ALASKA STATE LEGISLATURE
HOUSE SPECIAL COMMITTEE ON ENERGY
March 2, 2023
10:15 a.m.

MEMBERS PRESENT

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

MEMBERS ABSENT

Representative Josiah Patkotak

COMMITTEE CALENDAR

HOUSE BILL NO. 74
"An Act relating to geothermal resources; relating to the definition of 'geothermal resources'; and providing for an effective date."

- HEARD & HELD

PRESENTATION: GREEN HYDROGEN AND ALASKAN GEOTHERMAL

- HEARD

PREVIOUS COMMITTEE ACTION

BILL: HB 74
SHORT TITLE: GEOTHERMAL RESOURCES
SPONSOR(s): RULES BY REQUEST OF THE GOVERNOR

02/15/23	(H)	READ THE FIRST TIME - REFERRALS
02/15/23	(H)	ENE, RES
02/23/23	(H)	ENE AT 10:15 AM BARNES 124
02/23/23	(H)	-- MEETING CANCELED --
02/28/23	(H)	ENE AT 10:15 AM BARNES 124
02/28/23	(H)	Heard & Held
02/28/23	(H)	MINUTE(ENE)
03/02/23	(H)	ENE AT 10:15 AM BARNES 124

WITNESS REGISTER

PAUL CRAIG, President
GeoAlaska, LLC
Anchorage, Alaska
POSITION STATEMENT: Gave invited testimony during the hearing on HB 74.

GUY OLIVER, PhD, Leader
Geoscience and Exploration
Ignis Energy
Houston, Texas
POSITION STATEMENT: Gave invited testimony during the hearing on HB 74.

GEOFF SIMPSON, Landman
Cyrq Energy
Boulder, Colorado
POSITION STATEMENT: Gave invited testimony during the hearing on HB 74.

PAUL FUHS, CEO
Alaska Hydrogen Industries
Juneau, Alaska
POSITION STATEMENT: Testified in support of HB 74 and gave a PowerPoint presentation, titled the "Green Hydrogen and Alaskan Geothermal."

ACTION NARRATIVE

10:15:21 AM

CHAIR GEORGE RAUSCHER called the House Special Committee on Energy meeting to order at 10:15 a.m. Representatives Carrick, Prax, McKay, and Rauscher were present at the call to order. Representatives Wright and Schrage arrived as the meeting was in progress.

HB 74-GEOTHERMAL RESOURCES

10:16:35 AM

CHAIR RAUSCHER announced that the first order of business would be HOUSE BILL NO. 74, "An Act relating to geothermal resources; relating to the definition of 'geothermal resources'; and providing for an effective date."

10:17:33 AM

PAUL CRAIG, President, GeoAlaska, LLC, stated that GeoAlaska has geothermal exploration permits on Mount Spurr and Augustine Island. He said that GeoAlaska and Ignis Energy have worked out an agreement to partner together in efforts to develop geothermal energy at these sites. He expressed GeoAlaska's support for HB 74, as it is a necessary step in the development of geothermal resources. He argued that the current length of time for permits under current statute is too short to discover the feasibility of geothermal plants. He said that the current instability of royalty structures also makes it more difficult to secure investors. He stated that the oldest geothermal project in the world was created in 1904 in Tuscany, Italy, and it is still producing geothermal energy today.

10:26:40 AM

GUY OLIVER, PhD, Leader, Geoscience and Exploration, Ignis Energy, expressed Ignis Energy's support for HB 74, as written. He explained that Ignis Energy is a worldwide leader in connecting different sources of energy with geothermal sources of energy in order to meet energy demand. He said that Ignis has been doing work in Alaska for over 20 years, with the aim to greatly increase the development of Alaska's "underutilized" geothermal resource potential. He said that the extra time to explore provided in HB 74 would be a vital step in increasing geothermal power, especially because the weather patterns in the state limit the work that can be done during certain parts of the year.

10:33:11 AM

REPRESENTATIVE PRAX asked when the projects at Mount Spurr and Augustine Island could be expected to start producing energy.

DR. OLIVER answered that, according to plan, geophysical data is expected this year, with a test well by the summer of 2024. He stated that the total time to start producing energy would be five or six years from now.

10:36:14 AM

GEOFF SIMPSON, Landman, Cyrq Energy, stated that Cyrg Energy is a subsidiary of Macquarie Infrastructure and Real Assets, the largest infrastructure company in the world. He stated that Cyrg has 10 ongoing geothermal projects around the world,

including in Alaska. He expressed Cyrq Energy's support for HB 74.

10:38:37 AM

CHAIR RAUSCHER opened public testimony on HB 74.

10:39:09 AM

PAUL FUHS, CEO, Alaska Hydrogen Industries, testified in support of HB 74. He stated that geothermal energy would be sustainable in the long-term, and the provisions in the bill changing the royalty structure would create stability for geothermal energy.

10:40:32 AM

CHAIR RAUSCHER, after ascertaining that there was no one else who wished to testify, closed public testimony on HB 74.

[HB 74 was held over.]

10:40:45 AM

The committee took an at-ease from 10:40 a.m. to 10:42 a.m.

PRESENTATION: GREEN HYDROGEN AND ALASKAN GEOTHERMAL

10:42:10 AM

CHAIR RAUSCHER announced that the final order of business would be a presentation on green hydrogen and Alaskan geothermal.

10:42:31 AM

PAUL FUHS, CEO, Alaska Hydrogen Industries, gave a PowerPoint presentation, titled "Alaska Geothermal, Green Hydrogen, and Associated Industrial Processes and Products" [hard copy included in the committee packet]. He stated that he had overseen the building of a geothermal well during his time as mayor of Dutch Harbor. He stated that the earth's core is the same temperature as the sun, and heat radiates through the earth's mantle, allowing for the ability to produce geothermal energy.

10:44:20 AM

MR. FUHS continued to slide 3 and slide 4, overviewing the possible geothermal sites in the Aleutian Islands and Alaska's strategic marine shipping position. He provided a map with the locations and showing the heat flow. He pointed out that these positions allow for materials and goods to flow easily through the islands, increasing geothermal opportunities. He continued to slide 5 and slide 6, stating that the geothermal production system is binary. Heat is exchanged to produce steam and spin the turbines, which creates electricity, and the water is then reinjected into the ground to be heated again. He showed the Mammoth Geothermal Plant in California, which has an energy output similar to that of the Bradley Lake Hydroelectric in Alaska.

10:47:03 AM

MR. FUHS continued to slide 7 and slides 8, showing images of a magnetotelluric geothermal imaging graph and a hydrolyzer plant in Denmark. He stated that the most expensive part of geothermal production is the exploration for a good location. He pointed out that the green areas in the image are the less resistant areas, more easily allowing the necessary process of water going back into the ground. He stated that a hydrolyzer plant separates the water from the hydrogen in the process of restoring the water into the plant production area.

MR. FUHS continued to slide 9 and slide 10 showing the [projected] geothermal and tidal sites in False Pass and the [projected] Makushin geothermal plant in Dutch Harbor. He stated that the hydrogen producing parts of the plant could be adjusted to fill whatever current energy ends there are in False Pass. He stated that the geothermal plant would be able to produce energy at a cost as low as 4.5 cents per kilowatt-hour, and the currents sales agreement with Dutch Harbor is 12 cents per kilowatt-hour. He pointed out challenges that involve changing regulations, and he advised that the continuation of geothermal development would rely on the state providing stability to the projects.

10:54:23 AM

REPRESENTATIVE PRAX asked whether Alaska Hydrogen Industries is working with the Alaska Energy Authority.

MR. FUHS responded in the affirmative.

10:55:14 AM

MR. FUHS continued to slide 11 through slide 13, showing more images of geothermal plants and geothermal imaging. He expressed the opinion that Unimak Island includes an area of state land that has the potential to house facilities for both geothermal and tidal energy production, while Adak Island has great geothermal energy potential. He suggested that the City of Adak has an infrastructure which would make getting started there easier. He showed an additional sample of geothermal imaging representing the type of area that would best support the production of geothermal energy.

MR. FUHS continued to slide 14 and gave a brief overview of hydrogen programs provided by the U.S. Department of Energy (DoE). He stated that because of the population size, DoE had previously rejected a grant in Alaska, but the Alaska Hydrogen Working Group is working on a proof of concept to garner interest for future projects.

MR. FUHS continued to slide 15 through slide 17 and gave an overview of hydrogen electrolysis. He stated that separating the hydrogen and oxygen anodes works to generate electricity. He compared hydrogen electrolysis with burning natural gas, with the difference being the amount of carbon dioxide placed into the atmosphere.

10:59:54 AM

REPRESENTATIVE MCKAY commented on the high temperature mentioned, and he questioned the temperature in Fahrenheit.

MR. FUHS suggested that the temperatures in Celsius and Fahrenheit would cross over at some point. He stated that 30 percent of the methane would be burnt to produce the high temperatures.

11:00:40 AM

MR. FUHS continued to slide 18 and slide 19 and stated that steel is one of the greatest sources of carbon dioxide because of the amount of burning involved in the process. He said that Kobe Steel, LTD, has a plant in South Carolina with a tower to expose iron to hydrogen without burning it. He added that steel is the most recycled material, and this process has the potential to increase the number of times it can be recycled.

11:03:17 AM

MR. FUHS continued to slide 20 and slide 21 and gave a brief overview of hydrogen-based fuels. He stated that ammonia works well as a fuel and can be stored at temperatures that other types of fuel cannot. Methylcyclohexane is an artificial chemical created by taking hydrogen from the air; although carbon is being put into the air, it was taken out to produce the fuel. He added that this is already used to raise the octane level of gas station fuel.

MR. FUHS continued to slide 22 through slide 25 and gave an overview of fuel density and transportation. He stated that using less dense fuels would allow ships to carry more cargo and make fewer stops. He showed an experimental ship design that would allow for the more efficient transport of liquid hydrogen.

MR. FUHS continued to slide 26 and slide 27, pointing out that there is a market for hydrogen-based products in Japan. He expressed the understanding that Japan is seeking to reduce its fossil fuel output and look for nuclear alternatives. He suggested that Alaska could help by implementing policies that would support the development of renewable fuels, including providing financial support for the upfront costs associated with geothermal energy production. He added that the state should continue to provide support for fossil fuel production, expressing the opinion that people living in Artic regions are being made to "pay" for fossil fuel usage around the world. He suggested that Alaska should also support the development of mineral resources, as these minerals are needed to build the equipment for renewable energy production.

11:11:09 AM

CHAIR RAUSCHER asked how the purification process for iron ore works.

MR. FUHS answered that large magnets are used to pull the iron out, and then the iron is sent to hydrogen-based steel plants.

11:12:41 AM

REPRESENTATIVE MCKAY asked if there are any significant sources of iron ore in the state.

MR. FUHS answered that two of the biggest sources of iron ore are Brazil and Canada. In response to a follow-up question, he

said that any coal of the quality necessary to produce steel is on the North Slope.

11:16:15 AM

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at [11:16] a.m.