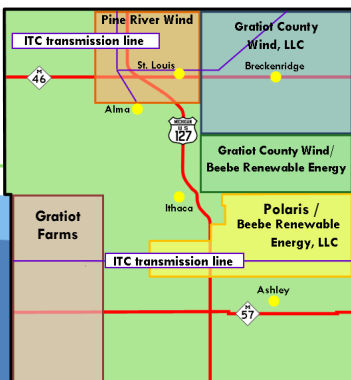


# Why Gratiot?

- Gratiot County is able to facilitate complex projects. The Gratiot County community organized Greater Gratiot Development, Inc. (GGDI) in 1978. GGDI works with business, industry, and government to coordinate projects of all types and sizes.
- This collaborative nature made the county a desirable location for businesses to locate, specifically for wind farms, due to its
  - ◊ Countywide Master Plan, which provided a path for achieving goals
  - ◊ Countywide Wind Energy Ordinance, which eliminated contradictory regulations
- Gratiot has many flat, open areas that are ideal for wind collection.
- Gratiot offered a strong ability to connect to the existing power grid. Wind development also strengthened the area's power reliability.
- Currently, Gratiot County has five wind farms:
  - ◊ Gratiot County Wind: Wheeler, Bethany, Emerson, Lafayette, & St. Louis
  - ◊ Beebe Renewable Energy: North Star, Emerson & Hamilton
  - ◊ Pine River Wind: Pine River & Bethany
  - ◊ Polaris Wind: Hamilton, Lafayette, & North Star
  - ◊ Gratiot Farms: New Haven & North Shade
  - ◊ Heartland Farms: Under construction for '24



# Gratiot Happens!



In total, the five farms provide:

- **345 turbines** that span approx. **86,000 acres**
    - ◊ But only a small amount of land is occupied, and farming continues as usual!
  - Approx. **300** temporary skilled construction jobs per wind farm and **38** permanent full-time maintenance jobs
  - Since 2012, wind development has provided Gratiot County with over **\$82.7 million** in additional tax revenue:
    - ◊ **\$28.7 million** to Gratiot County operations and millages
    - ◊ **\$43.8 million** to local school districts and intermediate school districts
    - ◊ **\$10.2 million** to local townships and cities
  - Lease payments benefit over **500 property owners**
- Indirect benefits to Gratiot County include:
- Wind investment was used to leverage a grant to complete infrastructure for the Breckenridge Industrial, Technology and Agribusiness Park, where there are now over **100** new FTE jobs.
  - Road upgrades, power grid improvements, and new electrical substations make the area attractive for new businesses.

# The Gratiot County Wind Story



For more information, please contact:  
**Greater Gratiot Development, Inc.**  
 136 S. Main St., Ithaca, MI 48847  
 (989) 875-2083  
[www.ggdi.gratiot.org](http://www.ggdi.gratiot.org)



# Wind Farms in Gratiot

## Gratiot County Wind

- Constructed in 2011 / Operational in 2012
- Located in Bethany, Wheeler, Emerson, & Lafayette
- Developed by Invenegy / Owned by DTE & Invenegy / Power purchaser: DTE
- 133 1.6 MW GE turbines (212.8 MW total)

## Beebe Renewable Energy

- Constr. 2012 / Oper. 2013 / Expanded in 2014
- Located in Emerson, North Star & Hamilton townships
- Developed and owned by Exelon
- Power purchaser: Consumers Energy, Lansing Board of Water & Light, and the MI Public Power Agency
- 55 2.4 MW Nordex turbines (132 MW total)

## Pine River Wind

- Constructed in 2018 / Operational in 2019
- Located in Pine River & Bethany townships (Gratiot County) & Coe Township (Isabella County)
- Developed by Invenegy / Owned by DTE
- 29 2.5/2.3 MW GE turbines in Gratiot (36 in Isabella County) (161.3 MW total)

## Polaris Wind

- Constructed in 2019 / Operational in 2020
- Located in Hamilton, North Star, & Lafayette townships
- Developed by Invenegy / Owned by DTE
- 68 2.5/2.3 MW GE turbines (168 MW total)

## Gratiot Farms

- Constructed in 2020 / Operational in 2021
- Located in New Haven & North Shade townships
- Developed by Tradewind / Owned by Consumers Energy
- 60 2.5 MW GE turbines (150 MW total)

# Wind Turbine Facts

- Foundation bases vary with turbine size. The foundation is continuously poured from up to 50 cement trucks (depending on truck size) and can weigh over **2,000,000 lbs.**



- The turbine towers have 5 sections and are 300+ feet. The tower weight is **229 tons!**

- A nacelle houses the gearbox and generator. It weighs **182,000 lbs.** and is as big as a mobile home.

- The turbine blades have a diameter of **≈400 ft.**, (just longer than an entire football field)! The tips of the blades have a max. speed of **202 mph!**

- Put together, the wind turbines in Gratiot County could power **127,000 homes** (eight times the size of Gratiot County)!



# Wind FAQ

## How do wind turbines affect land use?

“Farmers and ranchers can continue to work the land because the wind turbines use only a fraction of the land. Wind power plant owners make rent payments to the farmer or rancher for the use of the land, providing landowners with additional income.”

U.S. Dept. of Energy. *Advantages and Challenges of Wind Energy.* ([www.energy.gov/eere/wind/advantages-and-challenges-wind-energy](http://www.energy.gov/eere/wind/advantages-and-challenges-wind-energy))

## What is a turbine's impact on wildlife?

“All energy supply options can have adverse environmental impacts...Estimated annual bird mortality rates for collisions with wind turbines are one order of magnitude less than from collisions with communications and other towers, three orders of magnitude less than from collisions with power lines, and three to four orders of magnitude less than from collisions with buildings.”

U.S. Dept. of Energy. *Wind Energy FAQs.* ([www.energy.gov/eere/wind/frequently-asked-questions-about-wind-energy](http://www.energy.gov/eere/wind/frequently-asked-questions-about-wind-energy))

## Do wind turbines impact human health?

Sound: “As of 2013, global peer-reviewed scientific data and independent studies consistently concluded that sound from wind plants has no direct impact on physical human health. The sound level from wind turbines at common residential setbacks is not sufficient to cause hearing impairment or other direct adverse health effects. Low frequency sound and infrasound from upwind wind turbines are also well below the pressure sound levels and which known health effects occur.”

Shadow flicker: “When shadow flicker is present, it typically occurs at a frequency of 0.3–1.1 Hertz (Hz), which is well below the threshold known to elicit seizures in those with epilepsy.”

U.S. Dept. of Energy. *Wind Energy FAQs.* ([www.energy.gov/eere/wind/frequently-asked-questions-about-wind-energy](http://www.energy.gov/eere/wind/frequently-asked-questions-about-wind-energy))