



Renewable Energy Development

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Clinton County

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DTE is a clean energy leader

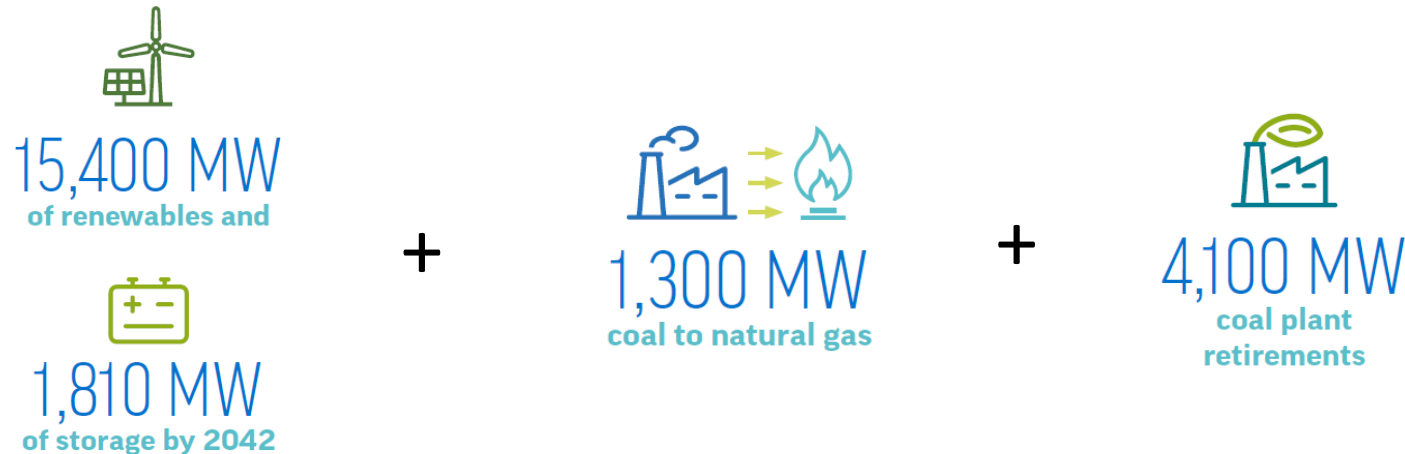
Largest producer of, and investor in, renewable energy

- Will continue investing in renewable energy assets and technology
- Have driven \$3 billion in renewable energy infrastructure since 2009

Current Michigan renewable energy portfolio

- 20 wind parks
- 33 solar parks
- Enough clean energy to power nearly 700,000 homes

Our path to net zero (by 2050)



Current Renewable Energy Portfolio


 20 Wind Projects
2008 MW


 33 Solar Projects
144MW


 2 Landfill Projects
6.4MW


 1 Biomass Project
17MW


 Wind

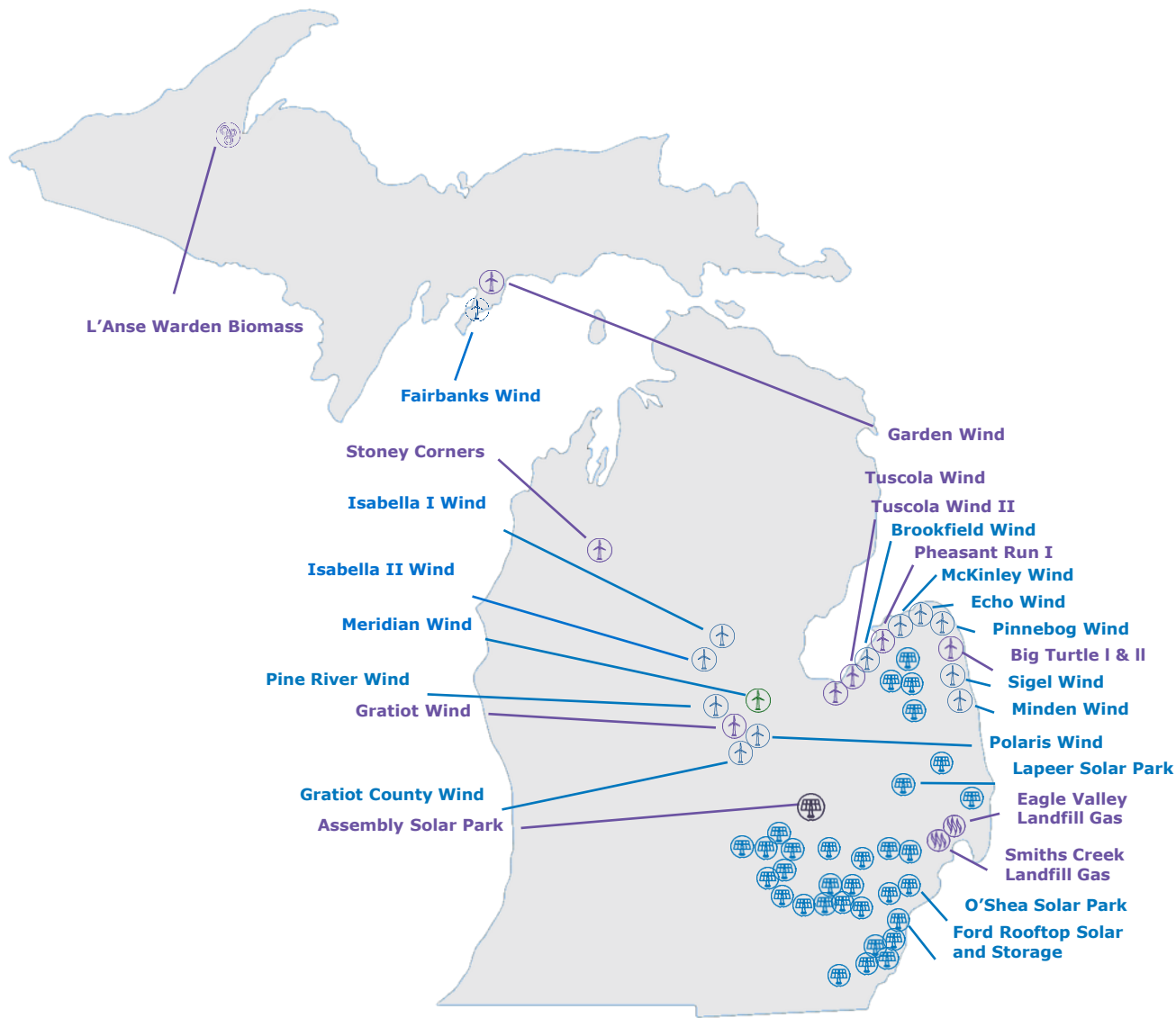
 Solar

 Landfill Gas

 Biomass

 DTE Energy owned projects

 Third party owned projects



DTE Siting Practices – Wind

- DTE will strive to comply w/ a community's wind energy ordinance
- If a community is un-zoned yet seeks a project, DTE strives to follow these wind siting practices:
 - ✓ One to three turbines per section
 - ✓ Turbines typically less than 500' tip height, but this may change
 - ✓ Setback from public roads is 1.5 times turbine tip height
 - ✓ Setback from non-participating residence is $\geq 1,320'$ (1/4 mile)
 - ✓ Setback from participating residence is $\geq 1,000'$ (>3 football fields)
 - ✓ Where possible locate turbines and access roads along fence rows or property lines
 - ✓ Underground collection line at least 4' below ground level
 - ✓ No advertising except for manufacturer logo
 - ✓ Shadow flicker at a residence limited to 30 hours per year or less, and may include operation limits if needed
 - ✓ Sound levels of no more than 45 dA Leq (1 hour) at non-participating homes, and no more than 55 dA Leq (1 hour) at participating residences
 - ✓ Follow US Fish & Wildlife Service and MI Department of Environment, Great Lakes, and Energy Guidelines
 - ✓ Decommissioning and restoration commitments in landowner agreements and w/ community
 - ✓ Complaint resolution process

Wind Project Siting – Constraints Analysis

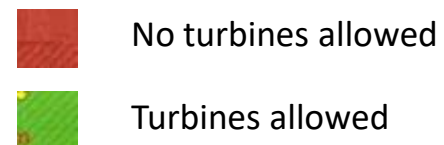


Composite of all constraints (red) applied to project area.

Remaining buildable area is shown in green.

Constraints considered:

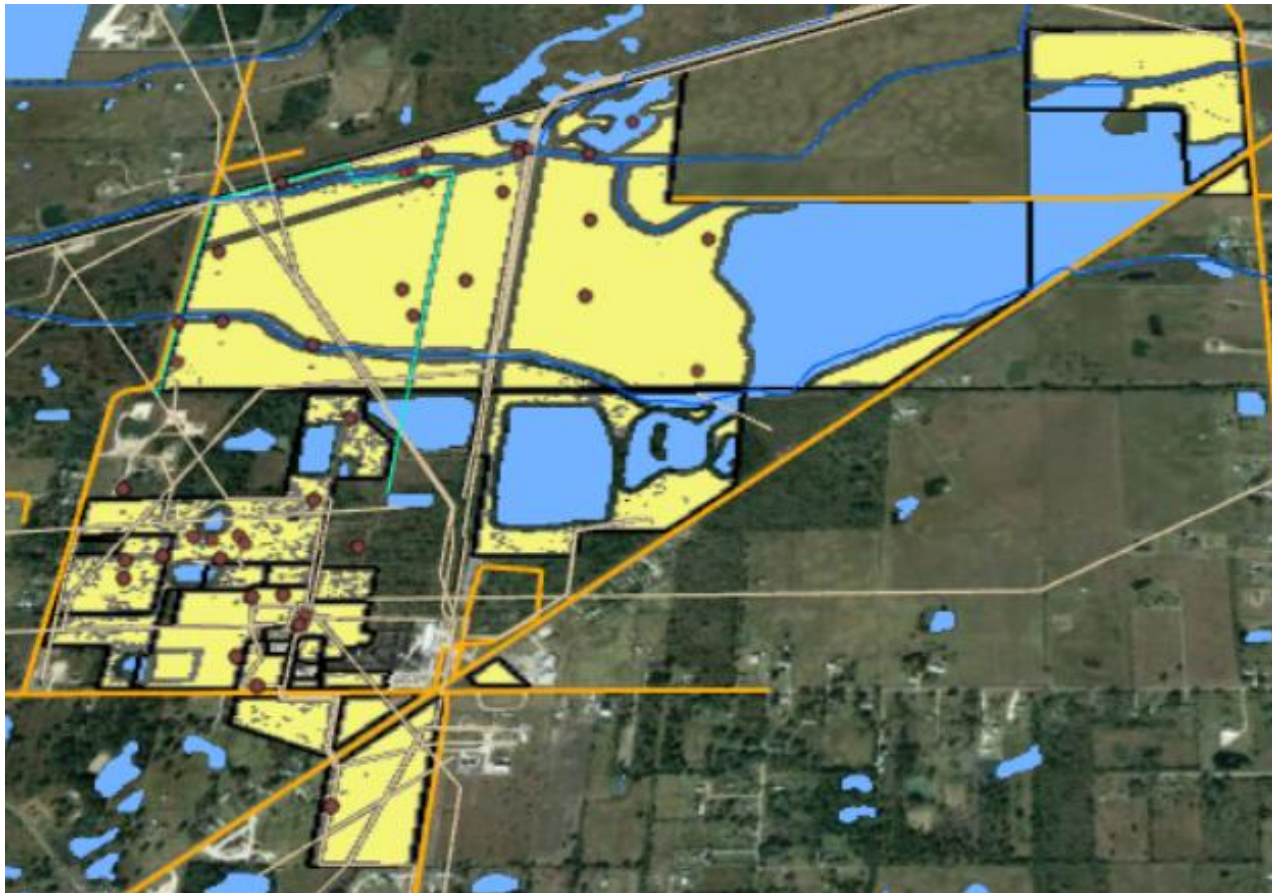
- Project boundary
- Roads
- Non-participating land/homes
- Participating homes
- Drainage
- 100 year flood plains
- Overhead lines
- Communications signals
- Streams and wetlands
- Other wildlife habitat
- Pivot irrigation systems
- FAA/MDOT airport requirements









DTE Siting Practices – Solar

- DTE will strive to comply w/ a community's solar energy ordinance
- If a community is un-zoned yet seeks a project, DTE strives to follow these solar siting practices:
 - ✓ One megawatt of solar requires from 5 to 10 acres of land
 - ✓ Solar arrays with tracking systems can range in maximum height from 15 to 20'
 - ✓ Solar array setbacks at least 50' from non-participating property lines or road right-of-ways
 - ✓ Solar array setbacks at least 100' from a residence
 - ✓ Underground collection lines at least 4' below ground
 - ✓ Entire solar array enclosed by a 7-foot high to restrict access, per federal requirements
 - ✓ Install a vegetative visual screening buffer along entirety of non-participating property line if requested
 - ✓ Sound levels of no more than 45 dBA Leq (1 hour) at non-participating homes, and no more than 50 dBA Leq (1 hour) at participating residences (little or no night-time sound anticipated)
 - ✓ Conduct glare studies and minimize glare through both design and operational controls
 - ✓ Follow US Fish & Wildlife Service and MI Department of Environment, Great Lakes, and Energy Guidelines
 - ✓ Decommissioning and restoration commitments in landowner easement, with the community, and for PA116
 - ✓ Limited and shielded lighting and 12-foot road width unless otherwise required
 - ✓ Complaint resolution process

Solar Project Siting – Constraints Analysis



Constraints List

-  Parcel AOIs
 -  Wetland and related
 -  OH Power Lines
 -  O&G Wells
 -  Roads
-
-  Estimated buildable areas

Solar – Visual Vegetative Screening Simulation

At Planting



5 Years



10 Years



DTE renewables community engagement



Other Considerations

- DTE strives to conduct itself with integrity and respect in communities regarding development, and desires to collaborate on projects
- Land easements include evaluation, construction, and operation phase payments, and details vary by technology
- Suggestions as Clinton County goes forward:
 - Review examples of ordinances that have proven to be workable by both the community and developers
 - Solar (Gratiot County, Pine River Township in Gratiot County)
 - Wind (Gratiot County, Chandler or Oliver Townships in Huron County)
 - Reach out to developers and operators about a project tour – a picture is worth a 1000 words, and a site visit even more
 - Seek out subject matter experts who can inform you on the factual way to look at details of sound, glare, environment and wildlife, property values, and other aspects of wind and solar siting
 - Identify peer-reviewed literature to inform your work