ALASKA STATE LEGISLATURE
HOUSE SPECIAL COMMITTEE ON ENERGY
March 6, 2012
3:05 p.m.

MEMBERS PRESENT

Representative Neal Foster, Co-Chair
Representative Dan Saddler
Representative Pete Petersen
Representative Chris Tuck

MEMBERS ABSENT

Representative Lance Pruitt, Co-Chair
Representative Bob Lynn
Representative Kurt Olson

OTHER LEGISLATORS PRESENT

Representative Tammie Wilson

COMMITTEE CALENDAR

PRESENTATION: TOK BIOMASS PROJECT

- HEARD

HOUSE BILL NO. 323
"An Act relating to the Alaska energy efficient home grant fund; and creating a grant program for converting homes in regions designated as particulate matter nonattainment areas to efficient home heating systems."

- BILL HEARING POSTPONED TO 3/13/12

HOUSE BILL NO. 336
"An Act establishing an energy assistance program in the Department of Revenue to issue an energy voucher to Alaska permanent fund dividend recipients; and relating to the analysis and recommendation of an energy assistance program by the governor."

- BILL HEARING POSTPONED TO 3/13/12

HOUSE BILL NO. 357

"An Act establishing the sustainable energy transmission and supply development program in the Alaska Industrial Development and Export Authority."

- BILL HEARING POSTPONED TO 3/13/12

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

DAVE STANCLIFF
Stancliff Consulting
Tok, Alaska
POSITION STATEMENT: Speaking as a consultant for the Alaska Gateway School District and Alaska Power & Telephone (AP&T), presented information on Tok and Tok School, and answered questions.

JOHN "CHRIS" MAISCH, State Forester; Director
Division of Forestry
Department of Natural Resources (DNR)
Fairbanks, Alaska
POSITION STATEMENT: Gave a PowerPoint presentation entitled, "Woody Biomass Update" dated 3/6/12, and answered questions.

THOMAS DEERFIELD
Dalson Energy, Inc.
Anchorage, Alaska
POSITION STATEMENT: Speaking as consultant to Alaska Power & Telephone (AP&T), described his task and answered questions.

TODD POAGE, Superintendent
Alaska Gateway School District
Tok, Alaska
POSITION STATEMENT: Presented a short film that depicted a fire in Tok and the history of the biomass project at Tok School.

ACTION NARRATIVE

3:05:53 PM

CO-CHAIR NEAL FOSTER called the House Special Committee on Energy meeting to order at 3:05 p.m. Representatives Foster, Tuck, Petersen, and Saddler were present at the call to order.

Representatives Pruitt, Lynn, and Olson were excused. Representative T. Wilson was also present.

PRESENTATION: TOK BIOMASS PROJECT

3:06:47 PM

CO-CHAIR FOSTER announced the only order of business would be a presentation on the Tok Biomass Project.

3:07:07 PM

DAVE STANCLIFF, Stancliff Consulting, said he was a consultant for the Alaska Gateway School District and Alaska Power & Telephone (AP&T), and also the vice-president of the Tok Chamber of Commerce. He informed the committee that Tok is in the unique position of having a tremendous amount of resource that threatens its safety; however, the community has found a way to harness that resource for the benefit of its school. Biomass is now heating Tok School and providing its electricity, whereas the school district used to spend more money on heating and lighting than on classroom instruction. Mr. Stancliff said Tok is not connected to other electrical grids in the state, and was forced to find solutions to the high cost of energy. He said the first part of his presentation would be through a DVD video entitled, "Alaska's Green Gold," produced by the Division of Forestry, Department of Natural Resources (DNR), followed by updates on projects, and the measurable results from funding previously provided by the legislature. Mr. Stancliff concluded that these results are not only related to power, but to the wellbeing of the Tok community and to the education of its children, because Tok School now has a music teacher and a counselor paid by the money saved using renewable energy.

3:10:56 PM

There followed a video presentation from 3:10 p.m. to 3:28 p.m.

3:28:49 PM

CO-CHAIR FOSTER commended the video.

3:29:18 PM

JOHN "CHRIS" MAISCH, State Forester; Director, Division of Forestry, DNR, began a PowerPoint presentation entitled, "Woody Biomass Update," dated 3/6/12. Mr. Maisch said his presentation

would provide a perspective on biomass projects that are in other areas of the state. Slide 1 was a map that depicted woody biomass projects currently operational, under construction, under design phase, and under feasibility study throughout the state. He pointed out that the first larger scale chip project that came online was at the Craig School on Prince of Wales Island, followed by Tok School, and Delta High School in Delta Junction. At this time, Tok School is the only combined heat and power operation. Also, there are many GARN boiler projects - using solid wood that is hand fed twice per day - in Tanana, Gulkana, Coffman Cove, and Thorne Bay. Mr. Maisch stressed that there are many types of systems and their scale should be sized for the resource, the community, and the heat load. Slide 2 was a picture of the Delta High School Wood Chip Boiler Space Heating Project which was completed for $200,500,000 with an appropriation of $200,000,000 from the Alaska Energy Authority (AEA) and a capital appropriation from the legislature for $800,000. The boiler is fueled by white spruce wood chips from Logging and Milling Associates' slab wood waste material delivered at a cost of $64.20 per ton.

3:32:34 PM

MR. MAISCH explained that biomass is measured as a green ton or a bone dry unit. Because the slab wood is already processed in a kiln, the wood chips are 18 percent moisture content (MC), which is drier than normal. Slide 3 was a picture of the Hurst Boiler installed at the Delta School. The school's 2011 heating oil consumption was 24,000 gallons, and on a British thermal unit (Btu) basis, one ton of chips at an 18 percent MC equals 106 gallons of fuel oil, thus the cost savings is about 85 percent. Slide 4 was a picture of the Sealaska Corporation wood pellet boiler that heats the Sealaska Plaza building, and of wood pellets being delivered to the storage bin, which auger feeds the pellets by an automated system. Turning to the role of the Division of Forestry in woody biomass development, he stressed that the forestry division must ensure current forest inventories in the state forest and other lands that are managed by the division. For AEA, the division must calculate the wood supply for proposed projects to ensure the supply is sustainable and economic over time, and write a report. The division also helps communities with jobs, reduces wildland fire risks, improves habitat, and offers local energy solutions. Finally, regarding the Alaska Power & Telephone (AP&T) project, the division is developing a 25-year, long-term contract for woody biomass to supply the proposed two megawatt (MW) power facility

in Tok, including the best interest finding and a timber sale that would commit a resource for that facility.

3:36:10 PM

THOMAS DEERFIELD, Dalson Energy, Inc., said he is representing Alaska Power & Telephone (AP&T). His company is part of a team contracted by AP&T to conduct a full scale, investment-grade feasibility study of a two MW combined heat and power (CHP) facility in Tok. Alaska Power & Telephone is a leader in utility conversion to renewable energy, converting from almost 100 percent fossil fuel generation in 1999, to over 70 percent renewable energy power in 2012, mostly generated by small hydropower. Several years ago the utility began to study biomass CHP operations around the world and in the Lower 48. Currently, the upper Tanana area is an isolated power grid, with a two MW generation station in Tok that pays the highest fuel cost for power generation in the state at over $4 per gallon, yielding power at over $.50 per kilowatt (kW) hour. The utility has researched alternatives such as small hydro, hydrokinetic, wind turbine, and solar, all of which have limitations. A prefeasibility study of biomass CHP "looked positive," so the utility and AEA are funding further study. Some of the benefits of biomass are that it is on-demand power - not dependent upon wind or sun - that is fueled by local fuel and local labor, keeping approximately $1,000,000 per year in the community to pay for local feedstock supplied by local harvesters. Also, the cost of power will be stable and significantly lower; perhaps 30 to 40 percent lower than fossil fuel. There is state support for the project through AEA, and federal support is possible - with quick action - through Rural Development, the Farm Service Agency, and the Forest Service, U.S. Department of Agriculture, and the National Renewable Energy Laboratory (NREL), U.S. Department of Energy.

3:41:40 PM

MR. DEERFIELD cautioned against comparing the project to conventional energy because renewable fuels cannot compete with the Btu density of fossil fuels, but fossil fuels are no longer cheap. The cost of operation and maintenance (O&M) is higher with all forms of biomass; however, O&M also creates local jobs. He advised that the feasibility study is dependent upon the long-term biomass harvest contract from the Division of Forestry mentioned by the previous speaker; the need is for 25,000 green tons harvested per year for 25 years to secure the financing for the project. In addition, his company is working on site review

and technology review, which looks at all of the commercially available and reliable forms of small-scale CHP technology appropriate to Tok's climate. Permitting, environmental, and financial analyses will follow, and the report is expected by the end of June.

3:43:30 PM

TODD POAGE, Superintendent, Alaska Gateway School District, said he has been the superintendent for five years.

There followed a video presentation from 3:44 p.m. to 3:54 p.m.

3:55:09 PM

MR. POAGE said the low-speed electrical turbine is now operational and is generating 20 kW of electricity. Through further testing and development, it is hoped one-half of the school's electricity will be generated by the turbine, in addition to the by-product of heat used for space heating.

3:56:13 PM

CO-CHAIR FOSTER observed the school does not benefit from power cost equalization (PCE).

MR. POAGE said correct.

REPRESENTATIVE TUCK asked how many schools are served by the Alaska Gateway School District.

MR. POAGE answered there are seven schools and a correspondence program that serve approximately 400 students in the district. In further response to Representative Tuck, he explained the turbine and boiler described are a source of power for Tok School. However, the district has applied for a grant from AEA in the amount of $750,000 to run a heat loop to the multi-purpose building in Tok.

REPRESENTATIVE TUCK asked how the electrical wattage was increased from 20 kW to 40 kW.

MR. POAGE explained bigger air fans were added to keep the combustion cooler, so that all of the wood is burned and there is no smoke. In further response to Representative Tuck, he said the boilers will last for 25 years to 35 years, and they can be reconditioned.

3:58:09 PM

REPRESENTATIVE SADDLER asked for the source - and the timeline - to obtain federal funds.

MR. DEERFIELD advised 2012 requests for proposal (RFP) from federal agencies are open. Historically, communities look to NREL and USDA agencies such as the Farm Services Agency, the Forest Service, and Rural Development.

REPRESENTATIVE SADDLER asked whether harvesting this amount of spruce would lead to any environmental or forest health detriments.

MR. MAISCH assured the committee this is a sustainable activity, with an allowable cut to ensure the fuel supply is available in perpetuity. There may be opposition from a minority viewpoint. In further response to Representative Saddler, he confirmed this harvest is black spruce; however, in Southeast, the fuel may come from harvested old growth timber, which leads to opposition. Furthermore, in the Interior, fire danger is a factor; in fact, spruce is known to firefighters as "gasoline on a stick."

REPRESENTATIVE SADDLER asked for per unit costs of the chippers and boilers.

4:01:58 PM

MR. STANCLIFF said the chipper was $375,000, plus the log loader. The chipper can be shared with other communities and schools. He pointed out all of the schools that are adding biomass equipment are trying to make the equipment and training compatible to save money. In further response to Representative Saddler, he said in order to prevent air pollution, pellets, briquettes, and dry cured wood all are about 12 to 14 percent MC, ideally. However, in a biomass boiler, it is desirable to have chips with a 20 percent to 50 percent MC.

4:04:17 PM

REPRESENTATIVE T. WILSON asked whether the university project to measure trees growing in Tok is still underway.

MR. MAISCH said the University of Alaska (UA) has an active Growth and Yield program. The Tok experimental forest is a unit

within the State Forest and there is an ongoing agroforestry species trial comparing the growth of lodgepole pine with that of spruce during drier climate conditions. He noted financial support has been requested for this type of research in biomass. In further response to Representative T. Wilson, Mr. Maisch explained that the 25-year contract the division is working on now uses its authority to sell timber for a period of up to 25 years. The division must write a forest land-use plan for the area, a best interest finding, and a draft contract for the purpose of negotiation. He expected this work to be completed in draft form for public comment in June.

4:07:00 PM

REPRESENTATIVE T. WILSON asked whether this process is required for each project. For example, how does the division work with AEA and advise different communities on which fuel and equipment is best for them.

MR. MAISCH answered that the division practices due diligence. The role of the division is on the supply side: to supply the raw materials for these types of projects. The division also has expertise on the types of fuels and harvesting systems, which is the forest management aspect of a project. At the beginning of the project under discussion, the division recommended AP&T engage a forestry consultant so that there was a common language between the parties. The division is also capable of data analysis and can provide technical assistance to AEA to ensure that the fuel supply is sustainable, available, and economic for a specific project.

4:11:09 PM

MR. POAGE, in response to Representative T. Wilson, said the district's electrostatic precipitator came from Germany, but was purchased through another company. Every two weeks the ash is easily dumped from barrels underneath.

MR. MAISCH suggested that Representative T. Wilson could tour Sealaska's electrostatic precipitator.

REPRESENTATIVE T. WILSON has heard that installation was difficult.

Due to technical difficulties, the committee took a brief at-ease.

REPRESENTATIVE T. WILSON understood the installation of electrostatic precipitators in chimneys would help the air quality in Fairbanks.

MR. POAGE restated his earlier response for the record.

4:12:13 PM

REPRESENTATIVE PETERSEN expressed his belief that to apply for an AEA grant, one needs to have a financial feasibility study. He then asked whether the trees left standing grow faster after the undergrowth is cleared.

MR. MAISCH said yes; reducing competition for water, sunlight, and nutrients in a stand of trees encourages growth in height and diameter. However, clearing underbrush is mainly done to create a defensible space around a home, and make a safe place for firefighters to work. In further response to Representative Petersen, he added that the trees left are more esthetic, or can be harvested by the homeowner for firewood.

4:14:43 PM

REPRESENTATIVE PETERSEN asked for confirmation that biomass boilers can use a mix of wood chips and solid waste.

MR. STANCLIFF said yes. He added that wood chips can also be mixed with coal, and this process is called co-firing. Locally, there is concern among harvesters of firewood, house logs, and saw logs, about the loss of wood supply; however, working roads to the biomass supply will increase access to other commercial trees. The typical biomass fuel is four-inch to eight-inch diameter trees, and "is not going to eliminate these other multiple-uses of our wood resources."

REPRESENTATIVE PETERSEN observed Eielson Air Force Base uses a mix of coal and garbage in its boiler.

MR. MAISCH, in response to Representative Petersen, said in hazardous fuel mitigation areas there is a 25-year to 30-year short rotation in spruce, but normally the cycle in the Tanana Valley State Forest for spruce is 100 years, and 80 years for birch and aspen. For areas where the division has taken black spruce out of a fuel break, aspen sprouts first, and spruce takes over at age 60 years, thus the intent is to mow down the hardwoods on a 20-year to 30-year cycle, and also create good browse for moose.

MR. STANCLIFF added that the nutrient layer down to 18 inches can be sterilized by a very hot fire, causing regrowth and regeneration to be slower than if man cuts down the trees. Worldwide, biomass research has found that planting trees - which accelerates regeneration - is carbon positive, even though biomass is considered as carbon negative. He reminded the committee that in Tok, the trees will burn in wildfires if they are not cut.

4:20:05 PM

REPRESENTATIVE SADDLER asked whether the Department of Natural Resources (DNR) area plans for the best use of land encourage or inhibit this action.

MR. MAISCH said no. The division works with the area plans as they are updated; for example, the Tanana Basin Area Plan has been divided into the Yukon Tanana Area Plan and the Eastern Tanana Area Plan. The Tanana Valley State Forest is not affected by an area plan, and there is pending legislation to designate more land to the State Forest. The division seeks to aggressively participate in updating the area plans to ensure that forestry is discussed.

4:21:46 PM

REPRESENTATIVE SADDLER asked for the best classification for land in order to facilitate woody biomass power generation for heat.

MR. MAISCH responded that land in a State Forest is the strongest way, or land classified for forestry use in area plans, although classifications are subject to change over time. In further response to Representative Saddler, he said there is no prohibition, but there are co-classifications, such as "allowed use." In Tok, the lands are classified as settlement lands and concurrence must be obtained from the Division of Mining, Land & Water, DNR, for access.

4:23:45 PM

CO-CHAIR FOSTER asked whether there are obstacles to using driftwood.

MR. DEERFIELD explained there was a pilot project in Stebbins to test both the long-term sustainability of volumes of driftwood,

and the ability of boilers to safely and cleanly combust wood that has been embedded with salt. The questions have not yet been resolved.

REPRESENTATIVE PETERSEN asked whether underbrush could be cleared on designated parkland to protect it from fire.

MR. MAISCH recalled the division has done hazard fuel mitigation on some parkland, in concurrence with the Division of Parks and Outdoor Recreation, DNR; however, these projects have not been a large commercial harvest.

4:26:36 PM

REPRESENTATIVE SADDLER asked what is required from the legislature for continued success.

MR. STANCLIFF listed many projects in Vermont and opined they are successful because the [Vermont] Division of Forestry had the resources available to stay ahead of the demand. He opined in Alaska the economic and social benefits of biomass will cause demand for these systems to grow quickly. He also cautioned that funding must be limited to sound projects without failures. In addition, his experience is that the DNR office in Tok is not fully staffed.

4:29:25 PM

REPRESENTATIVE PETERSEN suggested adding garbage to lengthen the sustainability of the biomass material available.

MR. STANCLIFF advised that everything burns at some temperature; in fact, in Sweden, utilities collect the refuse, process it, and generate power at minimum expense to the utility. This is not an opportunity for Tok, but is for Anchorage.

MR. MAISCH informed the committee the division has submitted a capital budget request in the amount of $200,000 for the Tok Long-Term Timber Sale for Biomass Energy.

MR. DEERFIELD opined that the state will be heating all of its rural schools - and the majority of its community buildings - with biomass, as fossil fuels escalate in cost. Although the infrastructure is not in place in Alaska, the technology is widely established in the Lower 48, Canada, and Europe. He compared the time needed to reforest with the time needed to produce oil or gas.

4:34:16 PM

REPRESENTATIVE TUCK referred to slide 1 of Mr. Maisch's presentation and asked whether the eight operational facilities in Alaska have to import wood pellets or are self-sustaining with local wood.

MR. MAISCH said they are all self-sustaining operations, using waste wood from sawmills or local wood from vendors.

REPRESENTATIVE TUCK asked where Tok School gets its power now.

4:35:20 PM

MR. STANCLIFF stated that prior to the biomass conversion, and to a degree now, Tok School and the 1,200 residents of Tok got power from the AP&T main grid located about 20 miles from the center of town. This power supply is approximately 1.5 megawatts (MW), and when there is a fire, power goes out and there is no communication possible from the communication tower to the Public Department of Public Safety, the Department of Transportation & Public Facilities, and other emergency services. Now, however, the independent power system from the school can back up the communications system. The power from the school will have to be balanced with AP&T on the grid to ensure that the cycles are the same.

4:37:10 PM

REPRESENTATIVE TUCK asked whether there will be an opportunity for the school to sell power on the grid during the summer.

MR. POAGE advised the peak demand of the school is 150 kilowatts (kW), and the system seeks to produce between 50 kW and 65 kW which is one-third of the peak demand rate. He said there is no agreement with AP&T, but AP&T allows the school to run the electricity it produces through its line into the school, thus it is not a closed circuit. The ultimate goal is to "have some type of net metering in place." In further response to Representative Tuck, he said peak demand in the summer is about 80 kW, and "at this time, none of what we've been creating has gotten past Tok School."

4:39:04 PM

ADJOURNMENT

There being no further business before the committee, the House Special Committee on Energy meeting was adjourned at 4:39 p.m.