ALASKA STATE LEGISLATURE
HOUSE SPECIAL COMMITTEE ON ENERGY
March 26, 2015
10:22 a.m.

MEMBERS PRESENT

Representative Jim Colver, Co-Chair
Representative Liz Vazquez, Co-Chair
Representative Benjamin Nageak
Representative David Talerico
Representative Cathy Tilton
Representative Matt Claman
Representative Adam Wool

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
Department of Commerce, Community & Economic Development
Anchorage, Alaska
POSITION STATEMENT: Provided a PowerPoint presentation entitled "Alaska Energy Authority: Renewable Energy Fund and Susitna-Watana Hydro," and dated 3/26/15.

SEAN SKALING, Director of Program Development and Project Evaluation
Alaska Energy Authority
Department of Commerce, Community & Economic Development
Anchorage, Alaska
POSITION STATEMENT: Participated in the presentation by the Alaska Energy Authority.

BRYAN CAREY, Project Manager
Bradley Lake Hydroelectric
Alaska Energy Authority
Department of Commerce, Community & Economic Development
Anchorage, Alaska
POSITION STATEMENT: Answered questions during the presentation by the Alaska Energy Authority.

WAYNE DYOK, Project Manager
Susitna-Watana Hydro
Alaska Energy Authority
Department of Commerce, Community & Economic Development
Anchorage, Alaska
POSITION STATEMENT: Answered a question during the presentation by the Alaska Energy Authority.

BETSY MCGREGOR, Susitna-Watana Environmental Manager
Alaska Energy Authority
Department of Commerce, Community & Economic Development
Anchorage, Alaska
POSITION STATEMENT: Participated in the presentation by the Alaska Energy Authority.

ACTION NARRATIVE

10:22:30 AM

CO-CHAIR LIZ VAZQUEZ called the House Special Committee on Energy meeting to order at 10:22 a.m. Representatives Claman, Wool, Nageak, Talerico, Colver, and Vazquez were present at the call to order. Representative Tilton arrived as the meeting was in progress.

PRESENTATION: ALASKA ENERGY AUTHORITY

10:23:18 AM

CO-CHAIR VAZQUEZ announced that the only order of business would be a presentation by the Alaska Energy Authority, Department of Commerce, Community & Economic Development.

10:24:06 AM

SARA FISHER-GOAD, Executive Director, Alaska Energy Authority (AEA), Department of Commerce, Community & Economic Development (DCCED), informed the committee AEA manages statewide programs under its mission: To reduce the cost of energy in Alaska. She

said AEA has the ability to own and operate some projects, but cannot own new projects, except the authority to own and develop Susitna-Watana Hydro was granted in 2011. To carry out AEA's mission, most statewide programs fall under AS 42.45 and the renewable energy programs fall under the statute for energy programs for Alaska (slide 2). The agency has focused on communities by taking a holistic approach, combining renewable energy projects and core infrastructure projects for Rural Alaska. This focus will ensure communities are in a project-ready status so that their basic structure can accept the integration of a renewable project. Internally, AEA seeks to emphasize community development, planning, program development, project evaluation, and implementation (slide 3).

10:26:26 AM

SEAN SKALING, Director of Program Development and Project Evaluation, AEA, said one benefit of the renewable energy fund program is to help achieve the state's renewable goal of 50 percent by 2025. In 2012, the goal was at 24 percent and there is additional wind and hydroelectric (hydro) power not accounted for at this time. Also, in certain regions of the state there has been great progress towards the goal, especially on Kodiak Island and in Southeast, which has 97 percent renewable energy. Another benefit is that the renewable energy fund program helps displace volatile-priced fossil fuels; in fact, about 15 million gallons of fuel per year has been displaced. Another benefit is that the program expands the renewable energy knowledge base by "leaps and bounds" (slide 4).

CO-CHAIR VAZQUEZ asked when the state's renewable energy goal was established.

MS. FISHER-GOAD answered the goal was established in 2010 by House Bill 306 [passed in the 26th Alaska State Legislature].

CO-CHAIR VAZQUEZ asked how "renewable" is defined in regard to this goal.

MR. SKALING responded that renewable is defined in statute for this program as follows: wind, hydro, biomass, woody biomass, geothermal, solar, and an option for any local fuel, such as local natural gas.

CO-CHAIR VAZQUEZ surmised the state definition differs from that of the United States Environmental Protection Agency (EPA), which excludes hydro.

10:31:20 AM

MS. FISHER-GOAD said EPA and the U.S. Department of Energy (DOE) definitions of renewable can include hydro power; however, AEA seeks to better define what federal programs are available for developing hydro power. For example, financing can be available for hydro power, but statistics of renewable energy often do not include hydro power.

CO-CHAIR VAZQUEZ concluded that federal programs will exclude hydro, but for financing and for state purposes, the definition includes hydro.

MS. FISHER-GOAD acknowledged there is no black and white definition; in fact, AEA has identified projects that are best for communities, but that do not quite fit the statutory requirements of the renewable energy fund program either. On the federal level, AEA has found that for financing, certain hydro projects qualify as a renewable resource.

MR. SKALING pointed out that DOE has a strong goal called Hydropower Vision which seeks to utilize hydro by energizing water systems for irrigation and other purposes; however, federal support is limited to certain departments and grant programs. He returned attention to the benefits of the renewable energy fund, noting that the program has a strong technical and economic evaluation process which means the projects are subject to the same vetting process, so that public funds are granted for the best use possible. There is an emphasis on high cost areas and providing regional balance, and eligible applicants also include the transmission of renewables. Mr. Skaling added that projects are funded in phases, beginning with a feasibility study and followed by funding for design and/or construction (slide 5). In 2014, the renewable energy fund program and Kodiak Electric received a joint award from the Clean Energy States Alliance, and he restated that in 2014 - throughout the state - 15 million gallons of diesel equivalent were displaced (slide 6). He provided a funding summary for Rounds I through VII: each round is one year beginning in July, with applications due in September. After Round VIII, about 800 applications will have been received and 185 distinct projects will have been funded, and there are about 125 active grants (slide 7). He displayed a map that showed the grants funded across the state after Rounds I-VII, and which illustrated the regional distribution of the many communities affected by the fund (slide 8). Further, a graph indicated the funds spent by

resource: wind and hydro are approximately 35 percent of the fund, followed by biomass, heat recovery, and heat pump projects (slide 9). Mr. Skaling advised that the renewable energy fund allows sufficient flexibility so that AEA can make adjustments in response to the needs of communities.

10:38:48 AM

REPRESENTATIVE WOOL asked whether there has been any ocean tidal activity.

MR. SKALING responded that there have been resource studies which would go through the emerging energy technology fund; in False Pass, studies show a strong tidal resource, but the issue is how to provide a cost-effective device to serve a very small community.

MS. FISHER-GOAD added that the False Pass project does not fit well into the renewable energy fund, but is a good project for hydrokinetic testing that could be provided through the emerging energy technology fund.

REPRESENTATIVE CLAMAN inquired as to heat projects and heat recovery projects.

MR. SKALING explained that heat projects include biomass; heat recovery projects take excess heat from a small community diesel power system and use it in a nearby building. Heat pumps are direct heat and geothermal projects generally are electric, but they can have a direct use of heat. In further response to Representative Claman, he added that excess wind and hydro energy can also go to heat, but their best use is to produce electricity. Mr. Skaling provided a graph which illustrated the regional distribution of funds from Rounds I-VII (slide 10). The first 44 projects in operation funded by the renewable energy fund in the amount of approximately $314 million, have a net present value (NPV) of $889 million for an overall program benefit cost ratio of about 2.8 (slide 11).

CO-CHAIR VAZQUEZ asked when the program started.

MR. SKALING said the program began in 2008, and grew to its present level of activity. He provided a graph that showed the fuel displaced by renewable energy fund projects in operation, beginning in 2009. In 2013, many projects reached operational stages; it is projected that 20 million gallons of diesel equivalent fuel would be displaced in 2015 (slide 12).

REPRESENTATIVE CLAMAN observed that slides 11 and 12 indicate that wind power activity is highest. He asked for the reason wind has historically outperformed hydro.

10:45:44 AM

MR. SKALING responded that wind power can be developed quickly whereas hydro requires more time for permitting, design, and construction. However, hydro projects are reaching construction at this time.

MS. FISHER-GOAD added that prior to 2008, AEA had federal grants for wind development through the Denali Commission and DOE, thus upfront work was done and some wind projects were somewhat "shovel ready" when the program was established.

REPRESENTATIVE CLAMAN returned attention to slide 8 which indicated there are many wind projects in Western Alaska and in the Aleutian Islands.

MR. SKALING agreed.

CO-CHAIR COLVER directed attention to slide 12 and asked for a description of wind to heat.

MR. SKALING said when a wind project is producing more energy than is needed by a community, the project uses the excess to power an electric boiler in a large building, such as a school.

REPRESENTATIVE WOOL asked which hydro projects reach completion this year.

MR. SKALING answered Whitman Lake Hydroelectric Project, Blue Lake Expansion, and possibly the Gartina Falls project.

CO-CHAIR VAZQUEZ asked for the megawatts produced by each project.

MR. SKALING said Gartina Falls will produce about 450 kilowatts, and he will provide more information.

10:49:54 AM

MR. SKALING provided a graph which indicated the funding, count, and percentage of projects by region. The funding amount and number of projects can vary, particularly when a region has a

number of small, heat projects (slide 13). Round VIII recommendations before the legislature are from projects that have proceeded through the four stages of evaluation: eligibility, technical and economical evaluation, ranking, and regional distribution. In order to fit within the governor's $15 million budget, AEA recommends 34 projects: 18 heat projects and 16 standard projects. The regional distribution formula was adjusted at the suggestion of the Renewable Energy Fund Advisory Committee (REFAC); for example, Southeast Alaska was determined to be overserved and thus was limited to 22.15 percent (slide 14).

REPRESENTATIVE TALERICO asked how many projects are not fully funded due to a funding cap.

MR. SKALING said five.

CO-CHAIR VAZQUEZ questioned what would happen to the projects with limited funding.

10:53:34 AM

MR. SKALING related that one project would require other financing, and the future is unclear about the other projects. In further response to Co-Chair Vazquez, he noted that some projects may be eligible for AEA's power project loan fund, or U.S. Department of Agriculture (USDA), Rural Development, Rural Utilities Service (RUS) funding may be an alternative source.

MS. FISHER-GOAD advised that it was difficult to maintain regional balance within the program's $15 million budget. For the first time, alternative financing is sought when a project becomes ready for construction; in the future, AEA and REFAC may recommend that projects delay, although projects like the one in St. Mary's would be challenged. In further response to Co-Chair Vazquez, she said AEA is working with all five projects that are not fully funded. The AEA power project loan fund is a logical alternative source of funding; however, any project with state participation greater than $5 million needs legislative approval through an appropriation or through an authorization. She offered the Blue Lake Expansion project in Sitka as an example.

REPRESENTATIVE COLVER asked for a description of the top five rated projects in Round VII.

MR. SKALING referred to a report entitled, "Renewable Energy Fund Status Report and Round VII Recommendations," and dated January 2015.

11:00:52 AM

The committee took an at ease from 11:00 a.m. to 11:07 a.m.

11:07:08 AM

MR. SKALING directed attention to pages 10 and 11 of the aforementioned report and said of the top five projects, three are biomass projects, one is a heat recovery project, and one is a wind project. The report provides information on each project's energy source, its recommended phase, funding amounts, and cumulative funding. Additional information is available on AEA's web site. Mr. Skaling returned to the presentation, noting that there are several temperature zones in Alaska, therefore, some areas of the state use significantly more energy than others (slide 15). Round VIII recommended heat projects and standard electric projects, including transmission, were distributed throughout the state (slides 16 and 17).

MS. FISHER-GOAD informed the committee REFAC wanted AEA to emphasize heat projects thus the application process was bifurcated.

11:10:11 AM

MR. SKALING continued that displacing 15 million gallons of fuel per year benefits commercial businesses in rural Alaska because they do not qualify for the Power Cost Equalization (PCE) program, and also benefits communities, schools, and the PCE program (slides 18 and 19). Resource types within hydro power sources are: conventional with storage; run of river; others such as hydrokinetic, tidal, and pumped storage (slide 20). Types of woody biomass are: cordwood boilers, pellet boilers, chip boilers, and others such as bricks and microchips (slide 21). A comparison of biomass technologies was presented (slide 22).

11:14:33 AM

REPRESENTATIVE NAGEAK asked for examples of low- and high-cost fuel.

MR. SKALING explained fuel pellets are manufactured and so are higher cost, and shipping adds cost. He presented information on the Thorne Bay Biomass and Greenhouse project which was very successful (slide 23), and on Kodiak's existing hydro power to which six wind turbines and battery storage were added (slide 24). Power in Kodiak is nearly 100 percent renewable and the residential rates were reduced from 20 cents to 15.8 cents (slide 25). Mr. Skaling concluded that the renewable energy fund is achieving its original goals which are: providing benefits throughout the state; reducing fuel; increasing the knowledge of renewables throughout the state (slide 26).

11:18:11 AM

MS. FISHER-GOAD provided a short history of hydro, stating that hydro has a long history in Alaska, especially in Southeast, and many projects are still being built. In fact, a primary purpose of the Alaska Power Authority - which preceded AEA - was to build, own, and operate the Four Dam Pool Projects which serve Kodiak, Copper Valley, Wrangell, Petersburg, and Ketchikan. In addition, Bradley Lake Hydroelectric Project (Bradley Lake) produces low-cost power for the Railbelt utilities. Hydro provides long-term diversification, promotes inflation-proofing, rivals the cost of coal, is clean, sustainable, reliable, and levels out the volatile cost of power (slide 26). A Susitna hydro project was first studied in the '50s and pursued in the '80s, but was mothballed by low oil prices and long-term natural gas contracts. In 2008-09, efforts to review the project arose, and AEA was funded to evaluate large hydro projects in the Railbelt. A primary decision document identified Susitna-Watana Hydro (Susitna-Watana) as a large hydro project to pursue. In 2011, AEA was funded to obtain a Federal Energy Regulatory Commission (FERC) license. Studies began on the Susitna River and surrounding areas in 2012 (slide 27). Benefits of the project include: provides 50 percent of power to the Railbelt region which has 80 percent of the state's population; provides 1,000 jobs during peak construction; provides long-term diversification; provides stable electric rates for 100 years; enables Alaska's 50 Percent Renewable Goal; maximizes the value of fossil fuels; annually displaces 1.3 million tons of CO2 (slide 28).

REPRESENTATIVE CLAMAN asked whether the economics of the project are viable without the goal of 50 percent renewable.

11:24:32 AM

MS. FISHER-GOAD said the renewable goal is not a factor in the feasibility of the project; in fact, the renewable goal set the stage for the policy and programs established by the legislature in 2010. The renewable goal is important to Alaskans; however, AEA has not suggested that the project would be funded by general fund appropriations to AEA, but that financing would follow the example of Bradley Lake, which received a 50 percent upfront capital contribution by the state, and 50 percent was debt financing. In 2021, the utilities will have an excess payment which is assumed to be roughly the same amount as the amount to be paid back to the state. Bradley Lake was used as a financing model; however, AEA's financial advisors have advised that financing "for Susitna-Watana is, is assume debt financing from the get-go including the eventual payback of the state of Alaska for the original investment, including what, what we're currently funded for, and expending, for the licensing development."

REPRESENTATIVE CLAMAN asked how much it cost to build Bradley Lake.

MS. FISHER-GOAD estimated the cost was $385 million. In further response to Representative Claman, she said the cost to build Susitna-Watana is over 10 times that of Bradley Lake and is estimated at $5.6-$5.7 billion, including preconstruction and licensing.

REPRESENTATIVE CLAMAN questioned whether Bradley Lake is the biggest hydro dam built by the state, in terms of cost.

MS. FISHER-GOAD said Susitna-Watana would be the largest project; Bradley Lake is currently the largest hydro project in Alaska.

11:27:56 AM

REPRESENTATIVE WOOL observed that the proposed production capability of the [project] exceeds the Railbelt's consumption, and asked what would be done with the excess power.

MS. FISHER-GOAD said the utilities - if the project becomes a reality - will retire their old generation facilities. She said the project is now "right-sized to be 50 percent of the Railbelt." In the '80s, the project was projected to produce 1,600 megawatts from two dams.

CO-CHAIR VAZQUEZ asked for information related to the capacity of Bradley Lake.

11:29:47 AM

BRYAN CAREY, Bradley Lake Project Manager, Bradley Lake Hydroelectric, AEA, said the rated capacity used by FERC for Bradley Lake is 120 megawatts. In further response to Co-Chair Vazquez, he said the project came online in 1991, following four to five years of construction. In further response to Co-Chair Vazquez, he advised that Bradley Lake provides power to the following six utilities: City of Seward, Homer Electric, Anchorage Municipal Light & Power, Chugach Electric Association, Matanuska Electric Association, and Golden Valley Electric Association.

CO-CHAIR VAZQUEZ asked whether there is an operating agreement between the utilities to share energy.

MR. CAREY stated there are many agreements between the utilities and AEA related to payments for power, and how the power is shared; all of the utilities receive energy and pay on a basis of percentage shares which were fixed in power sales agreements.

CO-CHAIR VAZQUEZ asked for the amount of megawatts projected for Susitna-Watana.

MS. FISHER-GOAD said the projected energy is 2,800 gigawatt hours annually; the capacity is 459 megawatts based upon the generators and turbines. In further response to Co-Chair Vazquez, she said the projected construction period is about seven and one-half years.

MR. CAREY confirmed that the construction period is approximately seven and one-half to eight years, and the time period is "probable, more on achievable scenario, slightly aggressive ...."

REPRESENTATIVE WOOL compared the output and construction cost of Bradley Lake with the proposed Susitna-Watana project, and surmised that the "dollar per megawatt is quite a bit more for this project, correct."

MS. FISHER-GOAD answered that she would present financing examples that analyze cost per kilowatt hour or capacity; however, the two projects may not be an apples-to-apples

comparison, due to inflation. She offered to provide further information.

11:34:56 AM

REPRESENTATIVE WOOL suggested economy of scale would be a factor.

MS. FISHER-GOAD agreed that all parties want to know what the project will cost per kilowatt hour. The estimates in this presentation are based on 2014 dollars, and the calculations are not inflation-proof.

REPRESENTATIVE CLAMAN restated the question and observed that Susitna-Watana is eight to ten times the expense of [Bradley Lake] but will not provide four times the megawatt capacity. Bradley Lake produces 120 megawatts and Susitna-Watana is estimated to produce 459 megawatts.

MS. FISHER-GOAD remarked:

> ... what we've been using, it's not, it's not just looking at the capacity of the generators that, that are there, it's actually looking at the amount of energy that's produced, and so the more, the number to use that I don't think is being recognized is the 2,800 gigawatt hours per year that the project is estimated to produce. ... It's actually about the energy generated.

REPRESENTATIVE CLAMAN asked for the gigawatt generation from Bradley Lake on an annual basis.

MR. CAREY answered that the annual generation of Bradley Lake is approximately 380,000 megawatt hours, which is about one-seventh of that proposed by Susitna-Watana.

11:37:38 AM

MS. FISHER-GOAD returned to the presentation and informed the committee that the project is currently within a FERC integrated licensing process. Three environmental field seasons and 58 FERC-approved studies have been completed. The initial study report was filed in June 2014, and tech memos have been filed in support of the initial study report. The engineering feasibility report was released in January 2015, which refined cost estimates and provided additional design information.

Because of [Governor Bill Walker's Administrative Order No. 271 (AO 271) executed 12/26/14] directing AEA not to spend nondiscretionary funds, AEA requested, and FERC granted, a licensing abeyance; were it not for AO 271, AEA would be holding a series of meetings related to study reports, filing further information with FERC, and soliciting stakeholder comments (slide 29).

CO-CHAIR COLVER asked for the amount of project funding on hand, and how much is unencumbered.

MS. FISHER-GOAD explained that from authorized funds of $192 million, as of 12/31/14, $19 million was encumbered. There are essential tasks to be completed such as removing radio collars from animals and field work to remove equipment in compliance with a pause in the project schedule, and budgeted personnel costs. Nondiscretionary funds at the time of AEA's response to AO 271 are about $26-$27 million. She noted that of the encumbered funds, many have been expended; however, $6.6 million are available pursuant to AO 271.

CO-CHAIR COLVER questioned whether AEA's project personnel costs are in its operating budget.

MS. FISHER-GOAD advised that AEA has staff devoted to the project and some accounting and procurement staff working within the Alaska Industrial Development and Export Authority (AIDEA), DCCED. In further response to Co-Chair Colver, she pointed out that if the $6.6 million were made available for other non-project purposes, AEA plans to "button up" the project by December 2015; however, if the $6.6 million is not removed from the project, AEA would continue to pursue the project and best preserve the investment that the state has made in the project. Ms. Fisher-Goad said there will be continued discussion with the administration and legislative committees.

11:44:01 AM

REPRESENTATIVE NAGEAK observed that energy is needed for the growing population, and so Alaska can continue to extract its natural resources. Furthermore, millions of dollars have already been spent. He suggested that power from the project could be sent to many villages and save money on fuel.

REPRESENTATIVE CLAMAN inquired as to how many staff are dedicated to Susitna-Watana.

MS. FISHER-GOAD said seven staff are dedicated to the project and the percentage of shared services is unclear. In further response to Representative Claman, she explained that all AIDEA employees and their work for AEA is accounted as separate personal services, although there is a separation of duties and supervision. This is done for efficiency and economy of scale. In further response to Representative Claman, she said AEA would need until 12/31/15 to responsibly suspend the project, and she elaborated.

REPRESENTATIVE CLAMAN asked how much it would cost to "wind it down most effectively as possible."

MS. FISHER-GOAD clarified that the $6.6 million is for after 12/31/15, in compliance with AO 271. She returned to the presentation and described the environmental study process, that is in the study implementation phase, and which would be followed by an impact assessment and a process to develop the protection, mitigation, and enhancement measures (PMEs) for the project (slide 30). Last year, AEA had more than 200 people in the field and completed data collection for 13 FERC-approved studies (slide 31). Regarding economic impact, she provided the following: 65 percent of workers were Alaska residents; many workers had hydroelectric expertise; $7 million were earned in Alaska wages in 2014; in 2013, $6 million were spent in goods and services in the Ma t-Su Valley (slide 32).

CO-CHAIR COLVER requested that AEA provide the firms that were hired and their contract amounts, disciplines, locations, and local hire component.

MS. FISHER-GOAD turned to the remote siting of the project which requires significant work prior to filing a comprehensive license application. A majority of the studies have been to understand the Susitna Basin and the impact of the project, including PMEs. Past work has advanced the science in order to understand the area, and has been done in close cooperation with the Alaska Department of Fish & Game (ADF&G), the University of Alaska Fairbanks, and the Department of Natural Resources (slide 33).

REPRESENTATIVE CLAMAN asked for AEA's official position on whether Susitna-Watana will enhance salmon habitat.

11:55:01 AM

WAYNE DYOK, Project Manager, Susitna-Watana Hydro, AEA, informed the committee there are several attributes that may help the salmon fishery: reducing turbidity could have a beneficial impact; managing water temperature and providing temperatures that are appropriate for the fishery; managing flows to better meet the needs of salmon. He said AEA is in the process of assessing these aspects through modeling, and its official position is that there could be possible benefits, but they are unknown until the analyses are complete.

CO-CHAIR COLVER returned attention to slide 33, noting that 4,500 tissues samples were submitted to the ADF&G Gene Conservation Lab, and questioned whether genetic analyses on the samples were prefunded, as the lab has an extensive backlog. He expressed concern about completing the genetic analyses and cataloguing the data.

MS. FISHER-GOAD offered to provide the requested information. She referred to the wildlife surveys done on moose, caribou, and Dall's sheep, noting that AEA and ADF&G need to complete studies of the animals that have been fitted with radio collars (slide 34). Turning to the cultural resources of the area and human uses of the region, she related that Ahtna are the primary traditional users of the area; furthermore, AEA has not completed its studies of the Dena'ina (slide 35). A map of the Susitna River illustrated the basin (slide 36).

12:00:14 PM

BETSY MCGREGOR, Susitna-Watana Environmental Manager, AEA, stated that AEA has implemented fish distribution and relative abundance studies, collected water sediments, bed load and hydrology and ice processes data, and calibrated models for baseline conditions. Based on the results, similarities to the '80s were found, and areas of potential impact were defined (slide 37). The average annual flow contributions provide context for the relative portion of the total Susitna River flow impacted by the dam, and for significant influences of potential project effects related to flow, sediment, water quality and ice processes. Above the dam, the Susitna River contributes 16 percent of the total Susitna River flow. In the middle river, tributaries contribute another 4 percent, the Chulitna River contributes approximately 18 percent, and the Talkeetna River contributes approximately 8 percent. These two rivers significantly influence the river downstream, and the main stem of the river quadruples below this confluence. The Yentna River contributes 40 percent of the total, which is why

potential impacts of the dam to river resources below the Yentna River will be insignificant (slide 38). Ms. McGregor further explained that the average annual bed material load contributions show both the water and sediment balances for the middle and lower Susitna River are similar to information gleaned in the '80s. The Chulitna River is the dominant source of gravel, and the Talkeetna River contributes a significant quantity as well. In fact, the Yentna River is the largest contributor of both water and bed load material with the bed load dominated by sand. Referring to earlier comments regarding the impact to salmon, she observed that the quality of salmon substrate will not be negatively impacted in the Susitna River main stem by the dam, because the upper Susitna River is not a source for this spawning substrate; water in the middle river will be clearer due to the dam capturing the silt (slide 39). To understand the impact of the dam on fish, it is necessary to understand what species of fish in life stages use the river, their locations, and their habitat. Of the total Susitna River, 95 percent of the total river escapement for Chinook, coho, and chum salmon occurs in the lower river below the three rivers' confluence, and primarily within the tributaries of the lower river. For sockeye salmon, less than l percent of total escapement enter the middle river. Distribution is important because the impact to riverine processes and the quality and quantity of habitat will be attenuated in the lower river; however, the majority of spawning occurs in tributaries which will not be impacted by the dam (slide 40). An illustration provided more detailed information on the spawning distribution of Chinook salmon. She pointed out that less than 5 percent of the total escapement pass above Devils Canyon, which is an impediment for all anadromous fish except Chinook salmon (slide 41). In 2014, AEA employed sonar at the dam site which revealed that 24 fish greater than 50 centimeters in length passed above the dam site.

12:06:24 PM

MS. MCGREGOR presented an illustration of more detailed information on the spawning distribution of coho salmon. The total escapement is to the lower river basin with less than 6 percent spawning in the main stem lower river. Approximately 5 percent escaped to the middle river watershed, with less than 0.5 percent spawning in the main stem middle Susitna River; no coho salmon have been documented above Devils Canyon (slide 42). There followed a chart illustrating the radio telemetry studies regarding Chinook salmon and which indicated salmon that were tagged at Curry, and subsequently were found at Devils Canyon,

above Devils Canyon, and above the project site. She noted that the canyon has three impediments (slide 43).

CO-CHAIR COLVER expressed his understanding that in the '80s, one of the problematic issues was that a large reservoir would impede the crossing of the Nachena caribou herd. He asked whether there was research on the ability of the herd to migrate through the area.

MS. MCGREGOR related that AEA is funding an ongoing ADF&G study of the Nachena and Delta caribou herds and their migration, productivity, and calf survival, augmented by global positioning system (GPS) radio collars. Results compiled by ADF&G thus far are found in the initial study report. In further response to Co-Chair Colver, she said she would provide a copy of the report.

MS. FISHER-GOAD displayed a comparison of Susitna-Watana and Hoover Dam, with the goal to look at the differences between capacities and estimated annual generation, in order to determine cost per kilowatt hour (slide 44). The project base cost estimate is $5.6-$5.7 billion, and the cost estimate will not be updated again until more geotechnical work is done (slide 45). Financing options include USDA RUS financing for up to 50 percent, blended rates, and the Bradley Lake model of state investment upfront with repayment (slide 46).

12:12:20 PM

MS. FISHER-GOAD continued to a comparison of the cost of power from Susitna-Watana and the cost of power from natural gas over time. Although hydro is more expensive in the beginning, the cost of hydro is inflation-proofed, and costs decrease, unlike natural gas generation (slide 47).

12:13:32 PM

CO-CHAIR VAZQUEZ asked the committee to submit questions in writing. She related her earlier involvement in the project.

12:14:06 PM

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 12:14 p.m.