MIKE KUGLITSCH

STATE REPRESENTATIVE • 84TH ASSEMBLY DISTRICT

Testimony for 2019 Assembly Bill 237

November 6, 2019

Good morning Mr. Chair and Members of the Committee. Thank you for the opportunity to testify regarding Assembly Bill 237, which uses Fast Forward grants through the Department of Workforce Development for training personnel in wind and solar energy systems.

The United States Bureau of Labor Statistics has identified solar photovoltaic installers and wind turbine service technicians as the fastest growing professions in the country. Wisconsin is no exception and growth in solar and wind has already begun, but is predicted to pick up in the coming years due to 5,535 megawatts of solar and 995 megawatts of wind in the current development que at Midwest Independent System Operator (MISO) as of October 31st. In addition, Alliant Energy announced last week an expansion of its Wisconsin solar energy generation by up to 1,000 megawatts by the end of 2023.

To meet the growing demand, Assembly Bill 237 allows businesses to create consortiums to pool resources for education and training of potential employees relating to wind and solar. Training characteristics will be based on the consortium's needs and the appropriate training level is determined by the individual businesses.

The maximum amount a consortium can receive is capped at $250,000 and the overall program is capped at $1,000,000 per biennium. Reimbursement to a consortium will be available through Wisconsin's Fast Forward grants program at the Department of Workforce Development and can be up to half the cost of training. Business matching costs are limited to what is approved in Wisconsin's Administrative Code and to qualify, the business must commit to hire the individuals once training is complete.

The amendment from the authors delays funding for the program until next biennium and adds "inspection" of wind and solar systems as an acceptable training option.

Finally DWD shall submit, as part of their annual report each December, these specifics of the program: 1) the number of people trained; 2) the cost to train the employee; and 3) was the employee hired and retained.

I appreciate the Committee's time and I believe it is our job as legislators to be proactive and identify opportunities where we can promote and train for family sustaining jobs of the future.

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Wisconsin State Senator
2nd Senate District

JOINT COMMITTEES:
Audit Committee, Co-Chair

Testimony on 2019 Assembly Bill 237

Senator Robert Cowles

Assembly Committee on Workforce Development – November 6, 2019

Thank you, Chairman Petryk and committee members, for allowing me to testify on 2019 Assembly Bill 237. This bill would require DWD to allocate $1 million every biennium from the Fast Forward appropriation to train workers in the installation, repair or maintenance of solar energy or wind energy systems.

The renewable energy workforce is consistently one of the fastest growing workforce sectors in the country. Wisconsin added 1,786 jobs in the clean energy industry in 2018, a 2.4% increase over the year prior for a total of 76,383 workers. Companies expect to add more than 6,000 jobs to the clean energy industry in 2019, a 6.0% growth rate. Inside of the clean energy industry, renewable energy generation accounted for 5,963 people working in that field in 2018 after adding 303 jobs in the year prior, a 5.4% increase.

Over the past few years, Wisconsin's renewable energy generation workforce has grown faster than the Midwest average, including doubling that rate in 2018. This trend will not be slowing in the foreseeable future either, as 6,530.38 megawatts (6.5 gigawatts) are currently active in the Midcontinent Independent System Operator (MISO) queue and even more projects, including 1 gigawatt of solar from Alliant Energy, are earlier in the planning stages. This is due to a shift in market forces making renewable energy competitive with fossil fuels in the open market. Yet, despite the growth in this industry, a report by Clean Jobs that surveyed renewable energy employers in Wisconsin found that nearly 88% stated it was "somewhat" or "very" difficult to find new employees.

Assembly Bill 237 would require the Department of Workforce Development (DWD) to allocate $1,000,000 biennially for grants to employers or consortiums of employers to train and certify individuals in the installation, repair or maintenance of solar energy or wind energy systems. The funding for these grants would come from the existing $6,250,000 annual appropriation for Workforce Training Grants and Services in DWD's Fast Forward program. Fast Forward helps employers to train and retain highly skilled workers by investing over $20 million in grant contracts to date for more than 200 worker training projects. The program benefits hundreds of employers and thousands of workers across Wisconsin. From 2014 to 2018, Fast Forward used approximately $4.6 million annually of their over $6.0 million appropriation.

Grants under Assembly Bill 237 would be capped at $250,000 and equally matched by the employer or consortium of employers, and must train and certify at least 25 individuals. Finally, in the already existing annual report by DWD on Fast Forward, the Department must discuss this newly created renewable energy workforce training program, including the total number of individuals who were hired and retained.

Fossil fuels aren't found in Wisconsin; they're brought to our state. Renewable energy can be generated right here in Wisconsin, and in the process will create thousands more jobs over the next decade as we're seeing a stronger commitment by utilities to renewable energy generation projects of all sizes being announced, approved, and operating. This includes a recent groundbreaking by WEC in Two Rivers on a utility-scale solar project, the PSC's approval of the Badger Hollow utility-scale solar project, Alliant's announcement of their Powering What's Next plan to increase solar generation substantially, and other openings of customer-scale solar projects such as one at Sisters of St. Francis of the Holy Cross in Green Bay.

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Assembly Bill 237 would help to further advance Wisconsin's renewable energy generation and our growing renewable energy workforce by establishing a state commitment to create more of these highly-skilled, family-supporting technical jobs of the future. In the process, we can create a stronger economy, a cleaner environment, and a more diverse energy portfolio.

Finally, I'd like to note that an amendment is in the works to address some of the comments that have been brought forward by stakeholders and to allow DWD to have the time necessary to implement this program properly. We anticipate finalizing the amendment with feedback presented today and introducing it soon.

Fastest growing occupations

Other available formats: (XLSX)

Table 1.3 Fastest growing occupations, 2018 and projected 2028
(Numbers in thousands)

2018 National Employment Matrix title and code		Employment		Change, 2018–28		Median annual wage, 2018(1)
		2018	2028	Number	Percent	
Total, all occupations	00-0000	161,037.7	169,435.9	8,398.1	5.2	$38,640
Solar photovoltaic installers	47-2231	9.7	15.8	6.1	63.3	$42,680
Wind turbine service technicians	49-9081	6.6	10.3	3.8	56.9	$54,370
Home health aides	31-1011	831.8	1,136.6	304.8	36.6	$24,200
Personal care aides	39-9021	2,421.2	3,302.1	881.0	36.4	$24,020
Occupational therapy assistants	31-2011	43.8	58.3	14.5	33.1	$60,220
Information security analysts	15-1122	112.3	147.7	35.5	31.6	$98,350
Physician assistants	29-1071	118.8	155.7	37.0	31.1	$108,610
Statisticians	15-2041	44.4	58.0	13.6	30.7	$87,780
Nurse practitioners	29-1171	189.1	242.4	53.3	28.2	$107,030
Speech-language pathologists	29-1127	153.7	195.6	41.9	27.3	$77,510
Physical therapist assistants	31-2021	98.4	125.0	26.7	27.1	$58,040
Genetic counselors	29-9092	3.0	3.8	0.8	27.0	$80,370
Mathematicians	15-2021	2.9	3.6	0.8	26.0	$101,900
Operations research analysts	15-2031	109.7	137.9	28.1	25.6	$83,390
Software developers, applications	15-1132	944.2	1,185.7	241.5	25.6	$103,620
Forest fire inspectors and prevention specialists	33-2022	2.2	2.8	0.5	24.1	$39,600
Health specialties teachers, postsecondary	25-1071	254.8	313.9	59.1	23.2	$97,370
Phlebotomists	31-9097	128.3	157.8	29.5	23.0	$34,480
Physical therapist aides	31-2022	49.8	61.2	11.3	22.8	$26,240
Medical assistants	31-9092	686.6	841.5	154.9	22.6	$33,610
Substance abuse, behavioral disorder, and mental health counselors	21-1018	304.5	373.1	68.5	22.5	$44,630
Marriage and family therapists	21-1013	55.3	67.7	12.3	22.3	$50,090
Massage therapists	31-9011	159.8	195.2	35.4	22.2	$41,420
Cooks, restaurant	35-2014	1,362.3	1,661.3	299.0	21.9	$26,530
Physical therapists	29-1123	247.7	301.9	54.2	21.9	$87,930
Respiratory therapists	29-1126	134.0	162.0	27.9	20.8	$60,280
Market research analysts and marketing specialists	13-1161	681.9	821.1	139.2	20.4	$63,120
Actuaries	15-2011	25.0	30.0	5.0	20.1	$102,880
Computer numerically controlled machine tool programmers, metal and plastic	51-4012	24.3	29.2	4.9	20.0	$53,190
Nursing instructors and teachers, postsecondary	25-1072	69.0	82.8	13.8	20.0	$73,490

Footnotes:
(1) Data are from the Occupational Employment Statistics program, U.S. Bureau of Labor Statistics. Wage data cover non-farm wage and salary workers and do not cover the self-employed, owners and partners in unincorporated firms, or household workers.
Source: Employment Projections program, U.S. Bureau of Labor Statistics

Back to top

Last Modified Date: September 4, 2019

TOOLS
Areas at a Glance
Industries at a Glance
Economic Releases
Databases & Tables
Maps

CALCULATORS
Inflation
Injury And Illness

HELP
Help & Tutorials
FAQs
Glossary
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U.S. Bureau of Labor Statistics | Office of Occupational Statistics and Employment Projections, PSB Suite 2135, 2 Massachusetts Avenue, NE Washington, DC 20212-0001
www.bls.gov/EMP | Telephone: 1-202-691-5700 | Contact EMP

State of Wisconsin
2019 - 2020 LEGISLATURE

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PRELIMINARY DRAFT - NOT READY FOR INTRODUCTION

ASSEMBLY AMENDMENT ,

TO ASSEMBLY BILL 237

At the locations indicated, amend the bill as follows:

1. Page 2, line 6: delete "$1,000,000 in each fiscal biennium" and substitute "up to $1,000,000 in each fiscal biennium, beginning in the 2021-23 fiscal biennium,".

2. Page 2, line 8: on lines 8 and 17, after "installation," insert "inspection,".

(END)

renewables
powered by nature

DATE: November 6, 2019
TO: Wisconsin State Assembly Committee on Workforce Development
From: EDP Renewables North America
RE: Please Support Assembly Bill 237 – Grants for Certification Programs in Solar and Wind Systems

EDP Renewables is a leading renewable energy company operating in markets around the globe. EDP Renewables North America (EDPR NA) develops, builds, and operates top quality wind farms and solar plants across the United States, Canada, and Mexico.

We thank Representatives Kuglitsch and Neylon for authoring Assembly Bill 237. As wind and solar developers like EDPR NA look to expand operations in Wisconsin, employee demand will only increase. This initiative helps ensure that future labor demands can be met with qualified workers trained right here in Wisconsin. We appreciate the representatives' foresight in taking measures to ensure that the state is well-positioned to meet the demands of the growing 21st-century energy economy.

EDPR NA operates the Quilt Block Wind Farm in Seymour Township, Lafayette County. The wind farm has an installed capacity of 98 megawatts, which is enough to power 36,000 Wisconsin homes each year. The project's construction phase employed over 200 workers, and provides 12-13 full-time, permanent jobs. Additionally, forty-four landowners participate in the project under long-term lease and easement agreements. Dairyland Power Cooperative has signed a power purchase agreement to buy all the energy produced by Quilt Block Wind Farm.

With technological innovations, wind and solar-powered generation is now cost-competitive with other energy sources, and successful grid integration has demonstrated the reliability of these technologies. Wisconsin will continue to diversify its electricity portfolio, and continued development in renewable technology will lead to even better efficiencies and capabilities. With advanced technology and resource potential, renewable energy developers will continue to invest and build in Wisconsin.

At its core, Assembly Bill 237 is a workforce development bill. Wind and solar technicians are the two fastest growing jobs in the country, and Wisconsin needs to be able to train and attract workers to participate in this growing sector. Assembly Bill 237 directly addresses the need for Wisconsin to have a trained and ready workforce. This kind of legislation sends a positive message to the renewable energy industry that Wisconsin is embracing new opportunities for energy development.

Once again, EDP Renewables North America is grateful to Representatives Kuglitsch and Neylon, and we thank the committee for holding a hearing on Assembly Bill 237. If you have any questions, please contact our lobbyist Tim Hoven at (414) 305-4011.

NEXTera® ENERGY RESOURCES

DATE: November 6, 2019
TO: Wisconsin State Assembly Committee on Workforce Development
From: NextEra Energy Resources
RE: Please Support Assembly Bill 237 – Grants for Certification Programs in Solar and Wind Systems

Affordable, reliable energy is essential to economic growth and job creation – both in Wisconsin and across the country. Energy is the engine that drives business, from small retail stores to large factories. It fuels Wisconsin's manufacturing base and lights millions of homes across the state. NextEra Energy Resources is proud to be part of the state's energy infrastructure and looks forward to providing electricity to the people and businesses of Wisconsin well into the future.

NextEra Energy Resources, a subsidiary of Juno Beach, FL based NextEra Energy, is a clean energy leader and one of the largest wholesale generators of electric power in the United States, with more than 19,880 megawatts of generating capacity in the United States and Canada. The company, together with its affiliated entities, is the world's largest generator of renewable energy from the wind and sun, which includes Wisconsin's 54 megawatt Butler Ridge Energy Center. The company also operates a fleet of nuclear plants across the country, including Wisconsin's only operating nuclear plant, Point Beach.

Additionally, our subsidiary, the Two Creeks Solar, LLC, is developing a 150-megawatt project solar project in Manitowoc County. The project will hold 500,000 solar panels on approximately 800 acres of land near our Point Beach facility. We broke ground on the project in August.

NextEra Energy Resources asks for your support of Assembly Bill 237, authored by Representatives Mike Kuglitsch and Adam Neylon. As the authors have identified, wind and solar energy projects are a growing industry in Wisconsin, as the unsubsidized cost of those energy sources have become less expensive than than coal and competitive with natural gas.

We commend the state legislature in recognizing the need for worker training in the growing renewable industry. Assembly Bill 237 will help NextEra Energy Resources in developing worker training programs to ensure we can meet our employment demands. This forward-thinking bill will help create jobs, assist in ensuring energy developers will have the resources to expand in the state, and ultimately help drive down energy costs for Wisconsin businesses and citizens.

We thank the Assembly Committee on Workforce Development for holding a hearing on this important bill. If you need any additional information from NextEra Energy Resources on this bill, please contact our government affairs associate Tim Hoven at (414) 305-2011.

midwest renewable energy association

November 4th, 2019
Custer, Wisconsin

Assembly Committee on Workforce Development
c/o Representative Warren Petryk (Chair)
Representative Barbara Dittrich (Vice-Chair)

Dear Assembly Committee,

I am writing to provide information regarding Assembly Bill 237 relating to the creation of reimbursement grants to employers for payment of employee training and certification in wind and solar energy technologies. It is my intention to provide information to the committee that may facilitate discussion on the merits and potential impacts for AB 237, particularly in regard to the development of Wisconsin's solar energy market.

The Midwest Renewable Energy Association (MREA) is a 501(c)3 tax-exempt, non-profit organization incorporated in Wisconsin in 1990 with a mission to promote renewable energy, energy efficiency, and sustainable living through education and demonstration. We are a membership association with a paid membership of 2,501 personal members and 122 business members. Twenty-three of our business members are involved in the Wisconsin solar and/or wind industry. Our primary engagement with these members is through the provision of technical training, the facilitation of internships with partnering technical college training programs, hosting professional networking events, and public engagement as part of public education events and community-led group purchasing programs for solar energy. You can read more about our work at https://www.midwestrenew.org/.

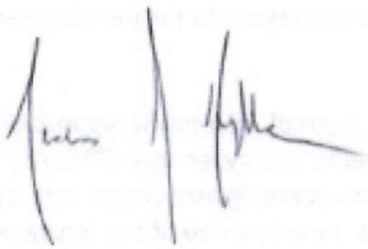
Our work with Wisconsin solar and wind energy employers has made us aware of the needs and challenges that they face in attracting and retaining employees to meet the demands of the growing industry. These needs have historically fallen outside of the priorities of state and federal workforce development agencies and, as such, private organizations like the MREA have been working to help satisfy training and hiring needs. Until recently, these efforts have seemed sufficient as the pace of market growth had been steady and manageable for most employers. Recent increases in demand in all sectors (residential, commercial, and utility scale) are outpacing the ability of Wisconsin-based contractors to expand their workforce. Market prices, customer interest, and utility development plans all indicate that the pace of market growth will continue to increase over the next 5 years.

Detailed industry employment data in the solar and wind industry is not publicly available in Wisconsin but a few national data sets provide indication of the needs and status of the industry, particularly the solar industry. The most prominent report *Solar Training and Hiring Insights* was published in 2018 by the Solar Training Network with funding from the US Dept. of Energy Solar Energy Technologies Office (see https://www.americansolarworkforce.org/resources/sthi/). Key findings from the report show that 84% of employers in the solar industry find it very difficult or somewhat difficult to hire for entry-level

jobs and that only 34% of the industry offers on the job training. The report also found that companies that invested in training showed significant reductions in the labor cost per kW installed, providing strong justification for investing in the training of existing employees.

Our own evaluations with the 9 employers and 18 students that have participated in the MREA Solar Professional Internship program over the last 2 years support the need for the training of entry level workforce in the Wisconsin solar industry. At this time, Wisconsin businesses are hiring to meet demand. They are facing increased competition from out-of-state firms that are looking to Wisconsin as a new growth market. They are aware that their employees require significant training investment to successfully engage in the rapidly growing industry. They are also increasingly aware that their investments in employee training will result in business growth, efficiency, and increased competitiveness.

Sincerely,



Nick Hylla, Executive Director
715-592-6595, x-107, nickh@midwestrenew.org

RENEW WISCONSIN

AB 237 – Solar and Wind Energy Workforce Training Grants

Testimony by Jim Boullion, Director of Government Affairs
Assembly Committee on Workforce Development
Wednesday, November 6th, 2019

Mr. Chairman and Committee members, thank you for the opportunity to speak today. My name is Jim Boullion, Director of Government Affairs for RENEW Wisconsin. We are a not-for-profit, issue advocacy organization that supports the development of renewable energy in Wisconsin.

I am here today to ask you to support passage of AB 237. Rep. Kuglitsch has explained what the bill does and why he introduced it. I wanted to spend a little more time focusing on the big picture of what is happening in the renewable energy industry and why this bill is needed.

On *page 3* of my handout is the list of *Fastest Growing Trades* from the US Department of Labor, Bureau of Labor Statistics. They have identified Solar Photovoltaic Installers and Wind Turbine Service Technicians as the two fastest growing occupations in the country over the next 10 years, and it isn't even close. *(chart)*

Why is the demand for solar and wind workers booming? Because the price of wind and solar have dropped dramatically, and are now much lower than coal and on par with natural gas. On *page 4* in the handout is a chart with the history of the average *unsubsidized* prices of energy from the industry recognized authority, Lazard.

As you can see, in the last 10 years the average price of solar energy has dropped 88% and wind has dropped by 69%, while the price of coal has stayed flat and nuclear has actually increased. The price of wind and solar is expected to decline even more in the future and their financial advantage will continue to increase.

As you would expect, this price drop in renewable energy is increasing demand in the marketplace from utilities and their customers. Not only will these lower prices help Wisconsin's utilities keep their rates competitive, it will help them meet their public commitments for clean energy generation by 2050.

In fact, just last week Alliant Energy announced that as part of their clean energy goal they plan to develop 1,000 megawatts of solar by 2023. That would be 10 times the total amount of solar energy we had in all of Wisconsin, combined, just one year ago.

We estimate that Alliant's commitment will not only create 1,600 construction jobs, it will generate $4 million in shared revenue payments to local governments and pay out approximately $5 million in land rental income, primarily to farmers, every year, for 30 years.

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That is only the beginning. In May of this year, when this bill was introduced, there were proposals on the MISO *(Midcontinent Independent System Operator)* electric grid planning queue to build an additional 4,250 megawatts of large scale solar and 800 megawatts of wind in Wisconsin. As you can see from the map in your handout, by August the number of projects spiked to 6,170 megawatts of solar and 1,196 megawatts of new wind projects.

If all of these large-scale projects were built they would be worth $100's of millions of dollars in construction spending, as well as $10's of millions of dollars in local payments every year to farmers, towns and counties.

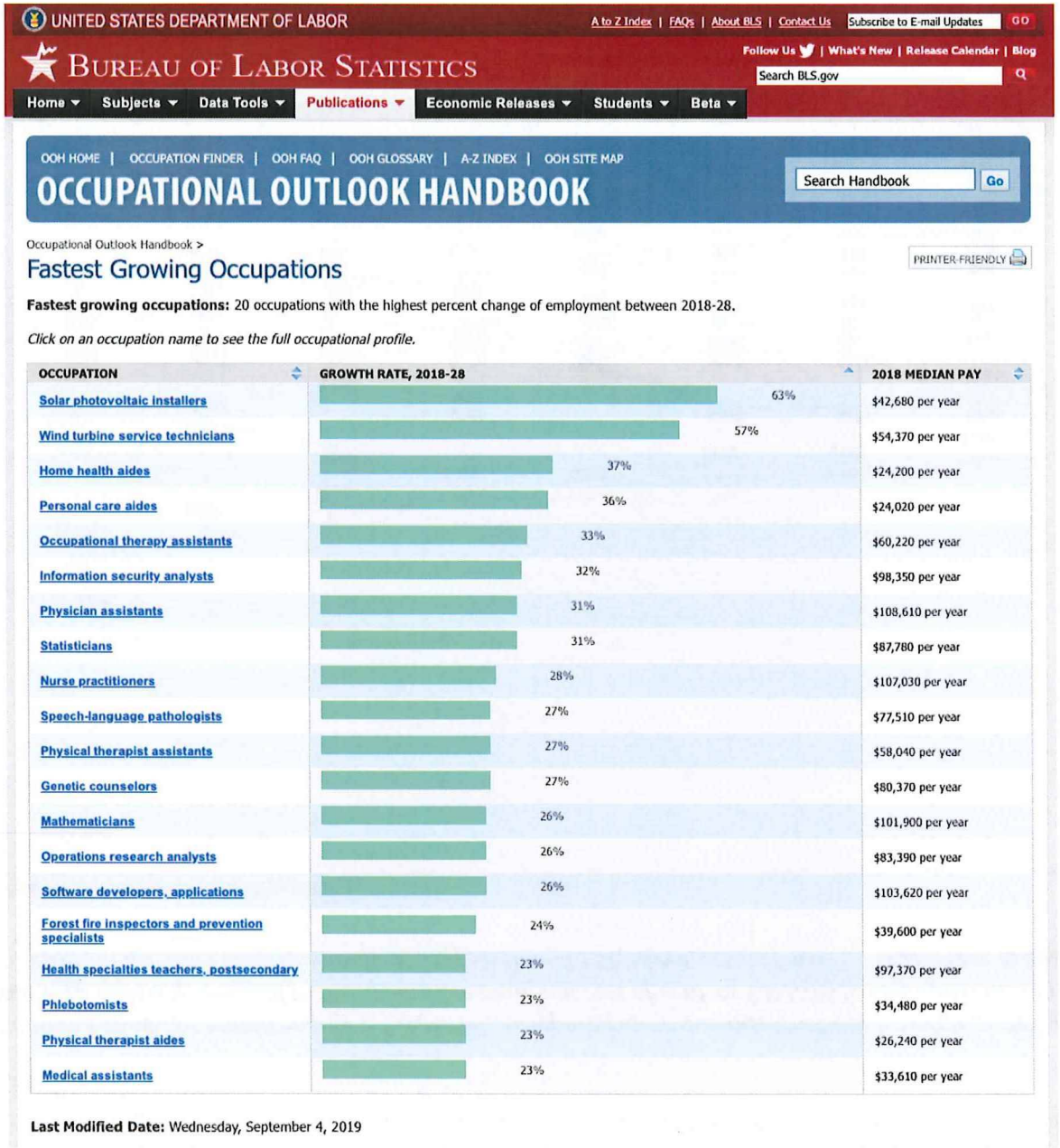
At the same time that this large, utility-scale work is being proposed, major companies in Wisconsin like Ashley Furniture, Organic Valley and American Family Insurance, as well as smaller companies like Central Waters Brewery and home owners across the state are also installing their own on-site solar arrays to save money and to meet their energy goals, driving demand for trained workers even higher.

Among the biggest benefits of renewable energy are creating jobs and keeping dollars right here in Wisconsin. Right now, for many large projects, out-of-state crews travel around the country and do this work. This legislation will help us train a Wisconsin-based workforce to build more of the projects here in Wisconsin and be prepared to compete nationally in this growing field.

Solar and wind energy generation have the potential to be one of the largest growth industries in Wisconsin. The economic benefits are enormous and ready to be captured if we work together, invest in our workforce and are prepared for that future.

Thank you for your support!

I would be happy to try and answer any questions you might have.

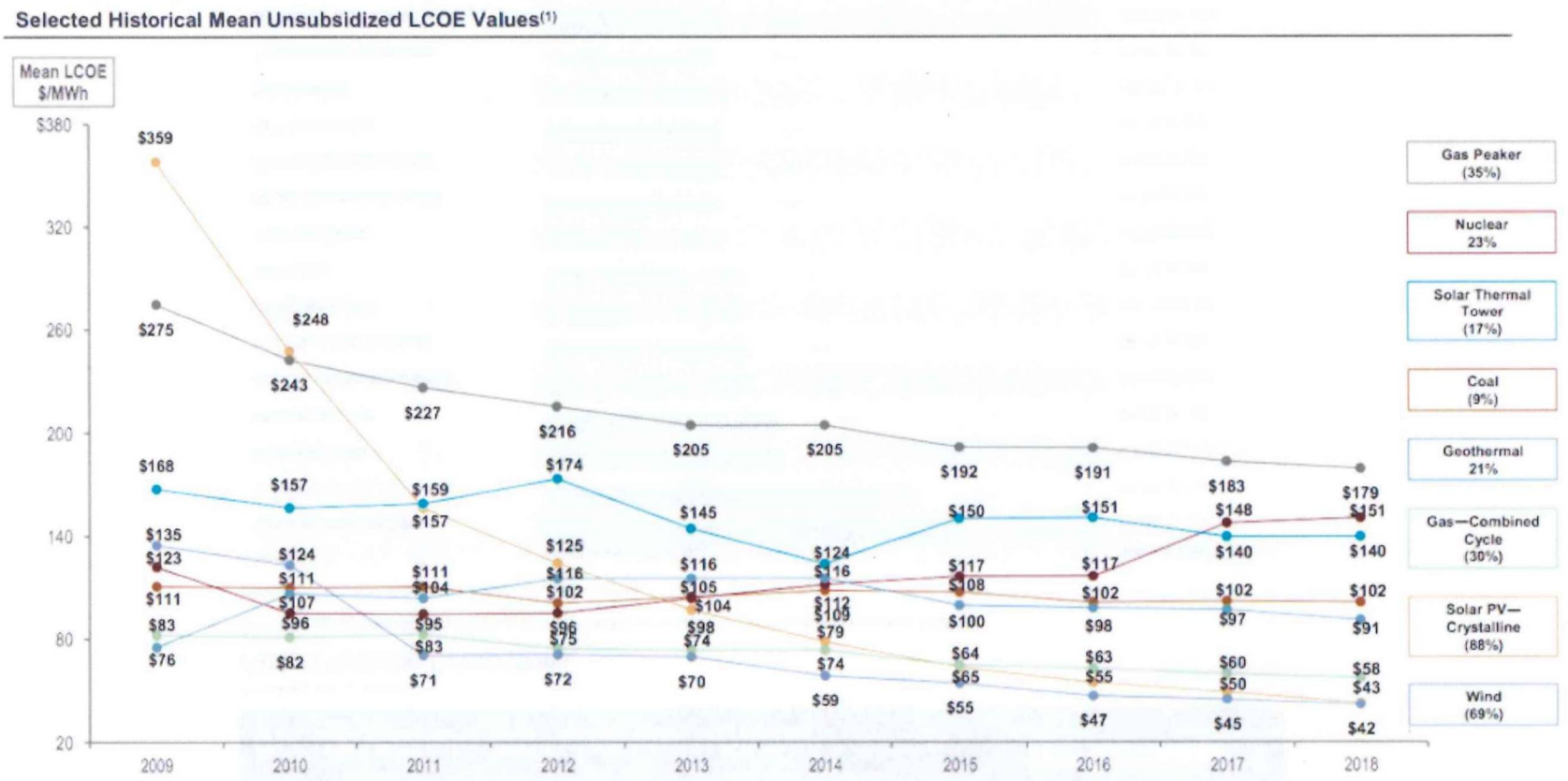


https://www.bls.gov/ooh/fastest-growing.htm

Levelized Cost of Energy Comparison—Unsubsidized Analysis

*"**Lazard's latest annual Levelized Cost of Energy Analysis (LCOE 12.0)** shows a continued decline in the cost of generating electricity from alternative energy technologies, especially utility-scale solar and wind. In some scenarios, alternative energy costs have decreased to the point that they are now at or below the marginal cost of conventional generation."*

*"The **low end levelized** cost of onshore wind-generated energy is $29/MWh, compared to an average illustrative marginal cost of $36/MWh for coal. The **levelized** cost of utility-scale solar is nearly identical to the illustrative marginal cost of coal, at $36/MWh. This comparison is accentuated when subsidizing onshore wind and solar, which results in **levelized** costs of energy of $14/MWh and $32/MWh, respectively."* ***November 8, 2018***



(1) *The "levelized cost of energy" (LCOE) is an estimate of the price that would need to be charged for power from such a plant over its lifetime, sufficient to cover the initial capital cost (at the anticipated utilization rate), plus the cost of operating and maintaining the plant,*

RENEW WISCONSIN

LARGE SCALE SOLAR & WIND DEPLOYMENT FOR WISCONSIN

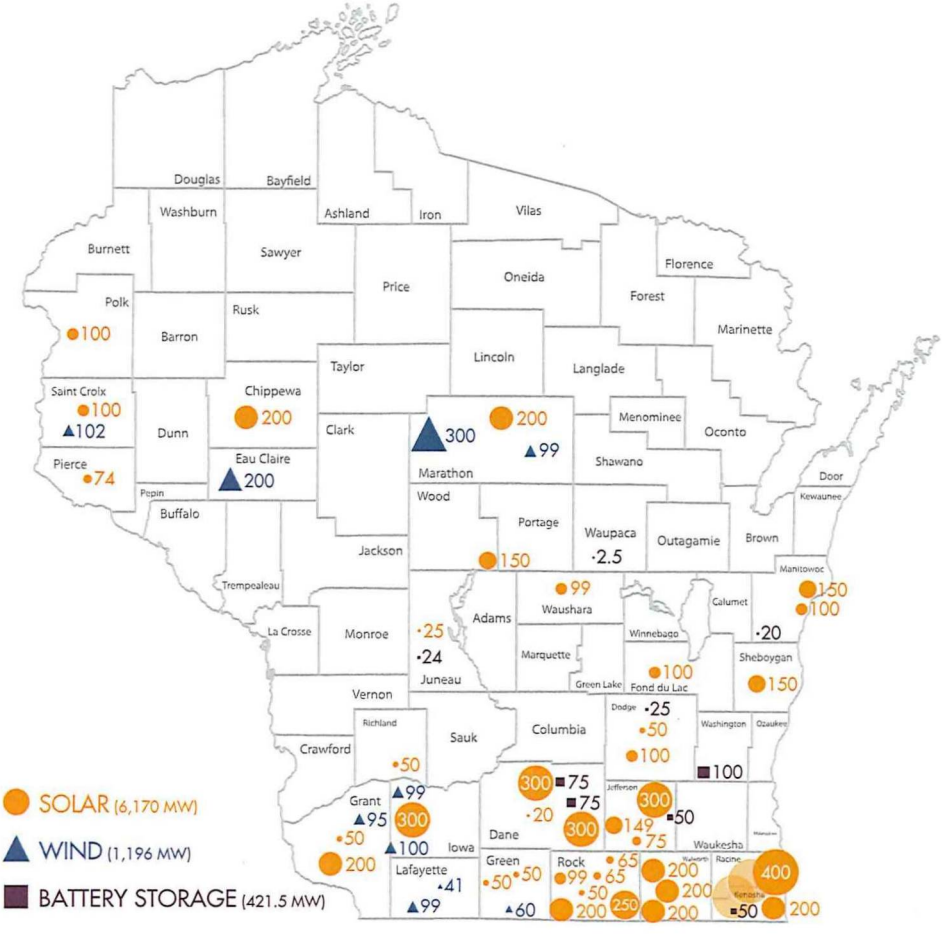
- 6,170 MW of solar and 1,196 MW of wind under development as of August 2019
- Wisconsin currently has 130 MW of solar, 52 MW of which is utility-scale
- Wisconsin currently has 737 MW of large-scale wind

WISCONSIN SOLAR, WIND, AND STORAGE UNDER DEVELOPMENT AS OF AUGUST 2019

6,170 MW Solar
1,196 MW Wind
421.5 MW Storage

*Numbers in map denote project size in megawatts

*Data sourced from August 2019 Midcontinent Independent System Operator (MISO) Queue and RENEW Wisconsin



RENEW WISCONSIN'S AGENDA TO ACCELERATE LARGE SCALE SOLAR & WIND DEVELOPMENT

SOLAR FOR CORPORATIONS AND LOCAL GOVERNMENTS

Working with electric providers to offer a low-cost service to large customers that desire clean energy.

POLLINATOR PLANTINGS UNDER THE ARRAYS

Working with solar developers to landscape their projects with pollinator gardens that sustain bird and bee populations.

SUPPORTING LARGE SOLAR AND WIND DEVELOPERS

Facilitating regulatory approvals through outreach to citizens and media.

HELPING UTILITIES MEET THEIR VOLUNTARY RENEWABLE COMMITMENTS

Our largest utilities' current renewable mix and stated goals.

UTILITY	NO. OF CUSTOMERS	2018 TOTAL RENEWABLES MIX*	STATED GOAL
WEC (We Energies and Wisc. Public Service)	1.14 million + 446,000	WE 6.0% WPS 6.5%	80% CO_2 reduction by 2050
Alliant	470,000	12.5%	33% renewables by 2024 80% CO_2 reduction by 2050
Madison Gas and Electric	153,000	11.3%	30% renewables by 2030 100% CO_2 reduction by 2050
Xcel Energy	241,000	24.6%	80% CO_2 reduction by 2030 100% CO_2 reduction by 2050
Dairyland Power	263,000	16.7%	PPAs for 98 MW Wind (2017), 149 MW Solar (2021)
WPPI Energy	200,000+	15.0%	PPAs for 132 MW Wind (2018) and 100 MW Solar (2020)

*Sourced from "Electric Provider Renewable Porfolio Compliance for 2018" PSC Docket 5-RF-2018 Appendix C-4 Column 16

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Conference
8 Hours

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Sean White Solar
Online, In-Person
40+ Hours

40+ Hour Advanced PV Training
HeatSpring Learning Institute
In-Person, Online
40+ Hours

96 Cell AC Modules Online
Sunpower Corporation
Online
1 hours

Advance Design Specialist
Millennium Solar Electric Training Academy
In-Person
24 hours

Advanced Design
Sunpower Corporation
In-Person
14 hours

Advanced Installation
Sunpower Corporation
In-Person
7 hours

Advanced PV Installation and Design
Civic Works (Via REACH!)
In-Person
40 hours

Battery Based PV System Design (PV230)
Midwest Renewable Energy Association (MREA)
In-Person, Online
4 hours

CE501 2011 NEC Updates for the Solar Professional
Solar Energy International (SEI)
Online
3 hours

CE505 Code Compliant Roof Mounting & Waterproof Flashing
Solar Energy International (SEI)
Online
2 hours

CE506 Code Compliant Conductor Sizing for Grid-Direct PV Systems
Solar Energy International (SEI)
Online
3 hours

CE509 Advanced Solar Thermal Troubleshooting and Repair
Solar Energy International (SEI)
Online
2 hours

CE510 Tips, Tools and Techniques of the Solar Industry
Solar Energy International (SEI)
Online
2 hours

CE513 Rooftop PV What You Need To Know About Roof Systems
Solar Energy International (SEI)
Online
2 hours

CE514 Rooftop PV What You Need To Know About Building and Fire Codes
Solar Energy International (SEI)
Online - 2 hours

CE516 2014 National Electric Code and PV Systems Industry-Wide Plus Product Development Cycles for Installers, Designers, Manufacturers, Engineers and Building Officials
Solar Energy International (SEI)
Online
3 hours

CE517 Performance Modeling of PV Systems Estimating Production of PV Systems
Solar Energy International (SEI)
Online
3.5 hours

CE519 Off-Grid System Considerations
Solar Energy International (SEI)
Online
2 hours

CE520 Introduction to Sketchup PV System Modeling
Solar Energy International (SEI)
Online
24 Hours

CE523 Solar Installation Safety Training
Solar Energy International (SEI)
Online
12 hours

CE524: PVSyst for PV System Production Modeling
Solar Energy International (SEI)
Online
4 hours

Certificate in Renewable Energy Management
NC Clean Energy Technology
Hybrid
18 hours

Comprehensive Solar Plus Storage
HeatSpring Learning Institute
Online
30 hours

Consumption Monitoring Online
Sunpower Corporation
Online - 1 hours

Determining SolarWorld Wind and Snow Loads for Non-Engineers
SolarWorld Americas LLC
Online
1 hours

Electrical Calculations
Electrical Training Center, Inc.
In-Person
8 hours

Free 2020 NEC with Sean White and Bill Brooks
Sean White Solar
Online
2 Hours

Fronius Residential Solutions Training
Fronius, USA
In-Person
8 hours

Fundamentals of Design
Sunpower Corporation
In-Person
2 hours

FV201L: Laboratorio Fotovoltaico de Sistemas Conectados a la Red-Practico
Solar Energy International (SEI)
In-Person
40 Hours

FV202: Diseno Fotovoltaico Avanzado y el NEC (Sistemas Interactivos)
Solar Energy International (SEI)
In-Person
40 Hours

FV301L Laboratorio Fotovoltaico de Sistemas Basados en Baterias - Practico
Solar Energy International (SEI)
In-Person
40 Hours

FVOL202: Diseno Fotovoltaico Avanzado y el NEC (Sistemas Interactivos) - en linea
Solar Energy International (SEI)
Online
60 Hours

Ground-Mounted Solar Installation Safety
Solar Energy International (SEI)
Online
8 Hours

Helix Carport
Sunpower Corporation
In-Person
7 hours

Helix Roof Design
Sunpower Corporation
In-Person
7 hours

Helix Roof Installation
Sunpower Corporation
In-Person
7 hours

Infrared Imaging as a PV Characterization Tool
HeatSpring Learning Institute
Online
1 hours

Inspecting PV Systems
Midwest Renewable Energy Association (MREA)
In-Person
4 hours

Intro to Energy Storage for Solar Professionals
New York City College of Technology (City Tech)
In-Person
30 Hours

Intro to Ground Mount and IronRidge Design Assistant
Ironridge Inc
In-Person

Introduction to Solis Invertor Tech and Design
Ginlong Technologies
In-Person

Introduction to Sungrow's 1000 & 1500 Volt String Inverter Solutions
SunGrow USA Corp.
Online, In-Person

Introduction to System Advisor Model (PV430)
Midwest Renewable Energy Association (MREA)
In-Person, Online
4 hours

Lessons Learned on the Roof: Top Tips for Maximizing Field Productivity
Sunpower Corporation
Conference
1 hours

Master Electrician License Preparation
Electrical Training Center, Inc.
In-Person
24 hours

Megawatt Design 30 Hours
HeatSpring Learning Institute
Online
30 hours

NABCEP Advanced PV Installation Professional Exam Prep
New York City College of Technology (City Tech)
In-Person, Hybrid
40 hours

NABCEP PV System Inspector Certification
Green Solutions International
SKN Incorporated
In-Person
16 hours

Navigating the NEC (G 110)
Midwest Renewable Energy Association (MREA)
Online
6 hours

NEC 2014/2017 Solar Code Review
Salt Lake Community College
6 hours

NEC Code Changes
Electrical Training Center, Inc.
In-Person
8 hours

Operations & Maintenance of PV Systems
NC Clean Energy Technology
In-Person
12 hours

OSHA 10 Outreach Training for Construction Electricians
Electrical Training Center, Inc.
In-Person
10 hours

Performance Testing and Maintenance of SolarWorld Modules
SolarWorld Americas LLC
Online
1 hours

Photovoltaic Simplified
Electrical Training Center, Inc.
In-Person
8 hours

PV 202 Solar PV Technical Design Training
Solairgen
Online
20 hours

PV 203 PV System Design and Installation
Solairgen
In-Person, Online
40 Hours

PV 204 Solar PV Systems with Energy Storage – Design and Installation
Solairgen
In-Person
24 hours

PV 221 PV Systems and the NEC
Solairgen
Online
12 hours

PV 222 Interactive PV System Configuration
Solairgen
Online
12 Hours

PV 223 PV Maintenance and Troubleshooting
Solairgen
Online
6 hours

PV 224 Energy Storage PV System Configuration
Solairgen
Online
12 hours

PV 305 Advanced Photovoltaic Systems Design
Georgia Institute of Technology
In-Person
40 hours

PV Commissioning and Maintenance Specialist
Millennium Solar Electric Training Academy
In-Person
24 hours

PV Installation Professional
Millennium Solar Electric Training Academy
In-Person
80 hours

PV Installer Specialist
Millennium Solar Electric Training Academy
In-Person
24 hours

PV Labs & Design Scenarios (PV204)
Midwest Renewable Energy Association (MREA)
In-Person
8 hours

PV Operations and Maintenance
Midwest Renewable Energy Association (MREA)
In-Person, Online
4 Hours

PV Sales & Finance
Midwest Renewable Energy Association (MREA)
Online, In-Person
7 hours

PV Supervisor 5X Installation Online
Sunpower Corporation
Online
1 hours

PV201L Solar Electric Lab Week (Grid-Direct)
Solar Energy International (SEI)
In-Person
40 Hours

PV202 Advanced PV System Design and the NEC (Grid Direct)
Solar Energy International (SEI)
In-Person
40 Hours

PV202 PV Design Specialist
Everblue Training Institute
Online
36 hours

PV203 PV System Fundamentals (Battery-Based)*
Solar Energy International (SEI)
In-Person
40 Hours *20 Hrs Advanced

PV207: PVsyst and Helioscope for PV System Production Modeling
Solar Energy International (SEI)
In-Person
24 Hours

PV301/FV301 Diseño e instalación de sistemas eléctricos interconectados a la red con energía solar
Politecnico Industrial Nueva Colombia
In-Person, Online
80 h totales: 32 horas cara a cara + 48 h en línea

PV301L: Solar Electric Lab Week (Battery-Based)
Solar Energy International (SEI)
In-Person
40 Hours

PV303 Advanced PV Multimode and Microgrid Design (Battery Based)
Solar Energy International (SEI)

In-Person
40 Hours

PV304 Advanced PV Stand-Alone System Design (Battery-Based)
Solar Energy International (SEI)
In-Person
40 Hours

PV320e: Advanced Solar PV Systems and NABCEP Certification Exam
Imagine Solar
In-Person, Online
60 Hours

PV350e Advanced Solar Business & Technical Sales
Imagine Solar
Online, In-Person
60 hours

PV351L: PV Systems - Tools and Techniques for Operations and Maintenance Lab Week (Grid-Direct)
Solar Energy International (SEI)
In-Person
40 Hours

PVOL203 PV System Fundamentals (Battery-Based)*
Solar Energy International (SEI)
Online
40 Hours *20 Hrs Advanced

PVOL206 Solar Business and Technical Sales
Solar Energy International (SEI)
Online
60 hours

PVOL303 Advanced PV Multimode and Microgrid Design
Solar Energy International (SEI)
Online
40 Hours

PVOL304 Advanced PV Stand-Alone System Design (Battery-Based)
Solar Energy International (SEI)
Online
40 Hours

PVOL350 PV Systems-Tools and Techniques for Operations & Maintenance
Solar Energy International (SEI)
Online
40 Hours

Quick Mount PV Professional E-Learning Program: Composition Roof Mounting
Quick Mount
Online, In-Person
4 hours

Residential & Small Commercial Energy Storage for Solar PV Professionals
New York City College of Technology (City Tech)
Hybrid
30 Hours

Roof-Mount PV System Design and Installation Lab
Midwest Renewable Energy Association (MREA)
In-Person
14 hours

Saving Customers Money with Solar and Storage - Non-Residential
CALSSA
Conference
1 hours

Saving Customers Money with Solar and Storage - Residential
CALSSA
Conference
1 hours

SOARES Grounding & Bonds
Electrical Training Center, Inc.
In-Person
8 hours

Solar Operations & Maintenance Workshop
Salt Lake Community College
4 hours

Solar PV+Storage+Microgrid
New York City College of Technology (City Tech)
In-Person -4 hours

Solar Storage Workshop
NC Clean Energy Technology
In-Person
21 hours

Solar Thermal Business Development
Alternate Energy Technologies
AET
6 hours

Solar Thermal Sales
6 hours

WISCONSIN CONSERVATIVE ENERGY FORUM

Scott Coenen
Executive Director
Wisconsin Conservative Energy Forum

Testimony in Support of Assembly Bill 237

Thank you to Chairman Petryk and members of the Assembly Committee on Workforce Development for the opportunity to testify today in support Assembly Bill 237. Wisconsin Conservative Energy Forum has a unique mission in our state; to bring a free market, conservative voice to the debate over energy and emerging technologies like solar and wind. Our support for AB 237 is grounded in the understanding that the renewable energy market is quickly emerging and this emergence offers Wisconsin very unique challenges and opportunities.

In the last decade the cost of utility scale solar has fallen 90% and wind generation 70%. Through efficiency gains, capacity building, and old-fashioned ingenuity these cost declines put renewable sources of energy in a position they have never been before; among the lowest cost options on the marketplace. Solar and wind, right now, represent significant new tools in our toolbox to meet Wisconsin and the Midwest's energy needs. To be clear, we are moving into a new phase of solar and wind development. One that is not driven by the heavy hand of government but is driven by consumer demand, market economics, and technological innovation. The renewable share of the market in Wisconsin is projected to increase dramatically in the next 10 years.

Innovation is allowing us the ability to harness two new resources, the sun and wind, to generate power at a mass scale. The opportunity this represents for Wisconsin is tremendous; in economic development, jobs local tax revenue, lease payments to landowners, and energy independence for our state. In Wisconsin, we have always relied on sources of energy from outside the state, spending $15 billion last year importing oil, natural gas, and coal. This $15 billion represents hundreds of thousands of jobs supported by our dollars in locations firmly outside of Wisconsin. With increased renewable generation cited and located in Wisconsin, those jobs start to come back. Policymakers must ask themselves a question; are we ready for these jobs to come back?

Representatives Kuglitsch and Neylon and Senator Cowles are seeking to begin to address this question with AB 237. Focusing resources and attention through the Department of Workforce Development and creating a place for the solar and wind industries to address workforce needs represents good first progress. Pulling the renewable private sector forward and into the conversation over Wisconsin's workforce needs in this emerging industry is an encouraging first step.

Ultimately, we recognize this is just the beginning. Cost competitive renewables, like any disruptive technology, present problems and require solutions. I would be happy to take any questions the committee has. Thank you again for the opportunity to testify in support of Assembly Bill 237.

Scott Coenen
Executive Director
Wisconsin Conservative Energy Forum