

**ALASKA STATE LEGISLATURE
HOUSE SPECIAL COMMITTEE ON ENERGY**

March 26, 2014
8:02 a.m.

MEMBERS PRESENT

Representative Doug Isaacson, Co-Chair
Representative Neal Foster
Representative Pete Higgins
Representative Shelley Hughes
Representative Benjamin Nageak

MEMBERS ABSENT

Representative Charisse Millett, Co-Chair
Representative Andy Josephson

COMMITTEE CALENDAR

PRESENTATION: ALASKA CENTER FOR ENERGY AND POWER

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

GWEN HOLDMANN, Director
Alaska Center for Energy and Power
University of Alaska Fairbanks
Fairbanks, Alaska

POSITION STATEMENT: Provided a presentation on the Alaska Center for Energy and Power.

ANTONY SCOTT, Senior Economist and Energy Analyst
Alaska Center for Energy and Power - Anchorage Office
University of Alaska Fairbanks
Anchorage, Alaska

POSITION STATEMENT: Participated in the presentation on the Alaska Center for Energy and Power.

ACTION NARRATIVE

[8:02:59 AM](#)

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

PRESENTATION: ALASKA CENTER FOR ENERGY AND POWER

[8:03:53 AM](#)

CO-CHAIR ISAACSON announced that only order of business would be a presentation by the Alaska Center for Energy and Power.

[8:04:56 AM](#)

GWEN HOLDMANN, Director, the Alaska Center for Energy and Power (ACEP), University of Alaska Fairbanks (UAF), informed the committee she would present an overview of ACEP's projects, especially those that are relevant to policymakers, with the assistance of the center's energy analysis group that studies economics and policy-related topics. The ACEP program was fundamentally designed as an interdisciplinary program and she said the presentation would include descriptions of ongoing working relationships with state agencies, industry, and within the University of Alaska (UA); in fact, ACEP does not have one project without external partners. Ms. Holdmann said she would also address the importance of emerging energy technology and energy research. She directed attention to a PowerPoint presentation entitled, "ACEP - Alaska Center for Energy and Power - Results-Driven Research for Alaska," and gave the following brief history of ACEP: organized about five years ago as a gateway to energy research at UAF; based at UAF with a satellite office in Anchorage; 20 staff members; 35 affiliated faculty members; and 50 students [slide 3]. When given a task, ACEP gathers a variety of researchers, inside and outside the state, for their expertise on a specific problem. At this time researchers from Australia and Idaho are working in the lab at UAF. Student research is also funded with the intent to attract and keep Alaskans at the university and in the state. Given the current constraints on state revenue, Ms. Holdmann stressed that ACEP is a revenue-generating research program for UAF and for the state; for example, during its short history, ACEP has received \$3.1 million in state funding through the UA operating budget compared to \$26 million in external grants and contracts for applied energy research of immediate relevance to Alaska.

[8:10:52 AM](#)

REPRESENTATIVE HUGHES asked for the source of the grants.

MS. HOLDMANN answered that approximately one-quarter are through the Alaska Energy Authority (AEA), Department of Commerce, Community & Economic Development, and the remainder are from industry.

CO-CHAIR ISAACSON surmised ACEP's ratio [of public to private funding] is not quite 9:1.

MS. HOLDMANN added that some of the state grants are competitive awards through AEA's Renewable Energy Fund program.

[8:12:24 AM](#)

CO-CHAIR ISAACSON concluded that a portion of the funds are leveraged against industry funds.

[8:12:58 AM](#)

MS. HOLDMANN continued to explain that of its total funds, ACEP leverages funds on a ratio of 9:1 and seeks to increase the amount of partnerships within the state. In the past energy research has been federally funded; however, in order to focus the research on Alaska, ACEP prefers to attract private sector partners from Alaskans and Alaska businesses. She pointed out that 40 percent of the funding received goes to small businesses in Alaska that work as subcontractors for ACEP in manufacturing and field work. Further, approximately 20 percent is used for base operating costs at UAF [slide 4]. The role of ACEP and UA is to develop information to help homeowners, industry, and governments make decisions through technology testing and optimization, energy analysis, and data management. In addition, ACEP prepares students to work in energy-related disciplines and commercializes energy innovation to generate wealth for the state and economic growth [slide 5].

[8:17:36 AM](#)

ANTONY SCOTT, Senior Economist and Energy Analyst, ACEP, listed samples of ongoing projects undertaken by the energy analysis group: diesel fuel price benchmarking to understand the variety of fuel prices around the state and facilitate solutions to high prices, such as alternative energy sources or conservation; assessment of the economics of a Southeast Alaska-BC

Transmission Intertie; private investment models for renewable energy infrastructure in Alaska, which may provide the lowest-cost power due to federal tax credits and deductions; and liquefied natural gas (LNG) economic assessment and screening for coastal Alaska communities [slide 6]. To delve further into the last topic, he explained that ACEP's ongoing work for AEA is high level screening of the economics of very small scale LNG to displace diesel-fueled powerhouses in coastal communities in Alaska. The Westpac Company seeks to transport LNG in international standard organization intermodal (ISO) shipping containers from British Columbia to Alaska, or alternatively from Cook Inlet to other areas of the state. This commercial opportunity has emerged as oil prices rise and natural gas prices do not, thus making the transportation and storage of LNG in ISO containers economic in some cases [slide 7]. The comparison sought by AEA was between ISO container transport and storage of LNG, which is the most expensive method, and the bulk transport of diesel fuel.

[8:23:45 AM](#)

REPRESENTATIVE NAGEAK cautioned that the use of LNG in villages requires building infrastructure, and asked about the use of propane as a source for fuel.

MR. SCOTT acknowledged that propane has potential, but the price of propane is not as low as that of natural gas; further, propane also requires infrastructure. He clarified that the AEA study focused on displacing diesel for the generation of electricity - not for home heating - because using LNG for power generation requires the least amount of capital investment at the village level and if that were successful, then subsequently AEA would look at opportunities for home heating. The study is further limited to the use of LNG as proposed by a private investor.

CO-CHAIR ISAACSON asked whether Bush communities can approach economies of scale of ten thousand 1,000 British thermal units per day (MMBtu/d).

[8:26:54 AM](#)

MR. SCOTT advised that the electric load in coastal communities in Alaska is small; in fact, aggregating all of the coastal communities from Bethel to Southeast does not amount to 10,000 MMBtu/d, which is the threshold of economical generation [slides 8 and 9]. However, industrial loads such as fish processing and

mining hold the potential for approaching sufficient demand to support a project using ISO containers for transport and storage [slides 8 and 9]. The study found that particularly for ice-free communities, if diesel costs are high and there is sufficient load, LNG can displace diesel for power production, no matter the size of the community. He directed attention to slide 10, which illustrated the break-even costs and the risks associated with transitioning to a new fuel. In response to Co-Chair Isaacson, he explained that each black line on slide 10 represents a community and the range in which the cost of natural gas is economic compared to the cost of diesel fuel - shown on the Y axis - during the period between fiscal year 2010 (FY 10) and FY 12. The red line - the X axis - indicated that during this period of time, natural gas could have been purchased for less than diesel, thus there is a reasonable expectation that LNG would be successful in ice-free communities if there is an industrial load. For ice-bound communities, LNG must be stored for the winter, which adds to capital expenditures (CAPEX), and he concluded that the additional storage costs undermine the economics of LNG use in those communities [slide 11].

[8:34:24 AM](#)

CO-CHAIR ISAACSON surmised that the use of ISO tanks should absolve storage tank issues, and questioned their purpose.

MR. SCOTT agreed that the ISO containers store the LNG for 60-90 days, but that is insufficient to supply an ice-bound community through the winter, with the exception of Dillingham and Naknek, which have sufficient electrical loads [slide 11]. Ice-free communities need fewer containers. The study showed that economies of scope and scale matter; for example, for the proposal to work, larger industrial loads are necessary and LNG is a potential option for ice-free communities. Also, a bulk delivery project relying on the electrical demand from fish processing is possible in Unalaska/Dutch Harbor, as is a Southeast-based ISO project, with the demand of an industrial load. Mr. Scott concluded that the state would not have to participate in these projects given that there is interest from private entities [slide 12].

[8:40:49 AM](#)

MS. HOLDMANN informed the committee that ACEP conducts directed research for rural energy issues and community solutions, and on a larger scale, topics related to industry. The ACEP lab in

Fairbanks tests many products and testing is also done in the field [slide 15]. She directed attention to slide 19 and noted there is significant interest in Alaska in the installation of ground and seawater source heat pumps; in fact, ACEP's work was credited with facilitating their installations in Juneau. The center has compiled economic data, and completed technical evaluations on heat pump operating systems statewide, in collaboration with the Denali Commission and others. In response to a request from the legislature, ACEP studied small modular nuclear reactors and issued a report in 2011, concluding that the reactors are potentially a viable technology for Alaska but will not be commercially available in the near-term. However, ACEP will continue to monitor developments in this industry [slide 20]. Slide 21 illustrated the locations of ACEP projects all over the state. The study of geothermal energy for Nome was highlighted as an example of ACEP's close work with a community, and its goal to develop each region's local energy options from coal to geothermal. The situation in Nome was researched from a multi-disciplinary standpoint including an economic assessment, a resource evaluation, the integration of sources of energy, and finding a role for private financing and industry in small and remote energy projects. Ms. Holdmann opined that Nome has followed a proactive approach with independent power producers, and is close to signing a power purchase agreement to develop a geothermal power plant [slide 22]. She said attracting private industry to work in partnership with the state is important to achieve sustainability throughout the state.

[8:47:43 AM](#)

CO-CHAIR ISAACSON asked Ms. Holdmann to provide models for how to leverage money to attract private investment with the use of tax credits.

MS. HOLDMANN said one model is the renewable energy fund, which approves grants to the most economic [project] first. These are the projects most likely to be developed if private financing was secured. Also, bundling projects together makes them more attractive for private financing. She advised that ACEP is directed towards projects with grant funding available, which is constraining, and seeks to explore ways to attract private funding into energy projects whenever possible. Slide 23 described two examples of private power projects and she observed that private projects are managed by "a different mentality." She closed with ACEP's vision for the state: Alaska leading the way in innovative production, distribution, and

management of energy [slide 25]. This vision entails addressing Alaska's challenges and moving into a leadership position worldwide by maximizing the production of oil and gas resources, developing local resources wherever practical, using innovative financing mechanisms, facilitating diesel-off in rural communities, and exporting the experience gained by solving Alaska's energy challenges [slide 26]. Iceland was highlighted as an example as an entity that exports its knowledge on geothermal energy, thereby creating a financial boon for the country, and Alaska can do the same on wind energy [slides 27 and 28]. Recently ACEP hosted an international wind integration conference in Fairbanks, and in the summer of 2014, visitors from Chile and Nigeria are coming to UAF to learn about the energy sector. She urged for continued funding of the Emerging Energy Technology Grant Fund and university-based research used to support industry [slide 30].

8:56:05 AM

REPRESENTATIVE FOSTER asked whether the project in Nome includes the transmission line.

MS. HOLDMANN said yes. Potelco Inc. has proposed investing \$40 million for a transmission line and a two megawatt power generation facility.

REPRESENTATIVE FOSTER lauded ACEP's work in Nome.

REPRESENTATIVE HUGHES asked whether ACEP tests the energy efficiency of homes.

MS. HOLDMANN said ACEP partners with the Cold Climate Housing Research Center (CCHRC) on residential testing and also studies large-scale energy efficiency at the generation level.

REPRESENTATIVE HUGHES asked what percentage of CCHRC's attention is focused on small communities - where the need is greatest - and what percentage is focused on Southcentral - where 75 percent of the population resides.

MS. HOLDMANN stated CCHRC's focus is statewide. For example, the report on ground and seawater heat pumps covered the Wasilla and Palmer areas because of the activity there.

REPRESENTATIVE HIGGINS pointed out there are companies that are currently marketing small nuclear power plants.

9:00:08 AM

MS. HOLDMANN agreed there is a company that is marketing a 45 megawatt power plant but it cannot be installed as an individual unit as designed. Furthermore, only one has been built and it uses natural gas as fuel. She advised the units are not available to purchase at this time.

9:01:41 AM

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 9:01 a.m.