

First Nation Fuel Ethanol Complex

A Renewable Fuels Initiative



FIRST NATION
ETHANOL DEVELOPMENT
CORPORATION

Purpose of This Presentation

- To describe an ethanol plant/complex project that is currently being developed
- To present some of the challenges and ways in which those challenges can be addressed
- To provide an overview of the opportunities that an ethanol plant/complex can create for First Nations

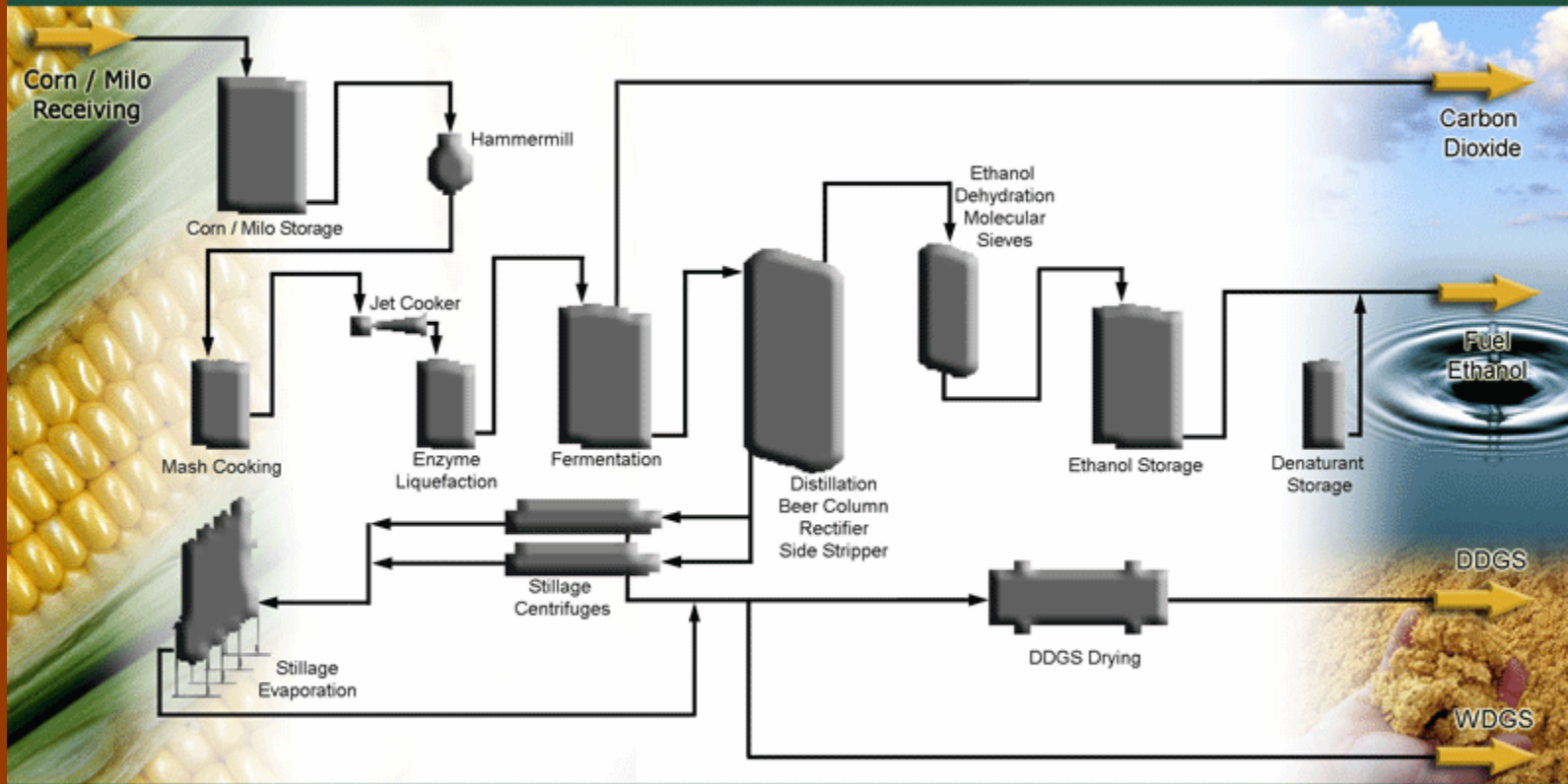
Our Vision for an Ethanol Complex

- An ethanol plant which produces:
 - Fuel ethanol for gasoline mix
 - CO₂ for carbonated beverage industry, greenhouses and pressurized applications such as renewing mothballed oil wells
 - Distillers Wet Grain (DWG) and Distillers Dry Grain and Solubles (DDGS) for animal feed
 - Steam to heat plant, office buildings and greenhouses
- A First Nation technical training school
- A greenhouse for vegetable produce
- A bio-diesel plant
- Extraction of corn oil prior to fermentation

Phase I Focus: An Ethanol Plant

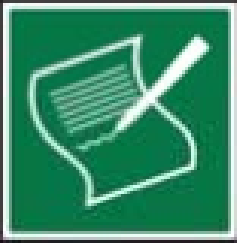
ETHANOL PRODUCTION

from Dry Milling



The Phasing of the Vision

- Phase I
 - Fuel ethanol production
 - CO₂ production
 - DWG/DDGS production
- Phase II
 - Tech school
 - Greenhouses
- Phase III
 - Bio-diesel plant
- Phase IV
 - Production improvement e.g. corn oil extracted for sale prior to ethanol production



A First Nation technical training school





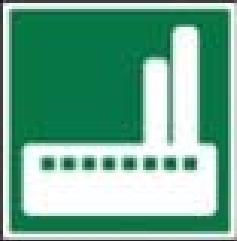
Steam to heat plant, office buildings and greenhouses





A hydroponic greenhouse





A bio-diesel plant



Support for Feasibility of the Vision

- A pre-feasibility study
- Supply and demand figures
- Interest from First Nations

The Pre-Feasibility Study

- Carried out by BBI Biofuels International – the leading authority in renewable fuel production
- Reported highly promising results:
 - Assessed three potential sites, all feasible, on First Nation land
 - Indicated sufficient feedstock availability in the area
 - Indicated an excellent market for ethanol and the by-products
 - Indicated a potential return on investment of over 25%

Supply and Demand

- Government mandate for ethanol use
- How much is needed
- Market analysis

Government Mandate

- Kyoto Accord has set out standards for the reduction of greenhouse gases, some of which come from car exhaust
- Among other measures, Canada is responding by:
 - Incentives to motorists to use E10 (gasoline with 10% ethanol mix)
 - Incentives to businesses to develop plants that produce fuel ethanol for gasoline mix
 - Incentives to car manufacturers to produce more environmentally-friendly and fuel-efficient cars
- Ontario is responding by requiring an average 5% ethanol in vehicle fuels by 2007 and 10% by 2012

How Much Ethanol is Needed?

In Canada:

- 1.8 billion litres by 2007, not considering potential exports
- 3.6 billion by 2012, again not considering potential exports

The Market for Fuel Ethanol

- 36 billion litres of gasoline are consumed in Canada each year
- With an average blending 5% requirement, 1.8 billion litres of ethanol will be needed
- At 10% it will be 3.6 billion litres.
- The current ethanol production capacity for Canada is 212 million litres annually with another billion litres coming on stream.
- Ontario's production capacity is 173 million litres, with approximately an additional billion litres recently approved in Phases I & II of the Ethanol Expansion Program
- Now is the time to act while incentives and demand are high to enable us to be leaders in the field

What is Needed to Make This Happen?

- Land
- Financing
- Sale of Ethanol and By-Products
- Purchase of Feedstock (Corn)
- Project Approvals

The Land

- Requires at least 50 acres, preferably 100 acres
- To be located suitably on First Nation land:
 - With proximity to major highways and rail lines
 - Not immediately adjacent to residential areas
 - Appropriately serviced

Financing

- The cost for the complex is approximately \$100MM (\$70MM for the ethanol plant of about 120 million litres/annum capacity)
 - Senior Debt Financing through the banks has been assured
 - Equity Financing by First Nations as well as capital markets
 - Provincial incentives and funding e.g. Ontario Ethanol Growth Fund
 - Federal incentives and funding e.g. EEP I & II

Product and By-Product Commitment

- Commitment for:
 - Purchase of ethanol
 - Purchase of DDGS/DWG
 - Purchase CO₂ for use in greenhouses or sale to the beverage industry

Commitments Related to Feedstock

- Suggested commitment:
- 100% of the feedstock to ensure project viability
- As much as feedstock to be purchased locally
 - Preference to purchase all feedstock from First Nation as First Nation farmers increase their production of corn

Project Approvals

- Use a consultative process with Chief and Council to assure that there is knowledge prior to the time that a decision is required
- Approval processes will address environmental, social and economic concerns
- Meet or exceed local, provincial and national requirements regarding the environment, etc.

Who Will Make This Happen?

- Financers
- Planners
- Builders
- You

Commonly-Voiced Concerns

Sound design and operational practices can address such issues as:

- Odor
- Emissions of volatile organic compounds (VOCs)
- Water/effluent discharge

Odor Impact

- Odors are non-toxic
- Analogous to cooking odors from a restaurant
- Will be considerably reduced using appropriate, odor control technology in the design such as a high stack and scrubbers
- With proper design there will be very little odor

VOCs

- Modern plants contain thermal oxidizers to reduce/eliminate VOC emissions from the dryer and evaporators
- Benefits include:
 - Less impact on the environment
 - More efficient plant operation

Water Treatment

- Water treatment facilities are included in the plant design to treat effluents
 - Will minimize biological oxygen demand (BOD) and chemical oxygen demand (COD) enabling the water to be recycled
 - Plants are designed to recycle process water as much as possible, to minimize cost and increase efficiency

Some Challenges

- Unique to First Nations:
 - Meshing communities' decision-making time frames with government funding proposal deadlines
- With any ethanol plant:
 - Addressing the concerns of community members, many with little or no background in ethanol
 - Obtaining an appropriate site

Why Invest in Fuel Ethanol?

- It's a potential investment opportunity for all First Nations across Canada because it will:
 - Create ongoing revenue
 - Create direct and indirect jobs
 - Create infra-structure
 - Provide education and training opportunities
 - Revitalize agriculture
 - Create ancillary industries
- Its use as a gasoline mix has been mandated by the Ontario Government
- Because there are so many co-products and ancillary industries, it gives a high rate of return immediately and increasingly so over time
- The Canadian Renewable Fuel Association is lobbying the federal government to require 10% ethanol in gasoline across Canada – making this a very high growth industry

What Does This Mean for First Nations?

- Greater economic independence as the money First Nations invest will come back to them through annual revenue from the profits
- The limited partnership will enable flow through of earnings to First Nations without being subject to taxes
- This project can also result in ancillary benefits:
 - Infra-structural development for the participating communities
 - Technical school for First Nations to help develop the capacity to build and run the numerous ethanol plants that will be inevitably required to meet future demand
 - Increase in agro-industries including corn, soybeans and greenhouse produce
 - Continued growth by the addition of ancillary businesses such as transportation, construction, bio-diesel, etc.
 - Increased employment (direct and indirect)