

Climate Fast Forward Conference

Track 2: Energy Use

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The Challenge and the Question

Efficiency is often described as the low-hanging fruit in emission reduction, but efficiency is sometimes constrained by existing design, incremental progress, lack of incentives, or complex decision-making processes. This track will focus on reducing emissions through energy efficiency, conservation, design and the built environment, and transportation. Likely topics for small group discussions within the track include identifying priorities for advances in efficiency and conservation in commercial and residential buildings, urban design and green infrastructure, and transportation systems (from vehicle emissions to the carbon impacts of highway construction and other large uses of concrete.)

What are the priority actions for reducing greenhouse gas emissions in Wisconsin through energy use?

Additional background/discussion

Energy efficiency is an effective strategy for greenhouse gas (GHG) emission reduction because it is the lowest cost resource and technically feasible. Wisconsin has a long track record of promoting energy efficiency, particularly through Focus on Energy, the statewide energy efficiency and renewable energy program. Focus on Energy provides information, cash incentives, and other resources for natural gas and electricity savings from energy efficiency in addition to renewable energy programming. The program measures and reports energy efficiency savings in MMBtu, kWh, kW, and therms. In 2018, the most recent year the Focus on Energy program was evaluated, verified net savings were:¹

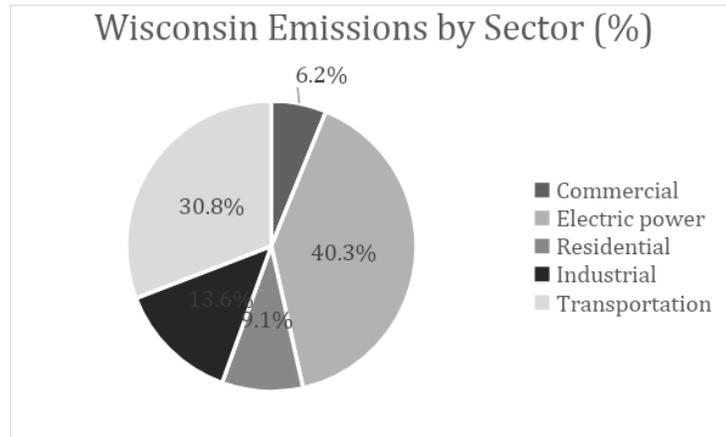
Verified Net Savings	First Year	Lifetime
Unit		
MMBtu	3,554,275	53,310,563
kWh	516,550,096	7,630,824,848
kW	67,780	67,780
therms	17,918,064	272,741,888

The purpose of the statewide program as described in 196.374(2)(a)2 is to “help achieve environmentally sound and adequate energy supplies at reasonable cost, consistent with the commission's responsibilities under s. 196.025 (1) (ar) and the utilities' obligations under this chapter.” Since the program is not expressly a decarbonization program, it does not measure performance in carbon dioxide or other GHG equivalents.

Although electric power is the sector with highest emissions currently, as the carbon intensity of the electricity grid reduces, Wisconsin will benefit from programs that optimize and quantify emission reduction enabled by energy efficiency. Residential space heating, which accounts for 55 percent of residential energy consumption in the Midwest, is a prime example of this consideration. Whereas more

¹ https://www.focusonenergy.com/sites/default/files/WI_FOE_CY_2018_Volume_I.pdf

than 65 percent of Wisconsinites heat our homes with utility natural gas currently, technological advancement has brought better cold climate performance of electric air source heat pumps. This new technology operates with unprecedented energy efficiency, and will enable dramatic emission reduction as the carbon intensity of electricity reduces.



Current energy efficiency programs generally address buildings, equipment, process, and increasingly behavior. **Though addressing these areas of efficiency can be individually effective, a more holistic, integrated, systems view of energy efficiency better frames Wisconsin’s climate change mitigation potential through energy efficiency. This integrated view also includes consideration of distributed energy resources (DERs), demand flexibility, new technology and controls, updated rate design that aligns real costs with consumer price signals, emissions profiling of specific loads, and transportation.**

Energy analysis has traditionally separated buildings and transportation. However, electrification of these sectors, as well as decreasing demand and improving efficiency as a means of decarbonizing, warrants integrated analysis.

In the transportation sector, by transforming our vehicles, rethinking the design of our cities and towns, maximizing the benefits of new technologies, and doubling down on proven strategies like public transit, the Midwest can ensure that the transportation system we pass on to our children is clean, resilient, equitable and accessible to all. A complete strategy for decarbonizing transportation that reduces the need for driving (and thus the need for energy consumption) can complement efforts to power vehicles with clean energy, and can be more effective, more resilient, and create a more equitable transportation system than strategies that rely only on changes to vehicles and fuels.

Transportation is the largest source of carbon emissions in the United States, and the second-largest in Wisconsin. Our car-centered transportation system and the infrastructure we have built to accommodate it also exacerbate societal inequities, contribute to adverse public health outcomes, and generally degrade quality of life in our communities.

Transitioning to electric vehicles could help reduce emissions from the transportation sector that accelerate climate change and cause harm to too many Wisconsinites. However, simply switching to a zero-emission fleet will fail to alleviate many of the more deep-seated problems associated with transportation infrastructure built for cars above all else - from economic and racial segregation that result from sprawling communities and massive highway projects, to the tens of thousands of deaths and millions more injuries that occur on America’s roads every year.

As in the buildings sector, a critical component to reducing emissions from the transportation sector will therefore be to reduce our energy use - and this means using public policy to make it easier and more enjoyable for people to get around without having to drive, in addition to transitioning to zero-emission vehicles. Because the decisions we make about infrastructure design and investments today will shape our built environment - and people's behavior - for decades to come, decision-makers must carefully consider the impacts of their decisions on our transportation system down the road. And while creating a cleaner, more effective, more equitable transportation system will take years - even decades - to accomplish, decision-makers can start bringing such a future closer to reality immediately by embracing proven and emerging tools to expand low-carbon transportation choices, and by setting bold goals and benchmarks. In the Midwest, smart transportation and smart growth strategies could reduce transportation energy demand and lead to emissions reductions of at least 20 percent by 2050, with greater reductions possible if those strategies are adopted together.

What is the Big Hairy Audacious Goal that would make a big difference in the next decade?

A goal of boldly halving Wisconsin's greenhouse gas emissions by 2050 through aggressive and systemic energy efficiency is necessary to mitigate climate change. Setting and achieving the right intermediate milestones toward this goal will reveal significant progress in the next decade alone.

Reputable studies show the possibility of reducing energy consumption and corresponding greenhouse gas emissions 50 percent by 2050. Capturing these energy savings and emission reductions requires a comprehensive approach that includes equipment/appliances, residential and commercial buildings, industrial process, transportation, and electric distribution, as well as supporting policies and practices. Wisconsin-specific sub-goals in each of these areas can together compose a pathway to the 2050 goal.

Examples for Wisconsin's transportation sector include implementing these ambitious strategies to reduce driving demand and transition to zero-emission vehicles within the next decade:

- By 2030, doubling the number of people who travel on foot, by bike or on public transportation.
- By 2030, ensuring that all public transit and school buses are all-electric.
- By 2035, ensuring that all new vehicles sold are all-electric.

What actions could advance progress toward that goal in the next decade?

Actions	Decision-makers	Implementers
Enact decarbonization legislation with Science Based Targets for Wisconsin.	State policy makers	State and local government; private sector; nonprofit sector
Create a state energy plan that includes scaled up energy efficiency.	State government	State and local government; private sector, nonprofit sector
Codify fuel switching policies and procedures that encourage GHG emission reduction with energy efficiency measures.	Public Service Commission (Commissioners & staff); State Agencies	Public Service Commission (Commissioners & staff); state agencies; private sector; nonprofit sector

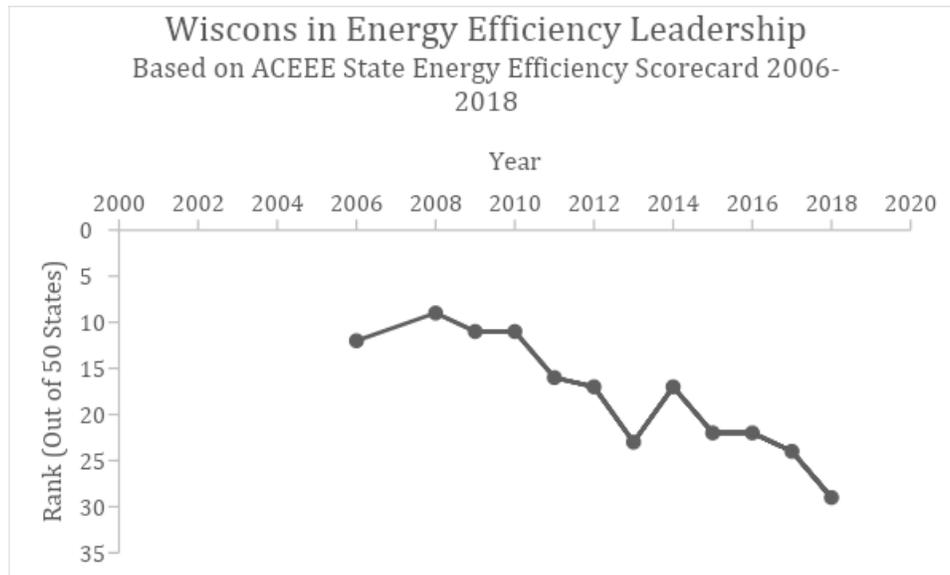
Modernize utility rate design to optimize grid management, clean generation, and demand flexibility.	Public Service Commission (Commissioners); Utilities	Public Service Commission (staff); utilities; utility program service providers; consumers
Unlock private capital to support energy efficiency investment.	State and local government; private sector	State and local government; private sector (esp. institutional and individual investors); nonprofit sector;
Strengthen federal energy efficiency standards.	Federal	State and local government; private sector; nonprofit sector
Commit to engaging the public about energy use.	All	All
Update energy metrics to value emission reduction.	State and local policy makers; Public Service Commission (Commissioners & staff)	State and local government; private sector; nonprofit sector
Prioritize smart growth: At least 60 percent of new urban growth occurs as compact development.	Local governments (city/county); regional planners	Local governments (city/county); regional planners; builders
Increase public transit service to double ridership by 2030, including through increased federal, state and local funding and the creation of Regional Transit Authorities (RTAs).	Governor/Wisconsin Department of Transportation; U.S. Department of Transportation; State Legislature; local governments (city/county)	Public transit agencies; local governments (city/county)
Encourage walking and biking (active transportation): Comprehensive buildout of connected and safe walking and biking networks in all cities.	Governor/Wisconsin Department of Transportation; local governments (city/county); regional planners; State Legislature	Local governments (city/county); regional planners; Wisconsin DOT
Expand shared mobility: Expansion of bikesharing and car-sharing systems to all major Wisconsin cities, with access to parking and the curb.	Local governments (city/county); (semi-)private stakeholders (universities, businesses, downtown associations et al.); shared mobility companies/providers	Local governments (city/county); (semi-)private stakeholders (universities, businesses, downtown associations et al.); shared mobility companies/providers
Implement smart pricing: End subsidies for parking in downtowns; smart pricing (tolling, demand-based pricing, congestion pricing etc.) implemented on highways.	U.S. Department of Transportation; Governor/Wisconsin Department of Transportation; State Legislature	Wisconsin DOT

What are the barriers/challenges to pursuing solutions?

Actions in the preceding table will help overcome key barriers and challenges to achieving the goal of aggressive and systemic energy efficiency as a means to mitigate climate change. Barriers to pursuing these solutions often rest in mindsets and competing stakeholder interests. For example, while polls increasingly show that Americans and Midwesterners believe climate change is real, serious, and occurring, perspectives

are much more diffuse about who is responsible for taking action. Shifting mindsets and finding common ground and ways to renew our social contract will strengthen Wisconsin's will to take these actions for the benefit of ourselves and others.

Another barrier to pursuing the solutions above is that Wisconsin has lost ground in energy conservation. Wisconsin was an energy efficiency leader among states, but lost this stature as shown in ACEEE's State Energy Efficiency Scorecard rankings from 2006 to 2018. Wisconsin ranked as highly as 9th in the country in 2008, but slipped to the 29th spot by 2018. The state must rebuild momentum and regain leadership in pursuit of needed solutions.



Additionally, we mustn't underestimate the economic and political power of the fossil fuel and auto industries - two of the most powerful interest groups in the country and in the world. Both have a vested interest in maintaining the status quo or in allowing only minimal change to energy production and the transportation system.

Specifically with respect to transportation, opponents of public transportation have effectively entrenched negative perceptions of transit by associating it with a "social service" that's only used by low-income people who are too unfortunate to own a car. Relatedly, public transit's opponents have also succeeded in painting this mode as inefficient and unfair because it supposedly requires massive taxpayer subsidies (a point that ignores the enormous amount of public funds spent on and lost to road construction, parking, and other driving-centric infrastructure).

Finally, some of the biggest barriers to change in the transportation sector may be cultural: For decades, "car culture" has been an important part of Americans' identity, and this is reflected in their daily lives: many people wouldn't question the negative costs (and dangers) associated with spending hours a day driving to and from work, to school, to the grocery store, and elsewhere, and it wouldn't occur to them that a different - cleaner, safer, more cost-effective, more efficient - transportation system is possible. These powerful cultural habits are reinforced by our built infrastructure, which for more than 70 years has facilitated the creation of car-centric, sprawling communities nationwide.

Nonetheless, it is worth keeping in mind that “car culture” and the infrastructure that has made it possible, as well as much of our modern built environment, are only a few decades old. Car companies, urban planners and others were able to envision and create the harmful transportation system we have today in a relatively short amount of time, and with a concerted effort, we will be able to create a brighter future just the same. The Midwest’s traditional small towns brought housing, jobs, school, shopping, health care and leisure together, creating convenience without car-dependence and fostering a genuine sense of community. There is no reason we shouldn’t be able to shape the Wisconsin in such a way again, improving quality of life for all.

What tradeoffs are involved in moving the solutions forward? Who gains, who stands to lose?

In Wisconsin, the benefits of energy efficiency accrue to almost all stakeholders in the form of jobs, bill savings, new technology acquisition, and environmental protection that enables better health and wellbeing. Increasing levels of DERs, and particularly demand for sensors and controls that will help optimize DERs for grid management and resiliency, present a significant economic development opportunity to the state. Our state has the track record, and research and manufacturing skill and workforce, to bolster grid modernization here and elsewhere by seizing this opportunity.

Those with stakes in fossil fuel infrastructure stand to lose from greater deployment of energy efficiency and a paradigm shift to electrification that is beneficial to consumers, grid modernization, and the environment. These primarily include natural gas distribution, propane, and investors in infrastructure that will become uneconomic/sunk as energy efficiency and other DERs grow, clean generation becomes even more affordable, and grid technologies and flexibility advance.

Similarly, the goal of implementing the transportation reforms outlined above is to create a transportation system that improves quality of life for all while reducing harmful emissions. Aside from industries that are actively contributing to the climate crisis by extracting and burning fossil fuels, or profiting from promoting policies and behaviors that increase carbon emissions from the transportation sector, no one should have to sacrifice. In fact, most of us stand to gain. Many people will continue to drive in a transformed transportation system; they will do so in zero-emission vehicles, while paying the full cost of the trips they take, including environmental, societal and economic costs. But for the vast majority of Americans and Wisconsinites, driving will be one among many efficient, accessible options for getting around. We must shift the perception that not driving is a tradeoff or a loss; by investing in and prioritizing high-quality public transit, shared mobility, active transportation options, and smart growth, we will make beneficial alternatives to driving more effective.

How will these actions address equity, inclusivity, transparency, accountability and justice?

Equity, inclusivity, transparency, accountability and justice are critical elements of the actions Wisconsin must take to increase energy efficiency and clean up its transportation system. Wisconsin decision-makers could use the [Equitable & Just National Climate Platform](#) as a guide for pursuing these actions with environmental justice in mind. This platform specifically calls for regular collaboration in shared forums that are co-created and co-led by environmental justice and advocates.

Pursuing strategies that encourage alternatives to driving in addition to electrifying vehicles is critical to equitably decarbonizing the transportation sector. Low-carbon land use and smart growth strategies can

help close racial and income equity gaps. Access to robust, affordable and efficient transit systems can allow low-income families to live full and productive lives without the financial burden of car ownership, saving thousands of dollars a year on loan payments, gas, insurance and maintenance. Expanded transportation options can connect those in marginalized communities to jobs and other opportunities that were previously unreachable without a car. And reducing fossil fuel emissions from transportation will improve health outcomes for those communities most impacted by the sector's harmful pollution.

What economic factors, costs, and distribution of costs and benefits will influence the viability of these actions?

Aggressive pursuit of systemic energy efficiency benefits all. Programs can help save money and create jobs while reducing GHGs that contribute to climate change, strengthening Wisconsin's economy overall. Focus on Energy reports that for every \$1 invested in the Focus on Energy program, there are \$5.93 of benefits for the state. Because energy efficiency is the lowest cost resource, pursuing energy efficiency first further enables renewable energy generation and integration. When health benefits of energy efficiency and climate change mitigation are monetized, these benefits are amplified. Together, the range of economic and wellbeing benefits increase the viability of the energy use actions outlined.

Meanwhile, in Wisconsin and across America, high-carbon modes of transportation are subsidized through public policy, while decision-makers miss opportunities to manage congestion and transportation's other negative externalities through the use of comprehensive, smart pricing. Ending those subsidies and ensuring that Wisconsinites pay the full cost of their travel (including the environmental and societal costs of car use) would encourage the use of lower-carbon modes of travel and support Wisconsin's ability to reduce carbon pollution. In order to ensure mobility for all, however, it is critical that accurate pricing of driving goes hand-in-hand with investment in alternative, non-driving modes; only then will these modes be seen and used as viable alternatives.

Subsidies could be used to more productive ends: While the market for electric vehicles has grown astronomically in recent years, many consumers, transit agencies and school districts find electric cars and buses too expensive, or are concerned about their range. Federal, state and local decision-makers could continue to accelerate the EV market's rapid growth by doubling down on (or creating) incentive programs that would make these vehicles more attractive to consumers by defraying some of the cost. In addition to helping increase consumer demand, policy-makers could also educate and provide incentives to automakers and dealers to encourage them to lean into production, promotion and sale of such zero-emission transportation technologies. Finally, policy-makers should help alleviate "range anxiety" by investing in public charging stations, and encourage employers, developers, retailers and others to install charging infrastructure (that is publicly accessible, whenever possible).

Best strategies to communicate about this topic to decision-makers and the public.

The best strategies for communicating about energy use are tailored to the audience and consider the values of that audience. It is effective to keep messaging clear, relatable, and free of judgment. Communication strategies should inform without overwhelming the audience. Elevating positive experiences of peers who have made energy use changes tends to be a highly effective motivator for promotion and adoption of energy efficiency.

Regarding the transportation sector, decision-makers and members of the public are increasingly aware of and concerned about the public health risks associated with pollution from the transportation system, and how such toxins make our communities less livable. The VW “Dieselgate” scandal, for example, put a spotlight on the dramatic dangers posed by particle pollution from diesel exhaust, in particular to children. Similarly, our car-centric transportation system is responsible for tens of thousands of deaths and millions of injuries on America’s roads every year - an unacceptable and avoidable threat to public health and safety, and to quality of life in the places we live.

Additional messaging frames that encourage transportation reform are aging and disability: Wisconsin’s population is aging rapidly, and more and more Wisconsinites live past their ability to drive. If we are to ensure independence and quality of life for Wisconsin’s growing number of seniors in communities across the state, we must provide effective non-driving transportation options. At the other end of the aging spectrum, we know that young people gravitate towards communities where they can get around without a car. In order to maintain Wisconsin’s economic and demographic vibrancy, we must create walkable, bikeable, transit-friendly communities that are attractive to young people. Everyone’s quality of life will benefit in the process.

Likely small group discussion topics in this track:

- **Approaching land use reform:** Denser communities are critical to reducing our energy usage in buildings and transportation, and to alleviating housing inequities. What policies should we be pursuing? What policies are standing in the way? How do we deal with NIMBY (“not in my back yard!”) objections to development, up-zoning and greater density?
- **Discussing “car culture”:** What core attitudes and assumptions underlie American “car culture”? Can we overcome it - and should we?
- **Promoting alternatives to driving:** Do you use public transit, walk or bike? Why? Why not? Do you have any experience with transit systems or walking/biking infrastructure that you really liked? How can we get others to use these alternative modes?
- **Untapped potential of energy efficiency and strategies to scale up:** Residential buildings.
- **Untapped potential of energy efficiency and strategies to scale up:** Commercial and industrial buildings.