Iowa’s Energy Future:  
Transmission Lines in Iowa

Have you ever driven by a wind farm and noticed that some of the turbines are not spinning? Those turbines are not broken; they are curtailed. When there is not enough transmission line capacity to carry the electricity generated by a wind turbine, the turbine is prevented from adding more electricity to the transmission lines in a process called curtailment. In order to build more wind farms and to fully utilize the electricity that the existing turbines generate, more transmission lines need to be built.

Transmission Siting

Iowa is at the core of several, multi-state transmission projects being proposed or planned; plus there are several transmission projects that may be built within the state. Granted, not all of the transmission lines are planned to carry the same amount of voltage and not all of them will have high capacities. However, some of these will be 765 kilovolt (kV) or 345 kV with the ability to upgrade to 765 kV. A kV is equal to 1,000 volts.

Transmission lines traditionally have carried alternating current (AC). AC current is a specific type of electric current in which the direction of the current’s flow is reversed, or alternated, on a regular basis.

There are at least two transmission lines proposing to carry direct current (DC). The DC lines require a smaller footprint and lower towers than AC lines. The DC technology results in more efficiency (less line loss), i.e. a greater percentage of the electrical power that is initially delivered to the transmission line is delivered to the customer. However, there are limited on ramps – the technology to add electricity to the grid once it is generated (from coal, gas, electric, nuclear, wind, solar) – for new wind generators to add their electricity to the grid and limited off ramps – the technology to move electricity to the consumer from the grid – to provide electricity to the consumer because the units that convert DC to AC or AC to DC current are very expensive.

Some of the studies and proposals include:

- Clean Line Energy Partners, direct current line; the project is called Rock Island Clean Line. This project will run from O’Brien and Cherokee Counties to Scott County.
- Four transmission lines are identified as RGOS (Midwest ISO Regional Generation Outlet Study) starter projects. Components of the Green Power Express, proposed by ITC Holdings, are included in these starter projects.
- Midwest Power Transmission Line, which was part of the Smart (Strategic Midwest Area Renewable Transmission) Study. This line will run from Adair County to Louisa County.
- Wind on Rails, direct current line following the Rock Island railroad right-of-way.
As additional wind farms are built in the state, there may be a need for more localized transmission lines to be built.

Although not all of the lines mentioned above will be constructed, there will still be significant miles of transmission lines built. Maps of these proposed lines indicate they will effectively divide the state almost like a checkerboard – and this could have a serious impact on our state's natural resources. Some of these transmission lines likely will be used to deliver electricity to out-of-state consumers, in Minnesota or Illinois or even points farther east.

The Iowa Utilities Board is responsible for approving new transmission lines in Iowa, including lines that deliver power to out-of-state customers. Transmission lines that cross several states must be approved by the states’ respective utility commissions.

**Wildlife and Natural Areas in Iowa**

Several issues related to transmission lines in Iowa concern the Iowa Chapter. On the west side of the state, along the Missouri River, there is a landform called the Loess Hills. This is a significant migration path for hawks and many other species of raptors and passerines (perching birds, songbirds).

The prairie pothole region in north central Iowa is a significant area for waterfowl and many wetland and grassland species. The Iowa Department of Natural Resources (DNR) and the federal government have spent significant amounts of money for many years in re-establishing waterfowl habitat, which is also used by other bird species.

In addition, the northern part of the state has many significant wetlands toward the Iowa Great Lakes area. There are several public lands and preserves across the northern part of the state where transmission lines should be avoided.

On the eastern part of the state, along the Mississippi River, there is a significant amount of National Wildlife Refuge land, and the Mississippi River valley is also a very important migratory bird corridor. Many species, including thousands of ducks, swans, eagles and other species of greatest conservation concern use that corridor. It is also one of the most important wintering areas for bald eagles.

The Des Moines River corridor and the Iowa River corridor are significant bird areas. In fact, part of the Iowa River Greenbelt, covering 135,000 acres, has been named a Bird Conservation Area by the Iowa DNR and an Important Bird Area by Audubon.

There are other significant natural areas spread in pockets across the state.

Iowa is one of the most developed states in the country given that significant numbers of acres are devoted to agriculture. Compared to other states, Iowa has very little publicly held natural areas; Iowa is 49th in amount of public land and the Iowa Chapter of the Sierra Club is concerned about the "industrialized" impact on our natural areas.
Transmission lines can be a hazard to birds that slam into the power lines during their flight. Hawks and ospreys will nest on the poles and they can be killed if the poles are not built with protective structures to avoid electrocution by the hawks. Although rarely mentioned, Iowa is also an area used by bats and bat migration so their migration corridors need to be protected as well as those used by birds.

**Policy on Transmission Lines**

The Iowa Chapter will continue to watch the transmission line issues to ensure that Iowa’s natural resources are protected while allowing renewable energy to be delivered to the market.

For the best interest of Iowans, the Iowa Chapter would like to ensure that there are on ramps so that the renewable energy generated in Iowa can be delivered to the market and off ramps so that Iowans can use their own renewable energy.

The Iowa Chapter prefers that transmission lines support renewable energy generators, not large coal-fired, nuclear or gas-fired power plants.

The Iowa Chapter supports coordination among the transmission builders to avoid significant impacts to natural resources and to reduce the number of acres overtaken by transmission.

The Iowa Chapter believes that transmission lines need to be sited protective of Iowa's natural areas and wildlife. There is a difference between the word “avoid” and the word “mitigate.” Mitigation sometimes involves attempts to move species, to build new habitat from barren ground and to acquire additional public land to replace land that will be destroyed by a project. Extensive damage to the state’s wildlife species could result. On the other hand, selecting one route over another because “it will kill as few birds as possible” is not really avoiding a natural area.

**Sources**


Dave DeWitte, “ITC Plans 3,000-mile ‘Green Power Express’,” *Cedar Rapids Gazette*, February 10, 2009