MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

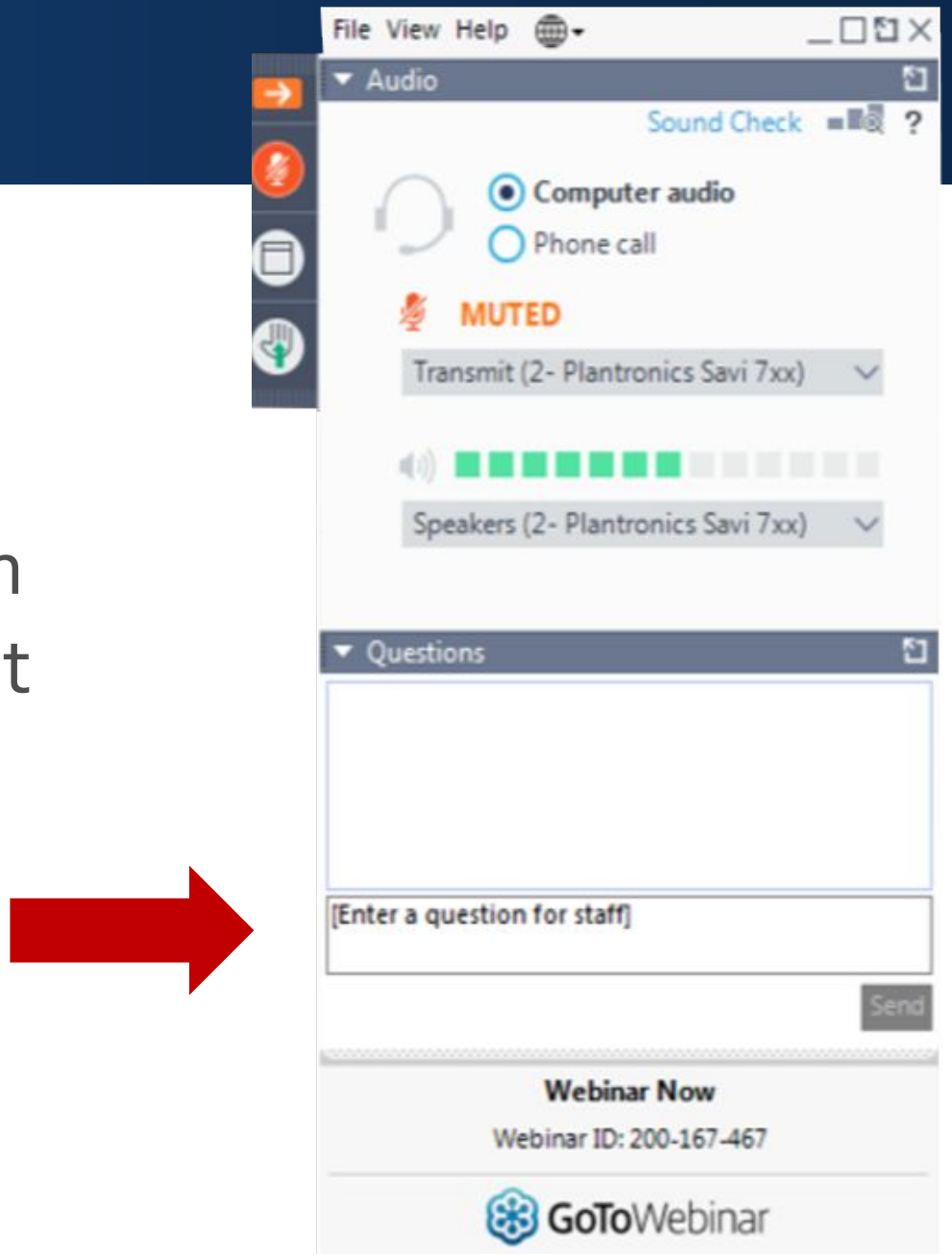
GRAHAM SUSTAINABILITY INSTITUTE
UNIVERSITY OF MICHIGAN

CLEAN ENERGY & ENERGY MANAGEMENT WEBINAR SERIES

Introduction to Planning & Zoning for Wind and Solar

Have a question?

Use the “Questions” function to pose questions throughout the webinar



Today's Speakers

- **Hannah Smith** - Master's Student at the University of Michigan School of Urban and Regional Planning

- **Sarah Mills, PhD** - Senior Project Manager at the Graham Sustainability Institute

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INTRO TO P&Z FOR WIND & SOLAR ENERGY

Sarah Mills, PhD

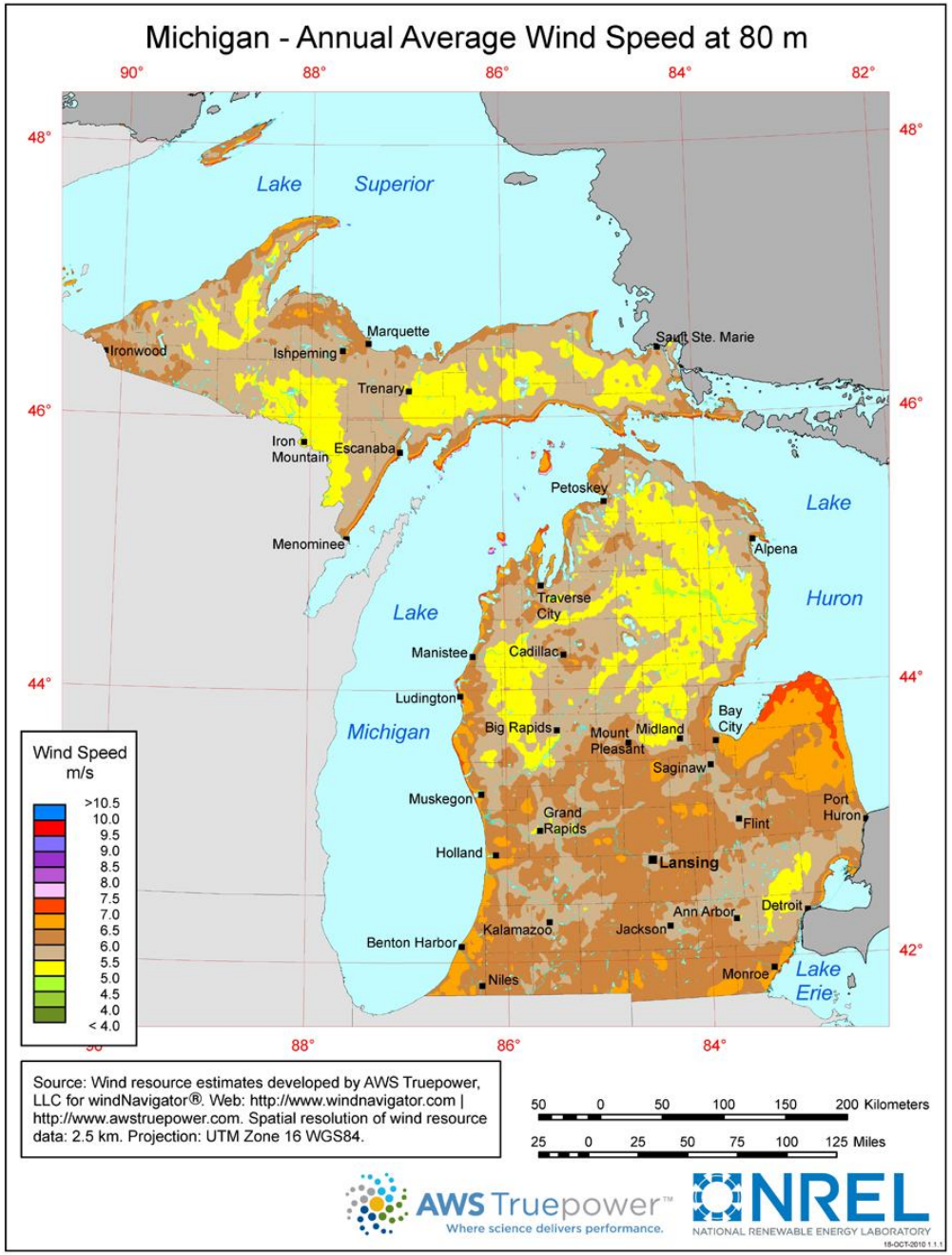
Hannah Smith

Overview

- Why plan (or re-plan) for renewable energy?
- Community impacts of wind & solar
- Basic principles in planning/zoning for clean energy
- Planning and zoning resources

Photos by Gonz DDL and John Cameron on Unsplash; Jukka Niittymaa on Pixabay

WHY PLAN (OR-REPLAN) FOR RENEWABLE ENERGY?



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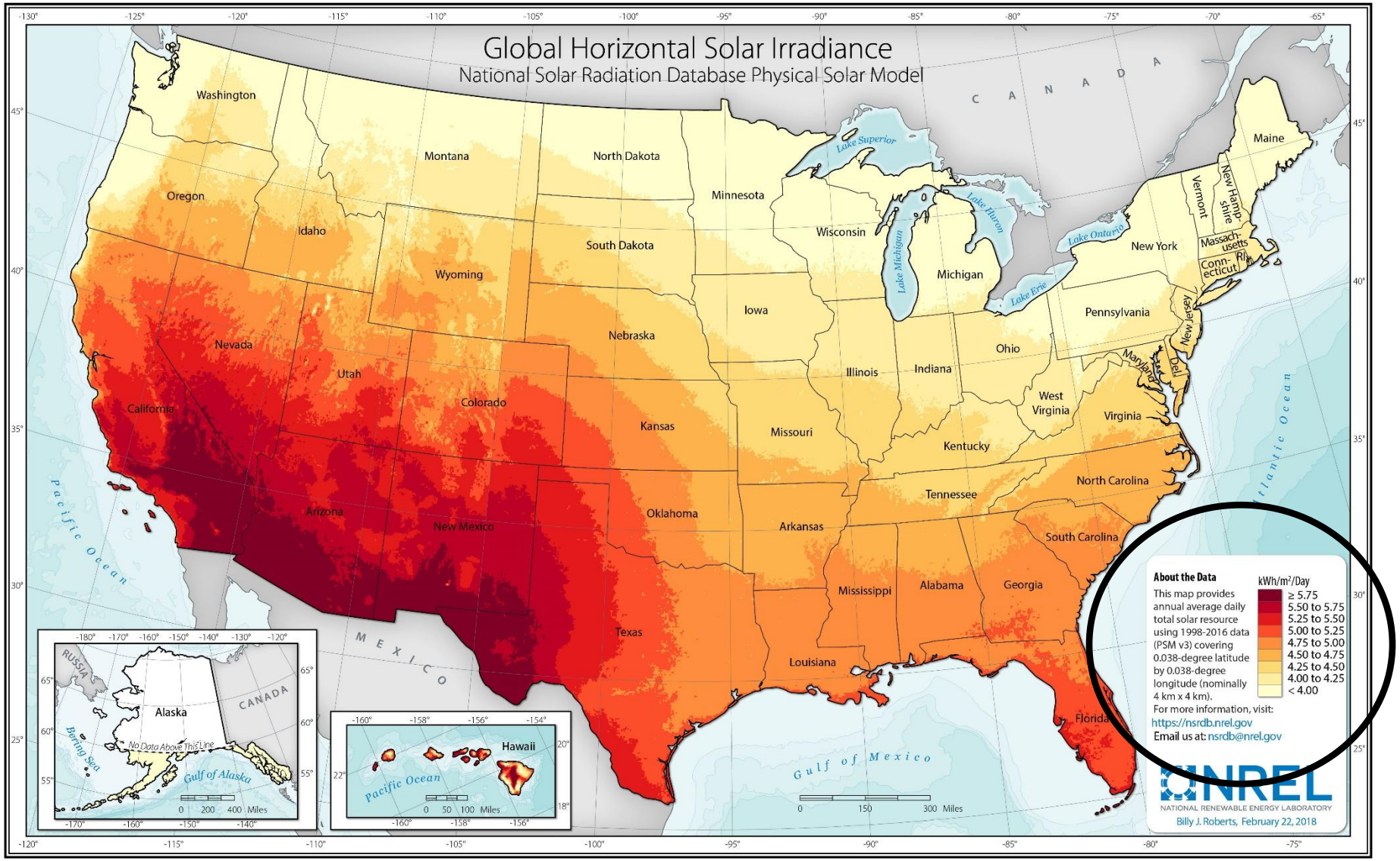


https://www.nrel.gov/gis/assets/images/solar-annual-ghi-2018-usa-scale-01.jpg

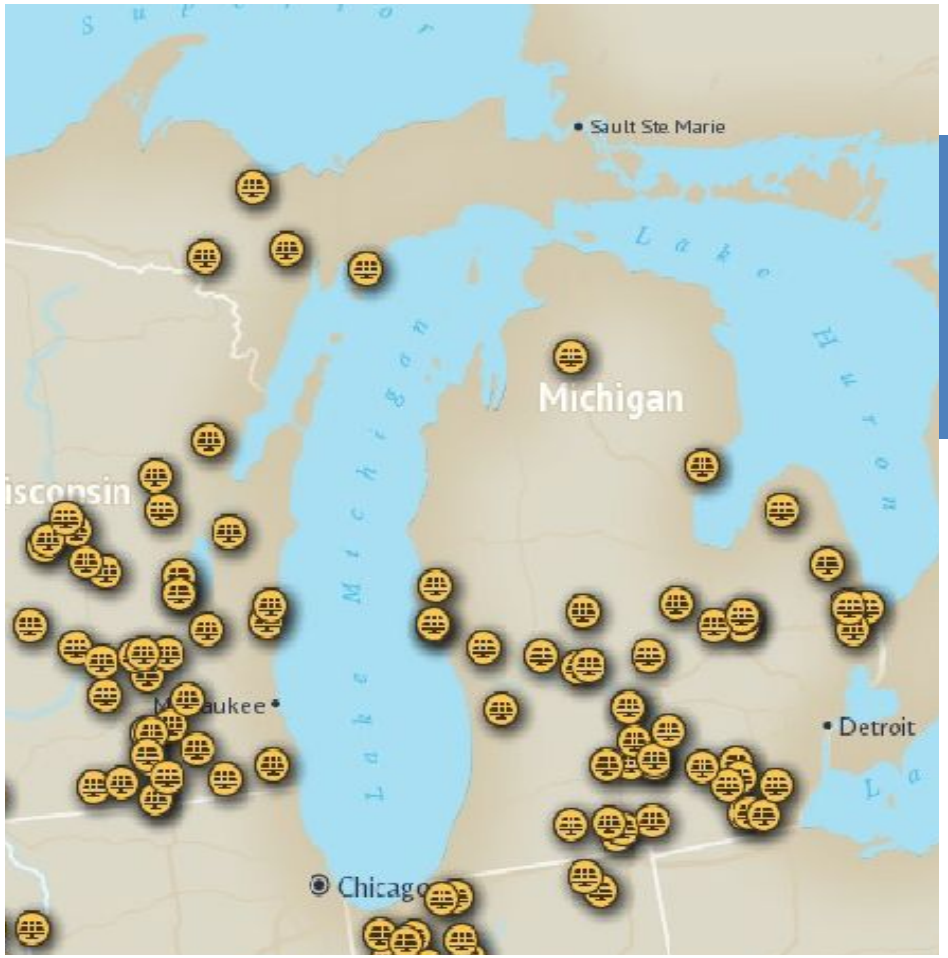
Existing Utility-scale Solar & Wind 2,290 MW

Source: U.S. Energy Mapping System, March 13, 2021
https://www.eia.gov/state/maps.php

Wind being considered 11 projects, 1,968 MW

Source: MISO Queue, March 13, 2021
https://api.misoenergy.org/PublicGiQueueMap/index.html

(Large) Solar being considered 48 projects, 6,708 MW



+ 3,000 MW of small projects

Source: MISO Queue, March 13, 2021
https://api.misoenergy.org/PublicGiQueueMap/index.html

Not all—but lots—will be built

CRAIN'S DETROIT BUSINESS

THIS WEEK NEWS & DATA AWARDS SPECIAL FEATURES VOICES EVENTS CONTEN

September 02, 2020 08:16 AM

DTE files plan to expand solar by 120,000 homes by 2022

420MW by 2022

gtm: Solar Grid Edge Storage Wind More Trending Podcasts Resources

SOLAR

Michigan PURPA Settlement Set to More Than Triple State's Solar Capacity

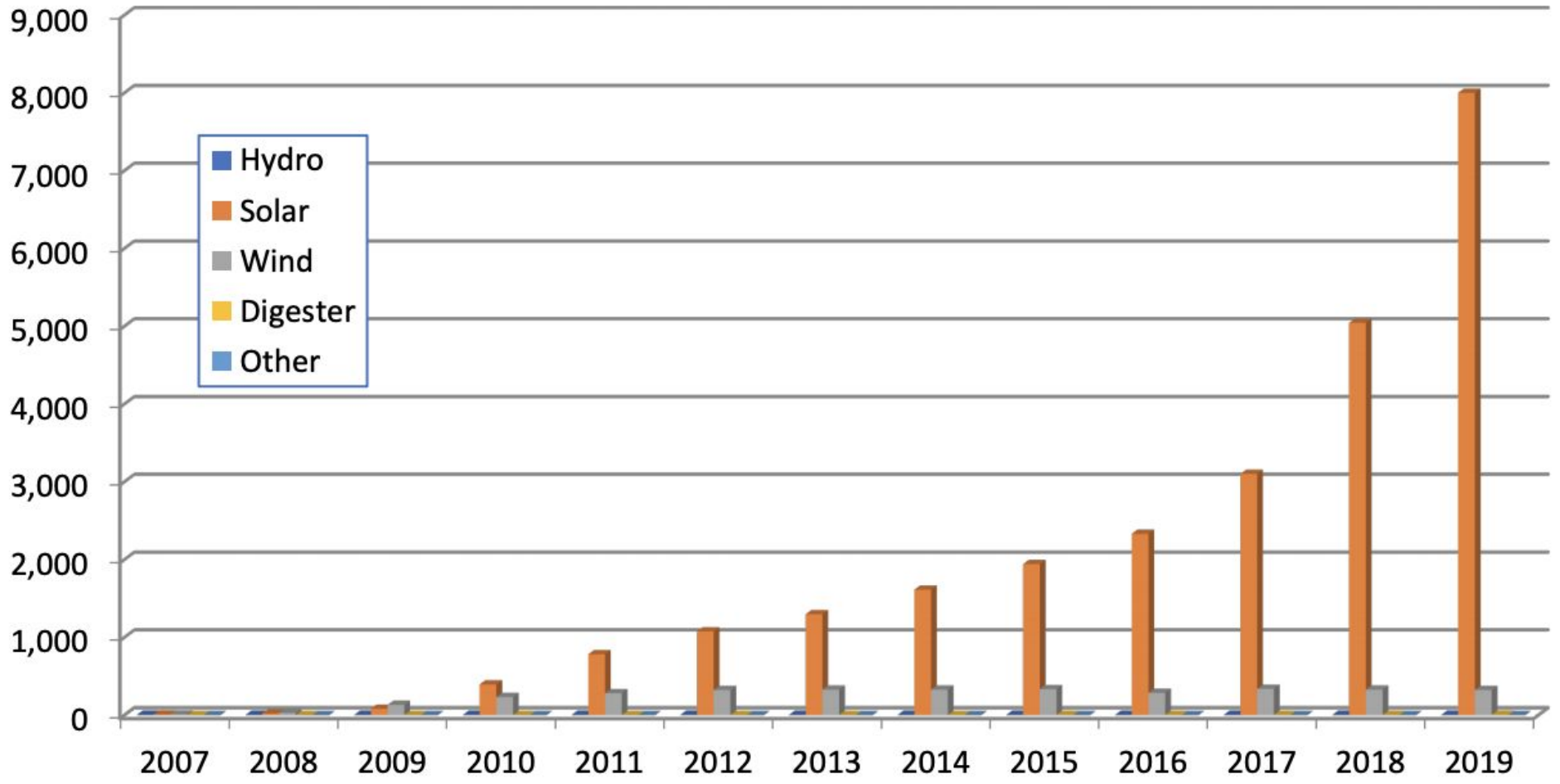
Consumers: +584 MW by Sept 2023

Michigan has its first massive solar contract

Consumers Energy has agreed to a deal with Ranger Power to purchase the output of 100 MW of Ranger's planned 149 MW River Fork Solar project, the first deal of its kind known to pv magazine in the state.

SEPTEMBER 9, 2019 TIM SYLVIA

Small-scale (net metered) solar also on the rise



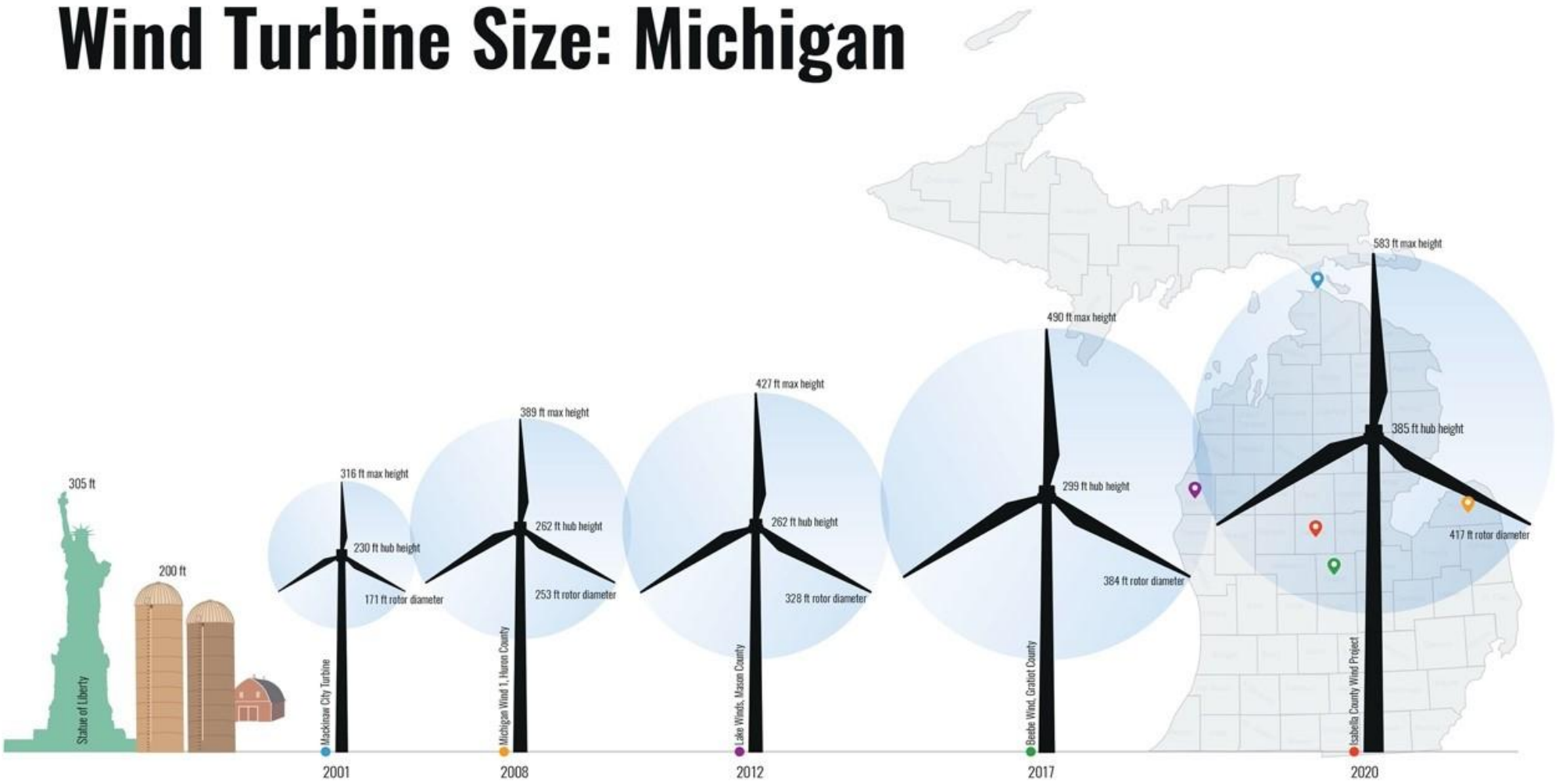
https://www.michigan.gov/documents/mpsc/DG_and_LNM_Report_Calendar_Year_2019_711217_7.pdf

Why so much activity?

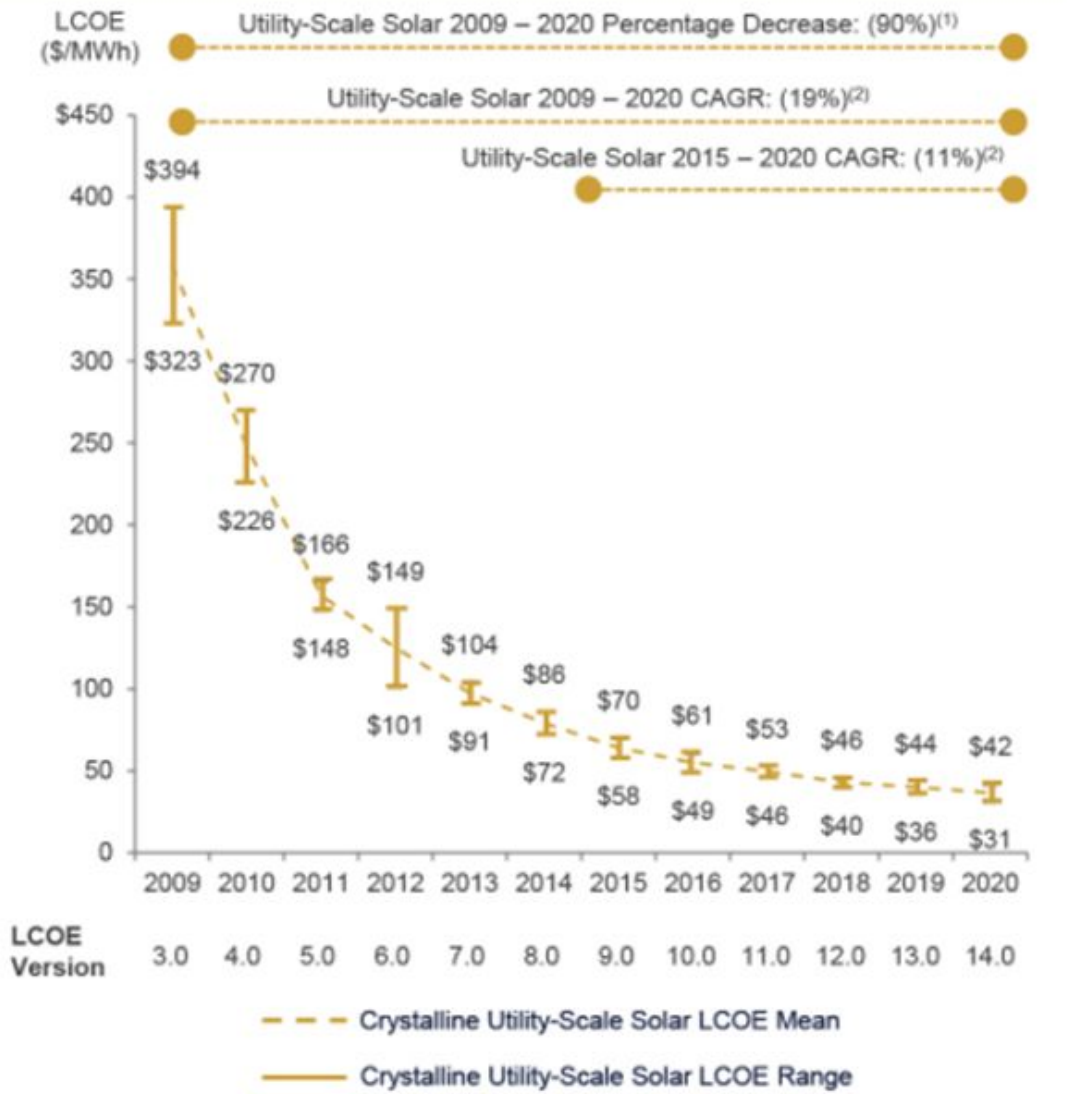
Demand from consumers, cities, corporations

Technology (wind), cost reductions (solar) making renewables possible statewide

Wind Turbine Heights over Time



Unsubsidized Solar PV LCOE



Source: https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/

Why Plan Now?

Photo: https://www.uppermichiganssource.com/content/news/Friends-of-the-Huron-Mountains-not-in-favor-of-wind-turbine-project-in-LAnse-489183491.html

All communities will be approached within 10 years

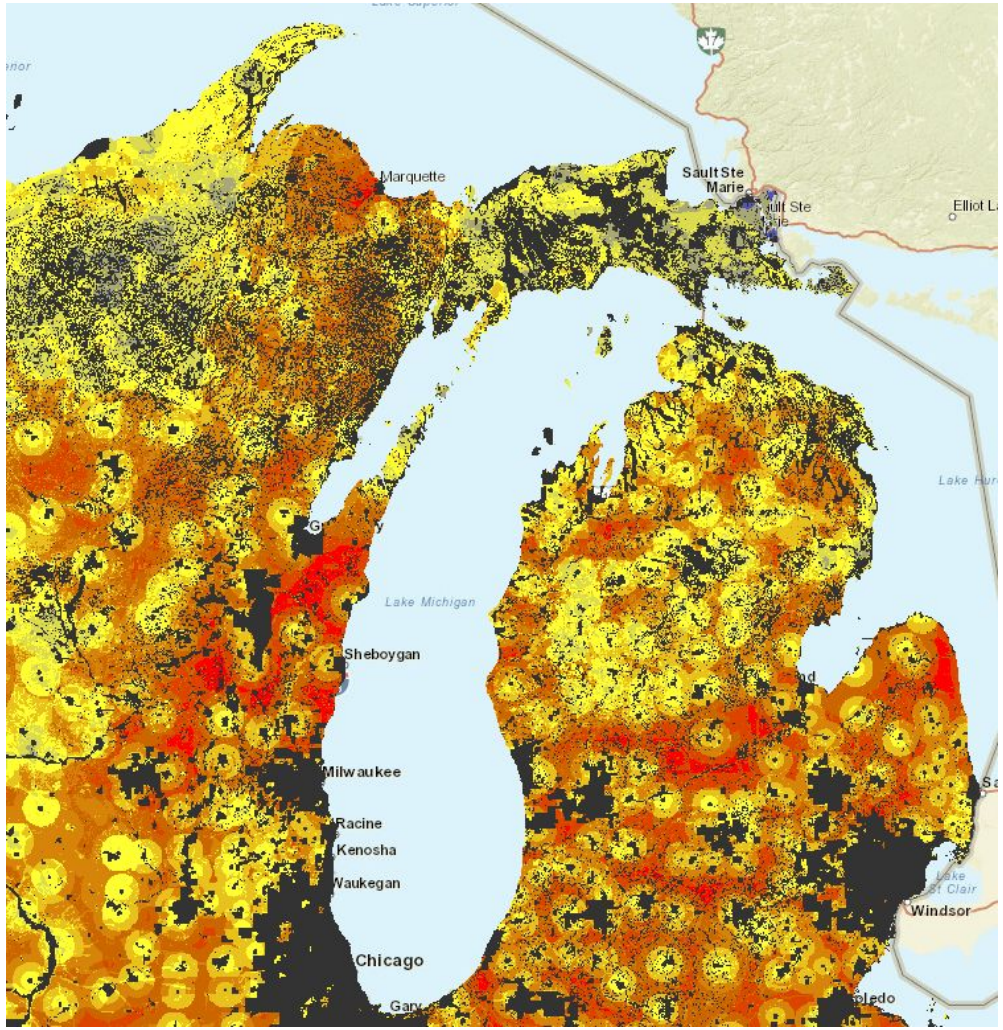
- **Set clear expectations for property owners and potential developers**
  - When zoning is silent, ambiguity
- **Best before proposal is on the table**
  - Time
  - Fewer conflicts of interest
  - Strategize

WHAT YOU NEED TO KNOW ABOUT WIND ENERGY

Different scales

Where is utility-scale wind development possible?

- Good wind resource (though relatively easy)
- Looking for access to transmission
- Avoid endangered species
- Away from urban areas
  - Not enough open land
  - Wind disruption



https://ezmt.anl.gov/mapping/viewer

Wind Energy

Local Benefits

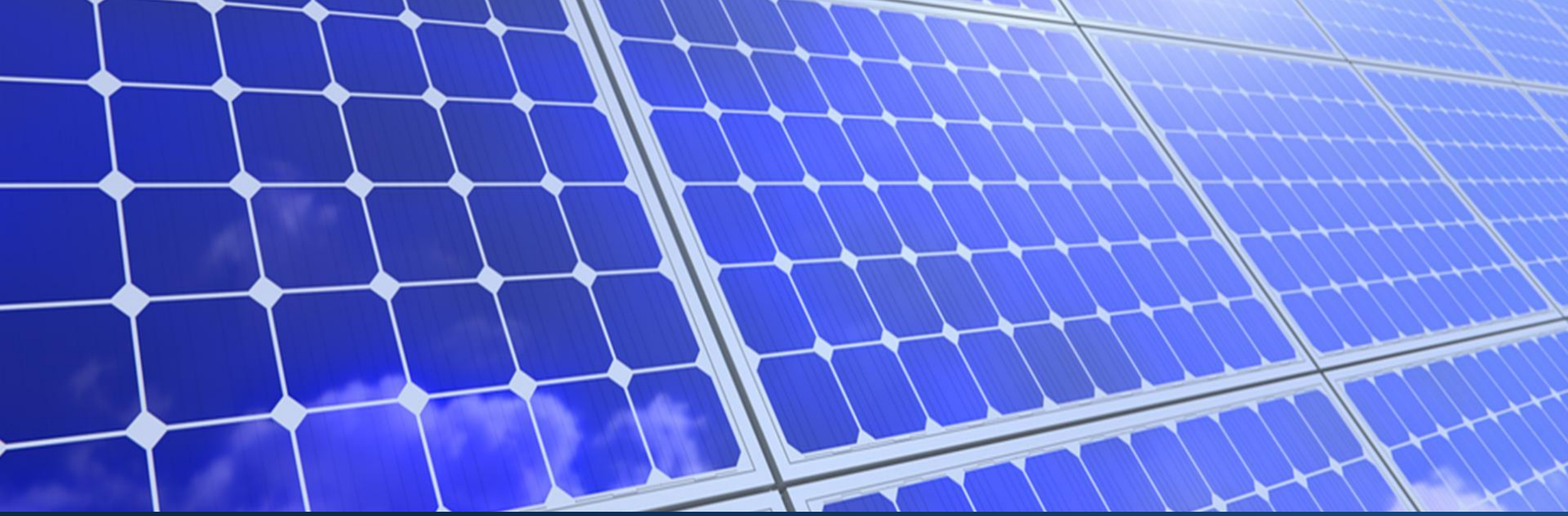
- Landowner payments
  - Farm reinvestment
  - Farm succession
  - Not JUST farmers
- Tax payments, developer donations
  - $2M+ value / turbine
- Jobs (caveat)

Local Concerns

- Noise / health
- Wildlife
- Visual Impacts
  - Outright
  - On property values
- "Not why I moved here"

Bottom Line on Wind

- Wind = economic development
- If goal is to sustain agriculture, wind can fit
- If goal is for substantial residential development or growth of tourism, wind may not be right



WHAT YOU NEED TO KNOW ABOUT SOLAR ENERGY

Solar comes in all sizes

https://news.energysage.com/how-many-solar-panels-do-i-need/

1MW = 5-7 acres
Avg. project in MISO queue = 600-800 acres

Photo: https://inovateus.com/portfolio-items/lapeer-michigan-solar/

Where is utility-scale solar possible?

- **Substation access key**
- **How close? Depends on project size**
  - Projects <50 acres typically adjacent to substation or on updated distribution system
  - Larger projects within a couple of miles
- **Prefer cleared, flat land**
  - Farmland
  - Brownfields
  - Parking lots

Utility-scale Solar Energy

Local Benefits

- Landowner payments
  - Opportunity for brownfields!
- Tax payments (?)
- Jobs (caveat)
- Water quality, pollinator potential
- Most viable urban climate action option

Local Concerns

- Wildlife (?)
- Glare
- Visual Impacts
  - "Not why I moved here"
- Wise use of land
  - Farmland (if not dual-use)
  - Urban land where development interest

Bottom Line on Urban Solar

- **Opportunity to demonstrate local climate action**
- **Where lots of land, little development pressure**
  - Revenue opportunity (leases and taxes)
- **Where considerable development pressure**
  - Perhaps limit greenfield solar, development of not-too-dirty brownfields

Bottom Line on Rural (Ag) Solar

- **Solar = economic development**
- **Where land is of marginal quality, no-brainer**
- **Where ag-based economy with prime soils**
  - Be consistent: What else do you allow in ag-district?
  - Solar as short- or long-term land use?
    - Short term: minimize soil movement/compaction & vegetative screening, require decommissioning
    - Long term: require screening & stormwater management, no decommissioning

Photos by Jukka Niittymaa on Pixabay; Gonz DDL and John Cameron on Unsplash

CORE PRINCIPLES FOR PLANNING AND ZONING FOR CLEAN ENERGY

Step 1: Plan first!

- **How does renewable energy fit with your long-term plan?**
  - For local economic development
  - For land use
  - For local climate action

- **What sort of renewable energy, at what scale, and in which part of community?**
  - On-site use renewables, typically uncontroversial
  - More thought to utility-scale

Step 2: Make zoning match your plan

- **Specifics matter for ability to realize plan**
- **Unlikely to satisfy everyone**
  - Averaging satisfies no one
- **Doesn't have to be all or nothing**
- **Beware of zoning out**
  - But making really hard is ok

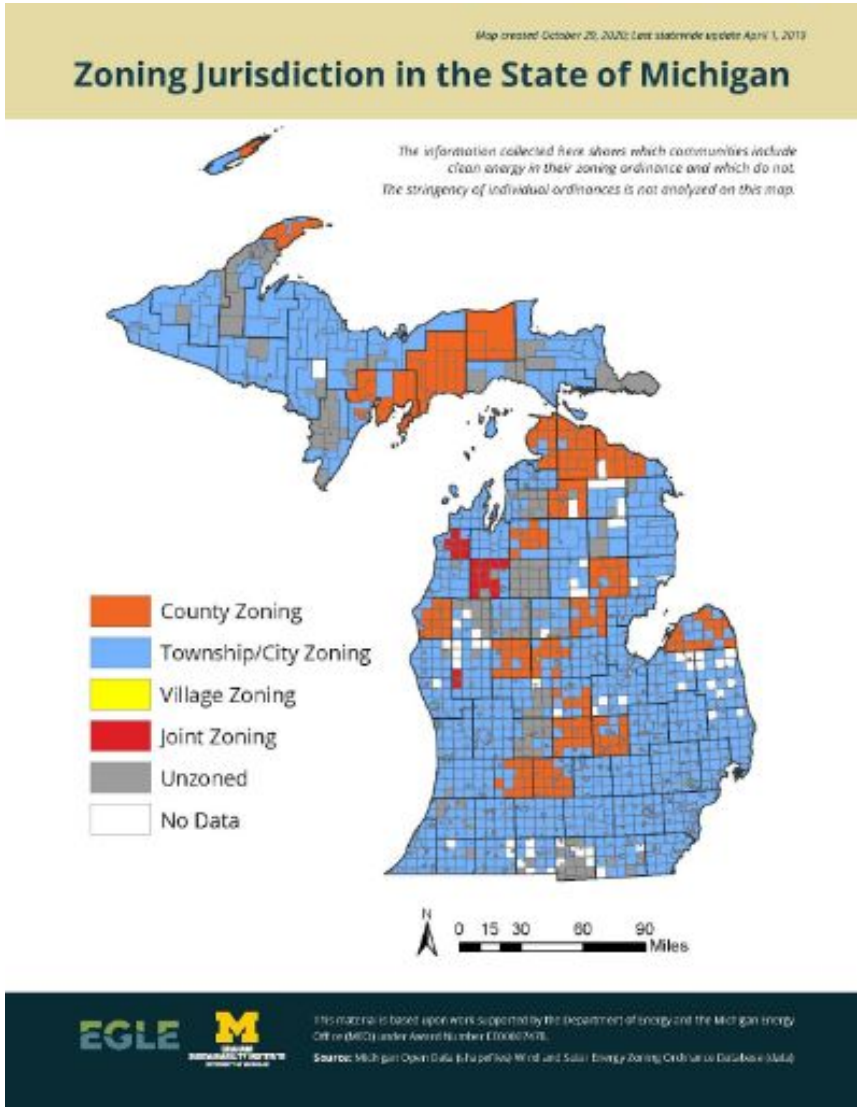
When all else fails, or to arbitrate disputes: Be consistent

- What else do you allow in districts, on prime ag land?
- What else do you require screening for, set noise limits for?
- What else do you require decommissioning bonds, performance bonds of?

Planning and Zoning Resources

- Curated repository of templates, guidance
  - http://graham.umich.edu/climate-energy/energy-futures
- Case Studies, FAQs
- March-April 2020 issue of Planning & Zoning News
- Updated (Oct 2020) zoning guidance on wind from MSU, coming guidance on solar

Michigan Zoning Database (Thanks to EGLE)

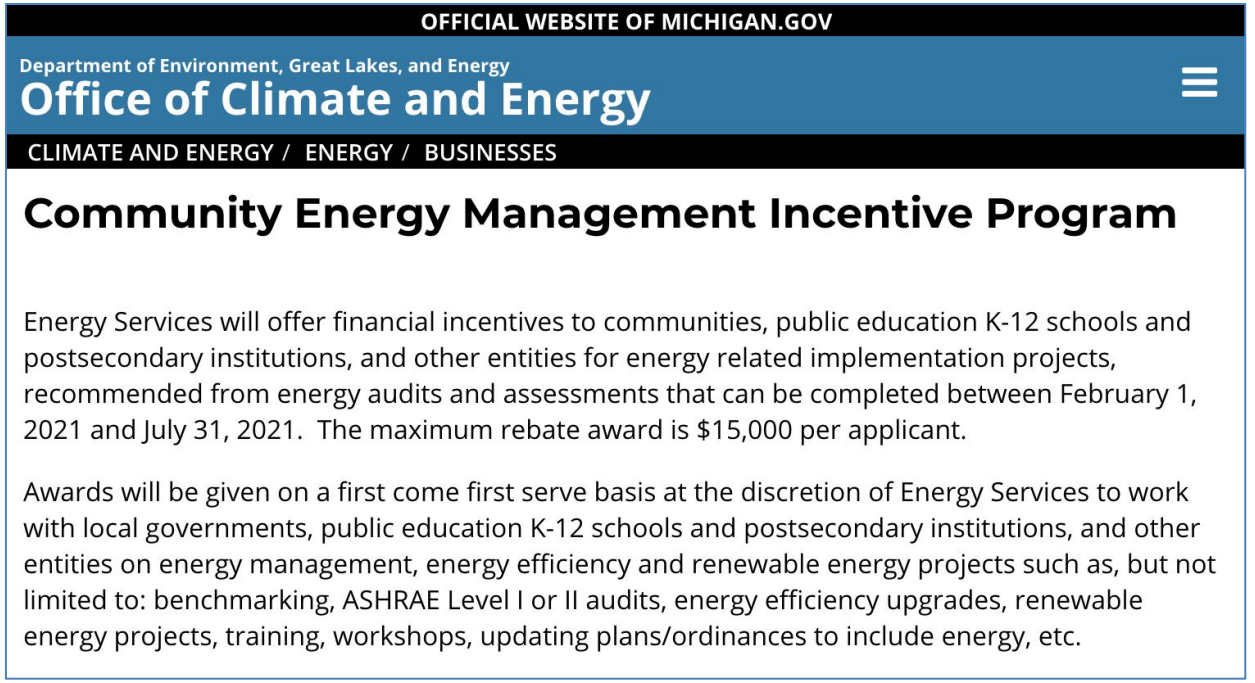


- Database of most zoning ordinances in the state; which have wind/solar content
- Available at https://www.michigan.gov/energy/

Consider whether peer communities do or do not have energy projects

EGLE grants

- Community Energy Management Incentive Program
- Grants for updating plans & ordinances for renewable energy
  - Up to $15,000
- Apply at www.Michigan.gov/energy



OFFICIAL WEBSITE OF MICHIGAN.GOV

Department of Environment, Great Lakes, and Energy

Office of Climate and Energy

CLIMATE AND ENERGY / ENERGY / BUSINESSES

Community Energy Management Incentive Program

Energy Services will offer financial incentives to communities, public education K-12 schools and postsecondary institutions, and other entities for energy related implementation projects, recommended from energy audits and assessments that can be completed between February 1, 2021 and July 31, 2021. The maximum rebate award is $15,000 per applicant.

Awards will be given on a first come first serve basis at the discretion of Energy Services to work with local governments, public education K-12 schools and postsecondary institutions, and other entities on energy management, energy efficiency and renewable energy projects such as, but not limited to: benchmarking, ASHRAE Level I or II audits, energy efficiency upgrades, renewable energy projects, training, workshops, updating plans/ordinances to include energy, etc.

https://www.michigan.gov/climateandenergy/0,4580,7-364-85453_85455_85523-475266--,00.html

Questions?

- **Reach out to us**
  - Answer questions
  - Give presentation
  - Connect you to MSU-Extension, other communities
- **Wind-, solar-specific webinars**

Sarah Mills, PhD
Senior Project Manager,
University of Michigan
sbmills@umich.edu

Hannah Smith
Research Assistant,
University of Michigan
hgraces@umich.edu

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CLEAN ENERGY & ENERGY MANAGEMENT WEBINAR SERIES

Upcoming Webinars & Trainings

April 13 Zoning for Utility-Scale Wind Energy

April 27 Zoning for Utility-Scale Solar Energy

Stay Up-to-Date and Find Recordings

www.Michigan.gov/Energy > Energy tab > Communities