

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

March 23, 2023
10:33 a.m.

MEMBERS PRESENT

Representative George Rauscher, Chair
Representative Tom McKay
Representative Stanley Wright
Representative Mike Prax
Representative Ashley Carrick

MEMBERS ABSENT

Representative Josiah Patkotak
Representative Calvin Schrage

COMMITTEE CALENDAR

PRESENTATION: ALASKA CENTER FOR ENERGY AND POWER

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

GWEN HOLDMANN, Vice Chancellor
Research, Innovation, and Industry Partnerships
Alaska Center for Energy and Power
Fairbanks, Alaska

POSITION STATEMENT: Gave a PowerPoint presentation, titled "Alaska Center for Energy and Power."

ACTION NARRATIVE

[10:33:42 AM](#)

CHAIR GEORGE RAUSCHER called the House Special Committee on Energy meeting to order at 10:33 a.m. Representatives Carrick, McKay, Wright, Prax, and Rauscher were present at the call to order.

PRESENTATION: ALASKA CENTER FOR ENERGY AND POWER

[10:34:56 AM](#)

CHAIR RAUSCHER announced that the only order of business would be a presentation titled: "Alaska Center for Energy and Power."

[10:35:27 AM](#)

GWEN HOLDMANN, Vice Chancellor, Research, Innovation, and Industry Partnerships, Alaska Center for Energy and Power, gave a PowerPoint presentation, titled "Alaska Center for Energy and Power" [hard copy included in the committee packet]. She began on slide 1 and slide 2, stating that the mission of the Alaska Center for Energy and Power (ACEP) is "fostering development of practical, innovative and cost-effective energy solutions for Alaska and beyond." She said that 80 researchers are affiliated with the program, and the University of Fairbanks (UAF) has a lab-based microgrid for testing energy solutions.

[10:38:16 AM](#)

MS. HOLDMANN continued to slide 3 through slide 8, giving a brief overview of ACEP projects and their locations. She said that the program looks at all forms of energy generation and energy transmission throughout the state. She stated that ACEP's philosophy is to place emphasis on the research question, working to finish research quickly to benefit Alaskans. She stated that ACEP also works on policy analysis to help improve energy policy. She expressed the opinion that many projects worked on by ACEP are beneficial. She pointed out the Alaska Renewable Energy Grant Fund and that 70 Alaskan communities are being powered to some degree by renewable energy.

[10:42:12 AM](#)

MS. HOLDMAN continued to slide 9 through slide 13, stating that Alaska is the U.S. leader in microgrid technologies. She showed a map detailing that much of the Arctic is not connected to outside power grids, including all of Alaska. The area is often referred to as the "Electric North." She described the Railbelt utilities as connected microgrids. She noted that these microgrids were not connected at the onset. She stated that ACEP has worked with the Railbelt utilities on strategies for a gradual process of decarbonization. She stated ACEP has received funding from the Office of Naval Research in partnership with the University of Hawaii. She added that

research on tidal energy was one of the first areas of study for ACEP.

[10:47:21 AM](#)

CHAIR RAUSCHER asked why there is a single black fin in the turbine of the tidal energy generator [pictured on the slide].

MS. HOLDMANN answered that it allows for the counting of the revolutions. She added that the generator has already been tested. This testing included understanding how this might affect salmon populations.

[10:48:45 AM](#)

REPRESENTATIVE CARRICK asked whether the same technology used for tidal generation can be used in rivers.

MS. HOLDMANN answered yes, because they both rely on the water currents for energy generation. She added that work on optimizing the technology is still ongoing.

[10:51:15 AM](#)

MS. HOLDMANN, in response to Representative Prax, stated that the test device in the river has a mechanism for blocking debris and catching smolt to see how the device effects them. She pointed out that there is a platform to mount the device. In response to a follow-up question, she said that it is not meant to stay in the river on a long-term basis.

[10:54:20 AM](#)

MS. HOLDMANN continued to slide 14 and slide 15, stating that ACEP and UAF are working on a U.S. Department of Energy project along with the University of Puerto Rico, University of Hawaii, and South Dakota State University. The project would be on "assessing dynamic response of converter-dominated power systems across multiple spatiotemporal scales." The study would show the implications of incorporating renewable energy on the resilience of the grid. She explained that using more renewable energy has the potential to make the grid act in a different manner, and smaller grids are more susceptible to these types of changes. She stated that ACEP is working with the Army Corp of Engineers to study resiliency at Eielson Air Force Base. She stated that Eielson has the ability to generate some of its own

power, but normally it is connected to the Golden Valley Electric Association grid.

[10:59:09 AM](#)

MS. HOLDMANN continued to slide 16, stating that Eielson has been selected to be a test site for a micronuclear reactor. She added that micronuclear reactors are being tested for their suitability in commercial applications and are "quite different" from traditional nuclear reactors.

[11:01:22 AM](#)

REPRESENTATIVE CARRICK questioned the size of a micronuclear reactor for a small community and the reactor's lifespan.

MS. HOLDMANN answered that a small micronuclear reactor would be 20 feet long. She added that micronuclear reactors act as a thermal battery which would need to be replaced every eight years. If uninterested, she said, communities would not have to accept a micronuclear reactor. She added that a community of at least 1,000 people would be needed for the reactor to make sense on a level of scale.

[11:05:42 AM](#)

REPRESENTATIVE WRIGHT asked if there have been any successful tests of micronuclear reactors.

MS. HOLDMANN answered that the technology is not new, although some of the safety features in micronuclear reactors are new. She offered that no advanced micronuclear reactors have been built, as of now.

MS. HOLDMANN, in response to Chair Rauscher, stated that prototypes will be tested at national labs and defense sites before any other location.

[11:08:23 AM](#)

REPRESENTATIVE PRAX commented that the challenge is finding a situation in which using such a device makes sense.

MS. HOLDMANN responded that engineers can build anything if it makes sense economically.

[11:09:17 AM](#)

MS. HOLDMANN continued to slide 17, giving a brief overview of the Pilgrim Hot Springs geothermal project in Nome. She said that ACEP has been working with Nome on this project for approximately 13 years. She added that ACEP has also been working on ways to use waste heat from diesel power generation to provide additional energy. She stated that Pilgrim Hot Springs has the potential to generate up to 5 megawatts of electricity.

[11:12:43 AM](#)

CHAIR RAUSCHER questioned the distance between solar panels.

MS. HOLDMANN answered that in Artic environments, solar panels using both sides are more effective, meaning they need more space to fully capture solar energy. In response to a follow-up question, she said that spacing of solar panels in Alaskan communities, such as Willow and Houston, will depend on the types of solar panels being used.

[11:15:06 AM](#)

REPRESENTATIVE PRAX asked what happened to the Chena Hot Springs trailer that was hooked up to the power plant in Fairbanks.

MS. HOLDMANN answered that without a large amount of hot water, it was not very effective.

[11:17:32 AM](#)

MS. HOLDMANN continued to slide 18 through slide 20, stating that the Emerging Energy Technology Grant Fund ended in 2018. It had been used to test and deploy new types of energy technology. She said that if the program were to be continued, it would have the potential of bringing new forms of energy generation and storage to Alaska. She said that Kotzebue is working towards 100 percent renewable energy, using double-sided solar panels and excess wind generation for heating in homes. She showed a blog from Kartorium which highlighted the work being done in Kotzebue, and the work ACEP is doing around the state.

[11:23:06 AM](#)

MS. HOLDMANN moved to slide 21 and slide 22, stating that ACEP has been looking at price structures for the different

utilities. Testing is being done in Kotzebue to see whether pulling heat from the air as a source of energy generation is a viable way to produce energy. She said that ACEP has set up a community innovation hub to work with different communities together on better ways to generate energy at a lower price by using technological innovations. The two main hubs of these innovation networks are Kotzebue and Cordova. She said that ACEP is involving students in the process and has pioneered a program for students used in 23 different states.

[11:26:43 AM](#)

MS. HOLDMANN continued to slide 23 through slide 25, stating that ACEP is partnering with different Alaskan communities, as well as Canada and Iceland, to train and develop the Arctic energy workforce. The Arctic Remote Energy Networks Academy prepares individuals to work on energy solutions in the Arctic. She said that the program focuses on developing microgrids. She stated that ACEP is also hosting workshops to educate the public about carbon sequestration technology.

[11:29:37 AM](#)

CHAIR RAUSCHER questioned the number of participants for the workshop registration.

MS. HOLDMANN responded that the number of participants is not limited, adding that registration is free. She offered that the workshops are recorded and posted online.

[11:31:10 AM](#)

MS. HOLDMANN moved to slide 26, expressing the importance of the University of Alaska system in developing energy resources. She said that investing in the energy workforce and innovation of new technologies is a great benefit to the state.

[11:31:38 AM](#)

CHAIR RAUSCHER asked whether there is a funding source that works better than others.

MS. HOLDMANN answered that the Power Project Loan Fund is an important fund which allows smaller renewable energy projects to get started. She added that there are federal sources of funding available Alaska should aim to receive.

[11:34:06 AM](#)

REPRESENTATIVE CARRICK asked why Emerging Energy Technology Funding was sunset in 2018 and how it differed from the Renewable Energy Grant Fund.

MS. HOLDMANN answered that the latter is meant for projects which are expected to succeed to a certain level, whereas the former is meant as a way to test new technologies which have a possibility of failing. She added that the Emerging Energy Technology Fund was sunset because there was a period with less investment into new forms of renewable technology. In response to a follow-up question, she stated that the benefit of investing state money into emerging technologies addresses the unique challenges faced by Alaska. Federal grants require state matches, and there may not be grants which go along with every possible technology in Alaska.

[11:40:22 AM](#)

MS. HOLDMANN, in response to Representative Prax, stated that ACEP does not compete with the private sector. She said that ACEP's role is to test new technologies. In response to a follow-up question, she said that ACEP does have a strategic plan of focus. She added that some of the work done on micronuclear reactors is not funded by the federal government, and some unpaid work is required. In response to a follow-up question, she stated that ACEP does have a written report containing a strategic plan.

[11:46:47 AM](#)

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 11:46 a.m.