

Testimony of
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Michigan Electric Cooperative Association (MECA),
Lansing, Michigan
For
The Michigan Electric Cooperative Association
Before the Senate Energy & Technology Committee
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Lansing, Michigan

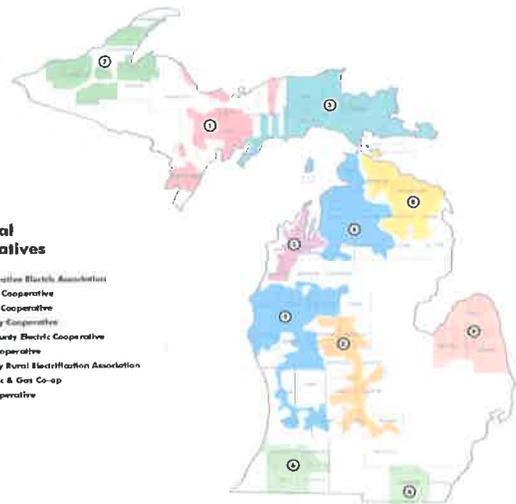
Good morning, my name is Art Thayer. I am the Director of Energy Efficiency Programs for the Michigan Electric Cooperative Association in Lansing, Michigan. I am testifying today on behalf of the 11 electric cooperatives represented by the Michigan Electric Cooperative Association. Michigan's Electric Cooperatives thank Chairman Nofs for the invitation to testify on Michigan's current Energy statutes and plans contained in SB 438 regarding renewable energy.

The Michigan Electric Cooperative Association (MECA) is the statewide trade association that provides services to its 11 cooperative members in the areas of Safety Training, Communications (including publishing the Michigan Country Lines Magazine), Legal, Legislative, Regulatory, Administrative services, and Energy Optimization. Collectively MECA's member cooperatives serve more than 300,000 homes, farms and businesses in 59 of Michigan's 83 counties.¹

My comments this morning will focus on (1) Geothermal Heating and Cooling Systems (also known as Ground Source

**Michigan's Rural
Electric Cooperatives**

- 1 - Alger Delta Cooperative Electric Association
- 2 - Charlevoix Electric Cooperative
- 3 - Cloverland Electric Cooperative
- 4 - Great Lakes Energy Cooperative
- 5 - HousaWoods Tri-County Electric Cooperative
- 6 - Midwest Energy Cooperative
- 7 - Ontonagon County Rural Electrification Association
- 8 - Presque Isle Electric & Gas Co-op
- 9 - Thumb Electric Cooperative



Heat Pumps or GSHPs) and how this technology provides for a clean, efficient, and renewable source of energy, and (2) How the energy landscape in Michigan is changing, primarily due to U.S. Environmental Protection Agency's (EPA) rule 111(d).

On behalf of our members, I would like to thank the Michigan Senate Energy & Technology Committee for the opportunity to share our views on geothermal heat pumps as an important and vital source of renewable thermal energy. We believe that geothermal heat pumps can play a significant role in helping the state comply with the new clean air rules recently finalized by the EPA under Sec. 111(d) of the federal Clean Air Act.

Geothermal heat pumps (GHPs) are a clean, renewable energy technology that use solar energy stored just below the earth's surface to heat, cool, and provide hot water to residential, commercial, and industrial buildings. Unlike conventional systems that gather heat and get rid of it in the air outside the building, geothermal heat pumps transfer heat to and from the ground. They achieve this through closed loops of fluid filled, polyethylene pipes buried either horizontally or vertically in the ground below the frost line where the temperature is consistently between 40 to 55 degrees year round here in Michigan. Ground source heat pumps use that constant temperature of fluid circulating through its loop in the ground and once installed, geothermal ground loops lasts indefinitely, and the inside unit has a lifespan of greater than 25 years.

A fully scalable technology that is effective in residential homes and commercial buildings, geothermal heat pumps use 25 to 50 percent less electricity than conventional heating or cooling systems. And according to the EPA, they can reduce energy consumption—and corresponding emissions—by 44 to 72 percent compared to traditional heating and cooling equipment.

The efficiency and renewability of geothermal heat pumps has been officially recognized by the administration in Washington, DC with its Executive Order, "Planning for Federal Sustainability in the Next Decade." The Order is meant to cut the federal government's greenhouse gas emissions by 40% over the next decade from 2008 levels. The EPA states on their Energy Star website that GHPs are the most energy efficient, environmentally clean, and the most cost effective space conditioning system available today.

The Executive Order specifically recognizes geothermal heat pumps in its mandate that the federal government increase the share of electricity it consumes from renewable sources to 30%, and that it increase energy efficiency and renewable thermal energy use by federal buildings. Geothermal heat pumps are easily applicable to many sections of the Executive Order as an efficiency tool and renewable thermal energy source for saving

energy, reducing costs and curbing carbon emissions by federal buildings across the nation. The benefits of increased geothermal heat pump installations and uses can bring those benefits to Michigan as well, especially regarding the new EPA clean air requirements under EPA rule 111(d).

The EPA recently released its 1,530-page Clean Power Plan (CPP) on August 3rd. It sets state-specific targets for carbon dioxide emissions from existing (coal-fired) power plants. The rule allows flexibility in meeting the agency's desired emissions reductions across the nation, including renewable energy and efficiency. The agency encourages the use of energy efficiency as a major way for states to comply with the new regulations.

To ensure that the full potential of GHPs is realized toward the goal of carbon reductions, EPA must recognize that GHPs may increase electricity use, but at the same time replace heating and cooling systems that rely on inefficient fuels such as propane and fuel oil.

The ability of geothermal heat pumps to avoid thermal energy produced onsite by fossil fuels should be recognized by Michigan as one of many tools to meet the requirements under EPA rule 111(d). With proper market-based incentives and other promotional efforts by utilities and the state, geothermal heat pumps can make a significant contribution to cutting greenhouse gas emissions and reduce summer peak demand in Michigan. A typical 3 ton residential GHP can reduce summer peak demand by approximately 2 kW. Take that times 500 homes equipped with GHPs and you have a peak power demand reduction of 1 MW.

It is of paramount importance for energy efficiency offsets to be implemented under EPA's carbon reduction rulemaking. Those energy efficiency considerations should specifically include the benefits of renewable thermal energy technologies as a way to avoid power generation and therefore cut carbon emissions. A primary component of such plans must include GHPs.

Given the high proportion of energy and electricity used by buildings, geothermal heat pumps offer a unique and efficient renewable energy technology for heating and cooling that provides both renewable energy and efficiency offsets that can help EPA and the states attain their carbon emission reduction targets.

As we move forward, all electric suppliers will need a suite of resources to meet the very stringent Green House Gas (GHG) reduction levels being proposed by the EPA. I believe that all electric utilities, in conjunction with their power suppliers will need robust energy efficiency programs to meet new federal GHG rules outlined by the EPA. Geothermal systems are an important tool in our toolbox that utilizes clean and renewable energy,

reduces greenhouse gas emissions, reduces energy waste, and reduces summer peak demand on Michigan's electric systems.

I would like to end on one final thought. That is, what are the total greenhouse gas emissions of a geothermal system that uses electricity generated from a hydro, solar, wind, or nuclear power plant? The answer is a simple one, zero.

Thanks again Chairman and members of this committee for the opportunity to speak in front of you today.

At this point I am happy to take any questions.

[1] MECA's membership consists of the following: Alger Delta Cooperative Electric Association, Cherryland Electric Cooperative, Cloverland Electric Cooperative, Great Lakes Energy Cooperative, HomeWorks Tri-County Electric Cooperative, Midwest Energy Cooperative, The Ontonagon County Rural Electrification Association, Presque Isle Electric & Gas Co-op, Thumb Electric Cooperative, Wolverine Power Marketing Cooperative, and Wolverine Power Supply Cooperative, Inc. Michigan's electric cooperatives maintain over 36,000 miles of line to serve approximately 310,000 meters. This results in an average of approximately eight customers per mile of line. This compares to approximately 35 customers per mile for the average investor-owned utility and over 90 customers per mile for some municipal systems. As for annual kWh sales per mile of line, the cooperatives average 60,500; the IOUs 725,000; and municipals top the scale at 1,950,000 kWh per mile per year. Approximately 95% of cooperative customers are residential. Several cooperatives serve a considerable number of seasonal homes and cottages where annual usage is low, but maintenance and the annual cost to serve may be higher.