



# Leading The Way

to an  
*Environmentally*

# SAFE FUTURE

Denali SD has recently relocated to the vibrant city of Aberdeen and to South Dakota's Brown County. Aberdeen's growing economy and entrepreneurial spirit were key factors in Denali SD's decision to move to this area. Denali SD is eager to be part of the positive growth that characterizes Aberdeen's business climate and to contribute to that success.

Denali SD is a sister company to Denali Energy, Inc. both under the umbrella of Denali Companies, Inc. headquartered in Baxter, MN. Denali Energy, Inc. focuses on the development of renewable energy, primarily wind farms and biomass projects in North and South Dakota.

Heath Johnson, a Principal of Denali SD is a native of Aberdeen, and he and his family are delighted to have recently moved back to the city of Aberdeen.

As Denali SD looks ahead as to what is next on the horizon for their renewable energy development team, they see something solid - the wind. Wind that can be harnessed to be a non-polluting, never-ending source of energy to meet electric power needs.

Wind turbines and wind farms are the foundation used for harnessing wind in certain predetermined "good wind" sites. A site must have a minimum annual average wind speed of about 11-13 mph to be considered. Essentially, wind turbines consist of a tower with three-blades and a rotor, a gearbox and a generator. The power of the land turbines varies from several hundred kilowatts to

two (or three) megawatts. One megawatt of wind power can power 400 urban to 800 rural homes per year. The determining factor being the diameter of the turbine and the wind's speed through the rotor. The longer turbines will produce greater amounts of energy, as the area they sweep will be larger. Even a modest increase in blade length will not only increase energy capture but also cost-effectiveness.

Turbine blades can measure over 40 meters long and be mounted on towers 80 meters tall. The electricity generated by a utility-scale wind turbine is normally collected and fed into utility power lines and delivered to utility customers, providing them with a cleaner energy. Usually a wind farm consists of more than three wind turbines.

The benefits of wind energy are numerous. Wind energy provides renewable, clean electricity that is both economical and environmentally friendly. Wind plants emit no air pollutants or greenhouse gases, and do not deplete natural resources such as coal, oil, or gas. Wind farms can be located on land that is used for grazing or farming. Wind turbines installed in pastures have no harmful effects on people, crop production, or livestock grazing. Wind is plentiful - it is a form of energy that is replenished daily by the sun - and won't decrease the natural resources of the world. Wind power is one of the sources of renewable energy with the greatest potential for the future.

In addition, landowners earn a steady, supplemental income through land leasing and wind energy royalty arrangements which, in turn, help to revitalize

the economy of rural communities. Income is generated from jobs for construction contractors and suppliers. Also, job creation after construction is estimated to range from 1:5 to 1:10 techs/turbines.

Wind energy systems require minimal maintenance and have low operating expenses. The cost of wind power has decreased over the past several years; however, the technology requires a substantial initial investment for the machinery, site preparation, and installation. To keep costs down in building a wind farm, availability and access to existing transmission lines needs to be considered. Nevertheless, wind is one of the least expensive sources of new electricity generation because there is no fuel to purchase and operating expenses are minimal over the lifetime of the wind plant. Another factor to consider when developing a wind farm is access to capital and to turbines.

Biomass is the second-most utilized renewable energy resource in the United States in terms of electricity generation, currently providing the amount of electricity used by 4 million average U.S. homes combined, or the entire state of Colorado. This amount of electricity generation requires about 60 million tons of biomass per year. Biomass is any sort of vegetation including agricultural and forest residues, and liquid transportation fuels such as ethanol and biodiesel derived primarily from agricultural crops, and industrial wastes. Biomass power is the use of biomass feedstocks (forest residues, mill residues, agricultural residues, urban wood wastes, and dedicated energy crops) instead of the usual fossil fuels (natural gas or coal) to produce electricity. Cellulose

biomass will begin to replace corn as the primary base in ethanol industry-wide by 2012. This timing will be dependent upon the planting of hundreds of millions of acres of dedicated energy crops. Also by 2012, 500 to 1,000 new biofuel plants will need to be built - cellulose biomass cannot travel much further than 50 miles without energy loss.

In the future, fast-growing energy crops may become the biomass fuel of choice. The U.S. Department of Energy is working with national labs, agricultural and forestry groups, power companies, and other governmental agencies to make energy crops a viable fuel source in the near future.

Denali Energy, Inc. is currently in the process of developing the Hartland Wind Farm in North Dakota, along with partner, Montgomery Energy Partner LP, Houston, Texas. The proposed project would be constructed on up to 850 square miles of leased private property throughout Ward, Burke and Mountrail counties about 25 miles northwest of Minot, ND. The project will consist of up to 1,333 wind turbine generators. The proposed \$4 billion project would provide up to 2,000 megawatts of renewable energy. This project has the potential to be one of the largest wind farm developments in the United States.

Denali SD is currently working on the development of their first South Dakota wind farm project. The Campbell County Wind Farm, will consist of up to 300 turbines and 450 megawatts at an investment of nearly \$900 million. The firm is also conducting feasibility studies for potential bio-diesel and municipal waste bio-mass projects in the Aberdeen area.



**Heath Johnson**