TECHNICAL SOLUTIONS

Strong vendor relationships and many feasibility studies have brought the project to technical functionality; crucial for long-term success.

- Strong 24/7 support from Fink Machines (boiler supplier) for ongoing troubleshooting and operations
- Extensive feasibility and impact studies with GNWT Energy and Natural Resources (4+ years)
- Challenges with consistent heat supply to buildings with large cordwood; led to confusion with customer

PROJECT OBJECTIVES

- Heat two local buildings with biomass (eventually wood chips)
- Create local jobs (e.g., harvesting willow, heat plant manager)
- Improve local economy by retaining dollars in community
- Develop skills, knowledge, and capacity in Fort McPherson
- Reduce dependence on imported fuels, reduce GHG emissions
- Enable a more self-reliant economy, enhance community pride
- Test the economic feasibility of a local biomass industry
- Understand price of local wood chips, vs. imported oil or pellets
- Apply traditional knowledge, resources and values through establishment of a local sustainable energy industry

CHALLENGES ENCOUNTERED

- Establishing supply chain (transition from pellets to woodchips)
- High capital cost for project development and implementation
- Limited local capacity (e.g., accounting, maintenance/operations)

FACTORS FOR FUTURE SUCCESS

- Continued community support, influenced by traditional connection to harvest of wood for heating, drying meat and fish, and shelter.
- Ongoing focus on new local employment, through harvesting, processing, operating biomass system, with a local supply chain
- Expand pilot project; always start small and only expand when ready
- Continued support from project champions within community (Johnny Kay), government (Bryan Pelke, Matt Kennelly), and NGOs such as the Arctic Energy Alliance (John Carr, Margaret Mahon)

POLICY INNOVATION

The Fort McPherson biomass project was developed with supportive policy promoting use of clean biomass heating across northern Canada.

- NWT Energy Action Plan: reduction of fossil fuels, reduce energy costs, use of renewable energy (2013)
- Financial support from AANDC ecoENERGY, GNWT, and CanNor’s Targeted Investment Program

LOCAL CAPACITY

Since inception, the project has focused on local economic development by establishing skills and jobs in the biomass industry.

- Leadership from project champion and enthusiastic support from Teetl’it Gwich’in Council members
- Community education and training workshops for residents with Arctic Energy Alliance and GNWT ENR
- Local wood chip supply chain under development and expected to replace pellet fuel in 2016/2017
The Fort McPherson biomass project can be viewed in three layers (policy, solutions, and capacity), each equally important to scaling up renewable energy solutions in remote communities.

All three ‘dimensions’ of systems change should be addressed at the same time to enable transformation of a complex sector.

**Policy and Regulations**

- Understand problem, facilitate controlled experimentation, enable market development for solutions

**Solutions**

- Understand local needs, brainstorm with community members, integrate with policy and regulation for effective solutions

**Project capacity**

- Understand issues, experiment to discover solutions, own and share solutions

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**Understand**

- NWT Energy Action Plan (2013) focuses on reducing cost, increasing renewables
- NWT Greenhouse Gas strategy sets targets for 2020/2030

**Co-Create**

- Engagement with GNWT and project champion (and TGC)
- Government funding applications with support from local champion
- Finalize contract details with Public Works (GNWT)

**Prototype**

- Funding from CanNor Targeted Investment Program, Government of NWT, AANDC ecoENERGY
- Finalize contract details with Public Works (GNWT)

**Transition and Scale**

- Expand contracting to include Band Council office
- Strong ongoing commercial support from Fink Machines on technical challenges

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**Outcomes:**

- Private financing
- Market mechanisms
- Evolution of policy

**Outcomes:**

- Industry leadership
- Tech standardization
- Competitive market

**Outcomes:**

- Local empowerment
- Sustainable revenue
- Scaled-up projects

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**Fort McPherson Biomass District Heating Project**

The Fort McPherson biomass project can be viewed in three layers (policy, solutions, and capacity), each equally important to scaling up renewable energy solutions in remote communities.

All three ‘dimensions’ of systems change should be addressed at the same time to enable transformation of a complex sector.

**Understand**

- Learning and knowledge transfer at conference
- Feasibility studies with GNWT (support from AEA)
- Local project champion (J. Kay) attends biomass conference

**Co-Create**

- Launch vendor engagement with Fink Machines
- Start small (pilot project) and scale strategically
- Local Gwich’in community engaged in traditional wood harvesting, heating, cooking, processing.

**Prototype**

- Installation and commissioning of mixed-fuel biomass boiler
- Design for fuel flexibility and allow for multi-fuel supply.

**Transition and Scale**

- Transition from pellets to local woodchips
- Heat more buildings in Fort McPherson (band council office, homes) with biomass
- Develop more local capacity for boiler operations & maintenance

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- Engagement with GNWT and project champion (and TGC)
- Government funding applications with support from local champion

**NWT Energy Action Plan (2013) focuses on reducing cost, increasing renewables**

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