Members of the Ohio Senate Energy and Public Utilities Committee, and Senator Steve Wilson Committee Chair:

Thank you for allowing me to submit testimony in OPPOSITION to House Bill 104 (HB 104), Ohio's "Advanced Nuclear Technology Helping Energize Mankind Act" (the "ANTHEM Act").

1. The committee should not be considering legislation which benefits a single corporation or entity.

2. The Ohio General Assembly must have a comprehensive energy plan in place before considering further subsidies to any single form of energy or single corporation. Any energy legislation must level the playing field with regard to subsidies. ".. if renewables had a fraction of nuclear's current subsidies they could already be light years ahead." https://www.theguardian.com/environment/2011/jun/23/thorium-nuclear-uranium

3. A comprehensive energy plan must also protect the health & safety of Ohio's taxpayers, so Ohio's energy policy must prohibit energy entities from bypassing regulations that will: a) prevent pollution of air, water and soils, b) curb greenhouse gas proliferation, c) restrict superheating of water supplies, and d) prohibit a toxic waste burden from being passed on to our children.

4. Ohioan taxpayers should not be forced to lose control over public safety and accountability, subsidize research and development, assume responsibility for any and all costs associated with any nuclear development entity - including decommissioning, dismantling, and disposal of hazardous wastes and damages from spills and accidents, or liability associated with any & all risks. This does not exemplify a competitive market. The cost of nuclear generation is on the rise–a stark contrast to the decreasing costs of renewable energy forms such as solar and wind.

5. Thorium reactors have never been commercially viable and remain unproven on a commercial scale. "Like all nuclear power production they rely on extensive taxpayer subsidies; the only difference is that with thorium and other breeder reactors these are of an order of magnitude greater, which is why no government has ever continued their funding."

https://www.theguardian.com/environment/2011/jun/23/thorium-nuclear-uranium

From **Fact-check: Five claims about thorium made by Andrew Yang**
By John Krzyzaniak, Nicholas R. Brown | December 18, 2019

Claim: Thorium reactors would be more economical than traditional uranium reactors

False: Nuclear energy economics are driven by the capital cost of the plant and building a power plant with a thorium reactor is no cheaper than building a power plant with a uranium reactor. Further, using thorium in existing reactors is technically possible, but it would not provide any clear commercial benefit and would require other new infrastructure.

Only after conversion to uranium does thorium become useful as a nuclear fuel. So, even for a reactor that would use thorium within its fuel cycle, most energy produced would actually come from uranium fissions.

Thorium-uranium fuel cycles provide no inherent benefits relative to uranium-plutonium fuel cycles, so… new reactors need not be thorium-powered.

Claim: The waste from thorium reactors would be easier to deal with than waste from today's uranium reactors.

False. A comprehensive study from the US Energy Department in 2014 found that waste from thorium-uranium fuel cycles has similar radioactivity at 100 years to uranium-plutonium fuel cycles, and actually has higher waste radioactivity at 100,000 years.

Claim: Thorium would be more proliferation-resistant than current reactors—you can't make nuclear weapons out of it.

False. A 2012 study funded by the National Nuclear Security Administration found that the byproducts of a thorium fuel cycle, in particular uranium 233, can potentially be attractive material for making nuclear weapons. A 2012 study published in *Nature* from the University of Cambridge also concluded that thorium fuel cycles pose significant proliferation risks.

https://thebulletin.org/2019/12/fact-check-five-claims-about-thorium-made-by-andrew-yang/