



**A Renewable
America**

BLOWING IN THE WIND

OHIO'S OVERLY RESTRICTIVE WIND
SETBACK LAW IS PUTTING BILLIONS IN
NEW IN-STATE INVESTMENT AT RISK





A Renewable America



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MAY 2017



EXECUTIVE SUMMARY

In June 2014, without public testimony or justification, Ohio passed a statewide property line setback law for wind power development that is one of the most stringent in the nation and far exceeds more common property lines setbacks implemented across the country. As a result, development has stalled in the state, depriving many of Ohio's rural counties of the economic benefits and clean energy enjoyed by farming and ranching communities across the nation.

Based on Ohio siting applications and company records, wind project developers have plans to build over 3,300 megawatts of new wind projects. These projects are estimated to bring over \$4.2 billion in local economic activity over their life, and would create more than 13,000 jobs. Local governments and schools would receive an estimated \$660 million in payments in lieu of taxes (PILOT) payments over the life of these projects – approximately 70 percent to school and the remainder to local governments – and landowners would be paid over \$440 million to host these wind turbines. Moreover, the energy generated from these wind projects would be able to supply the electricity needs of more than 900,000 Ohioan homes. Without a revision to the state's onerous setback laws, these investments remain at risk, with many projects unlikely to continue to completion.

Ohio also stands to gain from supply chain development that would accompany the expansion of the wind industry in the state. With more wind-related manufacturing facilities than any other state, Ohio is potentially missing a huge economic development opportunity by not revising its wind setback laws. In many cases, these heavy machinery or materials companies have been able to make up for slack in other industries' demand by supplying to the wind industry. Continuing to grow Ohio's wind industry will provide a larger market for these manufacturers and incentivize others to set up in the state.

KEY FACTS

There are over 3,300 megawatts of new wind projects either approved or proposed in Ohio. If completed, the projects would generate **\$4.2 billion in local economic activity**, this includes: including:

- \$660 million in PILOT payments to schools and local governments
- More than \$440 million in land lease payments to local farmers
- 13,000 jobs created
- Enough clean power for more than 900,000 Ohioan homes



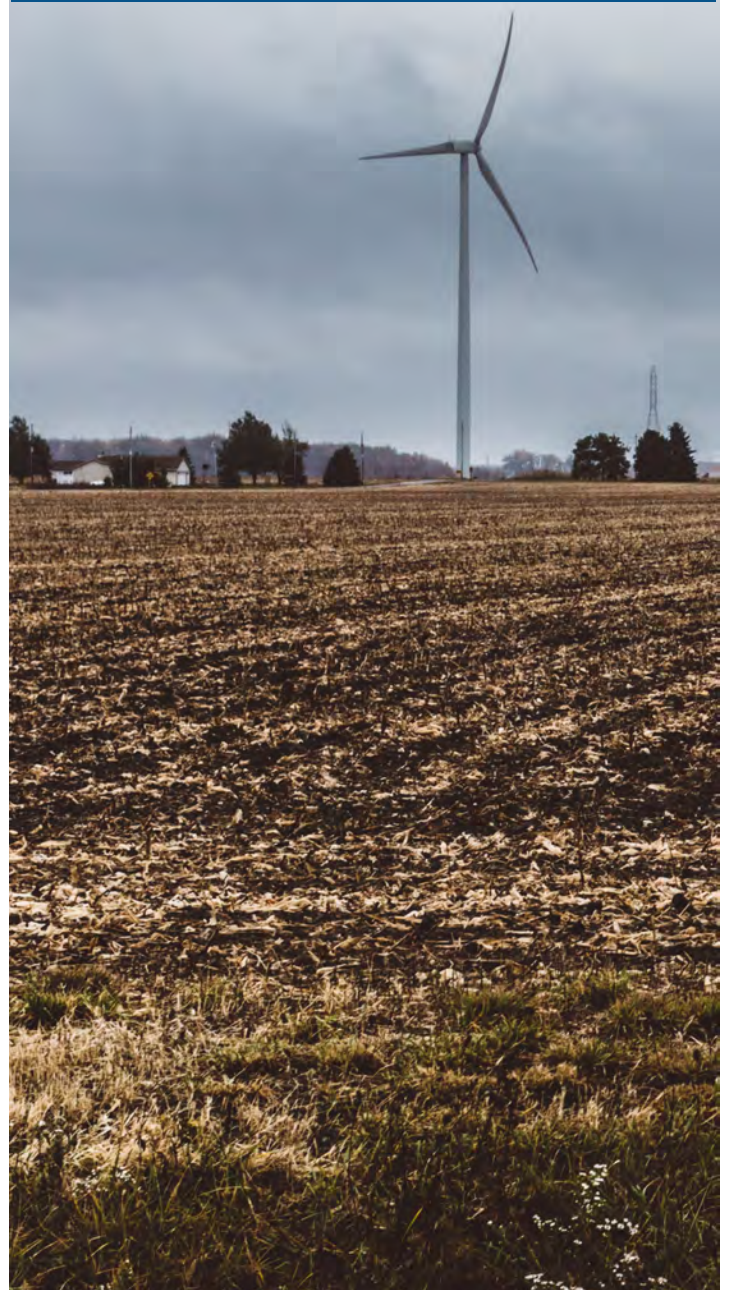
LEGISLATIVE HISTORY

In June 2014, a last minute amendment containing a provision to revise the state's property setback requirements for wind projects was inserted into the state's annual budget bill, House Bill (HB) 483. As a result, Ohio now has the one of the most stringent statewide setback requirement in the nation, according to the National Conference of State Legislatures.

The new law requires that wind turbines in any wind farm application submitted to the Ohio Power Siting Board (PSB) on or after September 15, 2014 must be located at least 1,125 feet from the tip of the turbine blade to the nearest adjacent property line, unless the applicant obtains the appropriate waivers. In practice, this requires setbacks of about 1,300 feet from each turbine's base to the edge of neighboring property, even if the presence of farmland means that the distance to an actual home is much, much greater. Although the law lets already-permitted projects continue, they may only proceed if no amendments to the existing certificates become necessary. Since typical wind projects often need to amend their certificates several times during the planning process - for both economic and environmental reasons, this provision does little to protect already planned wind projects, which are now subject to the discretion of the Ohio PSB. As a result, even the investments in "grandfathered" projects are at risk.

HB 483 was part of Governor Kasich's mid-biennium budget review, and most of the law dealt with tax cuts, spending for social programs, and other matters. The wind setback provision appeared for the first time when the Ohio Senate Finance Committee reported the bill out in May 2014 and there was no public testimony on the provision. Since the new law was enacted, no applications for new wind farms have been submitted in the state.

**As of June 2014,
Ohio's has one of the
most stringent
statewide property
setback laws in the
nation.**



COMPARISON OF OHIO'S SETBACK LAW TO OTHER STATES AND COUNTIES IN THE REGION

As demonstrated in the chart below, Ohio's setback requirements for adjacent properties not participating in a wind project are by far the most restrictive in the region and one of the most stringent in the nation.³

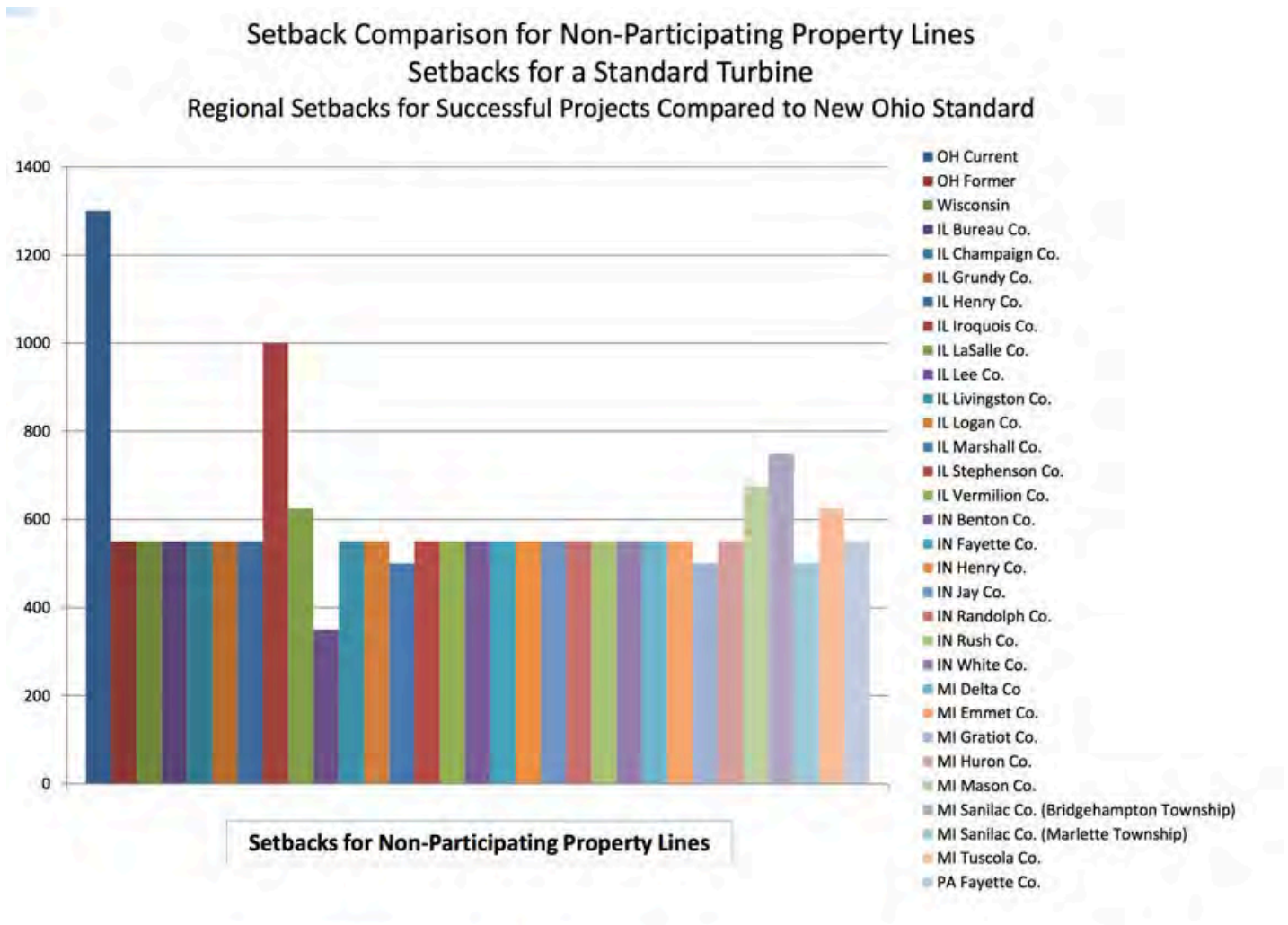


Chart current through January 2017

OHIO RISKS LOSING BILLIONS IN NEW INVESTMENT, ADDED TAX REVENUE

For many years, Ohio has largely missed out on economic development opportunities from the U.S. wind industry. At the end of 2016, Ohio contained only three utility-scale wind projects, lagging significantly behind neighboring states that have benefited from broader wind energy development. The eight wind projects already approved by the Ohio PSB remain at risk due to the change to the setback law, as developers may need to amend their certificates to complete the projects, which could subject them to the more restrictive setback requirements.

Similarly, the nine in-state projects proposed by developers are also unlikely to go forward without a fix to the wind setback law. Looking forward, Ohio risks losing an immense economic opportunity to attract new investment to its rural communities by not addressing the onerous setback restrictions.



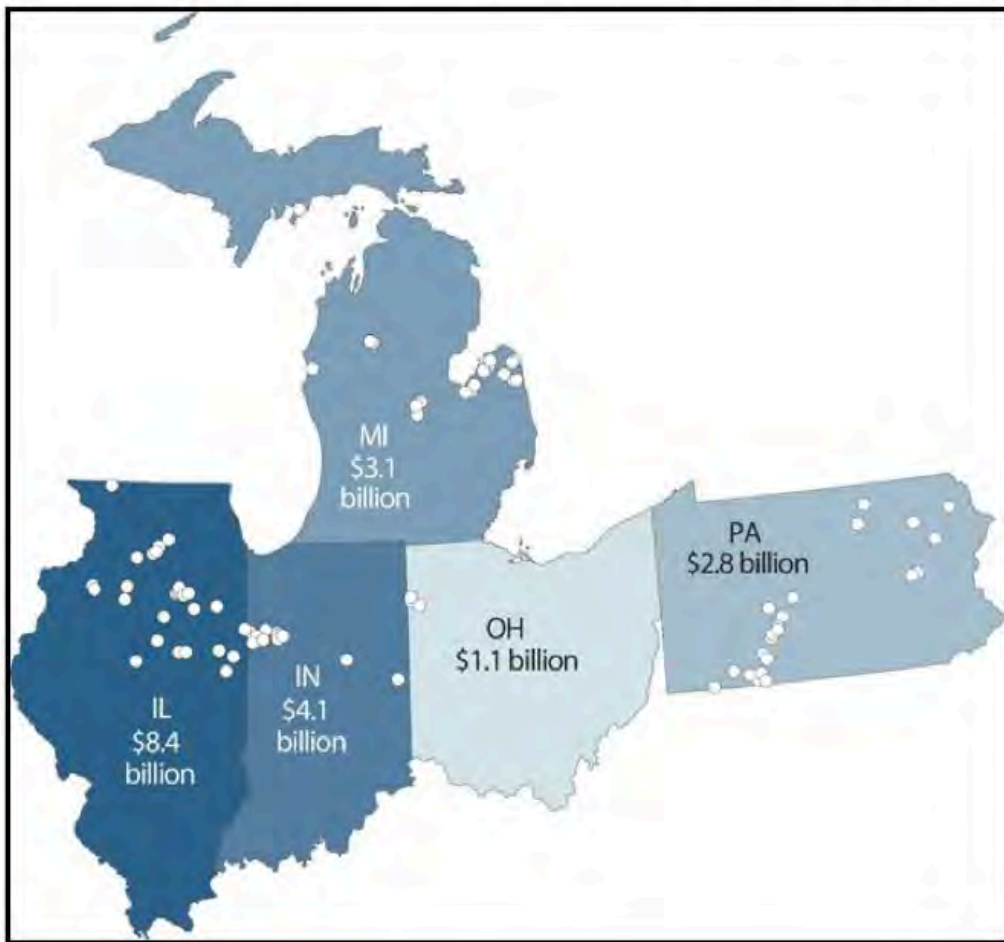
CURRENT DEVELOPMENT

Today, Ohio has only three utility-scale wind projects – Avangrid Renewable’s Blue Creek and EDP Renewables North America’s Timber Road II & III (also known as Amazon Wind Farm U.S. Central), all three of which were permitted under the prior setbacks system – compared to 26 projects in Illinois, 7 in Indiana, 21 in Michigan, and 22 in Pennsylvania. As a result, Ohio has foregone billions of dollars in economic development.

In fact, the U.S. wind industry has invested nearly three times as much in Michigan and Pennsylvania, four times as much in Indiana, and eight times as much in Illinois compared to the Buckeye state.

Ohio is not only foregoing capital investments from new wind projects, it is also missing out on-going expenditures in the form of land-lease payments to local farmers and ranchers, PILOT payments to local counties, additional spending to acquire local business services and support, as well as well-paying jobs associated with the upkeep and operation of these wind turbines.

Cumulative Investment in Wind Energy Projects



○ Online Wind Projects >10 MW

Although it may surprise some, Ohio's wind resource is just as plentiful as neighboring states. Thanks to industry innovations, wind turbines today can be equipped with taller towers and longer blades that allow them to access wind resources unreachable just a few years ago. With these advances, the U.S. National Renewable Energy Laboratory (NREL) estimates that Ohio possesses over 55,000 megawatts (MW) of technical onshore wind power potential and an additional 42,000 MW of technical offshore potential – enough to power over 27 million homes.⁴

Ohio possesses the necessary wind resource, unfortunately the state is pursuing a regulatory regime that effectively bans new wind development and puts

projects already approved by the Public Siting Board at risk. Based on Ohio siting applications and company records, wind project developers have plans to build over 3,300 MW of new wind projects in the state. These projects are estimated to bring over \$4.2 billion in local economic activity over their life.

The next section analyzes the full list of wind projects either approved or submitted to the Ohio PSB or proposed by wind developers. Using NREL's Jobs Economic Development Impact (JEDI) model for onshore wind, the economic and labor impacts of constructing and operating these wind projects is estimated.⁵

"We have seen the positive contributions of the wind farms in our communities: new money for farmers, land owners, and local government, a new revenue stream for our school district, a company like [Avangrid] who is willing to give donations to our school and students, and the opportunity to make a difference with a renewable energy in-state."

JEFF SNYDER
SUPERINTENDENT, LINCOLNVIEW SCHOOLS,
VAN WERT COUNTY



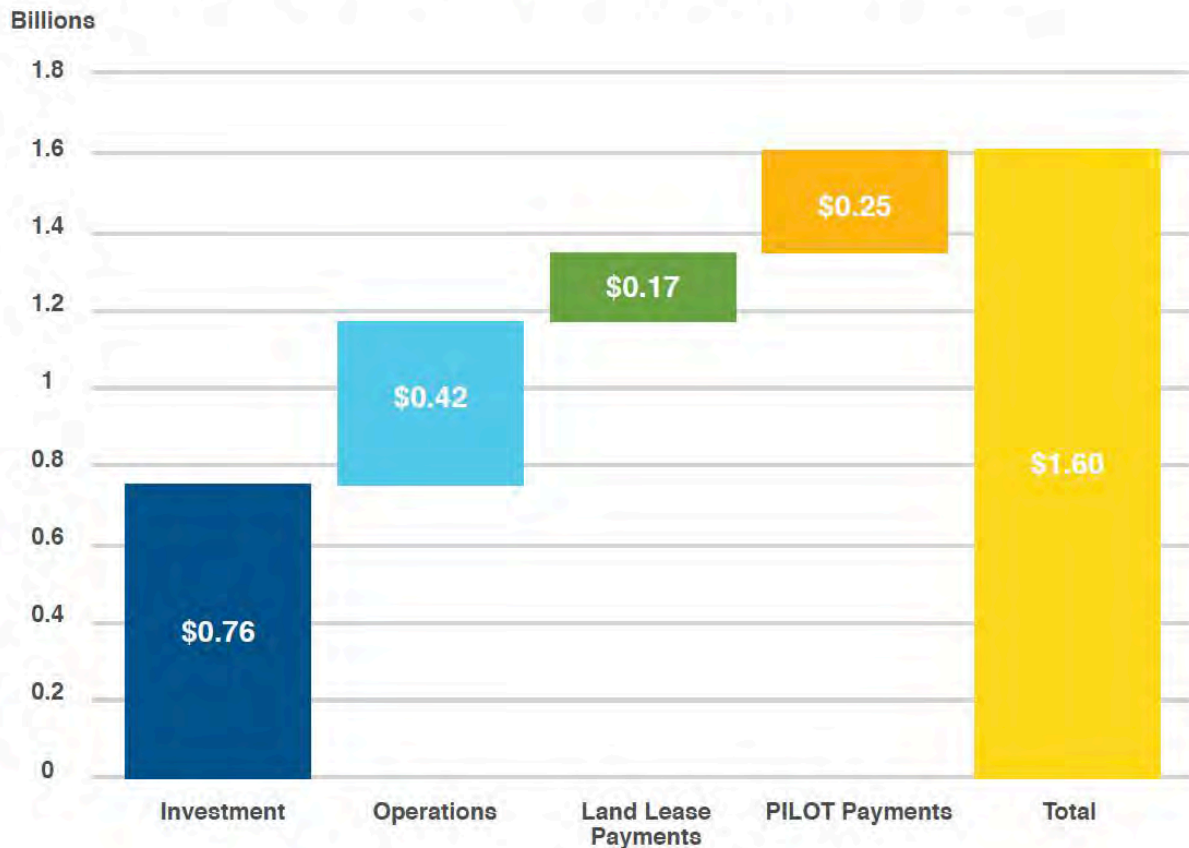
APPROVED PROJECTS

The Ohio PSB has approved a total of 1,232 MW of wind projects through March 2017. These projects, proposed in Champaign, Crawford, Hardin, Huron, Logan, Paulding, and Richland counties, represent more than \$760 million of new local investment in Ohio. Further, operating those wind turbines over 30 years will result in over \$420 million in local economic activity and more than \$420 million in local economic activity and more than \$165 million in land-lease payments to local farmers and ranchers. Importantly for local jurisdictions, if constructed, these wind projects will also contribute nearly \$250 million in payment in lieu of taxes (PILOT) payments that can help pay for new schools, infrastructure projects, or ambulances. In total, these projects represent nearly \$1.6 billion in economic activity in the state and will support just under 5,000 jobs in Ohio.

There are **1,232 MW** of approved wind projects in Ohio that are **at risk due to the overly restrictive setback law**. This includes projects in the following counties, all of which would lose out on millions in PILOT payments:

- Champaign
- Crawford
- Hardin
- Huron
- Logan
- Paulding
- Richland

Economic Impact of Approved Ohio Wind Projects



PROPOSED PROJECTS

Beyond projects that already have siting approval, 2,071 MW of wind projects are proposed for installation over the next few years. Much of this project development activity is in West-Central Ohio including Erie, Huron, Putnam, Seneca, Sandusky, and Van Wert counties. These projects are most at risk due to current statutory restrictions, as most are unlikely to proceed due to the limiting setback requirements.

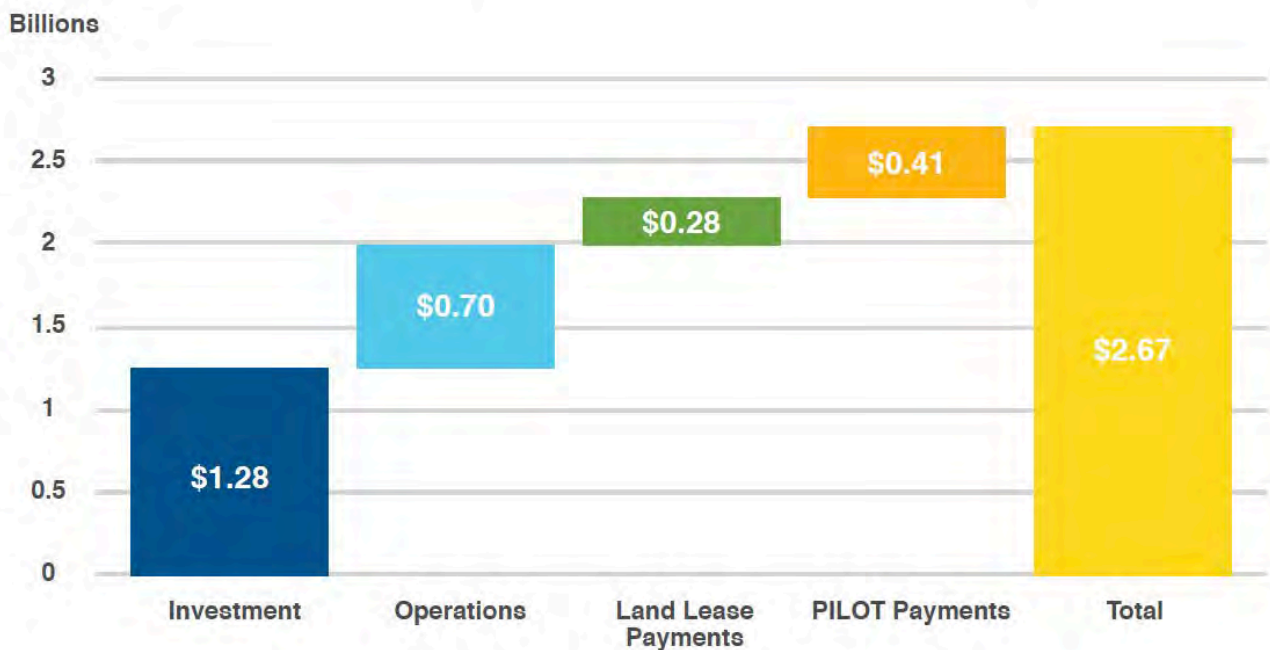
As proposed, these projects would attract almost \$1.3 billion in additional new investment to Ohio. Each year, the projects would contribute over \$30 million locally in operational economic activity and provide over \$12 million in land lease payments. That translates into nearly \$700 million in lifetime operational expenditures and over \$275 million in lifetime land lease payments.⁶ Over the life of the projects, local governments would receive more than \$410 million in PILOT revenues. Finally, these proposed projects are estimated to support over 8,100 jobs at their height of construction and 98 wind turbine technician jobs.

There are **2,071 MW** of proposed wind projects in Ohio that are **at risk due to the overly restrictive setback law**. This includes projects in the following counties, all of which would lose out on millions in PILOT payments:

- Erie
- Huron
- Putnam
- Seneca
- Sandusky
- Van Wert

Fixing the existing statutory restrictions on wind projects in Ohio will enable project developers to move forward with these projects. In that pursuit, they will bring over \$2.6 billion in economic benefits to Ohio and its citizens.

Economic Impact of Pending and Proposed Wind Projects



LARGE ENERGY USERS ARE INCREASINGLY CHOOSING WIND POWER

Wind power purchase agreements are typically long-term, with fixed rates, which help large in-state energy users plan for and control their energy costs. Locally-based large energy users such as Honda, Amazon, and Ohio State University all purchase wind to meet their energy needs.



CORPORATE PURCHASERS

In addition to missing economic opportunities afforded through new wind project development, Ohio's setback requirements are proving to discourage corporations from locating manufacturing facilities, data centers, or other large scale investments within the state. In July 2015, Facebook announced that it chose Texas over Ohio to host a new billion dollar data center, citing the inability to secure renewable energy for the facility. Further, in testimony provided to the Public Utilities Committee of the Ohio House of Representatives on May 18, 2016, Amazon noted that,

"Unfortunately Ohio's wind turbine setback standards enacted a little more than two years ago have significantly diminished the attractiveness to further investments in wind generation in Ohio. In fact, the current setbacks have acted as a moratorium of sorts on new wind development."

In effect, Ohio's setback standards are not only preventing wind development in the state, they are further discouraging corporations seeking to build new facilities in the region from considering Ohio due to the inability to procure renewable energy. This only adds to the economic and employment impacts of the setback standards.

CONCLUSION

As this report demonstrates, Ohio is potentially forgoing significant new local investment, annual revenue, and local tax payments with its overly restrictive property setback law for wind power development. In addition, large energy consumers such as Facebook, Amazon, and others are increasingly deciding where to locate their facilities based on the availability of renewable energy. With Ohio's current wind turbine setback laws operating as a de facto moratorium on wind development, the state is forgoing potentially billions in new revenue.

Further, the state also stands to gain from the supply chain development that will accompany the expansion of the in-state wind industry. With more than 60 wind-related manufacturing facilities, Ohio's manufacturing sector stands to benefit more from the expansion of the US wind industry more than any other state in the nation. Continuing to grow Ohio's wind industry will provide a larger market for these manufacturers and incentivize others to set up in the state, as well as delivering billions in new investment and millions in new annual revenue for local communities.

APPENDIX A - METHODOLOGY

The estimated employment and economic impact of approved, pending, and proposed wind projects in Ohio is primarily based on the National Renewable Energy Laboratories' Jobs and Economic Development Impact (JEDI) model. Landowner land lease payments and PILOT payments are based on separate input assumptions.

JEDI is an input-output economic model that estimates the full and local area employment and economic impacts based on industry norms and empirical market data and research. For this analysis, the JEDI land based wind model rel. W12.23.16 was used.

Each approved, pending, and proposed wind project in Ohio was individually evaluated in JEDI. All analyses used the default Ohio-specific input assumptions, except for the following local share' assumptions: Turbines (10%), blades (10%), towers (10%), transportation (90%), insurance (50%), and replacement parts/equipment/spare part inventory (50%). Projects were expected to be constructed in 2018 and all estimates are in 2016 dollars. The primary output from the JEDI model include: 1) local project investment 2) local annual operating expenses and 3) construction, supply chain, and operating jobs. The local share' assumptions allow estimation of the local, Ohio-specific employment and economic benefits of the projects.

The annual on-going operating expenditures were converted to cumulative expenditures assuming the expenditures continued over a 30 year average project life. They were then discounted to 2016 dollars using a 2% inflation rate.

The job estimates represent full-time equivalent (FTE) employment. One FTE represents 1,960 hours worked in a single year – or enough hours equaling one person being employed for a full year.

Cumulative land-lease payments were calculated assuming an average annual payment of \$6,000 per MW. These payments were assumed to continue over the 30 year average project lifespan. The full set of payments were discounted into 2016 dollars using a 2% inflation rate.

PILOT payments were calculated assuming an average annual PILOT payment of \$9,000 per MW. These payments were assumed to continue over the 30 year average project lifespan and converted to 2016 dollars based on a 2% inflation rate.

All impacts are localized impacts in Ohio. JEDI reports both total and local investment and operating expenditures. The identified projects will provide an additional amount of further economic and employment impacts outside Ohio that are not considered as part of this analysis.

The full set of results are then summarized based on the siting status of the projects.

APPENDIX B - DATA TABLES

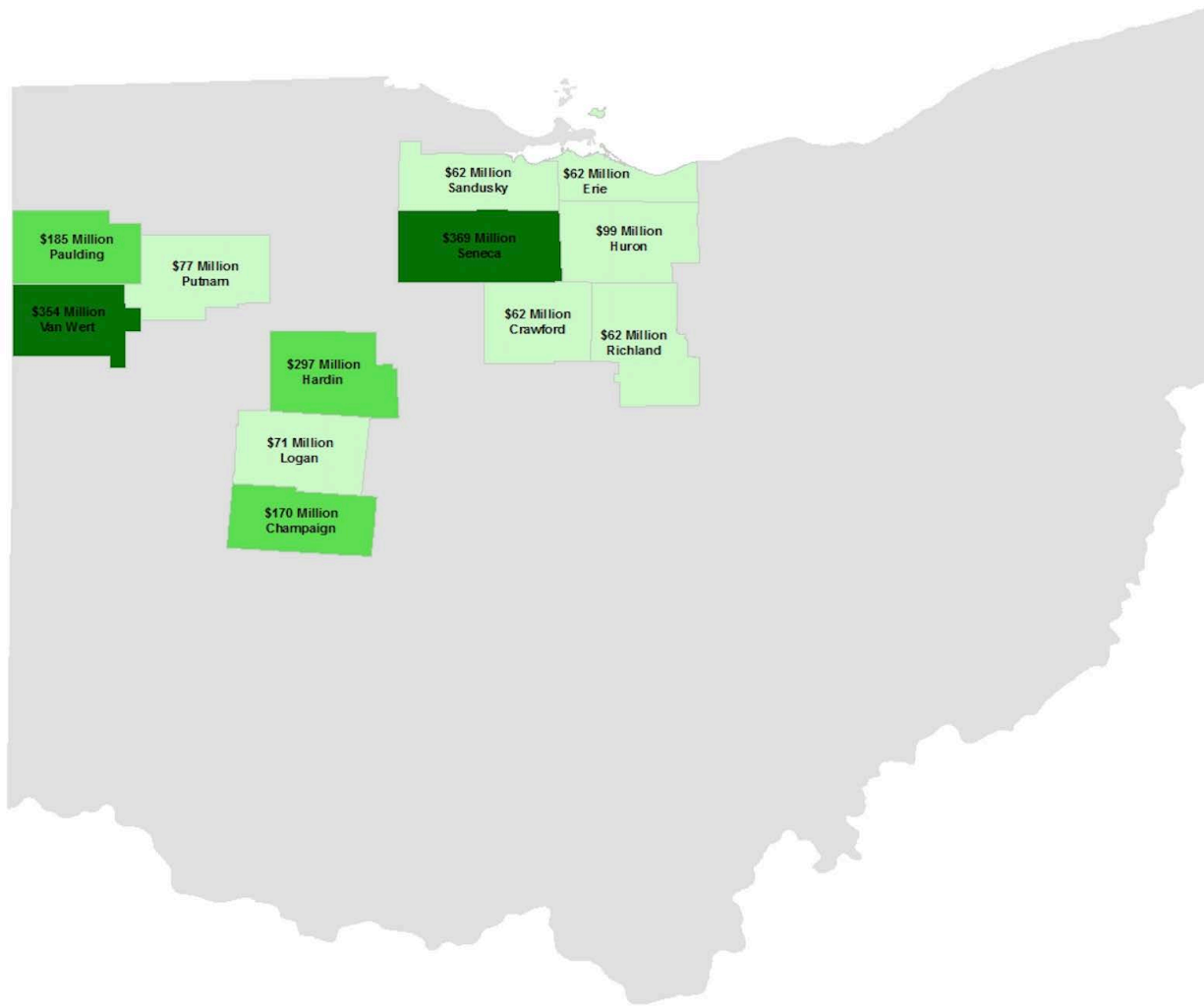
Wind Project	Siting Status	MW	County	Project Investing in Ohio	Lifetime Operational Expenditures in Ohio	Lifetime Land Lease Payments	Lifetime PILOT Payments	Constructi on Jobs	Supply Chain Jobs	Operating Jobs
Buckeye	Approved	135	Champaign	\$83,425,744	\$46,509,140	\$18,141,129	\$27,211,693	83	456	7
Hog Creek	Approved	66	Hardin	\$41,319,014	\$23,325,074	\$8,868,996	\$13,303,495	60	223	4
Hardin	Approved	300	Hardin	\$184,522,248	\$101,235,013	\$40,313,620	\$60,470,430	152	1,012	14
Black Fork	Approved	200	Crawford, Richland	\$123,240,131	\$68,314,762	\$26,875,747	\$40,313,620	110	675	10
Buckeye II	Approved	140	Champaign	\$86,485,215	\$48,171,749	\$18,813,023	\$28,219,534	85	473	8
Northwest Ohio	Approved	100	Paulding	\$61,958,014	\$34,804,914	\$13,437,873	\$20,156,810	67	338	6
Greenwich	Approved	60	Huron	\$37,638,280	\$21,291,917	\$8,062,724	\$12,094,086	57	203	4
Scioto Ridge	Approved	231	Hardin, Logan	\$142,187,786	\$78,296,223	\$31,041,487	\$46,562,231	121	779	11
APPROVED TOTALS		1,232		\$760,776,431	\$421,948,793	\$165,554,599	\$248,331,899	735	4,159	64
Seneca Wind Farm	Pending	200	Seneca	\$123,240,131	\$68,314,762	\$26,875,747	\$40,313,620	110	675	10
Timber Road IV	Pending	200	Paulding	\$123,240,131	\$68,314,762	\$26,875,747	\$40,313,620	110	675	10
Icebreaker*	Pending	21	Offshore	\$13,560,589	\$7,560,380	\$0	\$0	40	70	2
Long Prairie Wind	Proposed	450	Van Wert	\$276,783,371	\$151,852,520	\$60,470,430	\$90,705,645	228	1,518	20
Emerson Creek Wind	Proposed	300	Seneca	\$184,522,248	\$101,235,013	\$40,313,620	\$60,470,430	152	1,012	14
Republic Wind	Proposed	200	Seneca, Sandusky	\$123,240,131	\$68,314,762	\$26,875,747	\$40,313,620	110	675	10
Emerson West Wind	Proposed	200	Erie, Huron	\$123,240,131	\$68,314,762	\$26,875,747	\$40,313,620	110	675	10
Avangrid Proposals	Proposed	250	Putnam, Van Wert	\$153,784,632	\$84,362,511	\$33,594,683	\$50,392,025	127	843	11
EDPR Proposals	Proposed	250	Not specified	\$153,784,632	\$84,362,511	\$33,594,683	\$50,392,025	127	843	11
PROPOSED TOTALS		2,071		\$1,275,395,995	\$702,631,982	\$275,476,403	\$413,214,605	1,114	6,986	98
TOTAL		3,303		\$2,036,172,426	\$1,124,580,775	\$441,031,003	\$661,546,504	1,849	11,145	162

APPENDIX C - IN-STATE WIND-MANUFACTURING FACILITIES

Company	City	State	115th Congressional District	Classification	Category
ABB Inc.	Wickliffe	OH	OH-14	Electrical	Power transmission
Advanced Manufacturing	Cleveland	OH	OH-11	Power transmission	Gears
Aerotorque Corporation	Sharon Center	OH	OH-16	Power transmission	Drive train components
AFCO Precision Manufacturing	Napoleon	OH	OH-5	Power transmission	Machining/fabrication
Allied Moulded Products	Bryan	OH	OH-5	Power transmission	Machining/fabrication
AnSCO	Peninsula	OH	OH-14	Power transmission	
Argosy Wind Power	Solon	OH	OH-14	Distributed wind turbines	Turbines
Ashland Specialty Chemical	Dublin	OH	OH-12	Power transmission	Lubricants
BASF Corporation	Beachwood	OH	OH-11	Materials	Composites
Byrne Manufacturing	Mansfield	OH	OH-12	Power transmission	Gears
Canton Drop Forge	Canton	OH	OH-16	Power transmission	Gears
Cast Fab	Cincinnati	OH	OH-2	Structural	Castings
CMC/BMC Utility Products (Connector Manufacturing)	Hamilton	OH	OH-8	Power transmission	Machining/fabrication
Continental Fan Manufacturing Inc.	Dayton	OH	OH-10	Equipment	Other equipment
Dayton Superior	Dayton	OH	OH-10	Structural	Fasteners
Doncasters Fastener Systems	Elyria	OH	OH-4	Structural	Fasteners
Eaton Corp	Cleveland	OH	OH-11	Electrical	
Edco, Inc.	Toledo	OH	OH-9	Power transmission	Machining/fabrication
EGC Enterprises	Chardon	OH	OH-14	Structural	Fasteners
Elyria Foundry	Elyria	OH	OH-4	Structural	Castings
EMC Precision Machining	Elyria	OH	OH-4	Power transmission	Machining/fabrication
ERICO, Inc.	Solon	OH	OH-14	Electrical	
Federal Gear	Willoughby	OH	OH-14	Power transmission	Gears
Gleason	Dayton	OH	OH-10	Equipment	Manufacturing machinery
Graco	North Canton	OH	OH-16	Materials	Composite coatings
Graco Inc.	North Canton	OH	OH-16	Power transmission	Lubricants
Hamby Young	Aurora	OH	OH-14	Electrical	Power transmission
Heidtman Steel Products	Cleveland	OH	OH-11	Materials	Steel
Henkel Corporation	Warrensville Heights	OH	OH-11	Materials	Composite coatings
Honeywell Aerospace	Urbana	OH	OH-4	Equipment	Lighting
Horsburgh and Scott	Cleveland	OH	OH-11	Power transmission	Gears
HPM America	Mount Gilead	OH	OH-12	Structural	Castings
Hughey & Phillips	Urbana	OH	OH-4	Equipment	Lighting
ILSCO	Cincinnati	OH	OH-2	Electrical	Power transmission
Industrial Nut Corporation	Sandusky	OH	OH-9	Structural	Fasteners
International Paint	Cleveland	OH	OH-11	Materials	Composite coatings
Kalt Manufacturing	North Ridgeville	OH	OH-7	Power transmission	Machining/fabrication
Kaydon Bearings	Avon	OH	OH-7	Power transmission	Bearings
Koyo Corporation of U.S.A.	West Lake	OH	OH-16	Power transmission	Bearings
Lincoln Electric	Cleveland	OH	OH-11	Electrical	Wire & cable
Magna Machine Company	Forest Park	OH	OH-1	Power transmission	Machining/fabrication
Midwest Industrial Castings	Minster	OH	OH-4	Structural	Castings
Milacron Inc	Mount Orab	OH	OH-2	Equipment	Manufacturing machinery
Minster Wind	Minster	OH	OH-4	Structural	Castings
Nova Machine Products	Cleveland	OH	OH-16	Structural	Fasteners
Owens Corning Composites	Granville	OH	OH-12	Materials	Composites

Parker Hannifin Corporation	Mayfield Heights	OH	OH-14	Power transmission	Brakes
PPG Industries	Delaware	OH	OH-12	Materials	Composite coatings
PPG Industries	Strongsville	OH	OH-16	Materials	Composite coatings
PSL of America	Twinsburg	OH	OH-14	Power transmission	Bearings
Rotek Inc.	Aurora	OH	OH-14	Power transmission	Bearings
Sherwin-Williams	Cleveland	OH	OH-11	Materials	Composite coatings
Sika Corporation	Marion	OH	OH-4	Materials	Composites
Sky Climber	Delaware	OH	OH-12	Equipment	Fall protection
SUREnergy	Sandusky	OH	OH-9	Distributed wind turbines	Turbines
Swiger Coil Systems	Cleveland	OH	OH-9	Electrical	Generator components
The American Tank and Fabricating Company	Cleveland	OH	OH-9	Power transmission	Machining/fabrication
The Benjamin Company	Port Clinton	OH	OH-9	Power transmission	Machining/fabrication
The Dyson Corporation	Painesville	OH	OH-14	Structural	Fasteners
Tuf-Tug Products	Moraine	OH	OH-10	Equipment	Fall protection
WebCore Technologies	Miamisburg	OH	OH-10	Materials	Composites

APPENDIX D - POTENTIAL PROJECT INVESTMENT BY COUNTY



ENDNOTES

- 1 National Conference of State Legislatures (NCSL), State Legislative Approaches to Wind Energy Facility Siting, Nov. 1, 2016, <http://www.ncsl.org/research/energy/state-wind-energy-siting.aspx>.
- 2 Ohio Power Siting Board, Ohio Wind Power FAQ, <https://www.opsb.ohio.gov/opsb/index.cfm/information/ohio-wind-power-faq/>.
- 3 NCSL, *supra* n.1.
- 4 National Renewable Energy Laboratory, Renewable Energy Technical Potential, available at http://www.nrel.gov/gis/re_potential.html.
- 5 National Renewable Energy Laboratory, Jobs and Economic Development Impact modeling, available at <http://www.nrel.gov/analysis/jedi/>.
- 6 Assuming 30-year lifetime and 2% inflation rate.



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