

Alaska Wind Working Group

Wednesday, April 6 2022

11:30AM - 1:00PM

***** ONLINE ONLY *****

11:30 AM CALL TO ORDER

ATTENDEES

Kate Wedemeyer, individual,
Tom Wolf, Individual
Roderick Phillip, Puvurnag Power
Bill Rotecki - Ketchikan
Rob Roys, Launch Alaska
Natalie Hanson, Nuvista
Mark Masteller, UAF-Bristol Bay Sustainable
Energy program.
Matt Perkins, Alaska Renewables
Vince Cruz, RNT Profession Services
Margaret King
Mark Glick, Hawaii Natural Energy Institute
Jeremy VanderMeer, ACEP
Matthew Bergan, Kotzebue Electric Association
Bertha Prince, Nuvista
Kevin Owens, RNT
Katie Conway, Energy Program Manager,
Denali Commission
Bailey Gamble, ANTHC
Katia Ryan - Huntley and Associates
Vince Cruz
Teresa Rule
Chandler Kemp, UAF-Bristol Bay,
Kieshawne Green, VI Energy Office
Elise DeGeorge, NREL
Gerald Oxereok, community of Wales IGAP
Dan Bishop, GVEA
Chuck Huntley Huntley & Associates llc
Kay Kreiss, Transition Sitka
Brian Rule, RNT Professional Services
Brent Petrie, PETRIE and Associates
Chris Rose, REAP,
Scott Stiker, AVEC

Aldine (Dean) Reynolds, BOEM Alaska
Jack R Newell, BOEM, Alaska,
Michael Haller, BOEM Alaska
David Thomas, HEA
Deanna Hunter Wesco Distribution
Katherine Rule, RNT Professional Svc.
Petla Noden
Gary Newman, GVEA
Michael Haller, BOEM Alaska
Wales Igap program,
Joel Immaraj, BOEM Alaska
Kari Gardey
Josie Hartley, AEA
Neil McMahon, DOWL
Erin Mckittrick
Tony Zellers, MEA
Phylcia Cicilio ACEP
Forest Button, AVEC
Rob Jordan, REAP
Nicholas Goodman, Cyrq Energy
Jack Newlee
Robyne – KUAC
Daisy Huang, ACEP
Jack Colonell
Aldine Dean
Kate Ayers
Kent Barkhau, Woodstock
Fisheries LLC
Lee Henrikson

PROJECT UPDATES

KOTZEBUE WIND FARM UPDATE

(Matt Bergan, Kotzebue Electric Association)

- 1) Matt discussed how much the new solar array is producing. It's spring time with lots of blue sky cold windy days. In the middle of day running about 75-80% renewable. That includes both wind turbines full power at 900kw each and 500 kw of solar for about 2.3 MW of renewable. (Peak load is 2.8MW.) The solar panels replaced 8 66kw turbines, which were decommissioned. Solar has been a nice addition - low maintenance, and low headaches. Reached full power output with the solar in early March. In the middle of sunny days getting 3-4 hours of full 500 kw power from solar
- 2) Discussed a surprise event that tested the system. A few days ago, blew a fuse on the distribution line going out to wind farm and lost all 2.3MW of renewables at once. It overloaded generator. The lithium ion battery kicked in at 800-900kw for a second then dropped to 600Kw. It caused a small outage but the kept the system up. It was good to see how the system worked.

Roderick Philip: Asked about getting system back up after the fuse blew, and noted Kong has had issues with a turbine contactor that fried

Matt: Did lose one phase on the line going out to wind turbines, but all the protection systems worked. When all 3 phases came back, everything went back to normal. The turbines restarted and solar came back. KEA put bigger fuses in and no damage to system. Took about half hour to one hour to replace the fuse. One phase was out so part of town was partially off, but rest of town was still on. Maybe had 12 or 20 customers that were out of power, or had partial power. Also noted that Kotzebue has had an issue with contactor in NW 100 turbine.

Bailey Gamble: Asked about cause of the fault?

Matt: Cause was a water leak at airport that blew the underground line on the line going through the airport. So KEA rerouted power coming back from the wind farm. So it wasn't technically a fault, but sheer overload of the fuse. Fuse was rated at 60amps but had been running 85-90 amps. Lesson learned: check distribution systems.

3) FUTURE PLANS FOR KEA

- Looking at going diesels off for long periods of time
- Adding 2 more EWT turbines
 - Current turbines are 900KW. New turbines (EW-61) would go to 1MW. Current turbine is EW-54. EW-61 has slightly longer rotor diameter, and optimized electronics and optimized for lower winds which is good for Kotz. Should be able to capture more power overall.
- Increase size of energy storage from 1MW to 4MW

- Timeline: Kotzebue has the design so basically shovel ready. Waiting to see what happens with federal funds.

Bill Rotecki: Asked about wind speed regime for new EWT?

Matt: Wind regime in Kotz is Class III. Avg. wind speed is 13 mph with peaks TO 60-75mph. Do have a fair amount of time from 8-15 mph. EWT also has turbines designed for turbulent high speed regimes

Josh Craft: Noted the new EWTs are a class III turbulence machine where the previous model was a class II turbulence machine. This allows larger rotor diameter which allows more production at lower winds, but doesn't operate at a lower wind speed than the older model.

4) Matt highlighted an issue to work on with transmission/distribution system.

More and more with renewables the distribution system is becoming the Achilles heel. Kotz is using distribution system for a transmission system and that is becoming a problem. The transmission line is occasionally also a distribution line in terms of getting renewable from the site 4.5 miles from town back to town. Pushing 150-200 amps at 15 kv and trying to do it with high reliability

Petla Noden: Question about penetration levels and balancing the system

Matt: Kotz is high penetration. Can run at 75%, occasionally hit 85%+ at night. Still using a diesel dispatch control system, dropping smaller gen sets as wind increases. Battery enables this by providing spinning reserve. Sometimes one turbine trips off, and battery picks up the load to help the diesel to keep power on. Our renewables don't fluctuate a lot, the change is typically slow enough to bring on a generator. Can switch gen sets pretty quick. 3MW generator can be turned on in about 30 seconds, and can switch back to 1MW generator in another 30 seconds.

Discussion about amending PCE to fix it so more renewables don't result in financial penalty to community. Matt agreed that when produce more renewables, the result is the community gets less PCE

KONGIGANAK AIRFOIL BLADE UPDATE (Rod Phillip, Manager Puvurna Power Company)

- 1) Roderick gave a history on the project: Puvurna just signed off on grant agreement for blade replacements. Current blades were originally designed in 1980s in Denmark, used in California, then refurbished and brought to Kongiganak and installed in 2012. NREL did testing to specifically improve the blades of these turbines to be more aerodynamic. The new blade types have benefits that include reduced sensitivity to turbulence and increased annual energy output of 20-30% without increased load on tower or drive train.

Puvurnaqa will install the new blades on 2 of the wind turbines in Kongiganak. The blades have a tip brake design for overspeed protection which should improve current design. The power company maintenance crew has access to the crane to use local personnel to put on the new blades and will compare performance to past performance to validate performance of new blades.

Timeline: Was expecting blades this fall, but may be later.

Bailey: Question about how ETS stoves and how they have been working.

Roderick: We have 50 thermal stoves. Three weeks ago, the community had 2 weeks of diesels off and thermal stoves were charged the whole time. Do require some maintenance. Maintenance includes fan motors, sometimes radio antenna and radio chips. Then also annual maintenance. The wind techs go to each home and clean up thermal stoves, vacuuming the dust, etc.

Mark Masteller: Asked about lifetime of turbines

Roderick: Estimated 20 years before needing to be refurbished.

Petla: Asked how the system is managed, manually or automatic?

Roderick: SCADA is automatic. When wind is blowing the system first reduces diesel to the minimum load which is 60kw. Then it charges lithium ion batteries up to 27%, then starts dumping energy to electric thermal stoves. Then will switch back to charge batteries until 80%. Then turn off turbines.

Roderick: Noted he has also received grant for DOE to put in 400kw of solar, hoping to install this fall.

Stephanie: Asked if new blades will bring more diesel off time or just increased production overall.

Roderick: Average load this winter was about 180kw. On colder days go up to over 200kw. Summertime load is about 140kw during day. Hopefully the blades will save a lot of diesel fuel. Good time with diesel prices skyrocketing.

POLICY UPDATE

(Chris Rose, Renewable Energy Alaska Project)

PCE policy: Nothing is going on with PCE right now. But may have chance to look at this before the next legislative session.

Electric Reliability Organization (ERO): Railbelt is now required to have an ERO. The primary function of an ERO is: Establish and enforce reliability standards and interconnection and non-discriminatory open access standards. Cost recovery method for all new transmission. It doesn't deal with the current pancaking of transmission tariffs, or economic dispatch but it could be a platform for discussion on this. Regional Planning is other big function. It requires an IRP to be developed by the ERO that covers both generation and transmission.

On March 25, the Railbelt Reliability Council (RRC) submitted a 300-page proposal to become the ERO. RCA now has 6 months to certify application of the RRC which would become the ERO for the Railbelt. Application includes bylaws, articles of incorporation and gives the RCA an idea how the RRC would handle things like setting up standards, enforcing standards, developing an IRP, etc. RCA has an open docket on. Deadline for public comment is April 22 or to intervene.

Jeremy: Is it possible for the RCA to come back and ask for changes?

Chris: The RCA will likely allow the application to be certified. Only other choice for RCA is to set up an ERO on their own.

RPS standard. Governor introduced legislation in early February. The RPS targets the Railbelt but could indirectly impact rural Alaska by keeping electricity costs down in Railbelt which impacts PCE and by stimulating greater markets for renewables in Railbelt, which could increase access to people who could help with renewables around the state.

Standard requires 80% of electricity of Railbelt by 2040 with interim goals of (20% 2025) (30% by 2030) (50% by 2035) Unclear if this will make it through this session. In House Energy Committee now. Really important to weigh in if interested in this issue.

Additionally governor's office reached out and asked NREL to study how achievable 80% by 2040 is. Study found can get to 80% without impacting grid reliability and save \$400-500 million in natural gas costs per year. NREL did not have time to do analysis of how much it would cost to get to that 80% level.

Chris is working on finding some funding to continue that study. Alan Mitchell, a respected economist in Alaska, did a prelim study looking at mostly the wind and solar scenario. His prelim analysis showed the cost would be \$3.2B to build the wind and solar along with a little bit of hydro and would save \$6.7B in natural gas. That excludes cost upgrades for transmission and battery storage because those are base cases of actions that will need to take place anyway. For those who support an RPS, he urged people to write letters to governor

Gary Newman: noted AlaskaPower.org has information on the RRC/ERO. Initial capitalization estimated at \$10M among utilities to get it going. Also asked about timing and noted 20% by 2025 might be hard to meet to implement some requirements of RPS.

Chris: Agreed the timing may be tight. Likely the ERO will be a year off before up and running and an IRP might take 2-3 years. But the Railbelt is already close to 20% including hydro. Rules allow projects 15MW and lower to be built now so that may get us close. The ERO through the IRP process will essentially execute any RPS passed by the legislature. It will be the ERO's job to use that RPS number as one of its planning constraints.

Chris: Also noted there is language offering waiver or exemption from compliance with dates of specific goals.

Railbelt Decarbonization Study (Jeremy Vandermeer, AK Center for Energy & Power)

- ACEP, in partnership with Hawaii Natural Energy Institute (HNEI), is starting Railbelt Decarbonization pathway study. Office of Naval Research is the source of funding. Goal of project is to be unbiased and trusted assessment of what's possible of how best to work toward decarbonization including the economics. This is not directly tied to the RPS, but similar. Thinks the economics will favor renewables in the end.
- He noted this will also help build in-house capacity at ACEP to run production cost modelling. Also develop accurate model of the Railbelt and have it as a platform for other studies.
- Probably looking at 3-4 scenarios to start with them. Will have those likely at end of May and solicit public input on those. First focus is on commercially available proven technologies. But will leave the door open to consider other options like a hydrogen hub and advanced nuclear technologies.
- Focused on the electric grid which can include electric heat, but not looking at green fuels or transportation. Good time for stakeholders in wind industry and others interested in this to get in touch with ACEP as they develop scenarios

Mark: Are you also looking at Cook Inlet tidal or geothermal?

Jeremy: Aren't looking at those yet. But if there's a strong advocacy for that, ACEP might consider it.

Denali Commn. Funding opportunity and workplan updates (Katie Conway, Denali Commission)

- Started in January in this position after Tom Wolf retired. Katie previously spent 10 years at AEA
- FY 23 workplan. There will be public hearing April 21st on Denali Commission workplan.
- Also Denali has a Draft workplan for infrastructure funding bill funding. Bulk of the funding each year will go to infrastructure fund, but the process still being resolved. <https://www.denali.gov/now-accepting-public-comments-on-our-draft-fy2023-work-plan/>
- Early next week there will be funding opportunity for energy program. Not large amount, but could help with small amount of funding.

ROUND THE ROOM UPDATES

Stephanie: Upcoming July 26-29 IPS Connect Conference in Cordova, AK.

Mark Masteller: Chandler Kemp just started at UAF Bristol Bay campus.

1:00PM ADJOURN