BIOENERGY FACTS AND FIGURES

Pellet Project

- Partnership with the Wood Pellet Association of Canada and the Government of Canada through Western Economic Diversification's Community Economic Diversification Initiative.
- The system consists of a Viessmann 400kW pellet boiler that provides primary heat to the I.K. Barber Enhanced Forestry Laboratory.
- It uses about 150 tonnes of wood pellets per year and the pellets are currently being donated by Pacific Bioenergy, which operates a pellet plant in Prince George.
- The system incorporates the most advanced air emission filtration system of any pellet installation in North America.

Grand opening of the Bioenergy Plant – March 18, 2011

Biomass Gasification Project

- Features gasification technology provided by Nexterra Systems of Vancouver.
- Funded by the Public Sector Energy Conservation Agreement, the Innovative Clean Energy fund, and the Knowledge Infrastructure program.
- Fuel is sawmill residue provided by Lakeland Mills of Prince George, a family-owned sawmill within the city limits. The trees are harvested within a 70km radius of Prince George and primarily used for lumber production.
- About 8,000 tonnes of fuel are used per year, producing 80,000 gigajoules of energy.
- The facility was designed by Hughes Condon Marler Architects. It was built by IDL Projects Inc. of Prince George.
- The system was designed to produce emissions on par with heating systems that use natural gas.

Awards

"Top Campus **Sustainability** Programs in North America: UNBC and Harvard"
- The Association for the Advancement of Sustainability in Higher Education

"Newsmaker of the Year 2011"
- Northern BC Technology and Innovation Awards

"Excellence in Architectural Design"
– City of Prince George

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UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

LEED Platinum: A First for BC Universities

What LEED Means

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System® encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

LEED is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. It provides building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance.

LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:

- sustainable site development
- water efficiency
- energy efficiency
- materials selection
- indoor environmental quality

LEED certification categories include silver, gold, and platinum. **The Bioenergy Plant is the first university building in BC and the first building in the North to achieve the Platinum certification.**

The Building

UNBC's Bioenergy Plant is 1000 square metres and houses a control room and research laboratory in addition to the gasification technology. The construction cost was about $15.7 million. .

LEED Points

✓ Natural landscape – non water
✓ Water efficiency of building
✓ Building Energy Efficiency – HVAC and electrical
✓✓ Green Power
✓ Construction waste recycled
✓ Recycled content of materials in building
✓ Regional materials used – wood, concrete with high ash content
✓ Low VOC materials in building
✓ Use of natural light
✓ Green housekeeping
✓ Greenguard furniture
✓ Education program – brochure, display, and video
✓ LEED-accredited professionals in the design
✓ Fundamental Building System and Best Practice commissioning

Pending the CaGBC review and approval

What We've Done

Sustainable Sites

The goal of sustainable sites is to reduce the damage caused to the local ecology by the construction process. Measures taken to reduce the impact on undeveloped land include designing the building footprint to reduce the overall construction site size, reducing the negative impacts on water and air quality through the use of erosion control strategies, reducing the heat island effect by using light coloured roofing materials, and taking advantage of public transportation to reduce the parking lot size.

Water Efficiency

The purification of municipal water along with the infrastructure required to get the water to its destination requires mechanical equipment that in turn uses energy. Potable water usage was reduced by eliminating the use of potable water for landscape irrigation and by maximizing water efficiency through the use of low flow toilets, faucets, and shower heads. We anticipate a reduction of over 27% in water use compared to the LEED baseline case.

Materials and Resources

The process to create building materials through extraction, processing, and transportation pollute the air and water, and use natural resources. The Bioenergy Plant used over 16% (by cost) recycled content and over 25% of regional materials. The site recycling program kept approximately 55% of construction waste out of the landfill.

Energy Efficiency

The Bioenergy Plant uses electrical energy to run the lights, to run HVAC systems and to run the many mechanical systems involved with campus heating. The Bioenergy Plant reduces energy consumption by using high efficiency electrical devices like high efficiency electrical motors that turn mechanical equipment and lighting systems that turn themselves off when a room is no longer occupied. The energy design predicts a 60% reduction in energy use compared to the reference case in Canada's Model National Building Code.

Indoor Environmental Quality

Since we spend a majority of our time indoors, air quality has a large effect on an occupant's health and productivity. All the regularly occupiable spaces of the building have good ventilation, control of contaminants such as volatile organic compounds (VOC's), dust and pollen control, and access to daylight views.

Innovation & Design Process

The building industry continually evolves as new technologies are introduced to the market and new strategies are developed. In order to make use of the latest innovations, the Bioenergy Building design team included LEED-accredited professionals who are up to date on the most recent developments.

Premier Christy Clark speaks at the Grand opening of the Bioenergy Plant, March 18, 2011.