



CRC MEMORANDUM



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STATEWIDE BALLOT ISSUES: PROPOSAL 2012-03 RENEWABLE ENERGY

CRC's Analysis of State Ballot Issues

This paper is one in a series of papers that analyze the six questions Michigan electors will be voting on at the November 6, 2012, general election. The papers, information about webinars, links to the actual proposed amendments, and ballot language can be accessed at <http://election.crcmich.org>. The Citizens Research Council of Michigan does not endorse candidates for office or take positions on ballot issues. In analyzing these ballot issues, CRC hopes to provide more information so that voters can make better informed decisions in formulating their vote.

On November 6, 2012, voters will be asked to amend the 1963 Michigan Constitution to add a Section 55 to Article IV (Legislative Branch). Proposal 2012-03, which is on the statewide ballot as a result of petitions circulated by Michigan Energy Michigan Jobs, seeks to make it a constitutional policy of the state to promote and encourage the use of clean renewable electric energy sources and establish that at least 25 percent of the state's energy is from specific renewable sources.

Michigan's current renewable energy standard, created by Public Act 295 of 2008, calls for investor-owned utilities, alternative retail suppliers, electric

cooperatives, and municipal electric utilities to generate 10 percent of their retail electricity sales from renewable energy resources by 2015. Adoption of Proposal 2012-03 supposes that PA 295 would be amended to comply with the new constitutionally enhanced requirements. Without adoption of Proposal 2012-03, policymakers could still revisit the issue of renewable energy in the future and make legislative changes to require that a higher percent of total energy be generated from renewable sources, alter the types of renewable technologies that qualify under the act, and/or amend the manner in which compliance is monitored and credits are rewarded.

Clean Renewable Electric Energy

Efforts to promote clean renewable energy are often associated with the politically charged issue of climate change, but there is a general recognition that the production of energy from finite resources, such as fossil fuels, is unsustainable over the long run. Conversion to clean energy is also desirable because it can reduce negative externalities. For example, the consumption of fossil fuels, such as coal, can be bad for the environment, because they introduce elements such as mercury and sulfur dioxide into the environment. These elements are known to cause adverse health effects, such as increased occurrence of asthma. Additionally, it is hoped that increased use of clean renewable en-

ergy, and thus reduced reliance on fossil fuels will lessen the United States' dependence on many of the top oil producing countries. Efforts to increase clean renewable electric energy production are aimed at mitigating all of these effects of the use of finite resources for energy production.

Details of the Proposal 2012-03

The proposed constitutional amendment would require that at least 25 percent of each electricity provider's annual retail electricity sales be derived from the generation or purchase of electricity produced from clean renewable electric energy sources



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Proposal 2012-03

The proposal would add a new section (Section 55) to Article IV of the Michigan Constitution to provide:

1. *It is the policy of Michigan to promote and encourage the use of clean renewable electric energy sources. Clean renewable electric energy sources, which naturally replenish over a human rather than geological time frame, are wind, solar, biomass and hydropower.*
2. *Beginning no later than 2025, at least 25% of each electricity provider's annual retail electricity sales in Michigan shall be derived from the generation or purchase of electricity produced from clean renewable electric energy sources. The foregoing clean renewable electric energy standard shall be implemented incrementally and in a manner that fosters a diversity of energy generation technologies. Facilities used for satisfying the standard shall be located within Michigan or within the retail customer service territory of any electric utility, municipally-owned electric utility or cooperative electric utility operating in Michigan.*
3. *Consumers shall be charged for electricity from clean renewable electric energy sources in the same manner and on the same basis as for electricity from other sources.*
4. *To protect consumers, compliance with the clean renewable electric energy standard shall not cause rates charged by electricity providers to increase by more than 1% in any year. Annual extensions for meeting the standard may be granted, but only to the extent demonstrated to be necessary for an electricity provider to comply with the foregoing rate limitation.*
5. *The legislature shall enact laws to promote and encourage the employment of Michigan residents and the use of equipment manufactured in Michigan in the production and distribution of electricity derived from clean renewable electric energy sources.*
6. *Any provision or portion of this section held invalid or unconstitutional shall be severable from the remaining portions, which shall be implemented to the maximum extent possible.*

by 2025. It would require that the facilities used to generate clean renewable energy be located within Michigan or within the retail customer service territory of any electric utility operating in Michigan. And it would set limits on the extent to which compliance with this provision may cause rates charged to electricity customers to increase.

Renewable Energy

Proposal 2012-03 defines clean renewable electric energy sources as those "which naturally replenish over a human rather than geological time frame,"

and broadly includes energy derived from wind, solar, biomass, and hydropower.

Wind energy results from windmills that are connected to electric generators to turn the wind's motion energy into electrical energy. Wind over 8 miles per hour can be used to generate electricity.¹

¹ National Renewable Energy Laboratory Education Programs, R.E.A.C.T. Renewable Energy Activities – Choices for Tomorrow: Teacher's Activity Guide for Middle Level Grades 6-8, www1.eere.energy.gov/biomass/pdfs/react.pdf (accessed Aug. 02, 2012).

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Solar energy is produced when the light from the sun strikes solar panels that convert the sun's energy into electricity.

Biomass is the process of creating energy from any organic material from plants or animals. Sources of biomass include agricultural and forestry residues, municipal solid wastes, industrial wastes, and terrestrial and aquatic crops grown solely for energy purposes.²

Hydropower creates electric energy when falling or flowing water causes turbines to turn. The turbines drive generators, which produce electricity.³

Some technology to capture renewable energy is very old, but well tested. Windmills and hydropower were used to power machines long before technology evolved to harness electrical power. Other technologies are newly developed: the technology to capture energy from the sun is fairly new and still developing. Ultimately, all of the renewable energy technologies relate to the capture of energy produced by moving air or water, or capturing energy from the sun or the decomposition of organic matter.

25 Percent Standard

Proposal 2012-03 would require that at least 25 percent of each electricity provider's annual retail electricity sales in Michigan be derived from the generation or purchase of electricity produced from clean renewable electric energy sources. The amendment is explicit that the energy must be produced from facilities "located within Michigan or within the retail customer service territory of any electric utility, municipally-owned electric utility or cooperative electric utility operating in Michigan."

² U.S. Department of Energy, Energy Efficiency and Renewable Energy page, www1.eere.energy.gov/biomass/biomass_basics_faqs.html (accessed Aug. 02, 2012).

³ National Renewable Energy Laboratory Education Programs, R.E.A.C.T. Renewable Energy Activities – Choices for Tomorrow: Teacher's Activity Guide for Middle Level Grades 6-8, www1.eere.energy.gov/biomass/pdfs/react.pdf (accessed Aug. 02, 2012).

The provisions requiring that the facilities be produced in Michigan are meant to keep investment located within the state. Some of the electric utilities' customer service territories stretch into Indiana or Wisconsin. Locating renewable energy generation facilities in those states, but still within the customer service territories of those utilities, would satisfy the requirements of this proposed amendment.

PA 295 of 2008 created the following annual benchmarks to get each electric utility to the 2015 target based on a "baseline" established in 2009:

- 2012: Existing renewable energy baseline plus 20 percent of the gap between baseline and 10 percent target
- 2013: Existing renewable energy baseline plus 33 percent of the gap between baseline and 10 percent target
- 2014: Existing renewable energy baseline plus 50 percent of the gap between baseline and 10 percent target
- 2015: 100 percent of total obligation

Just as PA 295 of 2008 set an incremental schedule for electric utilities to phase in compliance with the current 10 percent by 2015 standard, the proposed amendment calls for an incremental implementation of the new 25 percent standard.

The expectation is that the legislature will amend PA 295 of 2008 in accordance with the provisions of this proposed amendment. The details for how the higher standard would be phased in would be determined at that time.

Consumer Cost Protections

A provision in the proposed amendment addresses how the cost of compliance with the proposed amendment would affect electric consumers. The proposal makes clear that the electric utilities are to charge for clean renewable electric energy in the same manner and on the same basis as they currently do for electricity from other sources.

Additionally, Proposal 2012-03 states that the cost of compliance with the proposed standard “shall not” cause electricity rates to increase by more than one percent in any year. Many inputs go in to determining the cost of electricity, including the cost of producing or obtaining electric energy and the cost of transmitting electricity to the consumers.

When fully implemented (if this proposed amendment is adopted), it is expected that non-renewable energy sources will still account for about 75 percent of the energy produced. The cost increase restriction will not hinder the ability of electric utilities to recoup the cost of producing or obtaining electricity from those sources.

Additionally, rate changes will not be constrained from increasing by more than one percent in any year if necessary to pay for transmission costs.

Finally, it must be recognized that the proposed amendment allows electric utilities to seek annual extensions for meeting the standard if needed to keep the cost of compliance with the standards related to the amounts that can be recouped from consumers within the cost protections.

The consumer cost protections aim to control increases in cost related to the portion of the bill related to compliance with the proposed constitutional standard; it will **not** keep increases in total electric utility bills to one percent per year. They will allow for moderation in implementing the standard if the cost of implementation exceeds one percent in any year. As is described below, it is expected that the cost of electricity will continue to increase in Michigan with or without adoption of this proposal. Supporters of the proposal think that adoption of the amendment will slow the rate of increase.

Investment in Michigan

Supporters of the proposed constitutional amendment believe that its adoption will lead to greater investment in Michigan. This increased investment could manifest itself in several forms.

Michigan is currently dependent on coal plants for most of the electricity produced in the state. The

state does not have coal resources that can be mined for that purpose, so coal has to be imported from other states. By reducing the dependence on coal, the proposed amendment would reduce the amount of resources paid to other states to purchase coal and would reduce the cost of transporting coal from other states. Money not paid for the purchase or transportation of coal could remain in Michigan to be put to other purposes.

The proposed amendment requires that the compliant clean renewable electric energy facilities must be located in Michigan or “within the retail customer service territory of any electric utility, municipally-owned electric utility or cooperative electric utility operating in Michigan.” Many might see land and resources put to productive use within this state as a positive investment, especially after the decade-long recession that Michigan has just endured. It should be noted that not all agree that land used for these purposes is necessarily a positive. Efforts to strategically locate windmills have divided several rural Michigan communities, with opponents upset about the noise and light pollution created by the revolving turbines.⁴

Finally, the proposed amendment includes language that encourages the legislature to enact laws to “promote and encourage the employment of Michigan residents and the use of equipment manufactured in Michigan in the production and distribution of electricity derived from clean renewable electric energy sources.” To the extent that laws that “promote and encourage” an activity or economic investment are successful, this could lead to expanded capabilities for manufacturing wind turbines, solar panels, and other means of generating clean renewable energy. Michigan’s manufacturing capabilities have been referenced by proponents as ideal to position the state as a leader in this field. Capitalizing on Michigan’s manufacturing strengths could position the state to produce the resources needed for renewable energy in other states.

⁴ See The Detroit News, *Wind Farms are a towering rural issue in Michigan*, August 13, 2012, www.detroitnews.com/article/20120813/SCIENCE/208130321/1524/SCIENCE/Wind-farms-towering-rural-issue-Michigan (Accessed Aug. 13, 2012).

Renewable Energy's History in Michigan

The American Council for an Energy-Efficient Economy reports that Michigan had a history of fairly aggressive energy efficiency programs until 1995. Electric utility restructuring at that time caused the state to discontinue demand-side management and integrated resource planning. From 1995 until 2008, efforts to employ energy efficient programs and incorporate renewable energy technologies into electricity production were voluntary actions taken by the electric utilities.⁵

PA 295 of 2008

In October 2008, Michigan enacted the Clean, Renewable, and Efficient Energy Act, Public Act 295, requiring the state's investor-owned utilities, alternative retail suppliers, electric cooperatives and municipal electric utilities to generate 10 percent of their retail electricity sales from renewable energy resources by 2015. Electricity providers are required to at least maintain that same amount of renewable energy in the years after 2015.

PA 295 laid out a series of benchmarks between implementation of the act and 2015 so that each utility would have an obtainable path to compliance with the standard in 2015.

The act provides detail on the types of technologies that can be used to generate renewable energy that qualify for compliance with the act. While the act enumerates a number of energy capturing methodologies that are not specified in Proposal 2012-03, each of those ultimately are derived from the capture of energy produced by moving air or water, or capturing energy from the sun or the decomposition of organic matter. PA 295 specified that new hydropower facilities that require the construction of new dams are not eligible sources of hydropower. In addition to the need to integrate renewable energy sources, PA 295 allows electric utilities to use energy optimization (energy efficiency) and advanced cleaner energy systems to meet a limited portion of the requirement.

PA 295 created obligations for the two largest investor-owned utilities, Detroit Edison and Consumers Energy, that go beyond those of other electric utilities.

How Michigan Aims to Meet this Standard

Information provided by the Michigan Public Service Commission indicates that the electric utilities are on pace to meet the 10 percent requirement in 2015. Thanks in part to federal tax credits that subsidized windmills, expansion of wind energy will account for most of the expansion in renewable energy to meet this standard. Energy companies have invested to lesser extents in solar, anaerobic, hydropower, and

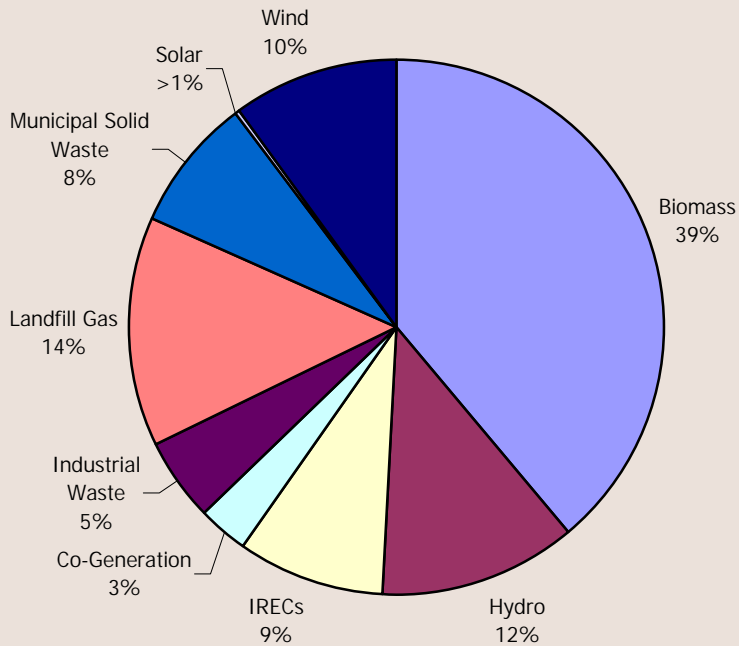
⁵ American Council for an Energy-Efficient Economy, State Energy Efficiency Policy Database, Michigan, www.aceee.org/sector/state-policy/michigan (Accessed Aug. 13, 2012)

landfill projects to meet the standard.⁶ **Chart 1** shows the energy produced from renewable sources in 2011 to comply with the provisions of PA 295 of 2008.

Finding locations for new windmills in Michigan may be more difficult than in many of the plains states that are capitalizing on this renewable energy resource. The areas of Michigan that have few inhabitants are generally forests, which are not ideal locations for windmills. Very few areas that are not forests, have large amounts of open space similar to the large commercial farms found in the plains states. Both additional terrestrial and new offshore wind projects have been considered as potential options, as well as small solar plants, and enhanced biomass production in southern Michigan should Proposal 2012-03 be adopted by the voters. It may also be necessary for the state to supersede local authority for zoning as it relates to locating windmills if Proposal 2012-03 is adopted. As was mentioned above, the location decisions for windmills have split many rural communities in recent years, with some proposed wind projects halted by votes of the residents. If additional locations are needed to garner the energy needed to produce 25 percent of the total from renewable sources, the ability of local residents to provide input on the locations could be set aside.

⁶ See *Report on the Implementation of the PA 295 Renewable Energy Standard and the Cost-Effectiveness of the Energy Standards*, Michigan Public Service Commission, February 15, 2012, www.michigan.gov/documents/mpsc/implementation_PA295_renewable_energy2-15-2012_376924_7.pdf and *Michigan Wind Farms Map*, michigan.gov/documents/mpsc/wind_map_for_energy_fair_396133_7.pdf.

Chart 1
Michigan Renewable Energy Certification System Vintage Credits, 2011



Source: Michigan Public Service Commission, *Report on the Implementation of the PA 295 Renewable Energy Standard and the Cost-Effectiveness of the Energy Standards*, February 15, 2012, www.michigan.gov/documents/mpsc/implementation_PA295_renewable_energy2-15-2012_376924_7.pdf (Accessed Aug. 16, 2012).

Interstate Comparisons

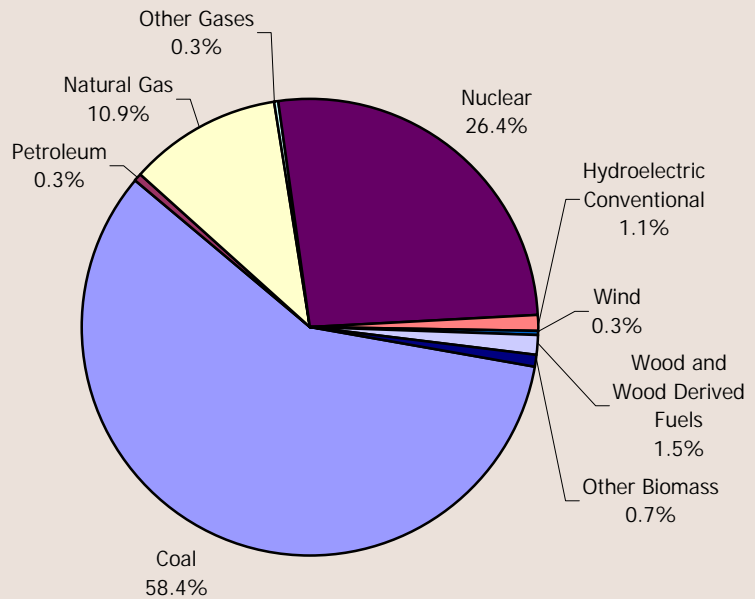
Many countries have attempted to reduce the use of fossil fuels through carbon taxes; effectively raising the price, lowering consumption, and making renewable energy more competitive. Those countries also have provided additional incentives to create renewable energy. Efforts to address this issue at the federal level in the United States that have tried to cap carbon consumption with policies like “cap-and-trade” have not garnered sufficient support to make it through both houses of Congress. With the void in policy at the federal level, many states have tackled this issue independently. Understanding how Michigan fits in among these state efforts requires comparisons of total energy consumption, the percent of energy that will be required to be produced from renewable sources in each state, and the types of renewable energy sources that qualify to meet the standards set in each state.

Total Energy Consumption

Energy consumption in Michigan is in line with other states when related to population and economic activity. The U.S. Energy Information Administration reports that energy consumption in Michigan in 2010 ranked 11th among the 50 states and the District of Columbia at 2,798.1 trillion BTUs. The data need to be converted to ratios to better allow for comparisons: per capita energy consumption in Michigan ranked 35th; energy consumption per real dollar of gross domestic product ranked 27th among the 50 states and the District of Columbia.⁷ It is likely that these rankings are relatively low compared to where Michigan otherwise would have been because of the lingering effects of Michigan's prolonged recession and how it affected the population (Michigan was the only state to lose population between 2000 and 2010) and reduced economic activity.

The sources of energy vary throughout the nation by region and by state according to the resources most readily available to energy producers. For instance, while coal is abundant in the eastern U.S., it is scarce in the western states. **Chart 2** shows the energy sources used to gener-

Chart 2
Michigan Electricity Generation by Energy Source, 2010



Source: U.S. Energy Information Administration, Net Generation by State by Type of Producer by Energy Source, www.eia.gov/electricity/data/state/generation_annual.xls (Accessed Aug. 16, 2012).

ate electricity in Michigan in 2010.⁸ Coal is used to generate more than half of the electricity generated in Michigan, with nuclear power and natural gas used to generate another third of the total. Less than five percent of the total energy generated was from renewable energy sources, including hydroelectric, biomass, and wind sources.

⁷ U.S. Energy Information Administration, State Energy Data System, Table C11, Energy Consumption by Source and Total Consumption per Capita, Ranked by State, 2010, www.eia.gov/state/seds/seds-data-complete.cfm (Accessed Aug. 16, 2012) and Table C12, Total Energy Consumption, Gross Domestic Product (GDP), Energy Consumption per Real Dollar of GDP, Ranked by State, 2010, www.eia.gov/state/seds/seds-data-complete.cfm (Accessed Aug. 16, 2012).

⁸ Keep in mind that Charts 1 and 2 show data for 2010 and 2011, which marked only the second and third years in which electric energy producers were striving to meet the phased-in standards set by PA 295. To be in compliance with the current provisions of PA 295, a chart similar to Chart 1 for 2015 will show at least 10 percent of the energy will be produced from renewable sources.

RPS Standards in Other States

Map 1 shows that Renewable Portfolio Standards (RPS) are currently in place in 29 states (plus Washington, D.C., and Puerto Rico) and eight states have voluntary renewable portfolio goals to increase their renewable energy usage by a variety of future dates from 2012-2030. Hawaii (40 percent) has the highest standard for renewables as a percent of the total, followed by California (33 percent), Maine and Colorado (30 percent), New York (29 percent), and Connecticut (27 percent).

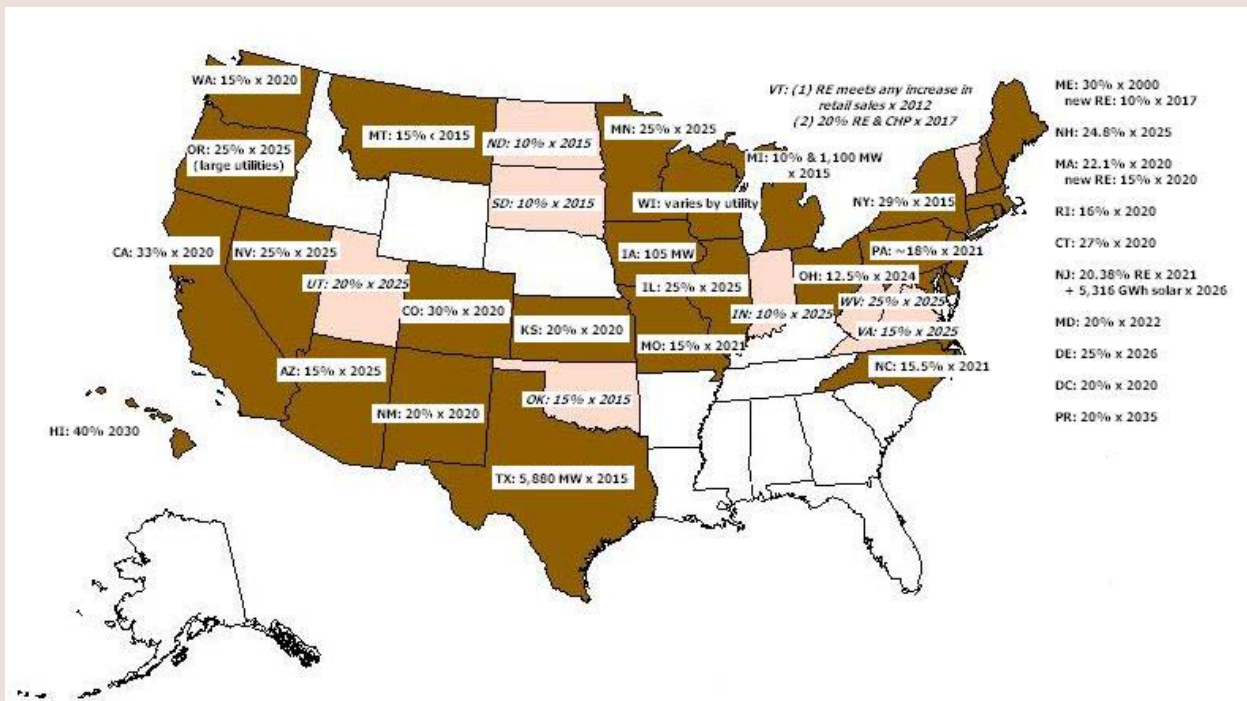
Notwithstanding that 13 states have not adopted either renewable energy standards or goals, Michigan's aim to have at least 10 percent of the state's energy from renewable sources by 2015 is among the least aggressive. A 25 percent standard by 2025 would put Michigan in the company of many of the other states that have adopted standards or goals.

Types of Renewable Energy Sources that Qualify

Each state's ability to generate electricity from renewable sources is primarily a function of the capacity to generate energy and the availability of the renewable sources. Hydroelectric power (63 percent) is the largest current source of clean energy. This energy is primarily generated from dams built before the mid-1970s, most of which are operated by federal government agencies. While hydroelectric energy can be more dependable than wind, year-to-year variation occurs with fluctuations in water levels dependent on annual rainfall and snow melt.

The contribution of other renewable sources to electric energy generation includes wind (23 percent), biomass (11 percent), geothermal (3 percent), and solar (less than one percent). The amount of electricity generated from wind has dramatically in-

**Map 1
Renewable Portfolio Standard Policies and Goals by State, May 2012**



Source: Database of State Incentives for Renewables and Efficiency, www.dsireusa.org/documents/summarymaps/RPS_map.pdf (Accessed Aug. 16, 2012).

creased in the past decade as many states have concentrated their efforts on this relatively low cost resource. These efforts were driven in large part by federal financial incentives that have subsidized the cost of wind turbines. Solar energy contributes very little to the total because most solar power is generated by small-scale, customer-sited installations like rooftop panels.⁹

Regions and states are not equally endowed with natural resources that can be used to generate renewable energy. The plains states have the most wind; the southwestern states have the most sun; mountainous states have the greatest opportunity to generate hydropower by harnessing falling water; biomass is best used to produce energy in the western states, in the northern plains states, in the

deep south, and along the east coast; and opportunities for the generation of energy from geothermal resources are most plentiful in the western states (See Appendices).

It is only in recent years that states have adopted renewable energy standards. Likewise, other nations only recently have made concerted efforts to supply significant amounts of their electric energies from renewable sources. This recent emphasis on renewable energy sources is a result of the increased cost effectiveness of the machinery for generating electricity from renewable sources. That emphasis is spurring increased research and development and improved production techniques, which is further driving increased cost effectiveness for these sources.

Issues

Constitutional Issue

Michigan has not encountered any known constitutional issues with regard to renewable energy, the provision of electricity, or with any other matters raised by this proposal. The proponents have chosen the route of a constitutional amendment as a way of enshrining in the state Constitution a policy in support of clean renewable energy.

The issue of whether this proposal should go into the Michigan Constitution is significant. CRC's recent paper, *Inserting Legal Code into the Michigan Constitution*, addressed the seemingly increased trend of policy advocates targeting the constitution in their initiative efforts rather than attempting to initiate law.¹⁰ Several additional constitutional issues should also be considered with respect to the proposal to amend this to the Constitution.

Some of the other states that have Renewable Portfolio Standards or voluntary goals to increase their renewable energy usage may have submitted requirements for renewable energy standards to voters in the form of statutory referenda, but no other state has included the standards of renewable energy usage in its constitution.

Adoption of renewable energy standards in each state is a relatively recent phenomenon. At this point, it is not clear if attainment of the standards set by the states will be financially feasible or the affect the standards will have on energy portfolios. Renewable energy is a field that is dynamic in terms of the ability to generate electricity from different types of energies, the technologies for generating that energy, and the ability to balance energy produced by non-renewable sources with renewable energy. Adoption of this amendment would provide some leeway to adapt to changing circumstances, but a future constitutional amendment(s) may be necessary to allow electric utilities to keep current in renewable energy usage to comply with state law.

Michigan does not have any other provisions in its Constitution that compel persons or businesses to engage in activities or perform tasks. The 1963 Michigan Constitution, even after being amended many times in its 49 year history, defines and limits

⁹ U.S. Energy Information Administration, *How much of our electricity is generated from renewable energy?*, June 27, 2012, www.eia.gov/energy_in_brief/renewable_electricity.cfm (Accessed Aug. 16, 2012).

¹⁰ See CRC Memo 1115, *Inserting Legal Code into the Michigan Constitution*, September 2012, www.crcmich.org/PUBLICAT/2010s/2012/memo1115.html.

the basic organs of power, states general principles, and declares the rights of the people. Even for the governmental types provided for in the Constitution – the state government, counties, townships, school districts, universities – the provisions define powers, establish officers, and enable boundary changes. The constitution does not compel any of those governments to perform an activity. The proactive requirements in Proposal 2012-03 requiring changes in behavior and investment in a particular manner for private entities – albeit regulated utilities – would be unique to the Michigan Constitution.

Furthermore, it is not clear what recourse the people would pursue in the event of non-compliance. The Constitution allows the people, through the courts, to cause a person or governmental entity to cease actions deemed unconstitutional and to force actions if needed to comply with constitutional provisions. Would the courts issue a writ of mandamus to compel an electric utility to generate more energy from renewable sources, to purchase more energy from renewable sources, or sell less energy from non-renewable sources to maintain compliance with the 25 percent standard?

Required Statutory Changes

If Proposal 2012-03 is approved, the legislature will have to amend sections of Public Act 295 of 2008, the law that currently requires at least 10 percent of the electricity sold to retail customers to be generated or purchased from renewable energy sources. The most obvious changes will entail increasing the ultimate renewable energy standard from 10 percent in 2015 to 25 percent in 2025 and establishing a schedule for the electric utilities to achieve the new target over the intervening years. Establishment of an incremental phase in schedule will be at the discretion of the legislature.

Other needed changes should be more subtle. The current law counts energy generated from geothermal, industrial thermal, and industrial waste among the eligible energy sources. A plain language reading of the proposed amendment would suggest that these energy sources do not “naturally replenish over a human rather than geological time frame” and are not derived from “wind, solar, biomass, and hydropower” sources. The current law allows ac-

tions taken to achieve energy optimization – energy efficiency, load management, and energy conservation – to be substituted for renewable energy. The language of Proposal 2012-03 only targets clean renewable energy.

Other changes may be necessary.

Compliance Issues

The proposal promises to create challenges for the state both with regards to monitoring retail sales of renewable energy and with the cost-containment mechanism built into the amendment. The requirements for renewable energy in Public Act 295 relate to the generation of electricity, with the tacit assumption that the electric utilities will sell what is generated. The proposal requires that 25 percent of retail sales emanate from renewable sources. On its face, this would seem to require some tracking of electricity from generation to sale unless energy production is legislatively equated to retail sales. This is further complicated by the requirement that the renewable energy be produced in Michigan. Electricity is not color coded or tagged in a way that monitors or consumers should know its source.

The legislature also will have discretion in determining how the cost-containment mechanism will be implemented. Should related costs include only the facilities used to generate renewable energy – windmills, solar panels, etc. – or should it also include costs related to transmission and monitoring? Should those costs appear as a separate line item on consumers bills or will the utilities be permitted to continue billing practices without independent itemization?

Production/Transmission Balance

Electric utilities have two core responsibilities relative to consumers: 1) generate or purchase electricity and 2) transmit that electricity to consumers. Consumers generally expect their energy providers be efficient in the production and transmission of energy, so that the electricity is affordable, and the providers to maintain a reliable stream of energy, so that the lights go on and machines start when switches are thrown.

Balancing the production and transmission of electric energy to provide reliable energy can be a delicate exercise. Energy is not used consistently throughout any given day, on each day of the week, or at different times of the year. Machines in Michigan's industries tend to operate more during daytime hours; less energy is consumed on weekends than during workdays; and peak electric energy consumption tends to happen during the summers when so many air conditioners work their hardest to keep houses and buildings cool. Electric utilities are expected to produce or obtain sufficient energy to meet demand and to anticipate variations in use to meet peak demands throughout the year.

The task of balancing production and transmission is made more complicated by the introduction of substantial amounts of renewable wind energy to the mix. Electricity is the ultimate exercise in "just-in-time" delivery. Once produced, energy cannot be stored for later use. Renewable energy generated from intermittent resources, such as wind or solar, must be delivered to the customer. But the facilities generating base electricity from coal or nuclear power must continue to operate: they cannot easily be powered up and down depending on the availability of renewable energy. Technology is being developed to assist with the necessary balancing between base and intermittent energy generation, but even in the best of circumstances, consumers will have to pay for the facilities generating base electricity even while renewable energy is being generated.

Cost of Energy

The cost of producing renewable energy differs from that of producing energy from fossil fuels or other sources. Generation of non-renewable electricity requires investment in facilities to generate energy from coal, nuclear power, and natural gas, and then energy companies must purchase and transport those combustible or fissionable resources to the facilities, and expend energy drawing the energy out of the resource.

In contrast, sources of renewable energy are not finite and do not have to be transported to facilities. Energy companies must invest in the facilities to generate energy from renewable sources, but ideally those facilities are strategically located and once

in place are driven by those sources (e.g., wind driving windmills, falling water creating hydropower, etc.). The cost of compliance with this constitutional requirement rests with erecting sufficient renewable energy facilities (windmills, solar panels, etc.) to produce adequate energy to provide 25 percent of the energy consumption by Michigan consumers.

While renewable energy is not seen as undesirable, many of Michigan's energy producers do not support expansion of the state's renewable energy standard above the 10 percent currently in law. Because the wind does not always blow at speeds sufficient to generate energy and the sun does not always shine in amounts sufficient to generate energy, facilities erected to comply with these standards operate far below capacity. Additionally, in wind generated electricity there tends to be a general mismatch between when the wind blows and when energy demand reaches its peak. Energy producers would prefer to invest in alternative investments that provide energy generating facilities that can be operated at full capacity when the demand for energy is the highest.

The timing for implementation of the 2008 law was very fortuitous for electricity customers, allowing the electric utilities to invest in renewable energy generating facilities while other price reductions offset their increased costs. First, the recession that plagued Michigan and the rest of the nation led to reductions in electricity demand and resulting drops in wholesale electricity prices. Excess capacity to produce electricity exists in Michigan and its neighboring states. Second, federal tax credits helped to subsidize the installation of wind turbines. Third, the declining cost of natural gas was a contributing factor. The ready supply of natural gas made possible by advances in "fracking" technology has allowed natural gas prices to be cut in half over the past few years.

Notwithstanding Michigan's history of electricity costs under PA 295, it is likely that the cost of electricity in Michigan will increase over the next 10 to 12 years with or without adoption of the proposed amendment. Michigan currently relies on coal for about 60 percent of the energy generated. The state's coal plants are aged and will need either to be replaced or retrofitted in the near future to keep them effi-

cient. New federal regulations will require that coal be burned using technology that creates cleaner combustion, which will accelerate the need to replace or retrofit coal plants and require investment in new technology. Also, coal has to be transported to the state, and transportation costs will probably not decline in the near future.

New nuclear plants are not on the horizon, but the drastic reductions in natural gas prices made possible by advances in “fracking” technology provide opportunities for electricity producers to divert to natural gas for energy generation. The U.S. Energy Information Administration projects U.S. natural gas production will increase 29 percent from 2010 to 2035. The Antrim shale play, which positions Michigan to be a producer of natural gas, should help to supply natural gas to energy producers for some time.¹¹

Compliance with Proposal 2012-03 will require energy companies to invest in facilities to generate renewable energy. New wind power is generally cost competitive with the current low-cost choice – natural gas. New solar and biomass power can be even more expensive than wind power. The federal government has been providing a tax credit that amounts to roughly 30 percent of the cost of wind turbines. That credit is set to expire at the end of 2012 and

there is considerable uncertainty in Washington D.C. surrounding its continuation.

Once renewable energy facilities are in place, the generation of electricity from renewable sources has the potential to temper the increase in electricity prices that may be caused by probable price increase drivers for non-renewable sources. Until that time, energy producers would have to invest in new facilities for renewable sources at the same time investments are being made to modernize facilities for non-renewable sources.

Municipal Utilities and Electricity Coops

Although Consumers Power and DTE Energy service most of the electric consumers in the state, Michigan also has a number of municipal utilities and electricity cooperatives that provide electricity. These entities are not large energy producers, but often purchase energy from others. The ability of any of these entities to generate at least 25 percent of their energy from renewable sources is questionable. The ability to purchase renewable electricity will depend on surplus electricity being available from Michigan generators of that power. The potential premium charged for that energy will threaten the financial position of these entities, and may in the end threaten their existence.

Appendices

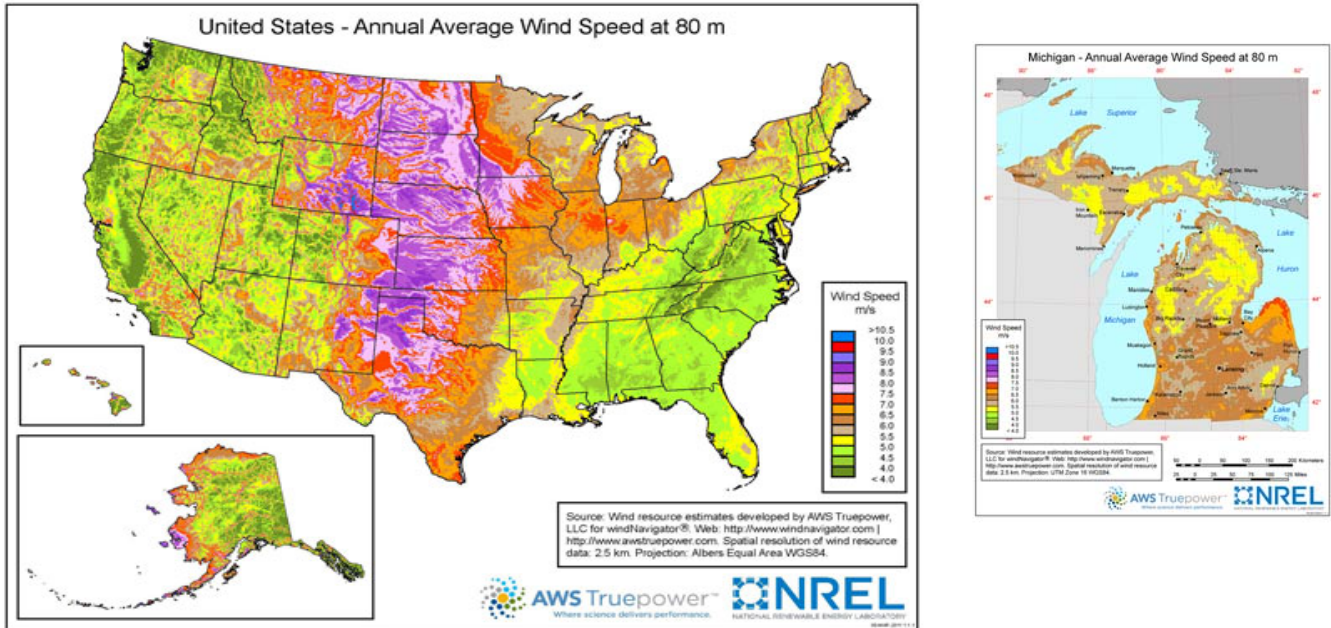
In the three main renewable energy categories (wind/solar/biomass), the majority of areas in Michigan have seemingly average capabilities for electricity generation compared with the rest of the United States. The plains states has a higher potential to maximize wind power, the southwestern United

States the highest potential for solar energy, and southern swamps are best fit to harvest biomass. Still, Michigan has a relatively decent potential for all three of these technologies in comparison with the rest of the country.

¹¹ U.S. Energy Information Administration, *What is shale gas and why is it important?*, July 9, 2012, www.eia.gov/energy_in_brief/about_shale_gas.cfm (Accessed Sept. 17, 2012).

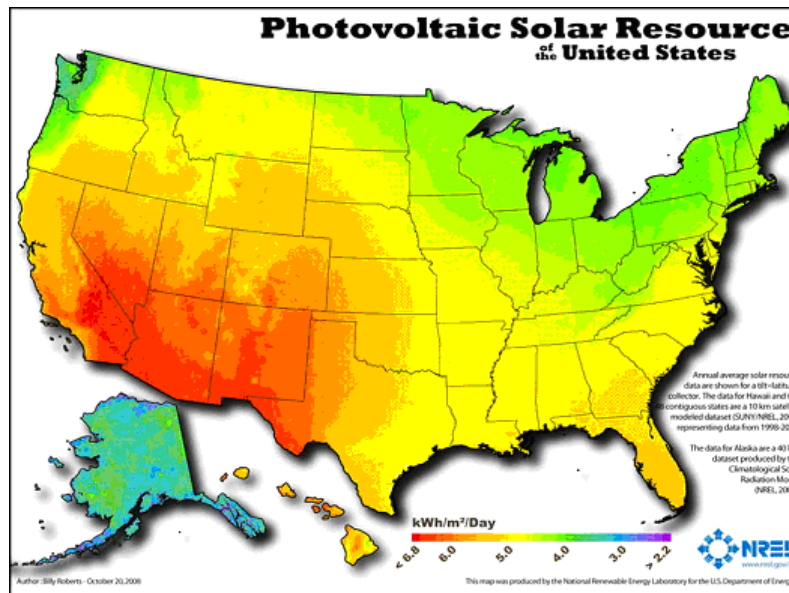
CRC MEMORANDUM

A – U.S. and Michigan Wind Maps



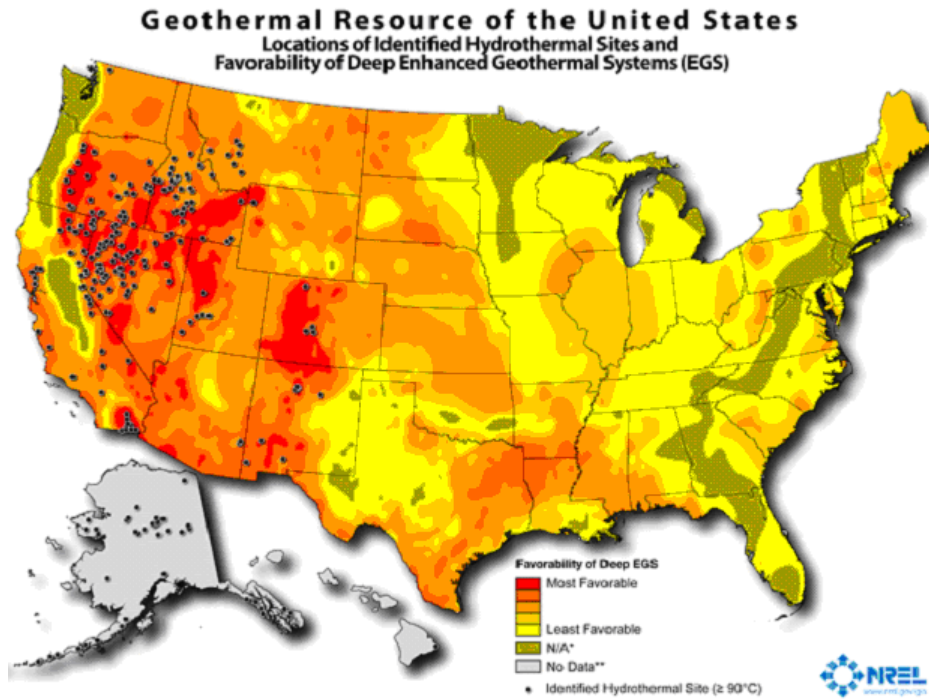
Source: U.S. Energy Information Administration, *Where Wind Power Is Harnessed*, www.eia.gov/energyexplained/index.cfm?page=wind_where

B – U.S. Sun Map



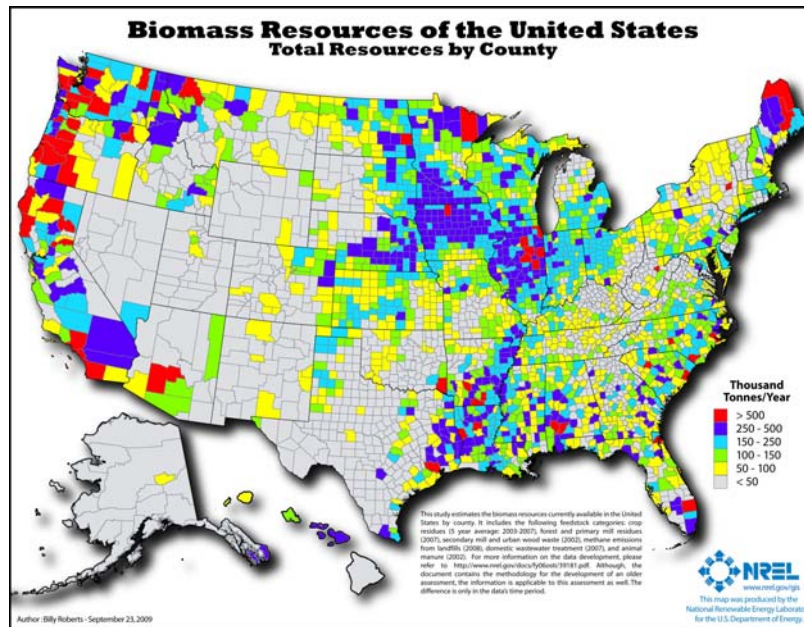
Source: U.S. Energy Information Administration, *Where Solar Is Found*, www.eia.gov/energyexplained/index.cfm?page=solar_where.

C – Biomass Harvested for Production Capabilities in the U.S.



Source: National Renewable Energy Laboratory. Biomass Resources of the United States. www.nrel.gov/gis/images/map_biomass_total_us.jpg.

D – Geothermal Map



Source: U.S. Energy Information Administration, *Where Geothermal Energy is Found*, www.eia.gov/energyexplained/index.cfm?page=geothermal_where