

# WISCONSIN CLEAN ENERGY TOOLKIT

DEVELOPING A CLEAN ENERGY PLAN FOR YOUR COMMUNITY



RELEASE DATE: MARCH 10, 2020



## INTRODUCTION

*Towns, villages, cities, and counties in Wisconsin are building the renewable energy economy. By investing in clean energy solutions, Wisconsin communities are reducing greenhouse gas emissions, driving local investment and building energy independence. Local governments are leading the way.*

*From Appleton to Ashland, more than 147 communities across Wisconsin have made commitments to be Energy Independent Communities or to increase the amount of renewable energy used by their communities to 25% by the year 2025. Nearly 800,000 Wisconsin residents reside in Green Tier Legacy Communities which are working towards superior environmental stewardship. Wisconsin Rapids, La Crosse, Sheboygan, and Racine are cutting red tape and reducing barriers to solar in their communities as representatives of Wisconsin's SolSmart Designated Communities. The Oneida, Potawatomi, Ho-chunk, and Bad River governments have made significant investments in clean energy on their reservations. Since 2017, eight communities, Madison, Middleton, Eau Claire (city and county), Green Bay, Fitchburg, Monona, and La Crosse have all committed to 100% renewable energy. The City and County of Milwaukee also committed to getting net zero greenhouse gas emissions by 2050.*

*School districts are also advancing efforts to reduce emissions and shift to renewable energy. Madison-metro and Eau Claire school districts have passed resolutions committing to 100% clean energy and many school districts have installed renewable energy systems. School districts have a unique role in working to advance clean energy because children are especially vulnerable to pollution, and schools are a major beacon within their community, as well as a place of safety during and after emergencies. Schools using clean energy - like solar power plus battery storage - can enhance the resilience of a school by ensuring that facilities and services are usable during power outages.*

*As support grows for clean energy, there is a need to help communities of various sizes with differing resources develop a plan for their transition to renewable energy. This toolkit offers ideas and resources to help Wisconsin communities begin this transition.*

## THANKS AND ACKNOWLEDGMENTS

**AUTHORS** • Heather Allen, Jennifer Giegerich, Elizabeth Ward

**DESIGN AND LAYOUT** • Jodi Jean Amble

**CONTRIBUTORS AND REVIEWERS** • Kathy Allen, Abby Attoun, Kate Beaton, Matthew Braugnin, John Clancy, James Davies, Will Dean, Don Ferber, Linda Frank, Tyler Huebner, Seth Hoffmeister, Connie Kanitz, Sarah Kear, Ted Kraig, Kathy Kuntz, Abby Lane, Abe Leno, Megan Levy, Jane McCurry, Chad Pelishek, Barbara Richards, Safa Seed, and Angela West Blank





# TABLE OF CONTENTS

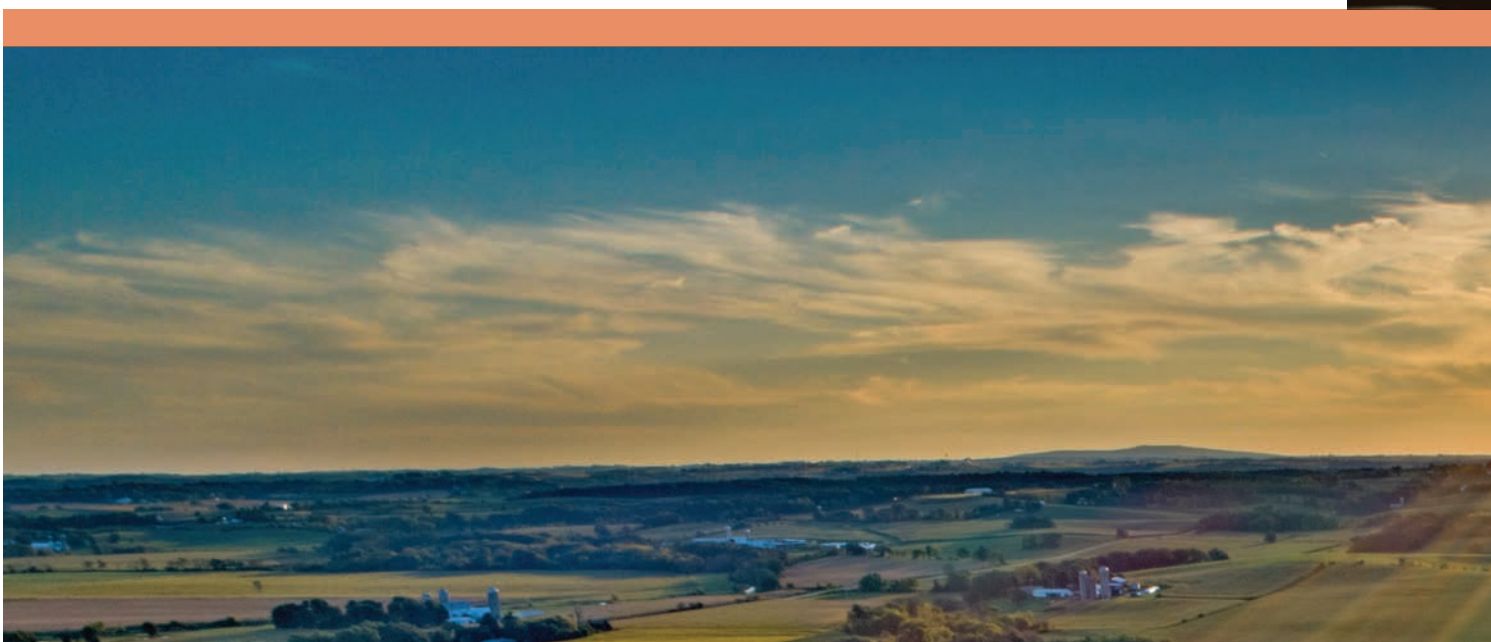
WI COMMITS TO 100% CARBON-FREE ELECTRICITY	4
THE ENERGY LANDSCAPE IN WISCONSIN	6
Wisconsin's Current Electricity Sector	8
Economic Benefits of Renewables in Wisconsin	11
Wisconsin Energy Regulation	11
Types of Electric Providers	12
Utility Commitments to Cleaner Energy	13
GETTING STARTED	15
Making a Commitment	15
Educating the Community and Building Support	16
Establishing a Baseline	18
Establishing Benchmarks	19
EQUITABLE CARBON REDUCTION STRATEGIES	21
REDUCING ENERGY CONSUMPTION	24
RENEWABLE ENERGY FOR LOCAL GOVERNMENTS	27
Onsite Renewable Energy	28
Reducing Solar Soft Costs	29
Offsite Renewable Energy Procurement	30
TRANSPORTATION	35
WHY SCHOOLS INVEST IN CLEAN ENERGY	40
FINANCING CLEAN ENERGY	44
Financing for Solar Projects	46
Financing for Transportation Programs	48
Net Metering Policies and Third-Party Ownership	48
Board of Commissioners of Public Lands Loans	49
Green Bonds	50
Funding for Tribal Clean Energy Projects	51
RESOURCES	52
Getting Started: Making a Commitment	53
Local Government Strategies	54
Organizations Available to Support this Effort	57
ENDNOTES	58
ACRONYM GLOSSARY	59

# THE STATE OF WISCONSIN COMMITS TO 100% CARBON-FREE ELECTRICITY

On August 16, 2019, Wisconsin Governor Tony Evers (pictured on the right) issued an executive order relating to clean energy in Wisconsin. The executive order outlined the creation of a new Office of Sustainability and Clean Energy. Together with other state agencies and state utilities, the office is charged with ensuring all electricity consumed in the State of Wisconsin will be carbon-free by 2050.

The announcement was followed by another executive order on October 17, 2019, creating a new Climate Change Task Force to examine the effects of climate change and make recommendations to address those impacts. The Task Force is charged with reviewing actions already taken by local governments to address climate change and developing strategies to create a clean energy economy that supports sustainable jobs.

As the State of Wisconsin advances clean energy, it is looking to build upon the commitments and progress local governments have already made. This toolkit recognizes the leadership in Wisconsin communities and the opportunities to expand these efforts across the state.







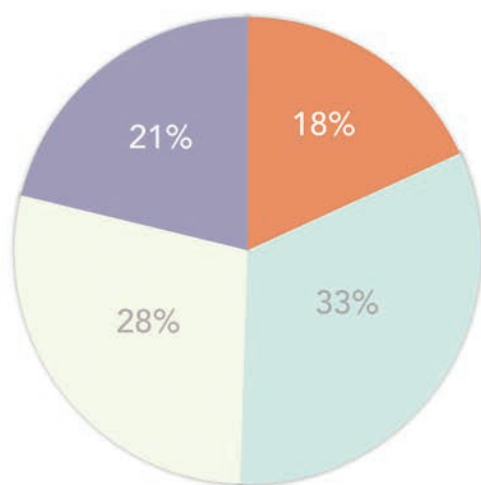


# THE ENERGY LANDSCAPE IN WISCONSIN

US residents use energy to power homes, businesses, agriculture, industry, and to travel and transport goods. As communities begin to evaluate their climate impact, it is important to keep in mind the breadth of local energy users and the role local government can play in reducing community-wide emissions.

When developing a clean energy plan, it is important to determine whether efforts are intended to be focused on local government operations (i.e. government building lighting, electricity, heating and cooling, fleet fuel usage, etc.) or the entire community (i.e. residential, industrial, commercial, and transportation uses).

Energy efficiency is often the most cost-effective first step in reducing emissions. Once efficiencies have been realized, strategies for further reducing emissions often rely on switching to renewable energy and electrification (like electric vehicles and heating and cooling systems). Powering the electric sector with solar, wind, and other renewable energy sources will reduce fossil fuel consumption and lower overall emissions.



- Commercial, offices, retail and public buildings
- Industrial, agriculture and construction
- Transportation and shipping
- Residential

SHARE OF TOTAL U.S. ENERGY CONSUMPTION BY END-USE SECTORS 2018  
(ADAPTED FROM U.S. ENERGY INFORMATION ADMINISTRATION)



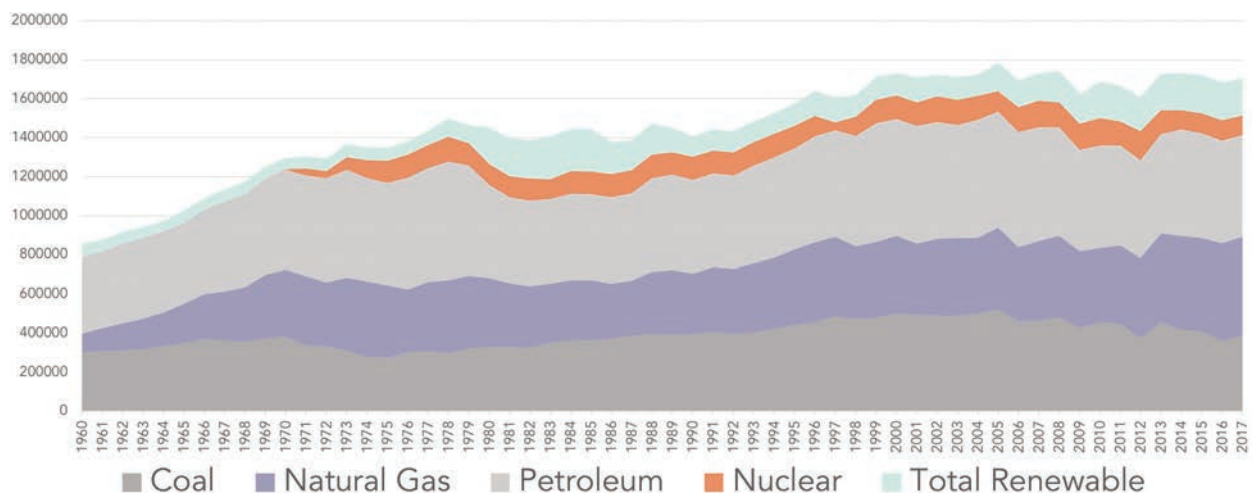


## WISCONSIN'S CURRENT ELECTRICITY SECTOR

As of 2016, Wisconsin generated 51.4% of its electricity from coal, and 24% from natural gas,<sup>1</sup> but rapid change in the energy mix has begun. Though coal remains a major source of energy for Wisconsin residents, the amount of coal used for our electricity is starting to decline. Since 1960, Wisconsin has increased reliance on natural gas, added nuclear power, and seen a modest increase in renewable energy from solar, wind, biogas and hydropower.

In 1999, Wisconsin became the first state to enact a renewable portfolio standard (RPS) without restructuring its electric utility industry. Wisconsin statute § 196.378 requires electric utilities to derive a certain percentage of electricity from renewable energy resources. The RPS set a statewide target of 10% by 2015. This 10% standard was primarily met through hydropower, wind power, and biomass<sup>2</sup> by 2013. Renewable electricity has remained at that level since. However, in April 2019, the Public Service Commission of Wisconsin approved 450 megawatts of solar PV that will increase the statewide renewable energy mix to 11.5%. Several other large scale wind and solar farms are in development as of February 2020.

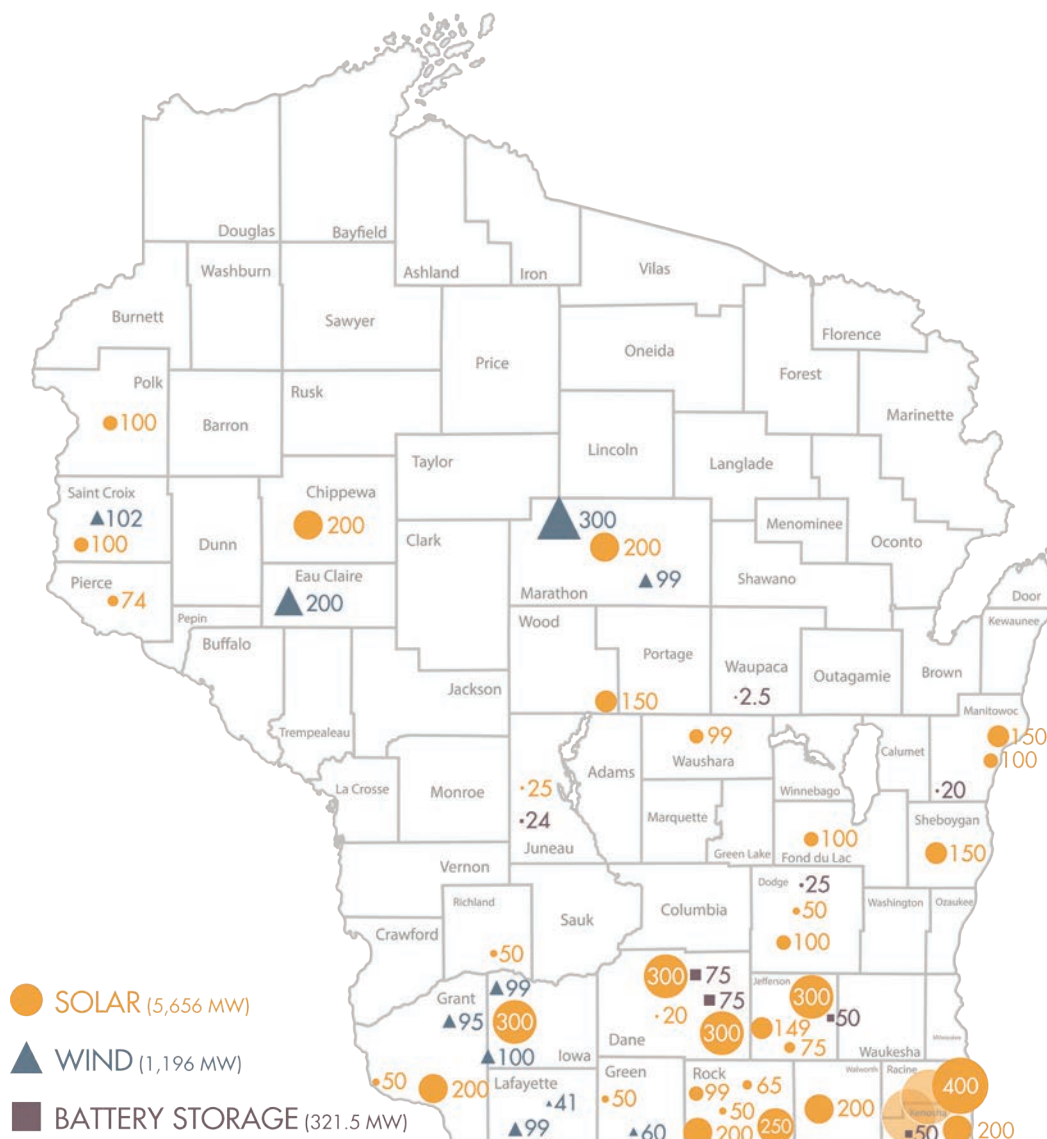
### WISCONSIN ENERGY CONSUMPTION BY FUEL SOURCE (1960-2017) (DATA SOURCED FROM U.S. ENERGY INFORMATION ADMINISTRATION)



The energy landscape in Wisconsin is shifting towards renewable energy at an increasing pace. The price of solar and wind electricity generation has decreased by 88% and 69%, respectively, between 2009 and 2018. As a result, renewable energy makes up a significant amount of new proposed generation for electric utilities.

As of November 2019, 5,600 megawatts (MW) of solar were proposed for development in the state, in addition to the approximately 130 MW of solar already installed and producing energy. If all of the proposed solar is installed, this would be a 60-fold increase in solar capacity. An additional 1,100 MW of wind power has been proposed which, if energized, would more than double Wisconsin's current in-state wind capacity.

## SOLAR, WIND, AND STORAGE IN DEVELOPMENT AS OF NOVEMBER 2019 (GRAPHIC COURTESY OF RENEW WISCONSIN)









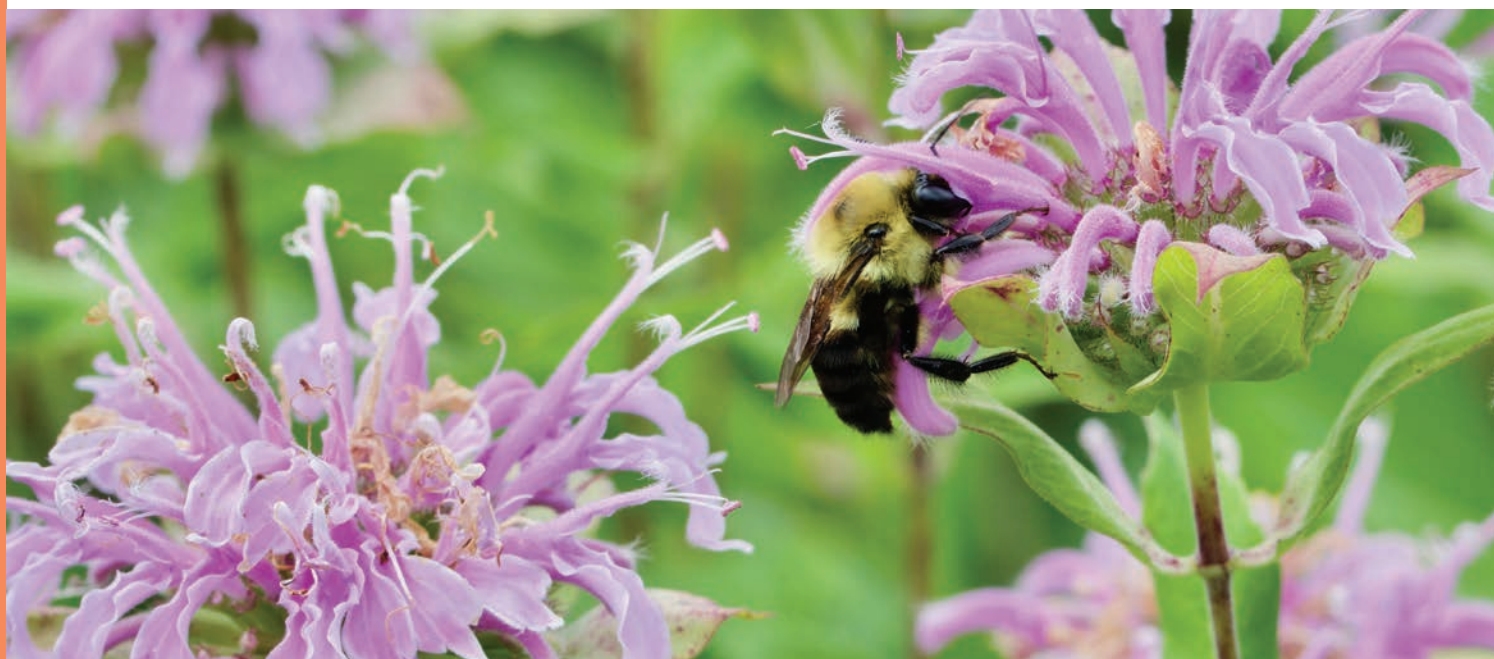
## ECONOMIC BENEFITS OF RENEWABLES IN WISCONSIN

More than 75% of the electricity generated in Wisconsin requires energy imports from various states across the country, including all coal, oil, and natural gas. As of 2016, Wisconsin had an energy spending deficit of \$14.4 billion. Because Wisconsin has no substantial fossil fuel resources, the entire \$14.4 billion in expenditures leaves the state in order to meet in-state energy demand.<sup>3</sup> In-state electricity generation would keep energy dollars in Wisconsin, create jobs, and significantly reduce carbon emissions and air pollutants detrimental to human health.

Producing electricity in-state would dramatically shift the state's fuel mix. Transitioning to clean energy will create economic, social, and health benefits for Wisconsin. In addition to keeping billions of dollars in state, switching from high carbon-emitting electricity sources to local, low-emission sources would create \$4.6 billion in benefits through avoided damages associated with carbon emissions alone.<sup>4</sup> Additionally, under a 100% in-state energy generation scenario, the economic value of avoided air pollution is estimated at \$21.2 billion annually.<sup>5</sup>

## WISCONSIN ENERGY REGULATION

The Wisconsin electricity market is regulated by the Public Service Commission of Wisconsin (PSC). The PSC was established in 1907 and is one of the nation's oldest regulatory agencies. The general objective of utility regulation is to ensure adequate and reliable service at prices that are sufficient for customers and for the utility. The PSC seeks to establish fair electricity rates for customers while allowing for sufficient revenue generation for utilities to recover its capital costs. The PSC is responsible for the regulation of over 1,100 electric, natural gas, telephone, water, and sewer utilities throughout the state.





## TYPES OF ELECTRIC PROVIDERS

### THERE ARE THREE TYPES OF ELECTRIC PROVIDERS IN WISCONSIN

- 1** INVESTOR-OWNED UTILITIES (IOUs) • These are private companies financed by a combination of shareholder equity and bondholder debt.<sup>6</sup>
- 2** MUNICIPALLY-OWNED UTILITIES • These utilities are governed by elected city council members or another commission. Many municipally-owned utilities are members of the Wisconsin Public Power Inc. (WPPI).
- 3** ELECTRIC COOPERATIVES (co-ops) • These are private, member-owned entities overseen by a customer-elected board. Many Wisconsin co-ops are members of Dairyland Power Cooperative.

The generation and distribution components of IOUs in addition to the overall costs of serving customers and rate design are regulated by the PSC. For municipal utilities, their distribution grids, costs of service, and rate design are also regulated by the PSC.

Electric cooperatives are not classified as public utilities and thus are not regulated by the PSC. All operations of the cooperative, including rate design, are overseen by elected boards.

The PSC must approve generation projects greater than 100 MW in the state, regardless of who owns the projects. The PSC regulates transmission companies separately.



## FIND YOUR UTILITY

The PSC website has a series of interactive maps to help you find your electric, natural gas, and water utilities. [psc.wi.gov/Pages/ForConsumers/Maps.aspx](https://psc.wi.gov/Pages/ForConsumers/Maps.aspx)

## UTILITY COMMITMENTS TO CLEANER ENERGY

A number of major Wisconsin utilities have made significant commitments to reduce carbon emissions by 2050. The chart below details the current energy mix of Wisconsin's largest utilities, and their respective carbon reduction or renewable energy pledges.<sup>7</sup>

UTILITY	NO. OF CUSTOMERS	2018 TOTAL RENEWABLES MIX	RENEWABLE ENERGY GOAL OR INVESTMENTS
WEC (WE Energies and WI Public Service)	WE 1.14 Million WPS 446,000	WE 6.0% WPS 6.5%	80% CO2 reduction by 2050
Alliant Energy	470,000	12.5%	33% renewables by 2024 80% CO2 reduction by 2050
Dairyland Power	263,000	16.7%	PPAs for 98 MW wind (2017) 149 MW solar (2021)
Xcel Energy	241,000	24.6%	80% CO2 reduction by 2030 100% carbon-free by 2050
WPPI	200,000	15%	PPAs for 132 MW Wind (2018) 100 MW solar (2020)
Madison Gas and Electric	153,000	11.3%	30% renewables by 2030 100% net-zero CO2 by 2050







# GETTING STARTED

## MAKING A COMMITMENT

As with all plans, the first step is creating your goal. These commitments can vary, including commitments from the mayor, resolutions passed by the common council, or the creation of sustainability committees or task forces.

In Wisconsin, commitments include:

**MAYORAL PLEDGES** like those of Mayor Tim Kabat in La Crosse

**RESOLUTIONS** including the cities of Eau Claire, Fitchburg, La Crosse, Madison, Middleton, and Monona

The creation of **TASK FORCES** like the Green Bay Sustainability Commission and the Milwaukee City-County Task Force on Climate and Economic Equity

**ENERGY OPTIMIZATION MODEL** adopted by Oneida Tribe of Wisconsin to develop a comprehensive energy investment strategy for renewable energy and conventional energy sources.

“ Middleton, with funding from the PSC’s Energy Innovation Grants, is partnering with six other Dane County municipalities to hire Slipstream to develop their comprehensive energy plans. The communities were able to negotiate a good rate with Slipstream to develop the plans more affordably. The communities get to learn from each other and adopt best practices that have worked elsewhere. It also allows local communities to figure out their ‘pet project’ that they may not be able to get a consultant’s help with otherwise. For example, Middleton wanted to figure out how to get energy battery storage worked into the city’s Police/Municipal Court Facility to foster resilience in the system.

Abby Attoun  
Director of Planning & Community Development  
City of Middleton







## EDUCATING THE COMMUNITY AND BUILDING SUPPORT

If a community is going to be successful in not just adopting but also implementing a clean energy goal, there must be a concerted effort to engage people throughout the process. The best plans anticipate the needs and desires of all aspects of the community. Seeking input on the front end, and then continually engaging community members throughout the process, is critical for developing plans that meet residents where they are.

Diversity and inclusion must be kept at the forefront in community outreach with an objective of bringing all viewpoints to the table, especially those of community groups that have historically been shut out of economic prosperity and have borne the brunt of the impacts of environmental harms. Leaders should work to build strong support for goals and to foster mutually beneficial arrangements between commercial, public, and nonprofit sectors.

### WHY CONSIDER EQUITY WHILE WORKING TOWARDS CLEAN ENERGY?

Evidence from a variety of sectors shows that initiatives lacking a focus on equity may worsen existing disparities between demographic groups.

A recent study reported in *Science Magazine* found that healthcare algorithms were directing more resources and care to white patients than the sicker black patients. The algorithm focused on future health care costs for the patients. Black patients often utilize less resources in the healthcare system, and the projected cost risk to the system was lower for these patients, despite the fact that they were sicker and needed more care. And as a result, the algorithm directed more care to healthier white patients.

As communities develop climate and energy solutions, it is important to consider how they impact various racial and ethnic populations. We must also be mindful of how existing disparities in energy use, exposure to pollution, access to renewable energy, and perspectives on energy impact our communities today.

See more in the section [Ensuring Equitable Carbon Reduction Strategies](#).





*In 2017, Eau Claire adopted a resolution making a local commitment to the Paris Climate Accord. This initial action led the city's Sustainability Advisory Committee to begin exploring ways to make this commitment real. Eau Claire benefited from conducting a community survey assessing support for clean energy and climate action ahead of adopting their goal. The survey was extremely helpful in building political will to pass goals and signal to city staff that more proactive climate action was warranted and supported by the community. It was a combination of the survey results and the drafting of a report that ultimately led the City of Eau Claire to adopt their 2018 resolution setting a goal of achieving 100% renewable energy and carbon neutrality by 2050.*

*Kate Beaton  
Eau Claire City Council Member*



## ESTABLISHING A BASELINE

Before creating a clean energy plan, a city should establish an energy baseline and create methods of measurement. This energy baseline seeks to identify areas where various sources of energy are being consumed within a city and helps project future energy demand. A successful baseline will inventory one or more energy-use sectors: electricity, buildings, or transportation.<sup>8</sup>

The Wisconsin Office of Energy Innovation's Municipal Energy Efficiency Technical Assistance Program (MEETAP) helps communities establish energy baselines. See the Financing Clean Energy section for more information. International Council for Local Environmental Initiatives (ICLEI USA) offers a data collection checklist and other resources to get started.

### STEPS TO CREATING A CLEAN ENERGY PLAN

- 1** INVENTORY OF ALL FACILITIES AND CITY-OWNED TRANSPORTATION VEHICLES
- 2** COLLECT AT LEAST 12 MONTHS OF ENERGY DATA (36 MONTHS, IF AVAILABLE)<sup>9</sup>
- 3** ANALYZE ENERGY CONSUMPTION TRENDS TO IDENTIFY UNDERLYING ENERGY CONSUMPTION PATTERNS  
Important metrics include energy intensity (energy use per square foot), energy consumption (kilowatt-hours), and seasonal variation of energy demand
- 4** CREATE AN ACTION PLAN TO REDUCE ENERGY CONSUMPTION AND INCORPORATE RENEWABLE ENERGY  
Focus on least-cost solutions to reducing energy consumption by facility  
Focus on highest impact areas (facility with the highest energy use per square foot)
- 5** TRACK AND REPORT PROGRESS  
Set yearly or 5-year targets to reduce energy consumption from base year





“Green Bay is in the early stages of transitioning to renewable energy. We are working on benchmarking all city buildings to get a better idea of our energy use. By transitioning to clean energy, we can save money in the long run and make our community healthier overnight.

We're really lucky that other similar Wisconsin cities have started this process, so we don't have to reinvent the wheel. Any resources from what other cities have done is super helpful not only when thinking about how to implement our goals, but it also assures potentially skeptical elected officials that it is a realistic and cost effective goal.

Seth Hoffmeister  
Chair Green Bay Sustainability Commission



## ESTABLISHING BENCHMARKS

Once a community has established its baseline energy use, they will need to develop a plan that takes into account the various sectors, buildings, and energy use practices. The federal government has several tools to help communities do in-depth benchmarking. Communities may develop benchmarks that set goals to deepen emissions reductions over time.

**TOOL FINDER FOR LOCAL GOVERNMENT CLEAN ENERGY INITIATIVES** • This query tool developed by the US Environmental Protection Agency (EPA) is intended to help local government staff measure the emissions, energy, and economic impacts of current and prospective programs and policies at both the government operations and communitywide scales.

**CITIES LEADING THROUGH ENERGY ANALYSIS AND PLANNING** • The U.S. Office of Energy Efficiency and Renewable Energy has several tools to explore how different policies would affect a community. This website offers a tool to evaluate new commercial building energy benchmarking data and the energy characteristics of low-income households.










# ENSURING EQUITABLE CARBON REDUCTION STRATEGIES



In developing and implementing climate action plans, local governments should take into account how the plans relate to and address issues of racial and economic equity. Specific equity issues that should be considered in local plans include:

MAINTAINING AND/OR IMPROVING THE AFFORDABILITY OF ENERGY FOR LOWER INCOME HOUSEHOLDS

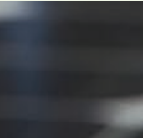
REDUCING THE DISPARATE IMPACT OF FOSSIL FUEL RELATED POLLUTION ON COMMUNITIES OF COLOR

UTILIZING THE NECESSARY INVESTMENT TO CREATE JOBS AND CAREERS FOR DISADVANTAGED COMMUNITIES

ASSURING EQUAL ACCESS TO THE BENEFITS OF GREATER EFFICIENCY, RENEWABLE ENERGY, AND SUSTAINABILITY

RECOGNIZING AND PREVENTING UNINTENDED CONSEQUENCES OF CLIMATE ACTION PLANS, SUCH AS GENTRIFICATION

COUNTERING THE DISPROPORTIONATE NEGATIVE IMPACT OF CLIMATE CHANGE ON LOWER INCOME COMMUNITIES







Over the past several decades, approximately 68% of African Americans lived within 30 miles of a coal-fired power plant. As a result, African Americans are more likely to suffer from health problems attributed from the pollution these facilities produce. For example, although African Americans are less likely to smoke, they are more likely to die of lung disease than white Americans. The same facilities that are polluting the air and water of marginalized communities are also major contributors of greenhouse gases. While making a transition to 100% clean energy, it is important to shift to an energy economy that is not only sustainable, but equitable for all members. Just transition is defined as people having the right to clean air, water, and healthy soil.

To understand the energy needs of marginalized communities, activists can create an Environmental, Energy, and Climate Justice committee to research and organize. The National Association for the Advancement of Colored People (NAACP) has a very thorough guide, Just Energy and Practices for Action Tool Kit, which helps communities to create an environmental justice committee and ways to research marginalized communities' energy needs.<sup>10</sup>

### MILWAUKEE CREATES A CITY-COUNTY TASK FORCE ON CLIMATE AND ECONOMIC EQUITY

In July 2019, the City of Milwaukee and Milwaukee County formed a joint task force on climate and economic equity.

The resolution creating the task force recognized a 2014 climate change vulnerability report that highlighted the risks of increasingly frequent and heavier rainstorms which will increase the stresses on local infrastructure. The resolution also highlighted the high unemployment rates, especially among African American residents, and the need for local investment in family sustaining jobs. The task force will examine and report on strategies to reduce greenhouse gas emissions and mitigate racial and income inequity through green jobs.





To ensure equitable carbon reduction, it is imperative to create a policy that directly addresses environmental and energy justice. Environmental justice means that all individuals have a safe and healthy place to live regardless of race, income, geography or other characteristics. Environmental justice also requires the fair and equal treatment of all individuals.

In particular, energy justice uses the same framework, but addresses the right to safe and affordable energy. NAACP has developed Legislative Campaigns for Energy Justice, which provides examples and processes on how to create energy specific policy through an equitable framework that directs investment towards expanding opportunity and works to assure equal access to the benefits of climate action. Along with working with local and state decision-makers, communities can also work directly with their utility companies. NAACP's guide to Engaging Your Utility Company and Regulators explains how public utility companies operate, and effective engagement strategies for working within the commercial utility sector.

To avoid exclusion of disadvantaged groups from economic opportunity and the benefits of clean, efficient energy, local governments need to plan very intentionally with equity concerns in mind. A number of useful tools for advancing equity in climate action planning processes have been developed by nonprofits and municipalities. The Urban Sustainability Directors Network offers a very detailed guidebook to help local governments address the current reality that most investments in energy efficiency and clean energy are bypassing low to moderate income households and may be exacerbating economic inequality.

The City of Cleveland, Ohio utilizes a Racial Equity Tool to inform all parts of its climate action planning process. The tool is designed to assure that neighborhoods are engaged in the process, appropriate data is reviewed to gauge impacts, potential disproportionate impacts of objectives and actions are considered, and economic benefits are maximized and shared equally. The Government Alliance on Race and Equity offers a variety of planning tools for assuring that equity concerns are addressed in local planning processes.

Some cities have incorporated equity concerns into their planning process by establishing separate working groups to review all plans through an equity lens and suggest appropriate modifications, including Portland and Minneapolis.







# REDUCING ENERGY CONSUMPTION

One of the most cost-effective tools cities can use to transition to clean energy is to reduce the amount of energy used for city operations and, as a result, reduce emissions and operational costs. The following review of key strategies provides a brief overview of the various approaches to reducing energy usage. There are additional strategies available to cities to reduce energy consumption.

## FACILITIES (ENERGY EFFICIENCY AND RETRO-COMMISSIONING)

### LIGHTING RETROFITS

About 25% of a commercial/non-residential facility's energy consumption is driven by lighting.<sup>11</sup> There are a number of ways to reduce energy consumption from lighting, namely, by replacing old incandescent and CFL lightbulbs with light-emitting diodes (LEDs) and adding light sensors to the LED fixtures.

### SMART STREET LIGHTING

With an energy savings potential of 50%, and operational savings of up to 20%, smart street lighting can provide a unique avenue for a city to reduce its energy consumption. Smart street lighting employs adaptive lighting that dims when no activity is detected (i.e. vehicles, pedestrians, etc.) and brightens when movement is detected.

## **HVAC RETROFITS AND CONTROLS**

Installation of modern HVAC systems can significantly improve energy efficiency and building control. Retrofit options include chiller improvements and heat and cooling improvements.<sup>12</sup> Space cooling and heat make up about 30% of a facility's energy consumption.

## **PLUG LOAD MANAGEMENT**

Plug Load Management refers to the management of a facility's electric outlets through the tracking and controlling of electricity usage. Incorporating smart plugs, advanced power strips, computer management software, and timers are all part of a "Plug Load Management" strategy. A 50,000-square foot building can save about \$10,000 a year on energy through the application of plug load management.<sup>13</sup>

## **ENVIRONMENTALLY-CONSCIOUS PURCHASING**

The sustainable purchase of products and services seeks to reduce the environmental impact of the sourcing, production, distribution, and use of said product or service. When determining whether a product is sustainable, the following standards should be considered: • Biobased • Biodegradable • Carcinogen-free • Chlorofluorocarbon (CFC)-free • Heavy metal free (i.e. no lead, mercury, cadmium) • Low volatile organic compound (VOC) content • Made from renewable materials • Compostable • Low toxicity • Recycled content • Rechargeable (batteries and other items) • Reusable or refurbished • Reduced packaging • Reduced greenhouse gas emission • Energy, resource and water efficiency.<sup>14</sup>

## **WATER UTILITY OPTIMIZATION**

Utility water supply systems are comprised of various operations, namely, the pumping and distribution of water and management of wastewater. The most energy-intensive component of the water supply system is the pumping process. In fact, 55% to 90% of a facility's overall energy use is associated with water pumping.<sup>15</sup> Another important component of water utility optimization is leakage management.

Modern water management systems are moving away from a "find and fix" approach to a "predict and prevent" approach. Sonic canvassing (leak detection survey),<sup>16</sup> automated leak noise monitoring, and minimum hour flow analysis are all examples of ways to "predict and prevent" active water leakage.<sup>17</sup>









# RENEWABLE ENERGY OPTIONS FOR LOCAL GOVERNMENTS



## ONSITE RENEWABLE ENERGY

Local governments can generate their own clean energy by installing solar and geothermal systems on government property and buildings. Generating electricity directly has multiple benefits for local governments including reduced energy expenditures and associated operating costs, reduced greenhouse gas emissions, greater energy independence, and opportunities to promote the local clean energy economy.

### SOLAR PHOTOVOLTAIC

An onsite solar photovoltaic (PV) system provides electricity directly to the host facility and can offset, on average, up to 80% of a building's energy usage throughout the year. Payback periods range between 10-12 years depending on the size of the system, utility rates/net metering policy, and available financial incentives. Solar PV has a useful life of 30 years and requires no regular maintenance. Quickly gauge the solar potential of a building by visiting Project Sunroof.<sup>18</sup>

### GEOTHERMAL

A ground source heat pump uses the temperature difference between the ground and air to either heat or cool a building. The system transfers heat from the earth into the building during cold winter months and transfers heat from the building back into the ground during warm summer months. Payback periods range from 2-10 years depending on the type of application and typically last more than 40 years.<sup>19</sup>



## REDUCING SOLAR SOFT COSTS

Local governments can help improve access to clean energy by streamlining the permitting process. The Interstate Renewable Energy Council (IREC) outlines nine steps to solar permitting best practices. Crucially, cities should 1) post requirements online, and 2) enable online permitting. Adopting a system that allows for submittal, review, and approval of solar PV permits streamlines operations for local governments, reduces costs, and significantly reduces the need for travel to and from a site.

The SolSmart Program funded by the U.S. Department of Energy (DOE) Solar Energy Technologies Office helps local governments make it faster, easier, and more affordable to go solar by cutting red tape and streamlining permitting for solar installations. This program helps to bring new business to communities, promotes economic growth, and fosters the creation of new local jobs.

Grow Solar issued a Wisconsin Solar Toolkit to offer specific resources for communities seeking to address barriers to solar energy. The toolkit includes information about how to incorporate solar into comprehensive planning, model ordinances for solar regulation in zoning codes, and a local government permitting checklist.



### THE MIDWEST RENEWABLE ENERGY ASSOCIATION HELPS WISCONSIN COMMUNITIES BECOME SOLSMART!

The Midwest Renewable Energy Association has helped Wisconsin communities review, revise, and amend permitting, planning, and zoning ordinances to lower barriers to solar development while helping to drive the local solar economy.

The following are Wisconsin SolSmart Communities:

**GOLD:** City of Eau Claire, City of Madison, City of Milwaukee, City of Stevens Point, City of Wisconsin Rapids, Wood County

**SILVER:** Village of Amherst, City of Ashland, Ashland County, Village of Egg Harbor, City of La Crosse, Village of Plover, City of Wauwatosa

**BRONZE:** City of Bayfield, Bayfield County, City of Fitchburg, La Crosse County, Portage County, City of Racine, City of Sheboygan

Learn about how to become a SolSmart community at [midwestrenew.org/mrea-working-with-wisconsin-communities-to-pursue-solsmart-designation-in-2019/](https://midwestrenew.org/mrea-working-with-wisconsin-communities-to-pursue-solsmart-designation-in-2019/)



## OFFSITE RENEWABLE ENERGY PROCUREMENT

There are several ways for a local government to procure renewable energy beyond installing solar or geothermal onsite. According to the National Renewable Energy Laboratory (NREL), communities may employ four different pathways; 1) Utility partnerships; 2) Community Solar; 3) Renewable Energy Credits; 4) Power Purchase Agreements.

Many local governments have strong relationships with their local utility, whether they are an IOU, a municipal utility, or a cooperative. Local governments are often the largest or one of the largest customers for their local utility. As such, they can have a strong influence on utility planning and investments in renewable energy.

Utilities are the main provider of electricity for local governments and often outlying areas. If the utility shifts toward renewable energy and away from fossil fuels, ALL of the local electricity purchased through the utility will become increasingly cleaner. Working directly with the utility can be a very powerful tool to shift local government operations to renewable energy, as well as local residences and business which would also be utilizing cleaner energy. For community-level commitments, working with the utility is essential to meeting renewable energy goals.



## OPPORTUNITIES TO INCREASE ACCESS TO RENEWABLE ENERGY

Directly investing in local, distributed solar and/or wind can enable municipal operations to be powered by onsite generation. Other opportunities may include sponsoring a solar group buy, or creating incentives for parking lot spaces that incorporate solar energy.

Renewable energy certificates (RECs) are tradeable market-based credits that represent one megawatt-hour of electricity generated from a renewable energy source. RECs are used as a way to add renewable energy attributes for the purpose of offsetting emissions from grid-supplied electricity used by the customer.

Community solar allows customers to receive a share of their energy from offsite locally-powered solar PV. Subscribers pay a one-time, up-front fee to reserve a portion of the electricity produced, and the price of the energy they purchase can be fixed for as long as 25 years.

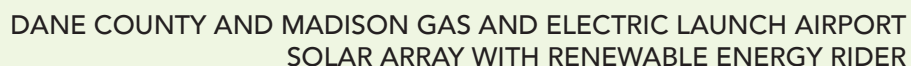
Customer hosted solar leases are contractual agreements that allow a utility to install solar PV arrays on the premises of a customer. Under this arrangement the customer receives a lease payment in lieu of energy savings.

Several Wisconsin utilities offer a framework for existing or new customers to purchase electricity from a dedicated renewable energy project under a Power Purchase Agreement (PPA). Examples of these programs are MGE's Renewable Energy Rider (RER), Alliant's Renewable Energy Partners (REP), and We Energies' Dedicated Renewable Energy Resource (DRER).

Green tariffs allow customers to “buy bundled renewable electricity from a specific project through a special utility tariff rate.”<sup>20</sup> Examples include community solar and offsite renewable energy offerings.

Encouraging utilities to pursue ambitious renewable energy investment plans have been shown to be effective in achieving energy goals. Municipalities and cooperative boards are in a position to pressure their electric providers to increase renewable energy sources and implement programs that incentivize residential and commercial action.





All told, the solar farm project is estimated to produce approximately 40% of the county's electricity needs to power county-owned facilities. Increasing the county's use of renewable electricity will help reduce climate change carbon emissions and save taxpayer dollars. The 30-year PPA specifies that the county will purchase approximately 18 million kW hours annually, resulting in first year energy savings of approximately \$137,000. There is no upfront capital requirement for Dane County.







## CITY OF MADISON AND MADISON GAS AND ELECTRIC ESTABLISH A FORMAL PARTNERSHIP

In 2017, after extensive conversations between the City of Madison's Sustainability Committee, City staff, and Madison Gas and Electric, the city adopted an agreement with the local utility. The agreement laid out a commitment from both parties to regularly meet and discuss opportunities to collaborate in the following areas:

The focus of the projects will include:

- EXPANSION OF SOLAR
- EXPANSION OF THE USE OF ELECTRIC VEHICLES
- PROMOTION OF ENERGY EFFICIENCY
- SOCIAL EQUITY AND ECONOMIC DEVELOPMENT
- OTHER TRANSPORTATION TOPICS
- CONTINUED WORK ON ONGOING COLLABORATIVE PROJECTS

Since establishing this agreement, the City of Madison has continued installing solar power, spurred development of solar farms in western Wisconsin by purchasing Renewable Energy Credits, purchased electric vehicles, and adopted a plan to implement its 100% renewable energy goal. In addition, the City has approved a purchase of electricity, over a 30-year period, from an offsite solar array owned by the utility. The partnership with the utility has allowed for creative approaches and mutually-beneficial strategies to advance renewable energy in the community.







# TRANSPORTATION

The transportation sector is now the leading source of greenhouse gas emissions in the U.S. with a recorded 1.9 billion tons of carbon dioxide emitted annually.<sup>21</sup> Technology in the transportation sector is quickly advancing. Reducing carbon emissions and switching to clean energy within the transportation sector will require a multi-pronged approach and could include a wide array of technologies and fuel types.

Green Bay's Commissioners and Council Members have started to think about how the city can do more to support electric vehicle adoption. Interest from local businesses and environmental groups has prompted Green Bay to address the issue of electric vehicles at the commission level. A local vendor reached out to the Mayor's office and sustainability commission recently, which prompted the city to evaluate their procedures for interacting with local vendors. They hope to increase public charging infrastructure for electric car recharging by using these new procedures. They will also need funding from the Volkswagen Settlement Trust Fund.

Seth Hoffmeister  
Chair of the Green Bay Sustainability  
Commission





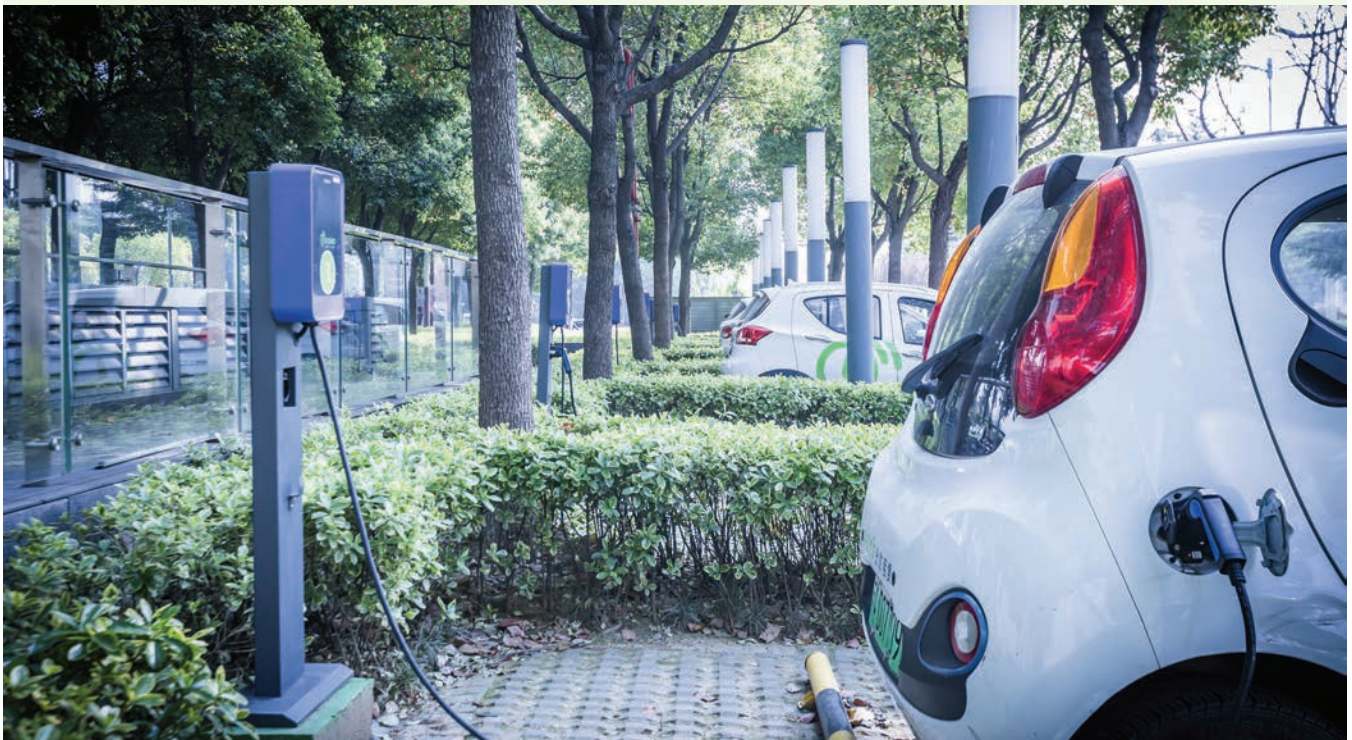
## FUEL ALTERNATIVES

**LIQUEFIED PETROLEUM GAS (LPG)**, also referred to as propane or butane, is used in internal combustion engine vehicles as an alternative to conventional petroleum and diesel-fueled vehicles. LPG is a cleaner burning fuel type relative to petroleum and diesel. LPG is non-toxic, free from tetraethyl lead, and free from particulates.

**COMPRESSED NATURAL GAS (CNG)** is also used in internal combustion engine vehicles as an alternative to conventional petroleum and diesel fueled-vehicles. CNG, depending on the type of vehicle, costs about 50% less than gasoline and emits up to 90% less tailpipe emissions. Compressed natural gas emits between 20%-29% less carbon dioxide than diesel or petroleum.<sup>22</sup>

**BIODIESEL** is a renewable non-fossil fuel source of energy that, once processed, is blended into petroleum or petroleum diesel. Biodiesel can be formed from vegetable oil, animal oils/fats, and waste cooking oil.

**RENEWABLE DIESEL** is very similar to biodiesel but differs in how it is processed. Renewable diesel does not require blending because it has the same chemical structure as conventional diesel fuel and can be used in a diesel engine.<sup>23</sup> According to the California Air Resources Board (CARB), the carbon intensity of renewable diesel ranges from 50 to 85 percent lower than baseline diesel fuel.



## ELECTRIFICATION

The electrification of public transit and other vehicles is central to a city's low-carbon transportation initiative. Electric-powered vehicles offer myriad benefits to local governments that are moving to a clean transportation fleet. Battery electric vehicles (BEVs) do not produce tailpipe emissions or greenhouse gases and can be sourced from 100% clean electricity. Plug-in hybrid electric vehicles (PHEVs) run on electricity and conventional petroleum and offer similar benefits of BEVs but are not emission-free, given the use of petroleum. Electrification of municipal fleets is an effective way to abate emissions from the transportation sector.

## ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Like gas stations for internal combustion engine vehicles, electric vehicles require charging stations to repower the vehicle's battery. There are two main types of non-residential charging stations:

- 1) Level 2 Chargers require a 240 volt outlet.
- 2) DC Fast Chargers (DCFC) require a 480 volt outlet.

As the level of charger increases, the duration to charge the vehicle's battery goes down significantly. DC Fast Chargers can charge 80% of an EV's battery in about 30 minutes depending on the vehicle. A level 2 charge would likely require 4-6 hours to provide the same amount of power, but often can meet the needs of EV drivers. The installation cost of electric vehicle charging station equipment varies significantly. The following table provides a series of cost estimates for each type of charging station.

### ELECTRIC VEHICLE CHARGING STATIONS INSTALLATION COSTS

TYPE OF CHARGING STATION	LOWEST COST	HIGHEST COST
Level 2 Commercial	\$2,500	\$4,900
DC Fast Charger (50 kW)	\$20,000	\$35,800
DC Fast Charger (150 kW)	\$75,600	\$100,000

SOURCE: RMI Reducing EV Charging Infrastructure Costs



## COMMUNITYWIDE TRANSPORTATION OPPORTUNITIES

There are a number of opportunities to reduce emissions from residential and community energy use. Programs and strategies that reduce driving and enable zero emission transportation, like biking and walking, are essential to reducing emissions and creating safer and healthier communities. The report, *Road to Clean Transportation*, by the Frontier Group, 1000 Friends of Wisconsin, and WISPIRG found that the following strategies could reduce greenhouse gas emissions by at least 20%.<sup>24</sup>

STRATEGY	REDUCTION POTENTIAL	KEY 2030 BENCHMARK	KEY 2050 BENCHMARK
Smart Growth	5 to 16 percent	60 percent of new urban growth occurs as compact development	90 percent of new urban growth occurs as compact development
Public Transportation	0.9 to 3.6 percent	Minimum 2.4 percent increase in service	Minimum 4.6 percent increase in service
Active Transportation	0.4 to 1.1 percent	Comprehensive build-out of connected and safe walking and biking networks in all cities	Comprehensive build-out of connected and safe walking and biking networks in suburbs and exurbs
Shared Mobility	1 to 4 percent	Expansion of shared bicycles and small vehicles to all cities, with access to parking and the curb	Ubiquitous availability of shared bicycles and small electric vehicles in all cities and towns, with at least 10 percent of parking spaces allocated to shared modes
Smart Pricing	3.6 to 10.7 percent	End subsidies for parking in downtowns; smart pricing implemented on highways	End all implicit and explicit subsidies for private vehicle ownership and uses

### TRANSIT SYSTEM EXPANSIONS

Communities are working to expand transit systems to provide access to more people and more places with more frequency on existing routes. Transit expansion offers greater access, mobility, and independence for those who cannot drive.

### PUBLIC-PRIVATE TRANSIT PARTNERSHIPS FOR TRANSIT

Many communities work with nonprofits or businesses to partially fund or fully fund transit systems. Many projects have government agencies designing and administering them while businesses support or completely fund the projects.

## **COMPACT DEVELOPMENT**

Spread out developments necessitate more driving. Developments that bring people closer together will result in shorter travel times, more vibrant communities, and reduced emissions.

## **EXPANSION OF BIKE AND PEDESTRIAN INFRASTRUCTURE**

A recent study from the Institute for Transportation and Development Policy concluded when evaluating future sustainable transportation, scenarios that include a robust bicycling component reduce emissions by an additional 11 percent. Creating a bicycle and pedestrian plan is a good first step. However, any such plan should address potential cyclist concerns. The number one concern that keeps people from riding, or occasional riders from riding more, is safety. Therefore, a good bicycle and pedestrian plan will be integrated with a holistic master plan that prioritizes the safety of people over cars. Protected and separated bike lanes should be the first choice. Parking protected bike lanes are an economical option that provides many ancillary benefits, including reducing the likelihood that a cyclist is “doored” (when a cyclist gets hit by a car door) and providing easier and safer access for people in cars who have a wheeled mobility device. A good plan will also ensure that streets are designed for the intended speed, so that on smaller residential streets, cyclists and pedestrians feel safe even if there aren’t bike lanes. The easiest way to slow vehicle speeds is to build narrower streets.

## **COMPLETE STREETS**

Communities can also encourage walking and biking by passing a Complete Streets ordinance. Complete Streets ordinances promote mobility and physical activity for people of all ages, abilities, and income levels. Usually ordinances require that all transportation modes be taken into consideration during street building or major repair.

## **BIKE SHARE PROGRAMS**

Cities can also invest in bike share to further promote cycling as a transportation choice. Bike share programs are an essential investment if cities are to achieve the levels of cycling necessary to realize the additional 11 percent reduction in carbon emissions. Bike share offers many benefits to a city. First, some bike share trips will directly replace short car trips. Second, a well-designed bike share system will connect users to other transit options (i.e. bike share stations could be co-located with transit stops), and thus serve as part of the first/last mile solution. Finally, most bike share systems are much more affordable than bike ownership, thus removing that barrier from increased bicycle use.

## **CHANGES TO PARKING SUBSIDIES**

To make real changes in how people get around, local governments will need to start thinking seriously about the degree to which they subsidize driving. For example, many cities in Wisconsin still provide free, downtown parking at least on evenings and/or weekends. Additionally, most zoning codes have parking minimums which both encourages sprawl but also encourages driving. Local governments may evaluate the subsidies they provide to cars and which ones they want to continue to provide and which ones they want to discontinue in order to better serve other transportation choices.



# WHY SCHOOLS INVEST IN CLEAN ENERGY





## **HIGH-PERFORMANCE SCHOOL BUILDINGS**

High-performance school buildings are designed to provide a healthier environment for students. Fossil fuel combustion contributes to air and water pollution, leading to asthma absences for teachers and students. Students in schools that are poorly ventilated suffer 50 to 70 percent more from respiratory illnesses. Cognitive function is also significantly impacted by a building's ventilation and carbon dioxide levels. Buildings that are resource-efficient enhance wellness through tangible improvements in the temperature and air quality that students and staff breathe. Using all-electric heating and cooling along with other energy efficiency measures can improve air quality in the classroom, decreasing respiratory illness among students and teachers. Clean energy school districts also alleviate air and water pollution in the wider community due to a decrease in fossil fuel combustion.

## **FOSSIL FUEL AIR POLLUTION AND CHILDREN'S HEALTH**

Children are especially vulnerable to fossil fuel air pollution because of their developing lungs and higher respiratory rates. Furthermore, students from low-income households suffer disproportionately from air pollution-related health impacts because these communities live in close proximity to major transportation hubs. If school districts commit to 100% clean energy, schools can lower their greenhouse gas emissions and the associated particulate matter, and offset energy-related health impacts.

## **CLEAN ENERGY AND STEM EDUCATION**

Since schools are spaces to engage with and instruct students, clean energy schools allow teachers to demonstrate to students in a hands-on way that 100% clean energy is achievable. Buildings that are energy efficient and powered by clean energy provide opportunities to project-based learning in STEM disciplines. Students who are engaged in clean energy projects can learn about where energy comes from as well as the planning, installation, and monitoring aspects of using clean energy.

## **COMMUNITY RESILIENCE**

As school districts are major beacons within their community, bringing awareness towards clean energy and committing to 100% clean energy illustrates to the broader community that it is attainable. Furthermore, schools are also a beacon of safety during and after emergencies. Schools that use clean energy - like solar power plus battery storage - can enhance the resilience of a school by ensuring that facilities and services are usable during power outages.



After a 2006 referendum supporting HVAC upgrades, Fort Atkinson invested in geothermal heating and cooling systems that save the district thousands of dollars in energy expenses each year for four school buildings. The Madison Metropolitan School District passed a resolution in May 2019 to move to 100% renewable energy. Oregon School District is designing a net-zero energy school building. And the Monona Grove/Cottage Grove School District already accesses geothermal energy at some of its facilities and is looking to build a large solar array in association with a new school.

The Northland Pines School District installed 331 kW of solar and upgraded the energy management systems at Eagle River Elementary and the Northland Pines Middle and High School. The solar PV energy systems were installed, respectively, on the Field House roof of the Middle and High School and on the ground behind the Eagle River Elementary School.

The solar PV energy systems' 1090 solar modules generate approximately 430,561 kWh per year or about 22% of the buildings' use. The installations serve as an platform for students, teachers, and the community to learn about solar energy. The energy management system improvements complement the solar energy and will significantly reduce the district's electricity costs by reducing utility peak demand charges.









# FINANCING CLEAN ENERGY

Communities are finding resources for financing clean energy from state and federal agencies. This section highlights programs and opportunities available to help a community identify funding for clean energy.

## **THE OFFICE OF ENERGY INNOVATION**

The Wisconsin Office of Energy Innovation (OEI) is the state of Wisconsin's designated "Energy Office." Every state and territory has an energy office, funded by the US Department of Energy. Wisconsin's office seeks to promote innovative and effective energy policies and programs that benefit Wisconsin's citizens and businesses. OEI offers a number of programs and resources that can support local governments as they shift to renewable energy. The following programs may be especially useful for school districts, municipalities, and counties. OEI and UW Extension have compiled resources for local governments which can be found on the Energy On Wisconsin webpage.

**ENERGY INDEPENDENT COMMUNITIES** have either adopted a goal to source 25 percent of energy used from renewables by the year 2025 or have implemented another thoughtful plan towards achieving energy independence.

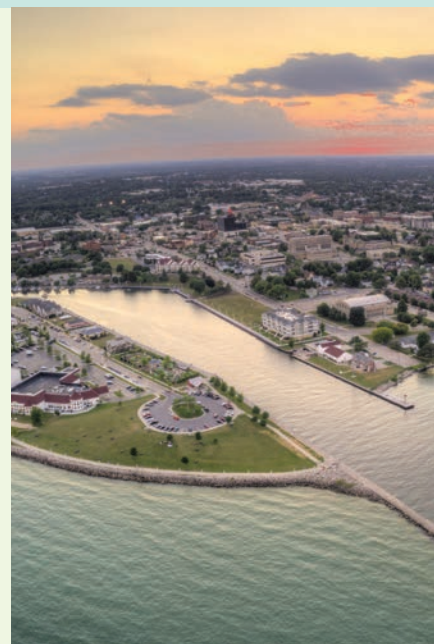
**ENERGY INNOVATION GRANT PROGRAM** offers competitive grant funding to support the reduction of energy consumption and its cost to businesses and taxpayers, increased use of renewable energy and transportation technologies, comprehensive energy planning, and bolstered preparedness and resiliency in energy systems.

**FOCUS ON ENERGY** is a ratepayer-funded energy efficiency and renewable energy program to help schools, government facilities, residences, and businesses reduce energy waste through partnerships with utilities across Wisconsin. Focus on Energy offers a number of financial incentives and technical resources to install renewable energy systems and energy efficient equipment and to reduce energy consumption. Learn more about Focus on Energy here: [focusonenergy.com](http://focusonenergy.com)

**MUNICIPAL ENERGY EFFICIENCY TECHNICAL ASSISTANCE PROGRAM (MEETAP)** helps municipalities, cities, towns, counties, and K-12 School districts reach their energy efficiency goals. The program offers a number of services including a wastewater infrastructure accelerator, baseline analysis of building and vehicle usage to calculate energy expenditures, a plan to control energy costs, verification of energy savings, water utility benchmarking analysis, and more. MEETAP places a particular emphasis on helping municipalities, Tribal Nations, and schools execute successful Energy Saving Performance Contracts (ESPC). MEETAP has RFP, RFQ, and contract templates available, as well as advice for communities about measurement and verification of savings from energy projects. Local governments can request water utility benchmarking reports via email to [oei@Wisconsin.gov](mailto:oei@Wisconsin.gov) or [Megan.Levy@Wisconsin.gov](mailto:Megan.Levy@Wisconsin.gov).

*Sheboygan is probably similar to most cities. The city passed a voluntary resolution to meet the 25% clean energy goals by 2025 in 2008. They struggled for a couple of years without a political driver to move the goals forward into implementation. Committees would meet, but they didn't make much progress until Mayor Vandersteen was elected in 2012. It was a personal priority of his to have Sheboygan be more sustainable. There is limited bonding ability under the levy limits to invest in clean energy projects or technology. There are also limited overall funds to hire contractors to assist with developing plans. Convincing local leaders to spend more money upfront for cleaner, more sustainable projects is hard to do with overall limited funds.*

Chad Pelishek  
Director of Planning & Development: Sustainability Coordinator  
for the City of Sheboygan







## FINANCING FOR SOLAR PROJECTS

In 2017, Sherrie Gruder, UW Extension, authored the Solar Energy Financing Guide: Empowering Local Governments. This comprehensive guide offers information and resources to support communities seeking to install solar.

The following is adapted from the Solar Energy Financing Guide.<sup>25</sup>

### FINANCING MUNICIPAL, TRIBAL, AND SCHOOL SOLAR PROJECTS

#### **DIRECT BUY**

Municipal governments can directly fund and own their solar systems and have them installed on city buildings, structures, and land. With direct purchase, the municipality funds the solar system but can partially offset the cost with Focus on Energy incentive money, utility funding, federal grants, and other funding sources.

#### **PUBLIC-PRIVATE PARTNERSHIP**

A public-private partnership is an agreement between a public entity and a private company that attracts private sector investment in a public infrastructure project. This incentivizes the use of solar due to lower upfront costs of installation. One form of public-private partnership is third-party financing. If municipalities and schools work with a third-party private business, they can avoid initial costs of purchase and installation.

## FINANCING RESIDENTIAL AND COMMERCIAL SOLAR

### **SOLAR GROUP PURCHASING**

Solar group purchasing is an approach that encourages solar installations through aggregating interested community members into a purchasing pool to obtain a reduced rate for solar systems and installation. This can reduce upfront costs as much as 20% and simplify the purchase process.

### **COMMUNITY SOLAR GARDENS**

Community solar, also called solar gardens and shared solar, are large centralized solar arrays often owned, built, and maintained by a utility in which individuals and businesses can buy shares. This allows broad access to solar power investments by anyone with a utility bill.

### **LEGACY SOLAR COOPERATIVE MODEL**

Legacy solar projects are solar energy installations built on community institutions like schools, libraries, food co-ops, and houses of worship. This tax financing model also doubles as a community solar garden approach, but instead of a bill credit for participating, members of the co-op buy subscription bonds and receive their payback in the form of annual principal and interest payments from the co-op.

## ADDITIONAL PROGRAMS AVAILABLE

### **PACE FINANCING**

Property Assessed Clean Energy financing is a local economic development tool used by municipalities to help fund the upfront costs of energy efficiency, renewable energy, and water conservation upgrades by property owners without taxpayer assistance. PACE programs use a property tax repayment method that is long-term, allowing the payment to be transferred with the property even when it's sold.

### **GREEN POWER PURCHASE**

Purchasing renewable energy certificates (RECs) from solar, wind and geothermal providers is a legitimate way for local governments, individuals, businesses, and organizations to offset their fossil fuel energy use with clean renewable energy. There are many companies that provide clean energy RECs in the marketplace nationwide. Look for green-e certified programs; they are third-party verified by the nonprofit Center for Solutions.



## FINANCING FOR TRANSPORTATION PROGRAMS

A variety of grants are available to municipalities looking into any of the infrastructure improvements listed above but may not be available to all communities in all regions. Two good sources of funding for these types of improvements are the Congestion Mitigation and Air Quality improvement program (CMAQ), which is available only to EPA nonattainment or maintenance zone, and Transportation Alternatives Program (TAP) grants.

## NET METERING POLICIES AND THIRD-PARTY OWNERSHIP

Customers who install their own solar panels and connect them to the grid will pay the utility for their use of electricity beyond the energy generated by their panels. Additionally, owners will receive a credit for any amount generated that exceeds their demand. This is called net metering. Depending on system output and customer energy usage, the credit received by the customer may be less than the standard energy rate.

Regardless of how much electricity is produced from that solar system, the customer will still be assessed a fixed monthly charge. Net metering terms of service are subject to approval by the PSC and will vary from one utility to another. Net metering is generally available to all electric customers.

As a general proposition, third-party ownership allows business owners and homeowners the opportunity to have the benefits of a solar system without the upfront costs. A solar developer/contractor owns and maintains the system while the customer offsets their energy bill from the electricity produced by the solar system. In Wisconsin, some projects have been completed as solar leases or through solar service agreements.

In late 2018, a legal case was brought by Eagle Point Solar to determine the legality of third-party owned solar leases for projects the City of Milwaukee had proposed. Cities and other government entities are eager to learn whether third-party financing will be a viable option to finance solar projects in the future.

## BOARD OF COMMISSIONERS OF PUBLIC LANDS LOANS<sup>27</sup>

The Board of Commissioners of Public Lands (BCPL) is Wisconsin's oldest state agency. The BCPL has a constitutional mission to manage the state-owned forests to finance public schools and projects for the benefit of all our citizens. The three members of the Board are State Treasurer Sarah Godlewski, Attorney General Josh Kaul, and Secretary of State Douglas La Follette.

Throughout their history, the BCPL has made loans to communities for public purpose projects at fixed rates competitive with the bond market. Their simple, no fee application process makes it easy for communities to act fast, taking only 30-45 days from application to funding. Communities can access the trust fund monies and act as a pass through entity for partnerships with local nonprofits. Interest rates are locked for up to six months at no cost to the borrower, and BCPL offers 2-20 year fixed rate loans from 4-4.5 percent. Interest earned from the loan program is distributed annually to public school libraries throughout Wisconsin for books and technology. In 2019, \$36.2 million in interest was distributed and was the sole source of state funding for public school libraries.<sup>26</sup>

The BCPL's definition of "public purpose" is quite general, so communities should feel encouraged that almost any clean energy project would be considered by the current board. The Trust Fund program currently makes \$80-\$90 million in loans per year but has the capacity to do much more - potentially up to \$300-\$400 million. Custom amortization programs are available, and there are no fees attached to the loan or prepayment penalties that may occur if the community went through a commercial bank. This is a unique investment opportunity that would be advantageous for communities looking to access clean energy.

### “ WASHBURN UTILIZES THE BCPL FOR WASTEWATER TREATMENT PLANT IMPROVEMENTS

In August 2019, the City of Washburn, Bayfield County, received \$169,000 for wastewater treatment plant improvements expected to cut utility costs by half. The BCPL is a quick and easy solution for municipalities like Washburn.

Our long-term goal with this project is to reduce sewer utility costs and help us get on a better financial track... with the rate and flexibility of this loan and the reduced energy costs that these improvements will bring, we expect the loan to be able to pay itself off.

Scott J. Kluver  
Washburn City Administrator





## GREEN BONDS

Green Bonds are a rapidly expanding new bond market that finance projects with environmental benefits. The first green muni bond (\$100m) was issued in Massachusetts in 2013 to improve energy efficiency and reduce energy use across the state. The market has ratcheted up from less than a billion dollars in green bonds in 2009 to over \$150 billion worth of bonds issued in the first eight months of 2019.

Green bonds offer municipalities an opportunity to reach new investors looking for sustainable investments. Investors seeking socially responsible investing options are not typically active in the muni bond market, but green bonds help bring these investors into the muni market. In the case of the Massachusetts, the green bonds were purchased by at least eight institutional investors who had never before bought the state's bonds.<sup>28</sup>

The Green City Bonds Coalition issued the Green Muni Bonds Playbook to help municipalities utilize this new bond category to finance green infrastructure and services. The report highlights how green bonds can be general obligation bonds, revenue bonds, or asset backed securities. They are primarily differentiated in their marketability to certain investors. "Key to the success of green bonds is that investors do not have to choose between financial returns and environmental benefits, as green bonds offer the same financial terms as other bonds, with the added bonus that their green label enables investors to identify them as environmentally beneficial investments."<sup>29</sup>

Green Bonds offer opportunities for municipalities to 1) grow and diversify their investor base, 2) inform and engage residents, and 3) increase collaboration between environment and finance departments.<sup>30</sup> Green bonds are a practical financial tool to facilitate investments in renewable energy and other sustainable infrastructure including low emission transit, stormwater management, parks and open space, waste and recycling management, energy efficiency investments, renewable energy and storage, green building, and more.



### MOLE LAKE BAND COMMUNITY SOLAR PROGRAM

In 2015, The Mole Lake Band of the Lake Superior Chippewa received a grant from the U.S. Department of Energy and the Department of Housing and Urban Development to implement a community solar program.<sup>31</sup> The goal is to produce up to 85 percent of power in homes and between 20 and 60 percent for businesses from the solar installations. Tribal Administrator Jeff Ackley, Jr said, "It will be significant savings all around for the community. From rough crunchings of numbers, we're looking at probably saving between \$60,000 and \$80,000 per year on energy usage."<sup>32</sup>



## FUNDING FOR TRIBAL CLEAN ENERGY PROJECTS<sup>33</sup>

### **DEPARTMENT OF ENERGY (DOE) TRIBAL ENERGY GRANT**

This grant can be used for both energy generation and energy efficiency projects. It can be used for all types of tribal buildings and does not have income limitations. The grants usually range from \$250,000 to \$2,000,000 for community-scale energy generation projects and \$50,000 to \$1,000,000 for specific site energy generation and efficiency projects. The grants require a 50% cost share of the total allowable costs of the project. The tribal government's cost share portion can be met through tax credit financing.

### **DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) INDIAN COMMUNITY DEVELOPMENT BLOCK GRANT**

These grants can be used for energy efficiency and energy generation for existing housing. The maximum Grants for Wisconsin is \$700,000. No cost share by the tribal governments is required, but maximum points require 25% leverage, which could be met through other federal, state, or private grants or through tax credit financing.

### **HUD INDIAN HOUSING BLOCK GRANT (IHBG) COMPETITIVE GRANT PROGRAM**

The FY 2018-2019 Consolidated Appropriations Acts, collectively, provide for an extra \$200,000,000 of IHBG funds for "competitive grants to eligible recipients ... The Secretary shall consider need and administrative capacity and shall give priority to projects that will spur construction and rehabilitation." These grants are up to \$5,000,000, and no cost share is required, but 25% leveraging is needed to receive maximum points. The program provides maximum points for new housing (which could include energy efficiency measures and energy generation for the housing units), but can also be used directly for solar and other energy projects. Congress is considering renewing the program for this fiscal year and beyond.

### **HUD OFFICE OF NATIVE AMERICAN PROGRAMS (ONAP) TECHNICAL ASSISTANCE**

Tribes may request free technical assistance regarding the development and financing of renewable energy and energy efficiency projects by completing the Technical Assistance Request Form and contacting the appropriate ONAP Area Office. Godfrey & Kahn has provided such onsite technical assistance, helping tribes and tribal housing authorities develop specific plans and strategies for energy projects and for the financing of those projects related to tribal housing and related facilities.





# RESOURCES

## GETTING STARTED: MAKING A COMMITMENT

### EXAMPLES OF COMMITMENTS TO 100% CLEAN ENERGY

**CITY OF EAU CLAIRE** • In March of 2018, the Eau Claire City Council adopted a resolution committing to city operations powered by 100% clean energy by 2050.

**EAU CLAIRE COUNTY** • In April of 2019, Eau Claire County became the first county to commit to a goal of 100% renewable energy and carbon neutrality by 2050.

**FITCHBURG** • The City of Fitchburg passed a resolution in January of 2019 committing the city to reduce all fossil energy use by 50% by 2050.

**GREEN BAY** • In March of 2019 the City of Green Bay approved the Sustainable Committee's work plan and goal of 100% clean energy.

**LA CROSSE** • La Crosse passed a resolution in July of 2019 committing to 100% renewable energy and carbon neutrality by 2050.

**MADISON** • In March of 2017, Madison was the first community in the state to adopt a 100% clean energy goal for the community in addition to city operations, and across all sectors--transportation, electricity, and heating.

**MIDDLETON** • In July, 2018, the City of Middleton passed a resolution committing to 100% clean energy, prioritizing energy efficiency and conservation.

**MILWAUKEE CITY-COUNTY** • Milwaukee was the first city to expand the resolution to include a commitment and call the City and County to mitigate racial and income inequality through "green" jobs. The resolution creates a joint City-County Task Force.

**MONONA** • In February of 2019, the City of Monona passed a similar resolution committing the city to address climate change by achieving 100% clean energy.

**ONEIDA NATION** • In January of 2019, the Oneida Nation Business Committee passed a resolution recognizing the Paris Climate Agreement. The resolution commits the Tribal Energy Team to integrate climate adaptation and mitigation solutions into the Energy Strategy Plan and adopt the policies necessary to achieve the goals established in the Strategic Energy Plan.

**NATIONWIDE LIST** • Across the country over 100 communities have committed to 100% clean energy and six cities in the U.S.--Aspen, Burlington, Georgetown, Greensburg, Rockport, and Kodiak Island--have already hit their targets. A running list is kept by the Sierra Club and can be found here: [sierraclub.org/ready-for-100/commitments](https://sierraclub.org/ready-for-100/commitments)

Cities are Ready for 100% Clean Energy: 2018 Case Study Report, Sierra Club, September 2018.



## EDUCATING THE COMMUNITY AND BUILDING SUPPORT

Jobs and Economic Development Impact (JEDI) screening tool, National Renewable Energy Lab

## ESTABLISHING A BASELINE

Wisconsin Electric Service Territories, Wisconsin Public Service Commission

State & Local Energy Data, The US Department of Energy: Office of Energy Efficiency & Renewable Energy

We Have the Power - 100% Renewable Energy for a Clean, Thriving America, Frontier Group and Environment America, Spring 2016

Wisconsin State Energy Profile: State Policy Opportunity Tracker: Spot for Clean Energy

Nonprofits Integrating Community Engagement Guide, The Building Movement Project and the Alliance for Nonprofits, 2015

Groundswell- From Power to Empowerment - Plugging Low Income Communities Into The Clean Energy Economy

A Guide for Training Public Dialogue Facilitators, Everyday Democracy, September 2008.

Coaches Manual, Clear Vision Eau Claire, May 2004.

Energy Star's Guidelines for Energy Management, Energy Star, a program of the United States Environmental Protection Agency

Energy Star's Building & Plants Tools, Energy Star, a program of the United States Environmental Protection Agency

## LOCAL GOVERNMENT STRATEGIES

## ENSURING EQUITABLE CARBON REDUCTION STRATEGIES

Disparities in Rooftop Photovoltaics Deployment in the United States by Race and Ethnicity, Nature Sustainability, January 2019

Just Energy Policies and Practices Action Toolkit, NAACP Environmental and Climate Justice Program, 2017

Module 1: Getting Organized So That You Can Organize

Module 2: Legislative Campaigns for Energy Justice

Module 3: Engaging Your Utility Company and Regulators

Carbon-Free City Handbook, Rocky Mountain Institute, 2017

Pathways to 100: An Energy Supply Transformation Primer for U.S. Cities, Cadmus

100% RE Building Blocks: A practical toolkit for a sustainable transition to 100% Renewable Energy, 100% Renewables

## CLEAN ENERGY FOR LOCAL GOVERNMENT OPERATIONS

Madison Renewable Energy Plan is a report by the city of Madison outlining their comprehensive plan to move to 100% renewable energy and net zero carbon emissions goal

Dane County Climate Action Plan

Solsmart is a national designation program designed to recognize communities that have taken key steps to address local barriers to solar energy and foster the growth of mature local solar markets

## REDUCE ENERGY CONSUMPTION, INCLUDING BUILDINGS

Policies for Better Buildings Cost provides cost-effective ways cities can cut carbon, slash costs, and create jobs

Synapse - Decarbonization of Heating Energy Use in California Buildings is a report on the options and impact of decarbonizing California's buildings which contribute up to 25% of California's greenhouse gas emissions

NREL: Solar in Action - Challenges and Successes on the Path toward a Solar-Powered Community is a case study of Salt Lake City's journey towards creating solar powered communities

Grow Solar: Local Government Solar Toolkit is a regional solar toolkit created for Wisconsin with information on solar development and as it relates to planning, zoning, and permitting

Project Sunroof is a tool by Google to explore the estimated solar potential of your community

Solar Project Builder is a tool to help local governments and other institutions estimate the financial return on solar projects



## CLEAN ENERGY AND OTHER SUPPLY-SIDE STRATEGIES

Advantage Local: Why Local Energy Ownership Matters, John Farrell, Institute for Local Self Reliance, September 2014

Engaging Communities on Utility-Scale Wind & Solar Development in the Midwest: Part II, Local Considerations, Jenna Greene and Jessi Wyatt, Great Plains Institute, October 2019

Prairie Establishment and Maintenance Technical Guidance for Solar Projects, Minnesota Department of Natural Resources, Revised July 2019

## TRANSPORTATION

Arrive Together: Transportation Access and Equity in Wisconsin, 1000 Friends of Wisconsin, etc., October 2018

The Road to Clean Transportation: A Bold, Broad Strategy to Cut Pollution and Reduce Carbon Emissions in the Midwest, Frontier Group, 1000 Friends of Wisconsin, and WISPIRG, August 2018

Transportation Design Guidelines: All Ages and Abilities Cycling Routes, City of Vancouver, Canada, March 2017

Complete Streets Policies at the Local Level: Model comprehensive plan language, model local ordinance, and model local resolution, ChangeLab Solutions, November 2014

Congestion Mitigation and Air Quality Improvement Program, State of Wisconsin Department of Transportation

Transportation Alternatives Program, State of Wisconsin Department of Transportation

## UTILITY FOCUSED STRATEGIES

Examples of city agreements with utilities: MGE & Madison MOU

Renewable Energy Procurement: What the Heck is a REC, Local Clean Energy Alliance, July 2013.

## COMMUNITY-ORIENTED STRATEGIES

Private Sector Participation and Public-Private Partnerships, Federal Transit Association

## FINANCING CLEAN ENERGY

Maryland Resiliency Hub Grant Program, Maryland Energy Administration

How to Issue a Green Muni Bond: The Green Muni Guide Playbook, Climate Bonds Initiative

Ready for 100%: Implementation Tools and Resources, Sierra Club

## ORGANIZATIONS AVAILABLE TO SUPPORT THIS EFFORT

DEPARTMENT OF NATURAL RESOURCES (DNR) GREEN TIER COMMUNITIES PROGRAM is a voluntary program that recognizes and rewards environmental performance "that voluntarily exceeds legal requirements related to health, safety and the environment resulting in continuous improvement in this state's environment, economy, and quality of life." (s. 299.83(1m)(b), Wis. Stats.), [dnr.wi.gov](http://dnr.wi.gov)

FOCUS ON ENERGY partners with utilities across Wisconsin to help residents and businesses reduce energy waste, [focusonenergy.com](http://focusonenergy.com)

ICLEI LOCAL GOVERNMENTS FOR SUSTAINABILITY builds and serves the movement of local governments pursuing deep reductions in carbon pollution and tangible improvements in sustainability and resilience, [iclei.usa.org](http://iclei.usa.org)

MIDWEST RENEWABLE ENERGY ASSOCIATION has promoted clean energy, energy efficiency and sustainable living through education, and demonstration since 1990 and has helped Wisconsin communities develop policies to increase local solar development, [midwestrenew.org](http://midwestrenew.org)

MIDWEST TRIBAL ENERGY RESOURCES ASSOCIATION empowers Midwest tribes to manage energy resources through collective action, [mtera.org](http://mtera.org)

OFFICE OF ENERGY INNOVATION AT THE WI PUBLIC SERVICE COMMISSION promotes innovative and effective energy policies and programs that benefit Wisconsin's citizens and businesses, [psc.wi.gov](http://psc.wi.gov)

RENEW WISCONSIN is a nonprofit organization dedicated to building a stronger, healthier, more vibrant Wisconsin through the advancement of renewable energy, [renewwisconsin.org](http://renewwisconsin.org)

SIERRA CLUB is Wisconsin's voice for the nation's oldest, largest and most influential grassroots environmental organization, [sierraclub.org/wisconsin](http://sierraclub.org/wisconsin)

SOLSMART is a Department of Energy national designation program designed to recognize communities that have taken key steps to address local barriers to solar energy and foster the growth of mature local solar markets, [solsmart.org](http://solsmart.org)

US GREEN BUILDING COUNCIL WISCONSIN (USGBC WI) is working to make healthy, sustainable buildings a reality for the people of Wisconsin within a generation, [usgbc.org/usgbc-wisconsin](http://usgbc.org/usgbc-wisconsin)

WISCONSIN CONSERVATION VOTERS is engaging voters to protect Wisconsin's environment, [conservationvoters.org](http://conservationvoters.org)

## ENDNOTES

- 1 PSC Final Strategic Energy Assessment, 2018.
- 2 Atkin, Emily. "Two Years Early, Wisconsin Hits Goal To Get 10 Percent Of Its Electricity From Renewables." ThinkProgress, 13 June 2014. [thinkprogress.org/two-years-early-wisconsin-hits-goal-to-get-10-percent-of-its-electricity-from-renewables](http://thinkprogress.org/two-years-early-wisconsin-hits-goal-to-get-10-percent-of-its-electricity-from-renewables)
- 3 COWS, University of Wisconsin, 2019. [cows.org/wisconsin-opportunity-in-domestic-energy-production-the-economic-and-health-benefits-of-100-in-state-energy-production](http://cows.org/wisconsin-opportunity-in-domestic-energy-production-the-economic-and-health-benefits-of-100-in-state-energy-production)
- 4 *Ibid.*
- 5 *Ibid.*
- 6 Lazar, Jim. Electricity Regulation in the US: a Guide. Regulatory Assistance Project, 2016.
- 7 Analysis by RENEW Wisconsin
- 8 "Ready For 100." Sierra Club, 5 Aug. 2019. [sierraclub.org/ready-for-100](http://sierraclub.org/ready-for-100)
- 9 "Sustainability Roadmap for Hospitals." Establish a Baseline for Current Energy Consumption. [sustainabilityroadmap.org/pims/22#.XQO3n9NKHE6](http://sustainabilityroadmap.org/pims/22#.XQO3n9NKHE6)
- 10 NAACP, Just Energy and Practices for Action Tool Kit. [naacp.org/climate-justice-resources/just-energy/](http://naacp.org/climate-justice-resources/just-energy/)
- 11 Energy Trends in Residential and Commercial Buildings, U.S. Department of Energy, 2008. [eere.energy.gov/buildings/publications/pdfs/corporate/bt\\_stateindustry.pdf](http://eere.energy.gov/buildings/publications/pdfs/corporate/bt_stateindustry.pdf)
- 12 Michael Rosone, January 28, 2016. "Commercial HVAC Retrofits Save Energy & More." Arista, 17 Jan. 2016. [aristair.com/blog/commercial-hvac-retrofits-save-energy-more/](http://aristair.com/blog/commercial-hvac-retrofits-save-energy-more/)
- 13 Lubofsky, Evan. "Time-of-Use Data Is Key to Effective Plug-Load Management." Greentech Media, Greentech Media, 30 Sept. 2014. [greentechmedia.com/articles/read/time-of-use-data-is-the-key-to-effective-plug-load-management#gs.kopv](http://greentechmedia.com/articles/read/time-of-use-data-is-the-key-to-effective-plug-load-management#gs.kopv)
- 14 Sustainable Purchasing Policy, City of Sacramento. [naspo.org/green/City\\_of\\_Sacramento.pdf](http://naspo.org/green/City_of_Sacramento.pdf)
- 15 EPRI/WRF (2013) Electricity Use and Management in the Municipal Water Supply and Wastewater Industries, Final Report, prepared by EnerNOC, Inc. under contract to EPRI, November 2013
- 16 "Utility Water Loss Control." Alliance for Water Efficiency. [allianceforwaterefficiency.org/Water\\_Loss\\_Control\\_-\\_What\\_Can\\_Be\\_Done.aspx](http://allianceforwaterefficiency.org/Water_Loss_Control_-_What_Can_Be_Done.aspx)
- 17 "Water-Efficient Technology Opportunity: Acoustic Leak-Detection Noise Loggers." Energy.gov. [energy.gov/eere/femp/water-efficient-technology-opportunity-acoustic-leak-detection-noise-loggers](http://energy.gov/eere/femp/water-efficient-technology-opportunity-acoustic-leak-detection-noise-loggers)
- 18 "Project Sunroof Data Explorer by Google." Google. [google.com/get/sunroof/data-explorer/](http://google.com/get/sunroof/data-explorer/)
- 19 "Geothermal Energy." Where All People Can Thrive. [go-gba.org/resources/green-building-methods/geothermal-energy/](http://go-gba.org/resources/green-building-methods/geothermal-energy/)
- 20 "Utility Green Tariffs." EPA, Environmental Protection Agency, 15 Nov. 2018. [epa.gov/greenpower/utility-green-tariffs](http://epa.gov/greenpower/utility-green-tariffs)
- 21 "Transportation Replaces Power in U.S. as Top Source of CO2 Emissions." Yale E360. [e360.yale.edu/digest/transportation-replaces-power-in-u-s-as-top-source-of-co2-emissions](http://e360.yale.edu/digest/transportation-replaces-power-in-u-s-as-top-source-of-co2-emissions)
- 22 "Gas South Compressed Natural Gas." Natural Gas from Gas South: A Georgia Natural Gas Provider. [gas-south.com/business/compressed-natural-gas.aspx](http://gas-south.com/business/compressed-natural-gas.aspx)
- 23 Ernst, Shelley. "What You Need to Know About Renewable Diesel." Green Fleet - Government Fleet, 10 Mar. 2016. [government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel](http://government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel)
- 24 The Road to Clean Transportation, Frontier Group, 1000 Friends of Wisconsin, and WISPIRG, August, 2018. [1kfriends.org/the-road-to-clean-transportation/](http://1kfriends.org/the-road-to-clean-transportation/)
- 25 Solar Energy Financing Guide: Empowering Wisconsin Local Governments, University of Wisconsin-Extension, April 2017. [wisconsinacademy.org/sites/wisconsinacademy.org/files/3\\_Sherrie\\_Solar\\_Financing\\_Guide\\_PresentationApril2017LocalGovSummit.pdf](http://wisconsinacademy.org/sites/wisconsinacademy.org/files/3_Sherrie_Solar_Financing_Guide_PresentationApril2017LocalGovSummit.pdf)
- 26 Library and Distribution 2019, Board of Commissioners of Public Lands, [bcpl.wisconsin.gov/Shared\\_Documents/Agency\\_Info/Library\\_Aid\\_Distribution\\_2019.pdf](http://bcpl.wisconsin.gov/Shared_Documents/Agency_Info/Library_Aid_Distribution_2019.pdf)



- 27 2019 BCPL Earnings Distribution, Board of Commissioners of Public Lands, [bcpl.wisconsin.gov/Shared Documents/Agency Info/Library Aid Distribution 2019.pdf](http://bcpl.wisconsin.gov/Shared%20Documents/Agency%20Info/Library%20Aid%20Distribution%202019.pdf)
- 28 Daigneau, Elizabeth. Massachusetts Uses Popularity of Environmental Stewardship to Pad its Bottom Line. *Governing*. July 2013. [governing.com/topics/transportation-infrastructure/gov-massachusetts-green-bonds-a-first.html](http://governing.com/topics/transportation-infrastructure/gov-massachusetts-green-bonds-a-first.html)
- 29 Green City Bonds. How to Issue a Green Muni Bond: Green Muni Bonds Playbook. [climatebonds.net/files/files/Green City Playbook.pdf](http://climatebonds.net/files/files/Green%20City%20Playbook.pdf)
- 30 *Ibid.*
- 31 For more information about Energy Financing and Planning for Tribal Governments, please contact John Clancy at 414-287-9256 or [jclancy@gklaw.com](mailto:jclancy@gklaw.com)
- 32 Sokaogon Chippewa Community: Emission-Free and Treaty Resources Protection Clean Energy Initiative, Presentation - Carson Ackley, Sokaogon Chippewa Community. [energy.gov/sites/prod/files/2017/11/f46/16-sokaogon.pdf](http://energy.gov/sites/prod/files/2017/11/f46/16-sokaogon.pdf)
- 33 Haines, Stephanie, "Mole Lake finishes up community-wide solar panel installation project. WJFW, Newswatch 12, January 18, 2017. [wjfw.com/storydetails/20170118231924/mole\\_lake\\_finishes\\_up\\_communitywide\\_solar\\_panel\\_installation\\_project\\_](http://wjfw.com/storydetails/20170118231924/mole_lake_finishes_up_communitywide_solar_panel_installation_project_)

## ACRONYM GLOSSARY

<b>BCPL</b>	Board of Commissioners of Public Lands	<b>LED</b>	light-emitting diode
<b>BEV</b>	battery electric vehicle	<b>LPG</b>	liquefied petroleum gas
<b>CARB</b>	California Air Resources Board	<b>MEETAP</b>	Municipal Energy Efficiency Technical Assistance Program
<b>CFC</b>	chlorofluorocarbon	<b>MW</b>	megawatt
<b>CMAQ</b>	Congestion Mitigation and Air Quality	<b>NAACP</b>	National Association for the Advancement of Colored People
<b>CNG</b>	compressed natural gas	<b>NREL</b>	National Renewable Energy Laboratory
<b>DCFC</b>	direct current fast chargers	<b>OEI</b>	Office of Energy Innovation
<b>DNR</b>	Department of Natural Resources	<b>ONAP</b>	Office of Native American Programs
<b>DOE</b>	Department of Energy	<b>PHEV</b>	plug-in hybrid electric vehicle
<b>EPA</b>	Environmental Protection Agency	<b>PPA</b>	power purchase agreement
<b>ESPC</b>	energy saving performance contracts	<b>PSC</b>	Public Service Commission
<b>EV</b>	electric vehicle	<b>PV</b>	photovoltaic
<b>HUD</b>	Housing and Urban Development	<b>REC</b>	renewable energy certificates
<b>ICLEI</b>	International Council for Local Environmental Initiatives	<b>RER</b>	renewable energy rider
<b>IHBG</b>	Indian Housing Block Grant	<b>RPS</b>	renewable portfolio standard
<b>IOU</b>	investor-owned utility	<b>TAP</b>	Transportation Alternatives Program
<b>IREC</b>	Interstate Renewable Energy Council	<b>USGBC</b>	US Green Building Council
<b>JEDI</b>	jobs and economic development impact	<b>VOC</b>	volatile organic compound
<b>kW</b>	kilowatt	<b>WIPPI</b>	Wisconsin Public Power Inc.

### **WISCONSIN CLEAN ENERGY TOOLKIT**

A coalition effort led by Sierra Club, RENEW Wisconsin and Wisconsin Conservation Voters

#### QUESTIONS?

[elizabeth.ward@sierraclub.org](mailto:elizabeth.ward@sierraclub.org)

[heather@renewwisconsin.org](mailto:heather@renewwisconsin.org)

[jennifer@conservationvoters.org](mailto:jennifer@conservationvoters.org)

