

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

March 9, 2017

10:17 a.m.

MEMBERS PRESENT

Representative Adam Wool, Chair
Representative Ivy Spohnholz, Vice Chair
Representative Matt Claman
Representative Dean Westlake
Representative DeLena Johnson
Representative Jennifer Johnston
Representative George Rauscher

MEMBERS ABSENT

All members present

COMMITTEE CALENDAR

PRESENTATION: INSIDE PASSAGE ELECTRIC COOPERATIVE

- HEARD

PRESENTATION: ALASKA VILLAGE ELECTRIC COOPERATIVE

- HEARD

PRESENTATION: COPPER VALLEY ELECTRIC ASSOCIATION

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

JODI MITCHELL, CEO & General Manager
Inside Passage Electric Cooperative (IPEC)
Juneau, Alaska

POSITION STATEMENT: Presented a PowerPoint of IPEC.

MEERA KOHLER, President/CEO
Alaska Village Electric Cooperative, Inc. (AVEC)
Anchorage, Alaska

POSITION STATEMENT: Presented a PowerPoint via teleconference titled "The Thrills and Perils of Providing Electricity in Rural Alaska."

BILL STAMM, Manager of Engineering
Alaska Village Electric Cooperative, Inc. (AVEC)
Anchorage, Alaska

POSITION STATEMENT: Answered questions during the PowerPoint presentation.

TRAVIS MILLION, Chief Operating Officer
Copper Valley Electric Association (CVEA)
Glennallen, Alaska

POSITION STATEMENT: Presented a PowerPoint on the Copper Valley Electric Association.

ACTION NARRATIVE

[10:17:56 AM](#)

CHAIR ADAM WOOL called the House Special Committee on Energy meeting to order at 10:17 a.m. Representatives Wool, Johnston, Johnson, Westlake, Rauscher, and Spohnholz were present at the call to order. Representative Claman arrived as the meeting was in progress.

Presentation: Inside Passage Electric Cooperative

[10:18:19 AM](#)

CHAIR WOOL announced that the first order of business would be a presentation by the Inside Passage Electric Cooperative (IPEC).

[10:18:48 AM](#)

JODI MITCHELL, CEO & General Manager, Inside Passage Electric Cooperative (IPEC), said that she had been with IPEC since 1993, and she directed attention to slide 2, "Introduction to IPEC." She reported that IPEC had 1,368 members in the villages of Angoon, Hoonah, Kake, Klukwan, and the Chilkat Valley, and that the IPEC headquarters were at Auke Bay. She noted that logistics were one of the biggest challenges, as the only means of access to these communities was by boat or airplane. She relayed that IPEC was 72 percent dependent on diesel, although they owned two hydro projects with the potential for two more projects in the next decade if funding becomes available. She

shared slide 3, "Outline," which included the challenges for providing electricity in Rural Southeast Alaska, recognition that small local hydro was the best solution for IPEC communities, and a review of regulatory considerations.

CHAIR WOOL asked if the villages were interconnected with transmission lines.

MS. MITCHELL replied that IPEC had four micro grids, and she proudly stated that all the maintenance, regulation, and administration were performed by only 11 full time employees.

REPRESENTATIVE RAUSCHER asked if the hydro power supplied the remaining 28 percent of power.

MS. MITCHELL expressed her agreement, although the percentage of use did vary during the calendar year. She returned to slide 4, "Challenges of Providing Electricity in Rural Southeast Alaska," and explained that the volatility of the price of diesel lead to volatile rates as the small consumer base did not allow for any economies of scale. She declared that these high rates also made it difficult to attract large power consumers, as there were high transportation costs, even with good use of the ferry system, and many logistical challenges. She reported that the village economies were weakening due to this lack of industry and jobs. She added that there was a high cost of compliance with regulatory and environmental policies, as well as high costs of alternative energy technologies. She expressed concern for the costs of compliance with any new policies. She moved on to slide 5, "2016 Aver Cost per kWh Sold," and pointed out that the largest component of the graph was the fuel and purchase power, even as the fuel costs were lower in 2016 than in previous years. She talked about the percentages of cost for non-fuel production, distribution, customer expense, regulatory cost, and depreciation. She noted that IPEC did not make any money from selling power.

MS. MITCHELL, in response to Chair Wool, explained that A & G meant administration and general, which included attorney fees, salaries, supplies, travel, and governance fees.

[10:25:21 AM](#)

MS. MITCHELL addressed slide 6, "Average Cost of Fuel per Gallon," which depicted prices from 1998 through 2016, and compared this graph with slide 7, "As fuel prices rise, rates rise." This graph portrayed the average rate per kWh and the

cost of fuel and purchase power per kWh for those same years. She noted that the cost had gone down in 2016, because of lower fuel prices and the construction of a hydro project.

CHAIR WOOL asked if the hydro costs figured into this chart and if these costs were before Power Cost Equalization (PCE).

MS. MITCHELL replied that the hydro was included, and that it was part of the average cost.

REPRESENTATIVE JOHNSTON asked about the type of hydro project.

MS. MITCHELL explained that these were small diversions in the river, and that it was possible for two-thirds renewable if there was \$25 million available to invest. She declared that hydro was almost permanent, sharing the Juneau hydro projects as examples.

MS. MITCHELL introduced slide 8, "As a non-profit electric cooperative," which depicted the costs and the years, with the revenue per kWh, the cost to produce the kWh, and the net profit per kWh. She noted that the IPEC profit was very small.

REPRESENTATIVE RAUSCHER asked why the net operating margin had spiked in 2007.

MS. MITCHELL offered her belief that this was upon completion of a rate case, which temporarily allowed for a higher margin. She added that subsequently, IPEC had moved to a simplified rate filing procedure which she declared as much better for IPEC.

MS. MITCHELL introduced slide 9 "What are we doing to help reduce energy costs for our members?" She reported that, in 2009, IPEC's board had created an energy plan to become diesel independent by 2015, which, obviously had not yet happened. She reported that the idea for interties between communities had proven to be too expensive. She reminded that the rain in Southeast Alaska was a great resource, and with help from the Renewable Energy Fund, IPEC had built the Gartina Falls hydro project in Hoonah, and identified the Gunnuk Creek hydro project in Kake, as well as another project in Hoonah. She reported that Kootsnoowoo Village Corporation in Angoon was developing the Thayer Creek hydro project, which was projected to provide 100 percent of the Angoon power needs.

[10:30:42 AM](#)

REPRESENTATIVE RAUSCHER asked for the projected costs for each of the aforementioned hydro projects.

MS. MITCHELL replied that IPEC would need about \$25 million for all three projects. She said that, while Angoon currently had \$7 million from the Renewable Energy Fund, they were looking for more grant money to make the project more economically feasible.

REPRESENTATIVE RAUSCHER asked how far along were those projects, and if there were designs.

MS. MITCHELL stated that the Gunnuk Creek project was shovel ready. In response to Representative Raushcer, she said that the preference was for the Gunnuk Creek project to begin immediately and could be completed by the end of next year with the funding; the Angoon project was also shovel ready; and the Hoonah project had not yet been designed. She declared that there was support for all the projects. She relayed that \$6 million was still needed for the Gunnuk Creek project, about \$10 million was still needed for the Angoon project, and an estimated \$9 million more for the second Hoonah hydro project, as, although it had a shared transmission line, it was harder to build.

MS. MITCHELL continued with slide 9, stating that grants were necessary to reduce the rates, and that the projects lasted for at least 50 years.

CHAIR WOOL asked if a low interest loan would allow for economic feasibility.

MS. MITCHELL replied that the loan would be helpful, but not as helpful because there was a depreciation expense for a loan whereas, there was not any depreciation expense for a grant. She added that the interest expense would vary with the interest rate.

CHAIR WOOL questioned whether, as there were many good energy projects in the state and not as much grant money, the projects would be affordable with low interest loans.

MS. MITCHELL said that she compared the cost of fuel with the cost of the new asset.

MS. MITCHELL moved on to slide 10, "IPEC identified Gartina Falls Hydro as the "best" project for Hoonah," and shared that this successful project was local, good sized, and affordable,

and it had displaced 32 percent of the fuel consumption, which was significant. She reported that IPEC was able to attain \$8 million in grant funding, and only had to borrow \$2 million. She noted that the project had to be Federal Energy Regulatory Commission (FERC) licensed, which cost \$1.5 million of the total cost. She added that the hydro and the diesel projects ran very efficiently together and noted that this was the same plan for the Gunnuk Creek project in Kake. She shared pictures of the Hoonah project, slide 11, and the Gunnuk Creek project in Kake, slide 12. She relayed some history for the projects, pointing out that the Kake project would include a diversion, which would allow the fish hatchery back on line.

REPRESENTATIVE RAUSCHER asked about the current power source.

MS. MITCHELL replied that Kake was 100 percent diesel with three engines, although the power plant was being upgraded. In response, she said that the hydro and the power plant would be a design similar to that in Hoonah, which would be more efficient. She said that the upgrade was fully funded.

[10:41:12 AM](#)

REPRESENTATIVE JOHNSTON asked about the small river flow generation projects.

MS. MITCHELL said that she was not familiar with these projects, noting that the local rivers were small. She said that they would look at that technology and not rule it out.

REPRESENTATIVE JOHNSTON reported that these had been tested on a small creek outside of Anchorage, and she offered to forward the information.

MS. MITCHELL, in response to Chair Wool, said that the dam in Kake was originally used for drinking water, and that the pumps were originally used to pump water to the water tank. She said that the tank was no longer in use. She stated that the dam had been designed for hydro power.

REPRESENTATIVE JOHNSON asked about the cost for the retrofit for the Kake project.

MS. MITCHELL replied that the estimate for a half mile penstock, a hatchery, and then a powerhouse with the hydro turbines would be about \$6 million. She shared that Alaska Department of Fish & Game was supportive of the project.

REPRESENTATIVE JOHNSON asked if there was any additional permitting necessary for an upgrade.

MS. MITCHELL said that a water rights permit and a request to FERC for a determination to its jurisdiction had been applied for, as well as another permit through Alaska Department of Fish & Game. She offered her belief that the project was not in the FERC jurisdiction. In response to Representative Johnson, she said the timeline for determinations was in the next few weeks. Once those were determined, they just needed money. She noted that there was Renewable Energy Fund money which had been dedicated for the Kake intertie. She expressed her desire for that money to be re-appropriated for this project, and the remainder could be borrowed.

MS. MITCHELL returned attention to slide 13, "Small local hydro can reduce IPEC's rates," and stated that hydro was a long-term project. She reiterated that with the project in Angoon and the two projects in Hoonah, IPEC would have about 66 percent renewable energy if all three of these projects came on-line. She declared that Southeast Alaska was fortunate to have hydro as a renewable resource, as it could help preserve the pristine air in Southeast Alaska.

MS. MITCHELL shared slide 14, "A little about IPEC's Regulatory Concerns:" and said that IPEC was fully regulated by the RCA (Regulatory Commission of Alaska) although they used the much simpler Simplified Rate Filing procedure. She stated that there was also a lot of compliance with PCE, which required an annual report and monthly billing, as well as audited statements. She said that IPEC was required by the RCA to commission depreciation studies, which were time consuming and expensive, and did not appear to add any value.

CHAIR WOOL asked if this was one of the more onerous RCA regulations.

MS. MITCHELL expressed her agreement, and said that they were required every five years, and cost about \$100,000, a lot for a small utility. She pointed out that the customers had to pay for the study, and that the businesses noticed the difference in rates when the PCE went up or down.

[10:51:33 AM](#)

CHAIR WOOL mused about the PCE increase in rates and that, although the residential consumers did not notice any increase, the business consumers did notice. He asked if the PCE adjustment was separating the consumers from reality and giving them less of an incentive to conserve or look for alternate means to lower their costs.

MS. MITCHELL said that she did not believe so, as the residents were limited to 500 kWh per month, after which it gets very expensive, often more than \$.045 per kWh. She said that the average residential customer used 320 kWh each month in 2015. She shared stories of residents in communities who only used one light at night, because power was so expensive.

CHAIR WOOL mused that the 500 kWh was the more influencing factor, more than the kWh rate, as there was a price reality after that 500-kWh use.

MS. MITCHELL shared that most energy companies had noticed a reduction in consumption because there were more energy efficient appliances and light bulbs. She said that, even though there were more customers, there was a 5 percent decline in sales. She said that made it difficult for setting rates.

CHAIR WOOL mused that more energy efficiency did not bode well for the utilities.

MS. MITCHELL spoke about the costs for the air quality permits which IPEC had to file, and then concluded with slide 15, a picture of the second hydro project in Hoonah. She shared that this project would be similar in size and output as the Gartina project, and upon completion, Hoonah would have about 67 percent renewable energy.

CHAIR WOOL asked who designed the plans for the currently shovel ready projects.

MS. MITCHELL replied that, for the Kake project, IPEC had hired Paul Berkshire, and that he had also designed the Hoonah project.

CHAIR WOOL asked if the Alaska Energy Authority (AEA) had helped with optimization or review of possibilities, and if they entered in to the design or decision process.

MS. MITCHELL acknowledged that AEA had been very helpful, noting that she relied on them for information on new technology. She

added that AEA had also helped with the power supply upgrades to the powerhouses.

CHAIR WOOL asked if AEA ever brought new technologies.

MS. MITCHELL acknowledged that AEA did make suggestions, reiterating that AEA was very helpful. In response to Representative Rauscher, she said that a grant of about \$1.5 million had been assigned to design the Kake-Petersburg intertie. She asked for the reason to design something which was not going to be built anytime soon, and that she would prefer to use the money for something that would help Kake now.

CHAIR WOOL asked if the aforementioned 1,368 members were rate payers.

MS. MITCHELL expressed her agreement and stated that the population served was about 6,000.

Presentation: Alaska Village Electric Cooperative

[10:58:34 AM](#)

CHAIR WOOL announced that the next order of business would be a presentation by the Alaska Village Electric Cooperative (AVEC).

[10:59:47 AM](#)

MEERA KOHLER, President/CEO, Alaska Village Electric Cooperative, Inc. (AVEC), introduced slide 2, (via teleconference) and reported that AVEC was in 57 Alaska communities, had 90 full time employees, with 16 of them based in Bethel, and the rest based in Anchorage. She noted that there were two part time power plant operators in each of the 47 power plant communities, and that there were 10,800 meters. She reported that AVEC had more than 170 diesel generators and bought about 8.5 million gallons of diesel each year, which was shipped in by barge. She relayed that AVEC had 34 wind turbines which served 15 communities, as well as 2 solar projects.

MS. KOHLER moved on to slide 3, which depicted a map of the United States, with Alaska inset to demonstrate its relative size. She addressed slide 4, "Cost Components per Kilowatt-hour Sold," a graphic representation of the average cost of a kilowatt hour. (indisc.) She relayed that the cost of \$0.43 per kilowatt hour in 2016 was a little deceptive because (indisc.)

was a very big chunk of that. She stated that the AVEC concerns were similar to those of IPEC.

MS. KOHLER moved on to slide 5, "AVEC's Revenue Sources," which reflected the various components of customer sales, including residential, schools, commercial, and community facilities. (indisc.)

REPRESENTATIVE SPOHNHOLZ asked for the reason the percentage of revenue from commercial sources almost doubled between 2013 and 2014.

MS. KOHLER said that Bethel [Utility] had brought a "very large chunk of commercial load," which was not eligible for PCE.

CHAIR WOOL offered his belief that, with the acquisition of Bethel Utility in 2014, although the percentages of all of the sources except commercial had declined, it did not mean the consumption or revenue had declined. He asked about the schools being self-generating.

MS. KOHLER said not exactly (indisc.) She stated that AVEC had a very good relationship with the schools.

[11:09:29 AM](#)

MS. KOHLER addressed slide 6, "Why is Electricity so expensive in rural Alaska?" She said that this was a function of (indisc.) because Alaska had a very small population in each village. She reported that the average village served by AVEC, not including Bethel, had 400 residents with an average use of 140 kilowatts, pointing out that there was not any economy of scale. She stated that the average cost of an installed meter was about \$17,000, which was three times the cost of urban Alaska. She added that remote shipping was very expensive, even on a barge, and that AVEC budgeted shipping costs for \$1.75 per pound to the communities. She reported that fuel was expensive, often the delivery and the storage exceeded the cost of the fuel. She concluded by stating that, as the communities were remote and required fly-in, the costs for operations and maintenance were much more expensive. She directed attention to slide 7, "AVEC strategies to reduce power cost," and shared that one strategy was to only add cost-effective new communities, pointing out that AVEC was often approached by communities which they could not afford to take on. Another strategy was to interconnect villages to improve the economies of scale, and she suggested that the state develop a state-wide power grid to take

advantage of low-cost energy sources, adding renewable energies when economically feasible. She reported that AVEC captured and sold recovered heat and excess wind energy.

[11:13:55 AM](#)

REPRESENTATIVE JOHNSTON asked if there were opportunities for the micro grids to be places of testing for energy technologies.

MS. KOHLER said that AVEC was open to testing programs, and that they collaborated with others and were open to experimental technologies.

REPRESENTATIVE JOHNSTON asked if direct current was a possibility.

MS. KOHLER replied that AVEC was very interested in the technology. (indisc.)

MS. KOHLER shared slide 8, "Add cost-effective new communities," and said that non-fuel costs rise as kilowatt hour sales in the community shrink. She compared the non-fuel costs in different communities, stating that the average AVEC village cost was \$0.25 per kilowatt hour, whereas in Bethel this was about \$0.08 cents per kilowatt hour. She reported that this non-fuel cost in Cordova was \$0.19 and in Kotzebue, it was about \$0.21. She reiterated that there was a direct relationship between the non-fuel cost and the size of the service area.

CHAIR WOOL asked if the non-fuel costs of \$0.129 presented by IPEC were similar. In response to Ms. Kohler, he relayed that this would include distribution, regulatory depreciation, everything except fuel and power.

MS. MITCHELL pointed out that the IPEC fiscal year was different than AVEC.

MS. KOHLER, in response, (indisc.)

MS. KOHLER moved on to slide 9, "How does a community join AVEC?" (indisc.)

[11:23:29 AM](#)

BILL STAMM, Manager of Engineering, Alaska Village Electric Cooperative, Inc. (AVEC), explaining slide 9, stated that a community had to petition AVEC and ask for membership. He said

that AVEC would evaluate the existing utility and review the condition of the power plant and the distribution system, determine if the kilowatt hour sales were adequate to cover the incremental costs, and see if this was in the best interest of the existing cooperative members, as AVEC had a fiduciary responsibility to its members. He reported that, unfortunately, many communities asked to join AVEC when their systems were failing, and the community was not able to maintain the system. He pointed out that adequate fuel storage was important as the fuel deliveries arrived during the summer months. He pointed out that when the rate for kilowatt hour sales had not been adequate to maintain the systems, it was a shock to the community when the rates went up. He stated that if all the pieces appeared adequate, and if membership would be beneficial to the cooperative as a whole, then the board would consider an action.

MR. STAMM spoke about slide 10, "Interconnecting Villages," and said that a positive was for greater diesel efficiencies, as larger units, when run at optimum load, were more efficient. He said that shutting down a power plant could save up to \$150,000 each year. He noted that upon intertie, a single generator was left for back-up in the joined village, in case the tie line went down. He pointed out that renewable energy became more cost effective when it was distributed with an intertie among more communities. He said that some of the negatives were for the loss of the ability to recover heat and electricity and distribute it to public facilities and schools, and that some jobs were also lost when a plant was on stand-by.

CHAIR WOOL mused that there was the possibility to lose jobs, lose heat, and, if the usage was not enough and rates had not been sufficient to pay for the facilities, pay more for electricity.

MR. STAMM shared slide 11, "The value of connecting villages," and spoke about an experience in Toksook Bay when Tununak and Nightmute were interconnected and 400 kilowatts of wind power was installed, about 20 percent of the total fuel use. He shared that the introduction of wind power did not always allow the diesel generators to operate at their optimum fuel curve.

MR. STAMM introduced slide 12, "Improve generator/distribution efficiency," reporting that AVEC had an average of 6.5 kilowatt hours per gallon of fuel 30 years ago, whereas today, this was 13.5 kilowatt hours per gallon of fuel. He pointed out that the addition of wind to the systems had brought this up to almost 20

kilowatt hours per gallon of fuel. He shared that the diesel plants were optimized as much as possible for their size.

REPRESENTATIVE JOHNSON asked if there was any idea for the amount of power used by public buildings, including schools and clinics.

MR. STAMM referred back to the earlier pie charts, pointed out that the community facilities covered these public buildings, and reported that this was about 15 percent of power sales.

MR. STAMM explained slide 13, "Add renewables where feasible," noting that, although many of the AVEC communities did not have hydro potential and that solar PV had not been as effective, there were 34 wind turbines in 11 locations. He reported that 900 kilowatt turbines were planned for Bethel and St. Mary's. He directed attention to slide 14, which depicted a map for the location of the wind turbines.

CHAIR WOOL asked about the lines on the map joining the communities.

MR. STAMM opined that the lines were most likely rivers. He explained slide 15, "A snapshot of Wind Production in 2016," which reported on the wind percentages, as those were dependent on the wind regime and the turbines in place. He noted that although the Kaltag wind project was small, it was working flawlessly.

[11:34:32 AM](#)

MR. STAMM shared that the picture, slide 16, "Kaltag Solar Project," was the solar array on Kaltag. He stated that slide 17 was a graph of the solar production on a "Cloudless September Day" and that slide 18 graphed the effect from clouds, "The Effect of Partial Clouds." He explained slide 19, "Sell recovered heat, wind energy," reporting that the efficiency of a typical diesel generator was 33 percent for electricity, 33 percent to jacket the water-cooling system, and 33 percent in the exhaust. He stated that heat was captured for the schools and community facilities in most of the AVEC communities.

MR. STAMM declared that it was the dedicated board and staff which made all of this possible, slide 20, "What makes it all possible?" He added that persistence, a commitment to improved efficiencies, and members' tolerance for higher outage rates was

also necessary. He stated support for the Power Cost Equalization (PCE) program.

CHAIR WOOL asked about the average cost of a kilowatt hour.

MR. STAMM replied that it was \$0.43 per kilowatt hour.

CHAIR WOOL offered his belief that, when PCE was applied, the cost was about \$0.22 per kilowatt hour.

MR. STAMM expressed his agreement that it was similar for AVEC communities.

CHAIR WOOL asked if this was enough incentive for people to conserve.

MR. STAMM emphasized that it was an incentive, and he opined that should anyone in Fairbanks and Anchorage pay \$0.22 per kilowatt hour, they would use less power.

MS. KOHLER reminded that PCE was only available for the first 500 kilowatt hours. She stated that winter required a lot of electric use. She reported that it was often necessary to fly fuel into the communities, and she offered an example of a cost of \$0.70 per kilowatt hour over the 500 allowable PCE hours. She pointed out that communities with piped water and sewer systems typically had means to keep the pipes flowing which added to the hourly usage.

Presentation: Copper Valley Electric Association

[11:39:43 AM](#)

CHAIR WOOL announced that the final order of business would be a presentation by the Copper Valley Electric Association.

[11:40:57 AM](#)

TRAVIS MILLION, Chief Operating Officer, Copper Valley Electric Association (CVEA), offered to move quickly through the overview in order to allow more time for questions. He directed attention to slide 2, "CVEA Facts," and explained that CVEA was a member owned, not for profit, cooperative with 3,750 meters, with assets of \$150 million, and with annual revenues of about \$20 million. He relayed that there was a very large service area, about the size of the State of West Virginia, with 600 miles of transmission and distribution facilities, staffed by 44

employees. He shared the map on slide 3, "Service Territory," noting that the majority of the service area falls on the road system.

MR. MILLION shared slides 4 through 8, "Generation Plants." He spoke about Solomon Gulch, the "workhorse of our system" as it generated 55 percent of its energy needs. He reported that it began operation in 1982 and was a 12-megawatt dam storage project. It included a lake at an elevation of about 685 feet that allowed for the back-up and storage of water. He said that water was utilized through penstocks, or pipes, which spun two turbines in the power plant. He explained that these turbines used a lot of flow, although not much pressure, to generate electricity. He added that most of the generation capacity was in the summer, and then the lake was utilized in the winter to allow for a yearly mix which included a 25 percent mix of hydro. He reported that this plant was the dispatch center, that most of the other power plants could be run from this facility, and that it was manned full time. He spoke about the Allison Creek Hydroelectric Plant, completed in October 2016, slide 5, and stated that this was considered a "run of the river project" as the water was diverted through a penstock to the powerhouse, and there was not much storage of water. He pointed out that Allison Creek could only be used when water was available, hence no operation once there was freeze up. He shared that this plant used high head pressure, with low flow, similar to a garden hose. He offered his belief that the 6.5-megawatt capacity would add about 14 percent to the overall hydro portfolio. He explained that there was 1.2 miles of penstock, starting at an elevation of 1300 feet, with the powerhouse at an elevation of 160 feet. He added that this created about 520 psi (pounds per square inch) of water pressure at the power house. He said it was designed to allow for efficient use of the water flows, from 80 cfs down to about 3 cfs (cubic feet per second). He stated that the cost of the plant was \$55 million, with \$23.3 million provided by the state.

CHAIR WOOL asked if the project would have been feasible if the money had to be borrowed.

MR. MILLION replied that it would not have been cost effective if 100 percent of the project cost had to be borrowed. He said it was already commercially operable, first producing on October 5, 2016.

MR. MILLION directed attention to the Cogeneration Project, slide 6, located in the Petro Star refinery in Valdez, Alaska.

He said it was a 5.2-megawatt gas turbine using a less refined liquid fuel, light straight run (LSR), and it became operational in 2000. He acknowledged that the fuel was cheaper but did not generate as much heat, BTUs, and was bought directly from the Petro Star refinery. He said the exhaust heat was then sold back to Petro Star, a good, cost effective process for both entities.

REPRESENTATIVE SPOHNHOLZ asked for an explanation of cogeneration.

MR. MILLION explained that cogeneration meant the utilization of two different sources at the same time, in this case heat and electricity from a turbine, which meant a much higher efficiency. He added that this plant was the winter workhouse, producing about 25 percent of the energy needs.

CHAIR WOOL mused that Petro Star did not want to go into the electrical generation business.

MR. MILLION spoke about the Valdez Diesel Plant, slide 7, operational since 1964 after the earthquake. He reported that there were five diesel reciprocating units ranging from 600 kilowatts to 2.4 megawatts. He added that two of these units were operated remotely from Solomon Gulch, with another two units becoming remotely operated at the end of 2017. He shared that the four oldest units had been replaced with two newer units which almost doubled the efficiency compared with the replaced units. He stated that this plant produced between 3 - 5 percent of the energy needs.

MR. MILLION discussed the Glennallen Diesel Plant, slide 8, which went into commercial operation in 1959, with seven diesel units ranging from 600 kilowatts to 2.8 megawatts. He added that four of these units were remotely operated Solomon Gulch. He stated that this plant produced between 3 - 5 percent of the energy needs. He moved on to slide 9, "Cost per kWh Hydro vs. Fuel," which graphed the blended power from June through May and portrayed the increase in cost per kilowatt hour from summer into winter, peaking in December as most of the water had frozen, which dramatically reduced hydro production. As the water and snow melted, the need for diesel fuel was reduced.

[11:51:07 AM](#)

MR. MILLION reported that there were three transmission substations, and five distribution substations, slide 10,

"System." He said that there was a 106 mile, 138k volt transmission line and more than 500 miles of overhead and underground distribution lines. He stated that there were two offices, the corporate offices in Glennallen with three power plant operators for the one power plant, four linemen, and the office staff; the remote office in Valdez with eight power plant operators for four plants, three linemen and the office staff, slide 11, "Staffing."

MR. MILLION shared slide 12, "Major Issues/Challenges," and stated that the aging of the workforce was a major challenge, as almost 40 percent of the power plant operators and 33 percent of the linecrew had retired in the past three years. He opined that 10 - 20 percent of the staff would retire in the next three to five years; hence, recruitment and the loss of all the experience was a primary issue. He said the age of some of the diesel units, and the need for replacement, was an issue. He reported that there were limitations for the amount of generation due to air quality out of each diesel plant. He shared that the Federal Energy Regulatory Commission (FERC) regulations created some difficulties, as there were necessary regulations that did not pertain to these operations.

REPRESENTATIVE RAUSCHER asked if these were state regulations.

MR. MILLION replied that most of these were federal regulations, although there were some Department of Environmental Conservation and Department of Natural Resources regulations, as well. In response to Chair Wool, he said it was hard to predict if any of these regulations would change in the future. In response to Representative Rauscher, he said there was close work with the Alaska Power Association for a collective voice for smaller projects.

MR. MILLION returned to slide 12 and reported that the cost of liquid fuel increased in the winter months, and consequently the rates went up. He said that the distribution assets were aging, and the cost of maintenance increased. He pointed out that there were always challenges with weather and terrain, the rising cost of labor and parts, and the isolated grid which was not connected to any other utility.

MR. MILLION turned to slide 13, "Major Projects," and shared that there were upgrades on the communications and controls protection systems to bring them up to date. He reiterated that the Valdez plant had received upgrades of more efficient units and there was replacement for a lot of the underground

residential distribution cables. There were more detailed inspections on the transmission and distribution facilities, and there was aggressive clearing of the right of ways. He concluded with slide 14, "What We Need," and said that having funding available for projects and interconnectivity to the Railbelt grid was beneficial. He suggested that a reduced regulatory burden, a reduction in land fees, and streamlined permitting would all be beneficial.

MR. MILLION, in response to Representative Rauscher, said that the majority of the regulatory issues were federal, as many state regulatory issues were driven by the Federal Energy Regulatory Commission.

MR. MILLION, in response to Representative Westlake, said that they were an associate member of a Railbelt membership group, and they all worked closely.

CHAIR WOOL asked about the importance of connection along the Glenn Highway.

MR. MILLION said that the difficulty was for a very expensive project for a very short distance.

MR. MILLION returned to slide 14 and said there had been a 700 percent increase of land use fees from FERC in four years. He asked for any support to bring down energy costs, noting that they did not receive any PCE. He suggested a debt reimbursement program for project funding.

CHAIR WOOL asked about the feasibility for barging in LNG, or other gases.

MR. MILLION replied that they had talked to many LNG shippers and providers, pointing out that there was only a need for 5-10 percent of diesel generation to offset. He said there was research into a dual fuel option to increase efficiencies.

[12:04:05 PM](#)

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 12:04 p.m.