources can be found near elevated terrain or channeled passes like those near Healy and Delta. Katabatic winds, created by variation in air mass temperatures, are found in places like the upper Matanuska Valley and near Seward and Juneau. In parts of Southeast Alaska, offshore locations are promising, but steep terrain and large forested areas limit onshore potential. Site-specific wind resource data has been collected through the Alaska Energy Authority's anemometer loan program.

Wind power technologies being used or planned in Alaska range from small wind chargers at off-grid homes or remote camps, to medium-sized machines displacing diesel fuel in isolated village wind-diesel hybrid power systems, to large industrial turbines greater than 1 MW. On the Railbelt, several of the major utilities are examining wind power as a way to diversify future sources of energy and hedge against rising natural gas prices. Initial studies by Chugach Electric Association and land owner Cook Inlet Region, Inc. at Fire Island west of Anchorage indicate a wind power class 4 to 5. A 50 MW project on Fire Island would provide approximately 3% of the Railbelt's electrical energy.

Alaska's first wind farm, located in Kotzebue in a Class 4 to 5 wind resource, has been displacing a significant portion of the utility's diesel fuel with wind power since 1997. On St. Paul Island in the Bering Sea, the Tanadgusix Corporation (TDX) takes advantage of a Class 7 wind resource to provide electricity, as well as heat produced from excess wind energy, to a large industrial facility. The Alaska Village Electric Cooperative recently installed three 100 kW wind turbines in Toksook Bay that will also provide electricity to the interconnected communities of Nightmute and Tununak. Other wind-diesel projects are underway or planned in several communities including Sand Point, Nikolski, Kasigluk, Hooper Bay, Chevak, Gambell, Selawik, Wales and Savoonga.

Nome

Bethel

BERING SEA

Unalaska / Dutch Harbor

ALEUTIAN

ISLANDS

ARCTIC OCEAN

Barrow

Kotzebue

Galena

Fairbanks

Tok

Wasilla

Palmer

Anchorage

Valdez

Kenai/Soldotna

Homer

Dillingham




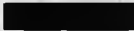



Kodiak

GULF OF ALASKA

Sitka

Juneau

Ketchikan

Wind		
Wind Power Class	Resource Potential	Wind Power Density at 50m Watts/m ²
	Poor	< 200
	Marginal	200 - 300
	Fair	300 - 400
	Good	400 - 500
	Excellent	500 - 600
	Outstanding	600 - 800
	Superb	> 800



State and federal policies that encourage renewable energy projects play an important role in their development.

At the federal level the production tax credit (PTC) is the primary incentive tool. The PTC was passed by Congress to even the playing field between the renewable energy industry and the heavily subsidized fossil fuel and nuclear industries. The PTC currently allows the owners of qualifying renewable energy projects to take 1.9 cents off their tax bill for every kilowatt-hour of renewable energy generated during the first ten years of the project. Though the tax credit is an important part of renewable energy project financing, one criticism of the PTC has been its short term duration. Congress has reauthorized the tax credit a year or two at a time, making it difficult for investors to plan development of renewable energy resources far into the future.

Because there are few other federal policies that support renewable energy development besides the PTC, individual state policies have been the primary drivers of renewable energy development in the United States. The three primary policies used across the country are net metering, renewable portfolio standards, and renewable energy funds. A fourth policy area focuses on state set electrical tariffs being used in countries like Canada, Germany, and Spain.

Net Metering

State net metering rules provide an incentive for individuals and businesses to invest in their own small renewable energy systems by allowing them to sell back into the grid any excess power they produce. Forty states now offer some form of net metering. Different rules in each state determine the



Home near Fairbanks that uses a combination of photovoltaic cells for power, an active solar water heater, and passive solar design.

maximum amount of power an individual can sell back to the utility, the price at which the utility must purchase the power, and the length of time an individual producer can "bank" the power they produce before a "net" bill must be calculated.

Although it is possible for individuals to sell power back in some Alaska utility districts, Alaska does not have a statewide net metering law that would make it much easier to do so.



Alaska Energy Authority

Renewable energy creates jobs for Alaskans

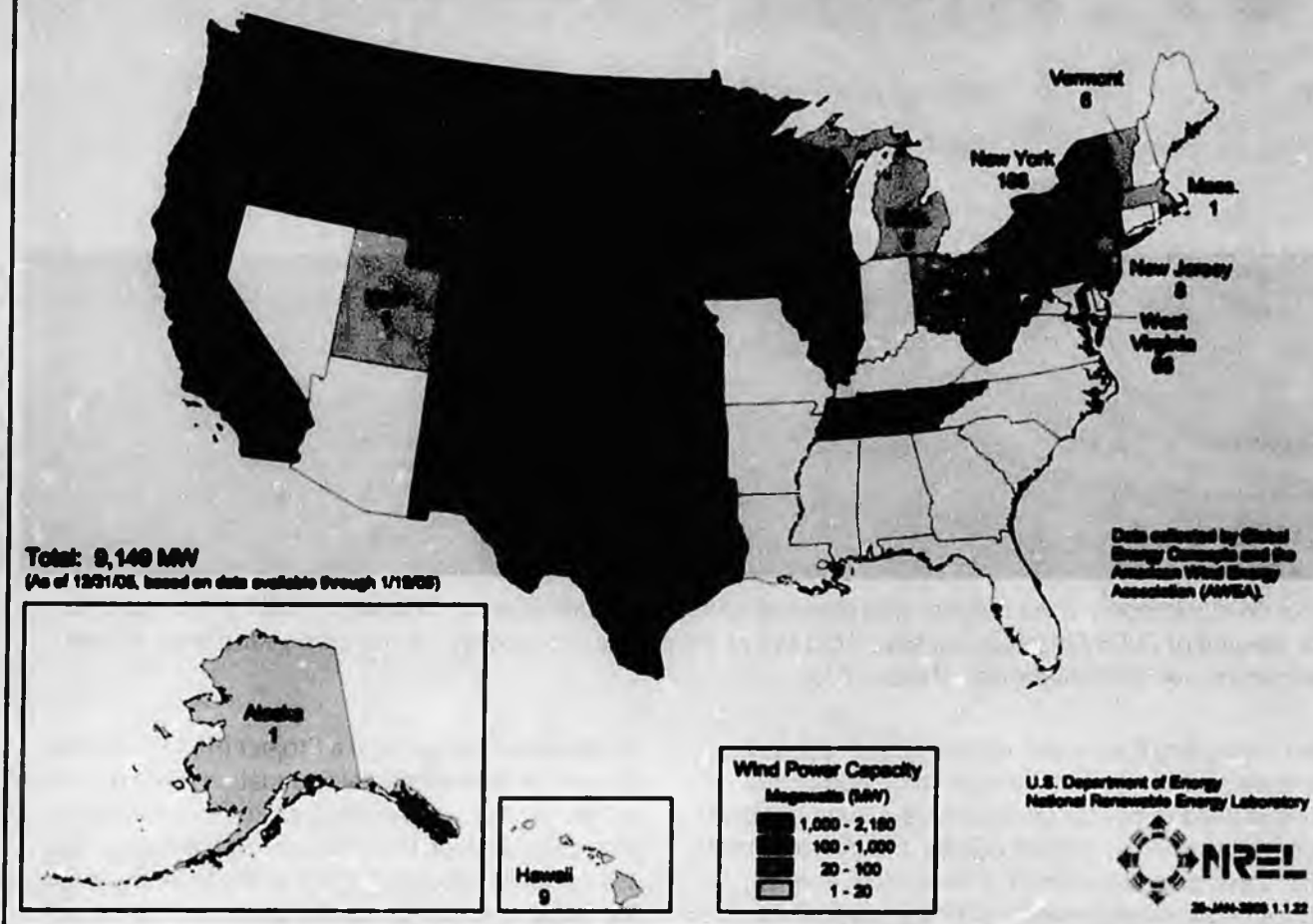
In the Fairbanks area Golden Valley Electric Association (GVEA) has developed the Sustainable Natural Alternative Power (SNAP) program. SNAP allows GVEA customers who wish to support renewable energy development to do so by contributing to a fund that is held in escrow by the utility company.

Individuals in the GVEA service area who want to produce up to 25 kW of renewable electricity for the grid are paid from the escrow fund in proportion to the amount of power they produce.

Renewable Portfolio Standards

Twenty-two states and the District of Columbia now have a policy known as a renewable portfolio standard (RPS). An RPS is a state law that requires utility companies to generate a specified percentage of their electricity from renewable resources by a certain date. For example, Nevada law mandates that investor owned utilities in that state produce 20% of their electricity from renewables by the year 2015. The percentage and the end date range widely across the various states that have an RPS. Utilities are typically given interim milestones, and must pay a fine if they do not reach those milestones. Most states allow utilities to purchase renewable energy credits (RECs) to meet the RPS standard and avoid paying fines. The RPS approach makes different entities and renewable energy resources compete to meet the standard.

United States - 2005 Year End Wind Power Capacity (MW)



Wind is the fastest growing energy sector in the world. The U.S. now ranks second in total installed wind generation capacity behind Germany, although the U.S. still generates less than 1% of its electricity from wind. Denmark already generates over 20% of its electricity from wind, followed by Spain at 8% and Germany at 6%.

Renewable Energy Funds / System Benefit Charges

Fifteen states have renewable energy funds (sometimes called clean energy funds), most of which are supported by small, mill-rated surcharges on energy sold to consumers. These surcharges are sometimes referred to as system benefit charges. Renewable energy funds provide support for the development of renewable energy by helping to remove market barriers, lowering financing costs, developing infrastructure, and educating the public. For example, the system benefit charges in Oregon are deposited into an independent trust that funds eligible wind, solar electric, biomass, small scale hydro, tidal, geothermal, and fuel cell projects. These projects are supported by grants, loans, rebates, equity investments, and other financing mechanisms used by the fund.

Terms of the various funds vary from state to state. Some states have scheduled funds to last only five years. Other states have open-ended funds. Longer-term funds provide greater stability for renewable energy developers. It's estimated that over the next 20 years the combined renewable energy funds of the 15 states will invest about \$4.5 billion in renewable energy generation.

In the states that have both an RPS and a renewable energy fund, the two policies complement each other in stimulating the renewable energy market. RPS standards "pull" renewable energy technologies into a state by providing a long-term market that reduces investment risk and provides a level playing field for developers. On the other hand, renewable energy funds "push" clean energy technologies by lowering market barriers through direct investment incentives



Kotzebue Electric Association

Four 66 kW Integrity wind turbines that make up part of Kotzebue Electric Association's 957 kW wind farm. By the end of 2006 Kotzebue will have 1155 kW of installed wind capacity. In a typical year the wind farm displaces over 100,000 gallons of diesel fuel.

and supporting the infrastructure needed to develop renewable energy. For example, in California, the fund is used to buy down the above-market costs of renewable energy. And of course, the development that takes place as a result of renewable energy funds helps states meet their RPS requirements.

Renewable Energy Credits (RECs)

Utilities recognized years ago that there was a market demand for clean renewable energy when customers agreed to pay more for resources like wind. Today, rather than charging a premium for renewable source power, most utilities sell the social and environmental attributes of renewable energy separately from the actual electrons in the form of certificates. Also known as "green tags," renewable energy certificates (RECs) are essentially the bragging rights that are created when renewable energy is produced. Each REC represents the production of one megawatt hour of renewable energy and the displacement of approximately 1,400 pounds of CO₂ emissions. Buyers of RECs include utilities trying to meet state RPS requirements, as well as a growing number of federal agencies and corporations committed to supporting increased renewable energy production. For example, Fortune 500 company Whole Foods is buying RECs from wind farms to offset 100% of the electricity used in all of its facilities in the United States and Canada.

Renewable Energy Alaska Project (REAP) and the Bonneville Environmental Foundation (BEF) recently joined forces to create the first REC containing renewable energy from Alaska. *Denali Green Tags* are available through the BEF website, and contain the social and environmental attributes from small village wind projects in rural Alaska.



Alaska Volcano Observatory

Steam vent on Kiska Volcano in the Aleutian Islands. Several communities in the Aleutians are considering developing their geothermal resources.

Electricity Feed Laws and Advanced Renewable Tariffs

Electricity feed laws and advanced renewable tariffs (ARTs) are used in a number of European countries and are considered by many to be the world's most successful policy mechanism for stimulating rapid renewable energy development. They give renewable energy producers guaranteed access to the electric grid at a price set by the regulatory authority, giving producers the contractual certainty needed to finance renewable energy projects. They also enable homeowners, farmers, cooperatives and others to participate on an equal footing with large commercial developers of renewable energy. Currently 16 countries in the European Union use some form of feed law.

ARTs are the modern version of Feed Laws. They differ from the simpler feed laws in several important ways. Tariffs are differentiated by technology. (There is one price for wind energy, another price for solar, etc.). Tariffs within each technology can also be differentiated by project size or, in the case of wind energy, by the productivity of the resource. Tariffs for new projects are also subject to periodic review to determine if the program is sufficiently robust. For example, programs are reviewed every two years in France, and every three years in Germany.

The Canadian province of Ontario recently enacted a type of Advanced Renewable Tariff called a Standard Offer Contract. The program offers 11cents/kWh (Canadian) to producers of wind, biomass and small hydro energy and 42 cents/kWh for solar photovoltaic energy. The contracts are for 20 years, and will be adjusted for inflation as time goes on. (This price compares to the 2006 residential retail price for electricity in Ontario of just under \$0.06/kWh). There is no limit to the number of projects that may apply for a contract, but the size of each project is capped at 10 MW. The contracts are available to anyone, including homeowners, businesses and commercial energy producers.

Many commentators are looking to Ontario's new policy to become a model that other North America jurisdictions will follow. Recently the State of Washington passed a modest version of a feed law for small solar projects. It gives businesses and homes with solar photovoltaics a credit of 15 cents/kWh for electricity generated by the PV system. The credit is capped at \$2,000 annually and runs until



Chris Rose, REAP

Hydrogen filling station in Reykjavik, Iceland. Iceland gets 99% of its electricity and over 90% of heat for buildings from its geothermal and hydroelectric resources. Ninety-three percent of Icelanders support the government's goal to be the first nation in the world to replace its use of fossil fuels in autos and boats with hydrogen fuel.

2015. The law also combines economic multipliers to increase the system owner's credit up to 54 cents/kWh if the project's components are manufactured in Washington.

Alaska

Two state documents have recently made policy recommendations calling for the increased development of renewable energy in Alaska. In 2003 the Alaska State Legislature commissioned the Alaska Energy Policy Task Force to develop a long-term energy policy for Alaska. In its written report to the Legislature the Task Force established goals to "promote research, development, and demonstration of clean and renewable energy" and to "promote conservation and energy efficiency across all of Alaska." It also recommended that Alaska "increase the proportion of renewables in long-term fuel sources," including hydroelectric generation.

The 2004 Alaska Rural Energy Plan, which was supported by state and federal agencies, concluded that wind energy development was feasible in a substantial number of rural communities, and recommended an aggressive program of resource assessment and turbine deployment in rural Alaska. The Alaska Energy Authority has begun to implement the plan through its anemometer loan and rural power system upgrade programs.

Absorption Chiller - A device that uses heat energy rather than mechanical energy to cool an interior space through the evaporation of a volatile fluid.

Active Solar - A solar water or space-heating system that uses pumps or fans to circulate the fluid (water or heat-transfer fluid like diluted antifreeze) from the solar collectors to a storage tank subsystem.

Alternative Fuels - A term for "non-conventional" transportation fuels derived from natural gas (propane, compressed natural gas, methanol, etc.) or biomass materials (ethanol, methanol, or biodiesel).

Anemometer - An instrument for measuring the velocity of wind; a wind gauge.

ASTM - Abbreviation for the American Society for Testing and Materials, which is responsible for the issue of many standard methods used in the energy industry.

Availability - Describes the reliability of power plants. It refers to the number of hours that a power plant is available to produce power divided by the total hours in a set time period, usually a year.

Avoided Cost - The incremental cost to an electric power producer to generate or purchase a unit of electricity or capacity or both.

Biodiesel - A domestic, renewable fuel for diesel engines derived from natural oils like fish and vegetable oil; produced by a chemical process which removes the glycerin from the oil and meets a national specification (ASTM D 6751).

Biomass - Organic matter that is available on a renewable basis, including agricultural crops and agricultural wastes and residues, wood and wood wastes and residues, animal wastes, municipal wastes, and aquatic plants.

Bioenergy - Electrical, mechanical, or thermal energy or fuels derived from biomass.

Capacity Factor - The ratio of the average power output of a generating unit to the capacity rating of the unit over a specified period of time, usually a year.

Co-firing - Using more than one fuel source to produce electricity in a power plant. Common combinations include biomass and coal, biomass and natural gas, or natural gas and coal.

Cogeneration - The generation of electricity and the concurrent use of rejected thermal energy from the conversion system as an auxiliary energy source.

Conduction - The transfer of heat through a material by the transfer of

kinetic energy from particle to particle; the flow of heat between two materials of different temperatures that are in direct physical contact.

Convection - The transfer of heat by means of air currents.

Dam - A structure for impeding and controlling the flow of water in a water course that increases the water elevation to create hydraulic head. The reservoir creates, in effect, stored energy.

District Heating System - Local system that provides thermal energy through steam or hot water piped to buildings within a specific geographic area. Used for space heating, water heating, cooling, and industrial processes. A common application of geothermal resources.

Distributed Generation - Localized or on-site power generation, which can be used to reduce the burden on a transmission system by generating electricity close to areas of customer need.

Distribution Line - One or more circuits of an electrical distribution system on the same line or poles or supporting structures, usually operating at a lower voltage relative to a transmission line.

Domestic Hot Water - Water heated for residential washing, bathing, etc.

Electrical Energy - The amount of work accomplished by electrical power, usually measured in kilowatt-hours (kWh). One kWh is 1,000 Watts generated for one hour and is equal to 3,413Btu.

Energy - The capability of doing work; different forms of energy can be converted to other forms, but the total amount of energy remains the same.

Energy Crop - A plant grown with the express purpose to be used in biomass electricity or thermal generation.

Energy Storage - The process of storing, or converting energy from one form to another, for later use. Storage devices and systems include batteries, conventional and pumped storage hydroelectric, flywheels, compressed gas, hydrogen, and thermal mass.

Ethanol - A colorless liquid that is the product of fermentation used in alcoholic beverage, in industrial processes, and as a fuel.

Feedstock - A raw material that can be converted to one or more products.

Fossil Fuels - Fuels formed in the ground from the remains of dead plants and animals, including oil, natural gas, and coal. It takes millions of years to form fossil fuels.

Fuel - Any material that can be burned to make energy.

Fuel Oil - Any liquid petroleum product burned for the generation of heat in a furnace or firebox, or for the generation of power in an engine. Domestic (residential) heating fuels are classed as Nos. 1, 2, 3; Industrial fuels as Nos. 4, 5, and 6.

Generator - A device for converting mechanical energy to electrical energy.

Geothermal Energy - Energy produced by the internal heat of the earth; geothermal heat sources include: hydrothermal convective systems; pressurized water reservoirs; hot dry rocks; manual gradients; and magma. Geothermal energy can be used directly for heating and cooling or to produce electric power.

Head - A measure of fluid pressure, commonly used in water pumping and hydro power to express height that a pump must lift water, or the distance water falls. Total head accounts for friction and other head losses.

Heat Pump - An electricity powered device that extracts available heat from one area (the heat source) and transfers it to another (the heat sink) to either heat or cool an interior space or to extract heat energy from a fluid.

Hybrid System - An energy system that includes two different types of technologies that produce the same type of energy; for example, a wind turbine and a solar photovoltaic array combined to meet electric power demand.

Hydroelectric Power Plant - A power plant that produces electricity by the force of water falling through a hydro turbine that spins a generator.

Hydrogen - A chemical element (H₂) that can be used as a fuel since it has a very high energy content.

Landfill Gas - Naturally occurring methane produced in landfills that can be burned in a boiler to produce heat or in a gas turbine or engine-generator to produce electricity.

Large-scale or Utility-scale - A power generating facility designed to output enough electricity for purchase by a utility.

Load - Amount of electricity required to meet customer demand at any given time.

Meteorological (Met) Tower - A structure instrumented with anemometers, wind vanes, and other sensors to measure the wind resource at a site.

Ocean Energy Systems - Energy conversion technologies that harness the energy in tides, waves, and thermal gradients in the oceans.

Ocean Thermal Energy Conversion (OTEC) - The process or technologies for producing energy by harnessing the temperature differences between ocean surface waters and that of ocean depths.

Organic Rankine cycle - A system that uses a hydrocarbon instead of water as a working fluid to spin a turbine, and therefore can operate at lower temperatures and pressures than a conventional steam process.

Panel (Solar) - A term generally applied to individual solar collectors, and typically to solar photovoltaic collectors or modules.

Passive Solar Design - Construction of a building to maximize solar heat gain in the winter and minimize it in the summer, thereby reducing the use of mechanical heating and cooling systems.

Peak load - The amount of electricity required to meet customer demand at its highest.

Penstock - A component of a hydropower plant; a pipe that delivers water to the turbine.

Photovoltaics (PV) - Devices that convert sunlight directly into electricity using semiconductor materials. Most commonly found on a fixed or movable panel; also called solar panels.

Power - Energy that is capable of doing work; the time rate at which work is performed, measured in horsepower, Watts, or Btu per hour.

Production Tax Credit (PTC) - An incentive that allows the owner of a qualifying energy project to reduce their taxes by a specified amount. The federal PTC for wind, geothermal, and closed-loop biomass is 1.9 cents per kWh.

Radiation - The transfer of heat through matter or space by means of electromagnetic waves.

Railbelt - The portion of Alaska that is near the Alaska Railroad, generally including Fairbanks, Anchorage, and the Kenai Peninsula.

Renewable Resource - Energy sources which are continuously replenished by natural processes, such as wind, solar, biomass, hydroelectric, wave, tidal, and geothermal.

Run-of-River Hydroelectric - A type of hydroelectric facility that uses the river flow with very little alteration and little or no impoundment of the water.

Small-scale or Residential-scale - A generating facility designed to output enough electricity to offset the needs of a residence, farm or small group of farms, generally 250 kW or smaller.

Solar Energy - Electromagnetic energy transmitted from the sun (solar radiation).

Solar Radiation - A general term for the visible and near visible (ultraviolet and near-infrared) electromagnetic radiation that is emitted by the sun. It has a spectral, or wavelength, distribution that corresponds to different energy levels; short wavelength radiation has a higher energy than long-wavelength radiation.

Tidal Power - The power available from either the rise and fall or flow associated with ocean tides.

Transmission Grid - The network of power lines and associated equipment required to deliver electricity from generating facilities to consumers through electric lines.

Turbine - A device for converting the flow of a fluid (air, steam, water, or hot gases) into mechanical motion.

Wave Energy - Energy derived from the motion of ocean waves.

Wind Energy - Energy derived from the movement of the wind across a landscape. Wind is caused by the sun heating the atmosphere, earth, and oceans.

Wind Turbine - A device that converts energy in the wind to electrical energy, typically having two or three blades.

Windmill - A device that converts energy in the wind to mechanical energy that is used to grind grain or pump water.

Wind Power Class - A class based on wind power density ranging from 1 (worst) to 7 (best).

Wind Power Density - The amount of power per unit area of a free windstream.

Wind Resource Assessment - The process of characterizing the wind resource, and its energy potential, for a specific site or geographical area.

UNITS

Ampere - A unit of measure for an electrical current; the amount of current that flows in a circuit at an electromotive force of one Volt and at a resistance of one Ohm. Abbreviated as amp.

Amp-Hours - A measure of the flow of current (in amperes) over one hour.

Barrel (Petroleum) - Equivalent to 42 U.S. gallons (306 pounds of oil, or 5.78 million Btu).

British Thermal Unit (Btu) - The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories.

Cord (of Wood) - A stack of wood 4 feet by 4 feet by 8 feet.

Gigawatt (GW) - A unit of power equal to 1 billion Watts; 1 million kilowatts, or 1,000 megawatts.

Hertz - A measure of the number of cycles or wavelengths of electrical energy per second; U.S. electricity supply has a standard frequency of 60 hertz.

Horsepower (hp) - A measure of time rate of mechanical energy output; usually applied to electric motors as the maximum output; 1 electrical hp is equal to 0.746 kilowatts or 2,545 Btu per hour.

Kilowatt (kW) - A standard unit of electrical power equal to one thousand watts, or to the energy consumption at a rate of 1000 Joules per second.

Kilowatt-hour (kWh) - A common measurement of electricity equivalent to one kilowatt of power generated or consumed over the period of one hour; equivalent to 3,413 Btu.

Megawatt (MW) - One thousand kilowatts, or 1 million watts; standard measure of electric power plant generating capacity.

Megawatt-hour (MWh) - One thousand kilowatt-hours or 1 million watt-hours.

Milli - A common monetary measure equal to one-thousandth of a dollar or a tenth of a cent.

Quad - One quadrillion Btu. (1,000,000,000,000,000 Btu)

Therm - A unit of heat containing 100,000 British thermal units (Btu).

Terawatt (TW) - A unit of electrical power equal to one trillion watts or one million megawatts.

Tonne - A unit of mass equal to 1,000 kilograms or 2,204.6 pounds, also known as a metric ton.

Volt (V) - A unit of electrical force equal to that amount of electromotive force that will cause a steady current of one ampere to flow through a resistance of one ohm.

Voltage - The amount of electromotive force, measured in volts, that exists between two points.

Watt (W) - Instantaneous measure of power, equivalent to one ampere under an electrical pressure of one volt. One watt equals 1/746 horsepower, or one joule per second. It is the product of Voltage and Current (amperage).

Watt-hour - A unit of electricity consumption of one Watt over the period of one hour.

Watts per Square Meter (W/m²) - Unit used to measure wind power density, measured in Watts per square meter of blade swept area.

References

Common Map Layers

(1) Communities: State of Alaska Department of Commerce, Community, and Economic Development. Community Database Online www.commerce.state.ak.us/dca/commdb/CF_COMDB.htm

(2) Lakes, Streams, and Glaciers: State of Alaska Department of Natural Resources (ADNR) www.asgdc.state.ak.us/metadata/vector/physical/hydro/lk2mil.html

(3) Grayscale Elevation Hillshade Image: Resource Data Inc. The elevation image was developed using a 300 meter digital elevation model from U.S. Geological Survey EROS Alaska Field Office. www.asgdc.state.ak.us/metadata/raster/elev/elev300m.html

(4) Canada and Russia: State of Alaska Department of Natural Resources. www.asgdc.state.ak.us/metadata/vector/physical/coast/canada.html
www.asgdc.state.ak.us/metadata/vector/physical/coast/russia.html

Infrastructure

Average generation from Alaska Electric Power Statistics (with Alaska Energy Balance) 1960-2001, University of Alaska Anchorage Institute of Social and Economic Research, 2003. www.iser.uaa.alaska.edu/Publications/akelectricpowerfinal.pdf

Pie chart from Alaska Electric Power Statistics 1960-2001, and AEA estimates for non-hydro renewables.

(5) Coal, Gas Turbine, and Diesel sites*: Institute of Social and Economic Research (ISER) Alaska Electric Power Statistics (with Alaska Energy Balance) 1960-2001.

(6) Existing Utility Hydroelectric sites: Alaska Energy Authority hydroelectric database. Spatial location and attribute data updated by HDR Alaska Inc. in 2006.

(7) Wind, Solar, Geothermal, and Biomass sites*: Alaska Energy Authority.

(8) Electrical Interties: Interties aggregated from data provided by Alaska Electric Light & Power Company, Alaska Power & Telephone Company, Alaska Village Electric Cooperative, Chugach Electric Association, City of Sitka Electric Department, Copper Valley Electric Association, Four Dam Pool Association, Homer Electric Association, Naknek Electric Association, and Nushagak Cooperative.

(9) Natural Gas Pipelines: ENSTAR Natural Gas Company.

(10) Electric Service Areas: Chugach Electric Association.

(11) Trans-Alaska Pipeline: State of Alaska Department of Natural Resources. www.asgdc.state.ak.us/metadata/vector/trans/pipeline.html

(12) Railroad: State of Alaska Department of Natural Resources. www.asgdc.state.ak.us/metadata/vector/trans/rail2mil.html

(13) Roads: State of Alaska Department of Natural Resources & State of Alaska Department of Transportation. www.asgdc.state.ak.us/metadata/vector/trans/road2mil.html
www.asgdc.state.ak.us/metadata/vector/othermet/akhwysy.html

Biomass

(14) Forested Areas: U.S. Forest Service, U.S. Geological Survey, and State of Alaska Division of Forestry Forest Health Monitoring Clearinghouse. <http://agdc.usgs.gov/data/projects/fhm/index.html#G>
<http://agdcftp1.wr.usgs.gov/pub/projects/fhm/vegcls.txt>

Vegetation classes for the map selected from source dataset classes as follows:
Open forest and tall shrub: Class 10, 15
Mixed spruce and broadleaf: Class 11, 12, 14, 16, 18
Closed spruce: Class 13, 17, 19

(15) Fish Processing Plants*: Alaska Energy Authority. Plant locations are a subset of a fish biodiesel database.

(16) Class I Landfills*: State of Alaska Department of Environmental Conservation.

(17) Sawmills*: Alaska Wood Products Manufacturers Directory, September 2004. Juneau Economic Development Council Wood Products Development Service. www.jedc.org/wood/index.htm

(18) Agricultural Lands: State of Alaska Department of Natural Resources, Division of Agriculture (ADNR). Agricultural lands classified by ADNR from land use plans and private land patented for agricultural use.

Geothermal

(19) Volcanoes: Alaska Volcano Observatory. The locations depicted represent volcanoes without regard to recency of activity. <http://www.avo.alaska.edu/volcanoes/latlong.php>

(20) Wells and Springs by Temperature: Geo-Heat Center State Geothermal Database CD, Geo-Heat Center, Oregon Institute of Technology. <http://geoheat.oit.edu/database.htm>

(21) Potential Geothermal Resources: Idaho National Laboratory. The areas depicted represent regions favorable for the discovery (at shallow depth, less than 1000m) of thermal water of

sufficient temperature for direct-heat applications. It is probable that only small areas of the regions are truly underlain by such thermal water; the regions represent that part of the state that deserves exploration for thermal areas. The regions are defined on the basis of various geothermal and tectonic phenomena such as locations of thermal wells and springs, above-normal heat flow, youthful volcanism, mineralization, and seismicity. <http://geothermal.id.doe.gov/maps/index.shtml>
http://geothermal.id.doe.gov/maps/ak_metadata.htm

Hydroelectric

(22) Existing and Potential Hydroelectric sites: Alaska Energy Authority hydroelectric database. Spatial location and attribute data updated by HDR Alaska Inc. in 2006.

Solar

(23) Solar Insolation: U.S. Department of Energy, National Renewable Energy Laboratory, 1999. The data layer provides annual average daily total solar resource averaged over surface cells of approximately 40 km by 40 km in size www.nrel.gov/gis/data_analysis.html

Wind

(24) Wind Power: AWS Truewind, 2006 & U.S. Department of Energy, National Renewable Energy Laboratory (NREL), 1986.

Three separate datasets were merged to create the wind power layer. In order of display priority these were 1) AWS Truewind 2006 final data for the core of Alaska (200m resolution), 2) AWS Truewind 2006 preliminary data for the Southeastern Panhandle (200m resolution), and 3) NREL 1987 data for the remaining locations. All datasets were clipped to the coastline to remove offshore locations. www.nrel.gov/gis/data_analysis.html
www.awstruewind.com/inner/windmaps/UnitedStates.htm

*For data sources with descriptive point locations the spatial positions were derived by matching the descriptive location to the community location in (1), or were geocoded using the U.S. Geological Survey Geographic Names Information System database.

Alaska

Alaska Energy Authority

www.akenergyauthority.org

Renewable energy resource maps, reports, programs, planning, and financing information.

Alaska Housing Finance Corporation

www.ahfc.state.ak.us

Residential energy efficiency and energy resources library, programs, and financing information.

Renewable Energy Alaska Project

www.alaskarenewableenergy.org

Alaska utilities, businesses, conservation and consumer groups, and Alaska Native organizations with a goal of increasing the production of renewable energy in Alaska.

University of Alaska Fairbanks

Arctic Energy Technology Development Laboratory

www.uaf.edu/aetdl

Promotes research, development and deployment (RD&D) of energy technologies in Arctic regions.

Cooperative Extension Service

www.uaf.edu/coop-ext/faculty/seifert/energy.html

Provides housing technology information to Alaskan homeowners and builders.

Nationwide and Regional

National Renewable Energy Laboratory

www.nrel.gov

USDOE's premier renewable energy research and development lab.

US Department of Energy's Office of Energy Efficiency and Renewable Energy

www.eere.energy.gov

Provides information on federal programs relating to renewable energy and energy efficiency.

Western Governors Association

www.westgov.org/wga/initiatives/cdeac/index.htm

Maintains an advisory committee on clean and diversified energy.

Policies Supporting Renewable Energy

Database of State Incentives for Renewable Energy

www.dsireusa.org

Information on tax incentives, rebate programs, portfolio standards, green power programs and other policies.

Clean Energy States Alliance

www.cleanenergystates.org

Works with clean energy funds across the country to build and expand clean energy markets in the United States.

Biomass

National Biodiesel Board

www.biodiesel.org

National trade association represents the biodiesel industry.

National Biomass Energy Program

www1.eere.energy.gov/biomass

USDOE's biomass energy program.

Pacific Regional Biomass Energy Partnership

www.pacificbiomass.org

Promotes bioenergy development in Alaska, Hawaii, and the Northwest.

Geothermal

Geothermal Resources Council

www.geothermal.org

International association for geothermal education including industry, researchers, and government.

National Geothermal Energy Program

www1.eere.energy.gov/geothermal

USDOE's geothermal energy program.

Ocean

Electric Power Research Institute

<http://www.epri.com/oceanenergy/>

Ocean energy webpage for independent, nonprofit energy research center.

Solar

Alaska Sun

www.alaskasun.org

Alaskans supporting solar energy with link to Solar Design Manual for Alaska.

American Solar Energy Society

www.ases.org

National association dedicated to advancing the use of solar energy.

National Solar Energy Program

www1.eere.energy.gov/solar

USDOE's solar energy website.

Wind

Wind Powering America

www.eren.doe.gov/windpoweringamerica

USDOE's wind energy program.

American Wind Energy Association

www.awea.org

National trade association promoting the development of wind power.

Acknowledgments and Thanks

Text and editing by Alaska Energy Authority (Peter Crimp, Mia Devine, David Lockard, and Reuben Loewen) and Renewable Energy Alaska Project staff (Chris Rose and Hannah Willard). Thanks to the Western Resource Advocates and Northwest Sustainable Energy for Economic Development (NWSEED) for consultation and textual material. Thanks to Rich Seifert, UAF Cooperative Extension Service for solar energy material and to Paul Gipe who provided information on feed laws for the policy section. Special thanks to Robert Glenn Ketchum for photographic support of this project.

Many thanks to Alaska Village Electric Cooperative, the Matanuska-Susitna Borough, and the National Renewable

Energy Laboratory for sharing the cost of developing the recently completed high-resolution wind map for Alaska. Thanks to Golden Valley Electric Association and Homer Electric Association for contributions to printing costs.

Thanks to Alaska Electric Light and Power Company, Alaska Power and Telephone Company, Alaska Village Electric Cooperative, Chugach Electric

Association, Homer Electric Association, City of Sitka Electric Department, Copper Valley Electric Association, Enstar Natural Gas Company, Four Dam Pool Association, Naknek Electric Association, and Nushagak Cooperative for power and natural gas system information for the infrastructure section.

Maps and design by Resource Data, Inc. (Dan Rathert and Matt Johnson).

Special thanks to the Alaska Power Association, Chugach Electric Association, Institute of the North - Arctic Energy Summit, Alaska Village Electric Coop, and TDX Power for covering the printing costs of this publication.

RENEWABLE ENERGY ATLAS OF ALASKA

A Guide to Alaska's Clean, Local and Inexhaustible Energy Resources



Alaska Energy Authority
813 West Northern Lights Blvd. Anchorage, Alaska 99503
Phone (907) 269-3000
Toll Free in Alaska (888) 300-8534
Fax (907) 269-3044
www.akenergyauthority.org



Renewable Energy Alaska Project (REAP)
308 G Street, Suite 218, Anchorage, Alaska 99501
Phone and Fax (907) 929-7770
www.alaskarenewableenergy.org

Jody Simpson

FOR THE RECORD

SB 96

From: mimi peabody [peamore@mtaonline.net]
Sent: Friday, April 13, 2007 11:45 AM
To: Sen. Charlie Huggins
Subject: energy bills
Follow Up Flag: Follow up
Flag Status: Green

Dear Senator Huggins,

I am a resident of the Mat-Su Valley and I strongly support the use of funds to develop a wind farm at Fire Island (SB 44). I am also in favor of HB 152 and SB 96 to put monies into renewable energy. This is an important direction for Alaskans to take and to demonstrate that we can be leaders in reducing green house gas emissions and in reducing pollution. I am also very strongly opposed to my electric company, MEA, building a coal power plant. Thank you for your work and hearing my voice.

Sincerely,

Mimi Peabody

Kathryn Eberhart
PO Box 1006
Palmer, AK 99645
(907) 745 2327

April 13, 2007

The Honorable Charlie Huggins
State Capitol, Rm 119
Juneau AK 99801-1182
Fax: 907-465-3265

Dear Senator Huggins:

I am writing to ask you to support Senate Bill 96 that will establish a renewable energy fund.

SB 96 is an important first step towards encouraging construction of renewable energy resources in Alaska. Our traditional "non-renewable" energy resources have serious problems. Prices of both oil and gas have increased dramatically. Production from Cook Inlet gas wells is declining. Coal, Alaska's other "non-renewable" energy resource, has enormous environmental and human health consequences—which may result in future public costs—as well as likely financial, regulatory, and technological risks related to the effect of Carbon Dioxide emissions on climate change.

SB 96 should also be supported because of the opportunity for a renewable energy fund to help lower rural Alaska's extremely high energy costs.

Making the decision to fund renewable energy projects in Alaska is not a Lone Ranger proposition. These types of projects are increasingly being developed in other states and countries. U.S. Energy Information Administration data shows that, in 2007, new wind generation capacity will come on-line in seventeen states: California, Colorado, Iowa, Idaho, Illinois, Massachusetts, Maine, Michigan, New Hampshire, New Mexico, New York, Oregon, Pennsylvania, South Dakota, Texas, Vermont, and Washington.

I encourage you to strongly support SB 96 and work for a swift passage of this legislation that is important to Alaska's future.

Sincerely,



Kathryn Eberhart



217 Second Street, Suite 200 • Juneau, Alaska 99801
Tel (907) 586-1325 • Fax (907) 463-5480 • www.aml.org

Friday, April 13, 2007

Chairman Charlie Huggins
Members of the Senate Resources Committee
State Capitol
Juneau, Alaska 99801-1182

Dear Chairman Huggins and members of the committee,

We are writing in support of SB 96 – ESTABLISHING A RENEWABLE ENERGY FUND.

The Alaska Municipal League supports renewable energy because it has the potential to lower energy costs in Alaska. This is due to the fact that there are virtually no fuel costs associated with renewable energy. Renewable energy also promotes industry and job creation because it allows for lower operating costs for industry. In addition, communities and citizens (particularly in rural areas) are being crippled by high fossil fuel costs.

In light of the nationwide discussion on Climate Change, we think it is necessary to address this issue, as most small communities in our state utilize diesel for most of their energy needs and we must begin to address emissions on a state-wide level.

AML passed a resolution in support of establishment of a renewable energy fund at our annual meeting on November 17, 2006. That resolution is attached to this letter.

We urge your support of SB 96.

Sincerely,

Kathie Wasserman

Kathie Wasserman, Executive Director
Alaska Municipal League
217 Second Street, Suite 200
Juneau, Alaska 99801
(907) 586-1325

ALASKA MUNICIPAL LEAGUE**Resolution No. 2007-14****A RESOLUTION ESTABLISHING A RENEWABLE ENERGY FUND**

WHEREAS, Alaska possesses vast amounts of renewable energy resources in the form of wind, geothermal, biomass, solar, tidal, wave and hydro power; and

WHEREAS, the Alaska Legislature established the Alaska Energy Policy Task Force in 2003 to review and analyze the state's current and long-term energy needs. The Task Force found that one of Alaska's long-term energy needs is to "identify and evaluate long-term fuel resources; and recommends that the state "increase the proportion of renewables in long-term fuel sources"; and

WHEREAS, there is virtually no fuel costs associated with renewable energy resources; and

WHEREAS, renewable energy technology development promotes both industry and job creation; and

WHEREAS, ISER's December 2005 Research Summary states, "Diesel is the main energy source in remote communities....and in 2004, diesel outside the rail belt cost about 5 times as much per unit of energy as natural gas." Community facilities such as electrical plants, water & sewer services and health clinics use diesel fuel; and

WHEREAS, there are numerous agencies dealing with energy assistance, both federal, state and international specialists. We urge the State to appoint a cabinet level position to coordinate and centralize resources to effectively solve the long-term energy crisis; and

NOW, THEREFORE BE IT RESOLVED, by the Alaska Municipal League, that we request our Alaska State Legislature and Alaska Congressional Delegation to address the energy needs by:

1. Creating a Renewable Energy Fund to finance new utility scale renewable energy projects in Alaska. The Fund shall be funded by general appropriations. The Fund shall be distinct from funds administered by the Alaska Energy Authority.
2. The Fund will conduct a program of energy research, development, demonstration and application.
3. Create a cabinet level position to coordinate efforts and centralize state and federal resources to solve the long-term energy crisis.
4. Creating a revolving loan and grant program to assist individuals, organizations, and businesses in purchasing and installing alternative and renewable energy products.

PASSED AND APPROVED BY THE ALASKA MUNICIPAL LEAGUE on the 17th day of November 2006.

Signed: 

Tim Bourcy, President
Alaska Municipal League

Attest:



Jody Simpson

From: Lisa Parker [LParker@agrium.com]
Sent: Friday, April 27, 2007 11:41 AM
To: Jody Simpson; Sharon Long
Cc: Wendy Lindskoog; Bob Evans
Subject: HB 229

Attachments: Lisa Parker.vcf



Lisa Parker.vcf (532
B)

Jody,

Sharon told me that you are taking over scheduling of Senate Resources Committee meetings while the work continues on AGAI.

Wednesday the House passed HB 229 which authorizes the railroad to issue up to \$2.9 billion in bonds to participate in the Kenai Gasification Project and for a railroad spur line to Port Mackenzie.
The bill passed 35-0.

Agrium would like to see this bill scheduled for hearing in the near future as well as passed the legislature this session. We support the bill that passed the House and would not recommend any changes at this time.

Should you have any questions please contact me.

Thank you,

Lisa

Lisa Parker
Agrium Corporate Relations
907-776-3275 (office)
907-776-5766 (fax)
907-398-1883 (mobile)
1-888-342-1256 (pager)
lparker@agrium.com

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IMPORTANT NOTICE

Jody Simpson

From: Travis Ross [travrossak@yahoo.com]
Sent: Monday, April 30, 2007 9:26 PM
To: Sen. Charlie Huggins
Cc: Deborah Grundmann; Karen Sawyer; Sharon Long; Jody Simpson; Carl McDonald
Subject: Support for Renewable Energy Funding (SB 96 & 44)
Attachments: Support for Statewide Renewable Energy Funding.pdf

Honorable Charlie Huggins and Esteemed Staff,
Please find attached a letter in support of funding for Renewable Energies.
Thank you for your time and thoughtful consideration.

Travis Ross, P.E.
3921 E. 86th Avenue
Anchorage, AK 99507
(907) 274-0629
travrossak@yahoo.com

Ahhh...imagining that irresistible "new car" smell?
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Travis Ross, P.E.
3921 E. 86th Avenue
Anchorage, AK 99507
(907) 274-0629 travrossak@yahoo.com

The Honorable Charlie Huggins
Alaska State Legislature
State Capitol
Juneau, AK 99801

April 27, 2007

RE: SUPPORT FOR RENEWABLE ENERGY FUNDING (SB 96) AND FIRE ISLAND WIND FARM PROJECT (SB 44)

Dear Senator Huggins:

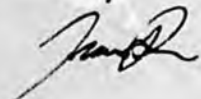
This letter is an expression of firm support for developing and funding renewable energies in Alaska. "With some of the best renewable energy resources in the country, Alaska has an opportunity to be a leader in their development and bring new revenue streams into the State's economy."¹ The House unanimously passed statewide renewable energy funding. I urge you to pass both SB 96 and SB 44 before end of session.

Here are but a few of the reasons for developing Alaska's vast renewable resources:

- **Alaska Has Long Been the National Leader in Energy Production, and We Have the Same Opportunity Toward Renewables:** More than 30 other states have already passed similar legislation. Countless energy companies, nations, and global economies are committing to renewable energies. Developing our vast renewable resources will bring **continued stability, diversification, and competitiveness to our Alaskan economy.**
- **Railbelt Power Affects Most Alaskans and Influences State Economy:** Approximately 70% of the Railbelt's power generation comes from natural gas, which is a hefty number considering that Railbelt power is distributed to 75% of the State's population.
- **Renewable Energies Can Hedge Against Rising Fuel Prices & Finite Supplies of Cook Inlet Gas:** Known reserves of Cook Inlet gas are dwindling: by 2015 demand is expected to exceed supply. Rising fuel prices are already impacting the pocketbooks of all Alaskans. Rural Alaska especially has been decimated by reliance on importing absurdly high priced diesel fuel.
- **Future Federal Carbon Regulations Present Uncertainties for Current Providers:** Electric generation from natural gas and other fossil fuels produces emissions, which are forecast to become increasingly and highly regulated, taxed, or capped in the near future. Stipulations of such regulations represent great uncertainties and financial burdens to power providers.
- **Renewable Energies Have Proven Success in Alaska:** Kotzebue Electric Association, Chena Hot Springs, and a handful of other small scale wind and hydro projects are already reaping the economic and environmental benefits of producing non-fossil fuel power. Renewable energy can provide clean, local, inexhaustible, AND cost-effective power generation.

The House has shown their intent to sedulously protect the future of Alaska's economy. We are now counting on you to carry this legislation forward. Thank you for your time and consideration.

Sincerely,



Travis Ross, P.E.

¹ "Renewable Energy Atlas of Alaska, A Guide to Alaska's Clean, Local, and Inexhaustible Energy Resources," by Alaska Energy Authority (www.akenergyauthority.org) and Renewable Energy Alaska Project (www.alaskarenewableenergy.org). 2006.

SB

103

SENATE COMMITTEE REPORT

First Committee of Referral

DATE: 3/2/07

FURTHER:

Date of 5-Day Notice: _____
(in accordance with Uniform Rule 23)

DATE TURNED
IN TO OFFICE: 4/10/07

Resources Committee considered SENATE BILL NO. 103

SB 103 LAND TRANSFERS ALASKA RR & DOTPF

"An Act authorizing the transfer of land from the Alaska Railroad Corporation to Eklutna, Inc.; and providing for an effective date."

and recommends:

- be replaced with SCS or CS _____ (_____)
- adopt previous SCS or CS _____ (_____)
- attached amendment(s)
- adopt _____ Letter of Intent
- further referral to _____ Committee

SENATE BILL:	
<input type="checkbox"/>	Same Title
<input type="checkbox"/>	New Title
<hr/>	
HOUSE BILL:	
<input type="checkbox"/>	Same Title
<input type="checkbox"/>	Technical Title Change
<input type="checkbox"/>	New Title w/ SCR # _____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#
DCED	3/16/07			✓	

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#

APPROPRIATION - no fiscal note

SIGNATURES AND RECOMMENDATIONS:	PRINTED LAST NAME	Do PASS	Do NOT PASS	No REC	AMEND
	Green	✓			
	FRIEDMAN	X			
	FRIEDMAN	X			
	Wielechowski	✓			
CHAIR:	Huggins	✓			

FISCAL NOTE

STATE OF ALASKA
2007 LEGISLATIVE SESSION

Fiscal Note Number: HB212-COM-ARRC-03-22-07
 Bill Version: HB 212
 () Publish Date: _____

Revision Date/Time (Note if correction): _____ Dept. Affected: Commerce
 Title: Land Transfer Alaska RR and Eklutna RDU _____
 Component: Alaska Railroad Corporation
 Sponsor: Stoltz, Fairclough
 Requester: House Community & Regional Affairs Component No. _____

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL EXPENDITURES						
-----------------------------	--	--	--	--	--	--

CHANGE IN REVENUES ()						
-------------------------------	--	--	--	--	--	--

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--Do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2007) cost: 0.0

Mark this box (X) if funding for this bill is included in the Governor's FY 2008 budget proposal:

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

This legislation transfers the 48-acre rock quarry site in Eagle River, currently owned by the Alaska Railroad Corporation (ARRC), to Eklutna Inc. ARRC is a public corporation supported by revenues generated through its freight, passenger and real estate services. Because ARRC does not receive state funding for operations or capital improvements and is operated as an independent state-owned enterprise, this legislation would not create a fiscal impact for the State.

Prepared by: Wendy Lindskoog, Assistant Vice President, Corporate Affairs Phone 907.265.2498
 Division: Alaska Railroad Corporation Date/Time 3/22/07 7:10 PM
 Approved by: Emil Notti, Commissioner Date 3/22/2007
 Agency: Commerce, Community, and Economic Development

SB 103

Alaska Railroad Transfers Eklutna Quarry to Eklutna, Inc.

48-acre property

Use as a quarry has been the subject of a long-running dispute between ARRC on the one side and the Native Village of Eklutna and the Municipality of Anchorage on the other.

Hills that comprise the quarry have valid historic and cultural significance to the Dena'ina.

ARRC determined that it will not use the Eklutna Quarry again for mining rock and has developed a new quarry site on property it owns near Curry, which is approximately 20 miles north of Talkeetna.

Agreements that resolved ANCSA Native land claims, long ago identified Eklutna, Inc. as the eventual recipient of title to the quarry.

Legislative approval of SB 103 will execute these long-standing agreements and pave the way for ARRC and Eklutna, Inc. to work on future land negotiations that are beneficial to both entities.

All affected parties including proximate community councils are favorably aligned with this measure.

Urge unanimous passage.

Floor talking points for C. H. April 11, 2007

ALASKA STATE LEGISLATURE

Sen. Charlie Huggins, Chair
Sen. Bert Stedman, Vice Chair
Sen. Lyda Green
Sen. Gary Stevens
Sen. Lesil McGuire
Sen. Bill Wielechowski
Sen. Thomas Wagoner



State Capitol, Room 119
Juneau AK 99801-1182
907-465-3878
Fax: 907-465-3265
800-862-3878

Senate Resources Committee

Wednesday April 4, 2007
4:30 p.m. - 5:30 p.m.

AGENDA

- **Governor's Appointments**

Department Commissioners:
Denby Lloyd, Dept. of Fish and Game

Testimony: Listen Only

- **SB 103 - LAND TRANSFERS ALASKA RR & EKLUTNA**

Pat Gamble, Alaska Railroad Corporation, CEO and President

By Teleconference:

Phyllis Johnson, Alaska Railroad Corporation, VP, Legal

Representing Eklutna Inc.:

Curtis McQueen, Corporate Affairs
Jim Arnesen, Corporate Lands and Regulatory Manager
Bill Price (potential), Chief Executive Officer

Representing The Native Village of Eklutna:

Daniel Alex, Tribal Administrator

Testimony: Time Limit May Be Set

SB 103

HOUSE BILL NO. 212

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - FIRST SESSION

BY REPRESENTATIVES STOLTZE, Fairclough

Introduced: 3/21/07

Referred: Community and Regional Affairs, Finance

A BILL

FOR AN ACT ENTITLED

1 "An Act authorizing the transfer of land from the Alaska Railroad Corporation to
2 Eklutna, Inc.; and providing for an effective date."

3 **BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

4 * **Section 1.** The uncodified law of the State of Alaska is amended by adding a new section
5 to read:

6 **APPROVAL OF THE TRANSFER OF REAL PROPERTY TO EKLUTNA, INC.** (a)
7 The Alaska Railroad Corporation is authorized to convey the corporation's entire interest in
8 approximately 48.17 acres, more or less, of rail land located within Township 16 North,
9 Range 1 West, Section 24, lot 9, SW1/4NE1/4, Seward Meridian, to Eklutna, Inc.

10 (b) The conveyance described in this section is made for the purpose of fulfilling the
11 obligations of the State of Alaska established by the North Anchorage Land Agreement and
12 Section 1425, P.L. 96-487, 94 Stat. 2371 (Alaska National Interest Lands Conservation Act)
13 regarding certain property that ceases to be used for mass and bulk transportation purposes
14 and the obligations of the Alaska Railroad Corporation established by the settlement

1 agreement between the Alaska Railroad Corporation and Eklutna, Inc., dated January 8, 1987,
2 regarding Native land claims.

3 (c) This section constitutes legislative approval under AS 42.40.285(1) for the Alaska
4 Railroad Corporation to convey its entire interest in the land described in (a) of this section.

5 * Sec. 2. This Act takes effect immediately under AS 01.10.070(c).

April 4, 2007
Senate Resources Bill Packet

SB 103 "An Act authorizing the transfer of land from the Alaska Railroad Corporation to Eklutna, Inc.; and providing for an effective date."

Enclosures:

Inside front cover: Fiscal Notes

1. SB 103(vs SB0103A)2 pages
2. Sponsor Statement 1 page
3. Quarry Transfer Agreement..... 3 pages
4. ARRC Board Resolution..... 2 pages
5. Q & A)..... 7 pages
6. Historical Summary.....3 pages
7. Photos.....2 pages
8. ANILCA Excerpt.....5 pages
9. NALA Agreement.....4 pages
10. 3 (e) Agreement between ARRC-EI.....4 pages
11. AS 42.40 Excerpt.....6 Pages
12. MOA Conditional Use Permit.....3 Pages
13. NVE Letter of Support.....1 Page
14. Press Clippings.....5 Pages

SENATE BILL NO. 103

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - FIRST SESSION

BY THE SENATE RESOURCES COMMITTEE

Introduced: 3/2/07

Referred: Resources

A BILL

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FISCAL NOTE

STATE OF ALASKA
2007 LEGISLATIVE SESSION

Fiscal Note Number: SB103-COM-ARRC-03-15-07
 Bill Version: SB 103
 () Publish Date: _____

Revision Date/Time (Note if correction): _____ Dept. Affected: Commerce
 Title Land Transfer Alaska RR and Eklutna RDU _____
 Component Alaska Railroad Corporation
 Sponsor Resources
 Requester Senate Resources Component No. _____

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL EXPENDITURES						
-----------------------------	--	--	--	--	--	--

CHANGE IN REVENUES ()						
-------------------------------	--	--	--	--	--	--

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type—Do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2007) cost: 0.0

Mark this box (X) if funding for this bill is included in the Governor's FY 2008 budget proposal:

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

This legislation transfers the 48-acre rock quarry site in Eagle River, currently owned by the Alaska Railroad Corporation (ARRC), to Eklutna Inc. ARRC is a public corporation supported by revenues generated through its freight, passenger and real estate services. Because ARRC does not receive state funding for operations or capital improvements and is operated as an independent state-owned enterprise, this legislation would not create a fiscal impact for the State.

Prepared by: Wendy Lindskoog, Assistant Vice President, Corporate Affairs Phone 907.265.2498
 Division: Alaska Railroad Corporation Date/Time 3/15/07 3:34 PM
 Approved by: Emil Notti, Commissioner Date 3/15/2007
 Agency: Commerce, Community, and Economic Development

SPONSOR STATEMENT

SENATE BILL 103: Alaska Railroad Transfers Eklutna Quarry to Eklutna, Inc.

Senate Bill 103 would authorize the Alaska Railroad Corporation (ARRC) to transfer its entire interest in the Eklutna Quarry site north of Eagle River to Eklutna, Inc., the ANCSA village corporation created for the Eagle River area containing the quarry site.

On February 1, 2007, ARRC, Eklutna Inc. and the Native Village of Eklutna signed an agreement memorializing this land transfer. The agreement allows ARRC to obtain appropriate permits and begin removing stockpiled material in the quarry with a replacement value of approximately \$2 million. All parties understood that legislative approval would be required before ARRC could carry out the land transfer.

This 48-acre property and its use as a quarry has been the subject of a long-running dispute between ARRC on the one side and the Native Village of Eklutna and the Municipality of Anchorage on the other. That dispute culminated in three Alaska Supreme Court decisions, which denied ARRC continued use of the quarry without first obtaining a municipal conditional use permit, and prevented ARRC from obtaining federal approval to use the rock on federally funded projects.

While ARRC has recently obtained local and federal approval to remove the processed material, it is unlikely to ever obtain future permits for new blasting without consent of the Village as tribal representative of the Dena'ina Native people. That consent is highly unlikely because the hills that comprise the quarry have valid historic and cultural significance to the Dena'ina. As a result, ARRC determined that it will not use the Eklutna Quarry again for mining rock and has developed a new quarry site on property it owns near Curry, which is approximately 20 miles north of Talkeetna.

Certain agreements that resolved ANCSA Native land claims long ago identified Eklutna, Inc. as the eventual recipient of title to the quarry. Under the North Anchorage Land Agreement (NALA), and the ARRC-Eklutna 3(e) Claims Settlement Agreement, the Quarry will revert to Eklutna, Inc. when it ceases to be used for certain transportation purposes.

Legislative approval of SB 103 will execute these long-standing agreements and pave the way for ARRC and Eklutna, Inc. to work on future land negotiations that are beneficial to both entities.

**Agreement Regarding Eklutna Quarry
Between
Alaska Railroad Corporation,
Eklutna, Incorporated and
the Native Village of Eklutna**

Dated as of 1/22/2007

Recitals:

The Eklutna Hills have a documented historic cultural use by the Eklutna Natives of major significance.

The Alaska Railroad developed a rock quarry in the Eklutna Hills sometime between 1920 and 1940. The Railroad has used rock from the quarry for railroad and other projects since that time.

The Eklutna Quarry (Quarry) transferred from the Federal Government to the Alaska Railroad Corporation (ARRC) with the purchase of the Railroad by the State of Alaska in 1985.

The Quarry was also identified for eventual transfer to Eklutna, Incorporated (EI) in the North Anchorage Land Agreement (NALA), and was further addressed in the Agreement dated January 8, 1987 between the ARRC and EI resolving native land claims (the "3(e) Agreement").

Because of the cultural significance of the Quarry, the ARRC is not able to use the rock resources on Federal projects. The continued use of the Quarry has also been a matter of considerable dispute between the Native Village of Eklutna and the ARRC.

Pursuant to a Memorandum of Understanding dated December 21, 2005, as amended, (MOU) between ARRC, EI, and the Native Village of Eklutna (NVE), the parties have been working together to develop an agreement to allow the ARRC to transfer control, either by ownership or lease, of the ARRC Eklutna rock quarry site; and to provide for other concerns of the parties.

While the above referenced MOU references other properties and negotiations towards agreements regarding other properties and issues are in progress, this Agreement is specific to the Quarry and the stockpiled materials at the Quarry.

Agreement:

1. The mechanism for transfer of control and title to the Quarry is agreed to as follows: ARRC agrees to transfer title and control of the Quarry to EI as soon as practicable on such further terms and conditions as shall be mutually agreed to by the parties as provided for in the December 21, 2005 MOU. EI and NVE understand that a title transfer may require legislative action. All parties are also desirous of accomplishing the transfer under the terms of NALA.

2. The ARRC wishes to utilize the previously mined rock materials (materials) on the ground at the Quarry for ARRC purposes, including federally funded projects. EI and NVE agree that removal of these materials by the ARRC is a necessary part of the transfer process and support ARRC's effort to obtain a conditional use permit for this purpose.

3. All parties agree that removal of the materials, as soon as practicable, is a desired element of this Agreement. All parties agree to cooperate with each other to this end.

4. Traditional access through or near the Quarry site is permitted for NVE villagers or EI shareholders, for subsistence purposes and to gain access to a traditional fishing site on the western side of the Quarry. Such permissible access is subject to safety concerns if the ARRC is operating at the site. EI and NVE agree to observe ARRC safety measures and precautions while using the traditional access.

5. While industrial noise is unavoidable during ARRC operations pursuant to this Agreement, the ARRC will take measures to minimize noise and the timing of noise to the greatest extent possible.

6. Explosives can be used in conjunction with removal of unsafe loose hanging rock or shaping the face of the Quarry rock wall for safety purposes, on twenty-four (24) hours' prior notice to EI and NVE, unless otherwise provided in the conditional use permit.

7. NVE and EI agree that they support any ARRC effort to obtain a National Historic Preservation Act, Section 106 resolution that allows the use of such materials on federally funded railroad projects.

8. Upon final removal of materials, the ARRC will remove the tracks and crossties and any loose or unstable materials in and around the Quarry that could present a safety hazard.

9. EI and NVE are not requesting or demanding any remedial re-vegetation or importation of remedial materials to the Quarry site as part of this Agreement.

Ektutna, Inc.

By W. Price

Its CEO

Dated 1/30/07

Native Village of Ektutna

By Donald Abas

Its Tribal Administrator

Dated Feb 1, 2007

Alaska Railroad Corporation

By PK Gould

Its Pres/CEO

Dated 1/23/07



Adopted: 01/22/07

Resolution No. 2007-07

Relating to the Approval Transfer
of the Eklutna Rock Quarry to
Eklutna, Inc.

WHEREAS, the Alaska Railroad developed a rock quarry in the Eklutna Hills sometime between 1920 and 1940 and used rock from the quarry for railroad and other projects; and

WHEREAS, the Eklutna Rock Quarry (Quarry) was transferred by license from the Federal Government to the Alaska Railroad Corporation (ARRC) with the purchase of the Alaska Railroad by the State of Alaska in 1985; and

WHEREAS, the Quarry was among the rail properties claimed by Eklutna, Inc. under the Alaska Native Claims Settlement Act (ANCSA) and was the subject of a settlement agreement regarding ANCSA claims between ARRC and Eklutna, Inc. dated January 8, 1987; and

WHEREAS, under said settlement agreement, ARRC would be entitled to continue mining the Quarry until the rock was removed to track subgrade level or when the property was devoted principally to a use other than mining of rock, at which point it would then revert to Eklutna, Inc.; and

WHEREAS, ARRC continued work in the Quarry from time to time following transfer from the Federal Government, but use of the Quarry has also been a matter of considerable dispute with the Native Village of Eklutna (Village) due to the documented significant historic cultural use of the Eklutna Hills by the Eklutna Natives; and

WHEREAS, the Native Village of Eklutna has taken several legal actions against ARRC and others to protect the historical and physical integrity of the Eklutna Hills, culminating in a 2003 Alaska Supreme Court ruling that ARRC must attempt to comply with local planning and zoning ordinances and seek a conditional use permit before conducting any further activity in the Quarry; and

WHEREAS, there is over one million dollars' worth of inventory stockpiled in the Quarry, consisting of rip rap, ballast and fines, which cannot be removed for use without a municipal conditional use permit; and

WHEREAS, because of the historic cultural significance of the Quarry, a conditional use permit for further rock extraction is difficult to obtain and, in addition, without completing a successful consultation with the Village under the

National Historical Preservation Act, ARRC is not able to use any of the rock resources on Federal projects; and

WHEREAS, ARRC management has located and is developing an alternative rock quarry at Curry and, as a result, further use of the Eklutna Quarry as a source is not urgent and compelling; and

WHEREAS, ARRC management believes that final resolution of the Quarry controversy will allow more efficient use of corporate resources, foster better relations with the Village, and encourage good faith negotiations to proceed with Eklutna, Inc. regarding exchange of other properties in a manner that will serve the parties' respective development and operational needs; and

WHEREAS, pursuant to a Memorandum of Understanding dated December 21, 2005, as amended, among ARRC, Eklutna, Inc. and the Village, the parties have been working together to develop an agreement to allow the ARRC to transfer control, either by ownership or lease, of the Quarry site; and to provide for other concerns of the parties; and

WHEREAS, reaching agreement with Eklutna, Inc. and the Village for transfer of the Quarry will enable ARRC to obtain a conditional use permit for removal of the existing rock inventory stockpiled in the Quarry and also to receive Federal Transit Administration approval for use of said rock inventory on federally funded projects; and

WHEREAS, a proposed Agreement Regarding Eklutna Quarry, as attached to the Resolution, has been negotiated and is recommended by ARRC management for Board approval.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors has reviewed the history of railroad use of the Eklutna Rock Quarry and the surrounding controversy and finds that it is in the best interests of the corporation to cease effort to conduct further quarry operations and to transfer complete ownership of the Eklutna Quarry to Eklutna, Inc. as set forth in the attached Agreement and consistent with the provisions of the January 8, 1987 settlement agreement and any other applicable agreements, laws or regulations; and

FURTHER RESOLVED, the President and CEO or his designee is authorized to negotiate such other conditions of transfer and take such other steps as he deems are appropriate and in the best interests of the corporation, including but not limited to seeking legislative approval of the transfer if required by law.

EKLUTNA QUARRY Q&A

Proposal Title:

Railroad Transfers Eklutna Quarry to Eklutna, Inc.

Proposal Summary:

ARRC proposes to transfer its entire interest in the Eklutna Quarry site north of Eagle River to Eklutna, Inc., and seeks legislative approval of the conveyance. This property and its use as a quarry has been the subject of a long-running dispute between ARRC on one side and the Native Village of Eklutna and the Municipality of Anchorage on the other. That dispute culminated in three Alaska Supreme Court decisions, which denied ARRC continued use of the quarry without first obtaining a municipal conditional use permit. While ARRC has recently obtained a permit to remove processed materials stockpiled in the quarry, it is unlikely to ever obtain a permit for new blasting without consent of the Village as tribal representative of the Dena'ina Native people. That consent is highly unlikely because the hills that comprise the quarry have valid historic and cultural significance to the Dena'ina.

Eklutna, Inc. is the ANCSA village corporation created for this area and is entitled to the Quarry property in the future under certain agreements that resolved ANCSA Native land claims. Under the North Anchorage Land Agreement (NALA), and the ARRC-Eklutna 3(e) Claims Settlement Agreement (the 3(e) Agreement), the Quarry will revert to Eklutna, Inc. when it ceases to be used for certain transportation purposes.

ARRC has determined that it will not use the Quarry again for mining rock, which potentially triggers transfer to Eklutna, Inc. An Agreement has been reached between the ARRC, Eklutna, Inc. and the Village that commits ARRC to transferring the Quarry to Eklutna, Inc., subject to legislative approval. The agreement also commits the Village and Eklutna, Inc. to support ARRC's application for a conditional use permit to allow the ARRC to remove previously stockpiled materials at the ARRC Quarry and to support its efforts to obtain federal approval for using the rock on federally funded projects.

Because of the application of NALA to this location, the transfer to Eklutna, Inc. will operate as an ANCSA conveyance under Section 1425 of the Alaska National Interest Lands Conservation Act (ANILCA). Under ANCSA and NALA, CIRI will receive the subsurface rights with Eklutna receiving the surface rights. Any transfer by ARRC of its entire interest in land is subject to legislative approval under the Alaska Railroad Corporation Act. To this end, ARRC is seeking and Eklutna, Inc. and the Village will support appropriate legislation this session.

Attachments:

- Agreement between ARRC, Eklutna, Inc., and Native Village of Eklutna

- Railroad Board of Director Resolution No. 2007-07
- Map/aerial photo of area
- ANILCA Section 1425
- NALA excerpt
- AS 42.40.285
- 3(e) Agreement excerpt
- Conditional Use Permit

Questions & Answers:

What is the history behind the Eklutna Quarry?

The Eklutna Hills, just outside the Native Village of Eklutna, are a culturally significant part of the heritage of the Dena'ina Native people. In addition, the larger area was administered by the Bureau of Indian Affairs as a Native school reserve from 1935 until 1946. During World War II, the BIA authorized the Alaska Railroad to develop a rock quarry on one of the knobs of granite that comprise the Eklutna Hills. That location still exists as the Eklutna Quarry. BIA abandoned the school complex in 1946 and decided to surplus the Native school reserve lands beginning in 1952. BIA transferred the quarry and other nearby lands to the federal Alaska Railroad in 1955. In keeping with the attitudes of the times, the government does not appear to have involved the Eklutna villagers in any of the transactions or decisions about how to handle this land. Usage as a quarry was fairly steady albeit light until the early 1980s, the heaviest use being for earthquake recovery efforts in 1964.

After the passage of ANCSA in 1971, Eklutna, Inc. (as the village corporation established for this area) asserted selection rights for a number of Alaska Railroad lands. Those selections were still in dispute when the State bought the Alaska Railroad in 1985. In 1987 ARRC negotiated a settlement of ANCSA land claims with Eklutna, Inc. known as the "3(e) Agreement" under which ARRC received a limited title to the Quarry and the right to mine the rock down, essentially, to ground level.

The Railroad's somewhat sporadic use of the Quarry intensified in the early 1990s and was opposed by the Native Village of Eklutna, which is a tribal council and a separate legal entity from Eklutna, Inc. This led to three separate lawsuits and three separate Alaska Supreme Court decisions. The cases established that ARRC had to obtain a conditional use permit in order to use the Quarry. The Village's opposition, based on the cultural significance of the Eklutna Hills, made it highly unlikely that ARRC would be able to get a permit. In addition, this opposition prevented ARRC from using rock from the Quarry on federally funded projects because federal law requires certain accommodations for culturally significant properties.

In 2001, the last season of blasting at the Quarry, ARRC produced over \$1 million's worth of railroad ballast and rip rap. Due to the ongoing lawsuits and the federal funding restrictions, most of this inventory remains stockpiled at the Quarry. A conditional use permit is required even to remove this already processed rock, and satisfaction of the Village's concerns is necessary before this rock can be used on federally funded projects.

After years of litigation, the ARRC, Eklutna, Inc. and the Native Village of Eklutna have settled their differences about the Quarry. An agreement was signed effective January 22, 2007 under which ARRC will transfer the Quarry to Eklutna, Inc., subject to legislative approval and other due diligence being agreed and performed (such as an environmental site assessment). A conditional use permit to remove the stockpiled rock is in hand. Based on this most recent agreement, the federal funding agency has removed its prohibition on use. Legislative approval of the transfer of the Quarry to Eklutna, Inc will bring this contentious chapter to a close and create a foundation for a future land exchange at other locations.

What is the North Anchorage Land Agreement and how does it affect the current situation?

The North Anchorage Land Agreement (NALA) was executed by the State of Alaska, the Municipality of Anchorage and Eklutna, Inc. in March 1982 to resolve numerous long-standing land ownership and management issues in the area north of downtown Anchorage and south of the City of Palmer. Native land selections under ANCSA in this area overlapped with state selections and municipal entitlements. Section 1425 of ANILCA authorized local parties to enter an agreement like NALA to resolve their issues directly instead of through BLM adjudications and individual litigation. Section 1425 requires that conveyances made under agreements like NALA be treated as conveyances under ANCSA.

For the Quarry location, NALA has two direct effects. One is the general principle of designating the lands around Eklutna Village as available for selection by Eklutna to the extent it was not actually used by a federal agency in 1971. NALA expressly recognized that the State was negotiating for purchase of the Alaska Railroad and the parties agreed such a transfer would not come within NALA's control. However, they went on to agree that if the State or its assignee (for owning the railroad, i.e. ARRC) ceased to use the lands "in connection with furnishing mass or bulk transportation", the Quarry land would be conveyed to Eklutna.

What is the ARRC-Eklutna "3(e) Agreement" and how does it affect the current situation?

ARRC inherited a number of ANCSA Native land selection disputes when the federal railroad was transferred in January 1985. One of the first negotiations was between ARRC and Eklutna, Inc. and it culminated in an agreement dated January 8, 1987. As to the Eklutna Quarry site, the agreement provided that it

was further implementing the previously agreed requirements of NALA. Specifically, the 3(e) Agreement stated that "cessation of use of the Quarry in connection with furnishing mass or bulk transportation will occur only when (i) the rock structure occupying the parcel has been exhausted and no quarry rock that can be removed remains above the of the track bed presently situated on the parcel, or (ii) the parcel is devoted principally to a use other than the mining of rock."

What is the proposal?

The proposal is to obtain legislative approval and transfer ARRC's entire interest in the 48-acre Eklutna Quarry parcel to Eklutna, Inc. under NALA and Section 1425 of ANILCA.

Why is it needed?

ARRC has determined that the corporation will no longer use the Quarry for mining rock. This is because the likelihood of getting a permit to conduct future blasting is slim and the likelihood of being allowed to use the rock on federal projects, which are the vast majority of ARRC's capital improvements, is even slimmer given the cultural significance of the knob. The cost of seeking these approvals is considerable, both in terms of direct expense and public and community bad will. Given that decision, the ultimate disposition of the land to Eklutna, Inc. under the applicable settlement agreements need not and should not be delayed. Under ARRC's governing statute, AS 42.40.285(1), legislative approval is required before the corporation can convey its entire interest in land. However limited or conditioned ARRC's interest in the Quarry might be, it is still an interest in land and therefore legislative approval is necessary.

Why is it needed now?

There is an estimated 145,000 tons of stockpiled material on the Quarry floor that ARRC needs for the upcoming spring break up season and summer construction projects. These materials cost ARRC over \$1 million to produce six years ago. Without assured access to the stockpile, ARRC would have had to spend at least \$2 million to purchase the same quantity of materials for use this year. The good faith cooperation of Eklutna, Inc. and the Village, which was based on the ARRC's commitment to seek authority for this transfer, has enabled ARRC to obtain the necessary permit and federal approvals. It's now ARRC's turn to follow through on its commitment and pursue this legislation, satisfying any legislative concerns that may be expressed.

Who owns the land value of the quarry?

ARRC currently holds title to the quarry under an interim conveyance issued by the U.S. on November 23, 2004, but the conveyance is expressly subject to the provisions of ARRC and Eklutna's 3(e) Agreement. Under NALA and the 3(e) Agreement, the residual land value of the quarry belongs to Eklutna, Inc. The ARRC can only extract the rock resource down to ground level under those agreements, with the "reversionary interest" belonging to Eklutna.

What is the resource value of the quarry?

The ARRC is unable to extract the resource because of its inability to obtain a conditional use permit from the Municipality of Anchorage for further production. Any third party owning the quarry would face the same requirement. In addition, if more material could be produced, the National Historic Preservation Act (NHPA) would prohibit its use on federal projects, greatly limiting use, without a successful NHPA consultation over the historic cultural aspect with the Village and Alaska SHPO. While a private owner would not face the NHPA issue, it would still have similar difficulties getting a municipal permit. As a result of all this, to the ARRC, there is little value in the raw resource (the remaining undisturbed knob). ARRC estimates that about 5 million tons of rock remain in place at the Eklutna Quarry.

Describe the future land exchange needed between the Alaska Railroad and Eklutna Inc.? Is DOT involved? What about the Birchwood Airport Expansion?

The ARRC and Eklutna, Inc. are considering a future land exchange that would benefit both parties' commercial and operational interests. The ARRC would give up its rights to "Parcel C", an area of about 400 acres adjacent to the North Eagle River interchange. Eklutna would incorporate this into its Powder Ridge development. Any conveyance of this land would, of course, also require legislative approval and we would expect to present a bill on this subject in the 2008 session.

ARRC would receive an equivalent value of land at Birchwood. ARRC intends this land for industrial development. It is zoned industrial and is easily accessible to the railroad.

Alaska DOTPF may be involved in the land exchange. DOTPF wants certain ARRC and Eklutna lands for expansion of the Birchwood Airport. DOTPF has been attending the discussions about a land exchange, but it is not clear that their timing and funding is consistent with the other parties' desired timeline. They will, however, continue to be invited to the discussions in an effort to incorporate their needs.

Isn't the quarry ARRC's leverage for the future land exchange? If yes...why does the transfer need to occur now rather than at the time the larger deal is finalized?

First and foremost, the Eklutna Quarry exchange stands out as an important symbol of good faith. It demonstrates the potential of a new business relationship, one whose strength issues from cooperation and trust as opposed to the exercise of leverage and maneuver.

Second, ARRC has inventory in the Quarry that can be particularly useful in early 2007. The ARRC would like to liquidate this inventory while preparing for

production of similar materials from a new source at Curry, 20 miles north of Talkeetna. Curry production is not expected to come on line until late 2007.

Does the Railroad need the Quarry any longer? Why not?

No. The Railroad has no "long-term" right to the land under NALA and the 3(e) Agreement; it only has the right to extract rock down to ground level. However, any realistic possibilities for further resource extraction are severely limited by the Village's opposition to further destruction of a culturally significant site. The only remaining value to ARRC is in the produced inventory, and as a demonstration of good faith to overcome the harsh legacy of years of litigation and in order to create favorable conditions for a reasonable negotiation on the exchange of lands at Birchwood and Eagle River.

What does the Railroad get out of this agreement?

Immediate use of the stockpiled materials with the associated cost avoidance, and the building of good will with its neighbors, particularly the Village and Eklutna, Inc.

What does Eklutna get out of this agreement?

Expressly, it gets land and the remaining resource intact and well in advance of when it would otherwise. This is important to the many Village residents who are also Eklutna shareholders. CIRI similarly gets the subsurface rights in advance of when it would have gotten them otherwise.

Are there limitations on what Eklutna can do with the land once it is transferred?

No, nor would there be any if it were transferred in the future after ARRC exhausted the above ground level resource. The granite resource probably extends far below ground level, and the regional corporation, CIRI, will own the subsurface rights in keeping with the usual ANCSA ownership scenario.

Are community leaders on board with this proposal?

ARRC has begun concerted public outreach with local government and community leaders, briefings of area legislators, and media briefings, and will continue this effort. We have not had any negative feedback to date.

Is there opposition to this proposal that we are aware of?

No.

Are there adjacent land owners or other land interests that should be considered? (Wells Fargo, CIRI etc.)

Eklutna, Inc. and Wells Fargo own most of the adjacent property. There are also individual land owners who are Village residents. CIRI owns the subsurface rights to the other Eklutna land in the area.

Wells Fargo's situation is somewhat unique. By historical quirk, it owns about half of the larger knob of the two Eklutna Hills, which is the same knob in which the ARRC's Quarry is located. Its predecessor NBA acquired this land through foreclosure on another early homesteader in the area. NBA tried to obtain a conditional use permit to mine its half of the knob in the 1990s, and while it was initially successful at the municipal level, it too was sued by the Native Village of Eklutna and lost at the Alaska Supreme Court level. It has not made any further efforts to mine the knob to our knowledge. It is reported that Wells Fargo is trying to sell the entire parcel of approximately 157.77 acres.

Alaska Railroad Corporation



P.O. BOX 107500 ANCHORAGE, ALASKA 99510-7500
327 W. SHIP CREEK AVENUE, ANCHORAGE, ALASKA 99501

To: Patrick K. Gamble, President & CEO
From: Phyllis Johnson, ARRC VP/General Counsel
Regarding: Eklutna Quarry History
Date: June 13, 2005

In anticipation of your next meeting with Lee Stephan, I have spent some time resurrecting the history of the Railroad's involvement with Eklutna Quarry, and discovered some interesting information. It's not necessarily inconsistent with Lee's view of that history, but certainly has some additional threads.

Included among the attachments are historical maps that shows the areas I'll be describing as the "Bank parcel" and the "ARR parcel". As you will see, the granite resource is about evenly divided between the two. They were both initially acquired from the U.S. by homesteaders, one by Samuel Hunt in 1922 and the other by Oscar Lof (or "Loff") probably around the same time. The executor of Lof's estate sold the latter parcel to the U.S. in 1935 for use by the Alaska Native Service (a forerunner of the Bureau of Indian Affairs or "BIA") for use as part of the native school reserve. The Lof parcel is the one that eventually made its way to the ARR for quarry use. The Hunt parcel was foreclosed on by, and deeded to, the Bank of Alaska in 1924, and is what we call the NBA parcel today.

So, as a quick summary, what is now the ARRC's quarry site was originally homesteaded by this Mr. Lof, acquired by BIA in 1935 and combined into a larger parcel that was called the Native Industrial or Vocational Reserve, and used as a Native school. ARR asked to use it as a quarry in June 1944, and authority to do so was granted from the one federal agency (BIA) to the other federal agency (ARR) by letter from Abe Fortas as acting Secretary of Interior in August 1944. Between 1952 and 1955, the BIA decided to surplus lands at Eklutna and the Railroad made an official request for transfer. There was some back-and-forth about how much the Railroad needed, a reference to "retain[ing] some of the land for the use of the Natives around Eklutna", and the title history on the Lof parcel. The ARR finally ended up with approximately 65 acres, including the quarry proper, in October 1955. That's where things stayed until ANCSA and ANILCA passed and gave legal status to Native land claims, creating much dispute from the early 1970s until ARRC's settlement with Eklutna Inc. in January 1987. Usage as a quarry was fairly steady

albeit light until the early 1980s. You'll see on a summary attached that earthquake recovery was by far the heaviest use.

When we were initially researching for the Eklutna Supreme Court cases, a photograph of the Quarry was found at the Museum that purportedly dated from about 1923, based on the age of the photos it was found among and the equipment that was shown on site. Perhaps this is true, and some use of the site made during initial railroad construction. However, if so, that usage must have lapsed, because the earliest written evidence that has been uncovered thus far suggests that the Railroad was not in the Eklutna quarry business prior to 1944 (letters referenced above, attached). What seems rather clearly to be the first reconnaissance visit by railroad personnel happened in April 1944, and led to the above mentioned June 1944 letter request to BIA. Nothing I've seen indicates it was specifically sought to aid in the war effort, but there's no reason to think otherwise either. There is also nothing to indicate there was any intention to return it to Native benefit after the war. Recall that in those days, the federal government had a paternalistic policy towards Natives, and Alaska Native groups did not own land. Even individual Native allotment owners did not actually hold title. BIA held title to all Native land interests in trust for their benefit. As this land was part of an educational reserve and had been deemed excess to that need, the paper trail is devoid of any evidence of intent to "revert" to Native benefit. However, that is just the bureaucratic paper trail, and there is no evidence of what might have been said to the villagers at that time.

As an aside, the Native school was also an orphanage and was apparently the forerunner to Mt. Edgecombe at Sitka, so was quite important in the overall program of how the federal government dealt with its obligations to Native Alaskans. The cultural anthropologists' reports we gathered during our legal battles say the school complex was established in 1924, condemned and abandoned in 1946, and the facility relocated first to Seward and later to Mt. Edgecombe. The larger tract where the school and dormitory buildings were located was also acquired for a time by the ARR, used for section purposes and, through a permit to the Army, for military supply purposes. This area is where the so-called Pow-Wow Grounds are now located, a bit south of the village at MP 141.

Also of interest is that in 1953-55, the Railroad got into a bit of a tiff with NBA because of railroad encroachment onto the Bank's side of the property line. The tenor of the letters/memos suggests that this was a rather long-standing complaint.

The only indication of Native Village of Eklutna involvement I found in the site's history is in a file memo dating from 1971, in which it is stated that the village's vice president (one Peter Ezi) came in and complained to the Railroad's real estate manager about the villagers being left out of discussions about swaps of land being

considered among ARRC, BLM and BIA. This is the same year that ANCSA was passed and the native community was getting more assertive about land rights. Eklutna Inc. filed ANCSA selections on all the Railroad's Eklutna properties, and this encumbrance survived the sale of the ARR to the State and led to the 1987 settlement agreement. The Village tribal entity was not a party in interest to those negotiations, although as you know there was considerable overlap in "personnel".

Attachments as referenced

Cc: Chris Anderson
James Blasingame

KNIK ARM

ARRC ROCK QUARRY
AREA = ±48.2 ACRES

NATIONAL BANK OF ALASKA
AREA = 169.1 ACRES


EKLUTNA INC.

SECTION 17 (T11N R11W S11)

EKLUTNA INC.

ALASKA RAILROAD

EKLUTNA VILLAGE

	ALASKA RAILROAD CORPORATION OFFICE OF THE REAL ESTATE DEPARTMENT P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500 (907) 283-2870	
	ARRC EKLUTNA QUARRY	
POSSIBLE LAND TRANSFER ARRC MP 142		
DESIGNED BY: TB	SCALE: 1" = 400'	FILE #/Worksheet DWG. NO.
DRAWN BY: M.D.C.	DATE: NOVEMBER 23, 2005	1 OF 1
APPROVED BY: I.B.		

