Promoting Alternative Energy
&
Energy Efficiency

A Proposed Agenda
For
The Kenai Peninsula Borough

Prepared by: John Janik, Economic Analyst

July 2009

KENAI PENINSULA BOROUGH

Mayor's Office

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July 31, 2009

David R. Carey
Mayor & CEO

Letter of Promulgation

The Kenai Peninsula Borough epitomizes the challenges and ruggedness of present-day Alaska, along with the need for alternative energy research and development, as well as with the application of energy efficiency and conservation. Our rich and ancient history, along with our great geographic diversity will always provide witness and testimony that as long as the people respect the land, the water, and the air, then opportunities will be limited only by our ingenuity and imagination.

Our Borough is divided into three (3) most interdependent areas:

(1) The center of our Borough is the Cook Inlet at the northernmost point of the Pacific Ocean's Gulf of Alaska, which is fed by the warmth of the Japanese Current. The Cook Inlet comprises 38% of the Borough at 9,900 square miles, and has brought explorers, trappers, miners, hunters, and the petro-chemical industry to Alaska.

The great schools of salmon, black cod, halibut, clams, and king crab all depend on the Cook Inlet during their cycles of life. Today, the oil and gas platforms in the Cook Inlet co-exist with those who make their livelihood fishing in these same waters. For most of our history, our people have lived in relationship to the Cook Inlet and the bodies of water which drain into it.

(2) The West-Side of the Borough is resource rich and includes four active volcanoes, many glaciers, and great streams, which support boundless numbers of wildlife from the air, the land and the waters in State and Federal Parks and Wilderness Areas. In 1963, the State of Alaska Boundary Commission included the West-Side as part of the newly formed Borough to provide the possibility of economic sustainability for the residents who would live in the Kenai Peninsula Borough.

The West-Side comprises 29% of the Borough, 4,895,261 acres, and the Tyonek Native Corporation in 2008 began promoting a review of economic development opportunities on the West-Side, which includes an industrial site, a conservation easement, export facilities, road access, a new community - "Nakacheba", and geothermal and hydropower generation.

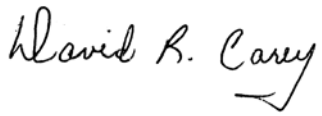
(3) The East-Side is comprised of the Kenai Peninsula which makes up 33% of the total Borough area. The Chugach National Forest, the Kenai National Wildlife Refuge and the Harding Ice Field dominate two-thirds of the area of the Kenai Peninsula. Great rivers, lakes and bays exist, promoting hunting, fishing, mining, bird-watching, and tourism. The first major oil and gas fields were discovered on the Kenai Peninsula at Swanson River near Sterling in the late 1950s, ushering in a great increase in population and human development.

There was a significant increase in homesteaders after World War II creating the need for roads and schools. Today, over 50,000 people live on the Kenai Peninsula as permanent residents with many times that number visiting each year. They arrive by ship, air, rail, and road. Our private and public schools, our hospitals and health care facilities, our industrial and commercial enterprises, along with the unique individualism and outdoor recreational priorities of our people combine to produce a great love for what we have and for what we can become, as we contribute in the area of alternative energy research and development, along with examples of energy conservation and application.

Once again, the area comprising the Kenai Peninsula Borough is geographically and historically poised to be a premier leader in the area of energy research and development. As we continue to feed the people of the world from our natural bounty, it is logical and reasonable that we assume a leadership position in the great challenge of energy transformation.

This Agenda, “Promoting Alternative Energy & Energy Efficiency”, is to serve as a guide and resource book for all those wishing to be a part of the alternative energy transformation or for those who simply want to explore this topic. The current generation of humanity put humans on the Moon and brought them back safely, now we must provide the means for future generations to live on the Earth safely.

Respectfully,



David R. Carey, Kenai Peninsula Borough Mayor & CEO

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INTRODUCTION

"If we truly want an innovative and creative renewable fuel industry, then it needs to be challenged. And if we create a set of protections that allow it to not be as creative and innovative as possible, then we aren't doing a service to the industry or the people of this country."

Tom Vilsak Secretary, Department of Agriculture
October 12, 2006 speech

Alternative energies such as solar, wind, hydro, and geothermal have been around since prehistory. Civilizations both ancient and modern have been taking advantage of these free sources of energy for centuries by both active and passive processes. Even today society continues to take advantage of sources of alternative energy, but for only 7% of total energy consumption[1]. Figure-1 below provides an itemization and comparison of renewable versus non-renewable energies. As technology continues to improve efficiency and reduce manufacturing costs, society is once again exploring the feasibility of alternative energy. This document is intended to serve as a guide to the creation of a repository for alternative energy and energy efficient processes as they apply to the residents of the Kenai Peninsula Borough. The repository will display the history of various alternative energies as well as explore modern day applications, their viability in Alaska, and specifically the Kenai Peninsula Borough. Extending beyond the introduction and promotion of alternative energy will be a renewed focus on energy efficiency and energy conservation.

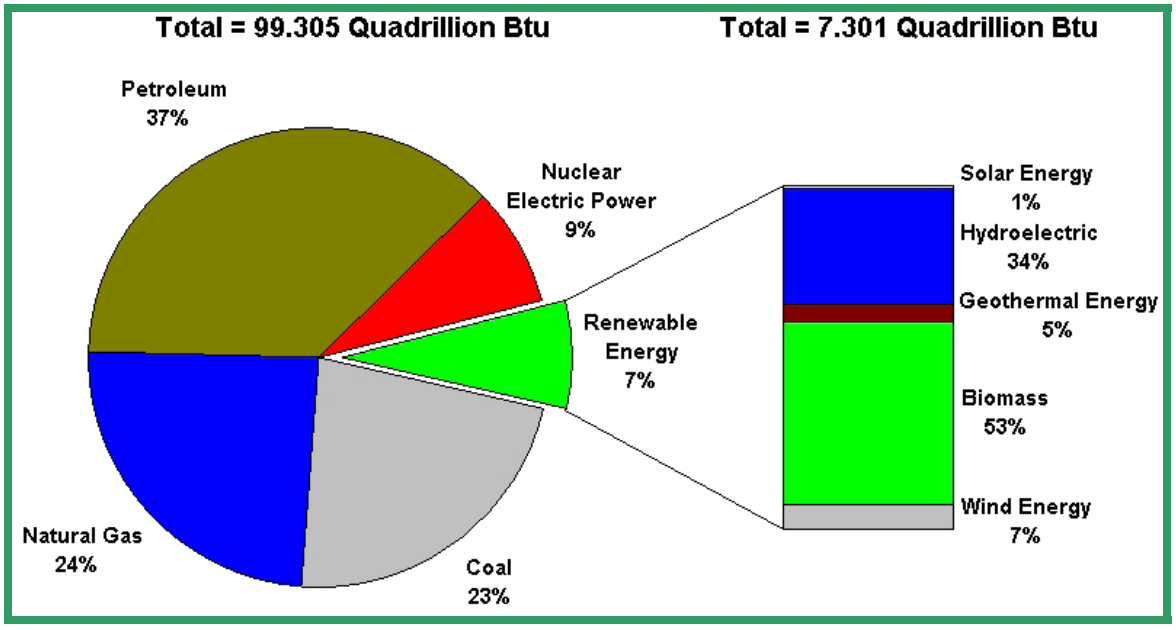


Figure-1 Renewable Energy Consumption in the Nation's Energy Supply, 2008

[1] DOE/EIA Renewable Energy Consumption and Electricity Preliminary Statistics 2008 (July, 2009)

Federal, state, and local incentives, both current and proposed will be included as well as the application process.[2] These incentives will consist of the many grants, loans, rebates, and tax credits already in existence, and sources of additional information. As information changes, any technological advances will be collected and made available to the public. Upon inception, the repository will exist electronically and be accessible to the public via the Kenai Peninsula Borough website. Once created, the alternative energy page will include links to other alternative energy, energy efficiency, and energy conservation websites as well. Abstracts of the material contained will also be made available by means of public seminars, workshops, and joint presentations with energy related companies.

Residential Wind Turbine

The collection, centralization, and subsequent distribution of this energy related information will allow the Kenai Peninsula Borough to be at the forefront in the promotion of alternative energy and efficient energy usage. This same action will allow the residents of the Kenai Peninsula Borough the opportunity to examine options available to make informed energy related decisions. In essence, the purpose of this agenda is to increase local and state legislative awareness, collect and provide accurate information, and to bring consumer and vendor together to advance the potentials of alterative energy and energy efficiency.

[2] DOE Database of State Incentives for Renewable & Efficiency (DSIRE) (2009)

A. Purpose of this Agenda

Increase Legislative Awareness

At present, federal recognition and support for alternative energy and energy efficiency exceeds that of the State by far. However, the State of Alaska is also beginning to recognize the importance of energy awareness although more so along the lines of energy efficiency. The public is beginning to display interest in alternative energy, but considering the cost of these various types of systems, there is increasing concern with regards to taxation. To be in compliance with state law, the Kenai Peninsula Borough assesses all real property at full and true market value.[3]

Photovoltaic collectors converting sunlight to electricity

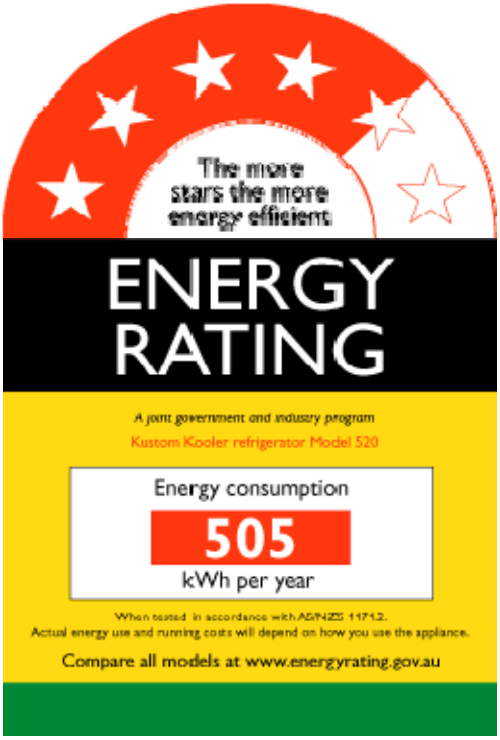
Currently there is no specific appraisal process to directly reflect the value of alternative energy systems. Public belief though unsubstantiated, is that as more systems are installed, actions may be initiated to create a process to capture the value of these systems for inclusion into taxable property.

[3] AS 29.45.110 *Full and True Value*

The first purpose of this agenda is to create legislative awareness into the potential taxation concerns of alternative energy. Should these systems become taxable, it is unlikely that alternative energy will retain current public support, let alone continue to grow. The state legislature is empowered to exempt these systems from taxation. As a further incentive, this same body has the ability to create legislation that will provide additional property tax exemptions as well. Each topic is addressed in greater detail later in this document.

Introduce Existing Incentives to Financiers and Builders

Most financial institutions that provide mortgages are aware of some of the incentives available for energy efficiency, such as the Energy Efficient Mortgage. This mortgage provides an interest rate reduction based on an energy rating, although most of this awareness assumes it only applies to new construction. Just as financial institutions are aware of the common programs available, most building contractors know as well. The typical new home built today incorporates many features for energy efficiency, such as additional insulation, better heat-retaining windows, and fuel-efficient furnaces. Some designs also incorporate the use of passive solar energy by placing most windows on a southern exposure to admit as much sunlight as possible. However, very few incorporate any type of active system such as wind, solar, or where available, hydro or geothermal. There are many recreational cabins throughout the borough that use solar (photovoltaic) systems to generate electricity, but these systems are typically small and are intended for limited application. The same holds true for wind, although wind appears to be used on a larger and more permanent scale.



Typical Appliance Efficiency Rating

The question of any cost savings during new construction as compared to a later retrofit cannot be answered generally or generically. Any initial construction savings would depend on the type and size of the system as well as how it relates to normally intended features. Wind and solar used to supplement electricity may need only minimal additional wiring to normal requirements. However, solar energy used to generate, circulate, and store hot water would involve a more complex system. What may be unknown to many of the building contractors is the availability of energy related loans that specifically apply to both new construction and retrofit.

Alaska Housing Finance Corporation (AHFC) is one resource that provides loans through a second mortgage loan and a small building material loan. Homer Electric Association is another resource that offers a $5,000 Line of Credit for the purchase of energy efficient appliances. Other similar programs at both the state and federal level exist.

As with creating awareness with the members of the state legislature, the second purpose of this agenda is to inform the public of the many different programs and incentives that are available through the new construction and mortgage process. Lenders may find new sources of funding and builders may find opportunities to enhance their marketing. In addition to new construction, many of these same programs can be used to retrofit existing structures. Ideally, if these incentives and programs are pursued collectively, the result will be greater flexibility in financing, more marketability in building, and energy savings in home ownership.

Public Education and Clarification

The center of focus of this agenda is the residents of the Kenai Peninsula Borough. This focus should be understood to include the business community with the same emphasis as on the residential population. The Kenai Peninsula Borough Assembly has initiated action to promote alternative energy and energy efficiency with respect to borough activities.

> **"WHEREAS,** Borough actions to increase energy efficiency and utilize alternative energy developments are expected to reduce the amount of energy used by Borough activities and would reduce the use of fossil fuels, produce financial savings, strengthen our economy, reduce dependence on foreign oil, improve air quality and lead to a healthier, sustainable community;"[4]

Just as the Kenai Peninsula Borough Assembly has taken steps to reduce energy consumption and promote alternative energy and energy efficiency; the different departments within the borough have actively implemented many of those steps. A partial list of the energy conservation and energy efficiency efforts can be found in Appendix-A.

Local businesses should be encouraged to initiate conservation and efficiency practices as well as introducing the use of alternative energy. Depending on their location and type of

[4] Kenai Peninsula Borough Resolution 2008-007 (2008)

business, they could serve as an example of the cost savings associated with alternative energy and energy usage.

Solar Application on a Commercial Building

To have any measurable impact on soaring energy prices, the public must play an active and aggressive role in bringing the use of alternative energy to fruition. Historic oil prices and oil consumption are reflected on Figure-2 below.

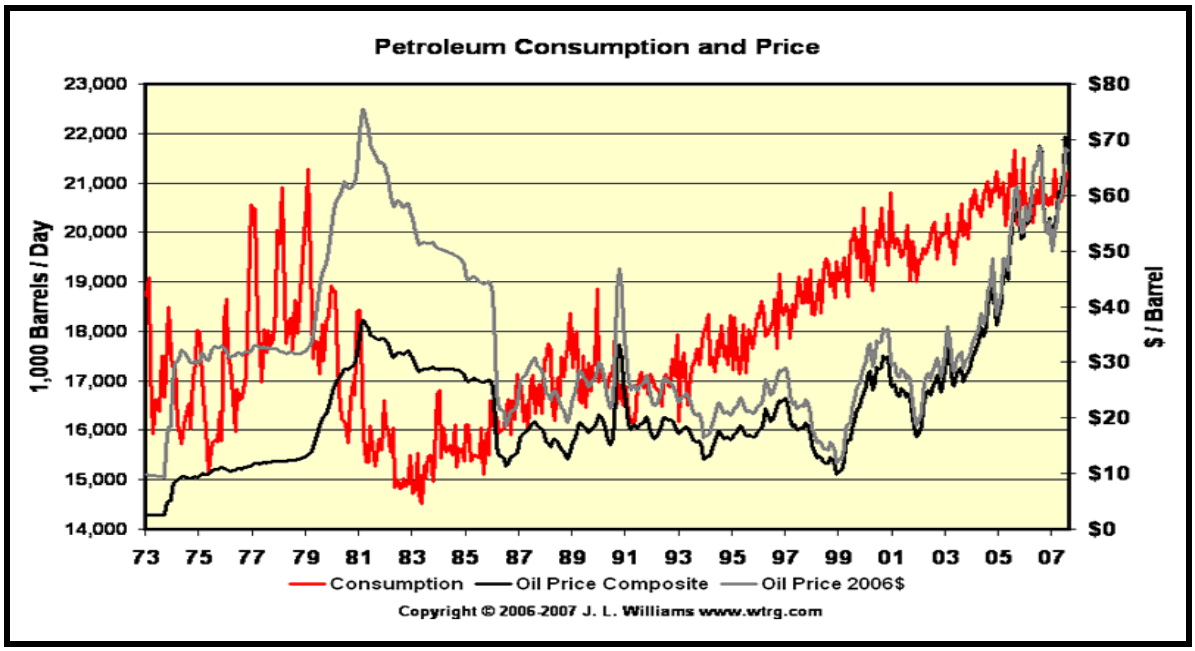


Figure-2 U.S. Petroleum Consumption and Price

To maximize potential benefits, alternative energy, both active and passive, and practices to promote energy efficiency, must be treated equally. One system should not be recommended over another, as the ideal situation may consist of a hybrid system that incorporates several different technologies. In all cases, either a single system or a hybrid should include practices and processes that provide energy efficiency. Government and the energy industry must work in harmony to create an environment of confidence and

pubic interest. To foster this level of public participation, educational avenues must be established to provide the access to information necessary to make an informed decision.

The oil and gas industry has been, and still is, a significant contributor and influence to the economy of the Kenai Peninsula Borough. Under the current Administration, the Kenai Peninsula Borough can be both instrumental and a pioneer promoting alternative energy, energy efficiency, and energy conservation while working in harmony with the oil industry.

> *"I am here today to tell you that the Kenai Peninsula Borough needs and wants the petro-chemical industry and our residents are living here today to assist in the transformation required in this new millennium as the industry moves into the development of new uses, especially health-care and fabrication, new cleaner technology in the extraction and processing field, and new political realities concerning alternative energy, carbon emissions, and the entire range of environmental standards"*[5]
>
> David R. Carey, Mayor
> Remarks to the Oil & Gas Alliance
> February 17, 2009

As information is collected it can be placed in the repository introduced earlier where it is readily accessible to the public. Through a joint effort with alternative energy related companies, lenders, and builders: public seminars and workshops can be provided at locations across the borough. The availability of school rooms or other available public buildings can provide for an informal atmosphere where a panel of experts can present information and the public can ask questions. In most cases the panel will consist of professionals in their respective fields. Whenever possible, the panel will consist of not only alternative energy system providers, but also members of the lending and construction fields. Some of these experts, who also represent the alternative energy companies, will likely have equipment on hand for display and demonstration.

In addition to publishing dates and locations on the borough website, the media can be approached and encouraged to assist as well. Radio stations and newspapers provide for Public Service Announcements (PSAs) at no charge. The Chambers of Commerce across the borough could also be approached to present information during their meetings, and the same could be attempted through the various fraternal organizations. The content and frequency of public presentations will need to be adjusted relative to public acceptance and participation.

[5] David R. Carey, Kenai Peninsula Borough Mayor: (February 17, 2009) Alliance Luncheon Remarks

B. Objectives of this Agenda

Proposal for the Creation of a Property Tax Exemption

The initial purpose of this agenda was to establish a homeowner property tax exemption as an incentive. The property tax exemption incentive can be approached and implemented on two levels. The first level of exemption would be to exempt the system itself from assessment. The second level would be to provide the homeowner with a secondary exemption similar to the existing senior or residential homeowner exemption. The amount of this exemption, if established, would be determined by the state legislature.

Photovoltaic collectors being used in a remote location for electricity

As indicated earlier, state law requires that all property be assessed at true and fair market value. Due to the limited number of existing alternative energy systems throughout the borough, no process is currently in place to record their size, composition, capacity, or value. In some cases the existence of these systems is reflected in the overall quality of the structure, so they are indirectly assessed. However, as these systems gain in popularity the borough assessor(s) may deem it necessary to create a process to establish a standardized value as to comply with existing state law. While the value that would be assigned to these systems is not known, they would likely be assigned a flat borough-wide value like that of driveways, wells, and septic systems.

Given the expensive initial cost and the subsequent value of alternative energy systems, any attempt at taxation would very likely discourage many homeowners from considering the use of alternative energy. Although no state law is known to exist at this time, the legislature could enact a state law that would exempt alternative energy systems from taxation. This would preclude the Kenai Peninsula Borough Assessor and other borough assessors across the state from trying to establish a taxable value, as each borough would

likely establish a different value based on different criteria. If this exemption is enacted through the legislative process it would simply remove the alternative energy system from inclusion with the remaining real property on the parcel. Allowances could be made to permit the recording of the existence of the equipment provided no taxable value is assigned.

Typical Control Center

Reassurances by state law that property assessments will not increase as the result of installing an alternative energy system may be the deciding factor for many homeowners. Also, once this exemption is formalized and exists as state law, those companies providing alternative energy systems will have one more incentive to pass on to the potential customers. An exemption existing as state law would be beneficial to real estate agents and lenders as well, should they be questioned by purchasers of homes that may already have these systems installed. Additionally, real estate companies could use the statutory exemption as a feature in trying to sell a home that has an alternative energy system. Homebuilders may be encouraged to promote the inclusion of alternative energy systems into new homes during the construction process.

An alternative or secondary exemption could be toward the assessed value of the property itself. Just as with the *$20,000 Homeowner Exemption* or *the $10,000 Firefighter/EMS Exemptions*, a specified amount could be exempted from assessed values. A variant of

this exemption could be in the form of a tax credit similar to the *Disabled Resident Exemption,* which currently provides for a $500 credit against actual taxes due. Either an exemption or a tax credit would prove to be an encouraging incentive for a homeowner to consider the installation of an alternative energy system.

An immediate argument to any tax exemption is that it does not reduce total taxation; rather it shifts the burden across the remaining tax base, which is true, but with barely measurable impact. The establishment of an exemption that would just exclude systems from assessments would have no impact at all since these systems are currently not formally included in the appraisal and assessing process.

The minimal impact of an exemption of $10,000 is presented in Figure-3, below. With a 2009 borough-wide assessed taxable value of $54,401,269, the number of alternative energy systems required to reach one percent (1.0%) of that value would be 5,440.[6] Borough-wide there are only 10,043 $*20,000 Homeowner Exemptions* claimed. Therefore more than half of the households borough-wide would need to install systems and claim the exemption to reflect a one percent impact on the tax base.

Kenai Peninsula Borough 2009 Certified Real Property Values & Number of Systems Needed to Reach 1% of Taxable Value

Total 2009 Assessed Borough-wide values	$13,090,512,428
Total 2009 Exemptions, Mandatory & Optional	$ 7,650,385,479
Total 2009 Taxable Value	$ 5,440,126,949
1% of Taxable Value	$ 54,401,269
Number of systems @ $10,000 needed to equal 1% of tax base	**5,440**
Total Number of Current 20K Exemptions	10,043

Figure-3

In reality a true estimate though aggressive, of new systems installed each year would be closer to 200 to 300 which translate to exemptions totaling only .036% to .055% of the taxable base. In essence, it would be several years before any noticeable impact on the tax base were to occur. The above chart clearly illustrates the importance of the exemption, as the direct incentive exceeds the concern for the shift in tax burden.

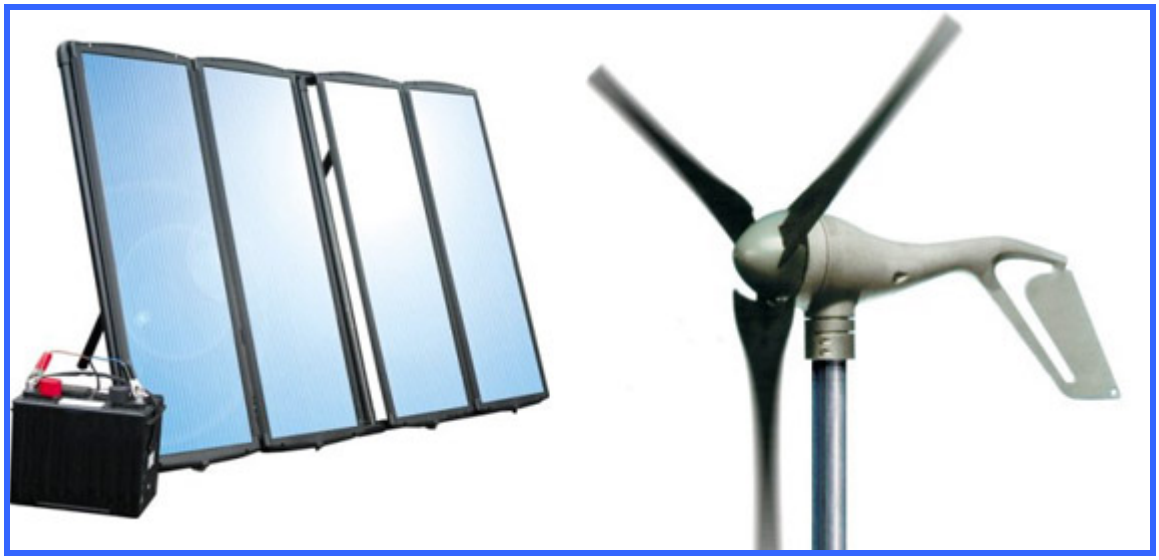
Establish a Dialogue with Energy Related Vendors

Before the Kenai Peninsula Borough can be effective in promoting alternative energy, a positive rapport must be established with the vendors who provide these systems. Operating as a local government, the Kenai Peninsula Borough does not maintain a

[6] Kenai Peninsula Borough 2009 Real Certified Roll

department or a staff that has expertise in the field of alternative energy or energy efficiency. This lack of expertise does not however, preclude the borough from creating programs that promote the use of alternative energy and energy efficiency to the public.

As the borough spearheads the promotion of alternative energy to the public, it is imperative that the providers of these systems actively participate in the delivery of the options available. The vendors possess the necessary knowledge and experience to provide the information needed by the public to help decide which alternative energy avenue to pursue. Presently the vendor base within the Kenai Peninsula Borough is small and those vendors have already established a working relationship with each other. While they are competitive, they also acknowledge that any single type of system will not likely be adequate in all applications, and in most cases the most effective system will be a combination of two or more.

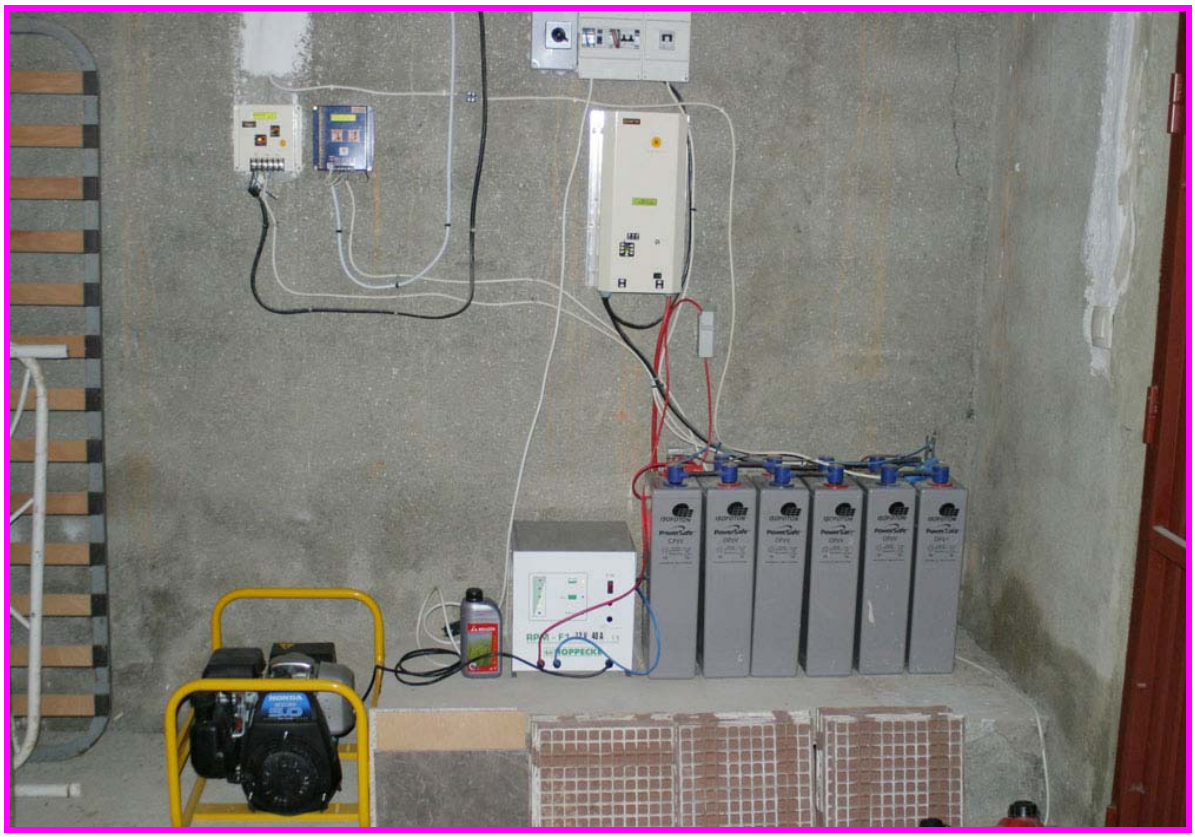


Combined Solar and Wind System

Generally the position of the borough in the promotion of alternative energy will be limited to introducing the alternative energy vendor(s) and possibly lenders and builders to the public. In the case of public service announcements, the borough participation would be to announce a time, date, and place of a public seminar or workshop. At the actual presentation, the borough should have representation to answer any tax-related or regulatory questions that may arise, but the majority of the presentation should be conducted by the alternative energy vendors.

Communications between the borough and alternative energy providers should be free-flowing and informative. These vendors are usually the first to receive information regarding major legislative efforts and technology advances. Having this knowledge provided by vendors, builders, and lenders would eliminate the necessity for the borough to expend resources for what would ultimately be a duplication of effort. The continuously updated material would also provide support to the ongoing public awareness campaign.

While there is a strong desire to establish a positive working dialogue with the alternative energy vendors, a point of caution needs to be addressed as well. The primary goal of the Kenai Peninsula Borough with regards to alternative energy is to promote its use. And while the borough can, and should promote alternative energy, care must be taken not to endorse a specific industry, incentive program, or vendor.



Typical Alternative Energy Battery Storage System

The role of the borough must be limited to providing information and wherever possible arrange public forums for the public and vendors to meet. It is important for the public to understand the Kenai Peninsula Borough supports and endorses the use of alternative energy, energy efficiency, and energy conservation without extending that endorsement to any individual business.

Establish Ongoing Promotion of Alternative Energy & Efficiency

To be effective, any program implemented by the borough will need to be repetitious. Through the use of existing borough buildings such as schools, assembly chambers, or the ERC classroom, the borough can provide a physical location for the interested public to meet with alternative energy system suppliers. Through the use of Public Service Announcements, the borough can access various media at no cost to the borough, participating companies, or the public.[7]

[7] Dessart, George. (2009)*Public Service Announcements*

Identify Long-Term Goals (Tidal & Geothermal Development)

Well beyond the scope of this agenda, but worthy of mention are the additional alternative energy sources of Tidal Energy and Geothermal Energy. Geothermal Energy research is already in progress at Mt. Spurr, although any large scale power generation is likely years away.[8] Mt. Augustine, another volcano located within the Kenai Peninsula Borough is also under consideration for geothermal studies. Furthermore, any power generation involving geothermal will require infrastructure on an industrial scale.

Geothermal Electricity Generation Plant in Iceland

On a much smaller scale, geothermal variant is to extract small amounts of heat from the ground or a body of water near a structure. Although this small amount of heat is insufficient to provide all heating needs, it can be used to augment primary heat sources. These systems operate very similar to solar hot water systems. Basically a coil of pipe or tubing is buried in the ground or placed in a body of water. A circulating pump circulates a fluid other than water through the coils. As the fluid circulates, it collects heat from the surrounding earth or water and brings it back to a heat exchanger to supplement existing heat sources. This type of geothermal heat system will be addressed in greater detail further into this document. At the time of this writing insufficient information exists as to the number, if any, of these systems are in use on the Kenai Peninsula, although one has been reported in use within the city limits of Homer.

[8] AK Division of Oil & Gas. *Geothermal Exploration.* (July 7, 2009)

Tidal energy has been the subject of a feasibility study by Ocean Renewable Power Company of Boston, Massachusetts.[9] If results are determined favorable, a commercial tidal power generation system could be in operation in Knik Arm by 2012. A river-flow turbine system test is also planned by Alaska Power and Telephone on the Yukon River in Eagle. The ultimate scale of investment into either geothermal or tidal energy sources is yet to be determined.

Roosevelt Island, New York

World's First Free-Flow Tidal-Power Turbines Activated in New York

The Roosevelt Island Tidal Energy (RITE) project recently generated and delivered to local businesses the world's first kinetic hydropower. This is an emerging form of renewable energy derived from the natural flow of water, without the use of dams.

RITE is using the first free-flow tidal turbines in the world, providing more than 1,000 kilowatt hours per day of clean, emission-free electricity to Roosevelt Island. The turbines are operated by Verdant Power, Inc., a global integrator of kinetic or "free-flow" hydropower systems and a marine renewable-energy developer of dam-less hydropower sites.[10]

[9] Bradner, Tim. Outside Company Testing Cook Inlet Tides as Energy Source. *Alaska Journal of Commerce* (October 28, 2007)
[10] Environment DEC (July 2007) World's first Free-Flow Tidal-Power Turbines Activated in New York

Establish Communication with Alternative Energy Companies

The Kenai Peninsula Borough can provide the resources and identify incentives for promoting the use of alternative energy to the public. Bringing the process to fruition will require alternative energy system suppliers to provide equipment and service that will instill pride and confidence in the consumer. Understanding that any single type of system may not be adequate, alternative energy system providers must work with each other to design systems that have the necessary mix to meet maximum efficiency relative to customer need. The KPB should not take any position of authority with respect to alternative energy, nor should it show preference to one company or form of alternative energy over another. The KPB should however, establish a positive working relationship with all local alternative energy system suppliers. The visible support and promotion of alternative energy by the KPB should in itself add to public acceptance and confidence.

Combined Application

The existence of a positive relationship will encourage alternative energy system providers to keep the KPB abreast of any changes or technical advances within the industry for dissemination to the public. Additionally, the KPB should maintain a current list of alternative energy system suppliers both locally within the Kenai Peninsula Borough and across the state. The current list of suppliers can be found in Appendix-C.

C. Projected Timeline

Agenda Completed and Implemented

The *Agenda for the Promotion of Alternative Energy & Energy Efficiency* was formally brought into existence on June 15, 2009, with the completion of its outline. Expansion of the outline into a working document began on June 24, 2009. Review and revision will continue through July 2009, with a final document completed and published by July 31. This document will be reviewed and updated through the remainder of 2009 and into 2010 until a determination is made by the Legislature as whether or not to enact an exemption for alternative energy systems. Once that determination is made, this document will be replaced with a new publication entitled *The Energy Resource Handbook*. The initial outline of that handbook is provided in Appendix-B.

Implementation of this agenda has already begun with the commencement of alternative energy and energy efficiency research. The completion of this document will formalize the implementation, as it will provide definition and objectives. Figure-4 below is a projection of the proposed timeline for the implementation of this agenda.

June 15, 2009	**July 30, 2009**	**Aug 31, 2009**	**Sep/Oct 2009**	**Jan 31, 2010**	**Feb 28, 2010**	**Mar 2010**
Initiation of Initial Outline	Completion of Expansion of Outline into a Working Document	Complete Initial Contacts Equipment Providers and Installers	Conduct Alternative Energy Presentation to Legislative Delegation	Meet with Alaska Housing Finance and Kenai Peninsula Builders Association	Finalize & Determine Public Presentation Format	Begin Public Classes

Figure-4 Timeline

Coordinate Efforts with Local Providers

Initial contact with the Kenai Peninsula Association for Renewable Energy (KPARE) occurred on May 27, 2009. At present, KPARE will serve as a liaison between the Kenai Peninsula Borough and the local alternative energy system providers. The KPARE website can be visited at www.kpare.org, and links to other relevant websites can be found there as well. Contact with individual providers both locally and in Anchorage will continue through August to establish a rapport in preparation for legislative and public presentation. Lending institutions that offer or administer energy-related loans will be contacted also.

As the relationship develops, these equipment providers will be afforded the opportunity to participate in, or contribute to the promotional presentations. Principals of each company will also be invited to sit on the panel making the presentation to the local representatives and state legislators. Considering the small number of providers on the Kenai Peninsula, representatives from companies outside the local area will also be

invited as the proposed exemptions affect the entire state and not just the KPB. A list of alternative energy system providers, both within the KPB and elsewhere across the state, can be found in Appendix-C.

Coordinate Presentation to Local Representatives and State Legislators

The focus of the presentation to the local representatives and state legislators will be the proposal of creating property tax exemptions for alternative energy systems. Incentives will also be developed and proposed for passive energy use reductions such as design features and energy ratings above a specified threshold.

Ideally, each of the local representatives and state legislators would be in attendance at a single presentation, which is proposed for late September or early October 2009. Officials and representatives from the cities across the borough will be invited to attend as observers. The timeframe proposed is well after summer activities, but before the holiday season. This will also allow time for collecting and providing additional information to the delegation should they decide to proceed with introducing legislation when their session begins in January 2010.

Coordinate Information Exchange with Financiers and Builders

Upon completion of the presentation to local representatives and state legislators recommending a property tax exemption, the next target group will be financiers and builders. With the number of incentives and programs that are becoming available, one organization may not have the same or as current information as the other. Rather than try to schedule meetings with individual financial institutions, a single meeting with the Alaska Housing Finance Corporation (AHFC) should be sufficient to provide insight into the programs and incentives that apply within the cities requiring building permits and the remainder of the borough as well. Likewise, rather than meet with individual builders, a single meeting with the Kenai Peninsula Builders Association (KPBA) should suffice. Meetings with each of these organizations will be requested during mid January, 2010 as construction activity is typically slow at this time.

Types of Insulation

Energy Efficient Light Bulbs

Develop Methods to Create Public Awareness

The ultimate goal of this agenda is to make the public aware of the viability of alternative energy and the numerous incentives. This awareness is also intended to be extended to include Energy Efficiency topics and Energy Conservation practices also. Methods currently under consideration include using public school classrooms, other borough buildings, and through cooperation with the cities within the borough and city buildings.

Methods of communication currently include Public Service Announcements, provider website, and possibly the Kenai Peninsula Borough website. In anticipation of the 2010 summer building season, the methods for creating public awareness should be finalized by the end of January 2010. Completion by this date will allow time to schedule the first public presentation for February 2010. A sample Public Service Announcement is provided in Appendix-D.

Phase I—Presentation to Legislators

A driving force behind the creation of this agenda was to provide a vehicle to propose a property tax exemption for homeowners who install alternative energy systems or make a substantial effort to increase energy efficiency. While the intent of this agenda is to provide a service to the residents of the Kenai Peninsula Borough, the scope of any exemption created by the legislature would extend statewide. A successful presentation as planned in late 2009 would allow the representatives time to identify any additional questions or information requirements before returning to session in 2010.

A. Presentation of Information

Target Audience

The presentation of an alternative energy property tax exemption proposal will have a greater chance of success if it can be presented in a single sitting. Every effort should be made to accommodate the schedules of as many of the state legislators as possible, to ensure greatest attendance. Providing the legislators the opportunity to observe the presentation together will allow them to ask questions both of the panel and each other. Invitations will be extended to:

(1) Senate President, Gary Stevens (Biography in Appendix-E 1)
(2) State Senator, Tom Wagoner (Biography in Appendix-E 2)
(3) State Senator, Con Bunde (Biography in Appendix-E 3)
(4) State Senator, Albert Kookesh (Biography in Appendix-E 4)
(5) Speaker of the House, State Representative Mike Chenault (Biography in Appendix-E 5)
(6) State Representative, Kurt Olson (Biography in Appendix-E 6)
(7) State Representative, Paul Seaton (Biography in Appendix-E 7)
(8) State Representative, Mike Hawker (Biography in Appendix-E 8)
(9) State Representative, Woodie Salmon (Biography in Appendix-E 9)

Alaska State Senators Representing the Kenai Peninsula

Senate President
Gary Stevens

Senator
Tom Wagoner

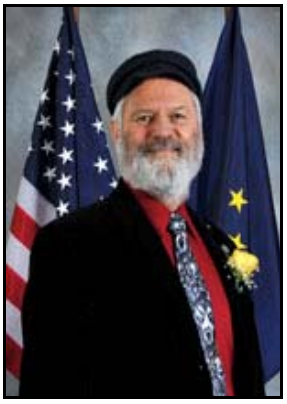
Senator
Con Bunde

Senator
Albert Kookesh

Alaska State Representatives for the Kenai Peninsula

Speaker of the House
Mike Chenault

Representative
Kurt Olson



Representative
Paul Seaton

Representative
Mike Hawker

Representative
Woodie Salmon

The location for the presentation of this proposal to the legislators has yet to be determined. Given the number of legislators involved, the preferred location will be either the Kenai Peninsula Borough Assembly Chambers or the Emergency Response Center classroom. Both of these locations have adequate seating capacity, and are capable of providing the necessary technical resources for a presentation of this scope.

Prior to the presentation of this proposal to the state legislators, a presentation will be made to the Kenai Peninsula Borough Assembly. As identified earlier, with the enactment of Peninsula Borough Resolution 2008-007, the Kenai Peninsula Borough Assembly has demonstrated support of alternative energy, energy efficiency, and energy conservation efforts. The current assembly membership is provided on the following page.

Kenai Peninsula Borough Assembly

	**Milli Martin, President** P. O. Box 2652 Homer, Alaska 99603 Phone: 235-6652 Fax: 235-6652 E-mail: millimom@xyz.net Map: District: 9-South Peninsula Term Expires: 2009 Previously Elected: 2000, 2002, 2003, 2006		**Gary Knopp** 50465 Patrick Drive Kenai, Alaska 99611 Phone: 283-9494 Fax: 283-9800 E-mail: pa12gary@hotmail.com Map: District: 1-Kalifornsky Term Expires: 2009 Previously Elected: 2006	
	**Hal Smalley** 105 Linwood Lane Kenai, Alaska 99611 Phone: 283-7469 E-mail: hvsmalley@yahoo.com Map: District: 2-Kenai Term Expires: 2011 Previously Elected2008		**Gary Superman** P. O. Box 8425 Nikiski, Alaska 99635 Phone: 776-8448 Fax: 776-8098 E-mail: gsuperman@gci.net Map: District: 3-Nikiski Term Expires: 2010 Previously Elected: 1989, 2001, 2004, 2007	
	**Pete Sprague, Vice President** 188 Farnsworth Blvd. Soldotna, Alaska 99669 Phone: 262-4073 Fax: 262-8615 E-mail: psprague@acsalaska.net Map: District: 4-Soldotna Term Expires: 2010 Previously Elected: 1998, 2001, 2002		**Charlie Pierce** Sterling, Alaska 99672 Phone: 260-6647 E-mail: cpierce@gci.net Map: District: 5-Sterling/Funny River Term Expires: 2011 Previously Elected: 2008	
	**Ron Long** P. O. Box 2464 Seward, Alaska 99664 Phone: 224-7068 Fax: 224-5707 E-mail: rlms@ptialaska.net Map: District: 6-East Peninsula Term Expires: 2009 Previously Elected: 2000, 2003, 2006		**Paul Fischer** P. O. Box 889 Kasilof, Alaska 99610 Phone: 262-9269 Fax: 262-4902 E-mail: akjfischer@hotmail.com Map: District: 7-Central Term Expires: 2010 Previously Elected: 1998, 2001, 2002, 2004, 2007	
	**Bill Smith** P.O. Box 150 Homer, Alaska 99603 Phone: 235-8932 E-mail: bsmith@xyz.net Map: District: 8-Homer Term Expires: 2011 Previously Elected: 2007, 2008			

Panel Conducting Presentation

The current Kenai Peninsula Borough Administration has taken the position to promote alternative energy and energy efficiency. With that, the administration has also taken the position of being a facilitator rather than a director for these presentations . The only deviation from this standpoint will be with respect to the proposed property tax exemption. As the local taxing authority, the Kenai Peninsula Borough is most qualified to best determine the type and value of property tax exemption to propose. Likewise the Kenai Peninsula Borough can produce the data, both current and historic, should it be necessary. However, this is not intended to diminish the value or contribution of the other members of the panel.

The forum used to present the proposal should be casual and relaxed with the intent of providing information. A facilitator will guide the proceedings but only to the extent of maintaining control over the flow of presentations and questions. Those presenting information will not be restricted to a time limit, but they will be instructed to keep information as generalized and as basic as possible. Any information that is technically complex should be avoided in presentation, but any specific questions should be answered.

The intended panel reflects a collection of expertise in the fields and industries acquainted with alternative energy and energy efficiency. Individual members of the panel will conduct a brief presentation in a particular area and explain how it will impact daily energy requirements and usage. An initial draft of the Schedule of Presentations (program) can be found in Appendix-F. The suggested makeup of the panel should include (order does not suggest level of importance):

(1) A Facilitator to Guide the Presentation
(2) The KPB Mayor or Delegated Representative
(3) KPB Representative to Introduce Proposal
(4) Wind Energy Representative
(5) Solar Energy Representative
(6) Energy Efficiency Representative
(7) Building Industry Representative
(8) Finance Industry Representative
(9) Local Independent Jurisdiction (cities) Representatives

Upon completion of presentations, members of the panel will be available to answer any questions which may be forthcoming. An attempt will also be made to have a static display of the various types of systems currently available. In addition to the static displays, efforts will be made to have pictures on hand of the alternative energy systems already in use across the borough. Those residents owning the systems will be invited to the presentation as guests to answer any questions the legislators may have.

B. Evolution of Alternative Energy

Throughout history mankind has been taking advantage of alternative energy. Ancient civilizations through the nineteenth century depended on wind to power sails to move ships across the oceans of the world. Even today, wind is still used to power recreational boats. Wind has been used to power windmills to pump water from wells and to recover land from the sea as in the case of the Netherlands.

Windmill

18th & 19th Century Sailing Ships

Solar has been used passively to heat homes, and actively to bake bricks across the Middle East and Western America. Ancient Romans captured geothermal energy to heat their famous public baths and the American Indians used hot springs for warmth, healing, and cooking.

Sun Dried Bricks

Hydroelectric Dam

More than any other renewable energy, today running water is used to power generators in hydroelectric dams. In most cases hydroelectric dams serve a three-fold purpose. First they provide a reservoir of water for irrigation, a population center water supply, or both. Secondly, as the water is released for agricultural needs, the flow is used to power turbines that generate electricity. Lastly, the reservoir can also be used for both recreation and wildlife habitat.

Reducing Dependence on Fossil Fuels

A very common misconception is that alternative energy is intended as a replacement for fossil fuels. Alternative energy, energy conservation, and efforts to improve energy efficiency are intended as supplements to reduce demands on fossil fuels. The use of alternative energy and taking steps towards energy efficiency can reduce dependency on fossil fuels.

At 20,680,000 barrels per day in 2007, the United States currently consumes nearly three times more oil per day than its nearest challenger, China, at 7,578,000 barrels. After China, the United States consumes more oil per day than the combined total of 20,097,000 barrels for Japan, Russia, India, Germany, Brazil, Canada, and Saudi Arabia.[11] (Figure-5)

Top 20 Oil Consuming Countries

Rank	Countries	Amount	Date
# 1	United States:	20,680,000 bbl/day	2007
# 3	China:	7,578,000 bbl/day	2007
# 4	Japan:	5,007,000 bbl/day	2007
# 5	Russia:	2,858,000 bbl/day	2007
# 6	India:	2,722,000 bbl/day	2007
# 7	Germany:	2,456,000 bbl/day	2007
# 8	Brazil:	2,372,000 bbl/day	2007
# 9	Canada:	2,371,000 bbl/day	2007
# 10	Saudi Arabia:	2,311,000 bbl/day	2007
# 11	Korea, South:	2,214,000 bbl/day	2007
# 12	Mexico:	2,119,000 bbl/day	2007
# 13	France:	1,950,000 bbl/day	2007
# 14	United Kingdom:	1,763,000 bbl/day	2007
# 15	Italy:	1,702,000 bbl/day	2007
# 16	Iran:	1,679,000 bbl/day	2006
# 17	Spain:	1,611,000 bbl/day	2007
# 18	Indonesia:	1,219,000 bbl/day	2006
# 19	Netherlands:	984,200 bbl/day	2007
# 20	Australia:	966,200 bbl/day	2007

Figure-5

As the world's largest consumer, the United States now imports more oil than it produces. (Figure-6) Additionally, the United States is reducing domestic production. During the first quarter of 2009 there were 22% less oil and gas wells than during the first quarter of 2008. The first quarter total is also 35% lower than the fourth quarter, 2008.[12]

[11] Nation-Master (2008) Energy Statistics

[12] Casselman, Ben "Slow Leak: U.S. Oil and Natural Gas Drilling Continues to Drop" *Wall Street Journal*, April 15, 2009

The increase in consumption, compounded by increasing imports and decreasing domestic production further supports the pursuit of alternative energy.
Figure-2 presented earlier on page 6 reflects the increasing consumption of oil, and Figure-5 indicates the United States ranking as the leader in oil consumption. Figure–6 shows that the United States now imports more oil than it produces while Figure-7 identifies the sources of oil imports.

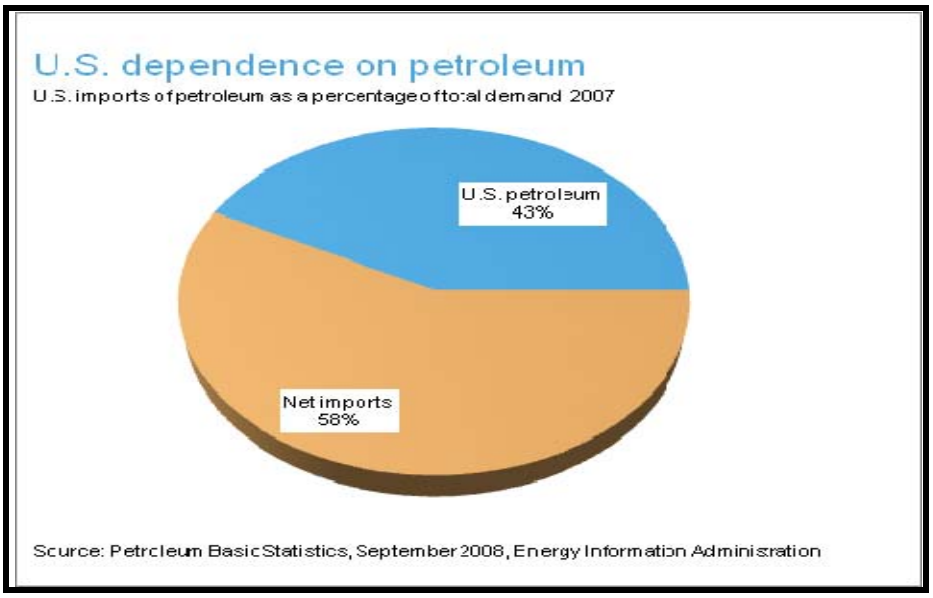


Figure-6

US Crude Oil Imports April 2008

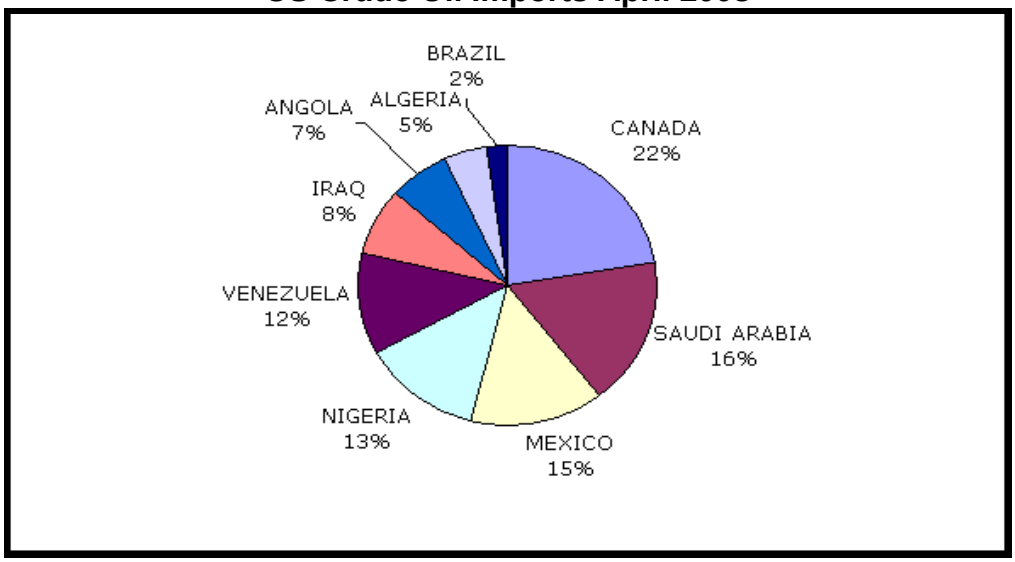


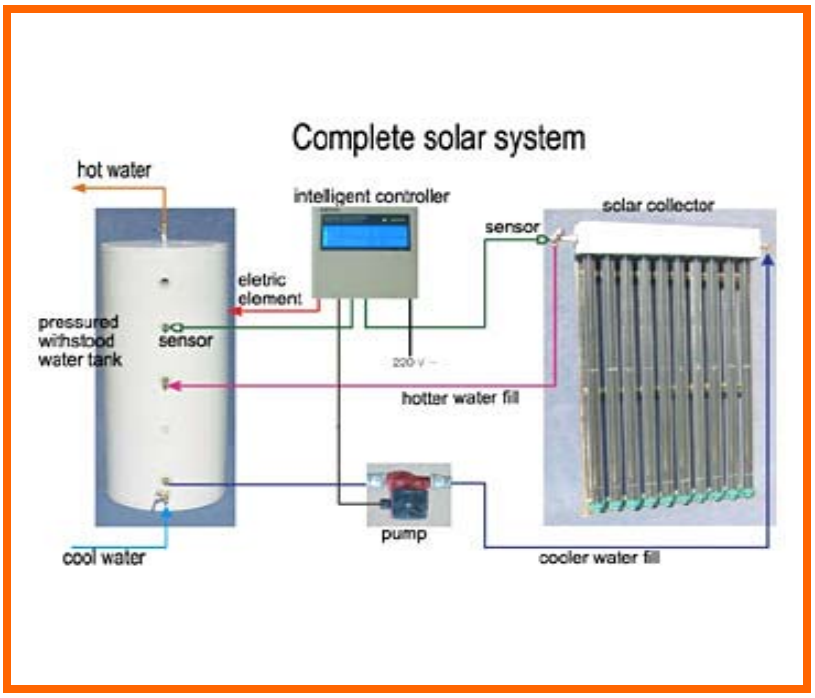
Figure-7

The information presented in the tables is a clear indictor that the United States must not only reduce its dependence on imported oil, but it must also take steps to reduce consumption. Energy efficiency and energy conservation are steps that are immediately available, and many alternative energy solutions are on the shelf and ready to go.

Evolution of Alternative Energy Technology

Different sources of energy have been pursued for decades, and even centuries, but alternative energy gained its first broad surge of interest during the energy crisis of the early 1970s. While capturing the energy of the sun, wind, moving water, and geothermal processes seem simple enough in theory, although doing so in practicality is a different matter.

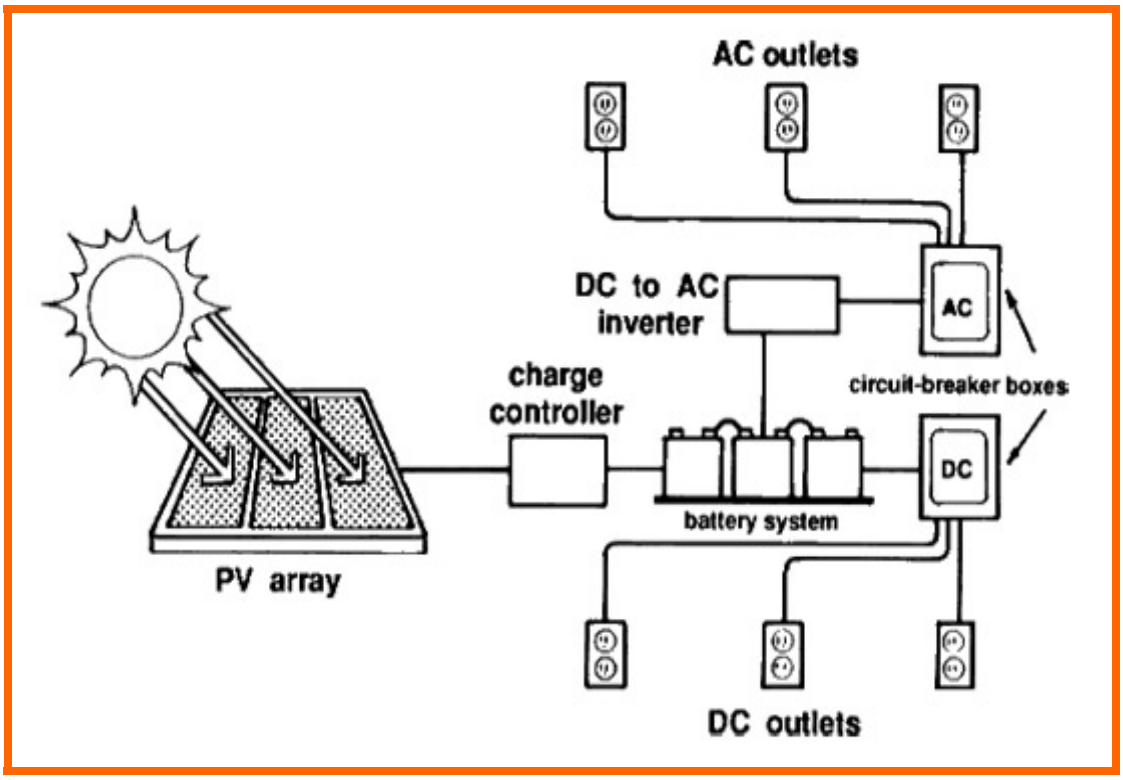
Hot Water: Solar energy has been used passively for eons, while actively it has a much shorter history. The first known true solar collector designed, built, and patented in 1891 by Clarence Kemp of Baltimore, Maryland. However, it was not until the 1970s that interest in solar hot water resurfaced.



Solar water heating system

These hot water systems, while relatively simple in design, were relatively expensive with regards to initial cost. In many cases they were used as a pre-heating system for traditional hot water systems, but either a special water heater tank or a secondary tank was required to introduce the solar heated water into the household system. In other cases a heat transfer fluid, such as ethylene glycol, was used which required a heat exchanger to keep the heat transfer fluid from mixing with the fresh water in the household system. The solar collectors used at the time, while not unlike those of today, were usually heavy and the glass "glazing" was fragile. In most applications the collectors were mounted on a roof which sometimes required reinforcement and special attention to penetrations through the roof for piping. A solar hot water system also requires a pump to circulate the water or transfer fluid from the collector to the hot water storage tank and back through the collector. The solar hot water systems of today have not changed in design or concept, but they have changed in equipment. Today's equipment is more efficient, more dependable, and comparably less expensive.

Solar Electricity: During the 1970s and into the present, there has been greater emphasis towards using sunlight for producing electricity. As with the solar water heating systems, photovoltaic systems suffered from high initial expense, defects in photovoltaic cells, and batteries with short lives relative to system design intent.



Typical photovoltaic schematic

Recent advances in technology now provide photovoltaic cells that are more efficient and durable. Likewise improved battery design provides for longer life and greater storage capacity. While photovoltaic systems still have high initial installation costs, maintenance costs have been reduced and the systems have improved in overall efficiency.

Wind Power: Wind has been used for centuries to pump water, either out of the ground for irrigation, or from behind levees to recover land. It was not until the 1920s that wind power was used for generating electricity. During this time and extending into the 1930s over one million households were using wind to power a small radio and a couple of household lights. Unlike the utility companies of today, the utility companies of that era saw this as a threat to centralized power and started the Rural Electrification Project to end individual power generation. "*They brought power to the countryside, they got the government to pay for it, and before they hooked up your house, you were required to destroy your wind generator. You had to tip your tower over. They shot the generators in the coils with guns. They literally assassinated the wind industry.*" [13]

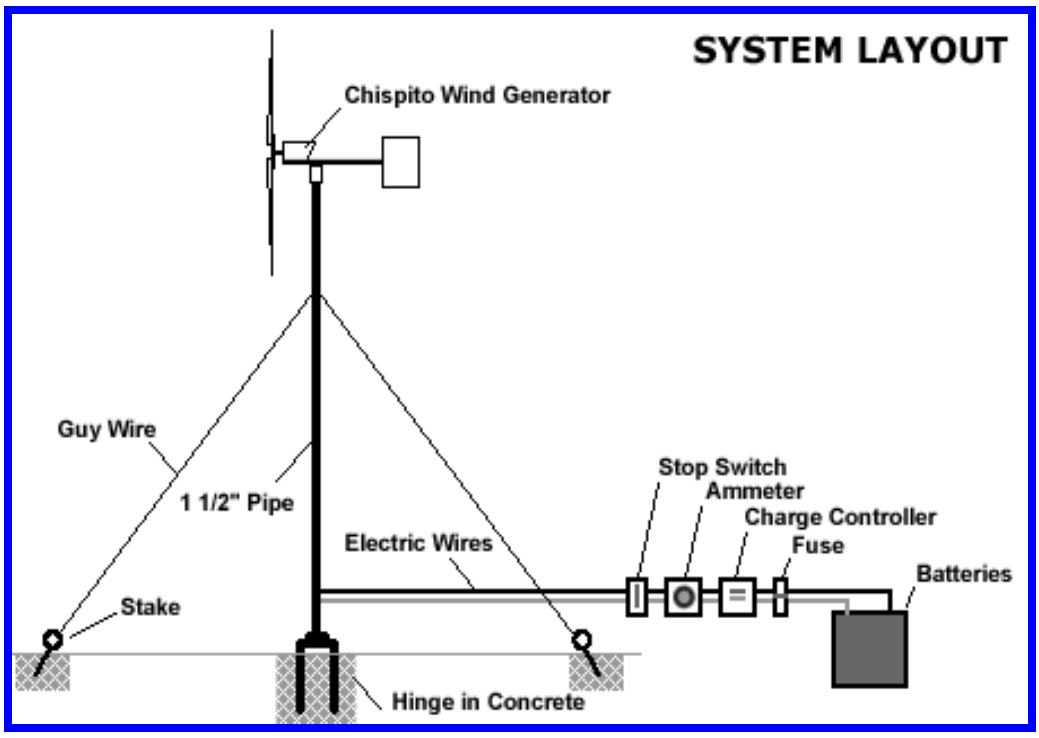
[13] Thurlow, Dave "The History of Wind Power", The Weather Notebook (July 2009)

With a resurgence of interest in solar energy in the 1970s, interest in wind energy was renewed as well. Just as with solar energy, advances in technology have been applied to wind power as well.

Circa 1930

Today

Today's wind turbines are more efficient and require less wind to operate. As wind turbines are being introduced into urban areas, their design is more aesthetically pleasing as well. Legislation also provides that local utility companies must purchase excess electricity that is generated by private systems.



Typical Wind System Schematic.

Anticipated Growth in Alternative Energy

According to the Energy Information Administration, the projected world demand for energy is expected to increase by 44% from 2006 to 2030. Through 2030, coal and natural gas together will continue to be the primary fuel providing 60% of electricity generation. With renewable energy as the fastest growing segment of energy production, it will continue to play an increased role in overall world energy production as identified by the Energy Information Administration. [14]

> "Renewable energy sources are the fastest-growing energy source for world electricity generation in the *IEO2009* reference case, increasing by an average of 2.9 percent per year from 2006 to 2030. Much of the growth is in hydroelectric power and wind power. Of the 3.3 trillion kilo-watt-hours of new renewable generation added over the projection period, 1.8 trillion kilo-watt-hours (54 percent) is attributed to hydro-electric power and 1.1 trillion kilo-watt-hours (33 percent) to wind power (Figure-8) (Identified as Figure-17 on chart). Other than hydroelectric power, most renewable technologies are not able to compete economically with fossil fuels over the projection period, except in a limited number of niche markets. Government policies and incentives typically are the primary drivers for the construction of renewable generation facilities." [15]

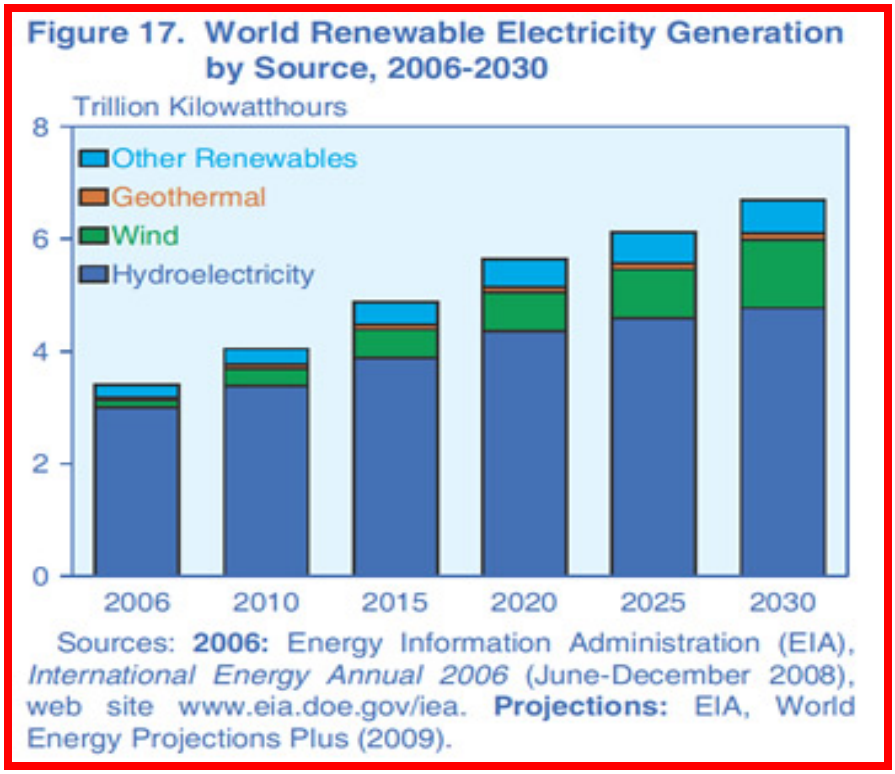


Figure-8

[14] Energy Information Administration
[15] Energy Information Administration

C. Types of Alternative Energy Locally Available

The Kenai Peninsula Borough is fortunate in that it is geographically situated to enjoy not only an abundance of fossil fuels, but also solar, wind, geothermal, hydro, and tidal resources. As with much of America, the Kenai Peninsula Borough has relied on fossil fuels for energy production.

Solar

A common misconception in Alaska is that there is not enough sunlight during winter months and too much during summer to make solar applications viable. The map in Figure-9 below will illustrate that Germany has similar sunlight conditions to that of Alaska, which is the least desirable United States solar region. And while Germany has conditions similar to Alaska, Germany has eight times the installed solar capacity of the entire United States. This is largely due to both public and government support of solar energy.[16]

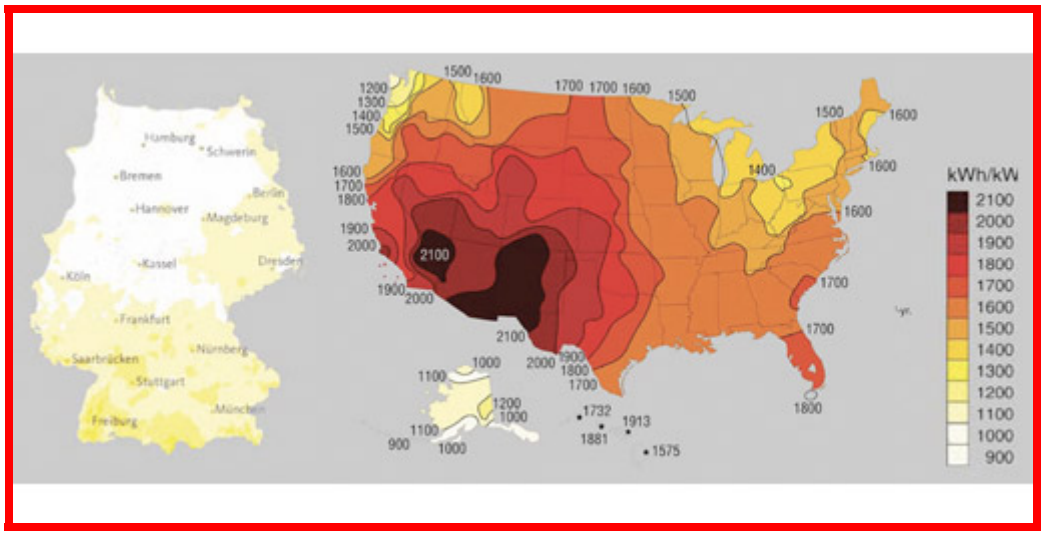


Figure-9 Germany shown with Similar Solar Availability as Alaska

Solar Thermal Power: Solar Thermal Power uses sunlight to heat either water or a heat transfer fluid. For household applications the heat is used to preheat water or produce hot water directly. Some open systems circulate water through the collector and water heater storage tank. Other closed systems circulate a heat transfer fluid, such as ethylene glycol, between the solar collector and a heat exchanger. The heat exchanger then heats water that is circulated between the exchanger and water heater.

On a limited commercial, and more so on an industrial scale, the thermal energy produced by the sun is used to heat a transfer fluid to a temperature high enough to produce steam. Figure—10 on the following page is a schematic of a typical sunlight-to-heat system for generating electricity.

[16]"Renewable Generation" *Repower America* (July 2009)

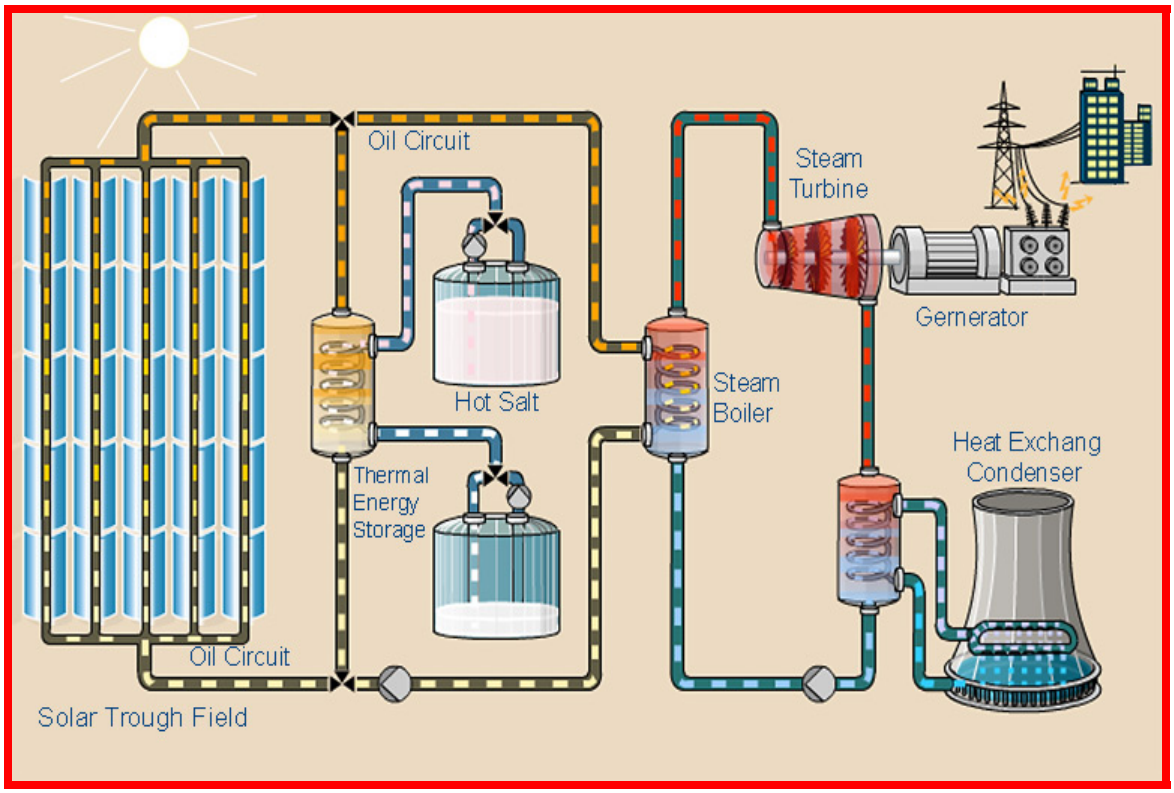


Figure-10

Solar Photovoltaic Power: Photovoltaic cells, also know as solar cells, convert sunlight directly into electricity. Figure-11 below is a representation of a typical photovoltaic system for household and small business applications.

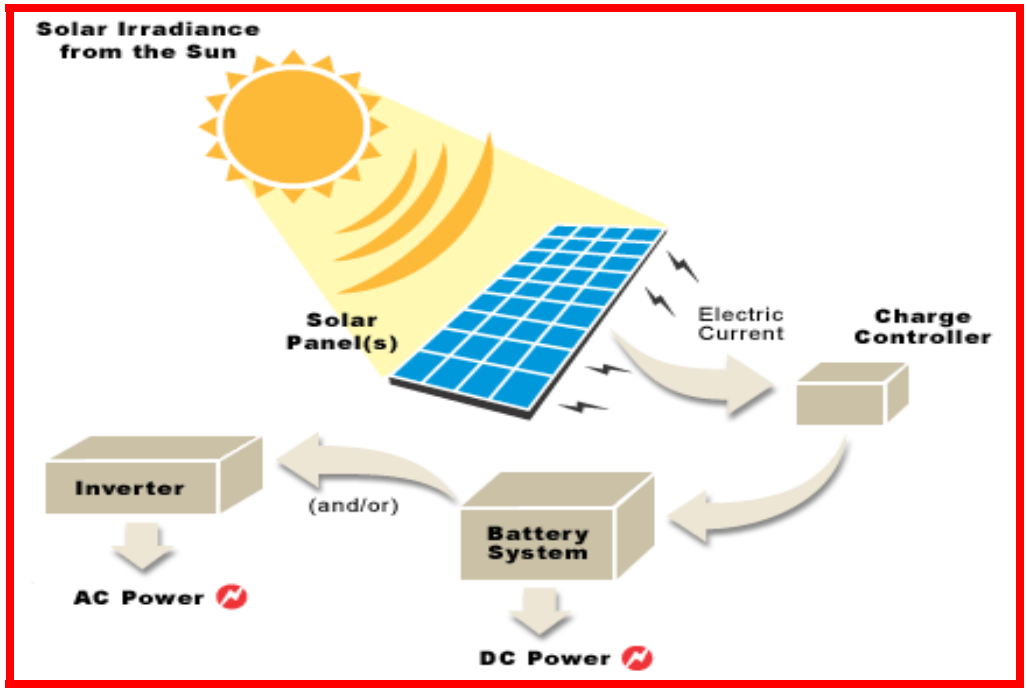


Figure-11 Typical Photovoltaic System with Battery Storage

Many individual photovoltaic cells connected together within a common enclosure is called a photovoltaic collector. Photovoltaic collectors can be mounted on rooftops, separate platforms, or incorporated into the design of the structure. In should be noted that photovoltaic systems work with Direct Current (DC) and the electricity produced is stored in batteries. When electricity is required for household use it is converted to Alternate Current (AC) by means of an inverter. Batteries allow for electricity to be stored throughout the hours of sunlight for use either immediately or later during hours of darkness. In Alaska, and specifically the Kenai Peninsula, with an adequate system and ample battery storage capacity, it is possible to produce and store enough electricity during short winter days for use on long winter nights.

Wind

With hundreds of miles of coastlines and varying topography the Kenai Peninsula Borough is well suited for using wind power as evidenced by the maps in Appendix-G. Although the technology is relatively complex, the theory of wind power is relatively simple. Wind is used to turn a propeller blade that turns a generator that produces electricity. Older technologies required stronger wind speeds and the blades could not self-feather or the generators could not turn themselves off resulting in damage during high winds. Figure-12 below is an illustration of the typical components in a modern day wind turbine. Notice the anemometer that is used to measure wind speed. If the wind speed becomes too strong, the controller will disengage the generator or set the brake to prevent damage.

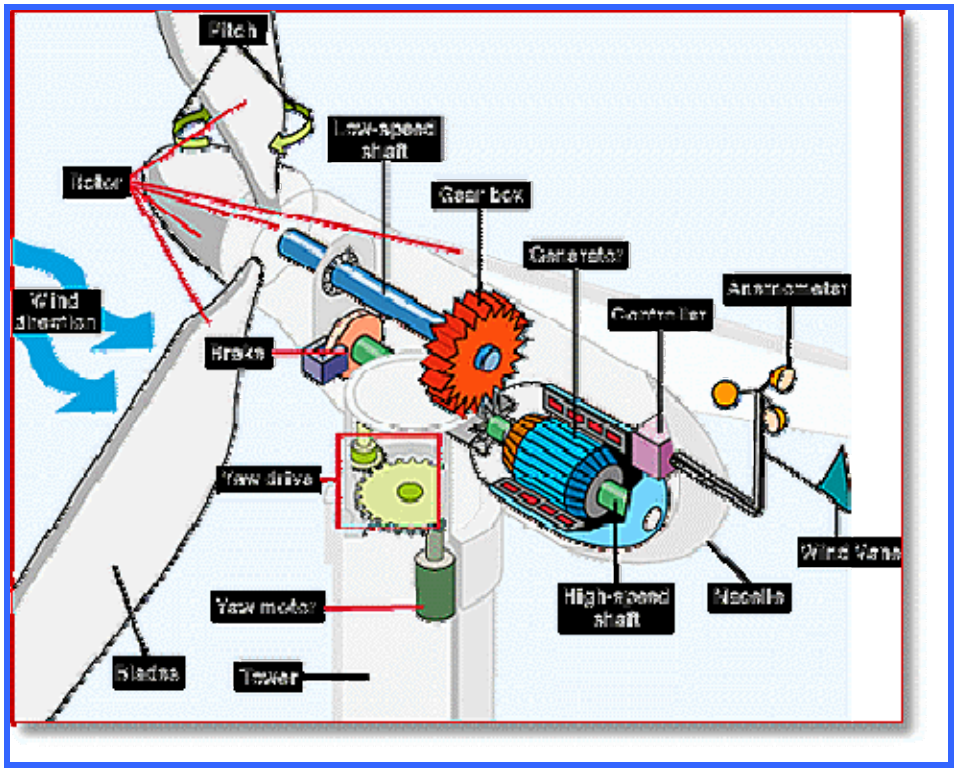


Figure-12 Cutaway View of a Typical Wind Turbine

Hydroelectric

Hydroelectric power is generally associated with huge dams and reservoirs, and in most cases that is true. Dams are in use across the world for many reasons, one of which is the production of electricity. Water is very much a renewable resource and the electricity produced by these dams is relatively less expensive than what is produced by burning coal or natural gas. Conversely, dam construction is expensive and requires investment on an industrial, if not a governmental scale.

Hoover Dam

What is generally unknown is the availability of hydroelectric generators on a consumer scale. These generators are typically much smaller in scale and only require sufficient water movement to operate such as the mini generator below.

Mini Hydroelectric Generator

While a small generator such as this would likely work on the waterways of the Kenai Peninsula, no focus beyond acknowledgement is presented due to the numerous regulatory issues that apply to those waterways, which are beyond the scope of this document.

Geothermal

With several active volcanoes within the borders of the Kenai Peninsula Borough, geothermal energy is receiving close attention. Geothermal energy can be used for both heat and for the production of electricity. Studies currently underway at Mt. Spurr and Mt. Augustine are also being considered.[17] The map on Appendix-H can be used to identify volcanic-related geothermal resources across not only the Kenai Peninsula, but the entire state.

Electricity Generation: Due to the huge expense, using geothermal energy to produce electricity is a large commercial or industrial scale venture. Locating a constant source of steam in the desired 350 degree temperature range may require drilling a well in excess of 12,000 feet. However, once an adequate source is located, geothermal energy like wind is relatively complex technically, but relatively simple in theory. Essentially a well is drilled into a reservoir of steam that is heated by volcanic activity. The steam is released under its own pressure through a production well into a turbine that powers a generator that produces electricity. The steam is then allowed to cool and reintroduced to the reservoir by an injection well. Figure-13 is a diagram of at typical geothermal electricity generation station.

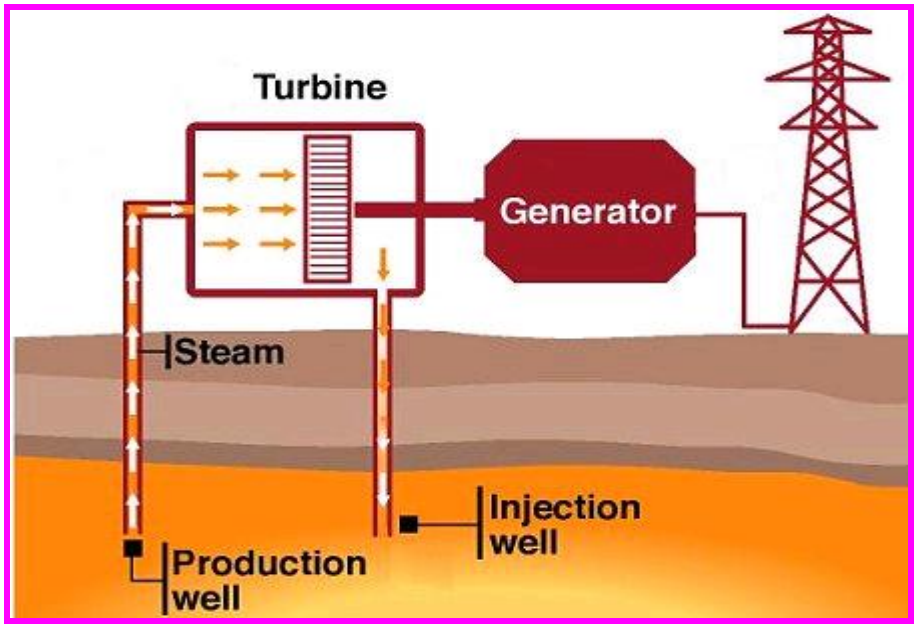


Figure-13

Household: Another application of geothermal energy is for producing heat. Typically this is done by removing heat directly from the ground even in the absence of volcanic activity. Depending on latitude, subsurface ground temperatures remain constant between 45 and 75 degrees Fahrenheit. Tubing is placed in the ground below the local frost line and fluid is circulated as in a solar collector for producing hot water. The closed loop can also be placed in a body of water that does not completely freeze during winter months. Unfortunately the technology is still lagging in this area and installation costs can be very

[17] Kolker, Amanda (October 2007) "Alaska Geothermal Development: A Plan" *Alaska Energy Authority*

expensive due to the amount of possible excavation necessary. Additionally, the cost recovery time can be five to ten years, if not more, depending on the type of system. Figure-14 below is a typical system with the heat collection coils placed within the ground and Figure-15 is a system that uses a small pond as a collection area.

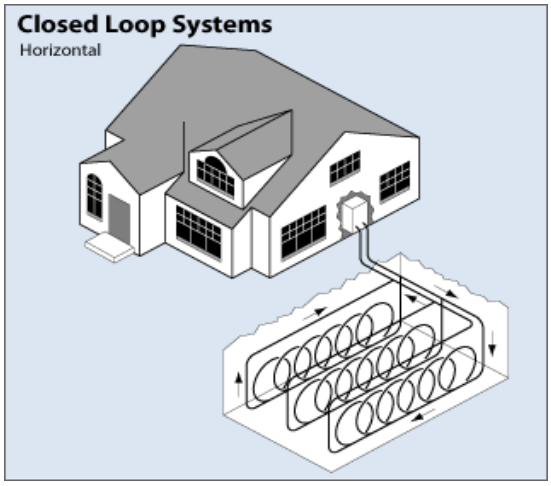


Figure-14

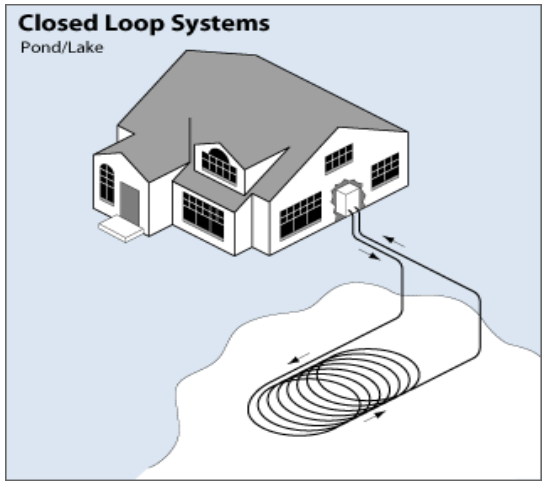


Figure-15

Tidal Energy

With two tidal changes each day, Cook Inlet within the Kenai Peninsula possesses great potential for the development of Tidal Energy. Several types of tidal-powered electric generators exist, and many are not unlike wind turbines in both operation and design. Figure-16 is a typical rotating blade and Figure-17 uses horizontal blades.

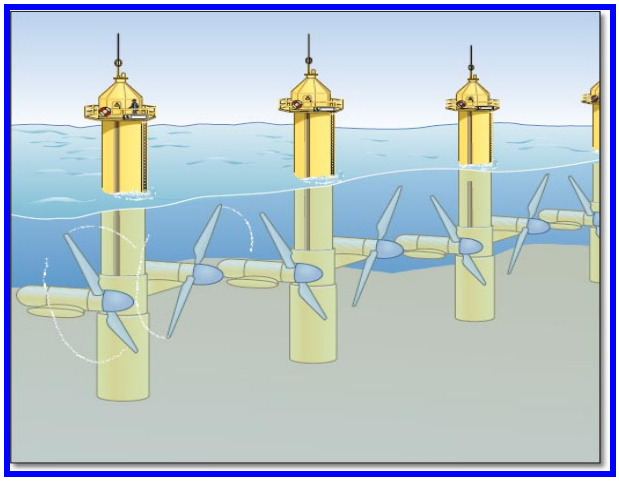


Figure-16

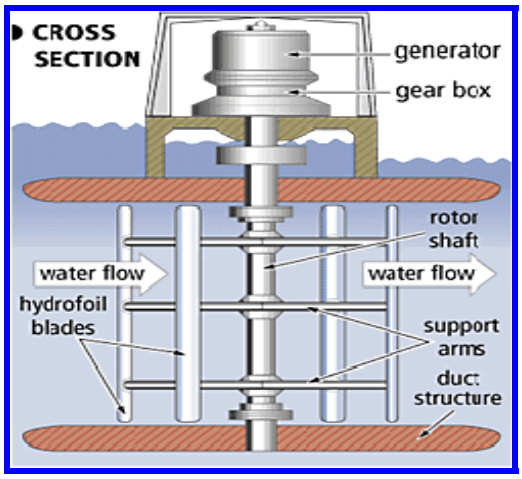


Figure-17

Just as with wind power, the tidal changes cause water movement to flow across the blades. As the blades turn, electricity is generated. The systems are also designed to capture the tide both as it rises, and again as it falls. So, with two high tides and two low tides each day, the tidal systems capture the energy of four tidal movements.

D. Current Incentives

Understanding the high initial expense in the installation of alternative energy systems, federal, state, and local governments have introduced programs and incentives to help promote alternative energy for private individuals, businesses and governments. The following federal and state incentives listed here have been reconstructed verbatim from the *Database of State Incentives for Renewable & Efficiency* (DSIRE), the Energy Efficiency and Renewable Division of the Department of Energy through the North Carolina Solar Center. The verbatim reconstructions can be found beginning on Page 50.

Federal Incentives/Policies for Renewables & Efficiency

CORPORATE DEDUCTION
- Energy Efficient Commercial Buildings Tax Deduction

CORPORATE DEPRECIATION
- Modified Accelerated Cost-Recovery System (MACRS)+Bonus Depreciation (2008—2009)

CORPORATE EXEMPTION
- Residential Energy Conservation Subsidy Exclusion (Corporate)

CORPORATE TAX CREDIT
- Business Energy Investment Tax Credit (ITC)
- Energy Efficient Appliance Tax Credit for Manufacturers
- Energy Efficient New Homes Tax Credit for Home Builders
- Renewable Electricity Production Tax Credit (PTC)

FEDERAL GRANT PROGRAM
- Tribal Energy Program Grant
- U.S. Department of Treasury—Renewable Energy Grants
- USDA—Rural Energy for America Program (REAP) Grants

FEDERAL LOAN PROGRAM
- Clean Renewable Energy Bonds (CREBs)
- Energy Efficient Mortgages
- Qualified Energy Conservation Bonds (QECBs)
- U.S. Department of Energy—Loan Guarantee Program
- USDA—Rural Energy for America Program (REAP) Loan Guarantees

INDUSTRY RECRUITMENT/SUPPORT
- Qualifying Advance Energy Project Investment Tax Credit

PERSONAL EXEMPTION
- Residential Energy Conservation Subsidy Exclusion (Personal)

PERSONAL TAX CREDIT
Residential Energy Efficiency Tax Credit
Residential Renewable Energy Tax Credit

PRODUCTION INCENTIVE
Renewable Energy Production Incentive (REPI)

State of Alaska Incentives/Policies for Renewables & Efficiency

PRODUCTION INCENTIVE
Golden Valley Electric Association—Sustainable Natural Alternative Power (SNAP) Program

STATE GRANT PROGRAM
Alaska Energy Authority—Renewable Energy Grant Program

STATE LOAN PROGRAM
Association Loan Program
Energy Efficiency Interest rate Reduction Program
Power Project Loan Fund
Second Mortgage Program for Energy Conservation
Small Building Material Loan

STATE REBATE PROGRAM
Home Energy Rebate Program

Local Incentives

Homer Electric Association—Sustainable Natural Alternative Power (SNAP)
Note: The following is a verbatim extract from the Homer Electric Association Website.

SNAP (SUSTAINABLE NATURAL ALTERNATIVE POWER)

Homer Electric's Sustainable Natural Alternative Power program, called SNAP, makes small-scale solar, wind, geothermal or biomass power more cost-effective for customers. The program simply connects customers who want to produce alternative power with other local members who want to support the development of new, renewable energy.

In 2007, a Homer Electric member survey revealed that members would be willing to pay a little extra each month to support renewable energy. The SNAP program offers that opportunity to support the generation of alternative energy by local members!

Under the SNAP program, Homer Electric members can voluntarily contribute money to a fund that will be distributed back to renewable energy producers on an annual basis. When you contribute to SNAP, you become an important part of developing local, eco-friendly,

renewable power. The money that supporters contribute is divided among the SNAP power producers, with payments based on how much money is contributed to the fund and how much renewable power each producer has generated.

The cooperative does not keep any of the funds designated by members of SNAP. Your contribution is distributed annually to the producers and supports your neighbors in developing alternative energy resources on the Kenai Peninsula.

The program is proving popular with producers, with two solar projects and three wind projects already on line. Several more members have contacted Homer Electric for information on how to install a system and participate in the program. The success of the SNAP program will depend on voluntary monetary contributions from Homer Electric members.

For additional information about becoming a SNAP producer, please contact HEA Manager of Distribution Engineering Services, Brad Hibberd, at 907-283-2318.

The goal of the SNAP program is to provide financial incentives for producers who are helping reduce the amount of fossil fuel generated power being used on the Homer Electric system. If you would like to be a SNAP contributor, simply call Homer Electric at 1-800-478-8551 or download the contribution form and return.

Click on SNAP Producers' Program brochure link for more information on how you can become a SNAP Producer.

Click on SNAP Supporters' Program brochure link for more information on how you can contribute.

Homer Electric Association—Line of Credit Program
Note: The following is a verbatim extract from the Homer Electric Association Website.

Homer Electric Association offers a line of credit to its members from $200 to $5,000 for the purchase of approved energy-efficient electrical appliances and other approved merchandise. The repayment period can be from 6 to 36 months upon approved credit, and will be setup to auto-draft from your designated bank or credit card account. There is an application fee of $35 at the time the loan closes.

The following page contains a partial list of qualifying items. An updated list and a list of approved vendors is available from http://www.homerelectric.com/Default.aspx, the Homer Electric Association website.

Qualifying Items and Services

Backup Generators/Transfer Switches
Compact Fluorescent Bulbs
Computer/Printer/Fax/Scanner/Copier
Electric Clothes Washer / Dryer
Electric Dishwasher
Electric Exercise Equipment
Electric Freezer
Electric Heat/Air Exchanging Systems
Electric Pump
Electric Range / Oven / Oven Fan
Electric Heater
Electric Refrigerator
Electric Toilet
Electric Vacuum Cleaners
Electric Water Therapy Equipment
Electric Water Heater
Electrical Wiring
Garage Doors/Openers
Holding Tanks (on-demand hot water)
Hot Tubs and Whirlpools
Meter Loops
Microwave Ovens
Monitor or Toyo Heaters
Permanent Lighting Fixtures
Satellite Dish
Security Systems
Septic Systems / Leach Fields
Sewing Machines & Sergers
Surge Protectors
Television / VCR / DVD / Stereo
Trash Compactors/Disposal Systems
Water Treatment Systems
Yard Lights & Installation Costs
Plumbing Appliances such as:
toilets, sinks, pipe, faucets, tubs

Eligible Services

Labor costs associated with:

- Installation or repair of electrical wiring
- Installation or repairs of plumbing or electrical appliances or equipment
- Installation of Transfer Switch for home generators
- Installation of Yard Light or Security System
- Installation of garage doors/openers

Net Metering: Net metering is a process by which a public utility is required to purchase excess energy that is produced by a customer that is using an alternative energy system. Although Net Metering has not been approved by the Regulatory Commission of Alaska, it is available in 42 other states and initiatives are in progress to gain approval in Alaska. The full text of *Article 3—Net Metering Standards* are provided in Appendix-I[18].

Insurance Not Required: At present no insurance requirements for connecting to the grid are known to exist within the Kenai Peninsula Borough. However, connections to the grid must be performed by a licensed electrician.

[18] 3 AAC 50 Net Metering Standards

E. Current Financial & Regulatory Drawbacks

Expensive Initial Installation

Initial expense is without question is the single most important drawback to the installation of not only alternative energy systems, but also to implementing energy efficiency and energy conservation. The ultimate initial cost of an alternative energy system is contingent upon the system type, design, and the level of intended usage. On average a system that will supplement normal consumption and occasionally send excess production back to the utility costs approximately $15,000 to install. Some of the incentives to help defray this cost have already been identified in the form of loan, grants, and tax credits. More incentives are anticipated as public acceptance increases and technology allows costs to decrease.

Wind Turbine Tower Consideration

As wind turbines are being introduced, a concern exists regarding tower height and tower location. Homer recently changed its tower height restriction and increased it to 170 feet. Kenai is considering the height of the tower plus 10% as a setback from property lines. Soldotna height restrictions (if any) are currently unknown. Seward has no height restriction but connection to the grid is restricted in some areas due to current electrical generation fluctuations. Another consideration regarding wind turbine towers is the potential to block views. This is a definite consideration in Homer as much of the city currently has an unrestricted view of Kachemak Bay.

F. Proposed Exemptions

At present there is no defined tax relief at the local level. The current administration of the Kenai Peninsula Borough is developing proposals for tax exemptions to help promote alternative energy.

Alternative Energy System Exemption

The first proposed exemption will be to exclude and exempt alternative energy systems or components from inclusion in real or personal property. The assessor will be permitted to document the existence of equipment but will be prohibited from assigning any value to the system for the purpose of property assessment valuation.

Property Tax Exemption

A second or alternate exemption will be similar to that of the $*20,000 Homeowner Exemption.* With this exemption, the State Legislature would provide for an exemption of a fixed amount ($10,000 to be proposed) that would reduce the annual assessment valuation. Unlike the *$20,000 Homeowner Exemption*, it will not be necessary for the owner to occupy the residence for a minimum of 181 days. When proposed, this exemption will extend to commercial structures as well.

Phase II—Presentation to Builders & Lending Institutions

The primary focus of this agenda is to create public awareness and to promote alternative energy, energy efficiency, and energy conservation. To ensure credibility with the program it will be necessary to ensure that both builders and lenders are aware of incentives available, and that the knowledge is equally understood. Much of the information presented to building contractors and financial institutions will be similar to that presented to the local and state representatives. In addition to providing these entities with the information contained within this document, the possibility exists that currently unknown information may be provided by the builder or lender.

A. Growing Acceptance

As an indication of the acceptance and growth of the environmental, alternative energy and sustainability markets, there have been at least 18 magazines and journals launched in 2007 that cover various green/alternative energy sectors.[19]

Much of this growing acceptance is due to improved technologies, improved applications and greater options, committed and professional companies, and governmental and regulatory support. A review of the industry and the incentives available further indicate increased acceptance and interest in alternative energy and energy efficiency.

Improved Technology & Increased Application Possibilities

Advances in technology such as lighter metals, stronger plastics, and improved electronics have been widely accepted in every field of alternative energy. With these advances, solar collectors are lighter and wind turbines are more efficient while requiring less wind energy to operate.

Passive Solar Aluminum & Mylar Sunroom

Old Windmill & New Wind Turbine

[19] "An Indicator of Acceptance" *All Business* (December 17, 2007)

From a relative perspective, the alternative energy systems today are less expensive, more durable, and operate with greater efficiency than earlier generations. As interest in alternative energy continues to grow, continued advancements in technology should provide greater viability and feasibility.

Solar Roofing Tile During Installation

Solar Roofing Tile After Installation

Digital Electronic Components

Carbon-Fiber Windmill Blade

The preceding photos are only a few examples of the advances in technology that have found their way into the alternative energy industry. It should be noted that these advances in technology apply to not only the active alternative energy applications such as wind turbines and solar collectors, but also to passive applications such as the sunroom pictured on the previous page.

Professional and Federal Certified Installation

Adding to the acceptance of and confidence in alternative energy is the availability of licensed and certified installation professionals. The use of wind power has always required the use of licensed electricians to connect to the grid, but in years past there has been little regulation of the solar industry. Today it is possible to locate a certified

installer by means of the internet. The North American Board of Certified Energy Practitioners (NABCEP) maintains a database of certified installers in every state.[20]

NABCEP Web Page Locator Map

In addition to Certified Specialists, many local plumbers are now qualified to install solar water heating systems into household plumbing, and many building contractors can now incorporate alternative energy systems into building designs.

Federal Government Recognition

In a U.S. Department of Energy press release dated November 3, 2005; the DOE announced that the U.S. Government has increased renewable energy use over 1000% since 1999 and greatly exceeded its goal.[21] This recognition has continued with the Obama Administration's emphasis on Energy Efficiency.[22] A further illustration of the federal government's support is the numerous tax incentives as well as direct funding that have already been identified.

Growing State, Local, and Public Recognition

The State of Alaska has demonstrated support of alternative energy and energy efficiency through the creation of the Alaska Energy Authority (AEA). The AEA has been tasked with reducing the cost of energy in Alaska and establishing energy independence.[23] The AEA administers many of the state incentive programs to include Alternative Energy, Loan Programs, and Renewable Energy Grant Programs. Other programs include Bulk Fuels and Rural Power System Upgrades, Power Cost Equalization, and Community Assistance. A new service that has been added is the Alaska Energy Data Inventory which is a continuously updated listing of Alaska's renewable resources.

[20] North American Board of Certified Energy Practitioners
[21] US Dept. of Energy; November 3, 2005
[22] US Dept. of Energy; June 29, 2009
[23] AEA

The State of Alaska has further demonstrated support of alternative energy by providing grants to help obtain alternative energy systems and have provided for interest rate reductions for new construction that implements energy saving features.

The public has also joined in with the creation of REAP. *The Renewable Energy Alaska Project (REAP) is a coalition of large and small Alaska utilities, businesses, conservation and consumer groups, Alaska Native organizations, and municipal, state and federal entities with an interest in developing Alaska's vast renewable energy resources.*[24]

Current Incentives

Energy Efficient Mortgage: An energy-efficient mortgage is one that rewards a homeowner for taking steps towards improving energy efficiency.[25] Typically, if a home is designed to be energy-efficient it will qualify for an interest rate reduction on the mortgage. Qualifying items include added insulation, improved vapor barriers, fuel efficient furnaces, and air re-circulation systems. Once the house is built it is evaluated by an energy rater who is a person qualified to conduct several tests to verify the efficiency of the house.

FHA Energy Efficient Mortgage: The FHA-EEM allows lenders to add 100% of the cost-effective energy efficiency improvements to an already approved loan up to a maximum of $8,000 with no additional down payment requirement.

VA Energy Efficient Mortgage: For those qualified by current or former military status, the cost of energy improvements to an existing house can be included in the mortgage for an amount between $3,000 and $6,000.

ENERGY STAR Mortgages: This is a pilot program that incorporates the cost of energy efficient improvements into a mortgage so they may be paid for over the life of the loan.

Federal Lending Agencies that Finance Solar Energy Systems: The following federal departments and agencies provide financing for both solar thermal energy and photovoltaic systems. The information presented in Figure-18 is a summary and the full text can be found at http://www.nrel.gov/docs/fy99osti/26242.pdf.

Agency	Program	Loan Amount	Collateral & Terms	Interest Rate	Energy Features & Systems Covered
Fannie Mae Corp. www.fanniemae.com	(a) Conventional mortgages; (b) Residential Energy Efficiency Improvement Loans	(a) Up to $240,000 (b) Up to $15,000	(a) Secured; 1 to 30 years (adjustable, fixed, or balloon) (b) Unsecured up to 10 years	(a) market rates (b) Usually below market rates	(a)Energy efficient mortgages (b) energy efficiency upgrades; olar water * space heating, photovoltaic

[24] Renewable Energy Alaska Project (REAP) (2009)
[25] "Energy Efficient Mortgage" *Energy Star* (2009)

Agency	Program	Loan Amount	Collateral & Terms	Interest Rate	Energy Features & Systems Covered
Federal Home Mortgage Loan Corp. (Freddie Mac) www.freddiemac.com	Conventional Mortgages	Up to $240,000	First mortgage to 95% loan-to-value; 15, 20, & 30 years (including balloon)	Fixed at market rates; variable at prime + 2%	Energy – efficient mortgages that meet Freddie Mac's criteria
U.S. Department of Agriculture (USDA) www.usda.gov	Rural Housing Service, Rural Business-Cooperative Service, Rural Utility Service	$300,000 (average)	As negotiated with RUS borrower; 10 years	0%; Conventional mortgages at market rates	Solar thermal systems; photovoltaic systems
U.S. Department of Energy (DOE) www.doe.gov	Energy Savings Performance contracts, State Energy Conservation and Weatherization Assistance	Varies	Unsecured; varies	Rate varies	Energy-efficient features and equipment,; solar thermal systems, photovoltaic systems
U.S. Department of Housing & Urban Development (HUD) www.hud.gov	Energy efficiency mortgages for FHA 203(b) and (k) insurance programs, etc.; special HOME, HOPE VI, ant Title I programs for energy efficiency an solar systems (with limits)	HUD area limit	First mortgage: to 120% loan-to-value; second mortgage: no maximum loan-to-value; 15 & 30 years	Fixed or variable rates	Energy-efficient features; solar water an space heating; photovoltaic systems; EEMs to 10% above base loan amount
U.S. Department of Veterans Affairs (VA) www.va.gov/loa/lenders	VA Home Mortgage Loan Program	Up to $203,000	First mortgage: 100% loan-to-value plus costs; 15 to 30 years	Fixed rates	Energy efficient features and appliances; solar water and space heating ; photovoltaic systems; EEMs to 10% above base loan amount

Agency	Program	Loan Amount	Collateral & Terms	Interest Rate	Energy Features & Systems Covered
U.S. Environmental Protection Agency (EPA) www.epa.gov	Energy Star Rated Home Energy Star Rated Building	Guided by Fannie Mae and Freddie Mac	First mortgage: to 120%; 30 years	Market rates, but discounts are available on some loans	Energy-efficient features making home up to 30% more efficient than code; solar thermal water and space heating; photovoltaic system (10-year payback or less required)
U.S. Small Business Administration (SBA) www.sba.gov	7(a) Std Small Business Loan, 7(a)-12 Energy Loan Program, 7(m), etc	Up to $750,000 guarantee (7(a))	Guarantees 80% to $100,000; 75% if more than $100,000; varies	Market Rates	Energy-efficient features; photovoltaic, solar thermal, and other renewable energy systems

Figure-18

Initial Construction versus Retrofit Cost Savings

The initial cost of using alternative energy can be reduced if it is included as part of the original building design. If solar thermal energy is used to produce hot water, the piping can be installed during the rough framing process in conjunction with installation of normal plumbing. If solar thermal energy is used for space heating either as a supplement or as an independent system, it can be installed during the framing stage as well. If solar thermal heat is used as a radiant floor heating system, the necessary tubing can be installed prior to pouring concrete in the case of a concrete slab foundation.

For solar photovoltaic systems or wind power, all additional wiring can be installed during the framing stage. If the structure is designed to use both AC and DC applications, the separate wiring and separate receptacles could be installed with less expense during construction than as a retrofit.

The design and construction phase would also be the best time to incorporate any structural changes that may be necessary to carry additional roof loads or passive energy applications. Incorporating energy efficiency into the original design and during initial construction, both time and labor can be saved as well as some material cost.

Resale Considerations

In the article "*Solar-Powered Products that Increase Home Resale Value*", there is indication that homes already having solar energy systems are increasing in demand.[26] The article goes on to say that the solar products that increase a home's value are Solar Water Heating Systems, Solar Electric Panels (photovoltaic), Solar Grid Panels, and a Natural Light Solar Attic Fan.

Almost any alternative energy for energy efficiency improvements incorporated into a new house design will increase its value while saving thousands of dollars over the 30 year life of a typical mortgage.[27] For Alaska, energy efficiency has been a design consideration for years with improvements that include thicker walls for more insulation, energy efficient furnaces that use less fuel while producing more heat, thermal windows, passive solar design, and energy ratings, just to name a few. Just as energy saving design features increase the resale value of a house, alternative energy-systems are rapidly adding to resale value as well. Figure-19 will identify some of the key energy efficiency features of a modern home.

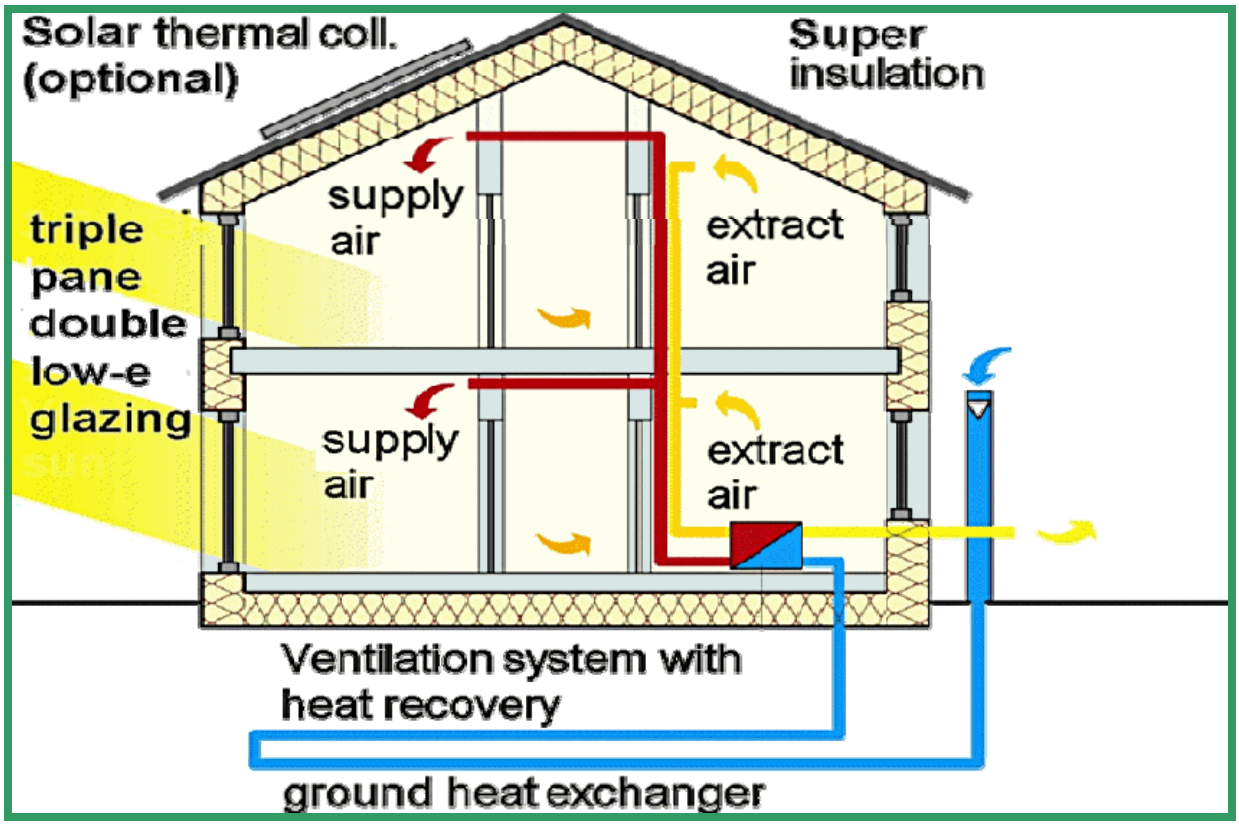


Figure-19

[26] Gaulin, Pam "Solar Powered Products Increase Home Resale Value" *Associated Content* (June 2009)
[27] Chiras, Daniel D. "The Energy Efficient House" Solar Today (Sept/Oct 2004)

Phase III—Public Awareness

The ultimate focus of this agenda is the public. As the interest and acceptance of alternative energy and energy efficiency continue to evolve, most people find they are confused, and to a degree intimidated, by the ever-increasing volume of options. To better inform the public of currently available options, several methods are under consideration.

Extension of the Kenai Peninsula Borough Website

The creation of an extension to the borough website would prove to be the fastest and most economical means of delivering related information to the public. The website could contain the full text of this Agenda, and later the *Energy Resource Handbook*, as well as links to the numerous websites with related information. The website could also serve as a point of contact for those who may still have questions after visiting the website. The website could also be updated as new information becomes available. This new information would include any changes or additions to the programs and incentives already identified, as well as any alternative energy system providers that may be new in the Kenai Peninsula Borough.

Classroom Presentation

During the initial stages of promoting alternative energy and energy efficiency, a public presentation will be most preferable as it would allow personal interaction between the public, alternative energy system providers, and the borough administration. The ideal initial setting could be any of the schools using either a classroom or auditorium (depending on the anticipated attendance). During the presentation, the borough administration could host the event and express support of alternative energy and energy efficiency as well as provide information as to the incentives available. Afterwards, representatives from the alternative energy industry could present information regarding specific system types and applications. As the presentation closes, members of the public in attendance will have the opportunity to ask questions and possibly observe a static display of some of the various types of systems available. The frequency and location of these classroom presentations would be determined by public interest. The times, dates, and locations could be advertised through public service announcements at no cost to the borough.

Add-On Mailing

The target group of the public that would benefit from alternative energy would be the real property taxpayer. Each year taxpayers are contacted a minimum of twice by mail with regards to property tax. The first mailing occurs at the end of February with the current year real property assessed value. The second mailing occurs at the end of June with the current year tax bill. In both cases, a statement could be included on the assessment or on the tax bill that would direct the taxpayer to the borough website for more information on alternative energy. Alternatively, a flyer could be included with a brief overview of the alternative energy options available and again directing them to the borough website for more information.

Summary

The ever-increasing cost of fossil fuel continues to increase interest in alternative energy and energy efficiency. The Kenai Peninsula Borough is fortunate in that it is geographically located with access to all the renewable energies available from solar to wind, and from geothermal to tidal. Solar and wind are immediately available with alternative energy system providers locally available.

The residents of the Kenai Peninsula Borough are also fortunate in that the current administration is in support of alternative energy, energy efficiency, and energy conservation. Local builders understand the importance of energy efficiency in construction and lenders know of the importance to locate funding to bring energy efficient improvements to fruition.

The federal government provides many incentives including tax credits and grants to help promote alternative energy and energy efficiency. Many federal departments and agencies such as Fannie Mae, Freddie Mac, the Department of Energy, Small Business Administration, and a host of others also promote energy-saving practices.

Given its geographical and political setting, the Kenai Peninsula Borough is poised to be a leader in alternative energy and energy efficiency.

Current Federal and State Incentives

NOTE: The following Federal and State Incentives have been reproduced verbatim from the *Database of State Incentives for Renewables & Efficiency (DSIRE*) through the North Carolina Solar Center in conjunction with the United States Department of Energy regarding Energy Efficiency and Renewable Energy. The website containing this information is http://www.dsireusa.org/.

Federal Incentives

CORPORATE DEDUCTION
Energy Efficient Commercial Buildings Tax Deduction

Incentive Type:	Corporate Deduction
Eligible Efficiency Technologies:	Equipment Insulation Water Heaters, Lighting Controls/Sensors, Chillers, Furnaces, Boilers, Heat pumps, Air Conditioners, Caulking/Weather-stripping, Duct/Air sealing, Building Insulations, Windows, Doors, Siding, Roofs, Comprehensive, Measures/Whole Building
Applicable Sectors:	Commercial, Construction, State Government, Fed. Government (Deductions associated with governmental building are transferred to the designer.)
Amount:	$.30-$1.80 per square foot depending on technology and amount of energy reduction.
Maximum Incentive:	$1.80 per square foot
Equipment Requirements:	Must meet certain requirements
Web Site:	http://www.efficientbuildings.org
Authority 1:	26 § 179D
Date Enacted:	8/8/2005 (Amended 2008)
Date Effective:	1/1/2006
Expiration Date:	12/31/2013
Authority 2:	H.R.1424: Div.B.Sec.303 (The Energy Improvement and Extension Act of 2008)
Date Enacted:	10/03/2008
Expiration Date:	12/31/2013

Summary:
The federal Energy Policy Act of 2005 established a tax deduction for energy-efficient commercial buildings applicable to qualifying systems and buildings placed in service from January 1, 2006, through December 31, 2007. This deduction was subsequently extended through 2008, and then again through 2013 by Section 303 of the federal Energy Improvement and Extension Act of 2008 (H.R. 1424, Division B), enacted in October 2008.

A tax deduction of $1.80 per square foot is available to owners of new or existing buildings who install (1) interior lighting; (2) building envelope, or (3) heating, cooling, ventilation, or hot water systems that reduce the building's total energy and power cost by 50% or more in comparison to a building meeting minimum requirements set by AS HRAE Standard 90.1-2001. Energy savings must be calculated using qualified computer software approved by the IRS. Click here for the list of approved software.

Deductions of $0.60 per square foot are available to owners of buildings in which individual lighting, building envelope, or heating and cooling systems meet target levels that would reasonably contribute to an overall building savings of 50% if additional systems were installed.

The deductions are available primarily to building owners, although tenants may be eligible if they make construction expenditures. In the case of energy efficient systems installed on or in government property, tax deductions will be given to the person primarily responsible for the systems' design. Deductions are taken in the year when construction is completed.

The IRS released interim guidance (IRS Notice 2006-52) in June 2006 to establish a process to allow taxpayers to obtain a certification that the property satisfies the energy efficiency requirements contained in the statute. IRS Notice 2008-40 was issued in March of 2008 to further clarify the rules. NREL published a report (NREL/TP-550-40228) in February 2007 which provides guidelines for the modeling and inspection of energy savings required by the statute.

Contact:
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: http://www.irs.gov

CORPORATE DEPRECIATION

Modified Accelerated Cost-Recovery System (MACRS)+Bonus Depreciation (2008-2009)

Incentive Type:	Corporate Depreciation
Eligible Renewable/Other:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric
Technologies:	Thermal Process Heat, Photovoltaic's, Landfill Gas, Wind, Biomass, Renewable Transportation Fuels, Geothermal electric, Fuel Cells, Geothermal Heat Pumps, Municipal Solid Waste, CHP/Cogeneration, Solar Hybrid Lighting, Direct Use Geothermal, Anaerobic Digestion, Micro-turbines.

Applicable Sectors: Commercial, Industrial
Authority 1: 26 USC § 179D
Date Effective: 1986
Authority 2: 26 USC § 48

Summary
Under the federal Modified Accelerated Cost-Recovery System (MACRS), businesses may recover investments in certain property through depreciation deductions. The MACRS establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 USC § 168(e)(3)(B)(vi)) under the MACRS, which refers to 26 USC § 48(a)(3)(A), often known as the energy investment tax credit or ITC to define eligible property. Such property currently includes:

- a variety of solar electric and solar thermal technologies
- fuel cells and micro-turbines
- geothermal electric
- direct-use geothermal and geothermal heat pumps
- small wind (100 kW or less)
- combined heat and power (CHP).
- The provision which defines ITC technologies as eligible also adds the general term "wind" as an eligible technology, extending the five-year schedule to large wind facilities as well.

In addition, for certain other biomass property, the MACRS property class life is seven years. Eligible biomass property generally includes assets used in the conversion of biomass to heat or to a solid, liquid or gaseous fuel, and to equipment and structures used to receive, handle, collect and process biomass in a waterwall, combustion system, or refuse-derived fuel system to create hot water, gas, steam and electricity.

The 5-year schedule for most types of solar, geothermal, and wind property has been in place since 1986. The federal *Energy Policy Act of 2005* (EPAct 2005) classified fuel cells, micro-turbines and solar hybrid lighting technologies as five-year property as well by adding them to § 48(a)(3)(A). This section was further expanded in October 2008 by the addition of geothermal heat pumps, combined heat and power, and small wind under *The Energy Improvement and Extension Act of 2008.*

The federal *Economic Stimulus Act of 2008*, enacted in February 2008, included a 50% bonus depreciation (26 USC § 168(k)) provision for eligible renewable-energy systems acquired and placed in service in 2008. This provision was extended (retroactively to the entire 2009 tax year) under the same terms by *The American Recovery and Reinvestment Act of 2009*, enacted in February 2009. To qualify for bonus depreciation, a project must satisfy these criteria:

- the property must have a recovery period of 20 years or less under normal federal tax depreciation rules;

- the original use of the property must commence with the taxpayer claiming the deduction;
- the property generally must have been acquired during 2008 or 2009; and
- the property must have been placed in service during 2008 or 2009

If property meets these requirements, the owner is entitled to deduct 50% of the adjusted basis of the property in 2008 and 2009. The remaining 50% of the adjusted basis of the property is depreciated over the ordinary depreciation schedule. The bonus depreciation rules do not override the depreciation limit applicable to projects qualifying for the federal business energy tax credit. Before calculating depreciation for such a project, including any bonus depreciation, the adjusted basis of the project must be reduced by one-half of the amount of the energy credit for which the project qualifies.

For more information on the federal MACRS, see *IRS Publication 946*, *IRS Form 4562: Depreciation and Amortization*, and *Instructions for Form 4562*. The IRS web site provides a search mechanism for forms and publications. Enter the relevant form, publication name or number, and click "GO" to receive the requested form or publication.

** Note that the definitions of eligible technologies included in this entry are somewhat simplified versions of those contained in tax code, which often contain additional caveats, restrictions, and modifications. Those interested in this incentive should review the relevant sections of the code in detail prior to making business decisions.*

Contact:
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: http://www.irs.gov

CORPORATE EXEMPTION
Residential Energy Conservation Subsidy Exclusion (Corporate)

Incentive Type:	Corporate Exemption
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Photovoltaics
Applicable Sectors:	Residential, Multi-Family Residential
Amount:	100% of subsidy
Terms:	Applies to energy conservations measures on dwelling units only
Web Site:	http://www.irs.gov/publications/p525/index.html
Authority 1:	26 USC § 136

Summary:
According to Section 136 of the IRS Code, energy conservation subsidies provided by public utilities,* either directly or indirectly, are nontaxable: "Gross income shall not include the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure."

The term "energy conservation measure" includes installations or modifications primarily designed to reduce consumption of electricity or natural gas, or improve the management of energy demand. Eligible dwelling units include houses, apartments, condominiums, mobile homes, boats and similar properties. If a building or structure contains both dwelling and other units, any subsidy must be properly allocated.

Given the definition of "energy conservation measure," there is strong evidence that utility rebates for residential solar thermal and solar electric projects may be nontaxable. However, the IRS has not ruled definitively on this issue. For taxpayers considering using this provision for renewable energy systems, consultation with a tax attorney is advised.

Other types of utility subsidies that may come in the form of credits or reduced rates may also be nontaxable, according to IRS Publication 525:

"Utility rebates. If you are a customer of an electric utility company and you participate in the utility's energy conservation program, you may receive on your monthly electric bill either: a reduction in the purchase price of electricity furnished to you (rate reduction), or a nonrefundable credit against the purchase price of the electricity. The amount of the rate reduction or nonrefundable credit is not included in your income."

** The term "public utility" is defined as an entity "engaged in the sale of electricity or natural gas to residential, commercial, or industrial customers for use by such customers." The term includes federal, state and local government entities*

Contact:
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: http://www.irs.gov

CORPORATE TAX CREDIT
Business Energy Investment Tax Credit (ITC)

Incentive Type:	Corporate Tax Credit
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaic, Wind, Biomass, Geothermal Electric, Fuel Cells, Geothermal

	Heat Pumps, CHP/Cogeneration, Solar Hybrid Lighting, Direct Use Geothermal Micro-Turbines
Applicable Sectors:	Commercial, Industrial, Utility
Amount:	30% for solar, fuel cells and small wind; 10% for geothermal, micro-turbines and CHP.
Maximum Incentive:	Fuel Cells: $1,500 per 0.5kW Micro-turbines: $200 per kW Small wind turbines placed in service 10/4/08-12/31/08: $4000 Small wind turbines placed in service after 12/31/08: no limit
Eligible System Size:	Small wind turbines: 100kW or less Fuel cells: 0.5 kW or greater Micro-turbines: 2 MW or less CHP: 50 MW or less
Equipment/Installation Requirements:	Fuel cells, micro-turbines and CHP systems must meet specific energy efficiency criteria
Authority 1:	26 USC § 48

Summary:

Note: The American Recovery and Reinvestment Act of 2009 (H.R. 1) allows taxpayers eligible for the federal renewable electricity production tax credit (PTC) to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The Treasury Department issued Notice 2009-52 in June 2009, giving limited guidance on how to take the federal business energy investment tax credit instead of the federal renewable electricity production tax credit. The Treasury Department will issue more extensive guidance at a later time.

The federal business energy investment tax credit available under 26 USC § 48 was expanded significantly by the *Energy Improvement and Extension Act of 2008* (H.R. 1424), enacted in October 2008. This law extended the duration -- by eight years -- of the existing credits for solar energy, fuel cells and micro-turbines; increased the credit amount for fuel cells; established new credits for small wind-energy systems, geothermal heat pumps, and combined heat and power (CHP) systems; extended eligibility for the credits to utilities; and allowed taxpayers to take the credit against the alternative minimum tax (AMT), subject to certain limitations. The credit was further expanded by *The American Recovery and Reinvestment Act of 2009*, enacted in February 2009.

In general, credits are available for eligible systems placed in service on or before December 31, 2016:*

- **Solar.** The credit is equal to 30% of expenditures, with no maximum credit. Eligible solar energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat. Hybrid solar lighting systems, which use solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight, are eligible. Passive solar systems and solar pool-heating systems are *not* eligible. (Note that the Solar Energy Industries Association has published a four-page document that provides answers to frequently asked questions regarding the federal tax credits for solar energy.)

- **Fuel Cells.** The credit is equal to 30% of expenditures, with no maximum credit. However, the credit for fuel cells is capped at $1,500 per 0.5 kilowatt (kW) of capacity. Eligible property includes fuel cells with a minimum capacity of 0.5 kW that have an electricity-only generation efficiency of 30% or higher. (Note that the credit for property placed in service before October 4, 2008, is capped at $500 per 0.5 kW.)

- **Small Wind Turbines.** The credit is equal to 30% of expenditures, with no maximum credit for small wind turbines placed in service after December 31, 2008. Eligible small wind property includes wind turbines up to 100 kW in capacity. (In general, the maximum credit is $4,000 for eligible property placed in service after October 3, 2008, and before January 1, 2009. *The American Recovery and Reinvestment Act of 2009* removed the $4,000 maximum credit limit for small wind turbines.)

- **Geothermal Systems.** The credit is equal to 10% of expenditures, with no maximum credit limit stated. Eligible geothermal energy property includes geothermal heat pumps and equipment used to produce, distribute or use energy derived from a geothermal deposit. For electricity produced by geothermal power, equipment qualifies only up to, but not including, the electric transmission stage. For geothermal heat pumps, this credit applies to eligible property placed in service after October 3, 2008.

- **Micro-turbines.** The credit is equal to 10% of expenditures, with no maximum credit limit stated (explicitly). The credit for micro-turbines is capped at $200 per kW of capacity. Eligible property includes micro-turbines up to two megawatts (MW) in capacity that have an electricity-only generation efficiency of 26% or higher.

- **Combined Heat and Power (CHP).** The credit is equal to 10% of expenditures, with no maximum limit stated. Eligible CHP property generally includes systems up to 50 MW in capacity that exceed 60% energy efficiency, subject to certain limitations and reductions for large systems. The efficiency requirement does not apply to CHP systems that use biomass for at least 90% of the system's energy source, but the credit may be reduced for less-efficient systems. This credit applies to eligible property placed in service after October 3, 2008.

In general, the original use of the equipment must begin with the taxpayer, or the system must be constructed by the taxpayer. The equipment must also meet any performance and quality standards in effect at the time the equipment is acquired. The energy property must be operational in the year in which the credit is first taken.

Significantly, *The American Recovery and Reinvestment Act of 2009* repealed a previous limitation on the use of the credit for eligible projects also supported by "subsidized energy financing." For projects placed in service after December 31, 2008, this limitation no longer applies. Businesses that receive other incentives are advised to consult with a tax professional regarding how to calculate this federal tax credit.

History
The federal *Energy Policy Act of 2005* (EPAct 2005) expanded the existing federal business energy tax credit for solar and geothermal energy property to include fuel cells, micro-turbines and hybrid solar lighting systems installed on or after January 1, 2006, and raised the credit for solar to 30%. Prior to the provisions of EPAct 2005, a 10% credit was available to businesses that invested in or purchased solar or geothermal energy property.

** Note that the credit for geothermal property, with the exception of geothermal heat pumps, has no stated expiration date. The credit for solar energy property reverts to 10% after December 31, 2016.*

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U.S. Internal Revenue Service
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Washington, DC 20224
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Web Site: http://www.irs.gov

Energy Efficient Appliance Tax Credit for Manufacturers

Incentive Type:	Corporate Tax Credit
Eligible Efficiency Technologies:	Clothes Washers, Dishwashers, Refrigerators/Freezers
Applicable Sectors:	Industrial, Appliance Manufacturers
Amount:	Dishwashers: $45 or $75 per unit, varies by energy and water efficiency Clothes Washers: $75-$250 per unit, varies by type, and energy and water efficiency Refrigerators: $50-$200, depending on energy efficiency rating
Maximum Incentive:	The aggregate amount of credit allowed is $75 million per taxpayer. Certain refrigerators and clothes washers will

	not add to the aggregate credit amount. See summary below for more details.
Carryover Provisions:	Not specified
Equipment/Installation Requirements:	Appliances must meet Energy star 2007 requirements; must be new and in compliance with all applicable performance and safety standards.
Authority 1:	26 USC § 45M
Date Enacted:	8/8/2005
Date Effective:	1/1/2006
Expiration Date:	12/31/2007
Authority 2:	H.R.1424: Div.B.Sec.305(The Energy Improvement and Extension Act of 2008)
Date Enacted:	10/03/2008
Date Effective:	1/1/2007
Expiration Date:	Varies by appliance and efficiency level

Summary

The Energy Policy Act of 2005 established tax credits for manufacturers of high-efficiency residential clothes washers, refrigerators, and dishwashers produced in calendar years 2006 and 2007. The Energy Improvement and Extension Act of 2008 (H.R. 1424, Division B) extended the credits for additional years depending on the efficiency rating of the manufactured appliance. Manufacturers only receive these credits for the increase in production of qualifying appliances over a two-year rolling baseline, and only appliances produced in the United States are eligible.

Credits available to manufacturers are as follows:

Dishwashers

- $45 for models manufactured in calendar year 2008 or 2009 which use no more than 324 kilowatt hours (kWh) per year and 5.8 gallons per cycle
- $75 for models manufactured in calendar year 2008, 2009, or 2010 which use no more than 307 kWh per year and 5.5 gallons per cycle .

Clothes washers

- $75 for residential top-loading models manufactured in 2008 which meet or exceed a 1.72 modified energy factor (MEF) and do not exceed a 8.0 water consumption factor (WCF).
- $125 for residential top-loading models manufactured in 2008 or 2009 which meet or exceed a 1.8 MEF and do not exceed a 7.5 WCF.
- $150 for residential or commercial models manufactured in 2008, 2009, or 2010 which meet or exceed a 2.0 MEF and does not exceed a 6.0 WCF.

- $250 for residential or commercial models manufactured in 2008, 2009, or 2010 which meet or exceed a 2.2 MEF and do not exceed a 4.5 WCF.

Refrigerators

- $50 for models manufactured in 2008 which are between 20% and 22.9% more efficient than the 2001 energy conservation standards.
- $75 for models manufactured in 2008 or 2009 which are between 23% and 24.9% more efficient than the 2001 energy conservation standards.
- $100 for models manufactured in 2008, 2009, or 2010 which are between 25% and 29.9% more efficient than the 2001 energy conservation standards.
- $200 for models manufactured in 2008, 2009, or 2010 which are at least 30% more efficient than the 2001 energy conservation standards.

Each manufacturer is limited to a total of $75 million for all credits under this provision. However, refrigerators manufactured in 2008, 2009, or 2010 which consume at least 30% less energy than the 2001 energy conservation standards will not add to the aggregate credit amount and have no separate credit limit. Residential and commercial clothes washers manufactured in 2008, 2009 or 2010 which meet or exceed a 2.2 MEF and do not exceed a 4.5 WCF also will not add to the aggregate limit and have no separate credit limit.

The 2007 IRS Form 8909 is available here. For more information on qualifying products, visit the Energy Star Web site.

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Web Site: http://www.irs.gov

Energy Efficient New Homes Tax Credit for Home Builders

Incentive Type:	Corporate Tax Credit
Eligible Efficiency Technologies:	Comprehensive Measures/Whole Building
Applicable Sectors:	Construction
Amount:	$1,000--$2,000, depending on energy savings and home type
Maximum Incentive:	$2,000
Web Site:	http://www.irs.gov business/small/industries/article/0..id=155445.00.html
Authority 1:	26 USC § 45L
Date Enacted:	8/8/2005 (Amended 2008)

Date Effective: 1/1/2006
Expiration Date: 12/31/2009
Authority 2: H.R.1424: Div.B.Sec.304(The Energy Improvement and Extension Act of 2008)
Date Enacted: 10/03/2008
Expiration Date: 12/31/2009

Summary
The federal Energy Policy Act of 2005 established tax credits of up to $2,000 for builders of all new energy-efficient homes, including manufactured homes constructed in accordance with the Federal Manufactured Homes Construction and Safety Standard. Initially scheduled to expire at the end of 2007, the tax credit was extended through 2008 by Section 205 of the Tax Relief and Health Care Act of 2006 (H.R. 6111), and then extended again through December 31, 2009 by Section 304 of The Energy Improvement and Extension Act of 2008 (H.R. 1424).

The home qualifies for the credit if:

- It is located in the United States;
- Its construction is substantially completed after August 8, 2005;
- It meets the energy saving requirements outlined in the statute; and
- It is acquired from the eligible contractor after December 31, 2005, and before January 1, 2010, for use as a residence.

Energy Saving Requirements
Site-built homes qualify for a $2,000 credit if they are certified to reduce heating and cooling energy consumption by 50% relative to the International Energy Conservation Code standard and meet minimum efficiency standards established by the Department of Energy. Building envelope component improvements must account for at least one-fifth of the reduction in energy consumption.

Manufactured homes qualify for a $2,000 credit if they conform to Federal Manufactured Home Construction and Safety Standards and meet the energy savings requirements of site-built homes described above.

Manufactured homes qualify for a $1,000 credit if they conform to Federal Manufactured Home Construction and Safety Standards and reduce energy consumption by 30% relative to the International Energy Conservation Code standard. In this case, building envelope component improvements must account for at least one-third of the reduction in energy consumption. Alternatively, manufactured homes qualify if they meet Energy Star Labeled Home requirements.

Certification
The Internal Revenue Service (IRS) has issued guidance to provide information about the certification process that a builder must complete to qualify for the credit. The guidance also provides for a public list of software programs that may be used in calculating energy

consumption for purposes of obtaining a certification.

IRS Notice 2006-27 provides guidance for the credit for building energy-efficient homes other than manufactured homes. IRS Notice 2006-28 provides guidance for the credit for building energy-efficient manufactured homes. Click here to access IRS Form 8908: Energy Efficient Home Credit.
For more information on this and other energy efficiency tax credits, visit the Energy Star web site.

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Renewable Electricity Production Tax Credit (PTC)

Incentive Type: Corporate Tax Credit
Eligible Renewable/Other Technologies: Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid waste, Hydrokinetic Power (i.e., Flowing Water), Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy, Ocean Thermal.
Applicable Sectors: Commercial, Industrial
Amount: 2.1¢/kWh for wind, geothermal, closed-loop biomass; 1.0¢/kWh for other technologies. Generally applies to first 10 years of operation.

Eligible System size: Marine and Hydro-kinetic: Minimum capacity of 150 kW
Agricultural Livestock Waste: Minimum Capacity of 150 kW
Web Site: http://www.irs.gov/pub/irs-pdf/f8835,pdf
Authority 1: 26 USC § 45
Date Enacted: 1992

Summary:
Note: The American Recovery and Reinvestment Act of 2009 (H.R. 1) allows taxpayers eligible for the federal renewable electricity production tax credit (PTC) to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The Treasury Department issued Notice 2009-52 in June 2009, giving limited guidance on how to take the federal business energy investment tax credit instead of the federal renewable electricity production tax credit. The Treasury Department will issue more extensive guidance at a later time.

The federal renewable electricity production tax credit (PTC) is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. Originally enacted in 1992, the PTC has been renewed and expanded numerous times, most recently by H.R. 1424 (Div. B, Sec. 101 & 102) in October 2008 and again by H.R. 1 (Div. B, Section 1101 & 1102) in February 2009.

The October 2008 legislation extended the in-service deadlines for all qualifying renewable technologies; expanded the list of qualifying resources to include marine and hydrokinetic resources, such as wave, tidal, current and ocean thermal and made changes to the definitions of several qualifying resources and facilities. The effective dates of these changes vary. Marine and hydrokinetic energy production is eligible as of the date the legislation was enacted (October 3, 2008), as is the incremental energy production associated with expansions of biomass facilities. A change in the definition of "trash facility" no longer requires that such facilities burn trash, and is also effective immediately. One further provision redefining the term "non-hydroelectric dam," took effect December 31, 2008.

The February 2009 legislation revised the credit by: (1) extending the in-service deadline for most eligible technologies by three years (two years for marine and hydrokinetic resources); and (2) allowing facilities that qualify for the PTC to opt instead to take the federal business energy investment credit (ITC) or an equivalent cash grant from the U.S. Department of Treasury. The ITC or grant for PTC-eligible technologies is generally equal to 30% of eligible costs.*

The tax credit amount is 1.5¢/kWh in 1993 dollars (indexed for inflation) for some technologies and half of that amount for others. The rules governing the PTC vary by resource and facility type. The table below outlines two of the most important characteristics of the tax credit -- in-service deadline and credit amount -- as they apply to different facilities. The table includes changes made by H.R. 1, in February 2009, and the inflation-adjusted credit amounts are current for the 2008 tax year. (See the history section below for information on prior rules.)

Resource Type	**In-Service Deadline**	**Credit Amount**
Wind	December 31, 2012	2.1¢/kWh
Closed-Loop Biomass	December 31, 2013	2.1¢/kWh
Open-Loop Biomass	December 31, 2013	1.0¢/kWh
Geothermal Energy	December 31, 2013	2.1¢/kWh
Landfill Gas	December 31, 2013	1.0¢/kWh
Municipal Solid Waste	December 31, 2013	1.0¢/kWh
Qualified Hydroelectric	December 31, 2013	1.0¢/kWh
Marine and Hydrokinetic (150 kW or larger)**	December 31, 2013	1.0¢/kWh

The duration of the credit is generally 10 years after the date the facility is placed in service, but there are two exceptions:

- Open-loop biomass, geothermal, small irrigation hydro, landfill gas and municipal solid waste combustion facilities placed into service after October 22, 2004, and before enactment of the *Energy Policy Act of 2005*, on August 8, 2005, are only eligible for the credit for a five-year period.
- Open-loop biomass facilities placed in service before October 22, 2004, are eligible for a five-year period beginning January 1, 2005.

In addition, the tax credit is reduced for projects that receive other federal tax credits, grants, tax-exempt financing, or subsidized energy financing. The credit is claimed by completing Form 8835, "Renewable Electricity Production Credit," and Form 3800, "General Business Credit." For more information, contact IRS Telephone Assistance for Businesses at 1-800-829-4933.

History

As originally enacted by the *Energy Policy Act of 1992*, the PTC expired at the end of 2001, and was subsequently extended in March 2002 as part of the *Job Creation and Worker Assistance Act of 2002* (H.R. 3090). The PTC then expired at the end of 2003 and was not renewed until October 2004, as part of H.R. 1308, the *Working Families Tax Relief Act of 2004*, which extended the credit through December 31, 2005. The *Energy Policy Act of 2005* (H.R. 6) modified the credit and extended it through December 31, 2007. In December 2006, the PTC was extended for yet another year -- through December 31, 2008 -- by the *Tax Relief and Health Care Act of 2006* (H.R. 6111).

The American Jobs Creation Act of 2004 (H.R. 4520), expanded the PTC to include additional eligible resources -- geothermal energy, open-loop biomass, solar energy, small irrigation power, landfill gas and municipal solid waste combustion -- in addition to the formerly eligible wind energy, closed-loop biomass, and poultry-waste energy resources. The *Energy Policy Act of 2005* (EPAct 2005) further expanded the credit to certain hydropower facilities. As a result of EPAct 2005, solar facilities placed into service after December 31, 2005, are no longer eligible for this incentive. Solar facilities placed in-service during the roughly one-year window in which solar was eligible are permitted to take the full credit (i.e., 2.1¢/kWh) for five years.

** Prior to H.R. 1, geothermal facilities were already eligible for a 10% tax credit under the energy ITC. It is not clear at this time if geothermal electric facilities will be eligible for a 10% tax credit, as defined by the ITC rules, or the full 30% tax credit now available for PTC eligible technologies in general.*

*** H.R. 1424 added marine and hydrokinetic energy as eligible resources and removed "small irrigation power" as an eligible resource effective October 3, 2008. However, the definition of marine and hydrokinetic energy encompasses the resources that would have*

formerly been defined as small irrigation power facilities. Thus H.R. 1424 effectively extended the in-service deadline for small irrigation power facilities by 3 years, from the end of 2008 until the end of 2011 (since extended again through 2013).

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FEDERAL GRANT PROGRAM
Tribal Energy Program Grant

Incentive Type: Federal Grant Program
Eligible Renewable/Other Technologies: Passive Solar Space Heat, Solar Water Heat, Solar Space Heat, Photovoltaic, Wind, Biomass, Hydroelectric, Geothermal Electric, Geothermal Heat Pumps
Applicable Sectors: Tribal Government
Amount: Varies by solicitation
Max. Limit: Varies by solicitation
Web Site: http://www.eere.energy.gov/tribalenergy

Summary
The U.S. Department of Energy's (DOE) Tribal Energy Program promotes tribal energy sufficiency, economic growth and employment on tribal lands through the development of renewable energy and energy efficiency technologies. The program provides financial assistance, technical assistance, education and training to tribes for the evaluation and development of renewable energy resources.

DOE's Tribal Energy Program consists of program management through DOE headquarters, program implementation and project management through DOE's field offices, and technical support through DOE laboratories. Program management for the Tribal Energy Program is carried out by DOE's Weatherization and Intergovernmental Program, which provides programmatic direction and funding to DOE field offices for program implementation. DOE's field offices, specifically the Golden Field Office, issue solicitations and manage resulting projects.

Program funding is awarded through a competitive process. Click here to view current program funding opportunities
Contact:
Lizana Pierce
U.S. Department of Energy
Golden Field Office
1617 Cole Boulevard, MS 1501

Golden, CO 80401
Phone: (303) 275-4727
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E-Mail: lizana.pierce@go.doe.gov
Web Site: http://www.eere.energy.gov/tribalenergy

U.S. Department of Treasury-Renewable Energy Grants

Incentive Type: Federal Grant Program
Eligible Efficiency Technologies: Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaic, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Fuel Cells, Geothermal Heat Pumps, Municipal Solid Waste, CHP/Cogeneration, Solar Hybrid Lighting, Hydrokinetic, Anaerobic Digestion, Tidal Energy, Wage Energy, Ocean Thermal, Micro-turbines.
Applicable Sectors: Commercial, Industrial, Agricultural
Amount: 30% of property that is part of a qualified facility, qualified fuel cell property, solar property, or qualified small wind property. 10% of all other property
Maximum Incentive: $1.500 per 0.5kW for qualified fuel cell property
$200 per kW for qualified micro turbine property
50 MW for CHP property, with limitations for large systems
Terms: Grant applications must be submitted by 10/01/2011. Payment of grant will be made within 60 days of the grant application date or the date the property is placed in service, whichever is later.
Web Site: http://www.treas.gov/recovery/1603.shtml
Authority 1: H.R.1: Div.B.Sec.1104 & 1603(The American Recovery and Reinvestment Act of 2009)
Date Enacted: 2/17/09
Date Effective: 1/1/2009
Authority 2: U.S. Department of Treasury: Grant program Guidance
Date Enacted: 7/09/2009

Summary:

Note: The American Recovery and Reinvestment Act of 2009 (H.R. 1) allows taxpayers eligible for the federal business energy investment tax credit (ITC) to take this credit or to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The new law also allows taxpayers eligible for the renewable electricity production tax credit (PTC) to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. (It does not allow taxpayers eligible for the residential renewable energy tax credit to receive a grant instead of taking this credit.) Taxpayers may not use more than one of these incentives. Tax credits allowed under the ITC with respect to progress expenditures on eligible energy

property will be recaptured if the project receives a grant. The grant is not included in the gross income of the taxpayer.

The *American Recovery and Reinvestment Act of 2009* (H.R. 1), enacted in February 2009, created a renewable energy grant program that will be administered by the U.S. Department of Treasury. This cash grant may be taken in lieu of the federal business energy investment tax credit (ITC). In July 2009 the Department of Treasury issued documents detailing guidelines for the grants, terms and conditions, and a sample application. These publications are available on the program website above.

Grants are available to eligible property* placed in service in 2009 or 2010, or placed in service by the specified credit termination date** if construction began in 2009 or 2010. The guidelines include a "safe harbor" provision that sets the beginning of construction at the point where the applicant has incurred or paid at least 5% of the total cost of the property, excluding land and certain preliminary planning activities. Below is a list of important program details as they apply to each different eligible technology.

- **Solar.** The grant is equal to 30% of the basis of the property for solar energy. Eligible solar-energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat. Passive solar systems and solar pool-heating systems are *not* eligible. Hybrid solar-lighting systems, which use solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight, are eligible.

- **Fuel Cells.** The grant is equal to 30% of the basis of the property for fuel cells. The grant for fuel cells is capped at $1,500 per 0.5 kilowatt (kW) in capacity. Eligible property includes fuel cells with a minimum capacity of 0.5 kW that have an electricity-only generation efficiency of 30% or higher.

- **Small Wind Turbines.** The grant is equal to 30% of the basis of the property for small wind turbines. Eligible small wind property includes wind turbines up to 100 kW in capacity.

- **Qualified Facilities.** The grant is equal to 30% of the basis of the property for qualified facilities that produce electricity. Qualified facilities include wind energy facilities, closed-loop biomass facilities, open-loop biomass facilities, geothermal energy facilities, landfill gas facilities, trash facilities, qualified hydropower facilities, and marine and hydrokinetic renewable energy facilities.

- **Geothermal Heat Pumps.** The grant is equal to 10% of the basis of the property for geothermal heat pumps.

- **Micro-turbines.** The grant is equal to 10% of the basis of the property for micro-turbines. The grant for micro-turbines is capped at $200 per kW of capacity. Eligible property includes micro-turbines up to two megawatts (MW) in capacity

that have an electricity-only generation efficiency of 26% or higher.

- **Combined Heat and Power (CHP).** The grant is equal to 10% of the basis of the property for CHP. Eligible CHP property generally includes systems up to 50 MW in capacity that exceeds 60% energy efficiency, subject to certain limitations and reductions for large systems. The efficiency requirement does not apply to CHP systems that use biomass for at least 90% of the system's energy source, but the grant may be reduced for less-efficient systems.

It is important to note that only tax-paying entities are eligible for this grant. Federal, state and local government bodies, non-profits, qualified energy tax credit bond lenders, and cooperative electric companies are not eligible to receive this grant. Partnerships or pass-thru entities for the organizations described above are also not eligible to receive this grant, except in cases where the ineligible party only owns an indirect interest in the applicant through a taxable C corporation. Grant applications must be submitted by October 1, 2011. The U.S. Treasury Department will make payment of the grant within 60 days of the grant application date or the date the property is placed in service, whichever is later.

**Definitions of eligible property types and renewable technologies can be found in the U.S. Code, Title 26, § 45 and § 48.*

***Credit termination date of January 1, 2013 for wind; January 1, 2014 for closed-loop biomass, open-loop biomass, landfill gas, trash, qualified hydropower, marine and hydrokinetic; January 1, 2017 for fuel cells, small wind, solar, geothermal, micro-turbines, CHP and geothermal heat pumps.*

Contact:
Grant Information
U.S. Department of Treasury
1500 Pennsylvania Avenue, NW
Washington, DC 20220
Phone: (202) 622-2000
Fax: (202) 622-6415
E-Mail: 1603Questions@do.treas.gov
Web Site: http://ww.treasury.gov

USDA-Rural Energy for America Program (REAP) Grants

Incentive Type:	Federal Grant Program
Eligible Efficiency Technologies:	Yes; specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Photovoltaic, Wind, Biomass, Hydroelectric, Renewable Transportation Fuels, Geothermal Electric,

	Geothermal Heat Pumps, CHP/Cogeneration, Hydrogen, Direct-Use Geothermal, Anaerobic Digestion, Small Hydrologic, Tidal Energy, Wave Energy, Ocean Thermal, Renewable Fuels, Fuel Cells sing Renewable fuels, Micro-turbines.
Applicable Sectors:	Commercial, Schools, Local Government, State Government, Tribal Government, Rural Electric Cooperative, Agricultural, Public Power Entities.
Amount:	Varies
Max. Limit:	25% of project cost
Web Site:	http://www.rurdev.usda.gov/rbs/busp/brogs.htm
Authority 1:	7 USC § 8106
Date Enacted:	5/13/2002
Date Effective:	FY 2003

Summary

NOTE: The U.S. Department of Agriculture's Rural Development has issued a Notice of Solicitation of Applications for the Rural Energy for America Program (REAP). The deadline to apply for grants and loan guarantees under this solicitation is July 31, 2009. Grants and loan guarantees will be awarded for investments in renewable energy systems, energy efficiency improvements and renewable energy feasibility studies.

The Food, Conservation, and Energy Act of 2008 (H.R. 2419), enacted by Congress in May 2008, converted the federal Renewable Energy Systems and Energy Efficiency Improvements Program,* into the Rural Energy for America Program (REAP). Similar to its predecessor, the REAP promotes energy efficiency and renewable energy for agricultural producers and rural small businesses through the use of (1) grants and loan guarantees for energy efficiency improvements and renewable energy systems, and (2) grants for energy audits and renewable energy development assistance. Congress has allocated funding for the new program in the following amounts: $55 million for FY 2009, $60 million for FY 2010, $70 million for FY 2011, and $70 million for FY 2012. REAP is administered by the U.S. Department of Agriculture (USDA).

Of the total REAP funding available, 96% is dedicated to grants and loan guarantees for energy efficiency improvements and renewable energy systems. These incentives are available to agricultural producers and rural small businesses to purchase renewable energy systems (including systems that may be used to produce and sell electricity), to make energy efficiency improvements, and to conduct relevant feasibility studies. Eligible renewable energy projects include wind, solar, biomass and geothermal; and hydrogen derived from biomass or water using wind, solar or geothermal energy sources. These grants are limited to 25% of a proposed project's cost, and a loan guarantee may not exceed $25 million. The combined amount of a grant and loan guarantee may not exceed 75% of the project cost. In general, a minimum of 20% of the funds available for these incentives will be dedicated to grants of $20,000 or less. The USDA likely will announce the availability of funding for this component of REAP through a Notice of Funds

Availability (NOFA).

The USDA will also make competitive grants to eligible entities to provide assistance to agricultural producers and rural small businesses "to become more energy efficient" and "to use renewable energy technologies and resources." These grants are generally available to state government entities, local governments, tribal governments, land-grant colleges and universities, rural electric cooperatives and public power entities, and other entities, as determined by the USDA. These grants may be used for conducting and promoting energy audits; and for providing recommendations and information related to energy efficiency and renewable energy. Of the total REAP funding available, 4% is dedicated to competitive grants to provide assistance to agricultural producers and rural small businesses.

** The Renewable Energy Systems and Energy Efficiency Improvements Program was created by the USDA pursuant to Section 9006 of the 2002 federal Farm Security and Rural Investment Act of 2002. Funding in the amount of $23 million per year was appropriated for each fiscal year from FY 2003-2007. In March 2008, the USDA announced that it would accept $220.9 million in applications for grants, loan guarantees, and loan/grant combination packages under the Renewable Energy Systems and Energy Efficiency Improvements Program. The application deadline was June 16, 2008.*

FEDERAL LOAN PROGRAM
Clean Renewable Energy Bonds (CREBs)

Incentive Type:	Federal Loan Program
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaic, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Hydrokinetic Power, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors:	Local Government, State Government, Tribal Government, Rural Electric Cooperative
Amount:	Varies
Terms:	Certain terms for "new" CREBs differ from those for prior allocations,. See IRS Notice 2009-33 for details
Web Site:	http://www.irsgov/irb/2007-14 IRB/ar17.html
Authority 1:	26 USC § 54 (Old CREBs)
Date Effective:	8/08/2005
Expiration Date:	12/31/2009
Authority 2:	26 USC § 54A (New CREBs)
Date Enacted:	10/03/2008
Date Effective:	10/03/2008
Authority 3:	26 USC § 54C (New CREBs)
Date Enacted:	10/03/2008 (subsequently amended)
Date Effective:	10/03/2008

Authority 4: IRS Notice 2009-3
Date Effective: 04/07/2009
Expiration Date: 08/04/2009

Summary

Note: The terms "new" and "old" CREBs are used in the following summary to distinguish between prior CREB allocations and the new CREB authorizations made by the U.S. Congress in 2008 and 2009. The use of the term "new CREBs" has legal significance in that new CREBs authorized under 26 USC § 54A and 54C have substantially different rules than prior CREB allocations authorized under 26 USC § 54.

Clean renewable energy bonds (CREBs) may be used by certain entities -- primarily in the public sector -- to finance renewable energy projects. The list of qualifying technologies is generally the same as that used for the federal renewable energy production tax credit (PTC). CREBs may be issued by electric cooperatives, government entities (states, cities, counties, territories, Indian tribal governments or any political subdivision thereof), and by certain lenders. CREBs are issued -- theoretically -- with a 0% interest rate.* The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest.

The Energy Improvement and Extension Act of 2008 (Div. A, Sec. 107) allocated $800 million for new Clean Renewable Energy Bonds (CREBs). In February 2009, the American Recovery and Reinvestment Act of 2009 (Div. B, Sec. 1111) allocated an additional $1.6 billion for new CREBs, for a total new CREB allocation of $2.4 billion. The Energy Improvement and Extension Act of 2008 also extended the deadline for previously reserved allocations ("old CREBs") until December 31, 2009, and addressed several provisions in the existing law that previously limited the usefulness of the program for some projects. A separate section of the law extended CREBs eligibility to marine energy and hydrokinetic power projects.

In April 2009 the IRS issued Notice 2009-33 soliciting applications for the new CREB allocation and providing interim guidance on certain program rules and changes from prior CREB allocations. The expiration date for new CREB applications under this solicitation is August 4, 2009. Further guidance on CREBs is available in IRS Notices 2006-7 and 2007-26 to the extent that the program rules were not modified by 2008 and 2009 legislation.

Participation in the program is limited by the volume of bonds allocated by Congress for the program. Participants must first apply to the Internal Revenue Service (IRS) for a CREBs allocation, and then issue the bonds within a specified time period. The new CREBs allocation totaling $2.4 billion does not have a defined expiration date under the law; however, the recent IRS solicitation for new applications requires the bonds to be issued within 3 years after the applicant receives notification of an approved allocation (see History section below for information on previous allocations). Public power providers, governmental bodies, and electric cooperatives are each reserved an equal share

(33.3%) of the new CREBs allocation. The tax credit rate is set daily by the U.S. Treasury Department. Under past allocations, the credit could be taken quarterly on a dollar-for-dollar basis to offset the tax liability of the bondholder. However, under the new CREBs allocation, the credit has been reduced to 70% of what it would have been otherwise. Other important changes are described in IRS Notice 2009-33.

CREBs differ from traditional tax-exempt bonds in that the tax credits issued through CREBs are treated as taxable income for the bondholder. The tax credit may be taken each year the bondholder has a tax liability as long as the credit amount does not exceed the limits established by the federal *Energy Policy Act of 2005*. Treasury rates for prior CREB allocations, or "old" CREBs are available here, while rates for new CREBs and other qualified tax credit bonds are available here.

History
The federal *Energy Policy Act of 2005* (EPAct 2005) established Clean Energy Renewable Bonds (CREBs) as a financing mechanism for public sector renewable energy projects. This legislation originally allocated $800 million of tax credit bonds to be issued between January 1, 2006, and December 31, 2007. Following the enactment of the federal *Tax Relief and Health Care Act of 2006*, the IRS made an additional $400 million in CREBs financing available for 2008 through Notice 2007-26.

In November 2006, the IRS announced that the original $800 million allocation had been reserved for a total of 610 projects. The additional $400 million (plus surrendered volume from the previous allocation) was allocated to 312 projects in February 2008. Of the $1.2 billion total of tax-credit bond volume cap allocated to fund renewable-energy projects, state and local government borrowers were limited to $750 million of the volume cap, with the rest reserved for qualified mutual or cooperative electric companies.

For further information on CREBs, contact Zoran Stojanovic or Timothy Jones of the IRS Office of Associate Chief Counsel at (202) 622-3980. Questions on recent IRS Notice 2009-33 can be directed to Janae Lemley at (636) 255-1202.

**In practice, for a variety of reasons bond issuers have sometimes had to issue the bonds at a discount or make supplemental interest payments in order to find a buyer.*

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Energy Efficient Mortgages

Incentive Type: Federal Loan Program
Eligible Efficiency Technologies: Yes; specific technologies not identified
Eligible Renewable/Other Technologies: Passive Solar Space Heat, Solar water Heat, Solar Space Heat, Photovoltaic, Day-lighting
Applicable Sectors: Residential
Web Site: http://www.resnet.us/ratihgs/mortgages

Summary
Homeowners can take advantage of energy-efficient mortgages (EEM) to finance a variety of energy efficiency measures, including renewable energy technologies, in a new or existing home. The U.S. federal government supports these loans by insuring them through Federal Housing Authority (FHA) or Veterans Affairs (VA) programs. This allows borrowers who might otherwise be denied loans to pursue energy efficiency improvements, and it secures lenders against loan default.

The federal Energy Star program has a partnership program for lenders whereby lenders who provide EEMs to borrowers may become Energy Star lender partners. These EEMs may or may not be used to purchase an Energy Star-qualified home. Becoming a partner allows lenders to utilize the Energy Star brand to promote themselves as Energy Star partners offering EEMs. To become a lender, partner lenders must first provide proof that they know how to write EEMs. To maintain their partnership benefits, lenders must write a certain number of EEMs per year. Energy Star does not have a lender certification program or process. Click here for more information about Energy Star's lender partnership program. As of August 2008, the federal Energy Star program lists 61 private lenders who offer homebuyer assistance, HERS assistance, special financing, and other assistance to applicants buying homes with the Energy Star rating. Energy Star requires that its lender partners provide EEMs to qualified borrowers regardless of whether it is an FHA EEM, Fannie Mae EEM, or VA EEM.

FHA Energy Efficient Mortgages
The FHA allows lenders to add up to 100% of energy efficiency improvements to an existing mortgage loan by insuring a loan of up to 5% of a home's appraised value with certain restrictions. FHA mortgage limits vary by county, state and the number of units in a dwelling. See www.fha.com/lending_limits.cfm for more details.

Loan amounts may not exceed the projected savings of the energy efficiency improvements. These loans may be combined with FHA 203 (h) mortgages available to victims of presidentially-declared disasters and with financing offered through the FHA 203 (k) rehabilitation program. FHA loan limits do not apply to the EEM. Homebuyers must submit a Home Energy Rating (HER), contractor bids, and a FHA B Worksheet. This process may become streamlined in 2009 as a result of the Housing and Economic Recovery Act of 2008, which requires HUD to report to congress with ways to remove the

administrative barriers and increase consumer participation and awareness of these financing options.

Presently, up to $200 of the cost of the HER may be included in the mortgage, and borrowers may include closing costs and the up-front mortgage insurance premium in the total cost of the loan. The loan is available to anyone who meets the income requirements for FHA's Section 203 (b), provided the applicant can meet the monthly mortgage payments. New and existing owner-occupied homes of up to two units qualify for this loan. Cooperative units are not eligible. Homebuyers should submit applications to their local HUD Field Office through an FHA-approved lending institution, or they can apply directly online at www.fha.com/energy_efficient.cfm. See also www.hud.gov/offices/hsg/sfh/eem/energy-r.cfm.

Department of Veterans Affairs (VA) Energy Efficient Mortgages
The VA insures EEMs to be used in conjunction with VA loans either for the purchase of existing homes or for refinancing loans secured by the dwelling. Homebuyers may borrow up to $3,000 if only documentation of improvement costs or contractor bids is submitted, or up to $6,000 if the projected energy savings are greater than the increase in mortgage payments. Loans may exceed this amount at the discretion of the VA. Applicants may not include the cost of their own labor in the total amount. No additional home appraisal is needed, but applicants must submit a HER, contractor bids and certain other documentation. The VA insures 50% of the loan if taken by itself, but it may insure less if the total value of the mortgage exceeds a certain amount.

This mortgage is available to qualified military personnel, reservists and veterans. (See www.homeloans.va.gov/elig2.htm for more details). Applicants should secure a certificate of eligibility from their local lending office and submit it to a VA-approved private lender. If the loan is approved, the VA guarantees the loan when it is closed.

Conventional EEMs
Like Energy Star mortgages, conventional mortgages are not backed by a federal agency. Private lenders sell loans to Fannie Mae and Freddie Mac, which in turn allow homebuyers to borrow up to 15% of an existing home's appraised value for improvements documented by a HER.

Fannie Mae also lends up to 5% for Energy Star new homes. Fannie Mae EEMs are available to single-family, owner-occupied units, and Fannie Mae provides EEMs to those whose income might otherwise disqualify them from receiving the loans by allowing approved lenders to adjust borrowers' debt-to-income ratio by 2%. The value of the improvements is immediately added to the total appraised value of the home.

Freddie Mac offers EEMs for one- to four-unit dwellings and also helps raise the effective income of the borrower to qualifying levels by allowing lenders to increase the borrower's income by a dollar amount equal to the estimated energy savings. Any energy efficiency improvements can qualify, and these mortgages can be combined with both fixed-rate and

adjustable-rate mortgages. Borrowers should apply directly to the lender. See www.natresnet.org/resources/lender/default.htm for more details

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Qualified Energy Conservation Bonds (QECBs)

Incentive Type: Federal Loan Program
Eligible Efficiency Technologies: Yes; specific technologies not identified
Eligible Renewable/Other Technologies: Solar Thermal Electric, Photovoltaic, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Hydrokinetic Power, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors: Local Government, State Government, Tribal Government,
Amount: Varies
Terms: Certain terms for "new" CREBs differ from those for prior allocations, See IRS Notice 2009-33 for details
Web Site: http://www.irsgov/irb/2007-14 IRB/ar17.html
Authority 1: 26 USC § 54A
Date Enacted: 10/03/2008
Date Effective: 10/03/2008
Authority 2: 26 USC § 54D
Date Enacted: 10/03/2008 (subsequently amended)
Date Effective: 10/03/2008
Authority 3: IRS Notice 2009-29

Date Effective: 04/07/2009

Summary
The *Energy Improvement and Extension Act of 2008*, enacted in October 2008, authorized the issuance of Qualified Energy Conservation Bonds (QECBs) that may be used by state, local and tribal governments to finance certain types of energy projects. QECBs are qualified tax credit bonds, and in this respect are similar to new Clean Renewable Energy Bonds or CREBs.

The October 2008 enabling legislation set a limit of $800 million on the volume of energy conservation tax credit bonds that may be issued by state and local governments. However, *The American Recovery and Reinvestment Act of 2009*, enacted in February

2009, expanded the allowable bond volume to $3.2 billion. In April 2009 the IRS issued Notice 2009-29 providing interim guidance on how the program will operate and how the bond volume will be allocated.

The advantage of these bonds is that they are issued -- theoretically -- with a 0% interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. The tax credit may be taken quarterly to offset the tax liability of the bondholder. The tax credit rate is set daily by the U.S. Treasury Department; however, energy conservation bondholders will receive only 70% of the full rate set by the Treasury Department under 26 USC § 54A. Credits exceeding a bondholder's tax liability may be carried forward to the succeeding tax year, but cannot be refunded. Energy conservation bonds differ from traditional tax-exempt bonds in that the tax credits issued through the program are treated as taxable income for the bondholder. QECB rates are available here.

In contrast to CREBs, QECBs are not subject to a U.S. Department of Treasury application and approval process. Bond volume is instead allocated to each state based on the state's percentage of the U.S. population as of July 1, 2008. Each state is then required to allocate a portion of its allocation to "large local governments" within the state based on the local government's percentage of the state's population. Large local governments are defined as municipalities and counties with populations of 100,000 or more. Large local governments may reallocate their designated portion back to the state if they choose to do so. IRS Notice 2009-29 contains a list of the QECB allocations for each state and U.S. territory.

The definition of "qualified energy conservation projects" is fairly broad and contains elements relating to energy efficiency capital expenditures in public buildings; renewable energy production; various research and development applications; mass commuting facilities that reduce energy consumption; several types of energy related demonstration projects; and public energy efficiency education campaigns (see H.R. 1424 for additional details). Renewable energy facilities that are eligible for CREBs are also eligible for QECBs.

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U.S. Department of Energy-Loan Guarantee Program

Incentive Type: Federal Loan Program
Eligible Efficiency Technologies: Lighting, Windows, Roofs, Yes; specific technologies not identified
Eligible Renewable/Other Technologies: Solar Thermal Electric, Solar Thermal Process Heat, Photovoltaic, Wind, Hydroelectric, Renewable Transportation fuels, Geothermal Electric, Fuel Cells, Manufacturing Facilities, Day-lighting , Tidal Energy Wave energy, Ocean Thermal, Biodiesel
Applicable Sectors: Commercial, Industrial, Nonprofit, Schools, Local Government, State Government, Agricultural, Institutional, Any Non-federal entity
Amount: Varies. Program focuses on projects with project costs over $25 million
Max Limit: None Stated
Terms: Full repayment is required over a period not to exceed the lesser of 30 years or 90% of the projected useful life of the physical asset to be financed.
Web Site: http://www.lqprogram.energy.gov
Authority 1: 42USC § 16511 et seq.
Authority 2: 10 CFR 609

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Summary
Innovative Technology Loan Guarantee Program:
Title XVII of the federal *Energy Policy Act of 2005* (EPAct 2005) authorized the U.S. Department of Energy (DOE) to issue loan guarantees for projects that "avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The loan guarantee program has been authorized to offer more than $10 billion in loan guarantees for energy efficiency, renewable energy and advanced transmission and distribution projects. The authority to issue loan guarantees granted by EPAct 2005 expires on September 30, 2009.

DOE actively promotes projects in three categories: (1) manufacturing projects, (2) stand-alone projects, and (3) large-scale integration projects that may combine multiple eligible

renewable energy, energy efficiency and transmission technologies in accordance with a staged development scheme. Under the original authorization, loan guarantees were intended to encourage early commercial use of new or significantly improved technologies in energy projects. The loan guarantee program generally does not support research and development projects.

The most recent solicitation for this program was issued in July 2008. The application deadline for stand-alone and manufacturing projects, as well as the Part I applications for large-scale integration projects, was February 26, 2009.

Temporary Loan Guarantee Program:
The American Recovery and Reinvestment Act of 2009 (H.R. 1), enacted in February 2009, extended the authority of the DOE to issue loan guarantees and appropriated $6 billion for this program. Under this act, the DOE may enter into guarantees until September 30, 2011. The act amended EPAct 2005 by adding a new section defining eligible technologies for new loan guarantees. Eligible projects include renewable energy projects that generate electricity or thermal energy and facilities that manufacture related components, electric power transmission systems, and innovative biofuels projects. Funding for biofuels projects is limited to $500 million. Davis-Bacon wage requirements apply to any project receiving a loan guarantee.

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USDA-Rural Energy for America Program (REAP) Loan Guarantees

Incentive Type:	Federal Loan Program
Eligible Efficiency Technologies:	Yes; Specific technologies not identified
Eligible Renewable/Other Technologies:	Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Photovoltaic, Wind, Hydroelectric, Renewable Transportation Fuels, Geothermal Electric, Geothermal Heat Pumps, CHP/Cogeneration, Hydrogen, Direct Use Geothermal, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave energy, Ocean Thermal, Renewable Fuels, Fuel Cells Using Renewable Fuels, Micro-turbines
Applicable Sectors:	Commercial, Agricultural
Amount:	Varies.
Max Limit:	$25 Million per loan guarantee

Terms: Full repayment is required over a period not to exceed the lesser of 30 years or 90% of the projected useful life of the physical asset to be financed.
Web Site: http://www.rurdev.usda.gov/rbs/busp/bprogs.htm
Date Enacted: 5/13/2002
Date Effective: FY 2003

Summary

NOTE: The U.S. Department of Agriculture's Rural Development has issued a Notice of Solicitation of Applications for the Rural Energy for America Program (REAP). The deadline to apply for grants and loan guarantees under this solicitation is July 31, 2009. Grants and loan guarantees will be awarded for investments in renewable energy systems, energy efficiency improvements and renewable energy feasibility studies.

The Food, Conservation, and Energy Act of 2008 (H.R. 2419), enacted by Congress in May 2008, converted the federal Renewable Energy Systems and Energy Efficiency Improvements Program,* into the Rural Energy for America Program (REAP). Similar to its predecessor, the REAP promotes energy efficiency and renewable energy for agricultural producers and rural small businesses through the use of (1) grants and loan guarantees for energy efficiency improvements and renewable energy systems, and (2) grants for energy audits and renewable energy development assistance. Congress has allocated funding for the new program in the following amounts: $55 million for FY 2009, $60 million for FY 2010, $70 million for FY 2011, and $70 million for FY 2012. REAP is administered by the U.S. Department of Agriculture (USDA).

Of the total REAP funding available, 96% is dedicated to grants and loan guarantees for energy efficiency improvements and renewable energy systems. These incentives are available to agricultural producers and rural small businesses to purchase renewable energy systems (including systems that may be used to produce and sell electricity), to make energy efficiency improvements, and to conduct relevant feasibility studies. Eligible renewable energy projects include wind, solar, biomass and geothermal; and hydrogen derived from biomass or water using wind, solar or geothermal energy sources. These grants are limited to 25% of a proposed project's cost, and a loan guarantee may not exceed $25 million. The combined amount of a grant and loan guarantee may not exceed 75% of the project cost. In general, a minimum of 20% of the funds available for these incentives will be dedicated to grants of $20,000 or less. The USDA likely will announce the availability of funding for this component of REAP through a Notice of Funds Availability (NOFA).

The USDA will also make competitive grants to eligible entities to provide assistance to agricultural producers and rural small businesses “to become more energy efficient” and “to use renewable energy technologies and resources.” These grants are generally available to state government entities, local governments, tribal governments, land-grant colleges and universities, rural electric cooperatives and public power entities, and other entities, as determined by the USDA. These grants may be used for conducting and

promoting energy audits; and for providing recommendations and information related to energy efficiency and renewable energy. Of the total REAP funding available, 4% is dedicated to competitive grants to provide assistance to agricultural producers and rural small businesses.

** The Renewable Energy Systems and Energy Efficiency Improvements Program was created by the USDA pursuant to Section 9006 of the 2002 federal Farm Security and Rural Investment Act of 2002. Funding in the amount of $23 million per year was appropriated for each fiscal year from FY 2003-2007. In March 2008, the USDA announced that it would accept $220.9 million in applications for grants, loan guarantees, and loan/grant combination packages under the Renewable Energy Systems and Energy Efficiency Improvements Program. The application deadline was June 16, 2008.*

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E-Mail: webmaster@rurdev.usda.gov
Web Site: http://www.rurdev.usda.gov/rbs

INDUSTRY RECRUITMENT/SUPPORT

Qualifying Advanced Energy Project Investment Tax Credit

Incentive Type: Industry Recruitment Support
Eligible Efficiency Technologies: Lighting, Lighting Controls/Sensors, Energy Conservation Technologies
Eligible Renewable/Other Technologies: Solar Water Heat, Solar Thermal Electric, Photovoltaic, Wind, Geothermal Electric, Fuel Cells, Geothermal Heat Pumps, Fuel Cells using Renewable Fuels, Micro-turbines
Applicable Sectors: Commercial, Industrial, and Manufacturing
Amount: 30% of qualified investment
Max Limit: Total amount of credits to be allocated shall not exceed $2.3 billion
Terms: Apply to the Internal Revenue Service for certification for credits
Web Site: http://www.ustreas.gov

Authority 1: H.R. 1: Div. B. Sec. 1302 (American Recovery and Reinvestment Act of 2009)
Date Enacted: 2/17/2009
Date Effective: 2/17/2009

Summary

The American Recovery and Reinvestment Act of 2009 (H.R. 1), enacted in February 2009, established a new investment tax credit to encourage the development of a U.S.-based renewable energy manufacturing sector. In any taxable year, the investment tax credit is equal to 30% of the qualified investment required for an advanced energy project that establishes, re-equips or expands a manufacturing facility that produces any of the following:

- Equipment and/or technologies used to produced energy from the sun, wind, geothermal or "other" renewable resources
- Fuel cells, micro-turbines or energy-storage systems for use with electric or hybrid-electric motor vehicles
- Equipment used to refine or blend renewable fuels
- Equipment and/or technologies to produce energy-conservation technologies (including energy-conserving lighting technologies and smart grid technologies)*

Qualified investments generally include personal tangible property that is depreciable and required for the production process. Other tangible property may be considered a qualified investment only if it is an essential part of the facility, excluding buildings and structural components.

The U.S. Treasury Department will issue certifications for qualified investments eligible for credits to qualifying advanced energy project sponsors. In total, $2.3 billion worth of credits may be allocated under the program. After certification is granted, the taxpayer has one year to provide additional evidence that the requirements of the certification have been met and three years to put the project in service.

In determining which projects to certify, the U.S. Treasury Department must consider those which most likely will be commercially viable, provide the greatest domestic job creation, provide the greatest net reduction of air pollution and/or greenhouse gases, have great potential for technological innovation and commercial deployment, have the lowest levelized cost of generated (or stored) energy *or* the lowest levelized cost of reduction in energy consumption or greenhouse gas emissions, *and* have the shortest project time. The U.S. Treasury Department, in consultation with the U.S. Department of Energy, must create additional specific program guidelines and the application process by August 16, 2009.

Any taxpayer receiving this credit may not also receive business energy investment tax credit.

**Note: This credit may be expanded in the future to include other energy technologies that reduce greenhouse gas emissions, as determined by the U.S. Treasury Department.*

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PERSONAL EXEMPTION
Residential Energy Conservation Subsidy Exclusion (Personal)

Incentive Type: Personal Exemption
Eligible Efficiency Technologies: Yes; specific technologies not identified
Eligible Renewable/Other Technologies: Solar Water Heat, Solar Space Heat, and Photovoltaic
Applicable Sectors: Residential, Multi-family Residential
Amount: 100% of subsidy
Web Site: http://www.irs.gov/publications/p525/index.html
Authority 1: 26 USC § 136

Summary:
According to Section 136 of the IRS Code, energy conservation subsidies provided by public utilities,* either directly or indirectly, are nontaxable: "Gross income shall not include the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure."

The term "energy conservation measure" includes installations or modifications primarily designed to reduce consumption of electricity or natural gas, or improve the management of energy demand. Eligible dwelling units include houses, apartments, condominiums, mobile homes, boats and similar properties. If a building or structure contains both dwelling and other units, any subsidy must be properly allocated.

Given the definition of "energy conservation measure," there is strong evidence that utility rebates for residential solar thermal and solar electric projects may be nontaxable. However, the IRS has not ruled definitively on this issue. For taxpayers considering using this provision for renewable energy systems, consultation with a tax attorney is advised.

Other types of utility subsidies that may come in the form of credits or reduced rates may also be nontaxable, according to IRS Publication 525:

"Utility rebates. If you are a customer of an electric utility company and you participate in the utility's energy conservation program, you may receive on your monthly electric bill

either: a reduction in the purchase price of electricity furnished to you (rate reduction), or a nonrefundable credit against the purchase price of the electricity. The amount of the rate reduction or nonrefundable credit is not included in your income."

** The term "public utility" is defined as an entity "engaged in the sale of electricity or natural gas to residential, commercial, or industrial customers for use by such customers." The term includes federal, state and local government entities.*

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PERSONAL TAX CREDIT
Residential Energy Efficiency Tax Credit

Incentive Type:	Personal Tax Credit
Eligible Efficiency Technologies:	Water Heaters, Furnaces, Boilers, Heat Pumps, Air Conditioners, Building Insulation, Windows, Doors, Roofs, Circulating Fans used in a Qualifying Furnace
Eligible Renewable/Other Technologies:	Biomass, Stoves that use qualified biomass fuel
Applicable Sectors:	Residential
Amount:	30%
Maximum Incentive:	Aggregate amount of credit for all technologies placed in service in 2009 and 2010 combined is limited to $1,
Equipment/Installation Requirements:	Equipment must be new and in compliance with all applicable performance and safety standards as described in tax code.
Authority 1:	26 USC § 25C
Date Enacted:	8/08/2005
Date Effective:	1/01/2006
Expiration Date:	12/31/2010

Summary
The federal tax credit for energy-efficient home improvements was established by the *Energy Policy Act of 2005.* After expiring December 31, 2007, the credit was extended and expanded by The Energy Improvement and Extension Act of 2008 (H.R. 1424: Div. B, Sec. 302) and The American Recovery and Reinvestment Act of 2009 (H.R. 1: Div. B, Sec. 1121). The credit now applies to eligible equipment purchased between January 1, 2009, and December 31, 2010. In addition to extending the credit, H.R. 1424 and H.R. 1

strengthened the efficiency requirements for most equipment, extended the credit to stoves that use biomass fuel and asphalt roofs with appropriate cooling granules; raised the cap for the credit; and redesigned the way the credit is calculated.

The credit applies to energy efficiency improvements in the building envelope of existing homes and for the purchase of high-efficiency heating, cooling and water-heating equipment. Efficiency improvements or equipment must serve a dwelling in the United States that is owned and used by the taxpayer as a primary residence. The maximum amount of homeowner credit for all improvements combined is $1,500 for equipment purchased during the two-year period of 2009 and 2010.

Building Envelope Improvements
Owners of existing homes receive a tax credit worth 30% of the cost of upgrading the efficiency of the building's envelope. Installation (labor) costs are not included. The following improvements are eligible for the tax credit:

- Insulation materials and systems designed to reduce a home's heat loss or gain
- Exterior doors and windows (including skylights) and
- Pigmented metal roofs designed to reduce heat gain, and asphalt roofs with appropriate cooling granules.

Heating, Cooling and Water-Heating Equipment
Taxpayers who purchase qualified residential energy-efficient property are eligible for a tax credit worth 30% of the system cost, *including* labor costs. The credit may also be applied to labor costs for assembly and original installation of eligible property. The following types of equipment are eligible:

- Electric heat pump water heaters
- Electric heat pumps
- Central air conditioners
- Natural gas, propane or oil water heaters
- Natural gas, propane or oil furnace or hot water boilers
- Advanced main air circulating fans
- Biomass stoves that use "plant-derived fuel available on a renewable or recurring basis, including agricultural crops and trees, wood and wood waste and residues (including wood pellets), plants (including aquatic plants), grasses, residues, and fibers"

Performance and quality standards for tax credit eligibility vary by technology. (See 26 USC § 25C, H.R. 1424 of 2008 and H.R. 1 of 2009) for details. Additionally, the Energy Star web site offers detailed information on qualifying products.

Significantly, *The American Recovery and Reinvestment Act of 2009* repealed a previous limitation on the use of the credit for eligible projects also supported by "subsidized energy financing." For projects placed in service after December 31, 2008, this limitation no longer applies. Businesses that receive other incentives are advised to consult with a

tax professional regarding how to calculate this federal tax credit.

Background
The *Energy Policy Act of 2005* established the tax credit for energy improvements to existing homes. The credit was originally limited to purchases made in 2006 and 2007, with an aggregate cap of $500 for all qualifying purchases made in these two years combined. There were also separate individual caps for the different equipment types. H.R. 1424 of 2008 reinstated the credit for 2009 purchases and made other minor adjustments. H.R. 1 further extended the credit to include purchases made in 2010 and replaced the $500 aggregate cap with a $1,500 aggregate cap for installations made in 2009 and 2010. Tax credits for installations made in 2006 and 2007 are still limited to $500. Any purchase made in 2008 is not eligible for this tax credit.

Geothermal heat pumps were originally eligible for this credit, with a $300 cap. However, geothermal heat pumps are now eligible for the residential renewable energy tax credit, with no cap.

Contact:
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: http://www.irs.gov

Residential Renewable Energy Tax Credit

Incentive Type:	Personal Tax Credit
Eligible Renewable/Other Technologies:	Solar Water Heat, Photovoltaic, Wind, Fuel Cells, Geothermal Heat Pumps, Other Solar Electric Technologies
Applicable Sectors:	Residential
Amount:	30%
Maximum Incentive:	Solar-electric systems placed in service before 2009: $2,000 Solar-electric systems placed in service after 2008: no maximum Solar water heaters placed in service before 2009: $2,000 Solar water heaters placed in service after 2008: no maximum Wind turbines placed in service in 2008: $4,000 Wind turbines placed in service after 2008: no maximum Geothermal heat pumps placed in service in 2008: $2,000 Geothermal heat pumps placed in service after 2008: no maximum Fuel cells: $500 per 0.5 kW
Carryover Provisions:	Excess credit may be carried forward to next tax year
Eligible System Size:	Fuel Cells: 0.5kW minimum

Equipment/Installation Requirements: Solar water heating property must be certified by SRCC or by comparable entity endorsed by the state in which the system is installed. At least half the energy used to heat the dwelling's water must be from solar. Geothermal heat pumps must meet federal Energy Star requirements. Fuel cells must have electricity-only generation efficiency greater than 30%.

Authority 1: 26 USC § 25D

Date Enacted: 8/08/2005 (subsequently amended)

Date Effective: 1/01/2006

Expiration Date: 12/31/2016

Authority 2: IRS Form 5695 & Instructions: Residential Energy Credits

Summary

Note: The American Recovery and Reinvestment Act of 2009 does not allow taxpayers eligible for the residential renewable energy tax credit to receive a U.S. Treasury Department grant instead of taking this credit.

Established by the federal *Energy Policy Act of 2005*, the federal tax credit for residential energy property initially applied to solar-electric systems, solar water heating systems and fuel cells. *The Energy Improvement and Extension Act of 2008* (H.R. 1424) extended the tax credit to small wind-energy systems and geothermal heat pumps, effective January 1, 2008. Other key revisions included an eight-year extension of the credit to December 31, 2016, the ability to take the credit against the alternative minimum tax, and the removal of the $2,000 credit limit for solar-electric systems beginning in 2009. The credit was further enhanced in February 2009 by *The American Recovery and Reinvestment Act of 2009* (H.R. 1: Div. B, Sec. 1122, p. 46), which removed the maximum credit amount for all eligible technologies (except fuel cells) placed in service after 2008.

A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States and used as a residence by the taxpayer. Expenditures with respect to the equipment are treated as made when the installation is completed. If the installation is on a new home, the "placed in service" date is the date of occupancy by the homeowner. Expenditures include labor costs for onsite preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home. If the federal tax credit exceeds tax liability, the excess amount may be carried forward to the succeeding taxable year. The excess credit can be carried forward until 2016, but it is unclear whether the unused tax credit can be carried forward after then. The maximum allowable credit, equipment requirements and other details vary by technology, as outlined below.

Solar-electric property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service before January 1, 2009.

- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- The home served by the system does *not* have to be the taxpayer's principal residence.
- Note that the Solar Energy Industries Association (SEIA) has published a three-page document that provides answers to frequently asked questions regarding the federal tax credits for solar energy.

Solar water-heating property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service before January 1, 2009.
- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- Equipment must be certified for performance by the Solar Rating Certification Corporation (SRCC) or a comparable entity endorsed by the government of the state in which the property is installed.
- At least half the energy used to heat the dwelling's water must be from solar in order for the solar water-heating property expenditures to be eligible.
- The tax credit does not apply to solar water-heating property for swimming pools or hot tubs.
- The home served by the system does *not* have to be the taxpayer's principal residence.
- Note that the Solar Energy Industries Association (SEIA) has published a three-page document that provides answers to frequently asked questions regarding the federal tax credits for solar energy.

Fuel cell property

- The maximum credit is $500 per half kilowatt (kW).
- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- The fuel cell must have a nameplate capacity of at least 0.5 kw of electricity using an electrochemical process and an electricity-only generation efficiency greater than 30%.
- In case of joint occupancy, the maximum qualifying costs that can be taken into account by all occupants for figuring the credit is $1,667 per half kilowatt. This does not apply to married individuals filing a joint return. The credit that may be claimed by each individual is proportional to the costs he or she paid.
- The home served by the system *must* be the taxpayer's principal residence.

Small wind-energy property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $500 per half kilowatt, not to exceed $4,000, for systems placed in service in 2008.
- Systems must be placed in service on or after January 1, 2008, and on or before December 31, 2016.
- The home served by the system does *not* have to be the taxpayer's principal residence.

Geothermal heat pumps

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service in 2008.
- Systems must be placed in service on or after January 1, 2008, and on or before December 31, 2016.
- The geothermal heat pump must meet federal Energy Star program requirements in effect at the time the installation is completed.
- The home served by the system does *not* have to be the taxpayer's principal residence.

Significantly, *The American Recovery and Reinvestment Act of 2009* repealed a previous limitation on the use of the credit for eligible projects also supported by "subsidized energy financing." For projects placed in service after December 31, 2008, this limitation no longer applies.

History
The federal *Energy Policy Act of 2005* established a 30% tax credit (up to $2,000) for the purchase and installation of residential solar electric and solar water heating property and a 30% tax credit (up to $500 per 0.5 kilowatt) for fuel cells. Initially scheduled to expire at the end of 2007, the tax credits were extended through December 31, 2008, by the *Tax Relief and Health Care Act of 2006*.

In October 2008, the *Energy Improvement and Extension Act of 2008* extended the tax credits once again (until December 31, 2016), and a new tax credit for small wind-energy systems and geothermal heat pump systems was created. In February 2009, *The American Recovery and Reinvestment Act of 2009* removed the maximum credit amount for all eligible technologies (except fuel cells) placed in service after 2008.

Contact:
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: http://www.irs.gov

PRODUCTION INCENTIVE
Renewable Energy Production Incentive (REPI)

Incentive Type:	Production Incentive
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaic, Landfill Gas, Wind, Biomass, Geothermal Electric, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal
Applicable Sectors:	Local Government, State Government, Tribal Government, Municipal Utility, Rural Electric Cooperative, Native Corporations
Amount:	2.1¢/kWh (subject to availability of annual appropriations in each federal fiscal year of operation)
Terms:	10 years
Web Site:	http://apps1.eere.energy.gov/repi
Authority 1:	42 USC § 13317
Date Enacted:	10/24/1992 (subsequently amended)
Authority 2:	10 CFR 451

Summary
Note: Contact the program administrator to find out the current funding status of this program.

Established by the federal *Energy Policy Act of 1992,* the federal Renewable Energy Production Incentive (REPI) provides incentive payments for electricity generated and sold by new qualifying renewable energy facilities. Qualifying systems are eligible for annual incentive payments of 1.5¢ per kilowatt-hour in 1993 dollars (indexed for inflation) for the first 10-year period of their operation, *subject to the availability of annual appropriations in each federal fiscal year of operation.* REPI was designed to complement the federal renewable energy production tax credit (PTC), which is available only to businesses that pay federal corporate taxes.

Qualifying systems must generate electricity using solar, wind, geothermal (with certain restrictions), biomass (excluding municipal solid waste), landfill gas, livestock methane, or ocean resources (including tidal, wave, current and thermal). The production payment applies only to the electricity sold to another entity. Eligible electric production facilities include not-for-profit electrical cooperatives, public utilities, state governments and political subdivisions thereof, commonwealths, territories and possessions of the United States, the District of Columbia, Indian tribal governments or political subdivisions thereof, and Native Corporations.

Payments may be made only for electricity generated from an eligible facility first used before October 1, 2016. Appropriations have been *authorized* for fiscal years 2006 through fiscal year 2026. If there are insufficient appropriations to make full payments for electricity production from all qualified systems for a federal fiscal year, 60% of the appropriated funds for the fiscal year will be assigned to facilities that use solar, wind,

ocean, geothermal or closed-loop biomass technologies; and 40% of the appropriated funds for the fiscal year will be assigned to other eligible projects. Funds will be awarded on a pro rata basis, if necessary.

Contact:
Christine Carter
U.S. Department of Energy
1617 Cole Blvd.
Golden, CO 80401-3393
E-Mail: Christine.carter@go.doe.gov
Web Site: http://www.energy.gov

State Incentives

STATE GRANT PROGRAM
Alaska Energy Authority—Renewable Energy Grant Program

Incentive Type:	State Grant Program
Eligible Renewable/Other Technologies:	Solar Thermal Electric, Photovoltaic, Landfill Gas, Wind, Biomass, Geothermal Electric, Fuel Cells, Hydrothermal, Waste Heat, Transmission or Distribution Infrastructure, Anaerobic Digestion, Tidal, Energy, Wave Energy
Applicable Sectors:	Commercial, Local Government, Utility, Tribal Government, Only Available for In-State Projects
Amount:	Varies
Funding Source:	State Appropriation
Program Budget:	$100 million (FY 2009 appropriation)
Web Site:	http://www.akenergyauthority.org/RE_Fund.html
Authority 1:	H.B. 152
Date Enacted:	05/22/2008

Summary
In May 2008, Alaska enacted legislation authorizing the creation of a renewable energy grant fund and recommendation program to be administered by the Alaska Energy Authority (AEA). The grant program is intended to provide assistance to utilities, independent power producers, local governments, and tribal governments for feasibility studies, reconnaissance studies, energy resource monitoring, and work related to the design and construction of eligible facilities. In order to be eligible for a grant, a project must be located within Alaska. The list of eligible technologies includes solar, wind, geothermal, hydrothermal, certain types of biomass, biogas, wave, tidal, waste heat utilization, river in-stream power, and hydropower. Also eligible are fuel cells that use hydrogen generated from an eligible renewable resource or natural gas; certain natural gas projects located in small communities; and, electricity or natural gas transmission and

distribution infrastructure projects that link an eligible project to related infrastructure.

The AEA will not actually approve projects; it will issue recommendations to the state legislature, which will make funding decisions. In September 2008, the AEA issued a solicitation for two rounds of grant applications under this program. The first round is for projects that are able to proceed quickly in anticipation of an expected award date of December 2008. The second round is for projects that require more preparation time or that may be considered for FY 2010 funding. Applications were due by October 8, 2008 for the first round and by November 10, 2008 for the second round. Although there are no firm limits on grant amounts or minimum applicant contributions, applications with matching funds will be looked upon favorably.

The enabling legislation states an intention to provide $50 million in funding annually to the program for five years, but $100 million was appropriated for the FY 2009 program. The initial allocation plan recommends that 20% of the funding go to reconnaissance, feasibility and resource studies, and the remaining 80% be awarded to final design, permitting and construction projects.

Please see the program website for additional details, including information on funding and eligibility questions.

Contact:
Butch White
Alaska Energy Authority
813 West Northern Lights Blvd
Anchorage, AK 99503
Phone: (907) 771-3048
Fax: (907) 771-3942
E-Mail: re_fund@aidea.org
Web Site: http://www.aidea.org/aea/index.html

STATE LOAN PROGRAM
Associated Loan Program

Incentive Type: State Loan Program
Eligible Efficiency Technologies: Yes; specific technologies not identified
Web Site: http://www.ahfc.state.ak.us/loans/association.cfm

Summary
With this loan, the Alaska Housing Finance Corporation (AHFC) will fund homeowners' associations (HOA's) common area improvements. The improvements made must be necessary for the health and safety of the property's residents or for the structural integrity of the building, but can include improvements made for energy efficiency.

The homeowners' association should submit a proposal to AHFC for preliminary approval. The forms to start this loan process are located at the program website. Loan limits are determined on a case-by-case basis. This loan is only offered to active HOA's in the state of Alaska.

Contact:
Eric Havelock
Alaska Housing Finance Corporation
4300 Boniface Parkway
P.O. Box 101020
Anchorage, AK 99510-1020
Phone: (800) 478-2432
Phone 2: (907) 338-6100
Fax: (907) 338-9716
E-Mail: ehaveloc@ahfc.state.ak.us
Web Site: http://www.ahfc.state.ak.us/

Energy Efficiency Interest Rate Reduction Program

Incentive Type:	State Loan Program
Eligible Efficiency Technologies:	Comprehensive Measures/Whole Building
Applicable Sectors:	Residential
Amount:	New Homes: Rate reduction of .25% - .50% Existing Homes: Rate reduction of .125% - .375% Existing Homes with Energy Improvements: Rate reduction of .125% - .750%
Maximum Amount:	Rate reduction applies to first $200,000; after this amount, a blended interest rate applies
Web Site:	http://www.ahfc.state.ak.us/loans/eeirr.cfm

Summary
The Alaska Housing Finance Corporation (AHFC) offers interest rate reductions to home buyers purchasing new and existing homes with 5 Star and 5 Star Plus energy ratings. All homes constructed on or after April 1, 2007 must meet Alaska Building Energy Efficiency Standard (BEES) 2007. Rate reductions are also available for energy improvements to older, existing home purchases. Any property that can be energy rated and is otherwise eligible for AHFC financing may qualify for this program.

For new and existing home purchases that are rated 5 Star or 5 Star Plus, applicants are eligible for an interest rate reduction for the first $200,000 of the purchase price, with a blended interest rate applying to the remainder of the price. The rate reductions are dependent on a property's access to natural gas and the energy rating of the home. A residence that has a energy rating of 5 Star and a Building Technology Certificate will be eligible for the 5 Star Plus interest rate reduction.

For homes that have energy improvements, a rate reduction is available for applicants,

based on the number of steps of improvement to the energy rating of the property. An applicant should have the lender contact AHFC to inform them that the borrower intends to participate in the rate reduction program. After loan closing, energy improvements should be completed within 365 days. After a energy rating, AHFC will modify the interest rate. The program is available through AHFC Approved Lenders.

Contact:
Cary Bolling
Alaska Housing Finance Corporation
Research Information Center
POB 101020
Anchorage, AK 99503
Phone: (800) 478-2432
Phone 2: (907) 330-8164
Fax: (907) 338-1747
E-Mail: cbolling@ahfc.state.ak.us
Web Site: http://www.ahfc.state.ak.us/

Power Project Loan Fund

Incentive Type: State Loan Program
Eligible Renewable/Other Technologies: Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Photovoltaic, Wind, Renewable Transportation Fuels, Municipal Solid Waste
Applicable Sectors: Local Government, Municipal Utility, Independent Power Producers
Amount: Varies
Terms: Interest rate tied to municipal bonds
Web Site: http://www.akenergyauthority.org/programsloan.html
Authority 1: AS § 42.45.010
Date Enacted: 1993, subsequently amended

Summary
Created by the Alaska State Legislature and administered by the Alaska Energy Authority, this fund provides loans to local utilities, local governments, regional and village corporations, village councils, and independent power producers. It is designed for the development or upgrade of small-scale power production facilities, conservation facilities, and bulk fuel storage facilities. This includes energy production, transmission and distribution, and waste energy conservation facilities that depend on fossil fuel, wind power, tidal, geothermal, biomass, hydroelectric, solar or other energy sources.

The loan term is related to the life of the project. Interest rates are the lesser of the average weekly yield of municipal bonds for the 12 months preceding the date of loan, or a rate the Alaska Energy Authority determines will allow the project to be financially feasible. Maximum loan amounts may be determined by available funds in the program. Contact

the Alaska Energy Authority at (888) 300-8534 (within Alaska) for current restrictions on maximum loan amounts.

Contact:
Bruce Chertkow
Alaska Industrial Development and Export Authority (AIDEA)
813 West Northern Lights Blvd.
Anchorage, AK 99503
Phone: (907) 771-3000
Phone 2: (888) 300-8534
Fax: (907) 771-3044
E-Mail: bchertkow@aidea.org
Web Site: http://akenergyauthority.org/index.html

Second Mortgage Program for Energy Conservation

Incentive Type: State Loan Program
Eligible Efficiency Technologies: Comprehensive Measures/Whole Building
Applicable Sectors: Residential
Maximum Amount: $30,000
Terms: The maximum loan term is 15 years
Installation Requirements: Efficiency upgrades must be recommended by an AKWarm certified energy rater
Web Site: http://www.ahfc.state.ak.us/loans/second_energy conserve.cfm

Summary
Alaska Housing Finance Corporation (AHFC) offers loans of up to $30,000 over 15 years to qualified borrowers through the Second Mortgage for Energy Conservation program. Borrowers apply to AHFC for financing to make energy improvements on owner-occupied properties. Applicants must select from the list of energy upgrades which are provided by an AKWarm certified energy rater. All improvements must be completed within 365 days of loan closing (improvements not listed may not be included in the loan). The interest rate is the Taxable Program 15-year interest rate. Click here for current interest rates

Contact:
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Fax: (907) 338-1747

E-Mail: cbolling@ahfc.state.ak.us
Web Site: http://www.ahfc.state.ak.us/

Small Building Material Loan

Incentive Type: State Loan Program
Eligible Efficiency Technologies: Building Material
Eligible Renewable/Other Technologies: Not specified
Applicable Sectors: Residential, Multi-Family Residential
Maximum Amount: $20,000
Terms: See AHFC for current interest rates; maximum loan term is 15 years
Web Site: http://www.ahfc.state.ak.us/loans/small_building_material.cfm

Summary
The Alaska Housing Finance Corporation offers a Small Building Materials Loan for applicants to complete or renovate property located within a "small community", as defined in the AHFC glossary.

Applicants may borrow up to $20,000 for projects that improve the livability of a home, improve energy efficiency or expand space. The loan can be applied toward building materials, freight or third party labor costs, and the project should be completed within 180 days of the loan closing. If the owner does not occupy the property, then only duplex and higher are eligible for the loan program. To apply for this loan program, contact AHFC directly.

Contact:
Debbie Sims
Alaska Housing Finance Corporation
P.O. Box 101020
Anchorage, AK 99510-1020
Phone: (800) 478-2432
Phone 2: (907) 330-8444
Fax: (907) 338-9716
E-Mail: dsims@ahfc.state.ak.us
Web Site: http://www.ahfc.state.ak.us/

STATE HOME REBATE PROGRAM
Home Energy Rebate Program

Incentive Type: State Rebate Program
Eligible Efficiency Technologies: Comprehensive Measures/Whole Building
Applicable Sectors: Residential
Maximum Incentive: $10,000 for energy efficiency improvements (plus $500 for energy audit);
$7,500 qualified new 5 Star Plus homes
Funding Source: Alaska Housing Finance Corporation
Web Site: http://www.ahfc.state.ak.us/Energy/weatehrization_rebates.cfm

Summary
Under the Home Energy Rebate Program homeowners who want to make their own energy efficiency improvements on their home can receive a rebate for some of their expenditures. The program requires a home energy rater to evaluate homes before and after the improvements. Rebates are dependent on the relative amount of efficiency gained and receipts from eligible improvements chosen by the homeowner from the energy rating's improvement options list. The Home Energy Rebate Program provides rebates up to $10,000 to homeowners who improve the energy efficiency of their homes. In addition, the Rebate program provides a $7,500 rebate for qualified new 5 Star Plus homes.

To participate in the program, the homeowner must sign-up for an energy rating by contacting the AK REBATE Call Center at 1-877-AK-REBATE or sign-up online. Alaska Housing Finance Corporation (AHFC) will reimburse the homeowner up to $375 for the cost of the first rating and up to $175 for the post-improvement rating. Extensive information on the program, including "The Home Energy Rebate Program Consumer Guide", is available on the AHFC website or by calling AHFC at 1-800-478-2432 or 1-907-338-6100. Recorded information on the programs is available by calling The Home Energy Rebate & Weatherization Hotline at 1-877-325-2508 (statewide except Anchorage; in Anchorage call 330-8300).

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Appendix-A

Kenai Peninsula Borough

Departmental Efforts Accomplishing Energy Conservation & Efficiency

Unplug Items Not in Use (All Departments)

Turn off Lights & Appliances when not in use (all Departments)

Landscape with Native Vegetation to Minimize Water Usage (Public Works Department)

Replace Incandescent Light Bulbs with Fluorescent Lamps (all Departments)

Use Variable Frequency Drive Controls on Motors (Solid Waste Department)

Replace Individual Equipment with Multi-Purpose Equipment (Clerk's Office)

Lighting & Ballast Upgrades in Schools

Turn Down Heat when Bay Doors Opened (Central Emergency Services)

Evaluation of Water Heaters & HVAC Systems (Maintenance Dept. Project)

Automated Systems (Public Works Department)

Shredding & Recycle of Paper vs. Dumping in Landfill (Clerk's Office)

Burning Used Motor Oil for Heat vs. Accumulation at Landfill (Solid Waste Department)

Recycle Glass for Drainage Medium & Road-building (Solid Waste Department)

Motion Activated Lights (Emergency Response Center)

Insulate Hot Water Pipes (Central Emergency Services)

Electronic Correspondence vs. Paper Where Possible (Clerk's Office)

Evaluate Equipment Sizing, Specifically Electric Motors (Maintenance Department)

Use of Natural Light and Ventilation Whenever Possible (Public Works Department)

Replaced Worn or Broken Weather Stripping (Central Emergency Services)

Practice Energy Conservation Awareness (all Departments)

Appendix-B

Energy Resource Handbook

(Proposed Content—Subject to Change)

I. Introduction

II. Overview
- A. Alternative Energy Type & Local Viability
  1. Wind
  2. Solar
  3. Hydro
  4. Geothermal
  5. Tidal
- B. Energy Efficiency
  1. Appliances
  2. New Building Construction
  3. Building Renovation and Retrofit
- C. Energy Conservation
  1. Lighting
  2. Heating & Cooling
  3. Appliances
  4. Electronics

III. Benefits
- Alternative Energy
  1. Provide all Household Needs
  2. Supplement Existing Needs
  3. Net Metering
- Energy Efficiency
  1. Reduced Operating Cost
  2. Possible Tax Credit/Rebate
  3. Possible Reduced Mortgage Interest Rates
- Energy Conservation
  1. Reduced Utility Bills
  2. Increased Appliance Life
  3. Reduced Demand on Utility Companies

IV. Regulatory Considerations (Alternative Energy Systems Only)
- A. Building Codes
  1. Installation Restrictions
     a. Licensed Installers
     b. Manufacturer Requirements
     c. Utility Connections
  2. Design Considerations

a. Roof Load (for solar collectors)
b. Wiring (wind & photovoltaic systems)

B. Zoning Restrictions
1. Wind Turbine Height Restrictions
2. Aesthetic Appearance

C. Environmental Considerations
1. U.S. Army Corps of Engineers Approval (hydro systems)
2. Kenai River Center Approval (hydro systems in Kenai River)

V. Added Value
A. Increased Efficiency in New Construction
B. Increased Resale Value
C. Increased Market Appeal

VI. Incentives for Alternative Energy & Energy Efficiency

A. Federal Incentives & Programs
1. Personal Exemption
(a) Residential Energy Conservation subsidy Exclusion
2. Personal Tax Credit
(a) Residential Energy Efficiency Tax Credit
(b) Residential Renewable Energy Tax Credit
3. Corporate Deduction
(a) Energy Efficient Commercial Buildings Tax Deduction
4. Corporate Depreciation
(a) Modified Accelerated Cost Recovery System
5. Corporate Exemption
(a) Corporate Energy Conservation Subsidy Exclusion
6. Corporate Tax Credit
(a) Business Energy Investment Tax Credit (ITC)
(b) Energy Efficient Appliance Tax Credit for Manufacturers
(c) Energy Efficient New Homes Tax Credit for Home Builders
(d) Renewable Electricity Production Tax Credit (PTC)
(e) Federal Grant Programs
7. Tribal Energy Program Grants
8. U.S. Department of Treasury—Renewable Energy Grants
9. USDA—Rural Energy for America Program (REAP) Grants
10. Federal Loan Programs
(a) Clean Renewable Energy Bonds (CREBs)
(b) Energy Efficient Mortgages
(c) Qualified Energy Conservation Bonds (QECBs)
(d) U.S. Department of Energy—Loan Guarantee Program
(e) USDA—(REAP) Loans Guarantees
11. Industry Recruitment/Support
(a) Qualifying Advance Energy Project Investment Tax Credit
12. Production Incentive

(a) Renewable Energy Production Incentive (REP)

B. State of Alaska Incentives
1. State Grant Program
(a) Alaska Energy Authority—Renewable Energy Grant Program
2. State Rebate Program
(a) Home Energy Rebate Program

3. State Loan Program
(a) Association Loan Program
(b) Energy Efficiency Interest Rate Reduction Program
(c) Power Project Loan Fund
(d) Second Mortgage Program for Energy Conservation
(e) Small Building Material Loan
4. Utility Rebate Program (GVEA=Golden Valley Electric Association)
(a) GVEA—Commercial Lighting Retrofit Rebate Program
(b) GVEA—Residential Energy Efficiency Rebate Program

C. Local Incentives
1. Homer Electric Association SNAP program
2. Homer Electric Line of Credit for Energy Efficient Appliances
3. Net Metering (pending)
4. No Insurance Requirement for Connection to Utility
5. Property Tax Exemption (pending)

VII. Local Resources A. Alternative Energy System Providers
B. Construction Companies
C. Building Material
D. Lenders
E. Architects/Building Designers
F. Energy Raters

Alaska Housing Finance Corporation (AHFC)
www.ahfc.state.ak.us/

U.S. Department of Energy (DOE)
www.**energy**.gov/

Kenai Peninsula Borough
www.borough.kenai.ak.us

Kenai Peninsula Association for Renewable Energy (KPARE)
www.kpare.org

Appendix-C

ALASKA ENERGY AUTHORITY

Alaskan Small-Scale Renewable Energy Equipment and Service Providers*

ABS Alaskan Attn: Tech Support 2130 Van Horn Rd. Fairbanks, AK 99701 Tel: (907) 451-7145 Toll-Free, in Alaska: 800-478-7145 Fax: (907) 451-1949 E-mail: sales@absak.com Web Site: http://www.absak.com	**Polar Wire Products, Inc.** 7941 Brayton Drive Anchorage, AK 99507 Tel: (907) 561-5955 Fax: (907) 561-4233 E-mail: info@polarwire.com Web Site: http://www.polarwire.com
Alaska Battery Mfg. Attn: Sales 166 E. Potter Dr., #2 Anchorage, AK 99518 Tel: (907) 562-4949 Fax: (907) 563-4900 E-Mail: abm@absak.com Web Site: http://www.absak.com	**Remote Power Inc.** Attn: Greg Egan 981 Gold Mine Trail Fairbanks, AK 99712 Tel: (907) 457-4299 Fax: (907) 457-4299 E-mail: greg@remotepowerinc.com Web Site: http://www.remotepowerinc.com
Alaska Wind & Solar Attn: John Dailey HC 1, Box 3102A Healy, AK 99743 Tel: (907) 683-2327 Fax: (907) 683-2327 E-mail: jdailey@mtaonline.net	**Solar-Alaska** Attn: Sales 2480 Killarney Way Fairbanks, Alaska USA 99708 Tel: (907) 479-2505 E-mail: info@solaralaskc.com Web Site: http://www.solaralaska.com/
Alaskan Wind Industries 155 Smith Way Soldotna, AK 99669 Tel: (907) 776-7664 E-mail: info@akwindindustries.com Web Site: http://www.akwindindustries.com/	**Solarwind Energy** Attn: Eric Zuber P.O. Box 304 Sterling, AK 99672 Tel: (907) 260-3782 E-mail: solarwindenergy@hotmail.com
Arctic Technical Services P.O. Box 72701 1318 Well Street Fairbanks, Alaska 99701 Tel: (907) 452-8368 Fax: (907) 452-8007 E-mail: nrgtech@polarnet.com	**Susitna Energy Systems** Attn: Kirk Garoutle 2509 Fairbanks St., Suite C Anchorage, AK 99503 Tel: (877) 485-1100 (toll-free) Tel: (907) 337-1300 Fax: (907) 644-4120 E-mail: susitna@gci.net Web Site: http://www.susitnaenergy.com/
Invertech Alaska Attn: George Menard P.O. Box 13169 Trapper Creek, AK 99683 Tel: (907) 733-2515 Fax: (907) 733-2515	

*Alaska Energy Authority does not endorse any of the listed vendors nor represent this list as complete. For proposed additions to the list, please contact James Jensen, AEA at jjensen@aidea.org or (907) 771-3043.

Appendix-D

Kenai Peninsula Borough

PUBLIC SERVICE ANNOUNCEMENT

Topic: Alternative Energy Workshop

Date: February 1, 20XX

Time: 7:30 PM

Location: Skyview High School Auditorium

Audience: Public

Cost: Free

1. The Kenai Peninsula Borough in cooperation with several alternative energy system providers will host an information workshop to promote alternative energy. The workshop is open to the public, and the public is urged to attend.

2. Topics to be discussed include types of alternative energy, feasibility of alternative energy, and typical installation costs. Representatives from the alternative energy industries, local financial institutions, and home builders will present information and answer questions.

For further information contact:
John Janik (907) 714-2337
jjanik@borough.kenai.ak.us

###

Appendix-E 1

Senator Gary Stevens, President of the Senate

Email: Senator_Gary_Stevens@legis.state.ak.us
District R
Party: Republican
Toll-Free: 800-821-4925

Session Contact
State Capitol Room 111
Juneau AK, 99801
Phone: 907-465-4925
Fax: 907-465-3517

Interim Contact
305 Center Ave. Ste. 1
Kodiak AK, 99615
Phone: 907-486-4925
Fax: 907-486-5264

Date/Place of Birth:
August 21, 1941
McMinnville, Oregon

Residency in Alaska:
1970 - present

Occupation:
Retired Professor

Family:
Wife – Rita
Children - Anna, Matthew, Natalie

Education:
Taft High School,
Taft, Oregon: 1955 – 1959
Linfield College, McMinnville, Oregon
- B.A.: 1959 – 1963
University of Oregon
- M.F.A.: 1963 - 1965
- Ph.D.: 1982 - 1984

Military Service: 3 years service
U.S. Army - 1st Lieutenant
Army Commendation Medal
National Defense Medal

Alaska State Senate: 2003 - present
Majority Leader: 2005 - present
Chair, Advisory Commision on Local Government:
2005 - present
Chair, Special Committee on University Oversight:
2006 - present
Statehood Celebration Commision: 2005 - present
Vice-Chair, Community & Regional Affairs Committee:
2003 - present
Chair: 2005
Armed Services Joint Committee: 2003 - present
ASC Subcommittee On Homeland Security:
2005 - present
Legislative Council Joint Committee:
2003 - present
Chair, State Affairs Committee: 2003 - 2004
Co-Chair, Special Committee on Fisheries:
2003
Vice-Chair, Joint Legislative Salmon Industry Task
Force: 2003
Labor & Commerce Committee: 2003 - 2004
Finance Subcommittees:
- Community & Economic Development:
2003 - present
- Corrections: 2003 - present
- Natural Resources: 2003 - 2004

Alaska State House of Representatives: 2001 - 2003
Co-Chair, Special Committee on Fisheries:
2001 - 2002
House Finance Committee: 2003
Health, Education, & Social Services Committee:
2001 - 2002
Joint Legislative Salmon Industry Task Force:
2001 - 2002
Resources Committee: 2001 - 2002
State Affairs Committee: 2001 - 2002
Special Committee on Education: 2001 - 2002
Finance Subcommittees:
- Chair, Administration: 2003
- Chair, Natural Resources: 2003
- Education & Early Development: 2001 - 2002
- Fish & Game: 2001 - 2002
- University of Alaska: 2001 - 2002

Other Political and Government Positions:
NCSL Executive Committee: 2005 - present
Ex-Officio Member, Alaska Seafood Marketing Institute
Mayor, Kodiak Island Borough
Mayor, City of Kodiak
President, School Board
Presiding Officer, Borough Assembly
Board of Directors, Alaska Municipal League
Alaska Conference of Mayors
Vice-President, Southwest Alaska Municipal Conference
Chairman, Kodiak Mayor's Conference
Member, Pacific Fisheries Legislative Task Force
Ex-Officio Member, Alaska Aerospace Development Corporation: 2001 - 2002
Host Committee, CSG Conference: 2003

Business and Professional Positions:
Professor, University of Alaska: 25 years
General Manager, Northern Processors: 5 years
Director, Kodiak Oral History Project
President, Alaska Historical Society
Board of Directors, Alaska Humanities Forum

Service Organizations and Community Involvement:
Rotary International
Governor, District 5010

Special Interests:
Alaska, U.S. History

Appendix-E 2

Senator Tom Wagoner

Email: Senator_Tom_Wagoner@legis.state.ak.us
District Q
Party: Republican
Toll-Free: 800-964-5733

Session Contact
State Capitol Room 423
Juneau AK, 99801
Phone: 907-465-2828
Fax: 907-465-4779

Interim Contact
145 Main Street Loop Suite 308
Kenai AK, 99611
Phone: 907-283-7996
Fax: 907-283-8127

Date/Place of Birth:
September 19, 1942
Pylesville, Maryland

Residency in Alaska
Kenai: 1969 - present

Occupation:
Small Businessman
Commercial Fisherman
Salt Water Charter Captain

Family:
Wife - Dorothy
Two Children - Dawn and Denise

Education:
Pomeroy High School: Graduated - 1960
Eastern Washington University:
1966 - BA Technical Design
1969 - B.A. Education
University of Alaska Anchorage:
1980 - M.A. Education Administration

Alaska State Senate:
2003 - present

Chair, Community & Regional Affairs Committee, 2003
Chair, Resources Committee: 2005 - 2006
Co-Chair, Transportation Committee: 2004
Vice-Chair, Community & Regional Affairs Committee: 2004
Vice-Chair, Resources Committee: 2003 - 2004
Vice-Chair: State Affairs Committee: 2005 - 2006
Community & Regional Affairs Committee: 2005 - present
Legislative Council Joint Committee: 2003, 2004 - 2006
Transporation Committee: 2003
World Trade & State Federal Relations: 2005 - present
Finance Subcommittees:
- Court System: 2003 - 2004
- Fish & Game: 2003 - 2004
- Labor and Workforce Development: 2005 - present
- Law: 2003 - 2004
- Natural Resources: 2003 - present
- Public Safety: 2003 - 2004
- Revenue: 2005 – present

- Transportation & Public Facilities: 2003 - 2004

Other Political and Government Positions:
Former Mayor, City of Kenai
Former Member, Kenai City Council
Alaska Post Secondary Committee
Alaska Student Loan Corporation.

Business and Professional Positions:
Commercial Fisherman
Owner, Wagoner's Seamless Flooring: 1967 - 1968
Owner, Wagoner's Flooring: 1971 - 1975
Owner, Peninsula Flooring Center: 1986 - 1993
Kenai Peninsula Community College, Kenai
- Former Education Coordinator
- Business Manager/Budget Officer
- Dean of Vocational Education
- Dean of Instruction

Member/Former President, Kenai Chamber of Commerce.

Service Organizations and Community Involvement:
Charter Member, Kenai Rotary Club

Special Interests:
Lapidary Arts, Golf, Sport Fishing

Appendix-E 3

Senator Con Bunde

Email: Senator_Con_Bunde@legis.state.ak.us
District P
Party: Republican
Toll-Free: 800-892-4843

Session Contact
State Capitol Room 504
Juneau AK, 99801
Phone: 907-465-4843
Fax: 907-465-3871

Interim Contact
716 W. 4th Ave. Suite 525
Anchorage AK, 99501-2133
Phone: 907-269-0181
Fax: 907-269-0184

Date/Place of Birth:
August 4, 1938
Mankato, Minnesota

Residency in Alaska:
Ketchikan: 1961 - 1962
Anchorage: 1968 - present

Occupation:
Retired University of Alaska,
Anchorage Professor
Retired Commercial Pilot

Family
Adult Children - Joylene, Kurt

Education:
Mankato High School, Minnesota:
Graduated 1956
Central Washington University: 1962 - 1966
- B.S. Speech Pathology
Central Washington University: 1967 - 1970
- M.S. Speech and Hearing Pathology
Anchorage Community College: 1984
- UAA Professional Piloting

Military Service: 3 years service
U.S. Army, Specialist 4th Class

Alaska State Senate: 2003 - present
Chair, Labor & Commerce Committee: 2003 - present
Vice-Chair, Finance Committe: 2003 - present
Legislative Budget & Audit Joint Committee: 2003 - 2004
Finance Subcommittees
- Chair, Administration: 2003 - 2004
- Chair, Labor & Workforce Development: 2003 - present
- Chair, Law: 2003 - 2004
- Chair, Natural Resources: 2003 - present
- Fish & Game: 2005 - present
- University of Alaska: 2003 - 2004

Alaska State House of Representatives: 1993 - 2002
Chair, Special Committee on Education:
2001 - 2002
Chair, Health, Education & Social Services
Committee: 1997 - 1998
Co-Chair, Long Term Care Task Force: 1997 - 1998
Co-Chair, Health, Education & Social Services
Committee: 1993 - 1996
Vice-Chair, Finance Committee: 1999 - 2002
Vice-Chair, Judiciary Committee: 1997 - 1998
Vice-Chair, Rules Committee: 1995 - 1996
Legislative Budget & Audit Committee: 1995 - 2000
Select Committee on Legislative Ethics: 1997 - 1998
Special Committee on Oil & Gas: 1997 - 1998
Judiciary Committee: 1995 - 1996
Community & Regional Affairs Committee:
1993 - 1994
Resources Committee: 1993 - 1994
Finance Subcommittees:
- Chair, Fish & Game: 1999 - 2002
- Chair, Public Safety: 2001 - 2002
- Chair, Revenue: 1999 - 2000
- Natural Resources: 1999 - 2000
- Education: 1993-94, 1997-98
- Court System: 1995 - 1996
- Fish & Game: 1993 - 1998
- University of Alaska: 1993 - 1998

Other Political and Government Positions:
Alaska Board of Fish and Game South-central
Citizens Advisory Committee

Business and Professional Positions:
Professor, University of Alaska, Anchorage

- Speech Communication
Commercial Pilot for various companies: 1974 - 1997

Service Organizations and Community Involvement:
National Rifle Association
Aircraft Owners & Pilots' Association
Alaska Outdoor Council
Alaskan Bow Hunters Association
Alaska Airmen's Association
National Conference of State Legislatures - Executive Committee Member
Commissioner/Former Vice-Chair, Education
Commission of the States

Awards and Recognitions:
University of Alaska, Anchorage Outstanding Educator of the Year: 1991
Award of Recognition from Alaskans for Tobacco Free Kids
Award of Recognition from Alaska Deaf, Hard of Hearing and Deafblind Council
Community Service Award from the Alaska Public Health Association

Special Interests:
Community Theater, Aviation, Hunting, Fishing, Dog Mushing, Master Instructor, Bow Hunter Education

Appendix-E 4

Senator Albert Kookesh

Email: Senator_Albert_Kookesh@legis.state.ak.us
District C
Party: Democrat
Toll-Free: 888-288-3473

Session Contact
State Capitol Room 11
Juneau AK, 99801
Phone: 907-465-3473
Fax: 907-465-2827

Interim Contact
State Capitol Room 11
Juneau AK, 99801
Phone: 907-465-3473
Fax: 907-465-2827

Date and Place of Birth:
November 24, 1948
Juneau, AK

Occupation:
Commercial Fisherman;
Lodge and Market Owner/Operator

Spouse:
Sally Woods Kookesh

Children:
Elaine, Jaeleen, Reanna, Albert, Walter

Residency in Alaska:
1948-present; raised in Angoon

Education:
High School - Mt. Edgecumbe High School College/University - Alaska Methodist University, 1971, B.A. Post Graduate - University of Washington, 1976, J.D.

Political and Government Positions:
Special Assistant for Rural Affairs, Office of the Governor, 1994-96; Alaska Democratic Party, Precinct Chairman, Central Committeeman

Business and Professional Positions:
Board of Directors, Sealaska Corporation; Former Business Manager, Executive VP, Acting President/CEO, Kootznoowoo Inc., 1976-92 Service Organization(s)

Membership:
Chairman, Hall of Fame Committee, Juneau Lions Club; Alaska Native Brotherhood Grand Camp; Co-Chair, AFN; Alaska School Activities Association

Special Interests:
Subsistence activities, competitive basketball, promoting youth sports Other: Honors, Hall of Fame, Mt. Edgecumbe High School; Hall of Fame, Sheldon Jackson College, Sitka American Legion Tournament, Gold Medal Tournament; Presidents Award for Service, ANB Grand Camp, 1995

Appendix-E 5

Representative Mike Chenault, Speaker of the House

Email: Representative_Mike_Chenault@legis.state.ak.us
District 34
Party: Republican
Toll-Free: 800-469-3779

Session Contact
State Capitol Room 208
Juneau AK, 99801
Phone: 907-465-3779
Fax: 907-465-2833

Interim Contact
145 Main Street Loop Room 223
Kenai AK, 99611
Phone: 907-283-7223
Fax: 907-283-7184

Date/Place of Birth:
February 25, 1957
Hobbs, New Mexico

Residency in Alaska:
Nikiski: 1967 - present

Occupation:
Vice-President, Qwick Construction Company

Family:
Wife - Tanna
Children - Brandon, Elisha, Shanda, Miranda

Education:
Kenai Central High School: Graduated 1975

Alaska State House of Representatives:
Speaker of the House: 2009 - present
Chair, Committee on Committees: 2009 - present
Chair, Special Committee on Military & Veterans' Affairs: 2001 - 2002
Committee on Committees: 2005 - 2008

Econ. Dev., Trade & Tourism: 2009 - present
Finance Committee: 2003 - present
Labor & Commerce: 2009 - present
Legislative Council: 2009 - present
Legislative Budget & Audit: 2003 - 2008
Military & Veterans' Affairs: 2001 - 2003
Natural Gas Pipelines: 2001 - 2002
Oil & Gas: 2001 - 2002
Resources Committee: 2001 - 2002
Special Committee on Oil and Gas: 2001 - 2002
School District Costs Task Force: 2005 - 2007
Finance Subcommittees:
- Administration: 2003 - 2004
- Corrections: 2001 - 2002
- Court System: 2005 - present
- Governor: 2005 - present
- Health & Social Services: 2001 - present
- Legislature: 2005 - present
- Military & Veterans Affairs: 2001 - 2002
- Public Safety: 2001 - 2002
- Resources: 2003 - 2004
- Revenue: 2005 - 2008
- University: 2007 - present

Other Political and Government Positions:
Kenai Peninsula Borough School Board: 1999 - 2000
Kenai Fire Service Board: 1999 - 2000

Business and Professional Positions:
Former President, North Peninsula Chamber of Commerce

Service Organizations and Community Involvement:
Elks Club
Moose Lodge

Special Interests:
Snow Machines, Golf, Fishing, Children's Sports, Bowling, Computers

Appendix-E 6

Representative Kurt Olson

Email: Representative_Kurt_Olson@legis.state.ak.us
District 33
Party: Republican
Toll-Free: 800-463-2693

Session Contact
State Capitol Room 24
Juneau AK, 99801
Phone: 907-465-2693
Fax: 907-465-3835

Interim Contact
145 Main Street Loop Suite 221
Kenai AK, 99611
Phone: 907-283-2690
Fax: 907-283-2763

Date/Place of Birth:
March 24, 1948
Sacramento, California

Residency in Alaska
Anchorage: 1977 - 1982
Kenai: 1982 – 1995
Soldotna: 1995 - present

Family:
Spouse – Barbara
Children - Madelyn, Valerie

Education:
Cupertino High School: 1966
California State University- B.A. 1977

Military:
USAF: 1967 - 1971; Honorable Discharge

Alaska State House of Representatives:
Chair, Labor & Commerce Committee: 2007 - 2008
Chair, Oil & Gas Committee: 2008
Co-chair, Community & Regional Affairs Committee: 2005 - 2006
Vice-Chair, Oil & Gas Committee: 2007
Member, Community & Regional Affairs Committee: 2007 - 2008
Member, Resources Committee: 2005 - 2006

Finance Subcommittees:
- Administration: 2005 - 2008
- Court System: 2007 - 2008
- Environmental Conservation: 2005 - 2008
- Fish & Game: 2007 - 2008
- Law: 2007 - 2008
- Public Safety: 2007 - 2008
- Revenue: 2007 - 2008

Other Political and Government Positions:
Soldotna City Council (2 years)
Central Emergency Services Service Area Board of Directors (elected 3 times, 8 years total, 3 as chair)

Business and Professional Positions:
Alaska Legislative Aide
Commercial Lines Insurance Broker
Custom Seafood Processor
The Kenai Peninsula Tourism Industry

Service Organizations and Community Involvement:
Rotary (Spenard, Kenai, and Soldotna)
Peninsula Winter Games Board of Directors
Kenai and Soldotna Chambers of Commerce (Board of Directors - Soldotna 5 years)
Kenai Wild Salmon Brand Board of Directors

Special Interests:
Fishing, hiking, and photography

Appendix-E 7

Representative Paul Seaton

Email: Representative_Paul_Seaton@legis.state.ak.us
District 35
Party: Republican
Toll-Free: 800-665-2689

Session Contact
State Capitol Room 102
Juneau AK, 99801
Phone: 907-465-2689
Fax: 907-465-2197

Interim Contact
345 W. Sterling Hwy. Suite 102B
Homer AK, 99603
Phone: 907-235-2921
Fax: 907-235-4008

Date/Place of Birth:
October 1, 1945
Oxnard, California

Residency in Alaska:
Seward: 1975 - 1982
Anchor Point: 1983 - 1992
Kachemak City: 1993 – present

Occupation:
Business Owner
Commercial Fisherman

Family:
Wife - Tina
Children:
- Tawny, Business Owner in Minnesota
- Rand, College Student,
Fish Tender Captain

Education:
Hueneme High School, Oxnard CA: Graduated 1963
Ventura College: Graduated AA 1965
University of California, Santa Barbara CA: 1966
University of Alaska, Fairbanks:

- B.S. Biology, 1968
- Master of Arts in Teaching the Biological Sciences, 1969

San Diego State College: 1972
- M.S. Marine Zoology.

University of California, Santa Barbara CA: 1974 - 1976
- studies on crustacean population ecology

Graduated from AVTEC in Diesel Mechanics: 1979

Alaska State House of Representatives:
Chair, Education: 2009 - present
Chair, State Affairs Committee: 2005 - 2006
Chair, Special Committee on Fisheries: 2003 - 2004, 2007 - 2008
Vice-Chair, Administrative Regulation Review Committee: 2007 - 2008
Vice-Chair, Special Committee on Education: 2003 - 2004
Vice-Chair, Health, Education & Social Services Committee: 2003 - 2006
Vice-Chair, Resources Committee: 2005 - 2006
Vice-Chair, State Affairs Committee: 2009 - present
Member, Health, Education & Social Services Committee: 2007 - 2008
Member, Health & Social Services Committee: 2009 - present
Member, Joint Legislative Education Task Force: 2007
Member, Resources Committee: 2007 - present
Member, Salmon Industry Task Force Joint Committee: 2004
Member, State Affairs Committee: 2003 - 2004
Member, Ways & Means Committee: 2005 - 2008
Finance Subcommittees:
- Commerce, Community & Economic Development: 2007 - present
- Education & Early Development: 2005 - present
- Environmental Conservation: 2005 - present
- Fish & Game: 2003 - 2006
- Law: 2009 - present
- Revenue: 2003 - 2004
- Transportation & Public Facilities: 2003 - 2008

Member, Education Funding District Cost Factor Commission

Other Political and Government Positions:
Community Rivers Planning Coalition, Anchor Point
Delegate to State Republican Convention, 2002
Lifetime Member, National Education Association: 1968 - present
Member, Pacific Fisheries Legislative Task Force
Former Member, Seward Fish & Game Advisory Committee
Former Member, Seward Harbor Commission
Former Member, City of Homer 2000 Fisheries Task Force
Member, Exxon Valdez Oil Spill Settlement Advisory Council
Member, Education Policy Task Force, Council of State Governments
Member, Education Committee Council of State Governments–West

Business and Professional Positions:
Business Owner: K-N-S Marine, fish tender business operating 2 vessels contracting with a variety of fish processors.
Commercial Fisherman:
- Cook Inlet Salmon Drift Gillnet for 19 years, 1966 - 1985
- Halibut, 1974 - present
- Tanner Crab Cook Inlet, (when it reopens)
- Pacific cod with pots, 1992 - 2001

Cook Inlet Keeper
Homer Chamber of Commerce
Founding Board Member, Alaska Marine Conservation Council
Former Member, West Coast Advisory Panel for the National Academy of Sciences
Former Member, National Research Council Committee on Individual Fishing Quotas
Former Member, North Pacific Fisheries Council Committee on 'Harvest Priority' and 'Full Retention and Full Utilization'
Former Member, Cook Inlet Aquaculture Association
North Pacific Fisheries Association

Service Organizations and Community Involvement:
Pratt Museum
Homer Foundation
KBBI Public Radio
Kachemak Bay Conservation Society
Kachemak Bay National Research Reserve Community Council
Kachemak Bay Rotary Club
Kachemak Heritage Land Trust
Alaska Marine Conservation Council
National Rifle Association

Special Interests:
Reading, Talking Politics, Hunting, Fishing, Lapidary

Appendix-E 8

Representative Mike Hawker

Email: Representative_Mike_Hawker@legis.state.ak.us
District 32
Party: Republican
Toll-Free: 800-478-4950

Session Contact
State Capitol Room 505
Juneau AK, 99801
Phone: 907-465-4949
Fax: 907-465-4979

Interim Contact
716 W. 4th Ave. Suite 610
Anchorage AK, 99501-2133
Phone: 907-269-0244
Fax: 907-269-0248

Date/Place of Birth:
June 25, 1956
Manchester, Iowa

Residency in Alaska:
1979 - present
All in our District 32

Occupation:
CPA (retired)
Accounting and Management Consultant
Legislator

Family:
Wife - Carol Carlson

Education:
1974 to 1979 - University of Northern Iowa
- Joint B.A.; Accounting and Humanities
- Certified Public Accountant

Business and Professional Positions:
1974 to 1991 - CPA, Price Waterhouse; Financial Accounting and Reporting Consultant
1991 to 1995 - Partner, Hawker and Raleigh, CPAs
1995 to 1997 - Corporate Financial Officer

1997 to 2002 - Business and Accounting Consultant
2002 to 2006 - Legislator

Service Organizations and Community Involvement:
Abused Women's Aid in Crisis (AWAIC)
- Director
Alaska Aviation Heritage Museum
- Trustee
Alaska Airman's Association
Collings Foundation (historic aircraft preservation)
Alaska Territorial Calvery (Motorized)
- Life Member
Isaak Walton League, Alaska Chapter
- Past Director
National Rifle Association
- Life Member
Alaska Gun Collectors Association
- Past Vice-President
Texas Gun Collectors Association
Harley Davidson Owners Group
- Life Member

Special Interests:
American history, museums and libraries
Firearms history, preservation and exhibition
Alaska Youth Firearms Safety Education Day sponsor
Historic aircraft and vehicle preservation

Appendix E 9

Representative Woodie Salmon

Email: Representative_Woodie_Salmon@legis.state.ak.us
District 6
Party: Democrat
Toll-Free: 800-491-4527

Session Contact
State Capitol Room 114
Juneau AK, 99801
Phone: 907-465-4527
Fax: 907-465-2197

Interim Contact
State Capitol Room 114
Juneau AK, 99801
Phone: 907-465-4527
Fax: 907-465-2197

Date and Place of Birth:
August 13, 1952
Fort Yukon, Alaska

Residency in Alaska:
Lifelong Alaskan

Political & Government experience:
Council member, Ft. Yukon
Mayor, Ft. Yukon
IRHA Board Member and Chairman
Chief, Chalkyitsik

Education:
Lathrop High School, Diploma
University of Alaska Fairbanks,
2 years study in Electronics

Business & Professional experience:
Professional pilot and air service operator for 20 years, Oil business (worked in oil fields, pipeline construction, operations and maintenance).

Hobbies:
Flying

Appendix-F

Kenai Peninsula Borough

Presentation to Select Legislators, State of Alaska Regarding A Proposal for a Property Tax Exemption for Alternative Energy Systems

Schedule of Presentations

Opening Remarks & Introductions ..... Presentation Facilitator

Comments by Borough Mayor ..... Mayor David R. Carey

Introduce Proposed Exemption..... To be determined

Overview of Wind Energy ..... Nadia Daggett

Overview of Solar Energy ..... Erik Schreier

Overview of Energy Efficiency ..... Steve Wisdon & Associates??

Building Design Considerations ..... Kenai Peninsula Builders Assn.??

Overview of Finance Considerations ..... Alaska Housing Finance Corp.??

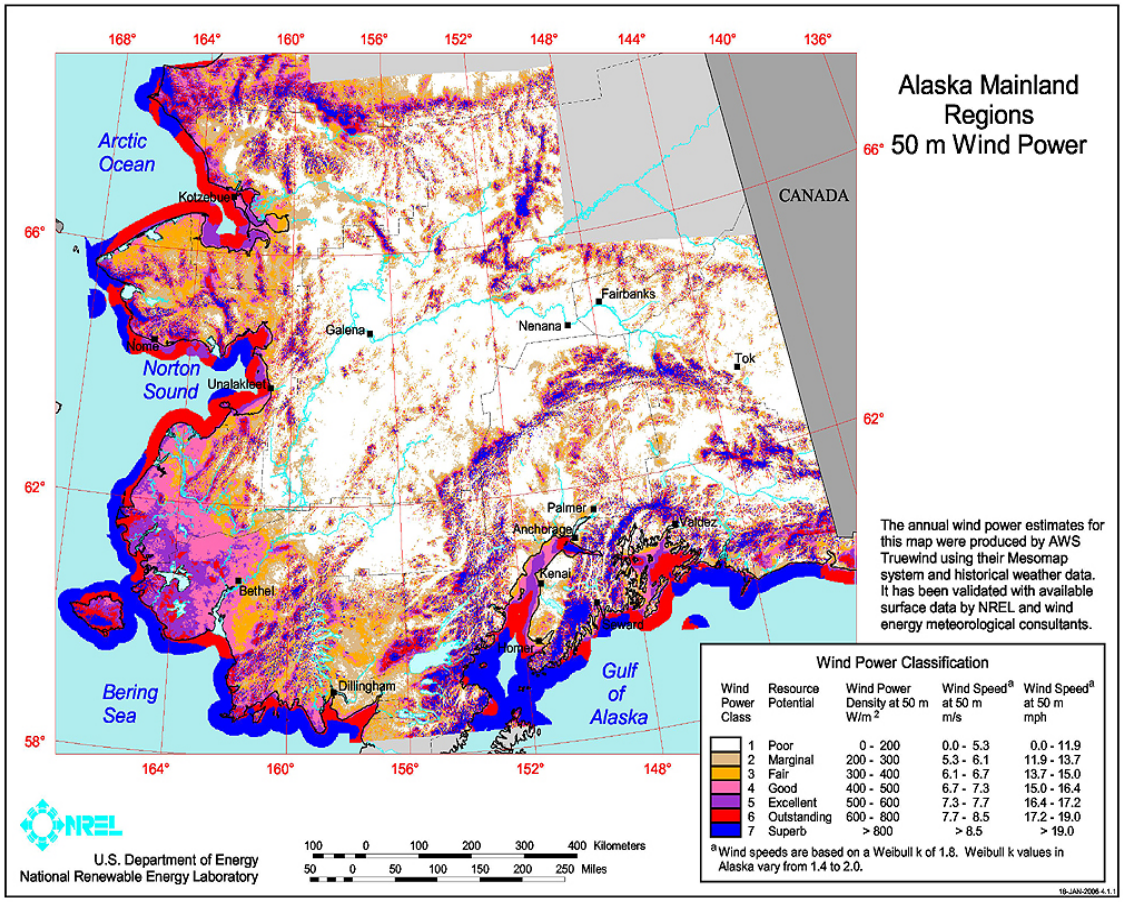
Statements from Local Jurisdictions ..... City Mayors, Managers, or Reps.?

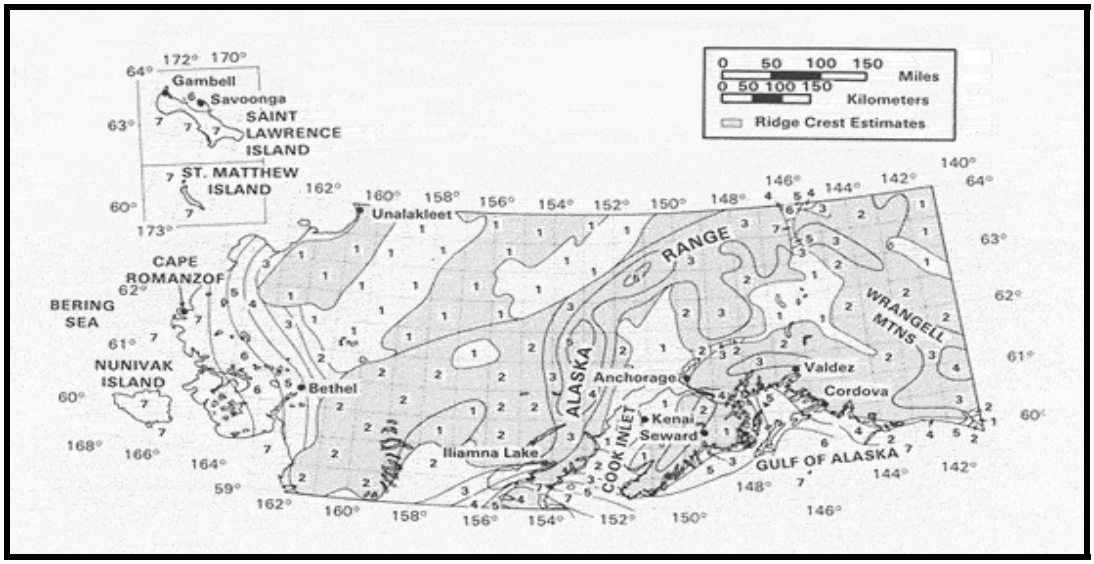
Questions from Legislators ..... Entire Panel

Closing Remarks..... Presentation Facilitator

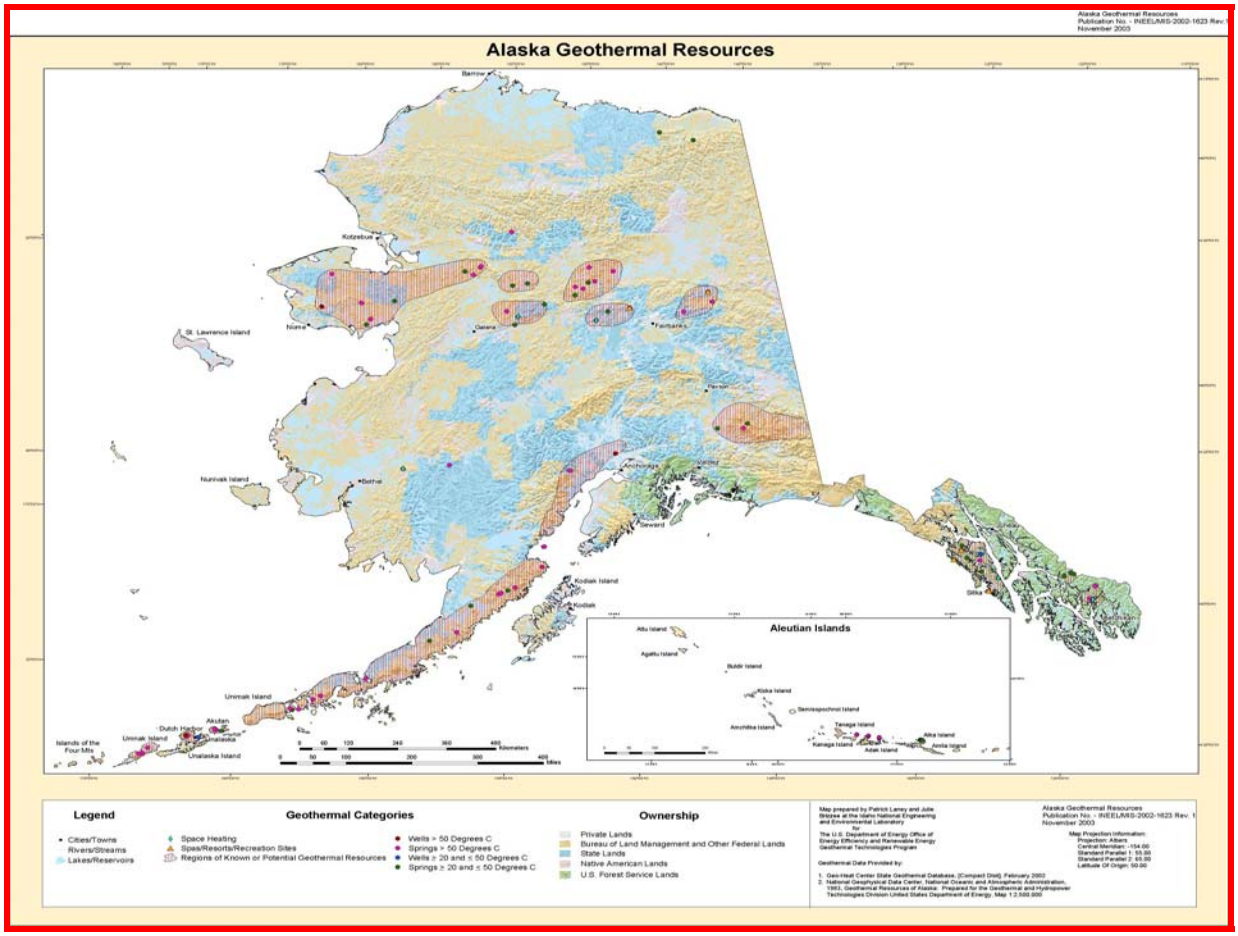
Appendix-G

Alaska Wind Resource Maps





Appendix-H


Alaska Geothermal Resources
Aleutian Islands
Legend
Cities/Towns
Rivers/Streams
Lakes/Reservoirs
Geothermal Categories
Space Heating
Spas/Resorts/Recreation Sites
Regions of Known or Potential Geothermal Resources
Wells > 50 Degrees C
Springs > 50 Degrees C
Wells ≥ 20 and ≤ 50 Degrees C
Springs ≥ 20 and ≤ 50 Degrees C
Ownership
Private Lands
Bureau of Land Management and Other Federal Lands
State Lands
Native American Lands
U.S. Forest Service Lands

Net Metering

Register _____, _____, 2009 COMMERCE, COMMUNITY, AND EC. DEV.

3 AAC 50 is amended by adding new sections to read:

Article 3. Net Metering Standards

Section

3 AAC 50.900. Applicability and waiver. (a) Except as provided in (b) of this section, the net metering requirements listed in 3 AAC 50.900 – 3 AAC 50.949 apply to all electric utilities subject to economic regulation.

(b) Net metering requirements do not apply to

(1) any independent electric system owned and operated by electric utility subject to economic regulation if, except for fossil fuel generation for standby and emergency power, 100 percent of the independent electric system's power is supplied by an alternative energy system, as that term is defined in AS 46.11.900;

(2) any independent electric system owned and operated by an electric utility subject to economic regulation if the independent system has total retail sales of less than 5,000,000 kWh during the previous calendar year; or

(3) any portion of the distribution system of an electric utility subject to economic regulation if and to the extent the electric utility demonstrates to the commission that limiting net metering installations in that portion of its distribution system is reasonably necessary to address system stability constraints or other operational issues.

(c) Except for those that are also required under AS 42.05, any requirement in 3 AAC 50.900 – 3 AAC 50.949 may be modified or waived, in whole or in part, by order of the commission upon application and a showing of good cause or on the commission's own motion. Application for waiver under this section must be in writing and set out the pertinent facts in sufficient detail to support a finding by the commission that no legitimate public interest will be served by enforcing the requirement designated in the application. (Eff. ___/___/ _____, Register _____)

Authority: AS 42.05.141 AS 42.05.151 AS 42.05.291 AS 42.05.691 AS 42.05.711

3 AAC 50.910. Net metering of electricity. (a) Except as provided in (b) of this section, an electric utility shall

(1) make a net metering program available to each of its consumers; and

(2) allow consumer generation systems to be interconnected to the electric utility's facilities in accordance with interconnection standards established by the commission.

(b) An electric utility may refuse to interconnect with a consumer requesting net metering if interconnection would cause the cumulative nameplate capacity of consumer generation systems interconnected with the utility to exceed 1.5 percent of the electric utility's average demand. The utility shall notify the commission if it refuses to interconnect with a potential net metering consumer on the basis that interconnection would cause the utility to exceed 1.5 percent of average demand.

(c) An electric utility that has a decrease in average demand that results in the cumulative nameplate capacity of consumer generation systems exceeding 1.5 percent of average demand shall allow existing net metering consumers to continue participating in the net metering program.

(d) By the first day of February of each year, an electric utility shall file a tariff advice letter with accompanying tariff sheet stating the number of kilowatts equivalent to 1.5 percent of the electric utility's average demand for the previous calendar year and the cumulative nameplate capacity of consumer generation systems interconnected with the utility at the time of filing.

(e) An electric utility may request, by tariff advice letter, an increase in the limit on cumulative nameplate capacity of consumer generation systems above 1.5 percent of the electric utility's average demand.

(f) An electric utility may deny participation in a net metering program to an electric consumer that

(1) participates in another program that allows the consumer to collect, through voluntary contributions from other participating customers of the utility, more than the non-firm power rate per kilowatt-hour for the sale of electricity; or

(2) sells electricity under an existing contract that allows the consumer to collect more than the non-firm power rate per kilowatt-hour for the sale of electricity.

(g) An electric utility may, if permitted by its tariff, require additional metering equipment for net metering consumers. The electric utility

(1) is responsible for all costs related to the purchase, installation, and maintenance of the additional metering equipment; and

(2) may not assess a recurring charge for the additional metering equipment. (Eff. ___/___/ _____, Register _____)

Authority: AS 42.05.141 AS 42.05.151 AS 42.05.291 AS 42.05.311 AS 42.05.321

3 AAC 50.920. Eligible consumer generation system. To be eligible for interconnection under a net metering program, a consumer generation system must

(1) be an eligible facility

(2) be owned or leased and operated by the consumer and

(A) have a cumulative nameplate capacity of not more than 25 kilowatts per consumer premises;

(B) be located on, or adjacent to, the consumer premises;

(C) be used primarily to offset part or all of the consumer's requirements for electricity;

(D) be controlled by an inverter or switchgear; and

(3) include an electric generator and its accompanying equipment package. (Eff. ___/___/ _____, Register _____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.321
AS 42.05.151 AS 42.05.311

3 AAC 50.930. Charges or credits for net electricity. (a) Each electric utility with a consumer participating in a net metering program shall measure the net electricity used or supplied by the consumer during each monthly billing period, and

(1) if the consumer has used more electricity than the consumer supplied to the utility during the billing period, the electric utility shall bill the consumer for the number of kilowatt hours of net electricity at the applicable rate contained in the utility's currently effective tariff; or

(2) if the consumer has supplied more electricity to the utility than the consumer used during the billing period, the electric utility shall credit the consumer's account with an amount derived by multiplying the kilowatt hours of excess consumer-generated electricity by the non-firm power rate contained in the utility's currently effective tariff, unless a different rate has been established in a commission-approved contract.

(b) Amounts added to the account of a net metering consumer for furnishing electricity to the utility under (c) of this section

(1) will be used to reduce amounts owed by the consumer in subsequent billing periods; and

(2) do not expire or otherwise revert to the utility.

(c) The electric utility may bill a net metering consumer for non-generation related consumer charges authorized by the electric utility's approved tariff.

(d) An electric utility administering a net metering program may not charge a consumer participating in the net metering program any additional fee for standby, capacity, interconnection, or other net metering expense unless approved by the commission.

(e) An electric utility may petition the commission to change electric rate designs, consistent with 3 AAC 48.500 - 3 AAC 48.560, to include appropriate rate classes for net metered consumers if the utility can demonstrate an adverse material rate impact on utility consumers that do not participate in the net metering program. (Eff. ___/___/_____, Register _____)

Authority:	AS 42.05.141	AS 42.05.291	AS 42.05.411
	AS 42.05.151	AS 42.05.391	AS 42.05.431

3 AAC 50.940. Interconnection of consumer generation facilities. The commission may adopt by regulation additional reasonable safety, power quality, and interconnection requirements for consumer generation systems if the commission considers the requirements to be necessary to protect public safety and system reliability. (Eff. ___/___/ _____, Register _____)

Authority:	AS 42.05.141	AS 42.05.291	AS 42.05.321
	AS 42.05.151	AS 42.05.311	AS 42.05.411

3 AAC 50.949. Definitions. Unless the context indicates otherwise, in 3 AAC 50.900 – 3 AAC 50.940

(1) "average demand" of a utility is the number of kilowatts determined by dividing the total retail sales of the utility, measured in kilowatt-hours, for a calendar year

(A) with 365days, by 8,760 hours, or;

(B) with 366 days, by 8,784 hours.

(2) "biomass energy" means energy, excluding fossil fuels, derived from plant matter such as trees, grasses, agricultural crops or animal matter including fish;

(3) "consumer" means a customer of an economically regulated electric utility who consumes the electricity purchased from the utility;

(4) "consumer-generated electricity" means electricity that is generated by a consumer participating in a net metering program;

(5) "consumer premises" means all buildings and associated grounds owned or leased by a consumer at a single location where an electric utility provides service through one or more utility meters;

(6) "economic regulation" means that the commission's exercise of jurisdiction extends to matters concerning rates and charges for public utility services,

(7) "electric system" means an integrated electrical system that includes at least generation, and distribution;

(8) "eligible facility" means a facility that uses energy derived from one or more of the following sources to generate electricity:

(A) solar photovoltaic and solar thermal energy;

(B) wind energy;

(C) biomass energy;

(D) hydroelectric energy;

(E) geothermal energy;

(F) hydrokinetic energy;

(G) ocean thermal energy;

(H) landfill gas or biogas produced from organic matter, wastewater, anaerobic digesters, or municipal solid waste; and

(I) other sources as approved by the commission that generally have similar environmental impact.

(9) "equipment package" means a group of components connecting an electric generator to a utility meter, including all interface equipment and the interface equipment's controls, switchgear, inverter, and other interface devices;

(10) "excess consumer-generated electricity" means the amount of consumer-generated electricity in excess of the consumer's consumption from the consumer generation system during a monthly billing period, as measured at the electric utility's meter;

(11) “geothermal energy” means energy generated from heat stored in the earth, or the collection of absorbed heat derived from underground;

(12) “hydroelectric energy” means energy generated by hydropower, the production of power through the use of gravitational force of falling or flowing water;

(13) “hydrokinetic energy” means energy generated from waves or directly from the flow of water in ocean currents, tides, or inland waterways;

(14) "independent electric system" means an electric system that is not interconnected with any other electric system;

(15) "inverter" means a device that converts direct current power into alternating current power to ensure the generated power is compatible with power generated by an electric utility;

(16) "nameplate capacity" means the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer.

(17) "net electricity" means the difference, positive or negative, as metered by the electric utility for a specified period, between:

(A) the amount of electricity used by a consumer participating in a net metering program supplied by the utility; and

(B) the amount of consumer-generated electricity supplied to the electric utility;

(18) "net metering" means measuring the amount of net electricity for the applicable billing period;

(19) "net metering program" means a program administered by an electric utility that allows a consumer owning, or leasing, and operating a consumer generation system to

(A) generate electricity primarily for the consumer's own use;

(B) supply consumer-generated electricity to the electric utility; and

(C) receive a credit under 3 AAC 50.930 if net metering results in excess consumer-generated electricity during a billing period;

(20) “non-firm power rate” means the rate updated quarterly in an electric utility’s tariff in accordance with 3 AAC 50.770(d);

(21) “non-generation related consumer charges” refers to all utility charges excluding the per kilowatt-hour rate based on the consumer’s metered consumption of electricity;

(22) “ocean thermal energy” means the conversion of energy arising from the temperature difference between warm surface water of oceans and cold deep-ocean current into electrical energy or other useful forms of energy;

(23) “retail sales” means sales of electricity to the end-use consumer, exclusive of any wholesale sales;

(24) “solar photovoltaic energy” means the conversion of sunlight into electricity through a photovoltaic cell, a nonmechanical device usually made from silicon alloys;

(25) “solar thermal energy” means a technology for harnessing solar energy for thermal energy;

(26) "switchgear" means the combination of electrical disconnects, fuses, or circuit breakers used to

(A) isolate electrical equipment; and

(B) de-energize equipment to allow work to be performed or faults downstream to be cleared. (Eff. ___/___/ _____, Register _____)

Authority: AS 42.05.141 AS 42.05.151