

## Government of the Northwest Territories' Past and On-Going Initiatives

Since the release of the *2013 Action Plan* the GNWT has funded or undertaken the following key initiatives:

### **Biomass Heating Systems**

The GNWT is a recognized leader in biomass heating systems. To date, the GNWT has installed 22 biomass plants and small scale district heating systems in public building across the NWT. These boilers combined will burn approximately 2,000 tonnes of wood pellets displacing approximately one million liters of heating oil per year with an annual greenhouse gas reduction of 2,600 tonnes.

This year biomass heating will be installed in the following schools:

#### *Biomass Boiler, Chief Albert Wright School*

PWS will install a 150 kW wood pellet boiler in the Chief Albert Wright School in Tulita. This project will displace 72,000 liters of heating oil, resulting in a GHG reduction of 194 tonnes annually. The project will save the GNWT approximately \$15,800 of heating fuel in the first year.

#### *Biomass Boiler, Chief T'Selehye School*

PWS will install a 150-200 kW wood pellet boiler in the Chief T'Selehye School in Fort Good Hope. This project will displace 79,715 liters of heating oil, resulting in a GHG reduction of 218 tonnes annually. The project will save the GNWT approximately \$18,400 of heating fuel in the first year.

### **Capital Asset Retrofit Fund**

The Capital Asset Retrofit Fund (CARF) was established by the GNWT to upgrade existing GNWT buildings that are not energy efficient. As of 2014-15 the GNWT saves \$1.48 million annually on its utility bills due to this program. The upgrades reduce operating costs and GHG emissions. CARF projects have involved upgrades such as efficient lighting retrofits, heating, ventilation and air conditioning control upgrades, increased insulation in walls, door and door seal replacements, window replacements, and efficient plumbing fixtures.

To date, over 35 facilities in 23 different communities across the NWT have had energy retrofits.

### **Programing Through the Arctic Energy Alliance**

The GNWT has significantly increased funding to the Arctic Energy Alliance (AEA) over the past several years. Energy efficiency and conservation measures are generally the best solution to reduce

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energy use and greenhouse gas emissions. The AEA has recently opened regional offices in Hay River, Inuvik, Norman Wells, Whatì and Fort Simpson to better serve residents of the NWT. The GNWT also just funded an electric vehicle pilot project with AEA to assess the impact of the extreme climatic conditions of the NWT, and to help determine the potential for this technology to be used in the NWT.

The AEA recently initiated a new program aimed to support energy efficiency upgrades to community governments. In 2014, AEA delivered energy audits of forty-six community government buildings in eight communities. The AEA identified two hundred and forty actions community governments could undertake that would pay for themselves in less than five years.

The AEA also has the following programs available to NWT residents:

- Energy efficiency Incentive Program: provides incentives for residents to invest in energy efficient products;
- Commercial Energy Conservation and Efficiency Program: aimed at helping businesses make energy conservation and efficiency investments; and
- Alternative Energy Technology Program: supports residents and communities in making investments into renewable energy sources such as solar.

### **Energy Efficiency Upgrades for Public Housing**

The Northwest Territories Housing Corporation (NWT HC) is committed to continuously improving the energy performance of its housing stock. To support this NWT HC is installing solar panels to supply energy to operate the mechanical and electrical systems in its units NWT HC owned housing units and seniors' complexes. This initiative will reduce greenhouse gas emissions and associated electricity costs.

Completed and ongoing projects include the following communities:

- |                  |                    |
|------------------|--------------------|
| 1. Inuvik;       | 4. Fort McPherson; |
| 2. Fort Simpson; | 5. Aklavik; and    |
| 3. Hay River;    | 6. Fort Liard      |

Solar panel projects are proposed for public units in:

- |                    |                         |
|--------------------|-------------------------|
| 1. Fort Good Hope; | 4. Fort Simpson;        |
| 2. Norman Wells;   | 5. Fort Providence; and |
| 3. Whatì;          | 6. Łutselk'e            |

### **Colville Lake Solar**

Construction of the first utility scale Solar-Battery-Diesel project in the NWT commenced construction in 2014-15 fiscal year. Colville Lake now has 135 kilowatts of solar panels as well as a

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battery bank and controllers allowing it to reduce reliance on diesel and reduce greenhouse gas emissions.

### **Jean Marie River Advanced Metering Monitoring**

Fifty advanced electrical meters will be installed in selected buildings in Jean Marie River in 2015-16. Advanced meters collect information about electricity use behaviours that can help better manage how electricity is supplied and allows for improved efficiency of the diesel plant.

### **Wind Energy Feasibility in Inuvik and Yellowknife**

Wind monitoring near Inuvik has confirmed excellent wind potential. A secondary wind site at “The Inuvik High Point” closer to the community also shows promise and monitoring will be in place this fall.

Two sites with good wind energy potential have also been identified north of Yellowknife. The Snare transmission system could accommodate from 2 to 6 megawatts of wind energy. Two years of wind data is required to design an appropriate system.

### **Liquefied Natural Gas Conversion in the Thermal Zone**

Liquefied Natural Gas (LNG) is successfully displacing diesel in Inuvik at a lower cost, while reducing greenhouse gas (GHG) emissions in the Town of Inuvik. A preliminary investigation has identified the road connected communities of Fort McPherson, Fort Simpson and Fort Liard as having the best potential for LNG. Tuktoyaktuk may also be a viable candidate for LNG once the highway is completed from Inuvik.

The GNWT has done significant work investigating the feasibility for a modular gas plant and LNG storage facility in Fort Simpson. The project package will be available for the consideration of the 18<sup>th</sup> Legislative Assembly.

### **Power Plant Residual Heat-to-Electricity Potential**

The use of diesel generators remains one of the most reliable ways to produce electricity in NWT communities. However, diesel generators produce significant heat that is not being used. This residual heat can be used to optimize electricity produced. The study will select a diesel community with significant residual heat available for capture, determine the electrical generation potential using a residual heat technology and develop the business case to consider the cost of the install and the corresponding fuel savings to see if heat-to-electricity is worth doing.

### **Light-Emitting Diode (LED) Streetlight Conversion Project**

This project will convert all 4,000 high pressure sodium streetlights in Northwest Territories Power Corporation (NTPC) thermal communities to LED streetlights. Each current 100 watt streetlight costs a community an average of \$60 per month. LED streetlights cost \$20 per fixture per month and provide the same amount of light using less power.

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Conversions have been completed in Gamètì and Tulita, Tuktoyaktuk, Whatì, Jean Marie River, Inuvik, Fort Simpson, Łutselk'e, Délįnę and Fort Good Hope.

In 2015-16 NTPC is planning to convert the following communities:

1. Fort Liard;
2. Wrigley;
3. Nahanni Butte;
4. Fort McPherson;
5. Aklavik;
6. Paulatuk;
7. Sachs Harbour;
8. Tsiigehtchic; and
9. Ulukhaktok

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