Legislative Analysis

NUCLEAR ENERGY FEASIBILITY STUDY

Phone: (517) 373-8080
http://www.house.mi.gov/hfa

Analysis available at
http://www.legislature.mi.gov

House Bill 6019 as enacted
Public Act 218 of 2022
Sponsor: Rep. Graham Filler
House Committee: Energy
Senate Committee: Energy and Technology
Complete to 1-6-23

BRIEF SUMMARY: House Bill 6019 amends 1939 PA 3, the enabling act for the Michigan Public Service Commission (MPSC), to require the MPSC to hire an outside consulting firm to conduct a feasibility study on nuclear energy generation in Michigan and to require a written report on the study be provided within 18 months to the governor and certain legislative leaders.

FISCAL IMPACT: House Bill 6019 would create additional costs for the MPSC, which operates within the Department of Licensing and Regulatory Affairs (LARA), for engaging an external consulting firm to conduct the study. The FY 2022-23 Department of Labor and Economic Opportunity (LEO) budget included $250,000 GF/GP to provide the MPSC with a grant to fund the study.

THE APPARENT PROBLEM:

The impacts of climate change are hard to ignore. Greenhouse gases play a contributing role in the warming of the planet and resulting changes in weather patterns, with carbon dioxide representing "about 79% of all U.S. greenhouse gas emissions from human activities" in 2020, according to the Environmental Protection Agency (EPA).[1] Carbon dioxide is released into the atmosphere when fossil fuels (coal, natural gas, oil), solid waste, and biological materials (e.g., trees) are burned. Certain chemical reactions, for instance in the manufacture of certain products, can also release carbon dioxide. Sequestering (removing) carbon dioxide is one way of diminishing the amount of carbon entering the atmosphere. Because trees and plants absorb carbon from the air, protecting forests and greenspaces is one way to mitigate carbon dioxide levels. Another mitigation tool is to grow technologies that, to support human activities, produce low to no levels of carbon dioxide.

The use of solar, wind, biomass, and other green technologies are beginning to have an impact on slowing the emissions of greenhouse gases. However, as society grows ever more dependent on reliable sources of electricity, some feel that these sources are not always sufficient to meet demand, especially in geographic areas where seasons and weather patterns mean that the electricity that can be produced on a daily or hourly basis does not always match the needs of consumers who rely on that electricity. Although recent research is promising regarding storage of electricity generated from renewable sources such as solar and wind, some feel that those energy sources need to be supplemented by a source that could more quickly and reliably respond to peak demands or unexpected needs.

[1] https://www.epa.gov/ghgemissions/overview-greenhouse-gases

It has been suggested that the state take a new look at nuclear power. Michigan currently has two nuclear power plants operating in the state, which account for 22% of the state's electric generation—Fermi 2 and Cook.[2] In recent decades, newer designs for nuclear reactors have been developed that have a smaller footprint and improved safety designs. Some feel, therefore, that policymakers should revisit the potential that these newer nuclear power plants offer in Michigan's quest to support its residents' need for affordable and reliable electricity. Legislation was offered to require that a study be conducted to determine the feasibility and benefits of pursuing nuclear energy for the state.

THE CONTENT OF THE BILL:

House Bill 6019 amends 1939 PA 3 to require the MPSC to engage an outside consulting firm to conduct a feasibility study on nuclear energy generation in Michigan. The MPSC must deliver a written report on the feasibility study to the governor, the Speaker and minority leader of the House, the Senate majority and minority leaders, and the chairpersons of the House and Senate standing committees with primary responsibility for energy and environmental protection issues by April 14, 2024 (18 months after the effective date of the bill).

The feasibility study must consider all of the following:

- Advantages and disadvantages of nuclear energy generation in Michigan, including the economic and environmental impact.
- Ways to maximize the use of workers residing, and products made, in Michigan in the construction of nuclear energy generation facilities.
- Evaluations, conclusions, and recommendations on all of the following:
    - Design characteristics.
    - Environmental and ecological impacts.
    - Land and siting, safety, and engineering and cost-related criteria.
    - Small cell nuclear reactor capability.[3]
- Socioeconomic assessment and impact analysis, including the following:
    - Workforce education, training, and development.
    - Local and state tax base.
    - Supply chains.
    - Permanent and temporary job creation.
- The timeline for development, including areas of potential acceleration or efficiencies and leveraging existing nuclear energy generation facilities in Michigan.
- Additional efficiencies and benefits that could be gained by coordinating with other advanced, clean energy technologies, such as hydrogen, direct air capture of carbon dioxide, and energy storage.
- Literature review of studies assessing the potential impact of nuclear energy generation in supporting an energy transition.

[2] A third nuclear power plant, the Palisades Nuclear Power Plant, was closed at the end of May 2022 and sold by Entergy Nuclear to Holtec International. A recent attempt by Holtec to reopen the power plant was denied by the federal Department of Energy in November 2022, and the plant is now in the process of being decommissioned. See https://www.detroitnews.com/story/news/local/michigan/2022/11/20/palisades-nuclear-power-plant-denied-federal-funds-to-reopen/69663890007/

[3] Roughly speaking, small modular reactors (SMRs) are like miniature nuclear power plants capable of power generation, processing heat, desalination, and other industrial uses but with a smaller physical footprint and reduced capital investment, among other benefits, according to the federal Department of Energy, Office of Nuclear Energy.

- Analysis of national and international studies of cases where development of nuclear energy is supported and adopted.
- Assessment and recommendation of current and future policies that may be needed to support or accelerate addition of nuclear energy generation or that may improve its cost-effectiveness.
- Stakeholder engagement to seek input or feedback, including current or previous nuclear energy generation facility owners and operators in Michigan.

MCL 460.10hh

ARGUMENTS:

For:

From TVs to heating and cooling to computers to digital currencies to electric vehicles, society is becoming ever more dependent on electricity to get through a day. Traditional sources of electric generation such as fossil fuels are no longer an indefinitely viable option due to a finite supply and impacts on the environment by the release of carbon and particulates when burned. Moreover, emissions from coal plants are a known detriment to the respiratory health of residents living near and downwind from coal-fired power plants.

Several coal plants in the state have already been closed and more are scheduled to go offline in the near future. Although electric generation from wind, solar, and other renewable sources is growing, renewables still face obstacles regarding storage when the wind doesn't blow and the sun doesn't shine. Therefore, some feel that nuclear power may be a viable way to produce carbon-free, baseload energy for whenever residents need it.

Newer designs for nuclear power plants include plans for large-scale operations as well as for smaller reactors capable of powering a neighborhood or just a large industrial plant. According to committee testimony, micro reactors using enriched fuels appear to be more efficient than the large reactors of the past and could operate for 10 to 20 years before needing to be offline for refueling, as compared to traditional reactors that must be refueled every 18 to 24 months. Nuclear power in the U.S. has been a very safe source of power for decades, and, reportedly, the newer designs incorporate features that would further increase safe operation. Further, the skills of many workers in coal-powered plants are easily transferable to nuclear plants. Constructing new nuclear power plants could be a source of employment for workers from decommissioned coal plants and the newly closed Palisades Nuclear Power Plant and continue to support those local economies.

House Bill 6019 does not require utilities to start building nuclear power plants around the state. Instead, the bill requires that a feasibility study be prepared for policymakers to have factual information as to whether pursuing adding nuclear energy to Michigan's energy portfolio would be beneficial to the state. The bill requires the study to consider the pros and cons of nuclear generation in the state, including impacts to the environment and the economy, along with things such as jobs, whether nuclear technologies could complement or coordinate with other emerging technologies like hydrogen, and what national and international studies show happened where nuclear energy was developed and supported. Based on the answers the study reveals, it may be clearer as to the best way to move forward in ensuring that Michigan's

energy needs in the future can be met in such a way that electricity is affordable and its production does not cause harm.

Against:

Opponents of the bill feel that House Bill 6019 represents a foregone conclusion that more nuclear power plants in the state *are* the answer to Michigan's energy needs, rather than an attempt to explore the viability of nuclear power as one of many options in determining the best course of action for the state's residents. They also question whether 18 months after the bill becomes law is adequate time for a thorough study to be conducted and a proper report prepared. Further, they note that the consulting firm hired to conduct the study and write the report could have ties to the nuclear industry, which would be a clear conflict of interest. If a neutral firm agreed upon by both proponents and opponents of the expansion of nuclear energy cannot be found, they argue, the bill should provide that firms representing both camps be hired. Although some findings may conflict, the reports taken together may give a truer representation of both the benefits, and the downsides, of expanding nuclear energy in the state.

Few dispute that nuclear power is a low- to no-carbon way to generate electricity. However, nuclear power plants still have fundamental safety issues and security disadvantages that other low-carbon options do not. Opponents note that the bill does not specifically require that health impacts or security issues be included in the study. The bill requires that the study address "safety criteria," but it is unclear whether the scope of that requirement would include the potential for terrorist attacks or health concerns even though the smaller reactors may be sited closer to residential or industrial areas than current large reactors are.

Moreover, opponents argue that nuclear power is no more renewable than coal, presents significant issues regarding safe and permanent storage of spent rods, and even if safe emission levels established by federal regulations are adhered to, all nuclear plants pollute the environment and pose health risks to people and wildlife due to the dumping of radioactive water, release of heated water into fresh water lakes (which contributes to algae blooms), scattering of radioactive particles, and dispersion of radioactive gases—all of which are part of a nuclear reactor's routine operation.

Response:

Yes, nuclear power plants do routinely release radioactive emissions. However, according to the Nuclear Regulatory Commission, these emissions are small and represent a fraction of the radiation allowed under the commission's established limits. For example, the NRC says, in information available on its website, that a person spending "a full year at the boundary of a nuclear power plant would receive an additional radiation exposure of less than 1 percent of the radiation that everyone receives from natural background sources." In addition, the NRC maintains that this additional exposure "has not been shown to cause any harm to human beings."

Legislative Analyst: Susan Stutzky
Fiscal Analyst: Marcus Coffin