

MGE's Energy 2030 Framework

A vision and direction for Building Tomorrow's Community Energy Company

Madison Gas and Electric (MGE) has been privileged to serve the energy needs of our community for more than 150 years. As your community energy company, we have done so in ways that reflect and balance the values and preferences of everyone we serve. To meet that commitment, we have a long tradition of engaging and working with our customers.

More than 10 years ago, we held our first wide-reaching Community Energy Conversations to gather customer input. Those conversations shaped and informed our Energy 2015 Plan. Energy 2015 included substantial commitments: eliminating coal-burning at our downtown Madison power plant, increasing renewable energy by almost twelve times and reducing CO₂ emissions by almost 20% from 2005 levels. We worked hard and met our goals early.

Now it's time to build on the progress we made. MGE is at the crossroads of a new energy world. The issues facing us today are complex and global. New technology has brought changes to how consumers use energy and to how we can potentially serve customers' needs. We can't address these issues alone. Going forward, we will need even more customer input, collaboration and participation to assure that the ways we take advantage of the transformative opportunities before us will best meet our shared goals.

Consequently in 2015 we undertook an even more robust effort to collect input from our customers and communities about how best to build a community energy company for the future. We gathered input through Community Energy Conversations, collaborations, customer research and numerous discussions with stakeholders. Customers affirmed the steps we have already taken to increase renewable energy and reduce carbon emissions. We also heard customers' continuing concerns about further reducing carbon emissions throughout our economy.

With the input we've gathered so far, we can now set a direction for the next 15 years, building on the progress we made through our Energy 2015 plan. We found strong support for the objectives of our 2030 framework. The following framework provides the direction and high-level goals that MGE believes are important to strive for in the next 10 to 15 years. Working together with our customers, we believe we can achieve our goals.

Using this framework, we want to collaborate with customers and others to figure out how to move forward and build the next steps to meet those goals. To further define those steps, we'll do research and we'll test ideas, concepts and options with customers. We'll work with customers to develop voluntary programs and experiment with projects to gauge customer acceptance. By working together, we hope to implement options that can best meet our shared goals and priorities. This will be an ongoing process of developing and testing ideas with customers as new technologies evolve over time.

Energy 2030 Framework

Working together with our customers, we will:

1. Transition to a more environmentally sustainable energy supply.

As a result of our efforts under our Energy 2015 Plan, we currently have 12% renewable sources in our energy supply mix and we have reduced CO₂ emissions from 2005 levels by almost 20%. Through the Community Energy Conversations, customers encouraged us to continue our addition of renewable sources of generation and reducing carbon emissions.

Our goals for Energy 2030 are to:

- Supply 30% of retail energy sales with renewable resources by 2030. As a milestone goal, we will supply 25% of retail energy sales with renewable resources by 2025.
- Increase energy efficiency and conservation as an important energy resource by working with customers to reduce growth in energy use.
- Work with customers to reduce CO₂ emissions associated with meeting our customers' energy needs 40% from 2005 levels by 2030.

As we make new investments in generation, we will include more energy from renewable resources and natural gas in our mix. We will not build additional coal plants and will plan for a transition away from aging fossil fuel-fired resources. We will continue to work closely with customers and through partnerships to encourage energy efficiency and conservation through education, information, technical assistance and other resources.

2. Give customers more control around energy.

A significant majority of the customers with whom we talked and surveyed told us it was important to have more control around using energy. With that understanding, we will develop new products and services over time that will offer customers more options to manage the ways they use energy. These may include additional renewable energy options like our Green Power Tomorrow program or Community Solar, or innovative pricing options to facilitate electric vehicle charging at off-peak times, or as they become more readily available, using "smart" appliances to help customers conserve energy and home automation systems to help them control when they use electricity. We will work with customers to understand their needs and preferences so our programs provide value and take advantage of the opportunities of new and changing technologies.

With the help and involvement of our customers, we will work to provide more differentiated products, services and pricing to reflect the more differentiated ways that customers want to use energy and the electric grid. As new technologies become available, we will develop programs that use new technology on the customer "grid edge," such as "smart" appliances, home automation and energy storage to benefit both individual customers and help manage long-term costs for all customers.

We also will upgrade and enhance our technology systems so that we can better deliver new products and services to our customers.

3. Reduce costs by managing our collective use of energy.

Customers told us that it was important to control costs. To that end, we will work with customers to help reduce growth in electric system peak. Reducing electric system peak will help us build and maintain an electric system that is only as big as we need to meet customer load and reduce the generating and distribution capacity that is needed only for times of peak use. This will save costs for all customers in the long-run.

We plan to test and explore strategies with customers such as using smart thermostats like NEST to reduce air-conditioning load at peak times while still maintaining comfort for participants. We'll also explore and test different pricing options such as Time Varying Rates and/or demand rates that can encourage customers to shift electric use to other times of the day.

We'll look at expanding programs to support use of electric vehicles and to manage electricity use for vehicle charging at peak times. We will research and potentially test options that build on our existing programs of electric vehicle home charging, workplace charging and our network of publicly available charging stations. We'll continue to support customer use of electric vehicles through information, resources and innovative rate designs. As energy and battery storage become available, we'll collaborate with customers to integrate these technologies to provide system and customer benefits.

4. Build a dynamic, integrated electric grid to enable new technology.

Customers told us it is important to have an electric grid that supports new technology and maintains reliable service at a reasonable cost. We will develop the electric distribution infrastructure, systems and controls to move from a world of one-way power flows to two-way power flows. This will enable distributed energy sources like solar photovoltaic energy and battery energy storage to help meet future customer needs while ensuring reliability for all customers. It also will harness and optimize the benefits to all customers that distributed resources can provide.

We will experiment with ways to integrate solar most effectively using solar power inverters that convert the DC power generated by solar photovoltaic systems to the AC power used in our homes and businesses and throughout the electric grid. We also will begin exploring and testing a "smart" power inverter program with customers to learn how distributed resources, such as solar, can be deployed to provide voltage support and other distribution system functions that can benefit all customers.

5. Ensure that all customers benefit from changing technology.

As a regulated utility, we have an obligation to serve all customers with critical energy services. As we develop new technology, products, services and rates, we will consider the benefits, costs and impacts across all of our customers and make sure that all customers have opportunities to share in the benefits of new technology.

We will continue to explore and experiment with new technologies through demonstration projects. We will continue to pursue projects that help customers learn about new technologies and from which MGE can learn how to optimize the technology on behalf of all customers. New projects could include such things as Net Zero Homes, electric micro-grids and battery energy storage.

In the future, we anticipate researching and testing innovative pricing and rate options. As we do, we will consider and balance the following factors:

- Encouraging energy efficiency and conservation.
- Discouraging use during times of electric system peak to save long-term costs for all customers.
- Equitably covering the costs of the critical assets used to serve customers, including the costs to maintain and improve the energy grid for everyone who uses it.

We plan to do research, testing and piloting of new options with customers on a voluntary basis to test customer acceptance and understand how well different options serve our Energy 2030 objectives.

We want to work through this process and will not be proposing an increase in fixed charges for residential and small business customers in our next rate case.

6. Deepen our engagement with the community.

It has been our long-standing practice to work together with our customers. We understand that even deeper engagement is important as we build a community energy company for the future. Now we will build upon the input we've received so far to explore ideas on how to move forward together.

As we move forward, we will continue our collaborations and partnerships with key stakeholders. We'll plan more customer and technical research and analysis. We will initiate and maintain more ongoing customer engagement opportunities.

Throughout this process, we will develop ideas for specific initiatives to test and explore together. Through ongoing research and engagement, we will build a community energy company for the future that will provide value to customers individually, as well as to all customers collectively.

In addition we will:

- Ensure that as we serve customers, we do so without barriers based on income, ethnicity, race and other factors.
- Continue to build relationships and partnerships with neighborhoods, community and service organizations and economic and business organizations to extend and expand our reach to all of our customers.
- Provide products and services in ways that are culturally competent.
- Ensure that all customers have options for shaping and managing their energy use and that all customers can share in the benefits of new technology.

Conditions for Success

The success of MGE's proposed Energy 2030 framework will depend on several important conditions. Customer participation in programs and partnerships will be critical to the achievement of the goals. We can only achieve these goals by working with our customers.

Underlying the goals are critical assumptions and projections. We have made assumptions about customer growth and customers controlling their energy use. We are projecting that we can work with customers and they will reduce overall and peak-energy use that will more than offset additional electric use by a growing population. We assume that renewable technology will become increasingly cost competitive.

Should our assumptions not be met, it may be necessary for us to modify our plans. Our plans may also need to evolve as technology and markets change over time, as well as any changes in regulations, laws or statutes. We must secure favorable regulatory treatment for our initiatives and investments as appropriate.

At all times, we need to meet our fundamental obligation to serve customers and deliver critical service to this community. Most importantly, we must receive strong community support for all facets of the Energy 2030 framework.

Next Steps

Working with customers, we will now need to figure out—over time—the specific initiatives, investments and programs to best accomplish the goals we've set. This will be an evolving and ongoing process. As technologies evolve and come into the market, we'll continue to collaborate with customers to develop our plans. We will use customer research to develop and test ideas and concepts. We'll learn and deepen our thinking by experimenting with voluntary pilot programs, demonstration projects, etc., as new technologies and options become available.

We will continually monitor our progress toward these collective goals. And, as we achieve the initial steps, MGE will again collaborate and provide more opportunities for customers to engage with us to develop our future next steps to achieve these goals.

Thank You

We would like to thank all of the people who made our 2015 Community Energy Conversations and other engagement efforts so helpful, informative and productive. We look forward to continuing our engagement and collaboration as we build our Energy 2030 framework and tomorrow's community energy company together.