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*A Special Message from Gov. Rick Snyder
Ensuring Affordable, Reliable, and Environmentally Protective Energy for Michigan's
Future*

To Michiganders and the Michigan Legislature

Introduction

Michigan needs to take aggressive steps to avoid a future of spiking energy prices and widespread power outages.

In the last two years, we have laid the groundwork for a bright energy future for Michigan. We have gathered key information and met with residents all over the state to learn about our options. We set clear goals for Michigan's energy future.

We knew our energy must be affordable for our homes and businesses – for instance, residential bills for heat and electricity should not be higher than the national average. We looked to ensure that people could rest easily, knowing there would be dependable heat and electricity to power their homes. Specifically, we said that we should not have widespread outages due to a lack of supply, and that our residents should endure less than one outage a year on average, and that our outages should average less than two hours and 15 minutes. We sought to make sure we had options so our state could draw energy from a variety of sources, able to adapt as technology developed reliable and efficient alternatives. We said that the newest technological advances that will be right for Michigan are in natural gas and renewable generation. And we made it a priority to protect our environment for the generations to come, reducing mercury, acid rain, and particles in the air.

We've made real progress since 2012. We met the 11th most aggressive renewable portfolio standard in the nation, and we did so under budget – in some cases, at no additional cost compared to other energy sources. We were able to do that for a lot of reasons. Our standard encouraged collaboration, so we had access to people familiar with the newest technologies. We saw huge price reductions in even the last five years as we took advantage of those new technologies – better towers, better blades, and better electronics all meant better prices for Michiganders in the wind space, which has

been our least expensive resource to date. In another success story, we established both utility and non-utility programs to reduce energy waste that are delivering measureable and very cost-effective results. In fact, our energy waste elimination is coming in at about a third the cost of what we would pay to generate that power. There is an awful lot of coal and natural gas we never had to burn, and that is only one way we managed to save so much money. We have proposed an energy code that will reduce new building energy usage by at least 25 percent.

I could keep listing good things that have happened, but we are here today because we have a lot more to do.

Our mission is to build a foundation of adaptability – that means that regardless of what the future holds, our energy system will be able to support all our needs at a reasonable price. Our efforts should be focused on ensuring our energy infrastructure can keep up with the demands of a growing economy. We need to ensure Michigan's future energy decisions are made in Michigan. We need to make sure that when we make those decisions, we have the right process to ensure the decisions focus on the pillars of a strong energy future: affordability, reliability, and protection of the environment.

Now it is time to propose a plan that will see Michigan through at least the next 10 years of energy decision-making. During those next 10 years, Michigan will have to solve a shortage of electric generation. It will likely have to do that while complying with new federal regulations on carbon emissions. Our economy is expected to grow, and our infrastructure and natural assets will become even more important to our future. Ten years is near enough to have a good idea of the challenges we will face, and long enough to take concrete steps to secure our energy future.

Affordability

Eliminating waste – investing in our homes and businesses – is vital to meeting our affordability goals.

Michiganders pay more than the national average for the energy that powers, warms and cools their homes right now. That needs to change. The first and best thing we must do to change that is to help our homes and businesses eliminate waste. When you can get the same result for less money by upgrading your home or business, that's a win-win-win solution for Michigan.

In 2009, Michiganders used 38 percent more energy -- heating plus electricity -- than the national average. Our average bills were 6 percent above national average. We can lower those bills.

There is a lot going on in those numbers. Our climate requires us to use more energy heating our homes than we do cooling them, unlike other parts of the country.

Our natural gas price is one of the 10 lowest in the country, and that is used to heat the vast majority of homes in Michigan. That is why we use so much more energy than average, but our overall spending is a lot closer to average.

But people in their homes and businesses can do better just by eliminating energy waste, and we have reason to think we have some big opportunities there. First, Michigan homes tend to be smaller and older than the national average, which means they should take less energy to heat and cool if they are properly insulated and have heating and air conditioning systems that are reasonably up to date. That means we have a big opportunity to hold down our costs by helping our neighbors do the same. When we need to build a plant or burn some coal, that shows up on all our bills. Our current program that utilities use to reduce waste has been so successful that we have spent about a third of the money we would have otherwise on coal, gas, or facilities. In other words, we saved two-thirds of our dollars, and did so while making Michiganders homes and businesses more comfortable and their bills lower. Why wouldn't we do more of that?

- Call to action: We should meet at least 15 percent more of Michigan's energy needs in the next decade by eliminating energy waste.

We know that an energy shortage will come if we do nothing. The more energy we need, the more we have to build, and building gets expensive. The best way to avoid those large expenses is to reduce that demand when it makes good economic sense. We know it does make a lot of economic sense for Michigan to reduce energy waste. The 15 percent goal comes from the reports that were prepared by the Michigan Public Service Commission and the Michigan Economic Development Corporation. That figure is actually conservative, as it represents carrying out only half of the projects that already pay for themselves.

Here are some examples of ways Michiganders are already reducing energy waste in these programs:

- Insulating or caulking windows to keep drafts from stealing away our heat.
- Replacing old furnaces and water heaters so that we can be just as comfortable for a lot less money.
- Getting newer seals on the big freezers and refrigerators in convenience and grocery stores.
- Replacing older industrial equipment with newer technologies that create a better price-per-piece.

We do have a lot of variation in the amount of waste that can be eliminated across the state. Some utilities cover a large number of vacation homes that are unoccupied during the winter. Insulating them won't produce much energy savings. Other utilities serve large areas with thousands of mercury street lights that are twice as expensive to operate as newer, brighter LED technologies, older homes that are occupied year-round and could be much more comfortable if they were better insulated,

and a large number of industrial operations that could become much more competitive if they had access to the expertise and capital necessary to capture those savings. Those are opportunities for save we can't pass up.

Michigan needs to change its attitude from seeing waste elimination as a nice-to-have add-on and see it as the cornerstone for Michigan's next energy policy.

- Call to action: We need to eliminate artificial limits to the amount of waste reduction that utilities do. Right now, our law prevents utilities from spending more than 2 percent of their budget on waste reductions, even if that forces them to buy more expensive equipment instead.
- Call to action: We need to make sure our Public Service Commission can weigh the benefits of energy waste reductions in the same way it can weigh other kinds of expenses.
- Call to action: We need to break out of the thinking that says the only compensation for waste reduction programs is to offset a loss, and instead make our smartest option a place where utilities want to invest. Capital invested in stopping energy waste should not be less valuable than capital invested in a new plant.

Working families and seniors on a fixed income might want to insulate or install a better furnace, but don't have the up-front money to do it. Or, someone might be a renter that pays utilities and would benefit from the lower bill, but doesn't own the house. On-bill financing can be a key tool to address these kinds of situations – and 30 other states are taking advantage of it. Such plans would allow utility payers to take measures that reduce their waste, and pay for them over time as part of their electric bill. In other words, someone could essentially borrow the money to improve the furnace, and pay it back out of their monthly bill. Their bill doesn't go up, because of the energy savings. When they are done paying it off, their bill drops.

This can be a great tool for lots of Michiganders. Renters who want to make an investment to keep their utilities bill down have a way to do it. A senior citizen who knows their home could be more comfortable but doesn't know how long they will be in the home can make the change and know they will only pay for as much as they use. Last year the Legislature and I worked as partners to allow municipal utilities to offer these programs.

- Call to action: We should continue our good work on this issue, and repeal the on-bill financing ban for other utilities.

There is one more big reason Michigan should be a leader in this area. Michigan has companies that design more efficient building materials, appliances, and machinery. We build many of these items here, too. Other Michiganders install these technologies and materials in Michigan homes and businesses. This is a perfect example of an

opportunity to build on existing leadership the state has in connecting Michigan businesses to each other. It is the right thing to do for energy costs, and the right thing to do for Michigan businesses and Michigan jobs. We cannot let this opportunity pass us by.

In every possible scenario, the elimination of energy waste is the right answer for Michigan. It enhances our reliability, as the only kind of energy that never strains the grid is the energy you don't use. It is the best thing we can do for affordability; the cheapest energy is the energy you don't use. It is the best thing we can do for environmental protection; the cleanest energy is the energy you don't use. And it allows our businesses and residents to save money by supporting each other.

Eliminating energy waste is only the place to start.

- Call to action: When utilities propose big-dollar investments, we need to make sure those investments will keep down costs, provide reliability, and protect our environment.

Utilities make a lot of investments – sometimes in new plants, sometimes in big upgrades to existing plants, and sometimes in operation, maintenance, and long-term purchase contracts. In 2008, we took a big step forward by saying investing new plants should have to be compared to other possible alternatives before pre-approval would be given. We need to expand that to all large investments.

We can protect our affordability by making decisions that take into account many possible futures. That includes making sure that Michigan's Public Service Commission has the power to require the cost of all alternatives be determined for the short and long term. Those alternatives also should be put through tests to determine the impact on reliability, our environment, and long-term regulatory compliance, and only the best alternative should be funded.

That is why we must get the right expertise asking the right questions. Michigan has the opportunity to be a nationwide leader in designing such a process; we should do that now.

We know that for some businesses, energy costs are not just one of many important costs, but one of their biggest expenses. Larger industrial customers that shaping metal in some way – like a steel-maker or a metal melter – are examples. On the agricultural side, some greenhouse operations also spend a large percentage of their budget on energy. We need to make sure that such businesses are able to choose Michigan, because they are a crucial part of our economic future. These are job creators that have a choice of where to locate. In order for the rest of our economy to build on a strong base of advanced manufacturing, we must be able to make sure such businesses can locate in Michigan and be competitive.

We need to adhere to our cost-of-service principles for all classes, meaning no one should be subsidizing others. Under legislation passed last year, the Public Service Commission is already looking at ensuring that rates properly reflect cost-of-service in most of lower Michigan.

But there is more we can do. These are many users that are motivated to work to control their own costs and destinies -- if given the tools to do so. For instance, we have seen a lot of success through the metal melting rate that Consumers Energy offers, which has as a major component pricing to encourage use during off-peak hours. We also need to encourage other voluntary “peak shaving” activities by energy users. Even small changes at the right time may have outsize benefits.

- Call to action: Some energy users, especially energy intensive industries, may be able to manage their energy use to go down when the grid starts to get strained, which will hold down costs and lower risks for everyone. We should make sure that we both create an opportunity and a reward for them to partner with our utilities to capture that savings.

Reliability

Michigan needs to do more to keep providing reliable electric and gas service.

Michigan residents and businesses need to know that when they flick the switch or twist the dial, they will have electricity and heat.

Just a few days after I announced my reliability goals in 2012, many Michiganders endured the hardship of spending several days without electric power. We have had a lot of extreme weather in the last two years that was hard on our electrical system – ice storms, heavy winds – and that has made us look at all the steps we need to take to make sure that we get better about protecting ourselves from outages.

People can’t get things done when the power goes out. Many of our businesses can’t function without power. Our schools close and parents must leave work to pick up their children. There also is a human element to outages that we can’t forget. Dialysis centers have to find somewhere else that can provide lifesaving treatment. A lack of air conditioning on a hot day is life-threatening to our seniors.

Michigan set goals last year of being leaders in reliability – meaning ensuring that both we don’t have as many outages, and they don’t last as long. The goals we set would mean that Michiganders would experience less than one outage a year, and that it would be over in about the time of a competitive college basketball game – less than two and half hours. For instance, in 2011, the average number of outages a year per customer was 1.13 (a little more than one a year). Today, it is 0.8 – meaning most Michiganders won’t experience a sustained outage this year. But we still have more to do.

I commend the Public Service Commission for setting aggressive goals in this area and working to encourage more measures that are already bearing fruit, and for our utilities and grid owners for responding.

Taking advantage of new technologies can also give us opportunities to prevent and fix outages much more easily than in the past. Until very recently, if your power went out, the utility did not know it until you called. Our utilities had to figure out what likely broke by how many people called, and where they were located. Now, with newer technologies, utilities can immediately see a problem and know what needs to be sent to the site to fix it.

- Call to action: Michigan needs to complete plans to deploy smart meters that help utilities locate outages and restore power more quickly.

The deployment of smart meters might be the best thing we ever do for reliability. That deployment should be complete in our two largest utilities in the next three years, and I know the commission has been working with utilities to accelerate the effort.

- Call to action: Michigan needs to continue investing in infrastructure and maintenance to keep our power grid and pipeline system working smoothly and safely.

The PSC has taken other steps to ensure reliability as well. It has pushed for more investment in tree trimming and challenged our utilities to step up their game on other infrastructure and maintenance activities that help keep our grid reliable. It's working. The average number of power interruptions has been declining in Michigan since 2011.

On the natural gas side, the commission took advantage of record-low gas prices to encourage utilities to replace our aging natural gas pipelines – especially those that are made of cast iron. For too long, we neglected our pipelines and recently, we have seen a quadrupling of leaks for some of our largest gas utilities compared to a decade ago. These programs are the right thing to do and must be continued, and accelerated as much as is economically feasible.

- Call to action: We must change our electric market structure to ensure all electric providers are protecting their customers from massive outages due to lack of supply.

An electric grid is a unique, gigantic machine that makes the market for electricity unlike all other economic markets. In most markets, if there is a shortage, some customers get the materials and some don't. But with electricity, if you can't get the electrons to the last light switch that flips "on," then the grid fails and no one gets power. We've seen this happen in Michigan before. In 2003, much of lower Michigan

experienced a massive outage and the Upper Peninsula remembers a similar problem when the Presque Isle Power Plant flooded out.

The Midcontinent Independent Systems Operator – MISO –is charged with making the interstate electric grid operate smoothly. MISO says the majority of lower Michigan is facing a 3 gigawatt shortfall of generation that can be called on to keep the grid from failing. That is about the size of our two largest nuclear plants – Cook and Fermi – put together. And that doesn't count the needs of the UP, which needs another plant built in the next five years. We've already taken some actions to fill that gap – but we aren't done yet addressing that gap, and we will need to do more almost every year for the next decade to fill that gap.

Michigan's risk of devastating outages is serious and growing. No large-scale grid operator in the country has a more serious risk than MISO, and no place in MISO has a shortage nearly as big as Michigan's.

If we don't solve that problem, Washington D.C. will solve it for us – and we will not like its solutions. We know this from what we are dealing with in the Upper Peninsula right now.

- Call to action: We need to act now to make sure we have the tools to solve our own problems and keep decision-making in Michigan, not in Washington D.C.

It is pretty clear that we have to make a lot of decisions – expensive decisions – in the coming years. And we have recently learned how important it is to take action in order to protect our ability to make those decisions here in Michigan. We know that if we don't get plants built in Michigan that we need, the federal government will essentially take over setting our electric rates and planning our energy future. And we know from experience that the "solution" imposed on us will not feature adaptability, affordability, reliability, or protection of the environment.

Consider what happened to the Upper Peninsula in the last year.

When the utility that owned a coal plant announced it didn't need it anymore, the people who run our interstate electrical grid for most of Michigan, a group called MISO, said the plant had to be kept operating for reliability. MISO doesn't normally get into the economics of running actual plants; that is usually done at the state level. But when there is a potential for the grid to collapse and leave everyone without electricity, it can step in. MISO entered into a private agreement with the utility that meant Michigan ratepayers were now going to have to pay almost \$100 million a year until new electric lines could be built – something that takes at least 5 years, even if done expediently.

Michigan's Public Service Commission said that amount was way too high – it meant as much as an overnight 20 percent increase in some bills. That's approximately \$120 a year extra for the hardest-hit residential customers, many of whom are on fixed incomes. That's the kind of rate hike businesses can't plan for and absorb. The Federal

Energy Regulatory Commission imposed the rate hike it anyway, saying that even though those rates might be unjust and unreasonable, it would be sorted out later.

Let's think about the "solution" we were buying for all that money – keeping an old coal plant limping along while we spent more than a half a billion dollars on upgrading the system to bring out-of-state energy -- mostly coal-generated -- into Michigan. It would leave our reliability in a worse position than building a plant, it would be less affordable than building a plant, and it would be worse for the environment than building a new, natural gas plant that is designed to reduce energy waste by selling steam.

That's just not what Michiganders call a solution. So in January, we were able to announce a series of likely transactions that would provide for an orderly retirement – without millions of additional dollars in MISO-imposed payments -- of the Presque Isle Power Plant (PIPP) and construction of a combined heat and power plant.

Today, I am announcing that the transactions have changed slightly, but overall, the outcome is still very positive for U.P. residents. Despite the best efforts of the Upper Peninsula Power Company and Cliffs Natural Resources, they were unable to come to terms on a contract for service. However, WE Energies has now agreed to provide service without seeking extra system support revenues, and Cliffs has agreed to remain with WE Energies until the new plant can be built. Just as before, the new plant to replace PIPP will be constructed no later than 2020, and will be supported by a series of business agreements. We look forward to working with legislative partners and the utilities to further cement Michigan's energy independence, by enabling the creation of Michigan-only utilities when that is in the ratepayers' best interest.

- Call to action: Finalize the transactions that will solve the U.P. power crisis.

I am proud to say that we still believe a long-term solution for the U.P.'s current energy crisis will be in place this year. We solved the problem, because that is what Michiganders hired us to do. But it is not going to be a way we can keep solving this problem, and this problem is set to hit the Lower Peninsula in a big way.

The same day FERC issued orders that imposed unreasonable costs in the Upper Peninsula; it issued another order to one of Michigan's biggest utilities, Consumers Energy. Consumers Energy plans to retire at least seven coal plants next year. It doesn't just plan to – it has a court order requiring it to do so for environmental compliance. But when Consumers Energy asked the FERC for permission to retire those plants, FERC didn't simply approve their request. Instead, FERC demanded more information on the impact those closings would have on others, suggesting the company could be placed in an impossible position: conflicting federal orders both to keep the plants running and to close them.

This time, after a lot of additional information, the FERC agreed the plants could be closed. But what happens next time, when the Lower Peninsula has a plant that the

grid needs but the utility wants to close because it doesn't make economic sense to run it?

If we don't have the ability to make some good decisions now, our future will be decided in years of Washington bureaucratic wrangling and court cases.

- Call to action: Prevent the Lower Peninsula from developing the same crisis the U.P. is living through by reforming our electrical market to require every electric provider to protect its customers.

We are facing a crisis because of a shortage of plants once coal plants begin retiring next year. These plants are being retired for two main reasons. First, our coal fleet is on average more than 50 years old, so many of the facilities just aren't efficient to run anymore. Second, there are some EPA regulations that are going to come into effect in the near future that will mean at least nine coal plants in lower Michigan, plus PIPP, will need to retire because they are too expensive to upgrade to meet the new standards.

This projected shortfall does not take into account any additional federal requirements that are currently proposed; it is the result of regulations that have already survived years of court challenges and are undoubtedly coming. We know at least 10 plants in Michigan will retire in the coming years. It could be more.

We cannot fix this without changing the way we structure our market. We need to give our regulators the power to determine when we may face a shortage, and tools to address it when we do. Without that, we cannot be adaptable. We also need to make sure that every company that sells energy in Michigan is protecting its customers from unpredictable price spikes due to a lack of generation or import ability. We can fix our electric capacity problem without forcing customers to change electric providers. But we can't fix our electric capacity problem until every electric provider has an equal responsibility to ensure that the plants or transmission lines their customers rely on will be there. Right now, we know we have a problem coming on that front. We need to require everyone selling power in Michigan to be part of solving that problem.

We can solve this problem without getting rid of retail open access – sometimes called choice -- for those businesses that have already made plans and commitments to get their power from an alternative electric supplier. But we can only solve this problem if that choice is a fair choice. In Michigan, any company that sells you life insurance has to show the state that they have enough reserves to make good on the policy they are selling. It's only fair to make sure that everyone who sells power is also required to buy the insurance policy that protects us all from big risks if there is not enough power available.

Right now, our incumbent utilities are required to be ready to take 100 percent of customers back – but those utilities will not receive approval to build plants their current customers don't need. When there were plenty of plants, that system worked without

causing a reliability problem. But that is not going to be the case in the coming years. Instead, we face the question of how to pay for plants that may only need to run a few weeks a year, if no utility can be authorized to build them, and no investor thinks they can make their money back.

In Michigan, we believe in the principle of cost of service – users should not be subsidizing each other. That principle needs to apply to our market design too, and make sure everyone is fairly sharing in the costs of those plants we may only need a few times a year, or the lines we need to bring in the power that keeps our grid running. This must be a top priority.

While we need to change our market structure, we need to recognize the fact that in much of Michigan, 10 percent of businesses have relationships with other electric providers. When we change our system, we can respect those business decisions and allow those relationships to continue, if those providers can be part of the solution to our current problems. Reorganizing and redesigning electric markets, and giving our electric companies and their customers time to respond to those changes, is crucial. We also need to have a defined universe of megawatts we are addressing, so we need to keep the 10 percent limit.

It takes 3-5 years to build a new generating plant, including all regulatory approvals and permit requirements. So we need to know electric customers are protected now and 5 years into the future. That will give us time to construct a new, efficient plant if needed. All electric companies should be required to show the MPSC they have the capacity to serve their customers for the next five years in order to do business in Michigan. I am calling on the legislature to help us reform this system before the summer break, so that we can give ourselves as much time as possible to make a smooth transition.

Adaptability

Michigan must set a reasonable, achievable and efficient goal for 2025 : a minimum of 30 percent clean energy – and potentially much more.

2025 is 10 years away. And in those 10 years, Michigan is going to need to build new plants for electric generation and make sure our natural gas infrastructure is able to handle increased demand. We need to make sure our decisions keep Michigan adaptable, while making sure our energy is reliable, affordable, and protective of the environment. We've been talking about energy for some time, and that time has given us clarity on some key challenges facing Michigan.

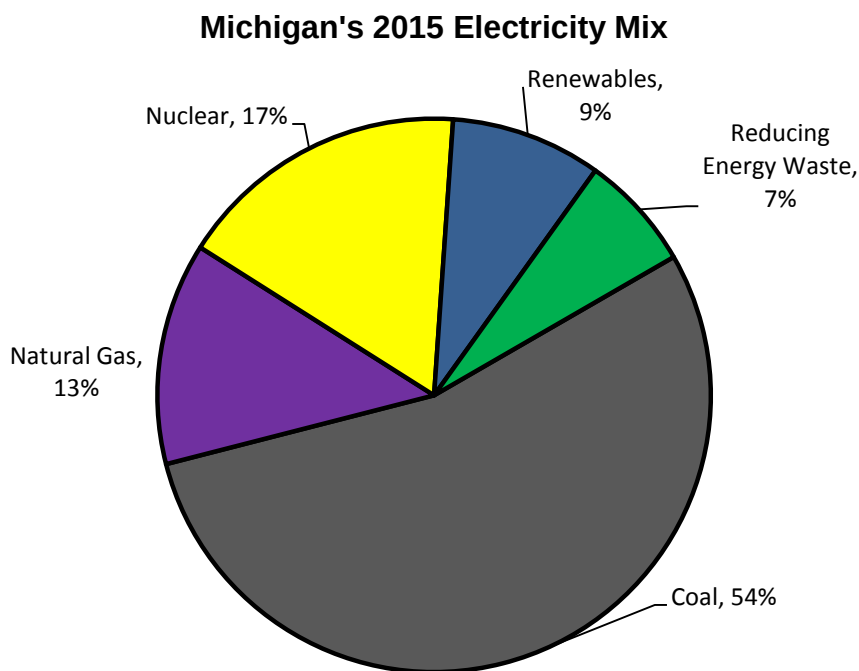
Michigan has historically been one of the top 10 states most dependent on coal. We will have fewer coal plants in the near future. Now is the time when we will make energy decisions that shape our future and our children's energy future. That energy future can be one where our system is adaptable, reliable, affordable, and protects our

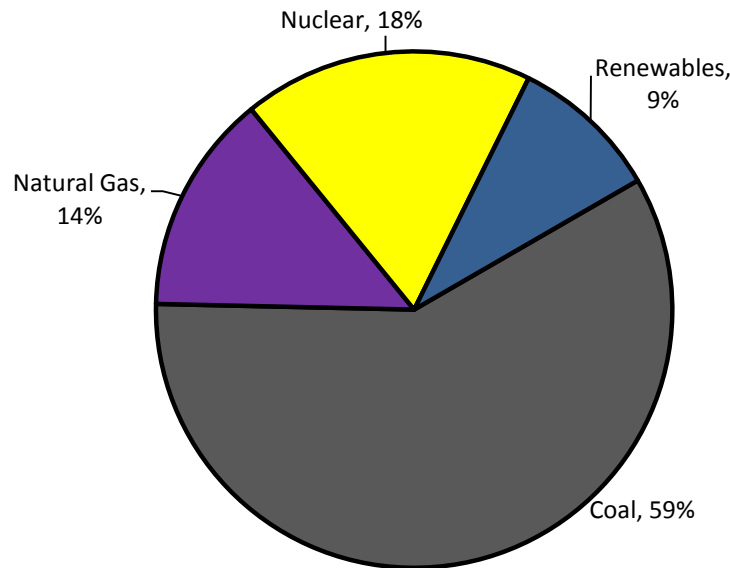
environment – but only if we are smart about how we make those decisions and take advantage of our strengths.

Michigan is well-positioned to make those decisions. We've been working during the last few years and have a pretty good idea of the range of the best solutions for Michigan.

First, we know that Michigan will benefit most by eliminating energy waste as our first priority. Then we can look at what plants will be shutting down and what will be replacing those to determine what our future mix of electric plants will look like. We will have less coal and more natural gas and renewables. We will have more natural gas plants for baseload generation as well as for intermittent generation when power from renewables may not be available -- and more renewable energy to help us contain costs. And reducing energy waste will be an increasingly important part of our portfolio.

If you look at where Michigan gets its electricity today, we are still pretty reliant on coal. But we are seeing a contribution from our newer investments – reducing waste and renewables – that is almost as large as the contribution from our nuclear plants. Below are charts showing what our mix looks like when you add in the energy waste reductions, or if you look only at our generation.





Now, when we look at the future, what do we know? First off, we know Michigan is growing again. While we should look at all scenarios, we should plan for at least a moderate amount of growth in electric demand.

We know that renewable energy has dropped significantly in cost, making it cost-competitive or close to cost-competitive. We are now hearing firm 20-year price quotes for wind that are less expensive than coal or natural gas. These least-expensive renewables can't provide baseload power – because they only work when the sun is shining or the wind is blowing. That said, we have a unique asset that helps us store power in Ludington, Mich. so we can get more benefit from intermittent power than most states do.

We know that our nuclear production is likely to hold steady until the federal government figures out what to do with the waste, and until we figure out a way to make sure nuclear plant construction can be done cost-effectively.

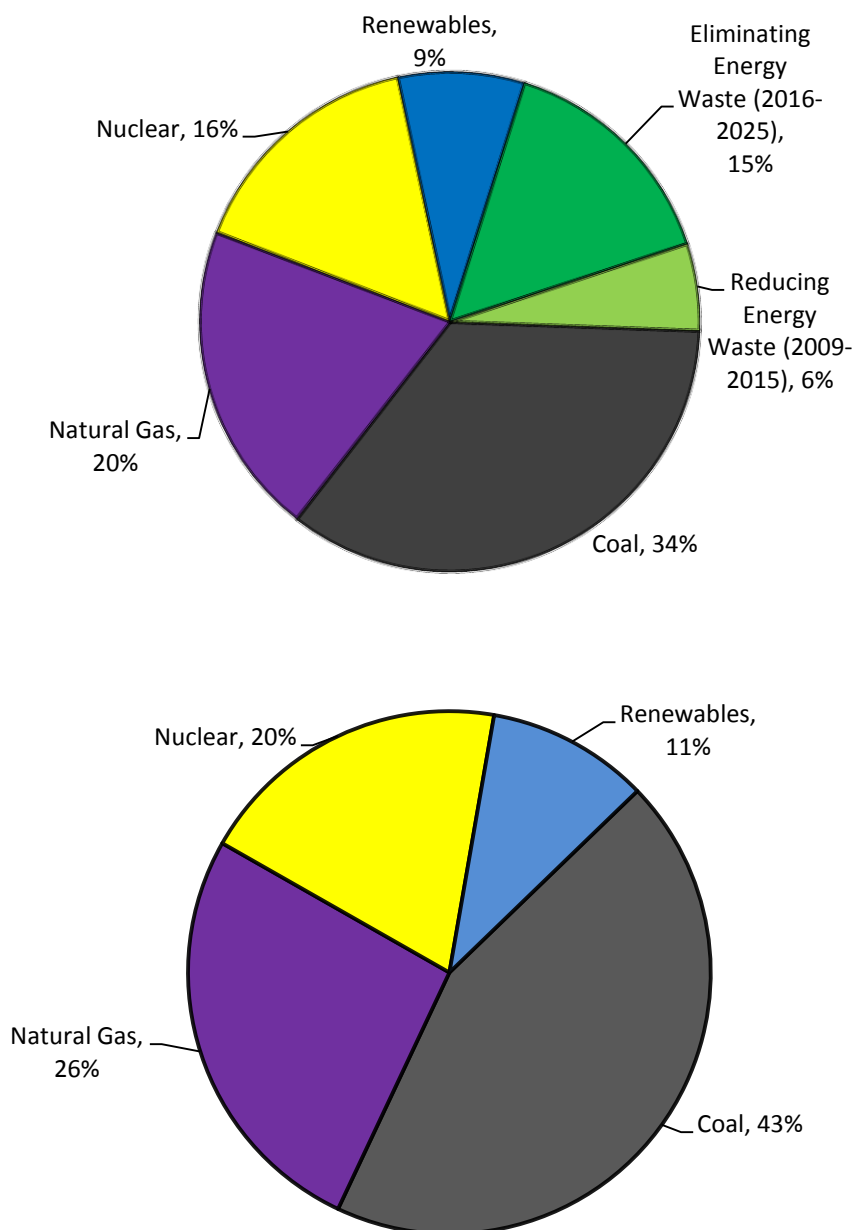
Our new source of baseload power will likely come from natural gas. We know that natural gas prices are more stable than we have seen for decades. We know Michigan has the best natural gas storage in the country. We know Michigan has the ability to produce natural gas – with a safety record to be proud of. And we know natural gas prices are very competitive in Michigan – the eighth-lowest in the country. With that said, natural gas also has a history of very volatile fuel pricing – lots of spikes as well as valleys. To protect Michigan residents and business from big price swings, we will need to offset that risk of natural gas prices with power that doesn't need us to pay for fuel – renewables.

Now, let's get to what we don't know. We don't know if exactly what natural gas will cost – if it will beat renewables, or vice-versa. So starting with what we know, we can try out some possible futures and see what our mix would be if we just built as

much of the cheapest thing as possible to fill our gap. To make it simple, these scenarios do not try to include any new federal regulations change the mix, or hedge our risks, or technological changes.

If natural gas generation is generally less expensive than renewables (onshore wind), then here would be the state's energy mix in 2025 with energy waste elimination shown (top), or the resource mix of only our generation assets (below).

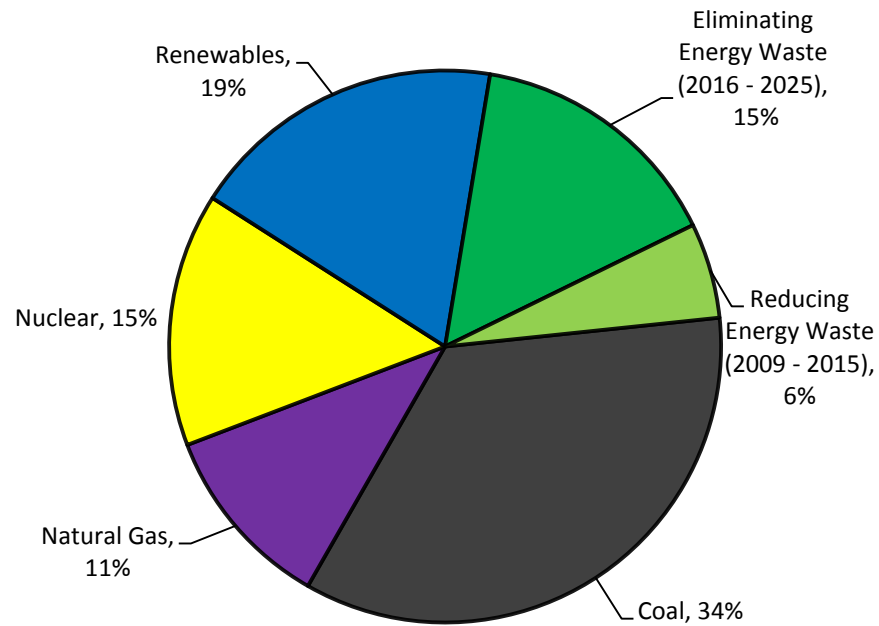
**Michigan's Potential 2025 Electricity Mix
(natural gas less expensive than renewables per kWh)**

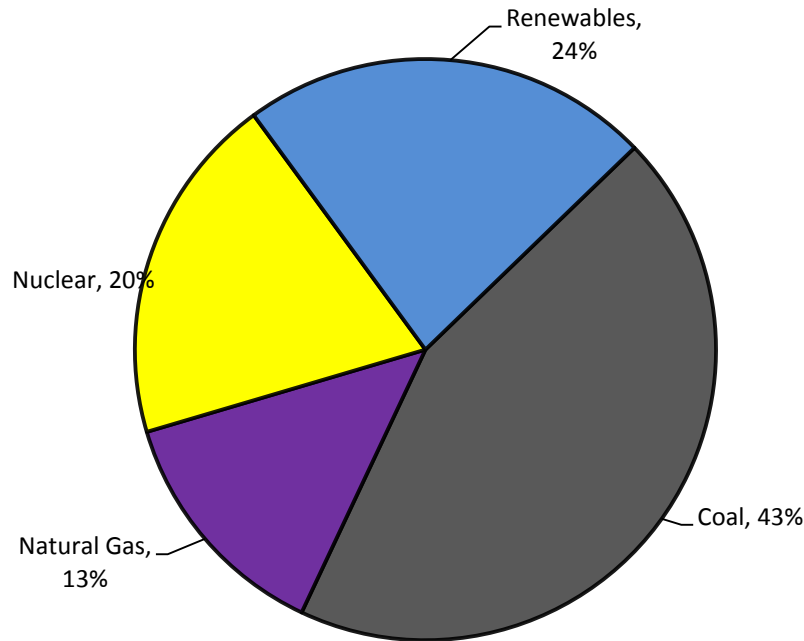


Now let's look at another scenario, where onshore wind is less expensive than natural gas.

Michigan's Potential 2025 Electricity Mix

(natural gas more expensive than renewables per kWh)





If we look at nothing but cost -- and renewables don't beat natural gas on cost -- Michigan would want to get **30 percent of our energy needs in 2025** from our cleanest sources (eliminating waste and renewable energy).

If we look at nothing but cost, and renewables beat natural gas on cost, Michigan would want to get **40 percent of our energy needs by 2025** from our cleanest sources (eliminating waste and renewable energy).

Once you start looking at possible futures, you can see why Michigan's energy goals include the elimination of energy waste and moving to a mix of natural gas and renewables. No matter what the future holds, there is no scenario in which we should not more than double our efforts to reduce energy waste. There are reasonably likely situations in which for financial reasons alone, Michigan would want to more than double our current renewable generation. And you also see why we need to be adaptable, since we don't know which future we will actually come to see.

When other factors are taken into account, including the likelihood of increased regulation on coal and the expected upward pressure on natural gas prices, it is clear that this range -- 30 percent to 40 percent renewables plus waste reduction -- represents the least amount of waste reduction and renewable energy that would make sense for Michigan to invest in during the next ten years.

Protecting the Environment

Michigan's energy generation needs to be part of a healthier future by reducing mercury emissions, pollution that creates acid rain, and particles in the air for the health of Michigan.

In Michigan, pregnant women and children can't eat a lot of fish we catch in our lakes and rivers because the mercury in the fish would cause serious health and developmental problems. There also are studies dating back decades that show particulate matter in the air is linked to asthma attacks and hospitalization, especially in children. And as the home of the Great Lakes, Michiganders care about acid rain creation, which is why we showed a lot of early leadership in controlling the pollutants that cause this.

We should not lose sight of the fact that there are other reasons beyond cost and portfolio diversity that these technologies are better for Michigan than what we have today.

Pure Michigan has been such a powerful brand for our state because it promotes the reality of our state. People should come here to enjoy the kind of experiences that make treasured memories.

One nearly-perfect Pure Michigan moment that comes to mind is a kid pulling a huge fish out of a picture-perfect lake. You know how to make that perfect? Having the kid be able to eat that fish that night. That's a part of no-regrets energy decision making.

We need to continue to take environmental priorities into account when making energy decisions. We must work to ensure our energy portfolio should continue to get better over time in controlling pollutants. When you replace a coal plant with a natural gas plant, you have essentially eliminated mercury as a pollutant from that plant. Chemicals that lead to acid rain-- SO_x and NO_x -- also drop enormously when you replace coal with natural gas. Particulate matter, which is linked to heart and lung diseases – like asthma – is reduced through natural gas use instead of coal, but large reductions come when you rely more on our cleanest sources, like waste elimination and wind or solar power.

Of course, we can't just look at power plants when we discuss energy and the environment.

In charting out Michigan's energy future, we should also explore ways to promote the adoption of advanced transportation fuels such as natural gas, biofuels, hydrogen, and electricity. Passenger cars and trucks, transit buses, fleet delivery vans, refuse and utility trucks, and even heavy duty rigs are now being powered by alternative energy sources and we must continue to examine how smart policies can help encourage their growth as part of Michigan's energy future. We also need to look at emerging technologies that may be able to do more to limit pollution from traditional vehicles.

Michigan has been a leader in developing and testing autonomous and connected vehicles, which would not only help reduce crashes, but can reduce emissions too.

In another arena, yesterday new rules went into place that continue Michigan's tradition of protective and effective regulation of drilling for natural gas and oil, and help us adapt to technological change.

We are pleased at the level of thoughtful interest and exchange this issue is receiving outside of government. The rules that took effect this week regarding high volume hydraulic fracturing were developed while key decision-makers from the state were participating in the first phase of an integrated assessment by the University of Michigan's Graham Institute. That helped us see an opportunity to strengthen our protection of water and give the public more information.

Specifically, we took some steps to require more preparatory work and monitoring of water levels. Baseline water quality samples will also have to be collected, so we will be able to know what the water quality was in the area before the operation started. DEQ will also have to be notified at least 48 hours before the operation starts.

The public will also have more information about when and where high volume hydraulic fracturing is used – permits will now have to contain this information, even if the producer is using the technique on an old well. The pressures and volumes being used will be reported, and operators must post information about the chemical additives used on the FracFocus Chemical Disclosure Registry – which is on the web and anyone can access.

The Graham Institute is now well into the second phase of its integrated assessment and the State will be among the many entities giving public comment to the researchers. The State looks forward to reading the final assessment and considering whether further rule changes or other improvements should be proposed.

Conclusion

Now is the time for Michigan to take charge of its energy future.

We have an agenda before us with great challenges. We have set ambitious goals and there is much to do if we are to meet them.

But one thing we know for sure is that Michiganders do not back away from challenges. Our reinvention is proof that we know how to pull together, innovate and find solutions. We can lead the nation. That's the only way we should approach our energy needs.

I announced in the State of the State address that I plan to create a state agency focused entirely on meeting our energy needs now and long into the future. Later this

month, I will sign an executive order creating that agency so that we can start improving our energy decision-making. We will do that not by replacing the skilled decision-making by our Public Service Commission and Department of Environmental Quality, but by having a single agency dedicated to getting all of our departments and commissions the information and context they need to support our energy priorities. We will be ready to put into place the changes that come about through work with our legislative partners as well as stakeholders. And most of all, we will be ready to adapt and make sure Michigan – and Michiganders -- make the best energy decisions for our future.