Zoning for Wind Energy: Trespass Zoning or Property Rights Zoning?

By
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Former Vice-Chairman
Riga Township Planning Commission

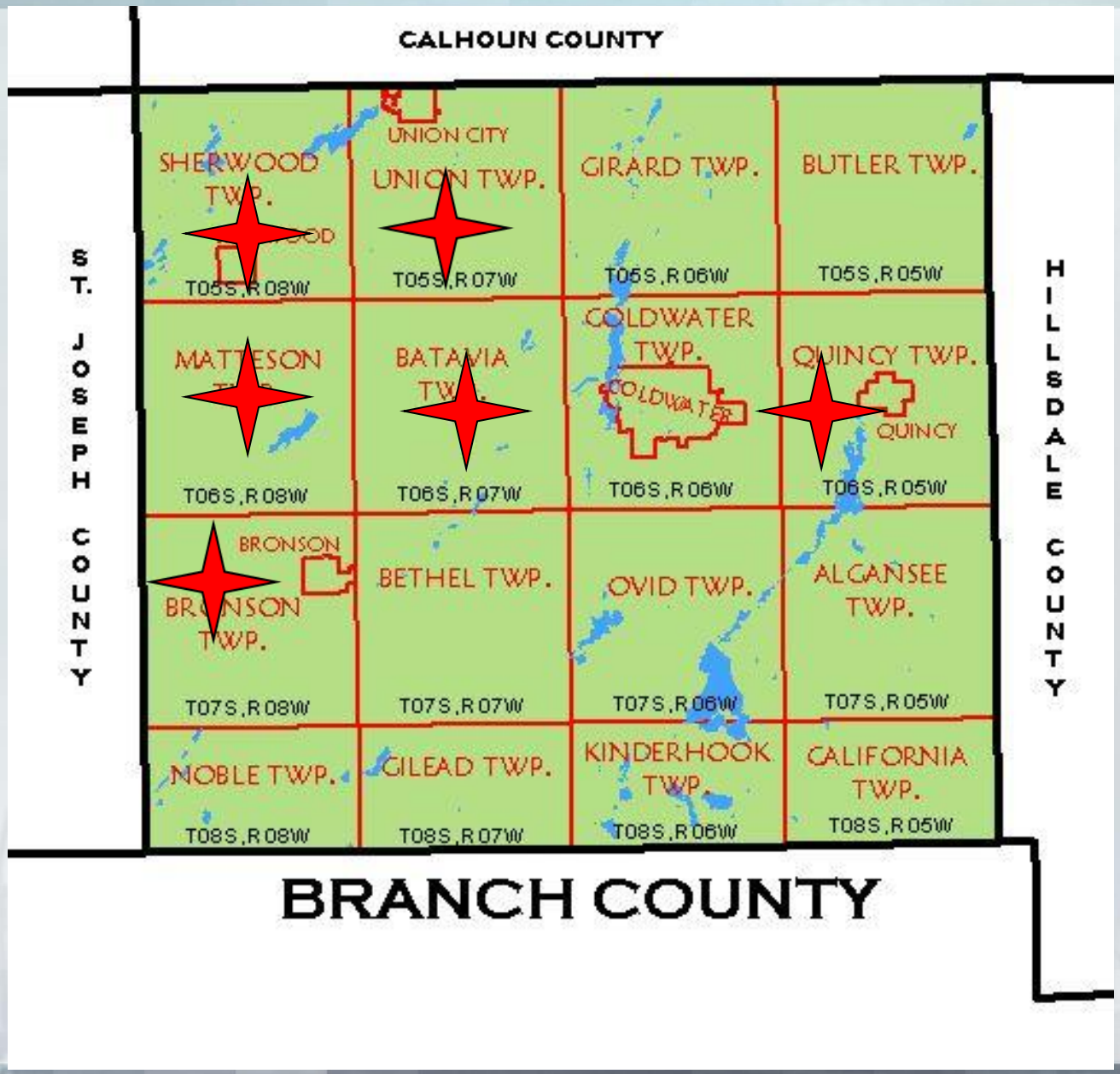
Director, IICC

Senior Policy Fellow
E&E Legal Institute
Washington, DC

Who is this guy?

- **BA History, University of Michigan**
- **Former Vice-chairman Riga Township PC-6 years**
- **Worked for 2 years drafting ag preservation plan for county**
- **Helped draft wind energy ordinance that became a State model ordinance**

Current Project Footprint:



Riga Township a State Model:

Examples of Zoning Guidelines for On-Shore Wind

The Environmental Law Institute report on State Enabling Legislation for Commercial-Scale Wind Power (see below) provides examples Model Wind Ordinances provided by ten different states. In 2009, the Bureau of Energy Systems (now Michigan Energy Office), published the Sample Zoning for Wind Energy Systems. Since that time, a number of organizations and communities have embarked on their own wind projects and have developed zoning ordinances. The MEO recommends that communities review the examples of wind policies at the local government level in Michigan.

The U.S. Department of Energy's Wind Powering America initiative provides examples of local wind zoning ordinances from a number of communities in the state, as well as information on best practices. The site also provides a link to the U.S. Department of Energy publication, Wind Energy Ordinances.

Please Note: the MEDC – Michigan Energy Office does not endorse nor offer these ordinances as a Best Practices. These ordinances are provided only as examples of Zoning Ordinances currently in use in the state and do not constitute a complete list. The MEDC Michigan Energy Office does highlight the Gratiot County Wind Energy Ordinance as notable because it was unanimously adopted as Michigan's first county-wide wind energy zoning ordinance.

City of Holland, Zoning Amendment

Centerville Township Zoning Ordinance for Commercial Wind Energy Systems

Emmet County Zoning Ordinance

Environmental Law Institute Report, *State Enabling Legislation for the Commercial-Scale Wind Power Siting and the Local Government Role, 2011*

Gratiot County Wind Energy Ordinance

Great Lakes Wind Collaborative, 2011, *Best Practices for Sustainable Wind Energy Development in the Great Lakes Region*, June 2011

Oliver Township Land Use Plan

Otsego County Ordinance No. 18.5 for Wind Turbine Generators and Anemometers

Riga Township Ordinance No. 32, Amendment to the 1974 Zoning Ordinance of Riga Township

Shiawassee County Wind Ordinances

BTW:

- **I am not a lawyer but I do watch *Law and Order.***
- **Nothing I say today should be construed as offering legal counsel.**
- **Developing wind energy ordinances that can withstand legal scrutiny is a specialty. It is important to retain experienced counsel in these matters.**

First:

The wind industry and their advocates like to make these zoning deliberations a discussion about how noble, green and beneficial wind energy development is.

First cont'd:

But the ONLY issue before us is how to safely place 50,60 or 70 story tall noisy structures into a rural/residential environment. Whether these structures produce "green" electricity, extract oil or coal, or turn sow's ears into silk purses is absolutely irrelevant.

This is about separating conflicting uses of land and protecting H,S&W.

Nothing more, nothing less.

Second:

As a former planning commissioner I fully understand the pressure of being asked to say “Yes” or “No” to a wind development. It is a thankless task that no one anticipates when volunteering to serve one’s neighbors on a zoning or planning board

Good news:

I believe that reasonable wind energy zoning regulations driven by the principles of *consent* and *compensation* can place the burden of deciding whether a given community hosts utility scale wind development upon the wind developer rather than the zoning authority.

This is as it should be.

For the record:

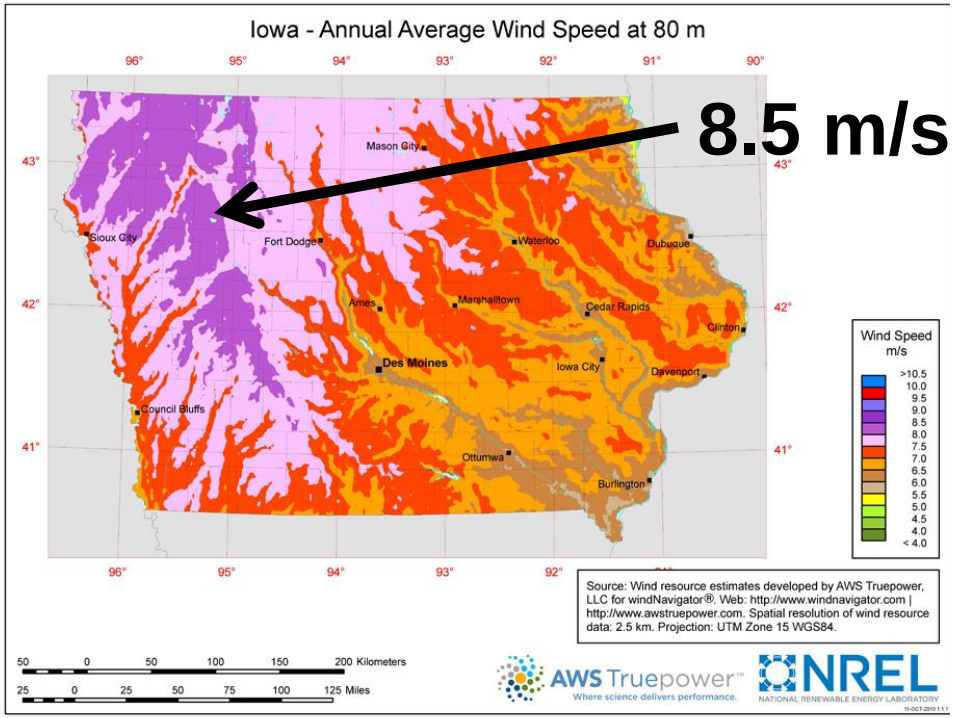
- **The IICC is a bipartisan group with supporters from the left and right.**
- **We have no ties to any fossil fuel or industrial interests**
- **I am not a paid lobbyist**
- **I donate my time as a volunteer and receive no financial compensation for my time**

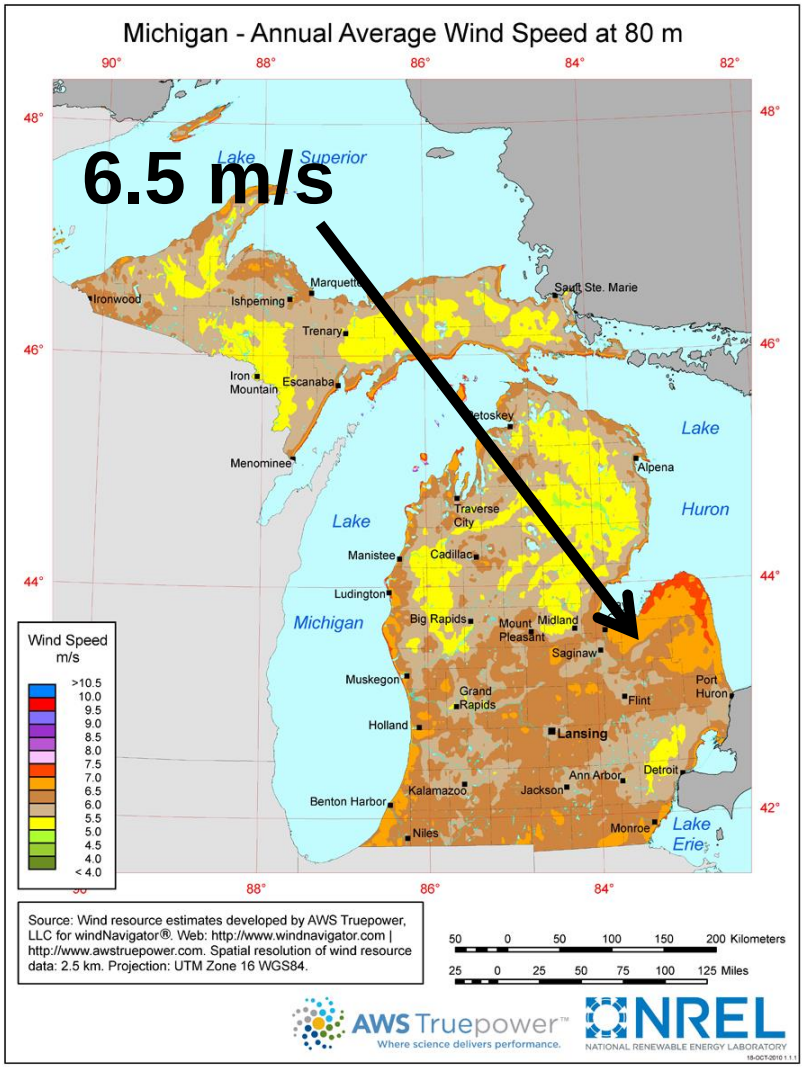
A couple non-zoning matters:

As noted already, wind developers like to sell communities and lease holders on the economic advantages of wind development as a tool to gain approval for their projects.

Let's briefly analyze wind economics from the macro level.

MI wind noncompetitive

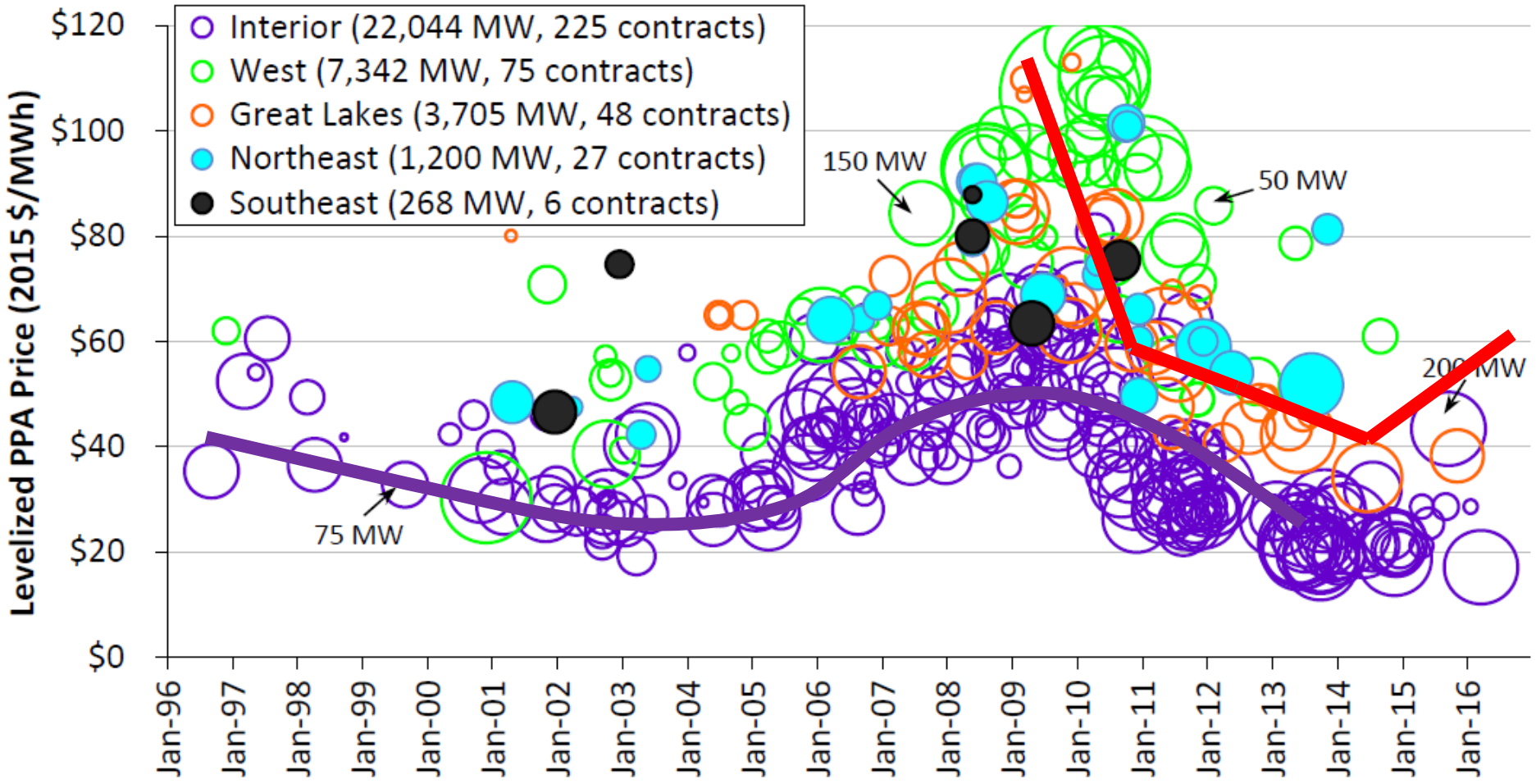




IA has large regions of 8.5m/s wind potential. MI has none, even @ 100m.

IA will produce ~2x the energy from each turbine as MI, <u>a permanent 2:1 price disadvantage for MI</u>

Red: Michigan
Purple: MISO Peers



MI wind remains very expensive relative to peers.

MI PPA prices vs. the Prairie States

Weighted Average Cost Comparison		
Commission Approval	**Company Owned**	**Power Purchase**
2015	$50.00	$45.00
2014	N/A	N/A
2013	$55.95	$50.04
2012	$52.50	$49.25
2011	$67.16	$60.90
2010	$104.00	$97.33
2009	N/A	$115.00
Total	**$74.49**	**$73.58**

MPSC boasts about MI wind contracts dropping in price since 2009.

https://www.michigan.gov/documents/mpsc/PA_295_Renewable_Energy_Report_2-12-16_514511_7.pdf

MI PPA prices vs. the Prairie State

Figure 3: Bidders for the Missouri Utilities Latest Wind RFP – *Who are the Players?*

Bid/Wind Project	MW Bid	Price ($/MWh)	Price Fixed or Escalating	Location
Apex - Grant Plains	50	$ 21.95	Fixed	Grant County, OK
AV3 - Green Hills	64	$ 50.00	Esc. - 1.0%	MO
Duke - Fronties City	200	$ 17.20	Esc. - 2.5%	Kay County, OK
Duke - Fronties City	150	$ 17.35	Esc. - 2.5%	Kay County, OK
Duke - Fronties City	100	$ 17.50	Esc. - 2.5%	Kay County, OK
Duke - Fronties City	200	$ 20.99	Fixed	Kay County, OK
Duke - Fronties City	150	$ 21.24	Fixed	Kay County, OK
Duke - Fronties City	100	$ 21.49	Fixed	Kay County, OK

https://neo.ubs.com/shared/d1Cr2SzL8AK/

Yet our cheapest contracts are TRIPLE the price of contracts offered in Missouri. Michigan wind energy offers no advantage to ratepayers.

What about CO2?

People concerned with CO2 emissions talk about the "social cost of carbon".

The Obama administration calculated that the economic harm of CO2 emissions is $40/ton* of CO2 emitted.

*http://www.sciencemag.org/news/2017/08/trump-s-attack-social-cost-carbon-could-end-hurting-his-fossil-fuel-push

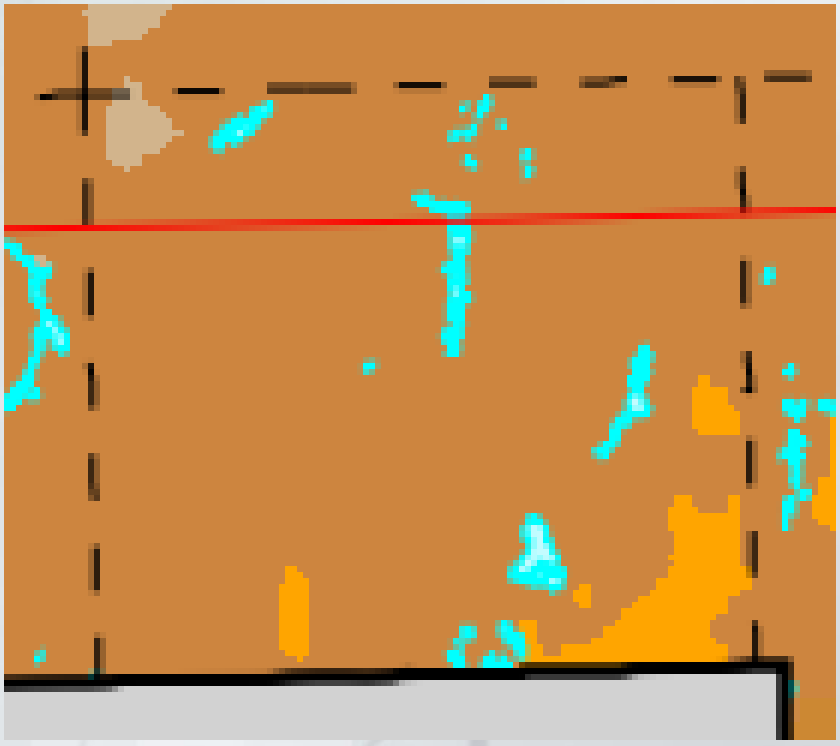
MISO on CPP and wind mitigation:

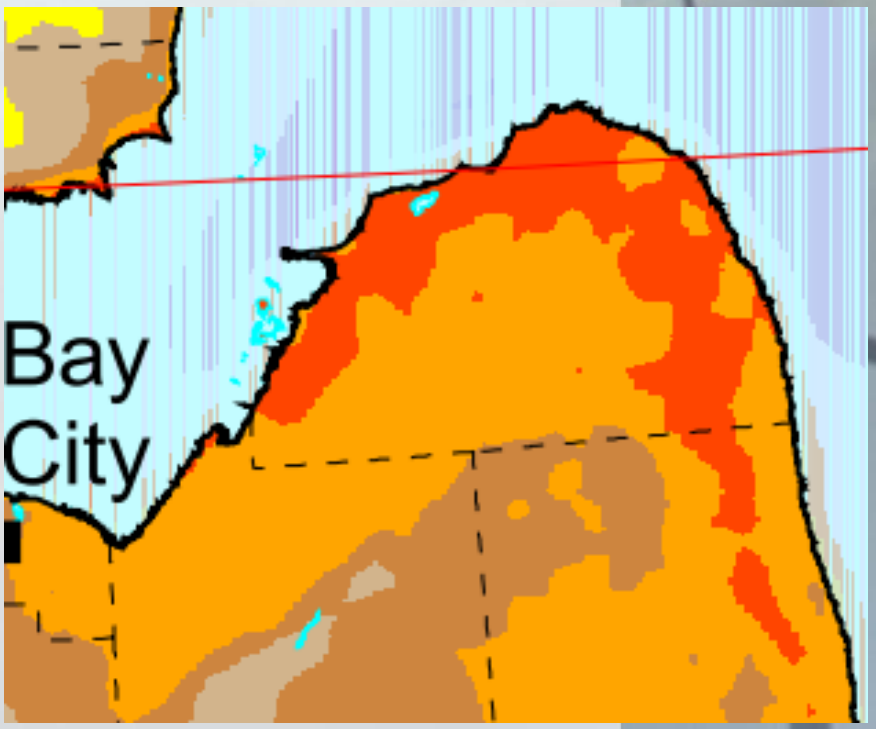
Reference case & Phase 1 scenarios

Scenario	EPA Assumptions and Methodology	Cost per ton of CO_2 reduction ($/ton) *
Reference Case	MISO's MTEP-15 Business As Usual future assumptions**	-
Building Block 1	In 2020, apply a 6% heat rate improvement to all the coal-fired units at a capital cost of $100/kW (amortized over 10 years).	5
Building Block 2	Calculate and enforce, starting in 2020, a minimum fuel burn for existing CC units to yield an annual 70% capacity factor.	53
Building Block 3	Calculate and add the equivalent amount of wind MWs to meet the incremental regional non-hydro renewable target.	237 Present value calculation for costs is the driver for the higher cost.
Building Block 4	Calculate the amount of energy savings for the MISO footprint and incorporate it as a 20-year EE program in the model.	70
All Building Blocks	Application of all building blocks.	60

http://www.eenews.net/assets/2014/09/18/document_ew_01.pdf

Branch C. vs. HC wind leaves obvious question:

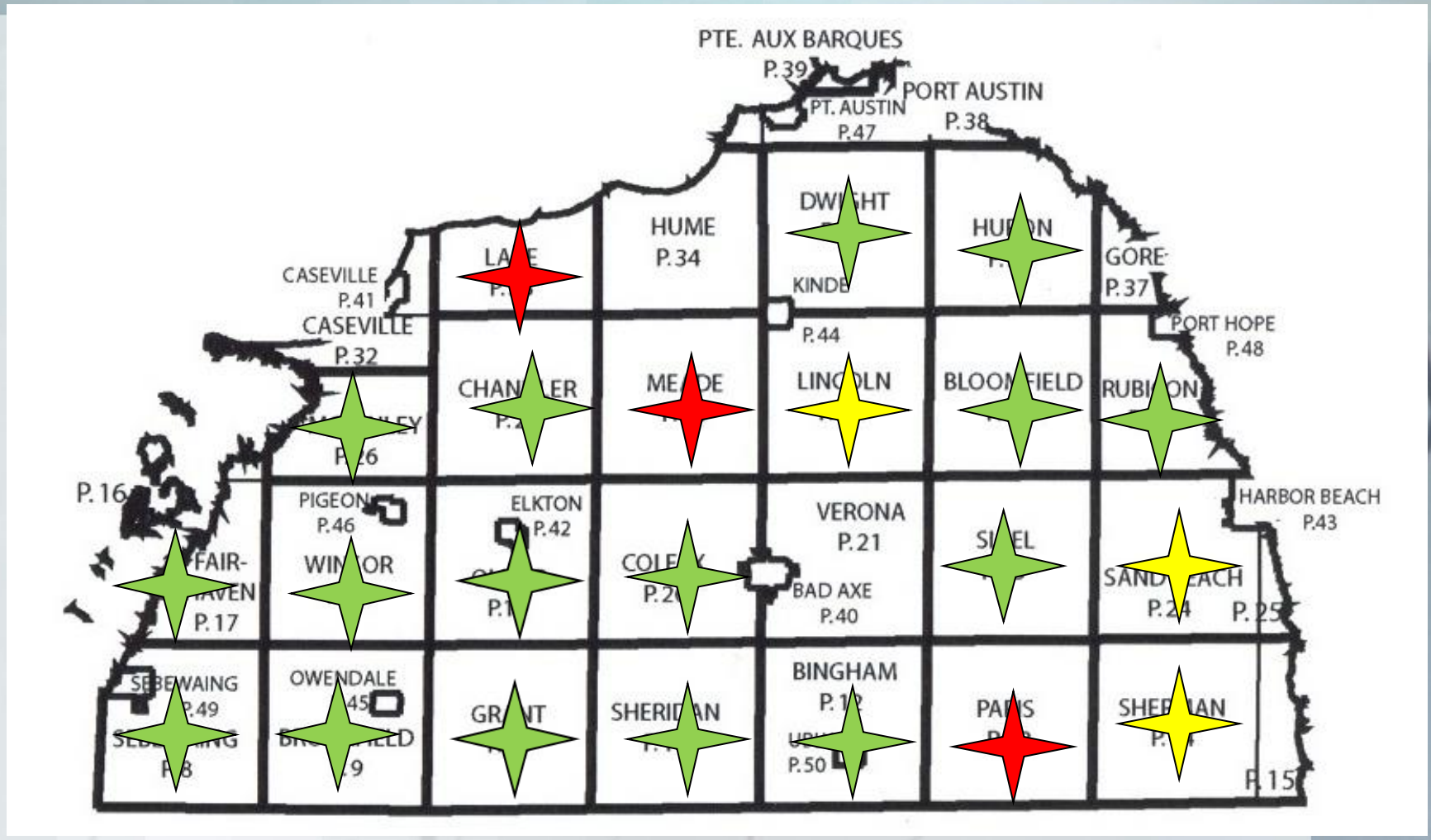




Why here?

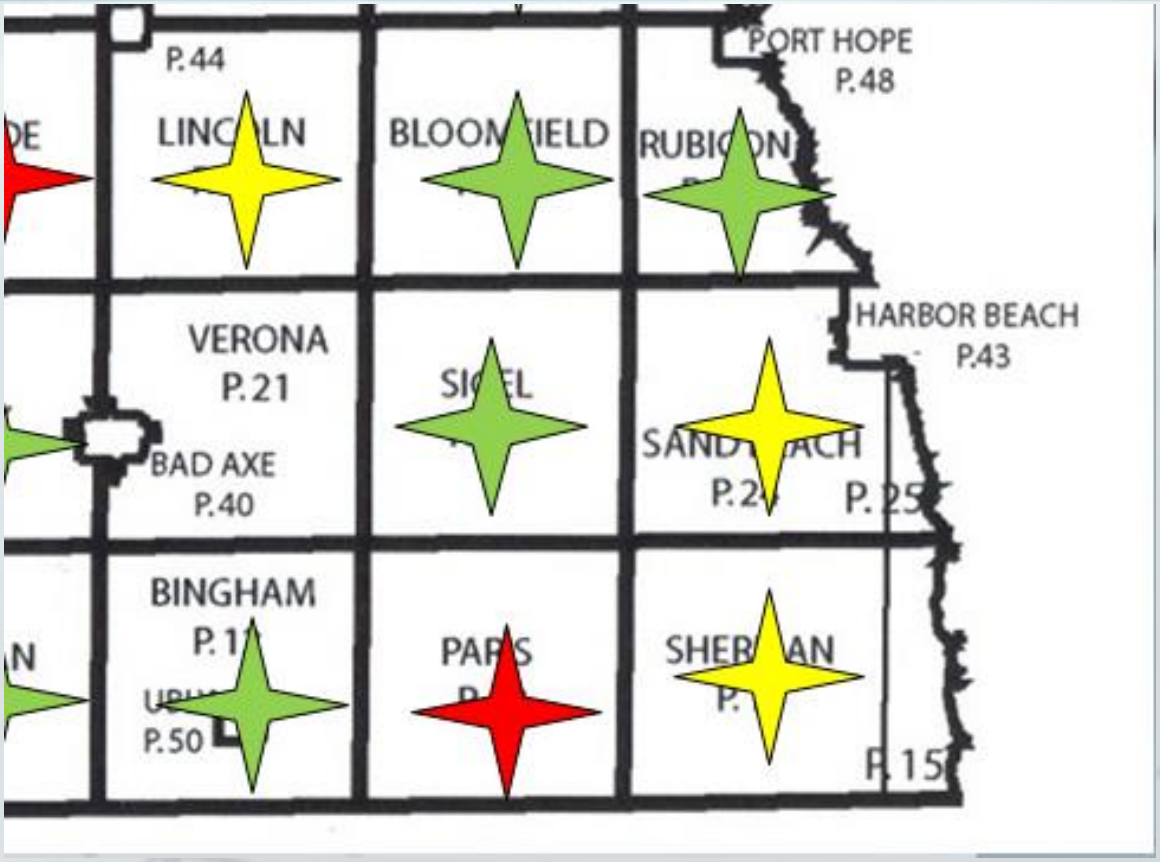
A little history.

Huron County:



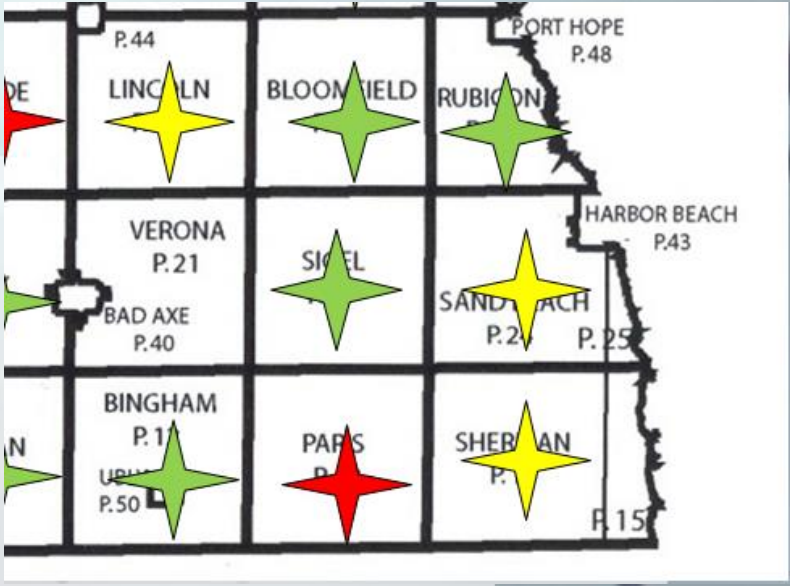
With stronger wind, Huron County has been a free-for-all for wind development since 2008.

Huron County:



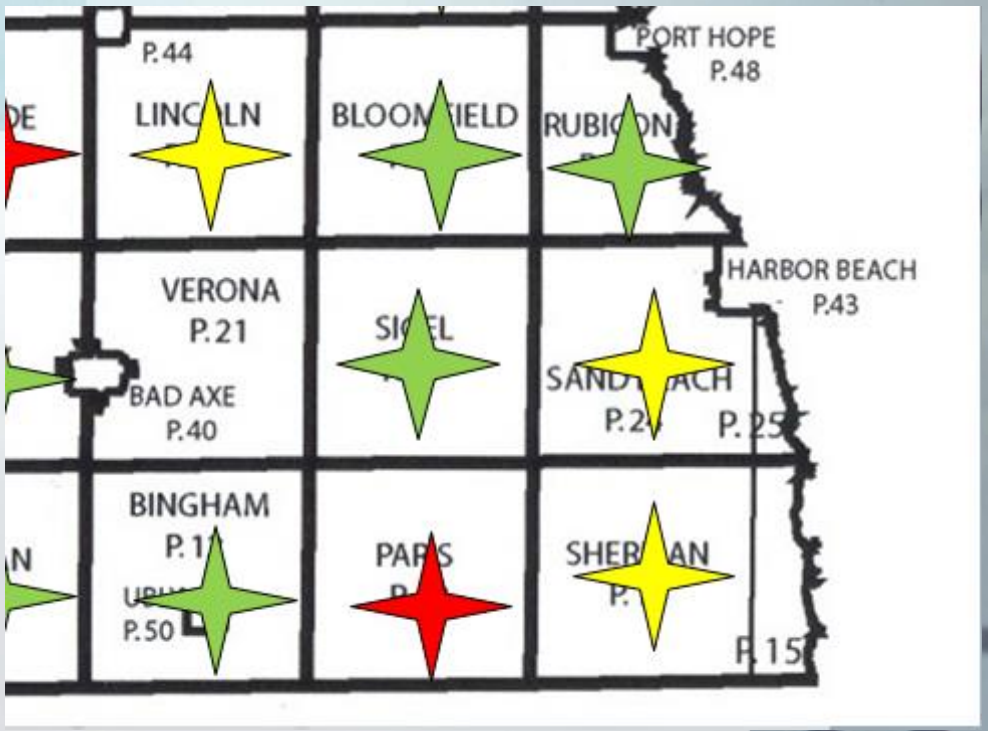
In 2016, 3 HC townships faced even more wind development-Lincoln Township by DTE and Sand Beach and Sherman by NextEra

Huron County:



Curiously, although 4 of 5 Lincoln Township trustees had DTE wind leases, they took action to remove themselves from county zoning in order to enact protective zoning of their own. They told the Huron County PC: "We feel that Huron County has done our part as far as Green Energy. We feel that no additional turbines should be allowed in Huron County."

Huron County:

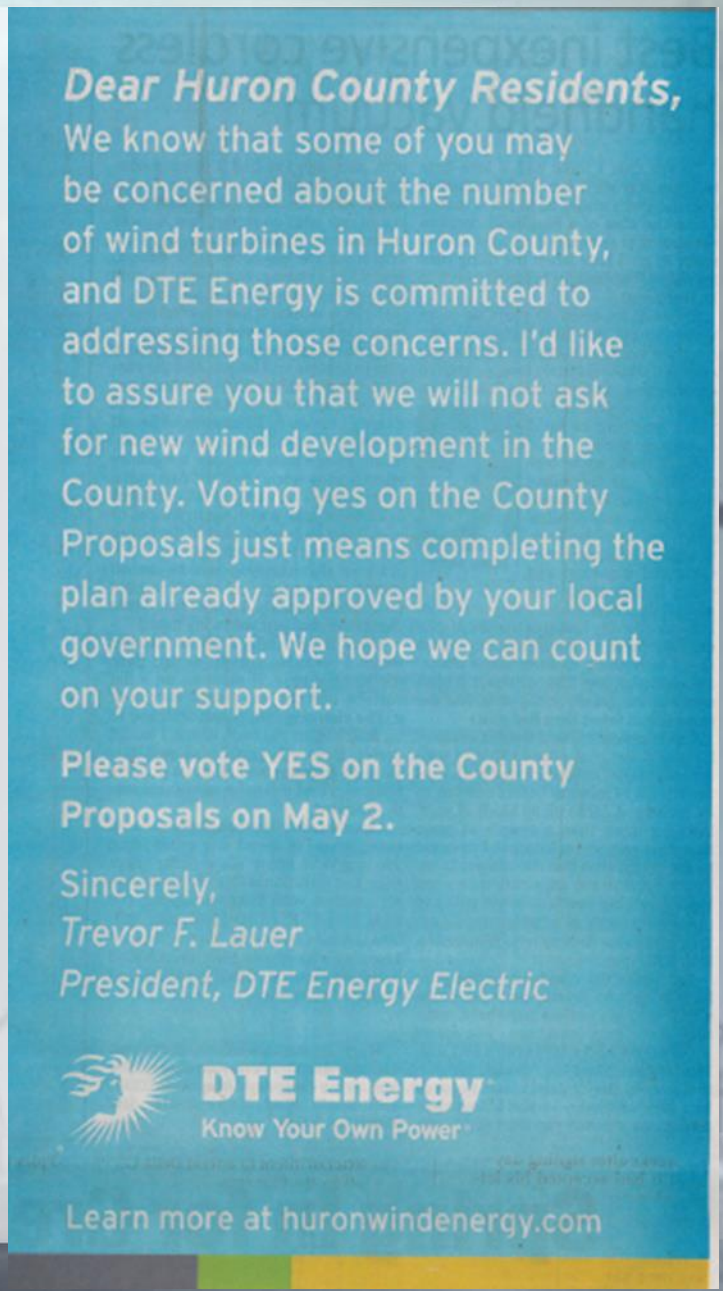


Without going into the details, the net effect of these two proposed projects was to engender 2 countywide zoning referenda and two township level referenda on the May 2nd ballot.

HC Campaign intense. From the absurd…

DTE Electric's CEO Trevor Lauer came to Huron County to campaign for the project.

He promised that if HC voters would allow just one more wind project, they would never build another in Huron County.



...to the menacing:

A PAC in the NextEra project footprint threatened people of Sand Beach Township with expensive litigation if they voted for stronger wind zoning.
With NextEra's ongoing suits in Tuscola County, it was no idle threat.

HC residents fought back:

Campaign Spending:

Campaign disclosures revealed that DTE and NextEra spent a combined $875,000.00 on the campaign.

The local folks spent about $3,700.00

Countywide Results?

Huron Wind LLC's Overlay District Propo	(0)	0/16	0.00%
YES		1,120	36.67%
NO		**1,934**	**63.33%**
	Total ...	**3,054**	**100.00%**
DTE's Overtlay District Proposal	(0)	0/16	0.00%
YES		1,110	36.60%
NO		**1,923**	**63.40%**
	Total ...	**3,033**	**100.00%**

Further:

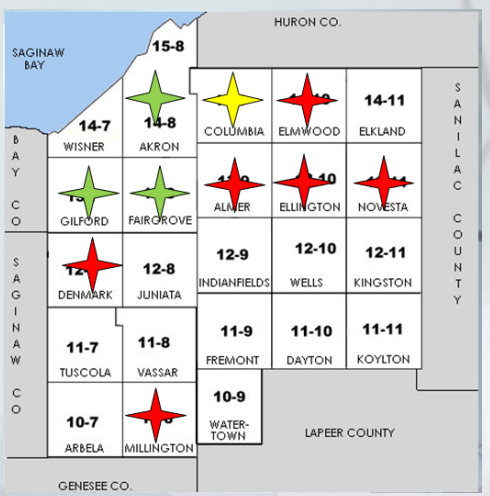
Wind losing at the ballot box despite lopsided campaign expenditures is not rare.

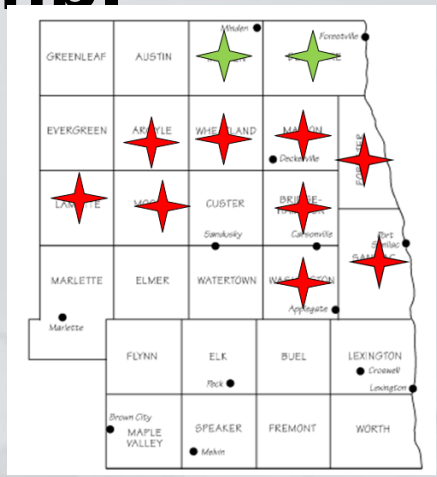
Since 2009, wind has *never* won a township referendum:

	% against	% in favor
Meade	60	40
Lake	62	38
Paris	64	36
Riga	64	36
Palmyra	55	45
Seneca	51	49
Reading	71	29
Wheatland	63	37
Moore	57	43
Argyle	53	47
Almer	55	45
Lincoln	58	42
Sand Beach	84	16
Sherman	63	37
Joyfield	53	47
Marion	55	45
Bridgehampton	63	37

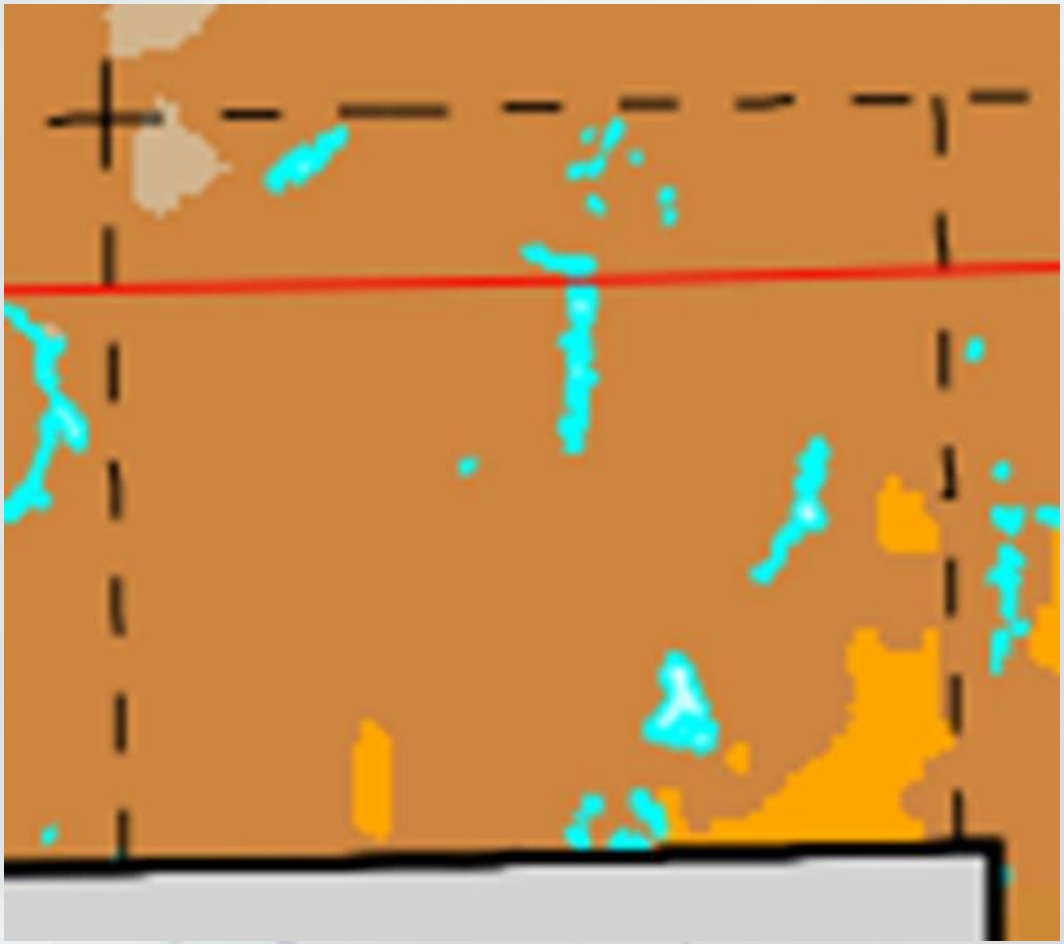
Statewide rejection of wind:

Since 2009, more than 40 townships and 3 counties have rejected wind energy including Mason, Emmet and Schoolcraft. More are following suit including most of Tuscola and Sanilac Counties in the Thumb.





So why is DTE in Branch County?



They are here because the windier Thumb has rejected virtually all future development.

One more reason:

Despite overwhelming opposition to even one more wind project in HC, just weeks after their bitter loss, DTE CEO Gerry Anderson announced a plan to build 6,000MW of new wind generation.

(He later reduced the goal to 4,000MW.)

4,000 MW of wind=1,000SM of land:

DTE's proposed St. Clair CCGT plant:

DTE's proposed 1,100 MW gas plant would be built on the site of these two retiring coal plants. The new plant will have roughly the same annual generation potential as the 4,000MW of new wind turbines proposed by DTE but would be built on only a couple square miles of existing brown field and require relatively trivial transmission expenditures.

http://www.freep.com/story/money/business/michigan/2017/08/01/dte-energy-natural-gas-power-plant-macomb/527961001/

2 sq. mi. vs. 1,000?

2 sq. mi. vs. 1,000?

Make sense to you?

CEO plan good for DTE, bad for ratepayers:

All dollar amounts in millions	
Generic Windfarm	
Nameplate Capacity(MW)	100
Cost ($M)	$ 220.00
Capacity Factor	40%

	yr 19	yr 20	totals
	220	220	
	209	220	
	11	0	
	$ 0.94	$ 0.31	$ 125.33

According to calculations performed for me by MPSC, a generic 100MW wind plant of 100MW nameplate capacity would yield a ratepayer-guaranteed profit of $125 million over the 20 year life of the plant.

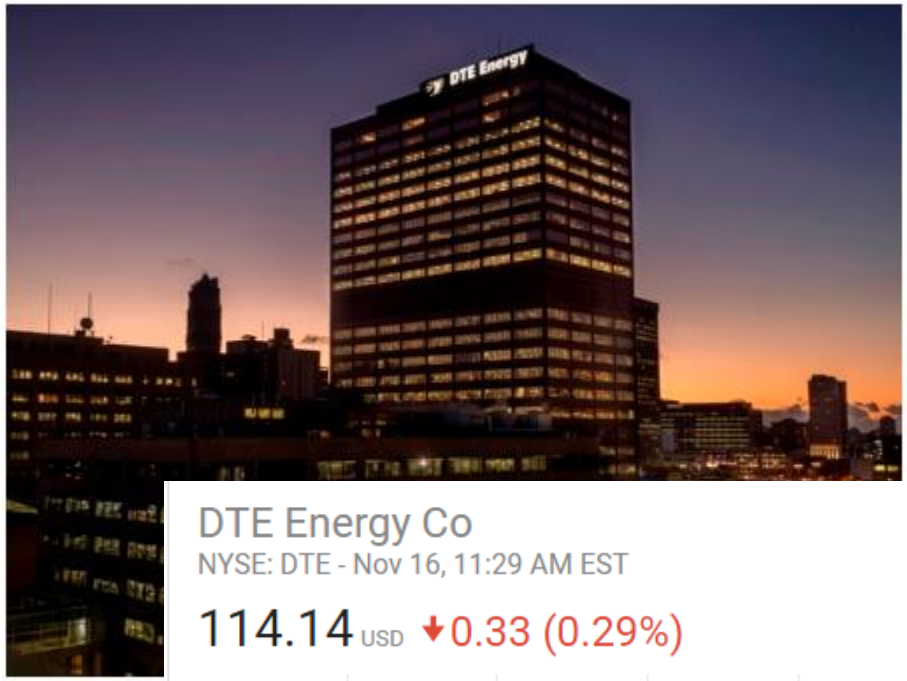
Add to this another $80 million in the federal PTC bringing the total to over $200 million (if the full PTC remains).

And of course the entire construction cost is borne by the ratepayers so this is a "no risk" endeavor.

So why is DTE really here in wind poor Branch County?

DTE Energy reports solid 2016 financial results; sets operational records while securing Michigan's energy future

DETROIT, Feb. 9, 2017 /PRNewswire/ -
- DTE Energy (NYSE: DTE) today reported 2016 earnings of $868 million, or $4.83 per diluted share, compared with $727 million, or $4.05 per diluted share in 2015. Reported 2016 earnings were higher primarily driven by weather, with the region experiencing a long, hot summer.



2016 operating earnings were $948 million or $5.28 per diluted share, compared with 2015 operating earnings of $863 million, or $4.82 per diluted share. Operating earnings exclude non-recurring items, certain mark-to-market adjustments and discontinued operations. Reconciliations of reported earnings to operating earnings are included

Wind pays.

$$$ vs. Land Use

Wind developers often speak of promises of great financial benefit to landowners and township or county coffers as an inducement for permissive wind energy zoning.

Remember:

All the financial promises made to your community in the form of new taxes and landholder lease payments are recovered from Michigan ratepayers, employers and from the US Treasury.

There is no free lunch.

In other words:

The MI experience:

Michigan has over 1,500MW of wind turbines installed

Initially the State recommended 1,000' setbacks from homes and 55dBa noise limits. Although it was not a binding recommendation it became an informal standard often proposed by wind developers.

BTW: turbines were only 390' tall then.

Experience has been a harsh teacher:

Wind development in MI has produced widespread complaints and/or legal & political action regarding wind turbine impacts.

Wind is land use intensive:

- **Fermi II Reactor- ~1100 Mw**

1100 MW from wind at 3.6 MW/sq mile w/30%CF

2 Vestas V-100 turbines per square mile

....and a couple of these for July, August, etc.

Or, 36 Square miles of this…

...could be equaled by one of these:

TM2500 Mobile Gas Turbine Generator

- Output: 21.8 MW @ 50 Hz; 22.8 MW @ 60 Hz (ISO)
- Dual Frequency – 50/60 Hz quick conversion (no reduction gear)
- Heat Rate: 9800 Btu/kW-hr @ 50 Hz; 9500 Btu/kW-hr @ 60 Hz (ISO)
- Voltage: 11.0kV (50Hz); 13.8 kV (60Hz)
- Liquid or natural gas fuel capability
- Brush Air-cooled 2-pole generator with brushless excitation
- Multiple units started/controlled through a single desktop PC
- Low emissions with demineralized water injection 25 ppm (gas); 42 ppm (liquid)
- Woodward Micronet® control system
- Inlet air heating/cooling provisions
- Electro-hydraulic starting system
- Single unit footprint ~110' x 70'
- Sound level at 3 ft. 90 dBA

Zoning Questions

- How do we evaluate any product that is brought before us?
- We evaluate the TCO-Total Cost of Ownership
- To establish an accurate TCO we first need to know the price, and then evaluate the benefits and costs- easy with a familiar product, like a new car:

Want to buy a car?

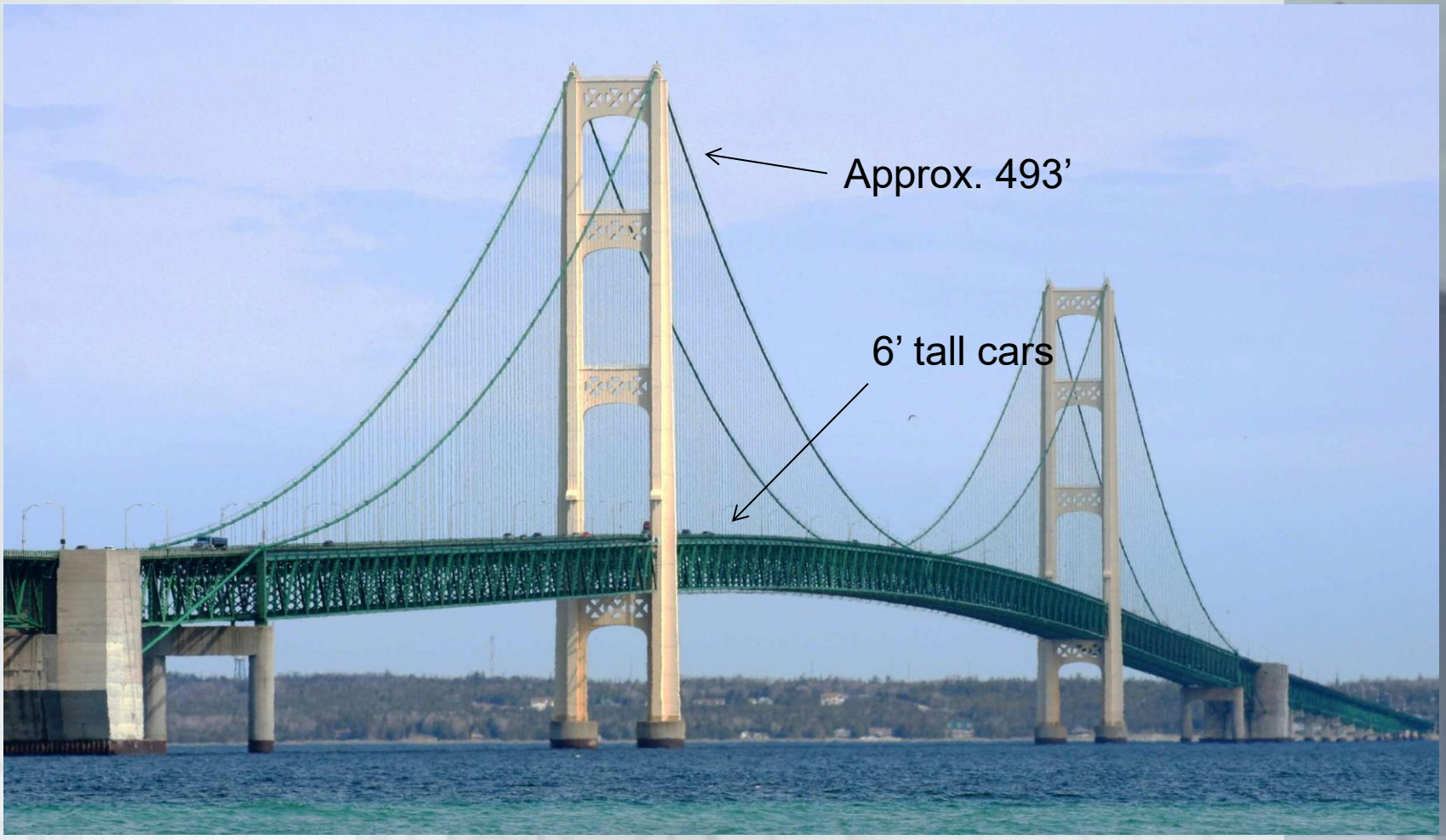
- First we evaluate price, economy, durability, style, brand, nation of manufacture, etc.
- Four door? Two door? Coupe? SUV? Smart Car? Minivan?
- We then decide how much we want to spend and then estimate the benefit based on past experience with the things above
- It's easy to decide because cars are a familiar product

Want to buy a turbine?

- So when a wind developer shows up and says that he would like to build some 100m class Vestas V-100 turbines we now have to ask questions about an unfamiliar product, like: “How tall are they?”
- Answer: 494’
- But just how big is 494’?

How big are they?

- These towers are 552’ above water



VESTAS V-100

1,139’ setback to home

BTW: newest turbine designs now 750+’ tall

Where do we get our regulatory guidance?

MI Zoning Enabling Act:

"A zoning ordinance shall be based upon a plan designed to promote the public health, safety and welfare…"

Put another way: if the proposed activity cannot be performed in our communities in keeping with Health Safety and Welfare, it must not be permitted.

REMEMBER: A d*eveloper's primary commitment is to bottom line and their "recommendations" are designed to maximize ROI*

But planning officials' single commitment must be to H, S and W

Or:

Put another way: if the proposed activity cannot be performed in our communities in keeping with <u>Health Safety and Welfare</u>, it must not be permitted.

REMEMBER: A d*eveloper's primary commitment is to bottom line and their "recommendations" are designed to maximize ROI*

But a planning official's single commitment must be to H, S and W

Limits to zoning:

- **Zoning regulations must have a rational relationship to protecting H, S and W.**
- **They must not be arbitrary or capricious.**
- **If a zoning regulation meets those criteria it is almost unassailable in court**

Remember: Reasonable zoning is strong!

H, S & W

Protecting Health Safety and Welfare is a sworn duty.

Developers (of any type) are crafty and present many superficially enticing arguments and promises.

But protecting H, S and W comes first.

H, S & W Questions

- Are (any) developer's profits more important than H, S and W?
- Are promised increases in tax revenue more important than H, S &W?
- Are claims of "private property rights" more important than H,S &W?
- Are claims of green jobs or emissions reductions more important than H, S & W?

The quick answer:

NO!

Remember:

It is the Health Safety AND Welfare

not Health Safety OR Welfare

that zoning commissioners are duty bound to protect.

Too often *Health* and *Safety* are diminished in exchange for developers' promises of jobs or tax revenue *Welfare.*

<u>But those promises are not contracts.</u>

Regulating wind installations:

There are many impacts associated with placing utility scale wind turbines in proximity to human habitation.

The most common are height, physical setbacks and noise limits.

Others may include aviation impacts, RF interference or environmental impacts like birds and bats.

I will mainly focus on height, setbacks, noise and property values.

Typical DTE regs:

1. 500’ height limit
2. 45-50dBa at homes
3. 1,320’ setbacks to homes
4. 30 hours shadow flicker
5. 1.1 setback to property lines and roads

Height Limits

- In general communities are free to regulate the height of structures simply on the basis of appearance.
- Many zoning ordinances restrict homes to only 2 or 3 stories even though 4 or 5 story homes can be built safely.
- Wind turbines are no different than any other lawful use. You may restrict their size for the sake of appearance.

We regulate billboards on appearance:

"The purpose of regulating signs in the county is to provide for a visually pleasant environment and minimize potentially unsafe conditions while also offering opportunities for public and private information and advertising." SCZO

And turbines have visual impacts too:

- **“Certainly there are some pristine places in Michigan where you don’t want to impact the viewshed…. You take a situation like Leelanau County or the Old Mission peninsula here in our region. Certainly there are areas where it just-while it would be perfect economic sense and perfect placement for utility turbines- we probably don’t want [them] as a region there.”**

-Steve Rawlings, DTE

DTE Echo Wind Plant
Huron County

And turbines have visual impacts too:

Curiously, wealthy regions in Michigan like Leland and Centreville Townships in the Leelanau Peninsula have adopted very stringent wind ordinances without fanfare or protest despite a demographic that claims to heavily support renewable energy.

DTE Echo Wind Plant
Huron County

So how tall is too tall?

Just like any other land use, it's up to you.

Worldwide setbacks & "industry standard":

Table I. Safety distances of wind turbines from human structures as practiced in different regions of the world.[17]

Authority/source	Safety distance [m] (ft)
France	1609 (5280)
Germany	1609 (5280)
Rural Manitoba, Canada (1981)	(6500)
US National Research Council	762 (2500)
IL, USA	457 (1500)
Riverside County, CA, USA	**3218 (10560)**
MI, USA	**304 (1000)**

Source: Analysis of throw distances of detached objects from horizontal-axis wind turbines, Sarlak and Sorenson, *Wind Energy* 2016

Minimum Setbacks-who to trust?

- **From Vestas "Health & Safety Instruction":**

  "If a runaway operation should occur, the plant must be evacuated immediately by running upwind, and access to the surrounding area in a radius of at least **500 metres** must be restricted"-**1640'**

- **Nordex:**

  "In case of a fire in the nacelle or on the rotor, parts may fall off the wind turbine. In case of a fire, nobody is permitted within a radius of 500 m from the turbine**."-1640'**

In real life? ~1500' Debris Field

Safety manuals:

- **My earlier slide quoted safety and operations manuals from Nordex and Vestas.**
- **Wind developers now claim that the basic safety information in those manuals is proprietary and they will not release them to planning commissioners.**
- **We feel that responsible wind ordinances should require the submission of those documents in un-redacted form.**

Ice Throw Jan 23rd, 2018:

Skylight damaged when ice flies off wind turbine at Mount Wachusett Community College

MOST POPULAR

1. Sewage backup creates bad smell at public housing complex in Worcester
   Jan 23 at 8:58 PM
2. Judge reverses decision blasting Worcester police promotions
   Jan 24 at 5:45 AM
3. Skylight damaged when ice flies off wind turbine at Mount Wachusett Community College
   Jan 24 at 9:28 AM
4. Icy conditions prompt 2-hour delay for Worcester schools on Wednesday
   Jan 24 at 9:21 AM

▲ HIDE CAPTION

One of the two wind turbines at Mount Wachusett Community College in Gardner, with the school's new science complex in the foreground. [T&G File Photo/Rick Cinclair]

Wind Energy paper on throw events:

Wind Energy

WIND ENERGY
Wind Energ. 2016; **19**:151–166
Published online 19 February 2015 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/we.1828

RESEARCH ARTICLE

Analysis of throw distances of detached objects from horizontal-axis wind turbines

Hamid Sarlak and Jens N. Sørensen

Section of Fluid Mechanics, Department of Wind Energy, Technical University of Denmark, DK-2800 Lyngby, Denmark

Wind Energy paper on throw events:

"It is found that, while at tip speeds of about 70 m/s (normal operating conditions), pieces of blade (with weights in the range of approximately 7-16 ton) would be thrown out less than 700m [2,300'] for the entire range of wind turbines, and turbines operating at the extreme tip speed of 150 m/s may be subject to blade throw of up to 2 km [1.2 miles] from the turbine. For the ice throw cases, maximum distances of approximately 100 [328'] and 600 m [2,000'] are obtained for standstill and normal operating conditions of the wind turbine, respectively, with the ice pieces weighting from 0.4 to 6.5 kg. The simulations can be useful for revision of wind turbine setback standards, especially when combined with risk assessment studies"

This peer reviewed paper published in an wind industry journal demonstrates that ice throw and component liberation are real risks inside a range of distance from 328' for a standing-still turbine up to 1.2 miles for blade throw during an overspeed event.

Developer's wishes:

Despite published safety data like that in the earlier slides,

wind developers routinely demand turbine setback distance ranging from 1,000 to 1,400' from neighboring homes (not property lines), leased or unleased, for turbines in the 400-500' class.

Here's the rub: Trespass Zoning

By demanding that the setbacks distances for wind turbines be measured from home on adjacent properties rather than from the property line (which is typical of virtually all other land use regulations) the wind developer is in essence asking the regulatory body to grant them an easement or trespass privileges on unleased property.

We call this Trespass Zoning.*

https://limaohio.com/opinion/columns/167093/william-j-seitz-and-kevon-martis-trespass-zoning-is-wind-energys-secret-subsidy

Wind lobby disputes “easement”:

Wind developers object to the phrase easement in the zoning context.

But their own leases make it clear:

5.2 **Effects Easement**. Owner grants to Operator a non-exclusive easement for audio, visual, view, light, flicker, noise, shadow, vibration, air turbulence, wake, electromagnetic, electrical and radio frequency interference, and any other effects attributable to the Wind Farm or activity located on the Owner's Property or on adjacent properties over and across the Owner's Property ("**Effects Easement**").

Wind lobby disputes "easement":

Apparently, in the mind of a wind developer, it is only an easement when they purchase the rights to do these things to your home.

But when they can talk the zoning board into donating the right to do these things to your home it is not an easement.

5.2 **Effects Easement**. Owner grants to Operator a non-exclusive easement for audio, visual, view, light, flicker, noise, shadow, vibration, air turbulence, wake, electromagnetic, electrical and radio frequency interference, and any other effects attributable to the Wind Farm or activity located on the Owner's Property or on adjacent properties over and across the Owner's Property ("**Effects Easement**").

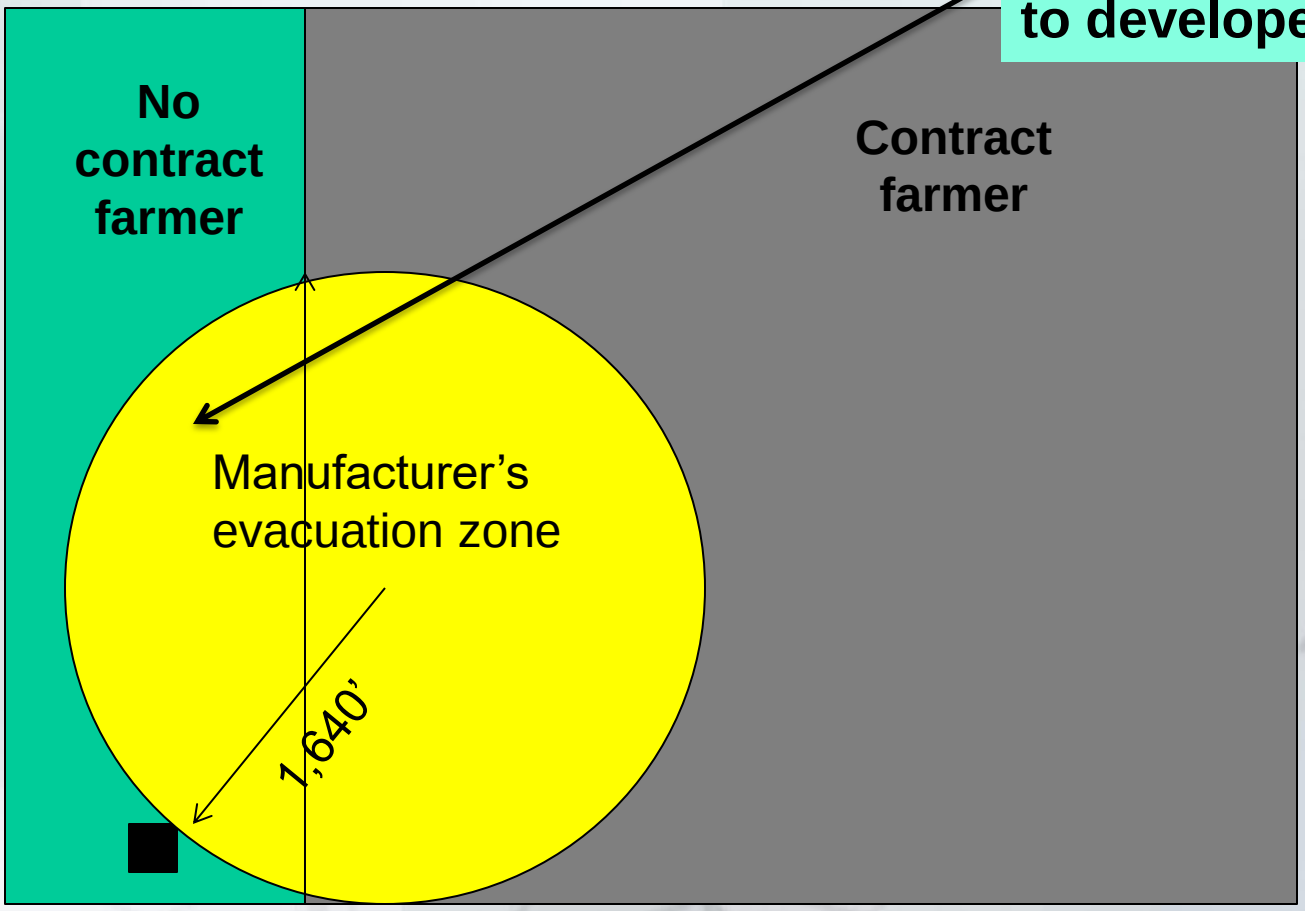
Trespass Zoning:

(Not to scale)

Setback to structure:

(Not to scale)

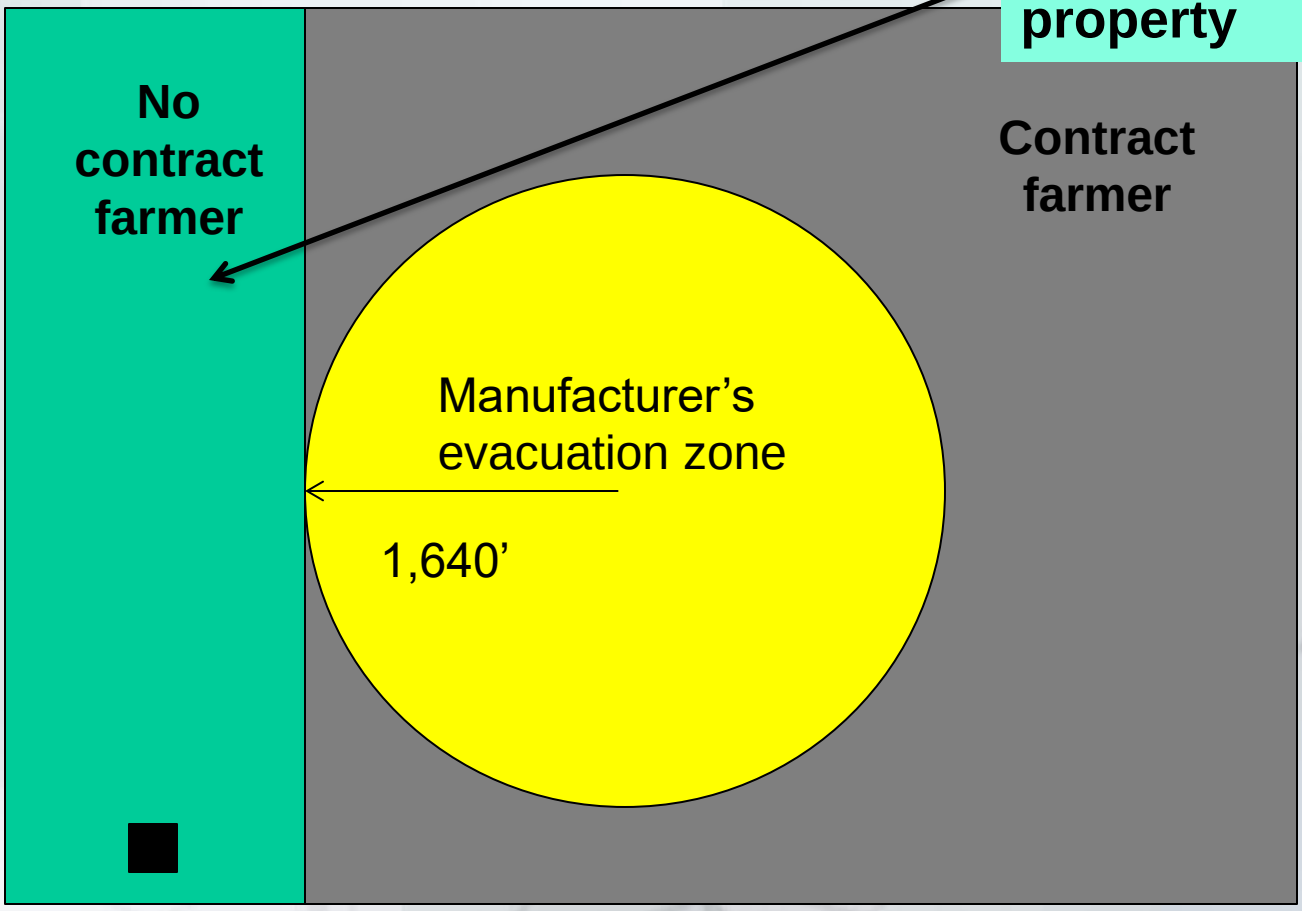
Green "no contract" farmer gives future development rights to developer for free



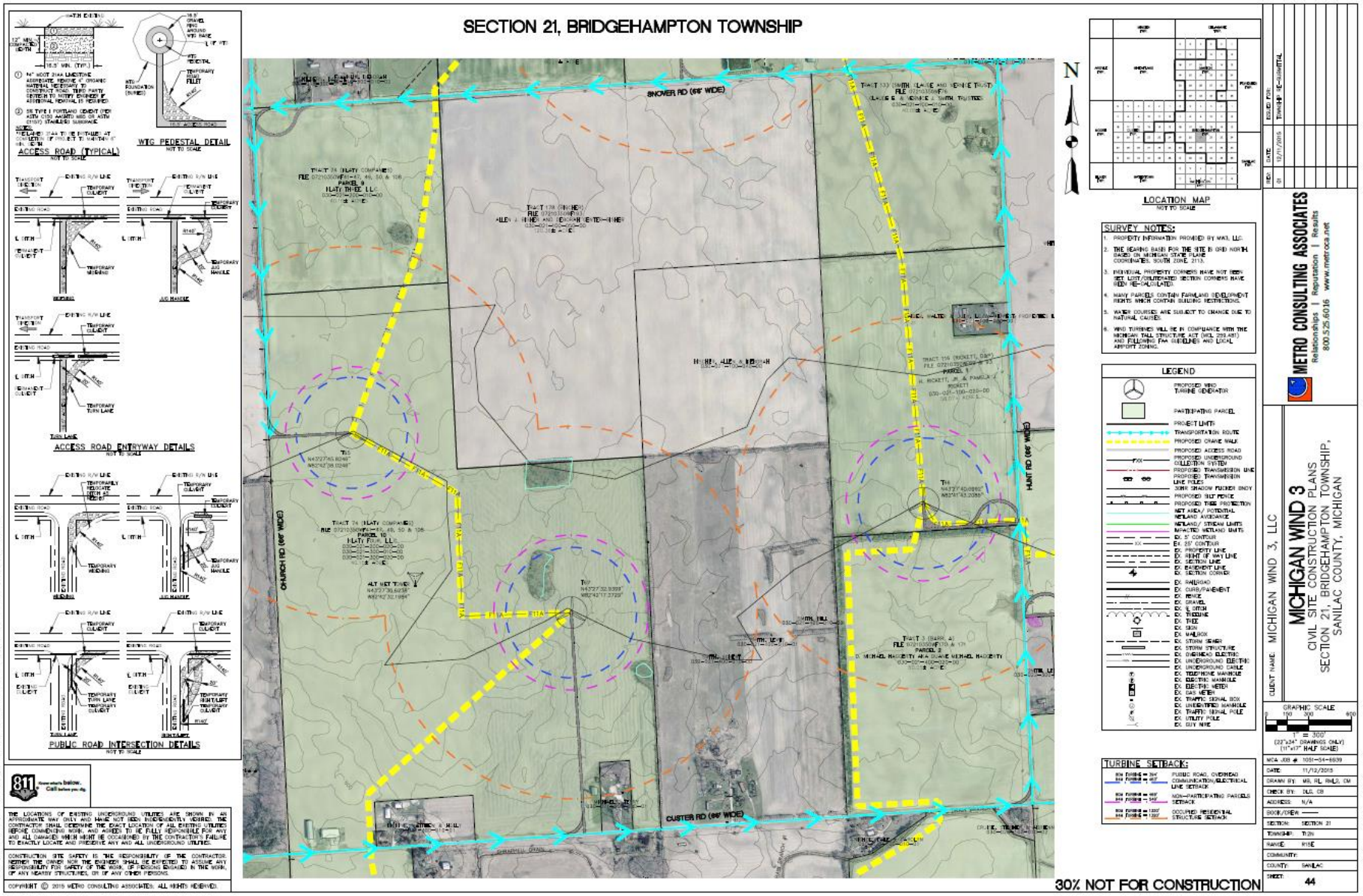
Setback to property line:

(Not to scale)

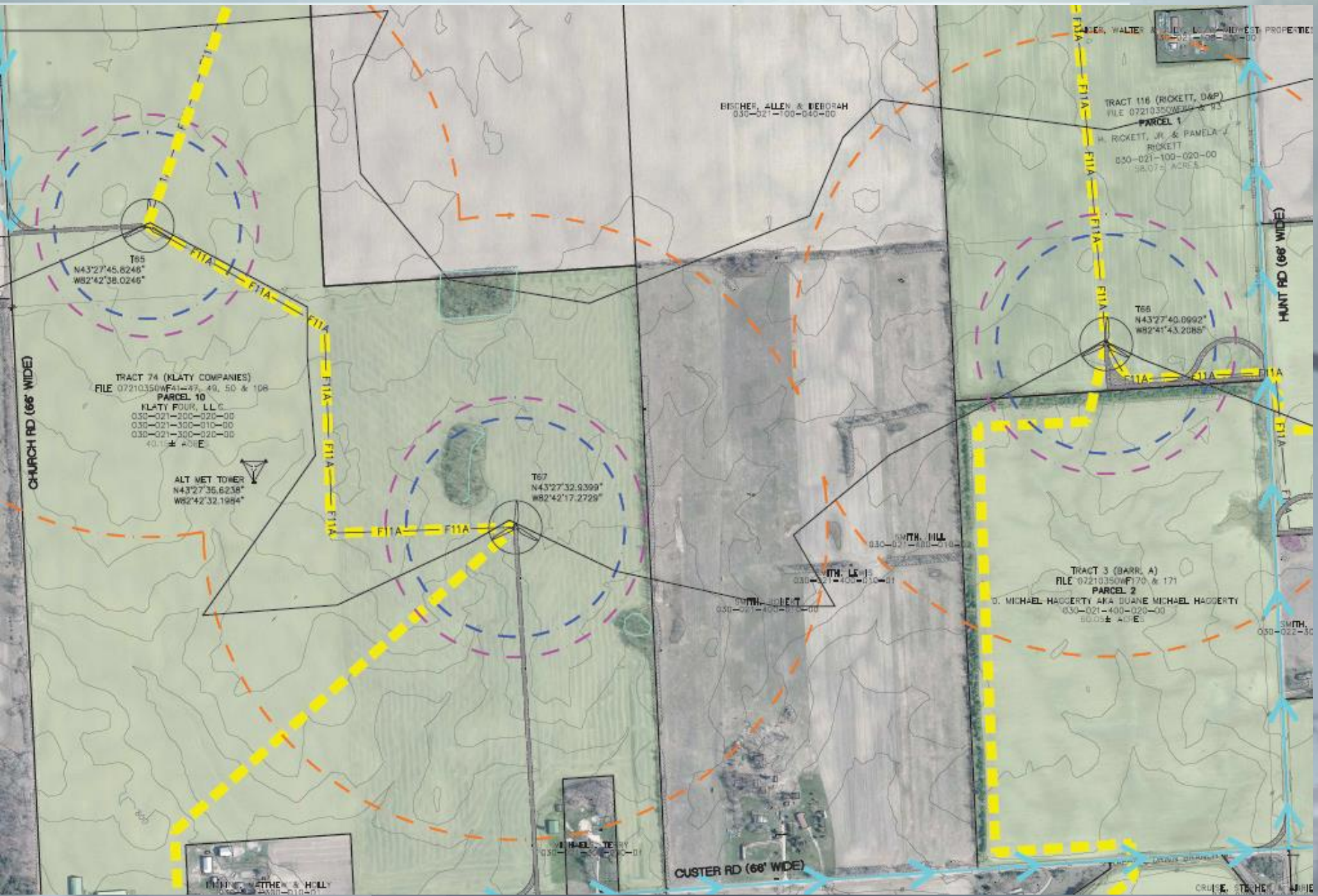
Green "no contract" farmer can safely build on his whole property



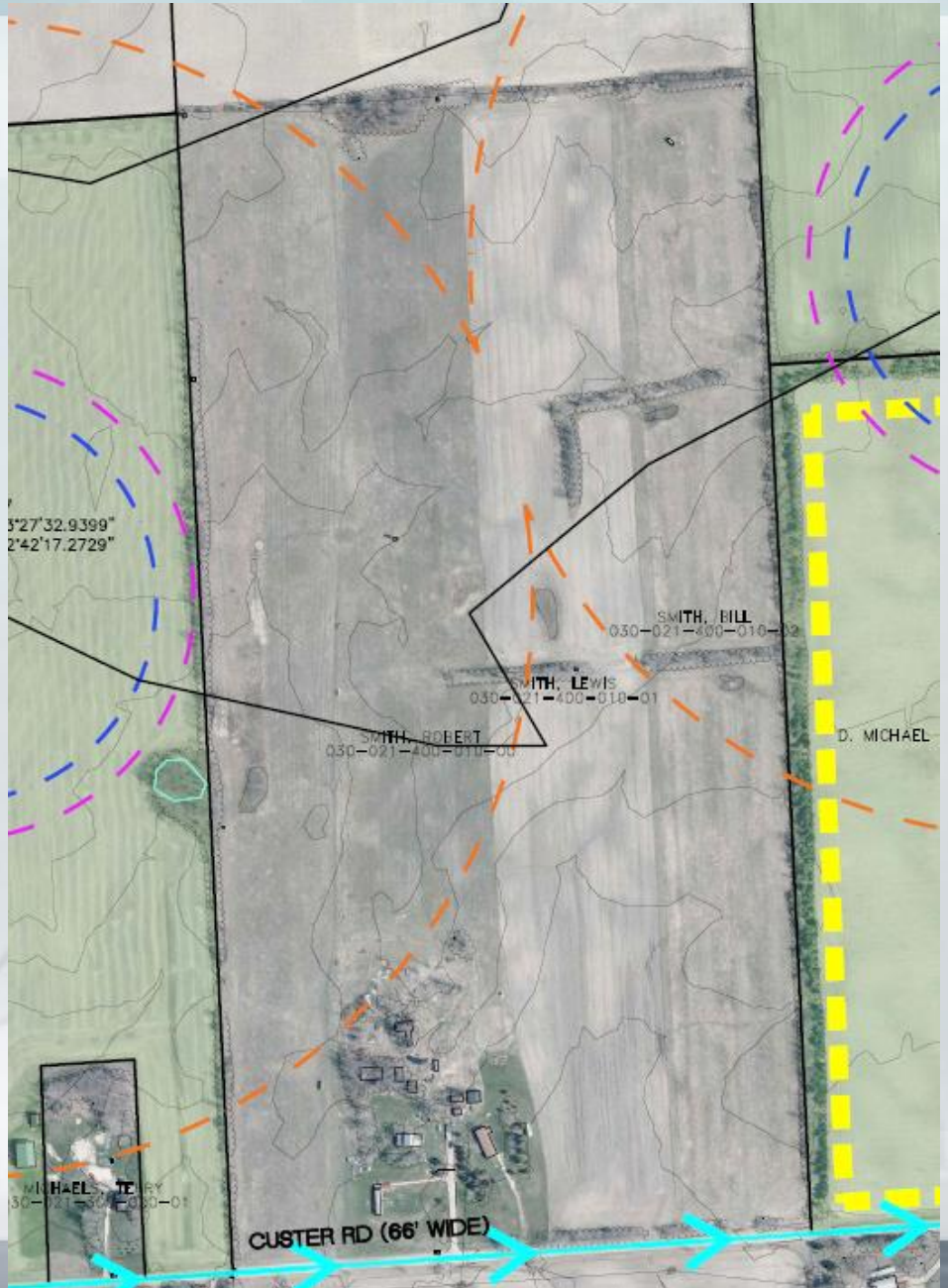
Actual examples of Trespass Zoning:



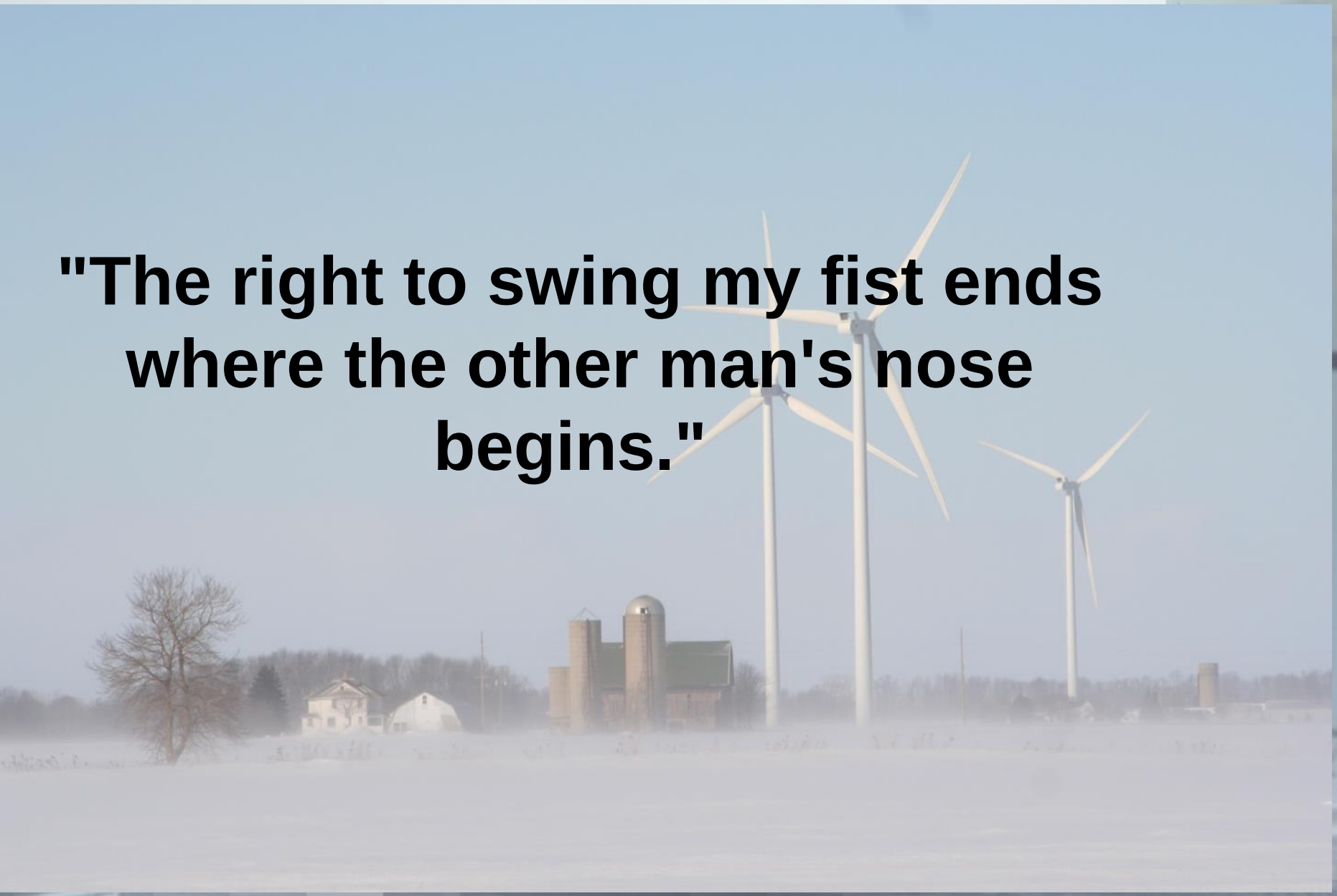
Green is leased, gray is not:



Nearly 50% of unleased land impacted:

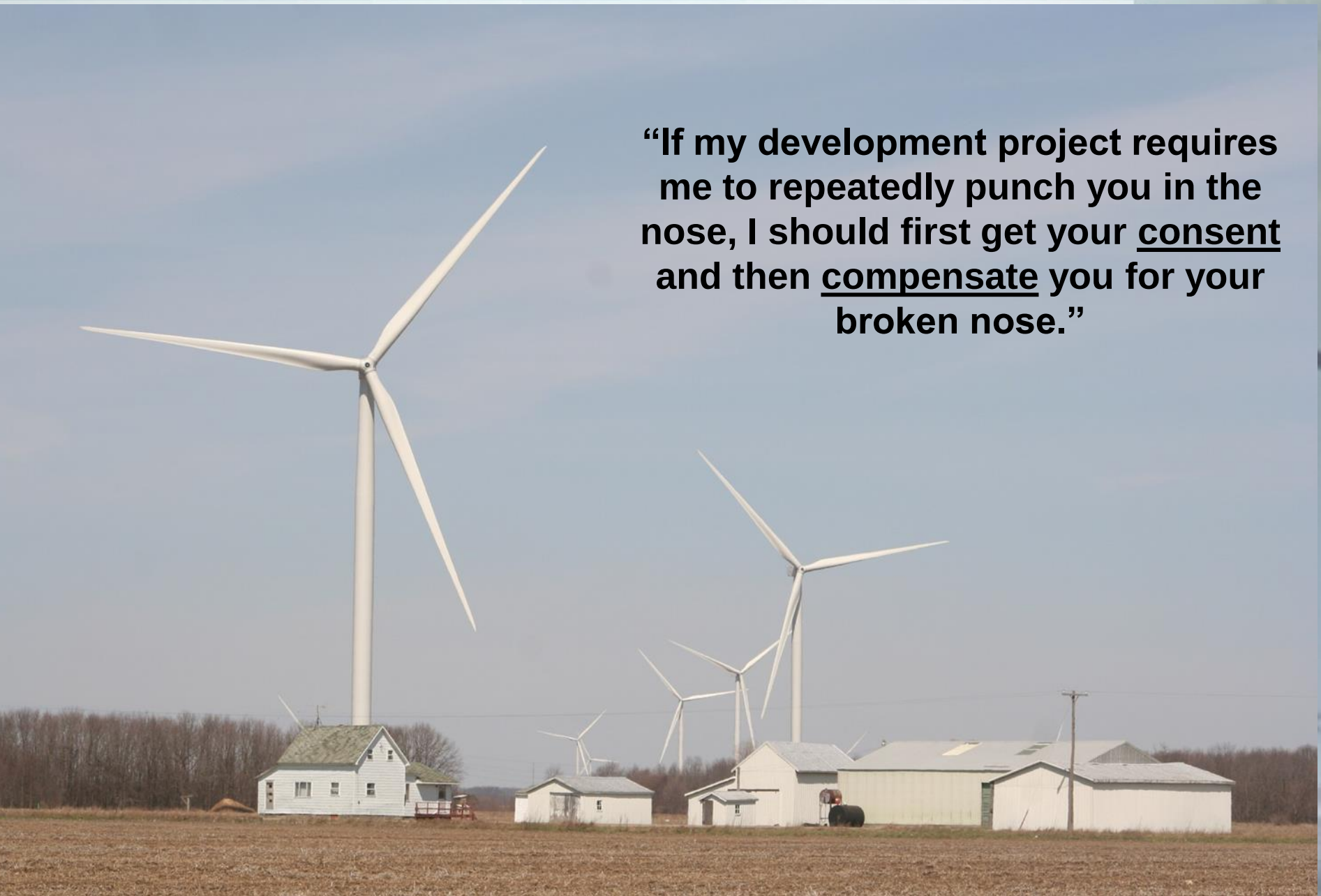


Oliver Wendell Holmes/Prop. Rights



"The right to swing my fist ends where the other man's nose begins."

Kevon Martis Corollary



“If my development project requires me to repeatedly punch you in the nose, I should first get your consent and then compensate you for your broken nose.”

Trespass Zoning:

The expressed goal of zoning regulations is to separate conflicting land uses from each other.

By establishing setbacks (and noise limits) from neighboring *homes* rather than *property lines*, the conflicting use is actually granted legal access to the neighboring property without consent or compensation.

<u>This is fundamentally unjust.</u>

NYS court agrees with us:

collapse and total fragmentation are taken into consideration [illegible]

backs. Generally, the location of a wind turbine is "set back" from a specific location such as a roadway or property line rather than, as here, emanating from the chosen location of the wind turbine outward. Here, though the applicant has stated that the 1750 foot setback exceeded the industry standard, such setback has impacted upon the use and/or prospective use of adjacent properties of non-participating landowners without their consent.[4] The "setbacks" are, in reality, "set offs" commencing at the point of the wind turbines' location and then "set off" 1750 from there. The property, then, of the non-participating landowners is, in effect, "taken" by this governmental action without compensation or consideration. The non-participating landowners' property is therefore adversely impacted by the location of the wind turbines as development of a use other than agricultural is curtailed. As such the decision of the Board to grant the special permit is without substantial support in the record nor otherwise deemed to be rational given the facts contained in the record.

But what is the right setback distance?

If you are regulating setbacks to protect families from fire or rotor failure, 1,640’ or a multiple of turbine height equal to 1,640’ as measured to property lines would be reasonable minimum for 500’ class turbines.

But what is the right setback distance?

And in view of the recent peer reviewed research on blade and ice throw, far bigger property line setbacks are now reasonable as well.

But what is the right setback distance?

And if you are regulating setbacks to serve as a proxy for noise regulations then distances up to 1.25 miles from unleased property lines may be reasonable.

Riga's solution:

As a compromise, Riga Township chose 4x height to non-participants' property line, ¼ mile to participants residence, <u>with these larger setbacks reducible with a waiver.</u>*

*http://gallery.mailchimp.com/be5a7d58cda36e183b67eed5d/files/Wind_Generation_Ordinance___Clean__7_8_11_1_.pdf

My recommendation cont'd:

Important that setback to non-participant to be at property line or the ordinance is *essentially awarding an uncompensated nuisance/safety easement to developer at non-participants' expense.*

Equitable wind energy zoning should not forcibly donate unleased property to the neighboring landowner's tenant.

The waiver is the key:

The two stage setback with a waiver is what empowers your residents to be able to negotiate on their own behalf with the wind developer.

It requires them to negotiate with all residents bearing the direct impact of wind development instead of just a few large-and often absentee-landowners.

Noise:

How loud is too loud and who do you believe?

Heritage Wind Noise Complaints:

2

73 names

October 8, 2012

Delta County Building and Zoning
310 Ludington Street
Escanaba, MI 49829

Dear Building and Zoning Board:

The sounds generated by the turbines erected on the Garden Peninsula have caused a great deal of the distress to those of us who live near this wind farm. Residents were told that the sound would not exceed levels of <45 dB(A) at occupied buildings, which was no louder than a dishwasher. Unfortunately, residents do not believe that is case. The sounds are so obnoxious and disturbing that it is causing individuals to have to resort to lifestyle changes that should not have to be endured.

Inside their homes people hear the sounds when they are conversing, watching TV, or simply going about their daily lives, thus increasing stress levels, as well as increasing their concerns over possible hearing loss. All which are bringing the issue of overall health to the forefront. When trying to sleep at night the noise awakens people, and some have a difficult time getting to sleep, making sleep deprivations a real concern.

Outside our home the sound and the feel of the turbulent air movement is further cause for concern. Working in our yards and gardens is no longer a relaxing time. Headaches, earaches, equilibrium issues and an overall uncomfortabel feeling is now what is being endured when spending our time outside our homes. It is unconscionable that these turbines were placed so close to homes in an area of such importance to wildlife and people, with little regard to what the effects would be.

We have been advised that studies continue regarding the killing of birds and bats. We also worry about taking away more area for all wildlife. Many of us have noticed far fewer birds in the area. The turbines are like enormous moving scarecrows that also create very uncomfortable sounds and vibrations.

These turbines are too noisy and causing much more distrubance than Heritage promised. We are requesting assistance in measuring the noise levels in question. Individuals living near the turbines are having difficulty proving this issue, and bringing in experts with the sound equipment is very expensive. Therefore, we are respectfully requesting the county to bring in the audio equipment they have at their disposal to help us learn if the sounds we are hearing indeed does exceed recommendations. There may also be a need to re-evaluate the permitted noise levels for future zoning. We would like to see setbacks much further homes. Also, the concerns from the Dept. of Interiors need to be considered regarding the Garden Peninsula.

Delta County, as well as the entire State must be educated as to what having turbines near home and wildlife will do in the long run. Perhaps this type of information will improve regulations made in turbine placement in the future.

Jerry F. Collins
Jean Collins
Susan Rochefort, 18th Rd Garden
Margaret Richard
Calvin J Richard

1

3

Freddie Tackett
Jacqueline Tackett 15963 Delta Ave.
Richard Morissette 15608 17th Rd.
Mike Hearns 15834 17th RD
Jeff Tatrow 16.5 RD
15860 17th Rd
15740 17th RD
Robert Casey 15837 17th RD
P.O. BOX 45 Garden
Anne Thorsand P.O Box 202 Garden, 49835
John C Thorsand P.O BOX 202 GARDEN 49835
6497 Winter Ave Garden, Mi 49835
6497 Winter Ave Garden, Mi 49835
Ethel Eva Harbinski 15769 17th Rd. Garden, Mi 49835
Leo Bodette
Nancy Lester
Brenda Chase 15712 17th Rd
Nicola M. Lester
Travis Harris
6889 PP Rd

4

Shannon Williams 16405 18th rd
16405 18th Rd
P.O. Box 22 Garden, mi
Francis A. Ansell 16405 18th Rd.
Scott Williams
18th Rd Garden
15640 17th RD GARDEN
6400 2nd Ave. Garden MI
Stacy Miller 7779 00.25 Rd Garden, MI
Mary Gollakner 6386 1st Ave. Garden, MI
6157 GardenBay Ln
Stu Craig
Earl F Ansell
Nichole Young 7028 00.25 Rd Garden, mi 49835 906 450 5042
Bill Bodette
E. Delores Haas
Jeremy J Ansell 15940 Delta Ave.
Rick LeMoine
19.5 Rd
Jeanne Ansell 5694 LL Rd Garden, Mi
Carolyn Winter 16087 Water St Garden
Tom Jacques

5

6490 Winter Ave Garden
6490 Winter Ave. Garden
BRUCE TATROW 6457 Winter AVE Garden MI
Pat 15748 18.5 Rd. Garden Mi
15670 18.5 Ln. Garden, Mi
Violet L. Rodick 15670 18.5 Ln Garden MI
15694 18.5 Ln Garden, Mi
15694 18.5 Ln. Garden, MI 49835
15893 mill St. Garden, MI 49835
Heather Guertin 6335 State St. Garden, Mi 49835
6327 State St. Garden, Mi 49835
Sarah Jones 15878 mill St. Garden, MI 49835
6327 State St. Garden, mi 49835
Nicole Guertin 6327 State St. Garden, mi 49835
Vicky Janes 6384 State Street GARDEN MI 49835
15975 Garden Ave Garden MI 49835
16080 Water ST garden MI 49835
16080 Water St Garden MI 49835

73 people living inside the wind energy plant's 14 turbine cluster signed petitions asking for relief.

Noise:

Vacuum Cleaner	70dB
Average Office Noise, Sewing Machine	60dB
Normal Conversational Speech	50dB
Refrigerator	40dB
Whisper	30dB
Rustling Leaves	20dB
Average Threshold of Normal Hearing	0 – 25dB

Wind developers ask for noise limits of 45-55dB (leq) at your home.

However:

Vacuum Cleaner	70dB
Average Office Noise, Sewing Machine	60dB
Normal Conversational Speech	50dB
Refrigerator	40dB
Whisper	30dB
Rustling Leaves	20dB
Average Threshold of Normal Hearing	0 – 25dB

What they don't tell you is 55dBa is a much higher noise level than you currently experience in the quiet parts of your community.

Ask WHO? (WHO, 2009) Nighttime Noise Guidelines

- **$L_{night,outside}$ up to 30 dBA: No substantial biological effects observed.**
- **$L_{night,outside}$ of 30-40 dBA: Body movements, awakening, sleep disturbance, arousal.**
  While average effects may be modest, young, chronically ill, and elderly populations are affected to a greater degree.

Courtesy E-CS

World Health Organization (WHO, 2009) Nighttime Noise Guidelines (Continued)

- **$L_{night,outside}$ of 40-55 dBA: Sharp increase in adverse health effects, exposed populations have to adapt coping mechanisms, and vulnerable groups are severely affected.**
- **$L_{night,outside}$ above 55 dBA: Adverse health effects occur frequently, high percentage of population is highly annoyed, and limited evidence suggests that human cardiovascular system is stressed.**

Courtesy E-CS

George Hessler in MN, Oct. 2011

- **"Based on the observed reaction to typical projects in United States, it would be advisable for any new project to attempt to maintain a mean sound level of 40 dBA or less outside all residences as an ideal design goal."**
- **"It is important to note that a project sound level of 40 dBA does not mean that the project would be inaudible or completely insignificant, only that its noise would generally be low enough that it would probably not be considered objectionable by the *vast majority of neighbors*."***

*https://www.michigan.gov/documents/energy/MLUI9_NARUC_420200_7.pdf

Rob Rand, INCE to Riga PC

- **“I understand that there have been suggestions of using a wind turbine noise limit of 45dBa at a distance of 1300 feet or so in Riga Township. Experience in New England has proven that these noise levels…are associated with…widespread complaints, appeals to stop the noise, and legal action.”**
- **-based upon EPA “Levels Document” with all adjustments made**

NextEra concurs with 40dBa:

“The Ontario Ministry of Environment’s Sound Guidelines for rural areas establish maximum permissible sound levels at residences of 40 decibels, which is consistent with the standards set by the United States Environmental Protection Agency.”*

*http://www.nexteraenergycanada.com/faq.shtml

VESTAS policy on noise

- **“Vestas also recommends that governments supplement relative noise limits with a low absolute maximum in areas of very low background noise (e.g. quiet countryside) which ensures minimal noise disturbance for turbine neighbors also in these places.”**
- **That is best done with Lamax limit rather than an average like leq.**

Leq vs. LAmax

$L_H := 65$ dBA High $:= 1$ minute (Car Pass-by)

$L_L := 25$ dBA Low $:= 59$ minutes (Quiet)

$$L_{eq} := 10 \times \log\left[\frac{\left[\left[\left[\text{Low} \times 10^{\left(\frac{L_L}{10}\right)}\right]\right] + \left[\left[\text{High} \times 10^{\left(\frac{L_H}{10}\right)}\right]\right]\right]}{(\text{Low} + \text{High})}\right] \text{ dBA}$$

$(L_{eq}) = 47.244$ dBA one hour average of car plus quiet periods

Noise Limit Recommendation

- **Riga Township has adopted 40dBa night time noise limit at non-participating property lines**
- **Riga Township has adopted 45dBa daytime noise limits**
- **They added a 55dBc limit as well for LF noise protection**
- **These were considered a reasonable compromise with developer's desire and HSW concerns**

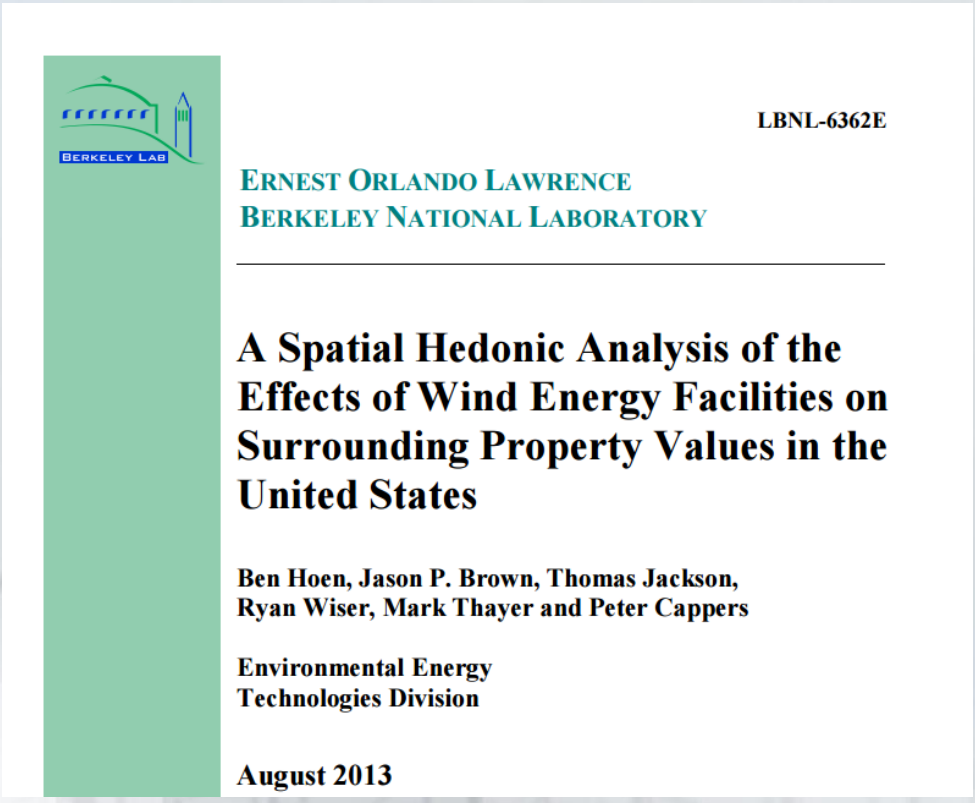
Noise Limit Recommendation Update

In view of the difficulty in enforcing noise limits based upon averages like leq, I am now recommending that communities consider 45dBa Lmax instead of 40dBa leq.

It is much harder to gerrymander and far easier to enforce.

Property Values:

Wind developers rely upon this report to support their claim that wind turbines do not harm property values:



LBNL-6362E

ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY

A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States

Ben Hoen, Jason P. Brown, Thomas Jackson,
Ryan Wiser, Mark Thayer and Peter Cappers

Environmental Energy
Technologies Division

August 2013

Hoen on Hoen:

“I think one of the things that often happens is that (wind) developers put our report forward and say look property values aren’t affected, and that’s not what we would say specifically. On the other hand, they have little ground to stand on if they say we won’t guarantee that.”

Ben Hoen,

https://www.wind-watch.org/documents/ben-hoen-on-need-for-property-value-guarantee/

Industry funded studies claim no loss:

Wind Industry Funded Studies						
Canning & Simmons	Appraisers (CANWEA)	2010	Ontario	Regression Paired Sales	Viewshed (6)	(7%-13%) (9%) No SS
Hinman	Academic ISU - REP Student thesis	2010	Illinois	Pooled Regression Realtor survey	3 miles ½ mile	No SS (11.8%) (7)
Hoen	USDOE funded LBNL	2009	9 states	Pooled regression	5 miles 3k ft – 1 mile	No SS (5.6%) (8)

Footnotes:

(1) Lansink Resale study uses resales from developer to private buyers, with Easement in Gross condition of sale. Buyer accepts noise impacts, etc., waives liability

(2) Lots only. No pooling of data

(3) McCann Illinois study & research updated, multiple states

(4) Kielisch regression lot sales; Realtor survey residential

(5) Committee compared actual sale prices vs. AV and found homes up to 1 mile sold @ 76% of AV, and > 1 mile @ 104% of AV

(6) Usually cited as being a study that found no impact. However, all methods used yielded negative numeric indication. Author concludes no statistical significance.

(7) Cites Realtor who believes no impact on value > 3 miles. Concludes some results indicate "wind farm anticipation stigma" (11.8%)/Pg.55. Author states "the results neither support nor reject the existence of a wind farm nuisance stigma after the wind farm achieved commercial operation…..likely due to only 11 properties selling during operations within 1 mile of wind farm." Good neighbor payments to some nearby neighbors. Values near wind farm appreciated $13,524 after operation, following $21,916 decline measured under anticipation stigma theory. (Net loss of $8,392 pre- vs. post operation./Pg. 120.

(8) Study excludes developer resales with 36% & 80% discounts from buyout price. Pooled data from 9 states 24 projects insures lack of statistical significance for value loss examples near turbines. Other sales nearby excluded due to deviation too far from mean and resale.

Independent studies show 14-59% loss:

LITERATURE REVIEW

Summary Wind Turbine - Property Value Impact Studies						
Independent Studies						
Author	Type	Year	Location	Method	Distance	Impact %
Lansink	Appraiser	2012	Ontario	Resale (1)	< 2 miles	(39%) Avg. 23%-59%
Sunak	Academic RWTH Aachen University	2012	Rheine & Neuenkirchen	OLS Geographic Weighted Regression (2)	2 Km	(25%)
Heintzelman Tuttle	Academic Clarkson University	2011	Upstate NY	Regression Resale & Census Block	1/10 to 3 miles	Varies to > (45%)
McCann	Appraiser	2009 -2013	Illinois, (3) MI, MA, WI, OH	Paired Sales & resale	< 2 miles	(25%) 20% - 40%
Gardner	Appraiser	2009	Texas	Paired Sales	1.8 miles	(25%)
Kielisch	Appraiser	2009	Wisconsin (4)	Regression & Survey	Visible vs. not visible	(30-40%) (24-39%)
Luxemburger	Broker	2007	Ontario	Paired Sales	3 NM	(15%) $48,000
Lincoln Twp.	Committee (5)	2000-2002	Wisconsin	AV ratio 104% v. 76%	1 mile	(28%)

"That's exclusionary!"

"No lawful land use can be excluded when there is a demonstrated need for that use within the locality or region, UNLESS there is no appropriate location in the area to provide for the use."

-Michigan Zoning Guidebook, 2008

I would argue that "appropriate location" is defined by evaluating impacts upon H, S and W.

Michigan Bar on "Exclusionary"

"Courts interpreting these provisions have found that, in order to establish a violation of the statute, "plaintiffs must show (1) that the challenged ordinance has the effect of totally excluding the land use within the [municipality], (2) there is a demonstrated need for the excluded land use in the [municipality] or surrounding area, (3) the use is appropriate for the location, and (4) the use is lawful."

Regarding the first element, courts have held that "[t]he total-prohibition requirement of this statute is not satisfied if the use sought by the landowner otherwise occurs within township boundaries or within close geographical proximity."

Thus, an ordinance can arguably survive an exclusionary zoning challenge, even when it undeniably prohibits a use, if the use exists in nearby municipalities."

-http://www.michbar.org/publiccorp/pdfs/winter09.pdf

Demonstrated Need in Tuscola Case:

"Wind turbines produce energy, which is, of course, needed by the Almer Township community. But …[NextEra's Tuscola Wind project] cannot reasonably argue that the Township will have inadequate access to energy absent the wind energy project."

Accordingly, it is **ORDERED** that Defendant Almer Township Board's denial of Plaintiff Tuscola Wind III, LLC's, SLUP application is **AFFIRMED.**

Dated: November 3, 2017

s/Thomas L. Ludington
THOMAS L. LUDINGTON
United States District Judge

Michigan 2008 Siting Guidelines:

DTE in particular likes to refer to the 2007/2008 State of Michigan wind turbine siting guidelines.

1. **Those guidelines were never binding on local rule communities**
2. **Those guidelined were abandoned by Governor Snyder**
3. **Current state policy is that there is no “one size fits all” approach to wind turbine siting**

2016 Energy Bill Amendment:

Amendment No. 2e
December 15, 2016

Senate Bill No. 438 (H-7)

Rep. Leutheuser moved to amend the bill as follows:

1. Amend page 42, following line 7, by inserting:

"SEC. 54. NOTHING IN THIS SUBPART ABROGATES THE POWERS GRANTED TO LOCAL UNITS OF GOVERNMENT UNDER THE MICHIGAN ZONING ENABLING ACT, 2006 PA 110, MCL 125.3101 TO 125.3702.".

BTW:

Many Michigan counties and townships have adopted regulations that protect their residents from irresponsible wind energy development.

And wind developers often state that they will sue over "exclusionary" zoning. They made this threat in Riga Township and it regularly occurs around the State.

But I know of only 1 instance since the adoption of PA295 in 2008 and it was dismissed because the applicant did not have standing.

Threats are common: litigation is rare.

Wrapping up:

- **Most land use changes are pretty benign-minimum lot sizes, sign ordinances, etc.**
- **Due to their size, wind turbines impacts are disproportionately large**
- **Riga felt that the change of land use policy was so massive and the impacts so profound that they should not occur without *consent* of <u>all</u> impacted parties**

...continued

Two stage setbacks with waiver option for both noise and distance require the developer to negotiate with ALL impacted citizens. It is fair and equitable and reduces community division

Ever heard this?

No one has ever come before a planning commission and said “The light coming through my windows is too steady, could you make it flicker? The night time noise level is too quiet, could you raise it to 55dBa from 25dBa? My property values are too stable, could you build some 50 story industrial machines next door to put that value at risk?”

The “bottom line” of zoning:

“We were here first. We get to decide.”

Only two type of wind ordinance:

- **Wind developers ask communities to adopt zoning language that essentially awards free safety and nuisance easements across non-participating properties**
- **Reasonable wind zoning demands that those easements be negotiated individually and privately between the developer and the impacted landowners rather than forced upon them by zoning regulation**

Who decides?

- The wind developer prefers to place the difficult decision of “do we let wind in or not?” in the hands of the zoning authority alone.
- By creating two stage zoning and setting those limits at the property line the decision as to whether the project proceeds or not is now in the hands of the private property owners and the developer.

What next as a township official?

If you think the zoning recommendations I have made are more reasonable then those made by your wind developer, what is your best course of action?

What next as a township official?

If you have township zoning, you can adopt a moratorium prohibiting wind development that could last a few months or even a year or two. This would give you time to amend your zoning ordinance in a fashion that suits your residents desires.

What next as a township official?

If you do NOT have township zoning, you can still adopt a moratorium prohibiting wind development.

You can then take action to adopt township zoning to regulate land use as you see fit including wind development regulations like those I proposed in this talk.

What next as a township resident?

If you have township zoning, you can encourage your elected and appointed officials to enact a moratorium.

Then you can work with your PC to adopt resident friendly wind zoning regulations.

What next as a township resident?

If your township board adopts wind energy zoning that you find to be too permissive, you have the right to place that ordinance amenment on the ballot through the referendum process.

This has been done many times in MI and permissive wind regulations have never survived a township election.

What next as a township resident?

If you do NOT have township zoning, you can encourage your elected and appointed officials to enact a moratorium and to create a planning commission.

If your board will not act, you can petition the board to do so by presenting signatures equal to 8% of the people who voted in the last gubernatorial election. Once certified, the board must permit the township to vote upon the creation of a township planning commission.

What next as a township resident?

<u>Last resort</u>:

You can initiate a recall process for officials who refuse to act.

We do not like recall. It is ugly and divisive in a small rural township.

But in extreme cases like conflict of interest or other malfeasance of office issues, it is you only recourse.

We prefer to see people meet with their officials privately outside of public meetings and encourage them to act.

Is it too late?

We often here official say “The wind company has already signed leases. We cannot stop them now, they have a contract.”

Under Michigan case law, developers have no vested rights in your zoning ordinance until two things have occurred:

1. **A building permit has been issued**
2. **Substantial exterior work has begun**

Private contracts NEVER bind a governmental body to act.

Riga Township Ordinance:

My talk is based upon the Riga Township wind ordinance which is available here:

www.rigatownship.com

Q's? Email me at kevon@kevonmartis.com