RECAP
RENEWABLE ENERGY CLEAN AIR PROJECT

INTERNATIONAL FALLS
MINNESOTA

RENEWABLE ENERGY CLEAN AIR PROJECT (RECAP)

RECAP is the first of its kind project in North America. The project utilizes the environmentally clean technology of plasma gasification to use all forms of biomass as feedstock to produce synthetic gasses and other value added byproducts. This project will focus on promoting municipal solid waste as the main renewable feedstock. All forms of woody biomass will also be included into the feedstock supply.

Plasma gasification, a very high temperature process operating in an oxygen deprived vessel, converts organic compounds into their basic components of hydrogen and carbon monoxide. These two main constituent gasses can be refined to produce pure hydrogen, biodiesel, alcohol for E-85 production, or an industrial gas similar to propane. The inorganic portion of the feedstock is processed into a molten slag, not unlike lava, that encapsulates all the heavy metals and other inorganic compounds. EPA tests have shown that this material is non-leachable. The slag can be further processed into road aggregate, bricks, pavers, and similar construction material. As the stream of molten material exits the process, compressed air can be blown into the stream and form rock wool for use as insulation in homes and businesses.

Because this process operates at 20,000 degrees and higher, there is a potential to produce large quantities of steam for various manufacturing processes or electricity production. Local communities will be able to determine the exact mix of light industrial businesses or steam customers in their project.

Environmental benefits: potential to completely negate the need for landfills; increase recycling; reduce mercury going into landfills, air, water, and soil; reduce methane generation, a greenhouse gas produced by existing landfills; the high temperature of the process eliminates the nasty compounds associated with the lower temperatures of various methods of incineration; and the utilizing of green credits, and green energy sources for other businesses consuming the energy or steam from this facility.

The base concept is to locate this project in small to medium communities in rural America. These communities have lost their vitality over the last several decades. This project will bring the possibility of good paying jobs, economic revitalization, and community involvement to areas that need it most.

This first RECAP facility will be located in International Falls in northeastern Minnesota. The Laurentian Resource Conservation and Development Council (RC&D) is responsible for providing project development leadership. Other main partners: Coronal, a Minnesota company focusing on combined heat and power projects, Koochiching County; the city of International Falls; Onanegozie and WESMIN RC&D Councils; Minnesota Agroforestry Cooperative; Fond du Lac Tribal and Community College, Cloquet; Rainy River Community College, International Falls; University of Minnesota Extension Service; University of Minnesota-Duluth; Minnesota Department of Natural Resources- Forestry Division; Natural Resources Conservation Service; USDA Forest Service; Minnesota Pollution Control Agency; Minnesota Power; USDA Rural Development; US Environmental Protection Agency; National Renewable Energy Laboratory; US Department of Energy; and Georgia Technical Institute.