**Planning Commission**
97 North Broad Street
Hillsdale, Michigan 49242-1695
(517) 437-6440 Fax: (517) 437-6450

# Planning Commission Agenda
# June 16, 2020

**I. Call to Order 5:30**
- A. Pledge of Allegiance
- B. Roll Call

**II. Public Comment**
Any Commission related item – 3 min. limit

**III. Consent Items/Communications**
- A. Approval of agenda – **Action**
- B. Approval of Planning Commission 05-19-2020 minutes – **Action**

**IV. Public Hearing**
58/60 N. West St. Rezoning –**Action**

**V. Old Business**

**VI. New Business**

**VII. Master Plan Review**
Goals and Objectives - **Discussion**

**VIII. Zoning Ordinance Review**

**IX. Zoning Administrator Report**

**X. Commissioner's Comments**

**XI. Adjournment**

**Next meeting July 21, 2020 at 5:30 pm**

Planning Commission
97 North Broad Street
Hillsdale, Michigan 49242-1695
(517) 437-6440 Fax: (517) 437-6450

# PLANNING COMMISSION MINUTES
## (Go To Meeting On-line)
## May 19, 2020 at 5:30 PM

**Call to Order**
Chairman Nutter called the meeting to order at 5:32pm.

**Members present:** Chairmen Sam Nutter, Vice Chairmen Eric Moore, Secretary Penny Swan, Commissioners Elias McConnell, Jacob Parker, Mayor Pro-Tem Will Morrisey, Ron Scholl.

**Consent Items and Agenda**
Public Comment
Public comment included in the packet via letters.
Approval of agenda as written, moved by Commissioner Morrisey, seconded by Commissioner Scholl, Agenda Approved.
Motion to approve the minutes of last meeting (February) made by Commissioner Swan, Seconded by Commissioner Parker, minutes approved.

**Old Business**
Short term rental resolution in disagreement with the State taking control of rentals.
Motion to support by Commissioner Morrisey, support by Commissioner Swan, motion passed.

**New Business**
58/60 West St discussion on re-zoning this area to enable the owners of the 2 buildings that need rehabbed to do the rehabilitation and add a business or 2 in that area.
Mr. and Mrs. Norton gave a brief synopsis on their plans for those two buildings and are asking about re-zoning that area.
Motion to pursue the re-zoning for 58/60 West St made by Chairman Nutter, seconded by Commissioner Scholl. Motion approved unanimously.

**Zoning Administrator Report**
Alan Beeker discussed some opening back up details from Covid-19 and money possibly available through grants. Alan Beeker also gave some details on the Dawn Theatre rehabilitation project.

**Commissioner Comment**
None

**Public Comment**
Jack McClain asked about the possibility of tax abatement on the 58/60 West St apartments, Jack also asked for more details on where apartments and any businesses would be in those buildings. Jack also asked about any remediation that my need to be done from the meth fire in that building.

**Adjournment**
Motion to adjourn by Commissioner Scholl, seconded by Commissioner Swan. Meeting adjourned at 6:27 PM.

**Next meeting: June 16, 2020 at 5:30 pm.**

**TO:** **Planning Commission**

**FROM:** **Zoning Administrator**

**DATE:** **June 16, 2020**

**RE:** **58 & 60 N. West Rezoning**

**Background:** During the May meeting, you were presented with a project that could transform the structures located a 58 & 60 N. West. The project would require the rezoning of the two parcels the current zoning of RM-1, Multiple Family Residential to B-1 Local Business. The intent would be to create mixed use properties of both structures which would mean the lower floors would be commercial and the upper floors would be residential. At the meeting, you voted to move forward with the rezoning. In accordance with the Michigan Zoning Enabling Act, a public hearing was set for this month's meeting and was noticed at City Hall, on the City website and in the local newspaper in compliance with MZEA guidelines.

006-227-276-35
61 BLUE, LLC
FROSCH, TIMOTHY JAY, RESIDENT AGENT
3884 MECHANIC RD
HILLSDALE MI 49242

006-227-277-32
BEACON HILL PRESERVATION LDHA LP
RELATED COMPANIES
60 COLUMBUS CIR
NEW YORK NY 10023

006-227-281-22
HILL TOP APARTMENTS
HILLSDALE HOUSING COMMISSION
45 N WEST ST
HILLSDALE MI 49242

006-227-276-33
DWV PROPERTIES, LLC
JOHNSON, VALORIE L, RESIDENT AGENT
797 WILLIAMS DR
QUINCY MI 49082

006-227-276-40
HAYS, MEGAN LEE ETAL
STEMPIEN, STEVEN
5389 S HILLSDALE RD
HILLSDALE MI 49242

006-227-276-21
HOLBROOK, CINDY, WILLIAM & GAIL
55 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-22
KLINE, ROBERT L
3 NORTH ST
HILLSDALE MI 49242

006-227-280-04
MERCER, BRANDY
18 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-16
PASTULA, PATRICK & JILL
73 N NORWOOD AVE
HILLSDALE MI 49242

006-227-281-07
REPIK, JOHN J IV
53 BUDLONG ST
HILLSDALE MI 49242

006-227-252-36
ADAMS, CLIFFORD R & JESSICA J
64 N NORWOOD AVE
HILLSDALE MI 49242

006-227-276-30
BERG, DANIEL WINTON LAFORREST
74 N WEST ST
HILLSDALE MI 49242

006-227-276-20
DUKE, KEITH
59 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-28
EPLING, ILSA
42 W FAYETTE ST
HILLSDALE MI 49242

006-227-280-26
HILLSDALE COMMUNITY SCHOOLS
30 S NORWOOD AVE
HILLSDALE MI 49242

006-227-276-15
ISENHOWER, BRUCE E REV LVG TRUST
ISENHOWER, BRUCE E & DEBRA L, TTEES
3481 HUGHES HWY
CLAYTON MI 49235

006-227-276-19
KOERNER, LACEY A
63 N NORWOOD AVE
HILLSDALE MI 49242

006-227-276-31
NAUMANN, STEPHEN
68 N WEST ST
HILLSDALE MI 49242

006-227-276-29
PECHTA, JON-JAY ETAL
KERBAWY, K/MORRIS, M, M, & J/NELSON
3520 N HILLSDALE RD
HILLSDALE MI 49242

006-227-276-18
RODGERS, RICHARD & DEBRA
1820 W CARD RD
HILLSDALE MI 49242

006-227-277-17
BALOGH, ALBERTA H LIVING TRUST
75 N WEST ST
HILLSDALE MI 49242

006-227-252-37
CARRINGTON, ADAM M & EMILY L
60 N NORWOOD AVE
HILLSDALE MI 49242

006-227-280-02
DUNN, STEVEN & JUNE
26 WESTWOOD ST
HILLSDALE MI 49242

006-227-277-18
HATFIELD, JOHN D & JENNIFER J
73 N WEST ST
HILLSDALE MI 49242

006-227-277-31
HILLSDALE LODGE NO 1575 BPOE CLUB
ELKS LODGE
60 N MANNING ST
HILLSDALE MI 49242

006-227-252-38
JONES, HAROLD B & LISA A
54 N NORWOOD AVE
HILLSDALE MI 49242

006-227-252-35
LANGSTON, NICK
68 N NORWOOD AVE
HILLSDALE MI 49242

006-227-276-37
NAEGELE, CYNTHIA L
21 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-38
PORTER, JESSICA ETAL
MORRIS, JOSEPH C & VICKI R
17 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-39
SCHAERER REAL ESTATE HOLDINGS LLC
SCHAERER, KARLA MARIE, RES AGENT
4645 FITZPATRICK RD
HILLSDALE MI 49242

006-227-276-36
SCOTT, PATRICK F
23 WESTWOOD ST
HILLSDALE MI 49242

006-227-252-43
SLAGLE, RICHARD & SONJA FAMILY TRST
SLAGLE, RICHARD L & SONJA L, TRSTEE
37 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-32
SMITH, CHRISTOPHER H & TERESA L
1850 S TRIPP RD
OSSEO MI 49266

006-227-277-16
SNYDER, DOUGLAS E & TAMMY L
79 N WEST ST
HILLSDALE MI 49242

006-227-280-03
WENTZ, GERALD & MOLLY
22 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-17
WHALEN, BENEDICT & LISA
69 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-23
YELLOW 14 LLC
FROSCH, TIMOTHY JAY, RESIDENT AGENT
3884 MECHANIC RD
HILLSDALE MI 49242

006-227-276-35
OCCUPANT
29 WESTWOOD ST
HILLSDALE MI 49242

006-227-280-01
OCCUPANT
28 WESTWOOD ST
HILLSDALE MI 49242

006-227-252-36
OCCUPANT
64 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-17
OCCUPANT
75 N WEST ST
HILLSDALE MI 49242

006-227-277-32
OCCUPANT
32 E CARLETON RD
HILLSDALE MI 49242

006-227-276-30
OCCUPANT
74 N WEST ST
HILLSDALE MI 49242

006-227-252-37
OCCUPANT
60 N NORWOOD AVE
HILLSDALE MI 49242

006-227-281-22
OCCUPANT
45 N WEST ST
HILLSDALE MI 49242

006-227-276-20
OCCUPANT
59 N NORWOOD AVE
HILLSDALE MI 49242

006-227-280-02
OCCUPANT
26 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-33
OCCUPANT
60 N WEST ST
HILLSDALE MI 49242

006-227-276-34
OCCUPANT
58 N WEST ST
HILLSDALE MI 49242

006-227-277-28
OCCUPANT
65 N WEST ST
HILLSDALE MI 49242

006-227-277-18
OCCUPANT
73 N WEST ST
HILLSDALE MI 49242

006-227-277-19
OCCUPANT
69 N WEST ST VACANT
HILLSDALE MI 49242

006-227-276-40
OCCUPANT
11 WESTWOOD ST
HILLSDALE MI 49242

006-227-280-26
OCCUPANT
30 N WEST ST
HILLSDALE MI 49242

006-227-277-31
OCCUPANT
60 N MANNING ST
HILLSDALE MI 49242

006-227-281-23
OCCUPANT
20 NORTH ST
HILLSDALE MI 49242

006-227-276-21
OCCUPANT
55 N NORWOOD AVE
HILLSDALE MI 49242

006-227-276-15
OCCUPANT
77 N NORWOOD AVE
HILLSDALE MI 49242

006-227-252-38
OCCUPANT
54 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-22
OCCUPANT
3 NORTH ST
HILLSDALE MI 49242

006-227-276-19
OCCUPANT
63 N NORWOOD AVE
HILLSDALE MI 49242

006-227-252-35
OCCUPANT
68 N NORWOOD AVE
HILLSDALE MI 49242

006-227-280-04
OCCUPANT
18 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-31
OCCUPANT
68 N WEST ST
HILLSDALE MI 49242

006-227-276-37
OCCUPANT
21 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-16
OCCUPANT
73 N NORWOOD AVE
HILLSDALE MI 49242

006-227-276-29
OCCUPANT
78 N WEST ST
HILLSDALE MI 49242

006-227-276-38
OCCUPANT
17 WESTWOOD ST
HILLSDALE MI 49242

006-227-281-07
OCCUPANT
35 N WEST ST
HILLSDALE MI 49242

006-227-276-18
OCCUPANT
65 N NORWOOD AVE & 65.5
HILLSDALE MI 49242

006-227-276-39
OCCUPANT
15 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-36
OCCUPANT
23 WESTWOOD ST
HILLSDALE MI 49242

006-227-252-43
OCCUPANT
37 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-32
OCCUPANT
66 N WEST ST 4-UNIT
HILLSDALE MI 49242

006-227-276-41
OCCUPANT
52 N WEST ST
HILLSDALE MI 49242

006-227-277-16
OCCUPANT
79 N WEST ST
HILLSDALE MI 49242

006-227-280-03
OCCUPANT
22 WESTWOOD ST
HILLSDALE MI 49242

006-227-276-17
OCCUPANT
69 N NORWOOD AVE
HILLSDALE MI 49242

006-227-277-23
OCCUPANT
9 NORTH ST
HILLSDALE MI 49242

**Alan C. Beeker**
**Zoning Administrator**
97 North Broad Street
Hillsdale, Michigan 49242-1695
(517) 437-6449 Fax: (517) 437-6450

May 26, 2020

To Whom It May Concern,

PLEASE TAKE NOTICE that the Hillsdale City Planning Commission has set a Public Hearing for June 16, 2020 at 5:30 p.m. in the Council Chambers, Hillsdale City Hall, 97 N. Broad St., Hillsdale, Michigan to consider the proposed re-zoning of 58 N. West St., parcel no. 006-227-276-34 and 60 N. West St., parcel no. 006-227-276-33.

Section 36-143 of Division 1, of Article 3 of Chapter 36. The proposed rezoning of the properties located at 58 and 60 St. from the RM-1, Residential Multi-family District to the B-1, Local Business District.

> Parcel 1:
> Lot 150 and 1 rod off from the South side of Lot 151, Old Plat of the Village, now City of Hillsdale, according to the recorded Plat thereof, as recorded in Liber E of Deeds, Page 380, Hillsdale County Records.
>
> Parcel 2:
> The North 5/6 of Lot 151, Old Plat of the Village, now City of Hillsdale, according to the recorded Plat thereof, as recorded in Liber E of Deeds, Page 380, Hillsdale County Records. EXCEPT, a 1/2 interest in the North 12 feet of the East 150 feet thereof, as a common driveway.

A developer has approached the owner and the City with the desire to redevelop the existing residential multi-tenant structures into mixed use, commercial and residential properties. The current zoning does not allow for that type of development. Included with this letter is a rendering of the developer's initial concept for the project.

All comments are welcome in person at the time of the public hearing or by email at planning@cityofhillsdale.org. You may also submit a comment in writing by mail to the City Planning Office, 97 N. Broad St., Hillsdale, MI 49242.

Sincerely,

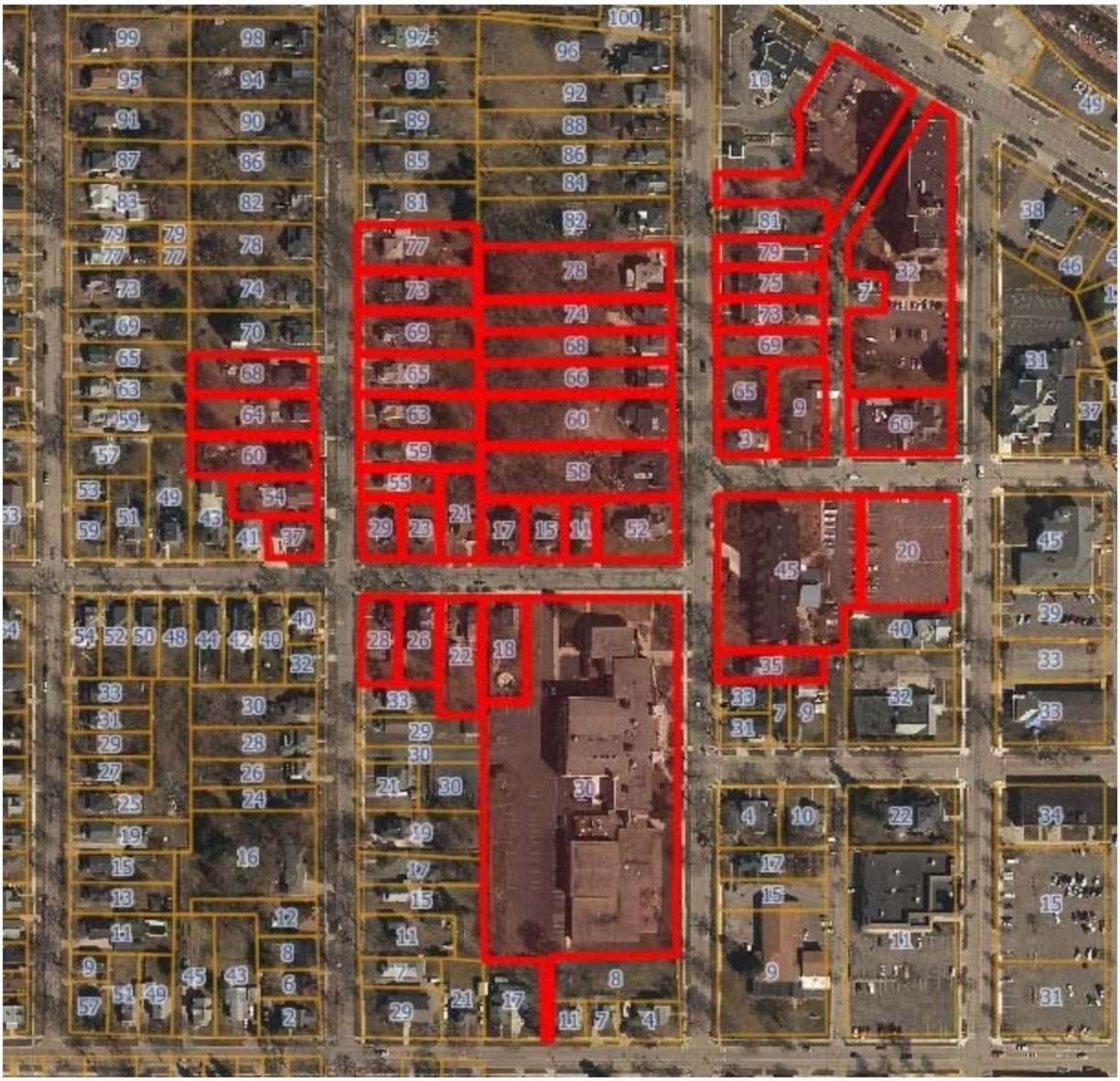
Alan C. Beeker
Zoning Administrator

**Alan C. Beeker**
**Zoning Administrator**
97 North Broad Street
Hillsdale, Michigan 49242-1695
(517) 437-6449 Fax: (517) 437-6450

Location of properties that have requested rezoning from RM-1, Residential Multi-family to B-1, Local Business District.

**Alan C. Beeker**
**Zoning Administrator**
97 North Broad Street
Hillsdale, Michigan 49242-1695
(517) 437-6449 Fax: (517) 437-6450

You are receiving this notice as you own a property within a 300’ radius of the two properties that have requested rezoning.




CBI Design Professionals
838 W. Long Lake, Suite 110
Bloomfield Hills, MI 48302
P: 248.645.3605
F: 248.647.7307
www.cbidesign.net


SK1

JOB NO.
DRAWN BY LMF
CHECK RGC
DATE 03.10.2020
SHEET NO.

Proposed Renovation for the
Wilson Building & Rowlson House
58 & 60 N. West Street, Hillsdale, MI 49242

CBI DESIGN PROFESSIONALS

SCHEMATIC-RENDERING

**TO:** **Planning Commission**

**FROM:** **Zoning Administrator**

**DATE:** **June 16, 2020**

**RE:** **Master Plan Goals**

**Background:** As we continue to review and update the City Master Plan for 2020, I have included the Goals and Objectives section from the current plan. First job to be accomplished is to review and decide if the current goals are still desired. Once the current goals are kept, replaced or a little of both, we will move on the second job which is to establish the objectives which will allow the City to attain the goals.

# Goals and Objectives

Master Plan

## General Community Development Goals

- *Provide for planned, controlled, growth of the City of Hillsdale as a great place to live, work, shop and raise a family.*
- *Leverage the rich commercial, cultural and academic history of the community to drive revitalization.*
- *Support economic development through appropriate land-use policy.*
- *Improve intergovernmental collaboration on issues related to land development to best serve the common interests of the City of Hillsdale and surrounding communities.*

| Neighborhoods | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Support neighborhood revitalization* | ■ Encourage home rehabilitation and support efforts to rid the community of blighted properties.<br>■ Improve the physical condition of the existing housing stock to increase property valuations.<br>■ Encourage a high percentage of home ownership and owner occupied dwellings.<br>■ Retain single family dwellings and limit conversion.<br>■ Preserve the historic character of neighborhoods. | ■ Adoption of form-based code and historic preservation tools. – Q4-2015<br>■ Consider zoning changes that better manage multi-family housing and work to preserve single-family housing where appropriate. – Q1-2016<br>■ Analyze & Recommend Neighborhoods for future Neighborhood Enterprise Zone (NEZ) – Q2-2016<br>■ Zone for appropriate mixed-use in residential neighborhoods that encourages redevelopment, walkability and small business development. – Q3-2016 | ■ Creation of Local Historic District<br>■ Increase Neighborhood involvement through competition<br>■ Research Adopt-A-Neighborhood and implement with non-profits<br>■ Seek programs and grants for Blight Removal<br>■ Create neighborhood pocket parks or gardens on empty lots<br>■ Neighborhood Enterprise Zones (NEZ) |

| | | | |
|---|---|---|---|
| *Encourage a variety of new residential development that will assure safe and sanitary housing to meet the needs of existing and future residents*<br><br>*Provide affordable housing for working families and senior residents* | ■ Encourage new residential development to be clustered in subdivisions and neighborhood areas located where appropriate community services and utilities can be feasibly provided.<br>■ Assure that land use policy reflects changing demographics and associated needs including, senior living, evolving family definitions and single (live alone) residents. | ■ Locate new residential development in areas where potential conflicts with incompatible land uses can be avoided. - Ongoing<br>■ Amend ordinances that allow for variable density of residential uses to be mixed with commercial uses. - Q4-2016 | ■ Market Hillsdale as a great place to live |

| Downtown Hillsdale | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |

| | | | |
|---|---|---|---|
| *Strengthen the vitality of the downtown district* | ■ Concentrate on redevelopment and restoration of existing commercial areas rather than promoting new commercial development in fringe or strip areas.<br>■ Preserve the historic character of the downtown business district centered on a historic theme and architectural style most common in the area.<br>■ Enhance the unique qualities of the downtown business district by creating flexibility in zoning and land use.<br>■ Encourage the redevelopment and use of second and third floor buildings in the downtown business district to include residential and other uses.<br>■ Support continued rehabilitation of the Hillsdale County offices and the Post office within the downtown business district.<br>■ Support the downtown business district property owners with assistance for the review and improvement of the building façades.<br>■ Encourage alternate forms of transportation | ■ Implement a form-based code overlay for the downtown district. – Q4-2016<br>■ Amend Parking Ordinance to allow more on-street overnight parking – Q4-2015<br>■ Create bike lanes along major streets.<br>■ Install bike racks in highly visible areas. | ■ Continue and promote the TIFA façade program and restoration grants<br>■ Enforce existing code<br>■ Seek programs and grants for Blight Removal<br>■ Encourage non-profit involvement especially the arts<br>■ Obsolete Property Rehabilitation Abatement (OPRA)<br>■ Rental Rehabilitation Grants<br>■ Redevelopment Ready Communities Program (RRC)<br>■ TIFA Business incentive programs<br>■ Creation of Local Historic District |

| City / College Connection | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Strengthen the physical and community connection between Hillsdale College and the Downtown district while maintaining and restoring the historic character of the connecting corridor.* | ■ Support walkability along the City/College corridor streets.<br>■ Develop attractive and accessible connections at City/College corridor intersections.<br>■ Encourage maintenance and restoration of the historic commercial and residential integrity of transitional areas.<br>■ Encourage conversion and preservation of historic structures in transitional areas to professional office and street-level food, entertainment and other commercial uses. | ■ Establish a bi-annual meeting between the City of Hillsdale Planning Commission and Hillsdale College representatives. – Q2-2015<br>■ Zone for appropriate mixed-use in residential neighborhoods that encourages redevelopment, walkability and small business development. – Q3-2015<br>■ Adopt form-based code and historic preservation tools. – Q3-2015<br>■ Analyze & Recommend Neighborhoods for future Neighborhood Enterprise Zone (NEZ) – Q2-2016 | ■ Improve lighting and walkability along the corridor<br>■ Implement signage and way-finding to direct visitors<br>■ Eliminate blight from area |

| | | | |
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| *Encourage redevelopment and conversion of residential structures and vacant property in predetermined areas.* | ■ Encourage physical renovation and rehabilitation of structures that are architecturally compatible with existing neighborhoods.<br>■ Encourage shared drives and off-street parking areas for office uses and develop Zoning Ordinance language that will provide necessary on-site parking areas or common shared off-street parking lots for staff of those facilities. | ■ Adopt Form Based Zoning Ordinance. – Q3-2015<br>■ Analyze & Recommend Neighborhoods for future Neighborhood Enterprise Zone (NEZ) – Q2-2016<br>■ Amend Parking Ordinance to allow on-street parking for businesses. – Q4-2015 | ■ Promote and market area for future development |
| *Develop Hillsdale as an academic excellence center.* | ■ Encourage the expansion of multiple-post secondary educational options that address the needs of a variety of students.<br>■ Promote the wide range of primary and secondary educational options available in the area.<br>■ Encourage the development of academic and policy related organizations in the area. i.e. think tanks<br>■ Leverage rich culture of the community, availability of historic structures and the academic reputation of local institutions to attract related organizations. | ■ Establish annual meeting time between the City of Hillsdale Planning Commission and Jackson College, Hillsdale College, HCISD, Hillsdale Community Schools, Hillsdale Prep., Will Carleton Academy and Hillsdale Academy. – Q3-2016 | ■ Market our many education opportunities from pre-School, to public, charter, private, junior college, beauty college, Hillsdale College, Jackson College, etc. |

| Brownfield / Industrial | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Encourage* commercial/residential, *mixed-use redevelopment of abandoned industrial sites outside of industrial parks.* | ▪ Redevelop existing abandoned industrial sites. | ▪ Support grant requests for Brownfield redevelopment support. - Ongoing | ▪ Research and write grants for blight elimination<br>▪ Industrial Facilities Tax Exemption (IFT)<br>▪ Local Development Financing Act (LDFA)<br>▪ Brownfield Authority<br>▪ Leverage high-speed internet infrastructure to attract technology related businesses. (EDC)<br>▪ Support start-up businesses to locate in redeveloped sites. EDC) |

| Brownfield / Industrial | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Support industrial development* | ■ Allow light industrial uses that provide economic benefit to the community and that do not result in negative consequences to bordering neighborhoods.<br>■ Provide high-quality business locations with existing essential infrastructure<br>■ Increase local employment opportunities | ■ Monitor Zoning Ordinances to remain current with Industrial district needs and trends. – Ongoing | ■ Partner with BPU to attract new business<br>■ Recertify industrial park locations |

| | | | |
|---|---|---|---|
| *Encourage the development of light, clean industry clustered in industrial parks that will diversify the local economy, provide a stable tax base and will protect the local environment from degradation.* | ■ Assure industrial uses have access to major thoroughfares and do not disrupt secondary and tertiary roadways.<br>■ Encourage industrial development in areas where soils are suitable and potential for groundwater contamination is minimized. | ■ Encourage industrial development to locate in well planned locations where these uses can be clustered and assure a high degree of compatibility with surrounding land uses. – Ongoing<br>■ Encourage location of industrial uses where sufficient infrastructure can support these uses. - Ongoing<br>■ Buffer industrial uses from residential uses. - Ongoing<br>■ Favor uses that do not pollute the air, soil, water, or are offensive to neighboring land uses because of noise, sight, or odor. - Ongoing<br>■ Require appropriate landscaping of each new or expanding industrial site. – Q3-2015 | ■ Promote and find technology-based companies, especially data storage |

| Commercial Development | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Encourage the development of commercial uses to support the needs of the City of Hillsdale and surrounding area that will provide convenient shopping and related services to area residents and assure compatibility of commercial areas with other areas.* | ■ Encourage clustered commercial development rather than sprawl or strip developments.<br>■ Locate commercial establishments so that they are accessible to efficient transportation systems.<br>■ Locate commercial uses so as to avoid incompatible adjacent uses.<br>■ Promote commercial activities in areas easily accessible to the area's residents.<br>■ Encourage diversification in the type of commercial and business establishments in order to meet a greater range of citizen needs.<br>■ Develop commercial business that promote dollars to be spent locally rather than force residents to spend dollars outside the area.<br>■ Preserve the architectural integrity of older commercial areas when being redeveloped or restored. | ■ Provide zoning requirements for greater green space and landscaping. – Q3-2015<br>■ Establish zoning ordinance safeguards to minimize the negative impacts of commercial activities on roads, adjacent land uses and the environment.<br>■ Evaluate Form Based Zoning ordinances that encourage historic preservation in commercial areas. – Q3-2016<br>■ Encourage B-1 zones on major streets in residential areas | ■ Encourage and invite niche entrepreneurs to the area<br>■ Commercial Rehabilitation Exemption (CRE) |

| M-99 Gateway | | | |
|---|---|---|---|
| **Goals** | **Objectives** | **Action Steps** | **Complementary Actions/ Responsible Agency** |
| *Promote the redevelopment of the M-99 commercial corridor to provide necessary commercial services, promote economic development and serve as an attractive gateway to the City.* | ■ Encourage walkability and limit the number of automobile access points in M-99 redevelopment projects.<br>■ Encourage a uniform streetscape and the development of an attractive gateway to the community.<br>■ Encourage pedestrian and bike traffic. | ■ Plan for and encourage a uniform streetscape for the M-99 corridor. – Q1-2018<br>■ Align land use policy to economic development plans. – Ongoing<br>■ Incorporate bike lanes along M-99. | ■ New signage<br>■ Remove blight<br>■ Support Fairgrounds restoration<br>■ Create cohesive historic theme from north to south |

# RENEWABLE ENERGY IN MICHIGAN

*By* **Andrew Light, Hannah Smith,** *and* **Sarah Mills,** *University of Michigan*

## Introduction

Like the rest of the world, Michigan has begun to switch how its electricity is produced. It is moving away from fossil fuels—especially coal—and toward renewable energy sources such as wind and solar power. This is a result of two primary factors. First, concern is increasing among citizens, businesses and governments to reduce carbon emissions as the effects of climate change emerge (often in the form of more intense rainfall). Second, this rise in renewables is also a result of the rapidly dropping costs of wind and solar making them increasingly cost competitive, especially in light of unknown future prices for fossil fuels. As shown in Table 1, renewable energies like wind and solar have increased substantially over the last two decades in Michigan and throughout the Great Lakes region, while coal fired power plants have increasingly been retired.

This transition to renewable energy has meant a shift in the geography of electricity production. Currently, most of our electricity comes from large, centralized fossil fuel and nuclear power plants sited in or near urban areas and especially along our coastlines where much of that power is used. By contrast, renewable energy sources are scalable, allowing for a more widely distributed power generation network. But these renewable energy sources also require more land area than traditional power plants to produce the same amount of power. What this means is that a shift toward renewable energy will put far more—and different—people in contact with energy infrastructure. Deploying rooftop solar throughout a community, for example, will put many more people in daily contact with their local *"power plant."* But even if solar panels were put on all available surfaces, there is simply not enough land area in cities to produce as much electric power as these cities consume. As a result, the ongoing energy transition will require siting renewable energy infrastructure—and the transmission lines to bring that power to urban areas—in rural communities, providing a new economic development opportunity for these communities.

**Table 1: Utility-scale Wind and Solar Net Generation in Midwest States and Ontario, Canada (in thousands of megawatt hours)**

| | Wind and Solar | | | Coal | | |
|---|---|---|---|---|---|---|
| **State** | **2001** | **2010** | **2018** | **2001** | **2010** | **2018** |
| Illinois | 0 | 4,468 | 11,965 | 79,551 | 93,611 | 59,642 |
| Indiana | 0 | 2,934 | 5,728 | 116,067 | 112,238 | 77,455 |
| **Michigan** | **0** | **360** | **5,575** | **68,263** | **65,604** | **42,331** |
| Minnesota | 897 | 4,792 | 11,756 | 31,819 | 28,083 | 23,455 |
| Ohio | 0 | 13 | 1,869 | 124,213 | 117,828 | 58,727 |
| Pennsylvania | 11 | 1,862 | 3,629 | 111,900 | 110,369 | 44,068 |
| Wisconsin | 72 | 1,088 | 1,678 | 41,253 | 40,169 | 33,322 |
| U.S. Total | 6,087 | 95,864 | 336,475 | 1,903,956 | 1,847,290 | 1,145,962 |
| | **2005** | **2015** | **2016** | **2005** | **2010** | **2018** |
| Ontario | 26 | 13,201 | 15,689 | 29,428 | 12,285 | 0 |

Source: *eia.gov; statcan.gc.*
Note: Most of the decline in coal produced power that has not been replaced by wind and solar has come from conversion to natural gas powered utility plants.

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While few planners in the past have had the need to give much consideration to siting energy infrastructure, that can no longer be the case. The transition to alternative energy is underway, and it is now more important than ever for all Michigan communities to decide whether, how, and where new energy infrastructure fits within their community. That means educating and asking the public for input, amending the master plan, and then zoning accordingly. Thereafter, it will be important to frequently reassess those ordinances to make sure they are keeping pace with changes in renewable energy technology.

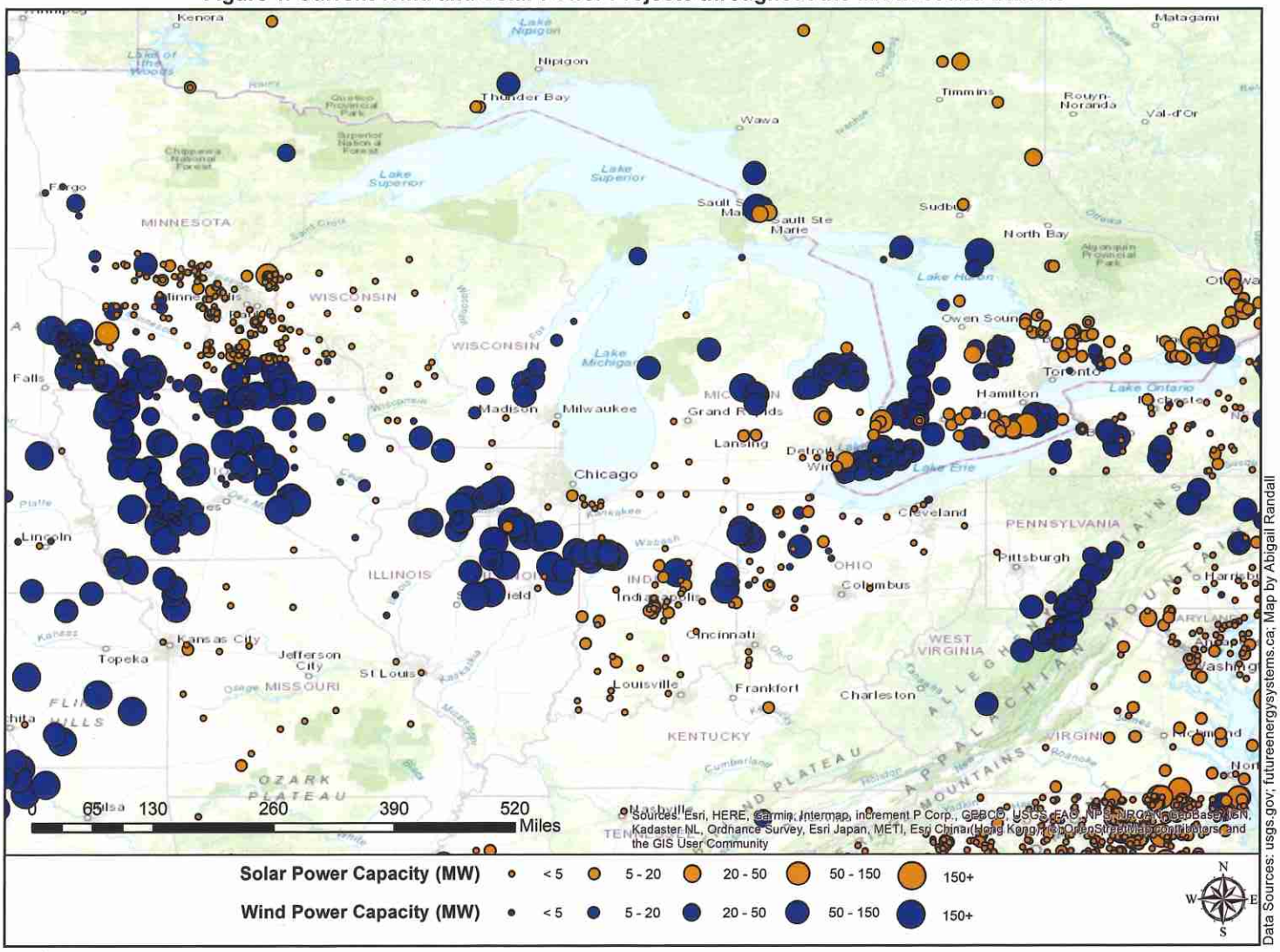
This article will examine the geography of wind and solar in Michigan, how utility-scale renewable energy development works, what developers are looking for when siting projects, community benefits and drawbacks of renewable energy projects, and how to properly plan and zone for renewable energy. This article does not address other forms of renewable energy production like hydroelectric, geothermal, tidal, or others.

## Geography of Wind and Solar in the Midwest

As shown in Figure 1, there is already considerable renewable energy development across the Great Lakes region—both in the U.S., and in Ontario. Most of the existing projects are wind farms, due largely to a more mature market for that technology. However, in recent years, as the costs of solar have begun to significantly decline, solar projects are becoming increasingly prevalent throughout the region.

In Michigan, of the 2,241 MW (megawatts) of utility-scale renewable energy currently deployed, 2,139 MW are wind energy. Most of this development has occurred near the Saginaw Bay and in the central Lower Peninsula region. One of the early investments made when developing clean energy in the state was to run transmission lines through the *"thumb"* of Michigan, which has some of the highest potential for wind energy production that could support utility-scale wind power. At the same time, the increased, rapid development of wind projects in that region has likely been a catalyst for some of the harsher resistance that wind developers have faced. The region now includes moratoriums on utility-scale wind projects, legal battles, and ongoing rezoning efforts. While the transmission lines might entice further alternative energy development, a lack of community support and many other factors that will be explored more fully later, will likely determine the future of additional energy development near the Saginaw Bay.

**Figure 1: Current Wind and Solar Power Projects throughout the Midwest and Ontario**




Instead, most development attention on wind energy has shifted to other areas of the state, notably along the US-127 corridor and other parts of central Michigan. More efficient blade design and taller wind turbine towers have made wind energy production viable in more areas in Michigan, though access to transmission lines and finding a welcoming community continue to limit how many wind projects will be built in the state. There are currently eight wind projects, totaling 1,215 MW, in the MISO (Midcontinent Independent System Operator) queue—that is, wind developers are studying to see if there is space on the transmission grid for these potential projects. See Figure 2 and Table 2 on pages 4 and 5.

There is far less utility-scale solar power currently developed in the state, and those projects that do exist are far smaller in size than wind energy projects. In part, this is because solar can occur at much different scales. While there are economies of scale for both wind and solar, the large equipment required to erect a wind turbine means that projects of one or two—or even 10—turbines are often cost prohibitive. For solar, it is more possible to create projects of varying scale from 1 MW to hundreds of MWs.

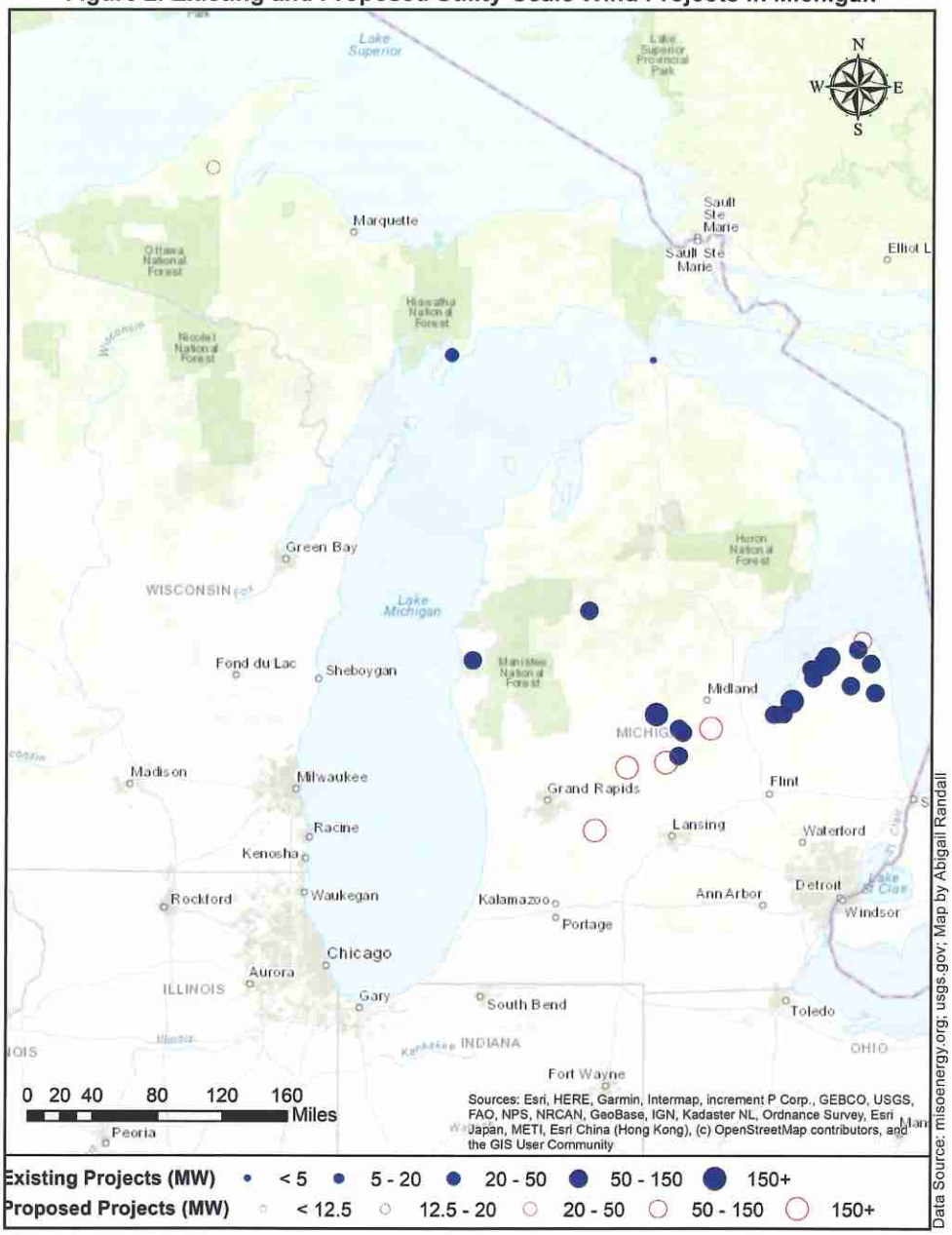
The 12 utility-scale solar installations currently in the state total 102 MW, or 8.5 MW on average. The largest existing solar project is a 50 MW project sited largely on city-owned property in the City of Lapeer. However, change is afoot. There is currently a 239 MW solar farm under construction in Shiawassee County that will single-handedly triple the state's installed solar capacity when it comes online, expected later in 2020. Furthermore, the MISO queue currently contains 49 solar projects totaling 6,253 MW of capacity, averaging 127 MW per project. Additionally, there are hundreds of smaller scale solar projects—more on the order of 1 to 20 MW—that would connect to distribution lines rather than transmission lines, which are not shown on these maps. Transmission lines are higher voltage electrical wires that transfer electricity from power plants to substations, where the power is stepped down to a lower voltage to reach end-users via distribution lines. While most of the solar projects are in the southern third of the state, there is active discussion of solar in the Upper Peninsula and in the Northwestern Lower Peninsula, demonstrating that much of the state has viable solar resources. See Figure 3 and Table 3 on pages 6 and 7.

## Renewable Energy Goals and Commitments

One driver of renewable energy development in Michigan has been the renewable portfolio standard (RPS) initially passed by the Legislature in 2008 which required utilities to get 10% of their electricity from renewable energy sources by the year 2015. In 2016, the RPS was legislatively increased to 15% by 2021, a target which the utilities in the state expect to meet. This puts the state roughly on par with the other states in the Great Lakes region. See Table 4 on page 8.

At the same time that the state increased the RPS, it also required the major investor-owned utilities, including DTE and Consumers Energy, to file integrated resource plans (IRP), showing how they plan to supply electricity to customers for the next 15-20 years. Both DTE and

**Figure 2: Existing and Proposed Utility-Scale Wind Projects in Michigan**




Consumers Energy have recently filed plans that show an increasing amount of electricity coming from renewables well beyond the 2021 expiration of the RPS. While the utilities have planned different paths—DTE's plan relies heavily on wind energy, while Consumers calls for solar—they expect to deploy a combined 1,300 MW within the next four years. Further, both of these utilities—along with others from across the nation—have announced carbon neutrality goals (Consumers by 2040; DTE by 2050), far exceeding the existing RPS. Carbon neutrality goals typically entail the electricity system either emitting no carbon emissions (through the use of renewable energy or nuclear energy), or offsetting any emissions produced by fossil fuels by capturing and storing carbon (either directly at the fossil fuel power plant or elsewhere by planting trees, removing carbon from the atmosphere, etc.).

Some municipalities have also been active in this space, calling for higher levels of renewable energy either for their city's own power use, or for the needs of all electricity customers in the city limits. Cities around the Midwest have found ways to place solar panels on municipal buildings or offset their energy use by purchasing power from larger renewable energy installations. Additionally, there are an increasing number of cities that have committed to 100% renewable energy goals, a list of which can be found in Table 5 on page 8.

Many businesses and other consumers have committed to renewable energy goals as well. Switch, a technology infrastructure company with a campus in Grand Rapids, MI, has worked with Consumers Energy to power their campus with 100% renewable energy. General Motors has signed on to RE100, a list of businesses committed to 100% clean energy. General Motors hosts solar panels on many of their buildings in Michigan as well as worldwide. And both Consumers Energy (Solar Gardens) and DTE (MiGreenPower) offer green pricing programs for customers of all sizes, allowing customers to opt into a program to get a larger percentage of their power from renewable energy sources than the current utility mix provides.

## Other Policies Impacting Renewable Energy in Michigan

There are other federal and state policies that have facilitated the deployment of renewable energy. At the federal level, both wind and solar technologies have received tax incentives to make them more cost-competitive with nonrenewable projects like natural gas or coal. These tax incentives have expired and later been renewed numerous times, and there is increasing discussion about whether they are needed any longer given the declining costs of wind and solar technologies.

At the state level, one significant policy for renewable energy production is the adjustment to the state Farmland and Open Space Preservation act, known as PA 116. This act, originally enacted in 1974, allows farmers around the state to voluntarily limit development on farmland in exchange for tax benefits. This popular program has more than 3.3 million acres (as of 2018), or about 33% of the state's best farmland enrolled.

Prior to June 2019, PA 116 policies largely allowed utility-scale wind energy development, while utility-scale solar was not. This effectively made a significant portion of the state's farmland off-limits to solar developers. In June 2019, Governor Whitmer announced a change to the policy as a result of a workgroup analysis. The new policy allows landowners to effectively put their PA 116 agreements on hold to pursue solar development so long as a list of conditions are met. Those conditions include maintaining the existing field tile (underground drainage), planting pollinator habitat and ground cover, and the developer posting a surety bond or letter of credit with the State to ensure that the solar panels are removed and the land is returned to a condition in which it can be farmed at the end of the project. The move was intended to allow farmers to be eligible to take advantage of the economic opportunity presented by renewable energy development while putting safeguards in place to preserve the ability to farm the land in the future.

There are also a number of state-level policies that have helped accelerate the deployment of smaller-scale renewable energy systems, including rooftop or small-ground-mounted solar installations. These include net metering—the ability for customers with renewable energy systems to sell excess power to a utility; and a 2019 change to Michigan's property tax policy for small-scale (less than 150kW) solar energy systems to prevent an in-

**Table 2: List of Operating Utility-scale Wind Projects in Michigan**

| Plant Name | County/Townships | Nameplate Capacity (MW) | Number of Turbines | Operating Year |
|---|---|---|---|---|
| Apple Blossom Wind Farm | Huron/ Winsor | 100.0 | 29 | 2017 |
| Bay Windpower I | Cheboygan/ Wawatam | 1.8 | 2 | 2001 |
| Beebe 1B | Gratiot/ Emerson, North Star | 50.4 | 21 | 2014 |
| Beebe Renewable Energy LLC | Gratiot/ Emerson, Hamilton, North Star | 81.6 | 34 | 2012 |
| Big Turtle Wind Farm I | Huron/ Rubicon | 20.0 | 10 | 2014 |
| Big Turtle Wind Farm II | Huron/ Bloomfield | 29.4 | 14 | 2016 |
| Brookfield | Huron/ Brookfield, Grant, Sebewaing, Winsor | 74.8 | 44 | 2014 |
| Cross Winds Energy Park | Tuscola/ Akron, Columbia | 111.0 | 62 | 2014 |
| Cross Winds Energy Park II | Tuscola/ Columbia | 44.0 | 19 | 2018 |
| Cross Winds Energy Park III | Tuscola/ Columbia | 76.0 | 33 | 2019 |
| Deerfield Wind Energy, LLC | Huron/ Bloomfield, Dwight, Huron, Lincoln | 149.0 | 72 | 2017 |
| Echo Wind Park | Huron/ Chandler, McKinley, Oliver | 112.0 | 70 | 2014 |
| Gratiot County Wind LLC | Gratiot/ Bethany, Emerson, Lafayette, City of St. Louis | 110.4 | 69 | 2012 |
| Gratiot Wind Park | Gratiot/ Bethany, Lafayette, Wheeler | 102.0 | 64 | 2011 |
| Harvest I | Huron/ Chandler, Oliver | 52.8 | 32 | 2008 |
| Harvest II | Huron/ Chandler, McKinley, Oliver | 59.4 | 33 | 2012 |
| Heritage Garden Wind Farm I | Delta/ Garden | 28.0 | 14 | 2012 |
| Lake Winds Energy Park | Mason/ Riverton, Summit | 100.8 | 56 | 2012 |
| McKinley Wind Park | Huron/ McKinley | 14.4 | 9 | 2012 |
| Michigan Wind 1 | Huron/ Bingham, Sheridan | 69.0 | 46 | 2008 |
| Michigan Wind 2 | Sanilac/ Delaware, Marion, Minden | 90.0 | 50 | 2011 |
| Minden Wind Park | Sanilac/ Delaware, Minden | 32.0 | 20 | 2012 |
| Pheasant Run Wind LLC | Huron/ Brookfield, Fairhaven, Oliver, Sebewaing, Winsor | 74.8 | 44 | 2013 |
| Pine River Wind Farm | Gratiot/ Bethany, Coe, Pine River | 161.3 | 65 | 2019 |
| Pinnebog Wind Park | Huron/ Chandler, Colfax, Oliver | 50.0 | 30 | 2016 |
| Sigel Wind Park | Huron/ Bloomfield, Sigel | 64.0 | 40 | 2012 |
| Stoney Corners Wind Farm | Missaukee/ Highland, Richland | 60.0 | 29 | 2009 |
| Tuscola Bay Wind | Tuscola/ Blumfield, Gilford | 120.0 | 75 | 2012 |
| Tuscola Wind II LLC | Tuscola/ Akron, Fairgrove, Gilford, Wisner | 100.3 | 59 | 2013 |

Source: EIA Form 860 and USGS

crease in taxable value until the home is sold. As is the case in many states, Michigan's current policies for these smaller-scale systems are in flux, with utilities often proposing changes that make it more difficult—or less lucrative—for residential and small business owners to sell excess solar power to the grid. There are currently legislative efforts by several groups to eliminate impediments to installing small-scale solar energy projects.

## Different Scales of Wind and Solar Energy Projects

As noted earlier, renewable energy technologies are scalable and so are deployed in many different sizes of applications. Understanding these differences in scale—and how technologies have shifted over time—is important to considering their fit in a community master plan.

### *Wind Energy*

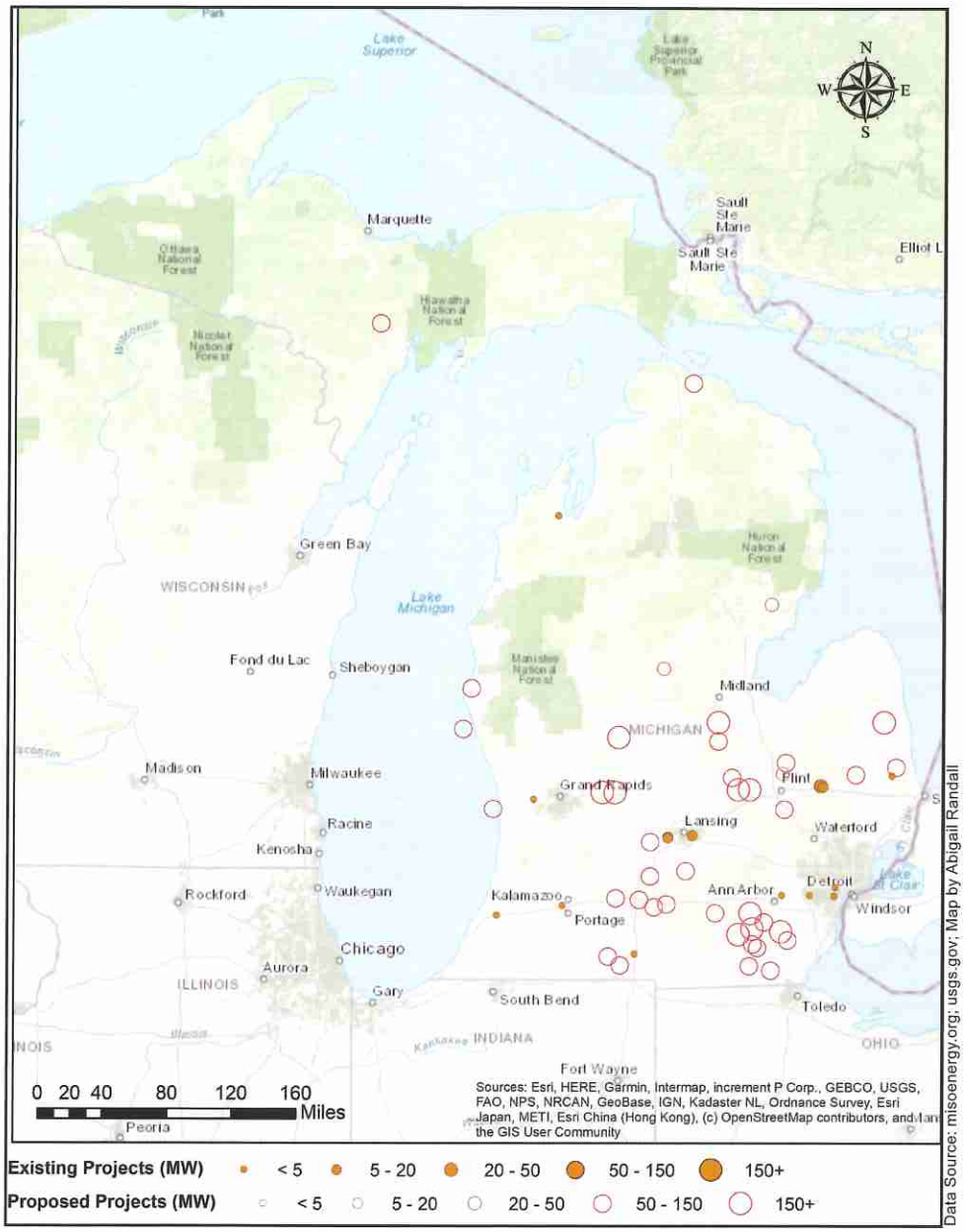
Wind turbines come in two main size categories. Large-scale wind turbines are used for utility-scale energy production, or *"wind farms."* The size of these large turbines has grown over time to allow for larger rotor diameters (which produce more power) and to take advantage of steadier wind speeds at higher altitudes. As shown in Figure 4 (on page 9), these turbines are close to twice the height of two new farm silos. In Michigan, most of the existing wind turbines are just under 500 feet tall, reflecting the technology that was largely available from 2010 to 2018, when most of the state's wind turbines were erected. However, some of the earliest turbines in the state are shorter, and many of those under construction right now are taller. The two turbines just south of the Mackinaw Bridge, built in 2001, for example, are roughly 325' tall, and the standard size in 2008, when Michigan's first large-scale wind turbines went online, was closer to 400'. By comparison, a wind farm currently under construction in Isabella County is the first to utilize turbines taller than 500'.

Because constructing modern wind turbines requires developers to bring in special cranes, developers often need to site multiple turbines in an area to reach economies of scale. There are examples of one or two smaller turbines deployed in Michigan (e.g., by Mackinaw Bridge, outside Traverse City, and in Northport) and elsewhere, especially in Minnesota and across New England. However, these smaller installations produce less power and are still expensive, so there is limited interest in this size of development.

There are, however, even smaller-scale wind turbines that do not require construction cranes that are possible in smaller numbers. Small-scale turbines can range from a short, roof-mounted turbine to a turbine that is upwards of 150' tall, depending on the local ordinance limitations. Most often, these turbines produce energy to off-set the use of grid power (similar to rooftop solar panels). While the primary use of small-scale wind is for on-site consumption, excess electricity produced may be sold back to the local utility, depending upon the net-metering policies in the utility territory. Small-scale wind energy systems may also use batteries to store excess energy.

There is also often talk of offshore wind, since some of the best wind resources in Michigan are over the Great Lakes. The primary obstacle to offshore wind in the Great Lakes is the cost: both because it is more expensive to do construction and maintenance in water, but also because offshore wind brings with it additional regulation. The costs have been declining, however, and so offshore

**Figure 3: Existing and Proposed Utility-Scale Solar Projects in Michigan**




Data Source: misoenergy.org; usgs.gov; Map by Abigail Randall

wind development is picking up. The first offshore wind project in the United States is near Block Island, Rhode Island. It came online in 2016, and more offshore wind is currently being planned along the East Coast. Currently, there is only one offshore wind project being planned in the Great Lakes. The Icebreaker Wind Project (so-named because of this additional challenge in fresh water compared to salt water). It is proposed to be located in Lake Erie 8-10 miles off the shore of Cleveland.

### *Solar Energy*

Solar energy, can largely be thought of at two different scales: utility-scale and small-scale for on-site use.

Utility-scale solar energy systems typically use panels that are affixed to support posts that are driven into the ground. The support structures can be made taller to create, for example, covered carports, as has been done on Michigan State University's campus. Solar panels can also be mounted on ballasted supports (effectively heavy concrete blocks) and sit on top of the ground, which is more expensive, but allows solar panels to be deployed on brownfield sites including capped landfills, where you are not permitted to penetrate the ground. There are also solar panel support systems that float on water such as at ponds or water treatment plants. Solar panels themselves can be fixed—facing the same direction all day—or may be *"tracking"* systems, rotating slowly to follow the sun throughout the day.

As noted earlier, it is more feasible for solar energy installations to come in a variety of sizes. Compared to a wind farm, there is far less specialty equipment that is needed to construct a solar farm, and while there are economies of scale (for example, in solar panel purchasing, engineering, and permitting fees), installations of various sizes mounted close to the ground are often feasible. Indeed, many of the existing utility-scale solar installations in Michigan are modest in size and connect to the distribution grid rather than the transmission grid. Some of these projects are *"community solar"* projects where utility customers can *"buy a share"* of the solar project—as they might if they had solar panels on their roof. Their utility bill is charged for the cost of the panels, but they are credited with the power the panels produce, with the idea that once the panels are paid off, they are receiving free electricity. The Lansing Board of Water and Light, for example, has a community solar project on a capped landfill, producing around 430,000 kWh per year. Not all of these small-scale systems, though, fall under that definition, but often these *"community-scale"* projects are viewed more favorably by neighbors than larger installations.

Small-scale projects for on-site use have been around for decades. Electricity customers—residences, but also commercial or industrial businesses—often have the option of placing solar panels on rooftops or using ground-mounted solar panels as an accessory structure on their property. The primary use of the property is for residential, commercial, or industrial use. Solar power is an *"accessory use"* of these properties. Sometimes these systems are sized to not produce any excess power; other times, they are sized to produce enough power to cover the building's needs over the course of the year, relying on net-metering to sell excess power to the grid, or increasingly to store some of the excess power in a battery. More information about planning and zoning for small-scale renewable energy starts on page 11. In contrast, a utility-scale solar farm would be considered the primary use of the land.

## What Utility-Scale Renewable Energy Developers are Looking For

There are many factors energy developers consider when trying to develop a new renewable energy project. These are some of the most common to help local governments better identify which parts of their community are most viable for renewable energy development.

Source: https://msutoday.msu.edu.

Michigan State University's solar carports

**Table 3: List of Operating Utility-scale Solar Projects in Michigan**

| Project Name | County/ Township or City | Output (MW) | What was there before | Size | Year Built |
|---|---|---|---|---|---|
| Watervliet PV | Berrien/ Watervliet Twp. | 5 | Cleared land since the year 2000 at least. Substation there since 2015 (Google Earth) | 30 acres | 2016 |
| Domino Farms Solar | Washtenaw/ Ann Arbor Twp. | 1 | "under-utilized parcel of land" also apparently could not be used for agriculture | 9.37 acres | 2015 |
| Ford World Headquarters | Wayne/ City of Dearborn | 1 | This is a covered parking lot | 360 parking spots | 2015 |
| Greenwood Solar Farm | St Clair/ Greenwood Twp. | 2 | Unused land on site of gas-fired power plant | Up to 180 acres on parcel of 475 acres | 2016 |
| Western Michigan Solar Gardens | Kalamazoo | 1 | Land part of WMU campus. Been a field since 2007 at least (Google Earth) | Almost 10 acres | 2016 |
| Grand Valley Solar Gardens | Ottawa/ Allendale Twp. | 3 | Former farm field | 17 acres | 2016 |
| Lapeer Solar Farm | Lapeer/ City of Lapeer | 50 | City-owned land. One parcel of a "former state-run institution that closed more than 25 years ago" and one parcel that had been leased out to a farmer. | 400 acres | 2017 |
| O'Shea Solar Farm | Wayne/ City of Detroit | 2 | Abandoned Park | 20 Acre park, 9.6 acres taken up by solar panels | 2017 |
| Spartan PV 1, LLC | Ingham/ City of East Lansing | 11 | Five parking lots | | 2017 |
| DG AMP Solar Coldwater | Branch/ City of Coldwater | 1 | Midwest Foundry | 7 acres | 2018 |
| Delta Solar Power I | Eaton/ Delta Twp. | 24 | Most land was either vancant or farmland | 190 acres | 2018 |
| IKEA Canton Rooftop PV System | Wayne City of Canton | 1 | Rooftop | 162,000 square feet | 2016 |

Source: EIA Form 860

### *Resource Access*

One of the first steps in deciding where to place wind turbines and solar panels is identifying geographic regions where wind and solar access is sufficient for energy production. For a long time, it was often assumed that Michigan did not have enough wind or solar access to make large-scale renewable projects viable. As technology has advanced, though, this has been proven to not be true. Turbines are taller and solar panels are more efficient than ever. Maps (https://www.nrel.gov/gis/data-tools.html) and online calculators (https://pvwatts.nrel.gov/) available from the National Renewable Energy Laboratory (NREL) help to show where there is ample wind and solar access in the state.

### *Transmission Access*

For utility-scale renewable energy projects, another key consideration is access to transmission lines and electric substations so the electricity can move from the project site to the consumers. The electricity grid consists of different levels of lines that can handle varying levels of electricity transmission. High output projects like wind farms and large solar farms require the use of high voltage transmission lines, and tend to be located within a couple of miles of an existing line. Some wind projects in the state have built new substations to connect to those transmission lines, while solar projects have tended to try to tap into existing substations. The online Energy Zones Mapping Tool (EZMT) from the U.S. Department of Energy includes layers with transmission lines and transmission-level substations.

Smaller utility-scale solar projects produce somewhere in the 1-5 MW range. These projects can be connected to existing distribution lines, so long as there is capacity on the system. These smaller projects are particularly sensitive to current electrical infrastructure capabilities, as they cannot typically afford to pay to upgrade infrastructure as part of the project. While there are not good online maps of distribution-level electrical lines, your local utility should be able to help you identify where there might be lines with existing capacity in your community.

### *Land Availability and Contours*

As noted earlier, one of the reasons that renewable energy is posing new challenges—and opportunities—to planners is that it is shifting the geography of energy. In part this is because, on a per MW basis, renewable energy power plants take up more land than conventional power plants (though when you consider the land required for coal mining or natural gas drilling, there are fewer disparities in this number). While a 1,000 MW conventional power plant might take 100 acres, 1,000 MW of solar requires anywhere from 5,000-7,000 acres, and a 1,000 MW wind farm could easily span 100,000 acres, though typically only 500 of those acres are actually occupied with the wind turbines and turbine access roads (typically 1-2 acres per turbine). This is one of the reasons why rural communities are often sought out for wind energy project locations.

Farmland in particular is sought out by both wind and solar developers because it is generally flat, has already been cleared of trees, and typically has a relatively affordable land price with relatively low township taxes. These are the same reasons that farmland has been desirable for so many other types of development projects. But neither wind nor solar projects must be confined to farmland. Some wind projects, particularly in other parts of the country, have been developed in more forested areas, often on ridgelines. Solar is possible on pretty much any property that is not shaded from the sun. Solar is also often possible on brownfields sites (the Environmental Protection Agency has a program called *"Brightfields"* which provides case studies and considerations for using brownfields for solar), though typically these parcels are not large enough for large-scale solar facilities which typically require at least 500 acres of land.

For wind development, it is important to note that wind developers rarely own the land that the project sits on. Instead, they enter into long-term leases with the landowner. Also, because wind turbines require unimpeded access to the wind, wind developers commonly enter into agreements with neighboring land owners to ensure those lands do not erect, for example, their own wind turbines or cell phone towers which might alter downwind flows. This is among the reasons that wind turbines spread across such large landscapes: turbines themselves cannot be lined up right next to each other.

Solar farms, in comparison, have comparatively consolidated footprints, and while large-scale solar farms may span multiple parcels, solar developers try to keep these parcels contiguous. In addition to being on land that is free of trees which could shade the panels, solar is typically

**Table 4: Renewable Energy Goals of States in the Midwest**

| State | Goal | Year | Mandatory/Voluntary |
|---|---|---|---|
| IL | 25% | 2026 | Mandatory |
| IN | 10% | 2025 | Voluntary |
| MI | 15% | 2021 | Mandatory |
| MN | 25% | 2025 | Mandatory |
| OH | 12.5% | 2026 | Mandatory |
| PA | 18% | 2021 | Mandatory |
| WI | 10% | 2015 | Mandatory |

Source: www.ncsl.org/

Note: The Michigan Clean, Renewable and Efficient Energy Act of 2008, amended in 2017, set a goal that not less than 35% of the state's electrical needs be met through energy waste reduction and renewable energy by 2025.

sited on flat land or those with a very gentle slope, to avoid topography changes in which one row of panels would shade the others at some portions of the day.

In terms of land ownership, some solar developers do enter into long-term leases with landowners, as is done with wind development, while other solar developers purchase the land outright. This is largely because, while wind turbines occupy a relatively small portion of the land under lease (and so most of the land can continue to be farmed), solar development typically occurs on most of the land that is under lease. While some niche farming opportunities exist under the panels (e.g., sheep grazing, hand-harvested vegetables, and bee-keeping), most solar farms as currently deployed in Michigan do not typically have active farming.

### *Environmental Permitting*

Developers have to comply with various state and federal environmental regulations. At the state level, developers must acquire a permit from the Department of Environment, Great Lakes, and Energy (EGLE) if the proposed project is close to any wetlands or other regulated lands, including brownfields. At the federal level, the Endangered Species Act protects the habitat of any species that is on the Endangered Species List. For wind energy in Michigan, this is most commonly associated with protection of bald eagles.

### *Zoning*

As might be expected, zoning is one of the primary factors impacting a renewable energy developer's ability to site a project. This is particularly true because, as noted, there are economies of scale associated with renewable energy. Zoning ordinances that limit wind or solar to only a small area of the community or in isolated pockets within individual properties may make a project financially infeasible. On the other hand, zoning ordinances that provide many opportunities for renewable energy development might attract developers to a community with otherwise mediocre wind or solar resources. The zoning ordinance effectively sends the message to potential developers that the community is *"open for business"* or that the developer should not bother trying to site a project in the community.

While there are many variations on how to consider renewables in zoning ordinances, it is important to understand that by not addressing the subject at all, a community is likely prohibiting renewables in a way that constitutes exclusion of lawful land uses in violation of the Michigan Zoning Enabling Act (MZEA, MCL 125.3101, et seq.). This is due to the fact that zoning in Michigan is structured so that any land use that is not specifically listed in the zoning ordinance is generally prohibited. At the same time, Section 207 of the MZEA provides that a community is not permitted to exclude a lawful land use in the face of a demonstrated need unless there is no appropriate location for that land use in the area. In effect, unless there is no capacity in the electric grid system for power generated by utility-scale renewables, or no viable wind resource, communities are required to provide for them, as there is demand for power produced by alternative energy (at least for the foreseeable future). However, communities are given wide discretion as to the contents of those zoning regulations. Restrictions to certain locations, or regulations on height, setback and noise are common regulations. Such regulations should be consistent with the goals of the local master plan, and the regulations must be reasonable. The standards cannot be set at a level that effectively excludes a lawful land use. What this means in practice is that communities should determine whether, how and where utility-scale renewable energy fits within their community, plan accordingly, and then set zoning regulations that reasonably match that intent.

**Table 5: Michigan Communities that have Passed 100% Renewable Energy Goals**

| State | City | Goal | By year: |
|---|---|---|---|
| MI | Ann Arbor | 100% renewable for city operations | 2035 |
| MI | Grand Rapids | 100% renewables | 2025 |
| MI | Petoskey | 100% clean energy citywide | 2035 |
| MI | Traverse City | 100% renewables community-wide | 2040 |
| MI | Meridian Township | 100% renewables for municipal | 2035 |
| MI | Northport Village | 100% renewables | 2025 |

Source: www.miclimateaction.org/

## Benefits and Drawbacks of Utility-scale Renewables

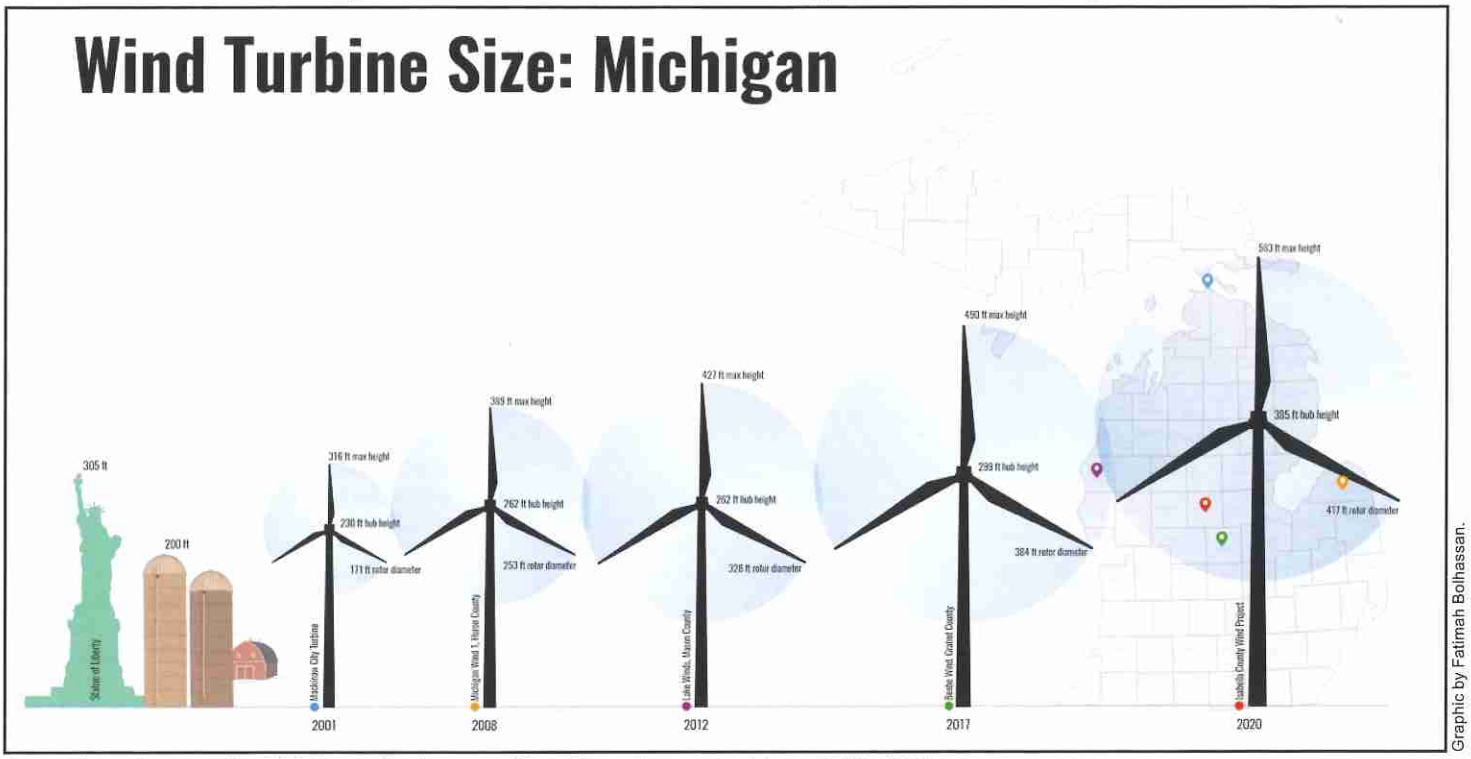
There are undoubtedly environmental benefits at the state, national, and global scale associated with a transition to clean energy. Our state has already begun to see the effects of climate change, and these effects will only increase in coming years. There is no shortage of data telling us that climate change is exacerbated by land use decisions (such as those that discourage high-density development in urban areas), but also that climate change will require land use changes in the form of clean energy development to limit the growth of greenhouse gases. As a result, there is a clear need for communities to provide opportunities in their zoning ordinances for clean energy production.

Similarly, at the national level energy security is a particularly high priority. At the moment, energy production is dependent on not only domestic supply of fossil fuels, but foreign supply of fossil fuels as well. Trade deals, conflicts, and a large portion of U.S. foreign policy has an energy security component as the government works hard to guarantee a cheap and constant flow of fossil fuels. Communities providing opportunities in their zoning ordinances for clean energy will help enable the United States to guarantee an energy supply to the country without concern over price fluctuations and global conflicts that could jeopardize electricity flow in the country.

Furthermore, zoning ordinances that create opportunities for renewable energy can improve the air quality in communities across our state and nation that currently host fossil fuel power plants. These plants emit particulate matter that exacerbates various health problems like asthma, and other respiratory diseases, as well as cause cancer with prolonged exposure. Historically, these power plants have been sited in historically disadvantaged communities, like communities of color or low income neighborhoods. This has led to an increase in negative health impacts to these populations. Transitioning to clean energy removes this burden from those communities.

These are all valid reasons why each community should consider providing opportunities within their master plan and zoning ordinance for renewable energy.

**Figure 4: Comparison of Wind Turbine Heights Over Time in Michigan**




Graphic by Fatimah Bolhassan.

Note: New silos may be 300 feet tall, whereas older silos often ranged from 30' to 100'.

At the very least, doing so will help meet the energy needs of their own community. But there are other benefits and some negative impacts in certain situations that should also be considered. Following are some of the common community-level benefits and potential negative impacts of wind and solar energy production.

***Benefits***

Utility-scale wind and solar projects offer many of the same benefits to communities who host these projects.

*Landowner Payments*

As mentioned earlier, wind developers often enter into leases or other contracts with property owners in the project area, many of whom may not actually have a wind turbine sited on their property. For solar development, the developer either leases or buys the land on which the solar panels will sit. While the value of these leases varies across the state, it can be on the order of a few thousand dollars per year for wind, and commonly the going land-rental rate for solar.

Research conducted by the University of Michigan in Michigan communities with existing windfarms has found that landowners often use the revenues that they receive from wind leases to reinvest in their property: improving the barn, buying new equipment, tiling their fields, and improving their home. These landowners also are able to solidify succession plans, as they now have a guaranteed revenue stream that helps to weather times of low crop prices or drought/flooding. Solar leases are often even more lucrative to the landowner than a wind lease, allowing landowners an additional revenue stream—and not just for farmland owners, but in the case of solar on brownfields, for the owners of these under-utilized properties. Examples of solar on brownfields in Michigan include projects in Coldwater (1.3 MW on a demolished foundry site), East Lansing (0.6 MW on a landfill site), and Cadillac (0.5 MW on a former industrial site).

*Tax Revenue*

There are also community-wide economic benefits from renewable energy. The infrastructure of both utility-scale wind and solar projects are taxed as personal property, and because both constitute relatively high dollar value investments, this can translate into significant tax revenues. While the exact amount will vary depending upon the size of the investment and the local millage rate, a case study we developed from Shiawassee County – where both a wind and a solar project were proposed – found tax payments for both technologies to average roughly $100,000 per MW over the 25-30 year life of the project. Notably, both wind and solar currently have multiplier tables set by the State Tax Commission that reduces the taxable value over time, so communities would see the largest tax benefits in the first few years of the project. Also, some (mostly urban) communities may be eligible to give tax incentives for personal property taxes, including for solar farms. For a better understanding of what tax revenue might be possible in your community, contact your assessor.

*Employment*

According to a 2019 report from the non-profit E2, 10,202 Michiganders are employed in the renewable energy industry statewide. However, not all—or even most—of the jobs in the wind and solar energy industry are in the communities with wind and solar farm projects. Many of the jobs are in the manufacturing and construction sectors. What is often of most interest to communities who are considering hosting renewable energy projects is how many long-term local jobs will be created that will stay in that community. University of Michigan's research into Michigan clean energy projects finds that for wind energy, there are between 7 and 11 long-term operations and maintenance jobs in or near the community where the wind farm is sited for each 100 MW, so a 200 MW wind farm would be expected to have 14-22 long-term local jobs. There is less information on solar jobs, in part because that sector is currently so much smaller in Michigan, but as a single datapoint, the solar farm under construction in Shiawassee County is projecting 4-6 long-term jobs based in or near Shiawassee County.

*Local Environmental Benefits*

Specifically for solar energy, there is potential for water quality improvements depending on what is planted under the panels and what was planted prior to the solar development. Since solar is often (though not exclusively) sited on farmland, it often displaces crops that would have had fertilizers and pesticides applied, which can cause downstream water quality prob-

lems if not properly managed. Planting ground cover aimed at retaining the soil and minimizing fertilizer use may lead to downstream benefits (the Department of Energy is currently funding a study to quantify these benefits). Water quality benefits may also accrue in urban environments, where large-scale solar developments might provide site improvements including stormwater management to alleviate downstream flooding. [Stormwater detention or retention basins may not be a good idea on farmland if the intention is to farm the land again.] Furthermore, planting native plants or pollinator habitat under solar panels is an easy way to increase biodiversity in areas that are historically dominated by monoculture, which may provide additional ecological benefits for neighboring lands.

***Drawbacks***

While there are many global and local benefits of renewable energy, it is important to remember that every energy source has some negative impact (which is why energy conservation is so important: the cleanest energy is the energy that does not have to be produced). It is important for communities to understand those drawbacks ahead of time, so that they can both tailor their own expectations, and figure out whether and how these technologies fit within their community.

*Human Health Impacts*

Given zoning's objective to protect public health, safety, and general welfare, concerns about health impacts are common when renewable energy is proposed. For both wind and solar, this often takes the form of concern over noise, as both wind turbine blades and the inverters utilized within a solar array do emit sound. We were unable to find any studies specifically considering solar farm noise, but many exist for wind energy. Most of this research has found that there are no direct human health impacts from wind turbines. There is ongoing research into the indirect impacts of wind turbines, specifically in determining whether or not wind turbines can induce stress or annoyance in local residents, which may lead to other human health problems. Additionally, there is evidence that the shadow flicker from wind turbines could negatively affect those with epilepsy, though occurrences of negative outcomes are rare. New turbines are built to spin at a slower rate than older turbines, making the impacts of shadow flicker less prevalent, and turbines can be programmed to not operate when shadow flicker might affect an epileptic person's home, for example.

*Wildlife Impacts*

The most immediate impact to wildlife from both wind and solar projects is the displacement of habitats during construction. While many wildlife will return following construction, that may not be the case if the project impacted niche habitat. For wind farms, there is often concern over the long-term impact on birds and bats. Many environmental organizations, including the National Audubon Society, support properly sited wind energy, as it helps mitigate climate change which poses an even graver threat to species. Research and recommendations on best practices to avoid conflict with wildlife is available from the American Wind Wildlife Institute, among other sources. For solar farms, one consideration is that the National Electrical Code requires developers to fence in the solar array which may impede large wildlife movement.

*Visual Impacts*

The primary and undeniable concern about utility-scale renewable energy projects is that they change the landscape. This is clearly evident for wind turbines. At 500-600 feet tall, modern wind turbines are impossible to conceal, and the red lights atop of the towers—which the Federal Aviation Administration (FAA) requires—are visible from even greater distances at night. [The FAA has approved a technology that would activate the lights only when an aircraft is within the vicinity of the windfarm, but that technology has not yet been deployed in Michigan.] This is particularly relevant in communities where aesthetic considerations are a high priority—for example, areas where the economy is based on tourism, or where a high number of people live in the area for its *"rural character."* University of Michigan research from across Michigan finds that property owners who see the landscape more for its productive value (for example, as a good place to farm) tend to be more supportive of wind turbines than those who place a higher aesthetic value on the landscape. While the most rigorous property value studies in the U.S. have found little to no impact on property values as a result of wind development, the reality is that most windfarms in the U.S. are in the *"wind-belt"* from Iowa down through west Texas, where productive landscapes dominate.

Generally, the visual impact of solar farms is far less than wind farms, and is largely limited to those that drive by. Even so, when solar is proposed on farmland, this divide between those who have a productive versus aesthetic view of the landscape often arises. For a person who built a house in a township to enjoy a bucolic rural setting, having solar panels across the road—or even surrounding their home—is a significant change to that vision. Solar on brownfield sites, by comparison, may actually be seen as an aesthetic improvement, particularly if the property was historically poorly maintained.

*Impact to Farm Economy*

Wind energy is generally seen as a benefit to the economy in farming communities, as it diversifies farm incomes and takes little to no land out of production. For solar energy, there are more questions about the impacts that large solar arrays may have in farming communities. Some of the concerns relate to the long-term farmability of the land: will the land be able to be farmed at the end of the solar project's life? While this question is rarely asked of other land uses in farming communities (for example, golf courses are often allowed in agricultural districts, though that land would not necessarily be farmable again), given the scale of solar projects on the horizon and that prime farmland is a limited commodity, it is a reasonable concern. There is nothing inherent in solar development that would make the land unfarmable: the panels and support posts can all be removed. It is unknown what long-term impacts solar farm driving paths or the concrete pads on which the inverters sit will have on farmland, particularly with respect to soil compaction. But these tend to be a relatively small percentage of the land area of a solar farm. A bigger concern for long-term farmability is local requirements, for example, to provide on-site stormwater detention, plant landscaping, or to berm as a screening mechanism. This movement of topsoil or planting of trees may jeopardize the ability to farm the land in the future. The guidelines outlined in PA 116—to maintain the field tile and plant pollinator habitat and other environmentally friendly ground cover—are good models to follow to help ensure the future ability for the land to be farmed.

Another concern of particularly large solar arrays is what impact they will have on agricultural supply chains in farming communities. To be sure, even if the state were to get 100% of its power from solar energy, it would only cover a small portion of the state's farmland (and again, solar development is possible on rooftops and brownfields). But within any one county, the impacts of many thousand-acre solar farms may incrementally impact farm economies: fewer people buying tractors, selling their products through the co-op, buying seed and fertilizer, etc. These declines might be offset by additional local economic activity either directly related to solar energy or induced by landowners with solar leases who spend those lease revenues in the community; but to date, there has been no systematic study of this, in Michigan or elsewhere. The University of Michigan and Michigan State University have recently jointly proposed research into this topic.

## The Planning Imperative

Since utility-scale renewable energy is a relatively new land use to Michigan, it is understandable that not all jurisdictions have provided for it. EGLE's Michigan Zoning Database finds roughly half of zoning ordinances in the state mention

utility-scale wind energy (49%) or small-scale wind (56%) while 27% mention small-scale solar and just 19% mention utility-scale solar. This is problematic, though, because communities without any regulations end up being reactive rather than proactive. As with most types of land development, the strongest community reaction comes when a large scale proposal is made. This is no different with utility-scale renewable energy projects. When communities plan and zone for renewable energy facilities prior to a project being proposed, they have the benefit of time to more thoughtfully consider whether, how, and where it fits within their community. Proactive planning can also either send a message to developers that your community would welcome a renewable energy development or not. The proactive response of Gratiot County has been celebrated nationally as a model for how to get ahead of energy development with a collaborative process to understand how renewable energy fits with other long-term community goals. See sidebar.

## Planning for Renewable Energy

As wind and solar energy become more prevalent in Michigan, it is increasingly important that communities have comprehensive plans that encompass renewable energy. This can be done in a few different ways, most often by integration of a section in the master plan or in specific functional plans like a sustainability plan. The first step of this process is determining how renewable energy fits into the long-term plan for the community and the overall vision that is likely already in your master plan. There are many considerations that should be taken into account when determining the role of renewable energy in your community.

First, you might consider whether the environmental or energy security benefits of renewable energy resonate with the other goals of your community. This need not suggest carte blanche support for renewable energy at all scales, but would help set the stage for considering opportunities for small-scale systems. For example, some communities may have a goal of allowing homeowners to produce some of their own electricity to offset reliance on the grid.

Secondly, as it relates to larger utility-scale systems, it should be considered what role wind or solar energy might play in the community long-term economic development plan. If your community has economic development goals focused on a diverse or expanded tax base, renewable energy could serve as an action item to contribute to that goal. If your primary economic development goal is to establish a large number of permanent full-time jobs, utility-scale renewable energy development might not be as strong of a supporting action.

You should also consider how renewable energy fits into your existing land use mix and future land use plan. With this, you must determine what kind of renewable energy and at what scale of projects the land use classes/districts in your community can support. Wind developments typically require more land than solar due to the size of the turbines. Large amounts of contiguous land are often required to support utility-scale wind and solar energy projects, while smaller projects may be more amenable to a diverse land use mix and can be implemented into more zoning districts. If your community has a large amount of agricultural land and if farmland preservation is a land use goal, utility-scale wind energy development might be a good fit. If there is already substantial residential development in your agricultural areas, solar might be more appropriate. If your community's primary land use is industrial, both wind and solar could be accommodated, but with attention paid to existing water and sewer infrastructure—neither solar nor wind require this infrastructure and so preserving those lands for land uses which require sewer and water connections might be more appropriate. If there is already considerable residential development, or your future land use plan calls for expanded single or multiple-family residential, large-scale renewable energy may not be compatible, but small-scale accessory solar might be suitable.

Incorporation of renewable energy development into your master plan is a good opportunity for community engagement,

# Collaborative Planning for Renewable Energy: Gratiot County

*By* **Jessica Crawford**, *Michigan State University*

### History of Collaborative Planning

Gratiot County has used collaborative planning between residents, businesses, and municipalities since the 1970s. In 2008, Greater Gratiot Development, Inc. (GGDI), a public/private partnership devoted to economic growth, worked with local leaders to apply for and receive funding from the Partnership for Change to support the formation of a countywide master plan. In 2011, the Gratiot Regional Excellence and Transformation (GREAT) plan was the first of its kind in Michigan to establish collective goals for renewable energy across municipal boundaries.

### Exploration of Wind

Wind developers began approaching Gratiot County during the creation of the GREAT plan because they saw the logistics associated with jurisdictions' universal ambitions as an opportunity. Wind Resource, LLC found that the county had suitable wind as well as grid availability residing from industries that left in the 1970s. As a result, the developer prompted the county to consider wind energy.

Information was shared with the community as the idea of wind energy began to be explored. The developer was instrumental in offering technical assistance, knowledge, and even guided wind farm tours for those who wanted to experience wind in action. Michigan State University Extension experts also hosted an education session open to the public. People expressed little to no opposition towards wind energy which encouraged authorities to move forward in turning this concept into reality.

### Public Engagement

The same collaborative framework used to form the GREAT plan was followed to simultaneously establish a countywide wind ordinance. The creation of this ordinance was fully transparent to attempt to disclose and address any concerns about wind energy. The county put out widespread notices for the ordinance meetings through newspapers, radio, and social media. Anyone could participate in crafting the wind ordinance if they desired. As many as 300 people attended any of the given 20+ meetings. It took two years to articulate and formulate Gratiot County's final wind ordinance. The county ordinance was the template for other municipalities to use, which 14 of the 16 townships adopted.

Gratiot County Wind was the first project to go online just a year after the GREAT plan and wind ordinance were completed. Invenergy became the developer of the project while Wind Resource, LLC stayed on as a consultant. Over 250 families signed on to be part of the project area. A *"pooling easement"* was produced to grant each of these families a lease payment even if they did not host a turbine. Negotiations for land leases occurred at the same time as the wind ordinance public meetings. After this project was built, the residents regrouped to initiate an increase in the ordinance's setback distance from 500 feet to 1,000 feet from a building. No major changes have been made to the document since. The expansion of wind projects has continued to progress in Gratiot County. Currently, the county has 217 wind turbines and two more projects under development. The prevalence of wind farms has provided landowner payments, jobs, tax revenue, and electricity to the region.

Courtesy of Consumers Energy.

as is a good standard practice for any amendment to master plans. Community participation can allow an opportunity to demonstrate the benefits and drawbacks of renewable energy, as well as get input from residents and a sense of the community's understanding and acceptance of incorporating wind and/or solar development.

While amending your master plan to cover renewable energy, there is an opportunity to incorporate energy information into your *"existing conditions and trends"* section that may provide support for the introduction of wind and/or solar into your community. This information could include a baseline assessment of energy usage in the community and the current mix of renewable and non-renewable energy sources and development within your jurisdiction's boundaries. This is also a good opportunity to identify areas in the municipality that have the greatest potential for wind or solar development by incorporating information on the quality of wind resources and existing transmission lines and substations. This analysis can also be used to help guide future zoning decisions.

Once you have determined how and where wind or solar energy fits into your community, you can incorporate renewable energy into your planning goals and objectives. One way to do this is to use the development of wind or solar energy as a way to reach existing goals. For example, renewable energy development can support economic development goals by expanding the property tax base and providing additional income to landowners through landowner payments. If farmland preservation is a goal in your master plan, wind energy specifically offers an opportunity to help farmers diversify while still sustaining their agricultural production. Wind and solar might also be appropriate if your plan calls for increasing opportunities for on-farm income generation. If you have goals focused on sustainability in the community, renewable energy serves as a cleaner energy source that harnesses natural resources without depleting them. Another way to incorporate renewable energy into your goals is to create new goals specific to energy. For example, communities might consider a goal of diversifying and localizing the energy base through renewable energy production.

For solar specifically, there are a few additional considerations to take into account relative to your land use mix and goals. Solar, more than wind, presents an economic opportunity for development of brownfield sites and vacant or compromised land. Solar energy requires less site remediation than many other uses, so it can offer a good development opportunity for sites that have challenges in terms of redevelopment. Additional considerations for solar include competing uses, particularly with historic districts. If historic preservation through historic districts is a main goal of your community, the role of solar relative to aesthetics should be carefully taken into consideration.

Because of their scale and land use requirements, most of the existing and proposed large-scale wind energy projects cross township boundaries. Increasingly, large solar projects that are being proposed also cross township boundaries. As the Gratiot sidebar demonstrates, a county wide or at least a joint plan among several adjoining jurisdictions often makes the most sense, particularly if the area is interested in attracting renewable energy development. Coordinated planning and zoning makes it easier for renewable energy developers—and community members—to understand what rules are in place throughout the area, rather than having to deal with a patchwork of different zoning regulations.

## Zoning for Renewable Energy

Once the role of renewable energy in your long-term plan is established, it is vital that your zoning matches what has been established in your master plan and is consistent with what you have decided about wind and solar energy development in your community. The zoning specifics matter here, as these requirements are what allow effective implementation of renewable energy. It is crucial that zoning language and regulations are thoughtfully and clearly laid out in your ordinance, since these can minimize or maximize opportunities for wind and solar development and aid or impede future application and enforcement. For utility-scale renewable energy development, this sends developers the message about whether or not they should come into your community. It is also important for small-scale accessory uses, as clearly laid out requirements allow homeowners and business owners to more confidently work with a solar installer, for example.

A caution though: beware of taking regulations suggested by supporters and opponents of renewable energy and simply averaging, for example, the setback distances to try to accommodate both audiences. Rather than satisfying both groups, this approach tends to satisfy neither, but can have real consequences on either making renewable energy deployment commercially viable or not in your com-

# What Can be Learned from Huron County?

### Relevance of Huron County

Huron County, the tip of Michigan's Thumb, has some of the best wind resource in the state. In 2009, a report from the Wind Energy Resource Zone Board identified the Thumb as having the highest potential to produce wind energy to meet the state's renewable portfolio standard, but noted the Thumb lacked transmission capacity to bring the renewable energy to load centers elsewhere in the state. This report paved the way for construction of a 140 mile transmission line—the Thumb Loop—to enable power generated by windfarms in Huron, Tuscola, Sanilac, and St. Clair counties to connect to existing electrical infrastructure north of metro Detroit.

For much of the last decade, the Thumb—and Huron County in particular—has been Michigan's wind capital. The county's first two utility-scale wind projects went online in 2008. Subsequently, eleven more projects were built in Huron County. As a result, the County's 13 wind projects account for about 41% of the state's total wind capacity (870 of the state's 2,139 MW).

### Huron County's Planning and Zoning for Wind

This growth of wind energy in Huron County was aided by planning and zoning that largely viewed wind energy development as a land use generally compatible with the County's agricultural goals, particularly related to farmland preservation. This was the view taken both by the County—which is responsible for zoning 16 townships—as well as by a number of other townships in the county that are self-zoned.

The County chose to regulate utility-scale wind energy through an overlay district. As a result, once a wind energy overlay district is applied, turbines can be sited within that district after a straightforward site plan review. However, because every wind project effectively requires a rezoning to apply the overlay district, each of these projects is subject to a referendum petition. This allows all voters who are registered in townships covered by county zoning to vote on whether the overlay district should be approved.

In 2010, a ballot measure challenging an overlay district that spanned four townships passed with 59% of the voters supporting the district.

### No Longer the Wind Capital

Though the projects approved through the 2010 ballot referendum were constructed, wind energy became increasingly divisive in Huron County. In 2015, the Planning Commission issued a moratoria on wind development to consider changes to the zoning ordinance. The County made changes to the ordinance and subsequently approved two new overlay rezonings. Enough signatures were gathered to put these rezonings before voters on the May 2017 ballot, and both were rejected by 63% of voters. For all intents and purposes, any wind developer interest in Huron County has stopped.

The County is currently undergoing a review of its Master Plan, and while not yet finalized as of March 2020, the draft Master Plan indicates that the referendum vote and a resident survey suggest that support for future wind development is uncertain.

### What Happened in Huron County?

No one knows for sure. There is some speculation that Huron County just reached a saturation point: that people decided existing wind turbines were enough. However, that idea is not ubiquitous, and research from other states and nations with wind has not consistently supported the idea of a saturation point.

One reason explicitly called out in the Master Plan review likely has to do with tax payments. The State Tax Commission has changed the tax table for wind turbines three times since it was initially adopted, often resulting in less money going to local governments than what was originally expected. This has led to legal disputes when wind developers appeal their tax assessments to the Michigan Tax Tribunal. It has also meant that local governments are hesitant to make long-term plans for the tax revenues associated with wind development since there is still some uncertainty about the revenue stream.

Another possible reason that there has been such a change in Huron County's approach to wind development may be that—as the first in the state—there was a learning curve for both communities and developers about how wind best fit in communities, and how to best engage residents in planning for renewable energy. Many of those lessons have been documented in "Lessons Learned: Community Engagement for Wind Energy Development in Michigan" (see Wind Resources on backcover) and are increasingly becoming standard practice in planning for wind. Many are also trying to apply these same lessons to solar energy as it emerges as a larger player in Michigan.

munity. Instead, it is better to fall back to your master plan and determine whether and where renewable energy—at different scales—is compatible and incompatible with those goals, and then adopting an ordinance that is more tailored to achieving that end.

Remember that zoning for renewables need not be all or nothing: you do not have to zone the whole community as eligible for renewable energy development or conversely create an ordinance where renewables are not allowed anywhere. As with other uses, you can designate certain zoning districts as eligible and decide which districts in your municipality are appropriate for development of wind and solar energy, and at what scale (from on-site use, to large utility-scale).

It is very common to have different regulations and zoning requirements based on the scale of projects. Smaller-scale systems, especially solar energy systems, are often permitted by-right as an accessory use and allowed in most districts. Utility-scale systems tend to not be permitted by-right, but rather as conditional or special permit uses, and to be confined to certain districts.

Another option sometimes utilized for utility-scale projects is overlay zoning. While the land retains its base zoning designation, you also *"overlay"* regulations specific to a particular land use (in the case of energy development, it would tend to be an ordinance that would be more permissive of renewables). You could proactively apply that zone to some areas of your community, for example, if only the farmland on the eastern side of your township is appropriate for utility-scale wind, or if you want to identify particular parcels in your city that are appropriate for utility-scale solar development. This approach would typically also allow developers who may be interested in siting a project outside of these designated zones to apply to have the land rezoned to utilize the overlay district. This overlay district model is used by Huron County. See sidebar above.

There is no shortage of models and sample ordinances available online to assist with alternative energy zoning. Links at the end of this article point to an online *"curated"* repository of guidance on the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) website, which provide sample planning and zoning language, along with annotated rationale behind them. EGLE also has a database of zoning ordinances from across the state, noting which have regulations for renewable energy systems of varying sizes so that communities can see models from similarly situated places. See page 16. Remember that these communities may have different goals than yours in either minimizing or maximizing opportunities for energy development. Do not just

copy and paste regulations from another community.

There are a number of land use specific standards that are commonly taken into account relative to wind and solar energy. Some of the primary considerations are discussed below.

### *Wind Energy*

*Setbacks*

Setbacks are extremely important for wind energy development, both for ensuring safety and for determining the commercial viability of a project. The larger the setback distance, the more difficult it is to site wind turbines. Turbines are typically set back at least 1-1.5 times the height of the turbine from the property line for safety considerations. Many communities have different setback requirements based on surrounding land uses (e.g., from residentially-zoned property, roads, streams, etc.). Zoning requirements can also differentiate between setbacks for adjacent participating properties and non-participating properties. To understand the impact that varying setback distances have on the ability to site wind turbines, it is highly recommended that communities use GIS analysis to model varying setback distances before making a decision.

*Height*

Turbine height is often used within ordinances to differentiate between small-scale and large, utility-scale turbines. Some ordinances also set a height limit. Because the trend has been for wind turbines to get taller over time, the height of a *"normal"* or *"typical"* turbine has also grown. There are numerous instances in Michigan where ordinances that were written a decade ago to attract wind development no longer achieve that objective because the height limit in the ordinance has not kept pace with the technology. Conversely, if your community has a reasonable rationale for limiting infrastructure height and does so for other land uses (such as cell phone towers), setting a height limit of anywhere under 300' is unlikely to result in a wind farm development, as turbines used in modern windfarms are at least 450' tall (from ground to tip of blade). For this, and other reasons, it is important to frequently reevaluate zoning ordinance standards for wind energy development.

*Noise*

There are many different ways to measure noise in terms of the measurement technique, over how much time noise is measured, and from where the measurement is taken. Also, there is conflicting guidance on health-based standards, in part because of the on-going research on the indirect health impacts from noise annoyance. The World Health Organization (WHO) has issued a *"conditional"* recommendation for the European Region of 45 $dBL_{den}$; there is not a commensurate recommendation in the U.S. Communities should consider how their community regulates noises from other land uses. Adopting a reasonable standard that is not exclusionary on its face may be very important in a future legal challenge. As science changes, the reasonableness of standards should be reexamined to ensure they remain lawful.

*Visual Impact*

An ordinance can require measures that minimize the visual impacts of turbines. This includes the use of non-obtrusive colors, like white and gray non-reflective surfaces. A typical practice is to prohibit advertising or signage on the turbines, as well. While the FAA will require lighting, communities can consider requiring that developers seek approval from the FAA to use an Aircraft Detection Lighting System (ADLS). This new technology only activates the red FAA lights when an aircraft is nearing the windfarm, reducing the hours that the red lights are on in most communities. Note that the FAA may not approve ADLS for all windfarms (which is why you would want to require the windfarm seeks approval, and not necessarily require its use). This technology would add additional cost to the windfarm which may make your community less attractive to a wind developer. But, this may be one way to address public concerns over red lights.

*Shadow Flicker*

Many ordinances require an analysis demonstrating which properties or residences might be impacted by shadow flicker. Some ordinances set a maximum threshold for flicker while others require mitigation measures such as planting vegetative screening or programming turbines to not spin during the time of day (and time of year) when they may adversely impact neighboring residences.

*Decommissioning*

Many ordinances require developers to submit a decommissioning plan, explaining how the turbines will be deconstructed

Courtesy of DTE Energy.

at the end of their useful life. This may be appropriate since there is specialty equipment required for constructing and deconstructing turbines. Requirements for a decommissioning plan could include an outline for the life of the project, decommissioning costs, and the planned procedures for removal of equipment and restoration of the site. It is also common that municipalities require a financial guarantee or surety bond for decommissioning.

### *Solar Energy*

*Temporary or Permanent Installation*

Zoning regulations for utility-scale solar should be based on whether the solar array is to be a long-term or temporary/transitional land use. This distinction is true in both urban and rural environments. Utility-scale solar installations on brownfields, for example, may be seen as an opportunity to generate lease and tax revenue that can then be used to remediate the site for future development as another use. Solar installations on farmland can be seen as a temporary opportunity to diversify farm incomes, with the expectation that the land will be farmable again in the future. Or, in both cases, solar energy may be seen as a long-term land use. Site improvements such as landscaping, stormwater management, and decommissioning could be substantially different depending on whether the use is considered a temporary or long-term use.

*Setbacks*

For both smaller-scale accessory uses and larger solar developments, it is typically recommended that solar energy projects follow the setbacks for the zoning districts they are located in. In reality, the setback may be greater as it typically makes sense to leave room between panels and property lines in order to avoid shading from neighboring vegetation, which reduces solar production. If a utility-scale development is located adjacent to a residential use, communities might consider adding an additional setback requirement if the district standard is considered too small.

*Height*

For both small-scale accessory and utility-scale solar projects, it is typically recommended that height restrictions follow those of the zoning district they are located in. It is not likely that the district requirements will overly restrict the solar developments. For rooftop accessory uses, the accessory height restriction may be different than the standard district requirement. Some communities, for example, allow rooftop panels (especially those on flat roofs) to exceed district height requirements so long as the rest of the building conforms.

*Reflection/Glare*

If glare is a concern, you can require measures to be taken to minimize the effects of glare from the panels on adjacent properties and surrounding roads. This can be done by changing the location, orientation, or design of the solar panels; or by erecting a small shield, fence, or berm.

*Visual Impacts*

It is also an option to regulate the visual impacts of solar energy developments by requiring that visibility of panels is limited from residential structures and public uses or, in the case of small-scale ground mounted systems, screening the back side of the panels, as with fencing or landscaping. For utility-scale systems, some communities require landscaping or other screening between panels and residential uses. Communities that require landscaping along roadways may consider extending this to solar energy systems. However, caution should be taken with these provisions, as requiring panels to be too far out of vision or screened with landscaping can dramatically limit energy production. As noted earlier, these screening requirements are generally only appropriate if the solar land use is considered a long-term land use.

Courtesy of DTE Energy.

*Lot Coverage/Stormwater Management*

Some communities have concerns over solar panels adding impervious surface and have set policies to limit lot coverage. This is appropriate where solar is seen as an accessory land use, as with small-scale systems. But for utility-scale projects, which may make use of an entire parcel—and often many parcels—lot coverage maximums tend to prevent development. Typically, stormwater management is not a problem for ground-mounted systems, so long as they are planted with vegetated ground cover. Where solar development is seen as an opportunity to address downstream flooding, requiring stormwater detention or retention may be appropriate. Note, though, that requiring such stormwater management is generally incompatible with goals that the land be able to be farmed in the future.

*Decommissioning*

For utility-scale solar projects, most communities require developers provide a decommission plan at the time of site plan approval. This plan should include details about the decommissioning process including removal of panels and foundations, and restoration of the site. Where solar is seen as a temporary land use, it is common to require a financial guarantee or surety bond to ensure the project is decommissioned. Where a system is seen as a long-term land use, requirements for such financial guarantees might follow what your ordinance requires for other forms of development.

## Summary and Conclusion

As a result of market forces, federal and state policies, and consumer demand, renewable energy is becoming an increasingly common way to generate electricity. While already present on the Michigan landscape, wind and solar energy systems at both the small- and large-scale will continue to be pursued in the coming years. Proactively planning and zoning can allow a community to decide whether and where both small-scale and utility-scale wind and solar projects fit within their community, and communicate to both landowners and energy developers those positions. Furthermore, since energy technology is continuously changing, communities that have already established policies might reconsider whether their ordinance is accomplishing its intended purpose in light of the existing technology and development landscape.

A number of communities across the state have already developed ordinances and many are being updated. A database of zoning ordinances, available on the Department of Energy, Great Lakes, and Environment's (EGLE) website catalogues which Michigan communities have incorporated energy into their zoning ordinances and links to the specific language. Table 6 and Figures 5-7 on page 16 are drawn from this new database. The EGLE website also has factsheets and case studies from wind and solar projects in the state, and a curated repository of planning and zoning guidance for both wind and solar. Links to some of these resources are included on the back cover, but the whole list can be found on the project website: http://graham.umich.edu/climate-energy/energy-futures

Further, EGLE has provided funding for the University of Michigan to answer questions and help develop additional resources to enable communities to plan and zone for clean energy. This includes providing presentations and technical assistance to communities who wish to learn more, and teaching a workshop on Clean Energy Planning administered through the Michigan Association of Planning. If your community has any questions, feel free to reach out to Dr. Sarah Mills at the University of Michigan (sbmills@umich.edu). ❑

**Table 6: Renewable Energy in Zoning Ordinances**

| Jurisdiction Type & # | Utility Wind | Small-Scale Wind | Utility Solar | Small-Scale Solar | Electric Vehicles |
|---|---|---|---|---|---|
| Township 1240 | 631 | 685 | 246 | 291 | 10 |
| City 280 | 71 | 110 | 27 | 86 | 18 |
| Village 253 | 39 | 55 | 12 | 29 | 2 |
| Total 1773 | 741 | 850 | 285 | 406 | 30 |

222 townships are under county zoning, which is not separately reflected in these numbers

**Note**: The data in Table 6 and represented in Figures 5-7 are derived from the Wind and Solar Energy Zoning Ordinance Database collected by the Graham Sustainability Institute at the University of Michigan, under contract to the Michigan Department of Environment, Great Lakes & Energy. The database and these maps are available from Michigan.gov/Energy (at https://www.michigan.gov/climateandenergy/0,4580,7-364-85453---,00.html). Additional case study resources are available at the project website: http://graham.umich.edu/climate-energy/energy-futures (click under "Products"). Additional resources and references are listed on the back cover.

**Figure 6:**

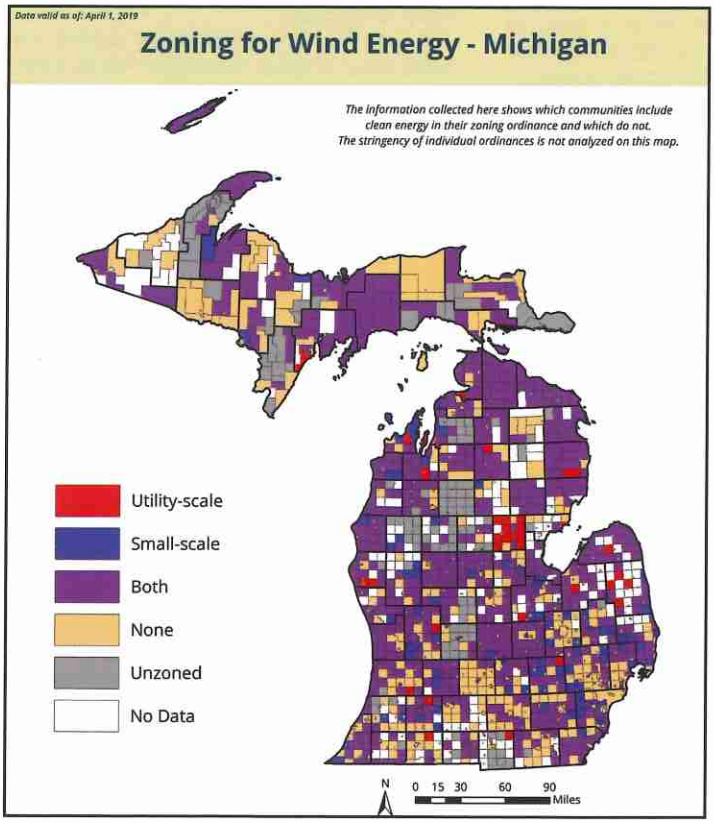


**Figure 5:**

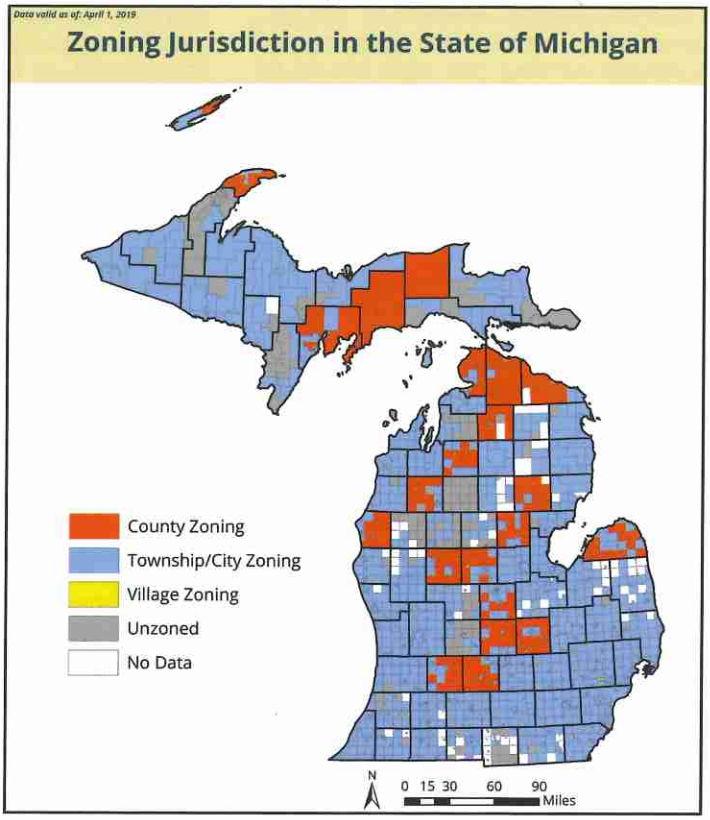



**Figure 7:**