

Dalson Energy

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President

Residential & Community Scale Biomass Systems

Lessons Learned & Urgency Required

Copper Valley Energy Summit

Glennallen, AK

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Urgency

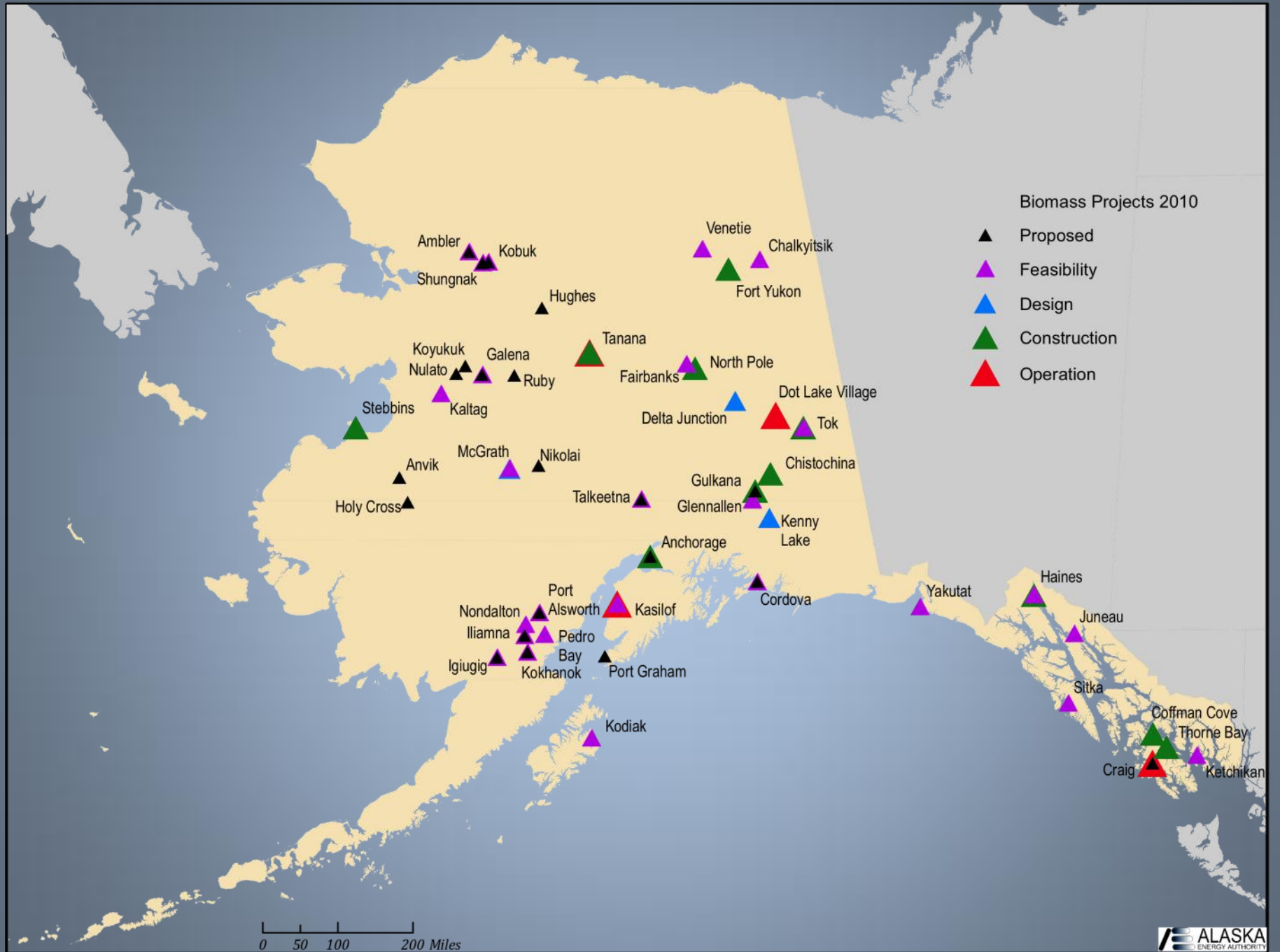
- Alaska is a leader in energy urgency
- Conventional Energy will inexorably be more expensive over time
- Communities need to exploit stimulus, incentives and subsidies
as if there were no tomorrow!
- There may not be...



Alaska snapshot

- 200+ Rural (Bush) communities
- Distributed Woody Biomass Resources
 - Millions of tons spread over millions of square miles
- Upriver supply – downriver users
 - Opportunities for river transport (back to the future)
- Driftwood fuel supply (salt + sand)
 - Coastal communities with no other biomass
 - River Logging
- Isolated power grids





Flashy versus Deployable

- USDA asked us to survey biomass-to-liquid fuel options in Alaska
- Our Response = Wrong question!
- Biomass thermal is deployable + needed now
- Small-scale Densification is deployable
- Small Scale CHP is deployable now
- Micro Scale CHP – nearly commercial
- BTL Liquid fuel – still on the horizon



Keep in Mind

- Comparisons to “conventional” energy systems
 - Cheaper is not likely possible (not yet!)
 - Renewable fuels will never “compete” with the BTU-density of fossil fuels
 - Externalized costs not counted with fossil fuels
 - Stable fuel costs are more valuable than “cheaper today”
- Efficiency & Conservation
 - EE&C are not sexy, but essential first step
- O&M costs
 - O&M (operations & Maintenance) is codespeak for JOBS



Current projects

- Boiler in a Box (aka GarnPac)
 - “Plug and Burn” deployment
 - ‘Water Battery”
 - Other Systems in a Box
- Galena district heating system
- Small scale densification projects
 - Pucks, Briquettes, Pellets
 - Storage, Transportation issues
- Spent Grain boiler in Juneau
- Community-Scale Biomass CHP (Tok)



Tok Biomass Project Technology Review



CONFIDENTIAL

March 7, 2012

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Community Scale CHP

- Upper Tanana Biomass CHP grid
- 2MWe for Tok, Tanacross, Tetlin & Dot Lake
- 8-10 MMBtu thermal for local use (!)
- 25,000 green tons per year
- Long term biomass harvest contract
- Financing, permitting, and patience
- Current system \$3M/year diesel \$0.52/kWh

Residential Scale

- Stoves
 - Cordwood, bricks
 - Pellet
 - Boilers
 - Hydronic systems
 - HELE versus LEHE
 - OWBs
 - Hot & Fast versus Slow & Cool
 - Thermal battery



Boiler in a Box - 40' Container



GARN WHS 2000



B in a Box – Framing + Electrical



Short term vision

- Every Interior school has a cordwood hydronic boiler system, and greenhouses!
- Every road-system school has a pellet, woodchip or cordwood heating system, and greenhouses!
- Every forested community has a regional-scale dryer and briquetter
- Upriver communities river-barge bricks to downriver villages

Forces are Conspiring

Peak Oil, Peak Gas, Peak Coal, Peak Uranium

- Recommended author: Richard Heinberg
- *“The End of Growth”*

Eye opening, page turning, must read

- Recommended author: Bill McKibben
- *“Eaarth”*

Aging infrastructure & growing demand

- Recommended author: Lester Brown (Worldwatch)
- *“Plan B 4.0”*





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