**ALASKA STATE LEGISLATURE**
**HOUSE SPECIAL COMMITTEE ON ENERGY**
February 26, 2014
8:02 a.m.

**MEMBERS PRESENT**

Representative Doug Isaacson, Co-Chair
Representative Charisse Millett, Co-Chair
Representative Neal Foster
Representative Pete Higgins
Representative Shelley Hughes
Representative Benjamin Nageak
Representative Andy Josephson

**MEMBERS ABSENT**

All members present

**COMMITTEE CALENDAR**

PRESENTATION: ALASKA ENERGY AUTHORITY

- HEARD

**PREVIOUS COMMITTEE ACTION**

No previous action to record

**WITNESS REGISTER**

SARA FISHER-GOAD, Executive Director
Alaska Energy Authority (AEA)
Department of Commerce, Community & Economic Development (DCCED)
Anchorage, Alaska
**POSITION STATEMENT:** Introduced Alaska Energy Authority staff and answered questions during updates on the Renewable Energy Fund grants and recommendations, and on the Emerging Energy Technology Fund.

SEAN SKALING, Deputy Director
Alternative Energy and Energy Efficiency
Alaska Energy Authority (AEA)
Department of Commerce, Community & Economic Development (DCCED)
Anchorage, Alaska
**POSITION STATEMENT:** Presented an update on the Renewable Energy Fund grants and recommendations.

ALAN BALDIVIESO, Program Manager
Emerging Energy Technology Fund (EETF)
Alaska Energy Authority (AEA)
Department of Commerce, Community & Economic Development (DCCED)
Anchorage, Alaska
**POSITION STATEMENT:** Presented an update on the Emerging Energy Technology Fund.

**ACTION NARRATIVE**

8:02:17 AM

**CO-CHAIR CHARISSE MILLETT** called the House Special Committee on Energy meeting to order at 8:02 a.m. Representatives Nageak, Josephson, Hughes, Isaacson, and Millett were present at the call to order. Representatives Foster and Higgins arrived as the meeting was in progress.

## PRESENTATION: ALASKA ENERGY AUTHORITY

8:02:28 AM

CO-CHAIR MILLETT announced that the only order of business would be a presentation by the Alaska Energy Authority on the Renewable Energy Fund grants and recommendations, and on the Emerging Energy Technology Fund.

8:02:43 AM

SARA FISHER-GOAD, Executive Director, Alaska Energy Authority (AEA), Department of Commerce, Community & Economic Development (DCCED), informed the committee that in addition to the update of programs, provided in the committee packet are copies of the executive summary for the Renewable Energy Fund grant report and details on projects that have been funded by Round 1 of the Emerging Energy Technology Fund.

8:03:40 AM

SEAN SKALING, Deputy Director, Alternative Energy and Energy Efficiency, AEA, DCCED, participated in the PowerPoint presentation entitled, "Renewable Energy Grant Fund and Emerging Energy Technology Fund" dated 2/26/14. Mr. Skaling informed the committee the beginning of his presentation would be an annual status report of existing projects, followed by recommendations for 2014. He said the Renewable Energy [Fund grants] program

has gained momentum, although the program has taken some time to get established and to see projects through to construction and to producing energy [slide 2]. In response to Representative Hughes, he said the Renewable Energy Fund was established in 2008 for a five-year period with $50 million per year and renewed in 2012. The Renewable Energy Fund diversifies and strengthens the state's energy portfolio, displaces volatile fuel prices, and thoroughly examines energy projects before making recommendations to the legislature for the funding of grants.

8:06:26 AM

CO-CHAIR ISAACSON observed that Garn boilers, such as the one installed at Coffman Cove School, seem to be the equipment preferred, but they are very expensive and there is a lower-cost alternative.

MR. SKALING said the program is not focused on a brand, but on a standard for high efficiency and low emissions to protect air quality. The Garn boiler meets this standard, as do others.

CO-CHAIR ISAACSON questioned how another system that can be proved as efficient and less expensive, could be vetted by AEA.

MR. SKALING said AEA seeks to include a cadre of biomass boilers that meet the standards as verified by an independent third-party.

MS. FISHER-GOAD added the AEA expects the equipment procured by the applicant to meet the standard, regardless of the brand.

REPRESENTATIVE NAGEAK surmised diversification of the energy portfolio means using different types of sources of energy, and he asked for a realistic outlook for providing energy to the villages in Alaska.

MR. SKALING explained that the Renewable Energy Fund program provides grants for those that apply, and there is outreach going on to inform communities of what energy resources are available. He expressed his belief that Alaska has vast renewable energy resources, and AEA seeks applications that can provide cost-effective renewable energy at a lower cost than is currently available. In further response to Representative Nageak, he said AEA will reveal later in the meeting its action plans for projects that are in place.

8:12:05 AM

CO-CHAIR MILLETT provided a brief history of the original [House Bill 152, passed in the 25th Alaska State Legislature] and modified by [House Bill 250, passed in the 27th Alaska State Legislature]. As a member of the Renewable Energy Fund [advisory committee] board, she said a lot has been learned through the evolution of the process that is now in Round VII of grant funding, and she encouraged the committee to attend the board's public meetings. Co-Chair Millett listed some of the requirements for a successful application to the grant program, and asked Ms. Fisher-Goad to provide further background information on the bill.

MS. FISHER-GOAD said the three directives in [AS 42.45.045] are to assign the greatest weight to projects in high-cost areas, and significant weight to projects that provide matching funds and that contribute to regional spreading. The mechanism developed by AEA has a strong vetting process to review all three aspects. She pointed out the Renewable Energy Fund grant program is unique in that AEA provides recommendations to the legislature on which grants to fund. Over the life of the program, the legislature has not made changes to the list of recommendations, and she attributed that to interaction with the advisory committee. Ms. Fisher-Goad stressed that the program strives to first achieve affordable energy for the benefit of a community.

8:16:24 AM

MR. SKALING returned attention to slide 2, noting that AEA and the contractors have learned how to develop a project "right" and maximize its benefits.

CO-CHAIR ISAACSON asked for more information about AEA's management, disbursal, and rewarding of funds.

MS. FISHER-GOAD said that information would follow.

MR. SKALING further explained that the Renewable Energy Fund provides local employment and benefits businesses that are not eligible for the Power Cost Equalization (PCE) program. Slide [3] showed the number of applications received round by round, and how many were funded. A total of 732 applications have been reviewed at length, 251 have been funded, and over 87 have been completed. In addition, $1.3 billion were requested, $340

million were recommended, and $237 million were funded. Slide 4 was a map which showed all of the projects funded throughout the state: wind projects are concentrated along the coast in Western Alaska, biomass projects are concentrated in the Interior, and hydroelectric (hydro) projects are concentrated in Southcentral and Southeast.

REPRESENTATIVE NAGEAK observed some projects have less cash disbursed than appropriated.

MS. FISHER-GOAD clarified that multi-year funding puts some reimbursement later in the fiscal year, or in the next year. Match funding is recorded as the funding is disbursed.

MR. SKALING added that large projects receive match funding in excess of what grantees are required to report to AEA.

CO-CHAIR ISAACSON commended AEA on its progress.

8:21:38 AM

MR. SKALING directed attention to slide 5 which showed the amount of diesel fuel displaced year-by-year in millions of gallons of diesel fuel equivalent. He pointed out savings - between 2011 and the projected savings in 2014 - increased from two million gallons to roughly sixteen million gallons.

CO-CHAIR ISAACSON expressed his interest in the displacement of diesel and its effect on PCE calculations.

MR. SKALING said information on each project and its yearly net production of electricity or heat, or electricity and heat, was provided on slide 6. Slide 7 showed the net present value (NPV) of benefits and costs of the program: the first 36 projects now in operation represent $82 million of the Renewable Energy Fund, the total NPV cost is $290 million, and the NPV benefits are $840 million, therefore the ratio is almost 3:1 overall project benefit versus costs.

CO-CHAIR MILLETT recalled the program was not funded at the $50 million level every year.

8:24:23 AM

MR. SKALING confirmed that the Renewable Energy Fund has received around $25 million every year other than the first. Slide 8 showed investment by region and by resource type during

Rounds I-VI, indicating that hydro and wind projects received the majority of funding. Slide 9 showed the expected grant completion schedule for 2014, and he pointed out that for the first time, the number of completed projects will exceed the stages of reconnaissance, feasibility, and final design. Mr. Skaling continued to slides 10 and 11 which highlighted the Pelican Hydro project: the Renewable Energy Fund invested $1.95 million towards the total cost of $5.8 million; the power plant can now operate on 100 percent hydro.

8:26:54 AM

REPRESENTATIVE JOSEPHSON asked how the little town of Pelican got a match of funds.

MR. SKALING was unsure.

REPRESENTATIVE NAGEAK recalled hearing testimony on this project last year.

MR. SKALING highlighted the Delta Junction School Biomass project, noting that with its fuel savings the school has retained two teachers, reinstated its music program, and remodeled the school. The system is an automatic auger chip system that is easy to manage [slide 12].

REPRESENTATIVE HIGGINS observed that Cantwell wants to save money on fuel at its school by using coal, and asked whether coal as an energy source would qualify for [a Renewable Energy Fund grant].

MS. FISHER-GOAD said AEA has other programs to assist in reducing energy costs besides the Renewable Energy Fund; in fact, AEA is looking at coal projects for other entities through its regional energy planning effort which allows for other fuel sources.

8:30:30 AM

REPRESENTATIVE HIGGINS surmised that every area has different resources to use for the highest benefit.

MR. SKALING highlighted the Kodiak Renewables project: the project has a blend of hydro, wind, and battery, and generates 95 percent of its electricity from renewables utilizing a battery storage system [slide 13].

REPRESENTATIVE HUGHES asked for the cost of electricity in Kodiak.

MR. SKALING advised the cost of electricity in Kodiak is in the range of 15-20 cents per kilowatt (kW).

MS. FISHER-GOAD said AEA would provide additional information on the cost of energy in Kodiak under differing scenarios, pointing out that renewables are an inflation-proof resource and the way to assess savings is to compare the future cost of renewable energy to the future cost of energy from existing power sources.

REPRESENTATIVE HUGHES requested information on the lowest and highest costs of electricity in the state.

REPRESENTATIVE HIGGINS compared the higher cost of the Eva Creek Wind Turbine Project to that of the Kodiak Renewables project.

8:35:22 AM

MR. SKALING expressed his belief that the projects have similar wind turbines of 1.5 megawatts (MW) each, but Eva Creek installed more of them; furthermore, the Kodiak project also had funds from other sources, and he offered to compare the cost per kilowatt hour.

CO-CHAIR MILLETT recalled Kodiak also received federal money.

MR. SKALING then turned attention to the Renewable Energy Fund Round VII disbursement recommendations. The recommended projects went through a four-stage review process, including vetting by the advisory committee, more stringent technical and economic criteria, and ranking using statutory criteria. The status report shows within a $20 million budget, AEA recommends funding 26 projects, of which 17 are heating projects and 9 are electric or other [slide 15]. Slide 16 illustrated the recommended Round VII heat projects; the larger projects are within the $20 million budget and are spread around the state.

CO-CHAIR ISAACSON asked for a description of the symbols on slide 16.

MR. SKALING explained the biomass symbol indicates a project that burns wood for heat; the heat pump symbol indicates taking heat from the ground into a building; the heat recovery symbol indicates the capture of wasted heat from diesel powerhouses that is diverted to a nearby public building; the hydro to heat

symbol indicates electricity from excess hydro generation that can be used to heat buildings; and the wind to heat symbol indicates the use of excess electricity generated by wind to heat buildings.

8:40:40 AM

CO-CHAIR MILLETT gave the gavel to Co-Chair Isaacson.

CO-CHAIR ISAACSON asked whether storing excess electricity generated by wind is successful.

MR. SKALING said the most economic deployment has the wind project "sized" to fit demand, with a secondary load for periods of excess generation; however, producing a large amount of heat is uneconomic during the seasons when the heat is not needed. In further response to Co-Chair Isaacson, he agreed the aforementioned system works best in a small community or village setting. Slide 17 illustrated the location of the recommended Round VII electric projects around the state; again the larger projects are within the $20 million budget.

CO-CHAIR ISAACSON inquired as to the nature of the transmission line project in the North Slope Borough.

MR. SKALING responded the project will bring electricity generated by local natural gas to a community currently burning diesel fuel. The applicable statutes were written to include local energy, including natural gas, thus the project qualifies for funding from the Renewable Energy Fund.

REPRESENTATIVE NAGEAK recalled attending a workshop about the project which will transmit electricity 75 miles along the Meade River from Barrow to Atqasuk.

REPRESENTATIVE JOSEPHSON asked, "... is there overlap in these electric amplification programs with ... the Railbelt major utilities, and their desire for more intertie enhancement?"

MS. FISHER-GOAD advised that the programs are considered separate projects; there are Railbelt utilities and other entities in the Railbelt that have applied and are represented on [slide 17] and are listed in the report as applicants.

REPRESENTATIVE HUGHES questioned whether there are tidal project applicants.

8:44:54 AM

MR. SKALING noted there is a hydrokinetic project in the False Pass area that is recommended, but is not in the $20 million budget. In further response to Representative Hughes, he said there is one other tidal project in the Cook Inlet area from an earlier round of applications. Tidal energy remains very expensive to develop and does not compete very well. Slide 18 illustrated the recommended Round VII heat applications specified by type and by region: Tier 1 projects were shown in red and fall within the $20 million budget, and Tier 2 projects were shown in tan, but are not within the budget.

MS. FISHER-GOAD offered to provide the committee information on the interaction between the Renewable Energy Fund projects and the PCE program. Generally, 30 percent of the kilowatt hours sold in a PCE-eligible community is eligible for PCE, therefore, the community is already receiving state assistance. How the Renewable Energy Fund benefits the community as a whole is by reducing the cost of the non-eligible kilowatt hours. A document further explaining the aforementioned relationship will be provided by AEA. She concluded that the PCE-kilowatt hours do not significantly benefit from renewables because the PCE program is already providing state assistance.

CO-CHAIR ISAACSON recalled testimony from the Alaska Village Electric Cooperative, Inc. (AVEC), and the Alaska Power Association that an unintended consequence of the displacement of diesel fuel causes a strain on the fixed-costs of utilities because it lowers demand. He urged for AEA to look at the PCE formula and how to identify lower-cost fuels, yet preserve small utilities. He observed that there is a related proposed bill now held in committee that needs an in-depth review by the committee, AEA, and the electric utilities.

MS. FISHER-GOAD was reminded that AVEC advised AEA that using excess electricity from wind power for a secondary load affects the PCE calculation by the Regulatory Commission of Alaska (RCA), and she expressed her belief that an adjustment to correct this problem may be possible by amending PCE regulations.

8:51:31 AM

CO-CHAIR ISAACSON urged for changes to be made by regulatory means, and for the committee to be kept informed.

MS. FISHER-GOAD related that when the Renewable Energy Fund grant program was established, the legislature was clear that AEA was not to fund projects that were not productive. Unrealistic projects are eliminated during the feasibility and reconnaissance grant analyses. She characterized the projects as "tightly managed" and stressed that AEA requires that reimbursements follow a stringent milestone basis. Project managers work very closely with grantees and seek successful results within the intent of the legislation, although more work could be done towards community outreach.

CO-CHAIR ISAACSON requested that Ms. Fisher-Goad describe AEA's project management process. He acknowledged that the Renewable Energy Fund is making progress and is considered a model of decision-making; he referred to slide 9 and asked for further information on what a basic model of project management entails.

MS. FISHER-GOAD suggested that her response be part of AEA's follow-up to the committee so as to include examples of specific projects.

CO-CHAIR ISAACSON re-directed his question to apply to a hypothetical project advancing through the four phases shown on slide 9.

8:57:40 AM

MR. SKALING said the lowest phase is reconnaissance, during which AEA measures the potential of the local energy resources in the affected community, and determines if there is a resource with which to work. If so, at the feasibility phase, AEA looks more closely at the approach, chooses the best resource, and determines the infrastructure that is needed to serve the community. The economics of a project are also a factor in the feasibility phase. Final design and construction are often grouped as one grant, depending on the project. In response to Co-Chair Isaacson, he said the time between reconnaissance and final design requires a minimum of one year of data. The final design phase also includes permitting and all of the pre-construction tasks, and the construction phase includes commissioning and starting operations. In further response to Co-Chair Isaacson, he stated that the time period of the construction phase can vary; for instance, installing a biomass boiler may take a few months, a hydro project takes much longer, and wind goes up relatively easily.

REPRESENTATIVE JOSEPHSON asked whether AEA assists with permitting.

MR. SKALING responded that AEA sets some guidelines and provides some assistance; however, obtaining the proper permit is the grantee's responsibility. In further response to Representative Josephson, he affirmed that projects take place on land owned by local governments, Native corporations, the state, and private landowners, and that the grantee needs to have clear access.

REPRESENTATIVE JOSEPHSON recalled there were detractors when Fire Island Wind was constructed, but he assumed AEA supports wind turbine electrical generation.

MR. SKALING said the aforementioned project was not a project through the Renewable Energy Fund and therefore was not vetted by AEA.

REPRESENTATIVE NAGEAK inquired as to the governance of Fire Island Wind.

MS. FISHER-GOAD said she was unsure but would provide information to the committee on the relationship of Fire Island Wind to Cook Island Region Inc. (CIRI).

REPRESENTATIVE HIGGINS observed that AEA knows the permitting process, and asked whether the agency would help an entity - that has a good project - obtain its permits.

9:05:30 AM

MS. FISHER-GOAD informed the committee that most of the Renewable Energy Fund projects are "pass through" grants with the exception of the construction of a powerhouse or a bulk fuel tank farm. Of the 200 renewable energy projects, there is a wide range as to whether the grantee has the capability to obtain permits. Her agency has been funded to provide technical assistance to small rural communities and help develop projects; however, because AEA does not own these projects, it does not have the responsibility to acquire permits. For example, a large electric utility would have the capability to manage and acquire permits, but a rural single-site utility may not.

REPRESENTATIVE HIGGINS sought more information on the guidance that AEA provides to a [small rural] utility or to a community before tying up grant funds.

MR. SKALING expressed his belief that the process is driven by the technology required for the project; for instance, biomass is "relatively light on permitting," hydro, depending on the scale, is hard to permit, but the companies involved are experts. For a wind project, AEA provides guidelines and assistance, and ensures that grantees acquire permits and provide proper notice.

REPRESENTATIVE HIGGINS said his intent is to shorten the time needed for permitting.

9:10:10 AM

MS. FISHER-GOAD directed attention to the Emerging Energy Technology Fund (EETF) and provided a brief history. The Emerging Energy Technology Fund was part of [Senate Bill 220 passed in the 26th Alaska State Legislature]. Unlike the Renewable Energy Fund, EETF is not a recommendation process, so when funds are available AEA issues grants immediately following the completion of its due diligence vetting process.

CO-CHAIR ISAACSON pointed out that EETF funding can "move faster."

REPRESENTATIVE NAGEAK expressed his hope that this type of program will reveal the new technology that is needed to produce energy from the resources that are found in the northern regions of the state.

9:13:31 AM

ALAN BALDIVIESO, Program Manager, EETF, AEA, DCCED, informed the committee that EETF supports demonstration projects of technologies that have a reasonable chance at commercial viability within five years. Approved projects can test emerging technologies, improve an existing technology, or demonstrate readily-available commercial technologies unproven in Alaska [slide 21]. This is also a competitive award program, although projects are not expected to be commercially economic within the demonstration period. The ideal is to gain a well-defined data set and a well-documented independent analysis of the performance of the technology, and its economic and technical viability in Alaska. Eligible energy technology includes renewables, diesel generation, the integration of renewables and diesel, energy storage, the extraction and refining of hydrocarbons, energy efficiency, and others, although the program is not an angel fund for research and

development (R&D), as eligible technologies must exist at least at the prototype level [slide 22].

CO-CHAIR ISAACSON asked Mr. Baldivieso to describe the examples given.

MR. BALDIVIESO said there are 15 Round 1 projects underway, including: the testing of Eocycle Wind Turbine, a small capacity wind turbine in Kotzebue that is mounted on a tilt-up monopole tower, and the testing of a large lithium ion battery module integrated into a wind-diesel grid in Kwigillingok [slide 22]. The program attracts diverse projects and technologies and EETF benefits from the advice of its seven-member advisory committee consisting of members with technical backgrounds. All projects are evaluated on technical criteria in addition to the priorities that are given to: partnership with Alaska entities; partnership with Alaska postsecondary institutions; commitments to matching funds or other resources; and a demonstrated potential for widespread use in the state. After review by AEA staff and its advisory committee, top-ranking proposals are funded [slide 23].

9:18:56 AM

REPRESENTATIVE HUGHES inquired as to the number of applicants that are affiliated with Outside entities.

MR. BALDIVIESO answered that Alaska entities seek to bring to Alaska new or existing technologies that are established Outside. In further response to Representative Hughes, he estimated that most of the technologies are manufactured outside of the state.

CO-CHAIR ISAACSON questioned the role of the AEA board.

MS. FISHER-GOAD responded that the AEA board has delegated appeal and final approval authority to her as its executive director, and therefore is not involved directly with the program or the final approval process.

MR. BALDIVIESO directed attention to the EETF first round of funding in 2012. The total amount available for awards was $8.9 million, largely from a matching grant from the Denali Commission. From 70 responses to the request for approval (RFA) 15 projects were awarded funding, representing a range of technologies and a geographic spread across the state, although

regional spreading is not required of the program [slide 24]. In response to Representative Hughes, he explained that applications for river hydrokinetics, a tidal application, and wave projects were received in Round 1.

9:22:52 AM

REPRESENTATIVE NAGEAK asked whether diesel applications are for diesel retrofitting in existing power plants.

MR. BALDIVIESO relayed that within the diesel category there are several technologies such as modifications to generators, and the incorporation of magnetic coupling.

MR. BALDIVIESO turned to Round 2, and noted that AEA is close to announcing its selections. Approximately $2.3 million are available for rewards, and AEA is pleased with the quality of the top proposals and with the continued high level of interest in the program [slide 24].

REPRESENTATIVE JOSEPHSON asked Mr. Baldivieso to compare EETC with programs sponsored by the Alaska Center for Energy and Power (ACEP), University of Alaska Fairbanks.

MR. BALDIVIESO said ACEP is involved in this program as a contractor to gather data and complete analyses for Round 1 projects; in addition, ACEP has made its power systems integration and hydrokinetic test beds available to EETF applicants.

CO-CHAIR ISAACSON clarified that testing done at ACEP is not limited to students' projects.

MR. BALDIVIESO highlighted a project in Kodiak applied for by an engineer who specializes in marine engines and generators. The project team is demonstrating the use of a power electronics package in combination with modified electric motors in order to improve the efficiency of a diesel generator. This application can be used in stationary generator set operations or in marine propulsion [slide 25].

9:26:59 AM

CO-CHAIR ISAACSON asked how the aforementioned project could be put into production after the demonstration period.

MR. BALDIVIESO said the projects are examined using the Department of Energy's (USDOE) Technology Readiness Level (TRL) system, which categorizes the development of a technology as it proceeds to commercial availability.

REPRESENTATIVE HIGGINS assumed these are technologies that will come on the market.

MR. BALDIVIESO said yes.

REPRESENTATIVE HIGGINS recalled that the University of Alaska (UA) has a program to fund new technologies and it gets a percentage of the patent.

MR. BALDIVIESO advised that the applications to AEA are typically for technologies that are already patented, and therefore are the intellectual property of the applicant.

CO-CHAIR ISAACSON suggested a mechanism to claim a portion of an applicant's revenue from future production could be put in legislation.

MR. BALDIVIESO returned to Co-Chair Isaacson's earlier question on the generation project's path to production: The diesel generation technology came to AEA at the prototype level, was first utilized in a modified automobile, progressed to a 15 kilowatt (kW) generator set, will advance to a 150 kW generator set, and from there will advance to commercial applications by the end of the project next year. In further response to Co-Chair Isaacson, he added that the commercial applications will be smaller powerhouse generator sets and marine propulsion.

9:31:28 AM

REPRESENTATIVE NAGEAK asked whether the same technology could be applied to snow machines.

9:31:43 AM

MR. BALDIVIESO expressed his understanding that the technology would translate to power-dense motors, he said, "I suspect ... that [the project developers] would try."

CO-CHAIR ISAACSON urged for drafting of the language AEA needs to enable "a profit-sharing of commercialized revenues [as reimbursement] for [the] investment the state has put into these

[technologies]." The recent UA enabling legislation is a good model to adapt for this purpose.

MR. BALDIVIESO highlighted the installation of a ground source heat pump in Fairbanks by the Cold Climate Housing Research Center to demonstrate that ground source heat pumps can be economically operated in colder environments. A horizontal ground loop is installed in a narrow band of thawed ground, is instrumented, and then is covered with different surface treatments above so as to compare heat retention and heat absorption [slide 26].

CO-CHAIR ISAACSON has heard that a heat pump can substantially lower residential home heating and electricity costs.

MR. BALDIVIESO confirmed that the project heat pump is in operation and is very efficient. Data on this project will be collected for two years to determine heat output and electricity costs so as to compare with installation costs, and to measure thermal degradation.

9:35:36 AM

REPRESENTATIVE HIGGINS advised heat pump technology helps with the cost of heating but not with electricity.

MR. SKALING added that heat pump technology is available and is in use in Juneau; the most favorable application is in a region that has low-cost electricity and high-cost heating.

CO-CHAIR ISAACSON expressed his interest in whether AEA is examining modifications for self-contained systems, such as electrical systems that create heat and heating systems that create electricity.

MR. SKALING stated that during past phases of the Renewable Energy Fund, AEA learned that it is generally challenging to take heat and produce electricity due to the loss of efficiency.

9:40:55 AM

**ADJOURNMENT**

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 9:40 a.m.