

WITNESS INFORMATION FORM

Please complete the Witness Information Form before testifying:

Date: 2/15/22 HB 434 Energy & Natural Resources Committee hearing

Name: Connie Kline

Are you representing: Yourself Organization

Organization (If Applicable): _____

Position/Title: _____

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Do you wish to be added to the committee notice email distribution list? Yes No

Business before the committee

Legislation (Bill/Resolution Number): HB 434

Specific Issue: Advanced Nuclear Reactors

Are you testifying as a: Proponent Opponent Interested Party

Will you have a written statement, visual aids, or other material to distribute? Yes No

(If yes, please send an electronic version of the documents, if possible, to the Chair's office prior to committee. You may also submit hard copies to the Chair's staff prior to committee.)

How much time will your testimony require? NOT in-person testimony

Please provide a brief statement on your position:

HB 434 would create a Nuclear Development Authority with virtually unrestricted powers to use public moneys and acquire private property by eminent domain, to both promote and assume regulatory powers from the NRC, DOE, DOD to construct and operate advanced reactors benefitting private corporations without cost, liability specificity or provisions for community/public involvement.

Please be advised that this form and any materials (written or otherwise) submitted or presented to this committee are records that may be requested by the public and may be published online.

BILL SUMMARY

Despite its deceptively brief 14 page length, HB 434, like its predecessors, HB 171, HB 104, and Sub. HB 104, has been deemed by national experts as one of, if not the most, unprecedented, extreme, drastic, dangerous pieces of legislation ever introduced into a state legislature because it seeks to significantly alter provisions of Ohio's agreement state status **by creating a Nuclear Development Authority (NDA) with sweeping, alarming, nearly unrestricted powers to "perform (ostensibly) an essential governmental function and address matters of (ostensibly) public necessity for which public moneys may be spent and private property acquired (through eminent domain)." (Sec. 4164.04, p. 4) by having the NDA "...act in place of the governor in approving agreements with [Sec. 4164.11(F) p. 11] ...and assum(ing) any regulatory powers delegated from [Sec. 4164.11(E) p. 11] the U.S. Nuclear Regulatory Commission, the U.S. Department of Energy, ...the U.S. Department of Defense, ...or any branch of the U.S. military or similar federal agencies, departments, or programs governing the construction and operation...of advanced nuclear reactors and the handling of radioactive materials...to make this state (Ohio) all of the following:**

- (1) A leader in the development and construction of new-type advanced-nuclear-research reactors;**
- (2) A national and global leader in the commercial production of (radioactive) isotopes;**
- (3) A leader in the research and development of high-level-nuclear waste reduction (undefined, but presumably some form of reprocessing of highly radioactive spent fuel waste) and storage technology" (Sec. 4164.10, p. 10)**

IGNORED ISSUES

All the "advanced" reactor bills, including the current HB 434, lack specificity or detail, and fail to address critical issues or actual provisions including, but not limited to: potential government/taxpayer subsidies; public health and safety; siting requirements; emergency/evacuation planning; costs for reactor research, construction, clean up, decommissioning etc.; liability caps; spills, leaks, discharges, accidents and contamination during and post reactor operation; nuclear waste disposal; security and nuclear weapons proliferation safeguards etc.

LACK OF PUBLIC INVOLVEMENT and TRANSPARENCY WORSENER BY AMENDMENT NO. 134-2614 TO MOVE THE NDA TO THE ODEV FROM THE ODAS

HB 434, like its predecessors, has **no provisions for community or public stakeholder involvement.** Yet like previous versions, as noted in the first paragraph of this testimony, Sec. 4164.04 of HB 434 provides for the creation of the NDA under the Department of Administrative Services **"...to address matters...for which public moneys may be spent and private property acquired."** The public would have no say in NDA matters, but could potentially be on the hook for billions of dollars under worst case scenarios.

Ohio has recently passed laws like SB 52 allowing extensive public participation and decision-making by permitting counties to kill solar and wind projects (largely on the basis of aesthetics), even those approved by the Ohio Power Siting Board, yet cities and counties are expressly forbidden from vetoing or preventing natural gas (HB 201), fracking (per August 2015 ruling by then Secretary of State John Husted) or nuclear projects.

Establishing the ONDA under the Department of Development rather than the Ohio Department of Administrative Services (note - HB 104 would have established the NDA under the Ohio Department of Commerce) would presumably place the NDA under the auspices of the controversial, much criticized **JobsOhio Corporation** which "is not a state or public department, agency, or body, and thus is exempt from many requirements imposed on public entities. For example, directors and employees...are not state employees or officials and are generally not subject to...ethics laws, certain Criminal Code provisions,...Open Meetings Law...Ohio Public Records Law...or audit of funds by the State Auditor...(t)he specific economic development duties that JobsOhio was to assume from the Department of Development (DEV) were not prescribed in statute. Instead they are set forth in a contract between JobsOhio and and DEV."

LSC Fact Sheet on JobsOhio

<https://www.lsc.ohio.gov/documents/reference/current/membersonlybriefs/134%20JobsOhio%20FAQs.pdf>

INHERENT CONFLICTS OF INTEREST

Creation of the NDA under its own Agreement State provisions and locating it in the Ohio Department of Administration, the Department of Commerce, or worse yet, the Department of Development/JobsOhio rather than the Ohio Department of Health's Radioactive Materials Licensing and Inspection Program <https://odh.ohio.gov/know-our-programs/radioactive-materials-licensing-inspection> means that nuclear promotion, not the regulation of public health and safety, is the priority. There is an inherent conflict of interest in the NDA acting as both regulator and promoter of the "advanced" reactor nuclear industry.

As noted in the first paragraph of this testimony, the NDA will have both promotional and regulatory powers delegated from the NRC, the DOE,...the U.S. Department of Defense,...or any branch of the U.S. military or similar federal agencies, departments, or programs governing the construction and operation of "advanced" nuclear reactors, radioactive materials, and high-level radioactive waste.

It is worth noting that in 1974, due to conflicts of interest in its dual roles of promoting and regulating nuclear energy, the Atomic Energy Commission was split into the Nuclear Regulatory Commission (NRC) for purposes of regulating nuclear power and the Energy Research and Development Agency which later became the Department of Energy (DOE) whose purpose was to promote nuclear power and develop nuclear weaponry.

"By 1974, the AEC's regulatory programs had come under such strong attack that Congress decided to abolish the agency. Supporters and critics of nuclear power agreed that the promotional and regulatory duties of the AEC should be assigned to different agencies. The Energy Reorganization Act of 1974 created the Nuclear Regulatory Commission; it began operations on January 19, 1975." <https://www.nrc.gov/about-nrc/history.html>

After perusing the website of a company called **eGeneration**, it was quite obvious and disturbing that this corporation was behind HR 518, which, in 2017-2018, began the entire "advanced" reactor push in Ohio. Incredibly and unabashedly, HR 518 was adopted virtually verbatim, word-for-word from a petition on eGeneration's website, and the subsequent "advanced" reactor bills HB 771, HB 104, Sub HB 104, and now HB 434 all contain language attributable to eGeneration.

1) eGeneration's Petition - <https://egeneration.org/petition/>

HR 518 - as adopted by the House in the 132nd General Assembly

https://search-prod.lis.state.oh.us/solarapi/v1/general_assembly_132/resolutions/hr518/AH/02/hr518_02_AH?format=pdf

2) HB 771 - Introduced in the 132nd General Assembly, 56 pages. The bill's title "Establish Medical-Isotope Economic Development Authority" (lifted from eGeneration material) was designed to sound benign and beneficial.

PDF Text of HB 771

https://search-prod.lis.state.oh.us/solarapi/v1/general_assembly_132/bills/hb771/IN/00/hb771_00_IN?format=pdf

3) HB 104 - Introduced in the 133rd General Assembly, 34 pages, still contained some language attributable to eGeneration. Its title "Advanced Nuclear Technology Helping Energize Mankind Act" (ANTHEM) is also framed to seem innocuous, acceptable, and humankind's savior.

PDF Text of HB 104

https://search-prod.lis.state.oh.us/solarapi/v1/general_assembly_133/bills/hb104/IN/00?format=pdf

4) SUB. HB 104 - 133rd General Assembly, second 10 page version did not pass the Senate,

PDF Text of Sub. HB 104

https://search-prod.lis.state.oh.us/solarapi/v1/general_assembly_133/bills/hb104/PH/02?format=pdf

OH Legislative Service Commission Brief Comparison of the 2 versions of HB 104

<https://www.legislature.ohio.gov/download?key=13435&format=pdf>

Five of the seven people presenting HB 434 proponent testimony on December 8, 2021 have direct ties to eGeneration:

- David Amerine is a project consultant for eGeneration Foundation and also a member of the Ohio State University's Nuclear Engineering External Advisory Board making him eligible to sit on the NDA's Nominating Council, a potential conflict of interest.
 - William Thisling - testified on behalf of eGeneration and also testified four times in favor of HB 104
 - Jon Morrow - testified on behalf of eGeneration and also testified four times in favor of HB 104
 - Eugenio Villaseca is listed by eGeneration as a professor and academic advisor
 - Edward Pheil is co-founder of Elysium Industries, a company seeking to develop and commercialize the Elysium Fast Chloride Molten Salt Reactor which coordinates with eGeneration.
- <https://www.elysiumindustries.com/>
<https://thoriumenergyalliance.com/resource/elysium-industries-mcsfr-molten-chloride-salt-fast-reactor-ed-pheil>

Despite a detailed, complicated, process to form a Nominating Council to choose members of the NDA "To foster innovative partnerships and relationships in the state...among...the state's...private companies...in cooperation with the public and private sectors..." there do not appear to be any restrictions in HB 434 regarding the NDA's relationship with companies designing, constructing, or operating the reactors or "reducing high-level radioactive waste." Nothing in HB 434 precludes private companies from being members of the Nominating Council or the NDA, itself. This situation would be worsened if the NDA is placed in the DEV/JobsOhio since virtually no public information would be available.

Do we have a potential HB 6/Generation Now situation where a supposed non-profit corporate entity - eGeneration - or a corporation like Elysium Industries is behind HB 434 and its NDA?

WERE ANY LESSONS LEARNED FROM THE HB 6 FIASCO?

Widespread, diverse opposition to and independent polling about HB 6 clearly showed intense disapproval of nuclear bailouts and subsidies and strong support and preference for renewables such as solar and wind rather than nuclear power. An Ohio Conservative Energy Forum February 2019 poll found large majorities of conservative voters prefer investment in solar, wind, and efficiency rather than nuclear power. The conservative Buckeye Institute and the Ohio Chapter of Americans for Prosperity testified against HB 6, as "corporate welfare...(and) a glorified slush fund."

Conservatives oppose bailouts and nuclear power, support renewables

<https://www.cleveland.com/business/2019/02/conservative-ohio-voters-want-most-of-ohios-electricity-to-come-from-renewable-sources.html>

Conservatives consider nuclear bailouts as corporate welfare

<https://energynews.us/2019/05/06/midwest/conservatives-criticize-firstenergy-nuclear-bailout-bill-as-corporate-welfare/>

August 2020 Polling on HB 6

<https://static1.squarespace.com/static/568c2a10c647ad1e5182756c/t/5f3ff12bc06aa76ba05900bd/1598026029663/HB6+Repeal+Polling+Memo.pdf>

<https://static1.squarespace.com/static/568c2a10c647ad1e5182756c/t/5f3ff259cf516a64b6131a95/1598026330138/HB6+Repeal+Polling+Presentation+deck++%281%29.pdf>

Instead of encouraging and promoting investment in renewables such as wind power for which Ohio is ideally suited, solar energy, and energy efficiency none of which require emergency and evacuation planning, availability of potassium iodide, radioactive waste disposal, radioactive contamination, worker and public health and safety issues etc., the PUCO, the Ohio Power Siting Board, Ohio governors, and the Ohio legislature have systematically decimated Ohio's renewable energy and efficiency standards and discouraged and stymied investment in wind and solar.

Ohio was 13th in the U.S. for wind power until a 2014 Ohio law (HB 483) created the most restrictive wind turbine set backs in the country and impeded renewables and efficiency.

Ohio energy policies spurred growth, now driving business away Pew report says

https://www.cleveland.com/open/2015/01/ohio_renewable_energy_policies.html

Drops in Ohio clean energy investment could hurt jobs, growth

<https://energynews.us/2015/01/22/midwest/drops-in-ohio-clean-energy-investment-could-hurt-jobs-growth/>

HB 6 completely eliminated the renewable and energy efficiency standards which, to date, have not been even partially restored.

To add insult to injury, as noted above, Ohio has recently passed laws like SB 52 allowing counties to kill solar and wind projects, even those approved by the Ohio Power Siting Board, while statutorily forbidding home rule over natural gas, fracking, or nuclear projects.

History from 2008 renewable standards to restrictive wind turbine setbacks in 2014 to SB 52 stymying wind and solar projects

"Volatile place New (solar and wind) laws thwart Ohio renewables" 8/5/21

<https://www.eenews.net/articles/volatile-place-new-laws-thwart-ohio-renewables/>

"Governor Mike Dewine signs (SB 52) giving (county) commissioners 'kill switch' on wind, solar projects" 7/13/21

<https://www.wtol.com/article/news/politics/state-politics/ohio-gov-mike-dewine-signs-bill-wind-solar-projects/512-643ddb27-ce1e-410d-9a52-8774b768f2a9>

Legal Summary/Analysis of SB 52

<https://www.jdsupra.com/legalnews/ohio-legislature-adopts-new-wind-and-2878693/>

"Kingwood solar operation opposed by Greene County Commission" 10/21/21

<https://www.daytondailynews.com/local/giant-kingwood-solar-operation-opposed-by-greene-county-commission/HXYWTBZHSBC57BAUDY73J5VN3A/>

And after finally eliminating the Ohio Power Siting Board's "poison pill" disallowing night time operation of Lake Erie's proposed Ice Breaker wind project for eight months of the year, the General Assembly has now effectively killed the project altogether, although the Department of Energy has, fortunately, extended its grant for a year. Ice Breaker costs millions in comparison to the billions that "advanced" reactors could cost Ohioans.

Ohio axes 'poison pill' for Lake Erie project" 9/20/20

<https://governorswindenergycoalition.org/ohio-axes-poison-pill-for-lake-erie-project/>

"Icebreaker wind project proposed for Lake Erie needs to find more financing soon" 10/19/21

<https://www.cleveland.com/news/2021/10/icebreaker-wind-project-proposed-for-lake-erie-needs-to-find-more-financing-soon.html>

"Republicans in Ohio House reject support for proposed Lake Erie Ice Breaker Wind Project" 12/11/21

<https://www.cleveland.com/news/2021/12/republicans-in-the-ohio-house-of-representatives-reject-chance-to-support-proposed-icebreaker-wind-project-for-lake-erie.html>

"Federal grant extended for off-shore wind project" 1/18/22

<https://www.cleveland.com/news/2022/01/icebreaker-federal-grant-extended-giving-advocates-for-cleveland-offshore-wind-project-more-time-to-arrange-financing.html>

PREMATURE AT BEST

This entire incessant push for Ohio "advanced" reactors is premature given that the NRC has not yet developed rules, regulations or even guidance regarding "advanced" reactors. The public comment period on the Part 53 Advanced Reactors rule (which doesn't yet exist) has recently been extended (for a third time) until August 31, 2022, and a final rule isn't expected to be promulgated until 2025. <https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/part-53.html>

Because no private insurance companies would cover commercial nuclear reactors due to the potentially catastrophic risk, Congress was forced to pass the Price Anderson Act in 1957 to provide limited liability insurance in the event of a nuclear accident. It is unclear at this point if or to what extent the Price Anderson Act will cover experimental "advanced reactors."

SERIOUS ISSUES OHIO COULD FACE IF HB 434 BECOMES LAW

Thorium (in HB 104), Molten Salt, Sodium Cooled Reactors - Contamination, Waste, Proliferation Problems

- Contrary to industry promotion, unlike uranium, thorium is not a nuclear reactor fuel. It cannot power reactors because it does not contain enough fissionable/fissile material to cause a chain reaction. Uranium-235 or plutonium-239 are necessary to start the reaction until enough thorium is converted to U-233 to sustain the chain reaction.
- Uranium-233 is, itself, a nuclear bomb explosive material. Furthermore, as described above weapons-grade highly enriched uranium or plutonium must be used to get the thorium reactor going. Therefore, thorium reactors can contribute to nuclear weapons proliferation.
- Like larger reactors, thorium reactors produce high-level radioactive waste that remains dangerous and must be isolated for hundreds, thousands, or millions of years. For example, U-233 has a half-life of 160,000 years making its hazardous life (a factor of 10-20) millions of years.
- Molten salt reactors use thorium based liquid fuels containing a fluoride based salt and pose the same proliferation and waste problems as other thorium reactors. "The stabilization and disposal of the irradiated nuclear fuel at the very small Molten Salt Reactor Experiment that operated at the Oak Ridge National Laboratory in the 1960s has turned into the most challenging cleanup problem that Oak Ridge has faced, and the site has still not been cleaned up (as of 2019)."
https://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/thorium-reactors-statement.pdf
- Further molten salt is highly corrosive and damaging.
<https://www.sciencedirect.com/science/article/pii/B9780123985385000123>
- Fermi 1 in Michigan was a Liquid Metal Fast Breeder Reactor that used liquid sodium as its coolant. It had a partial core melt down on October 5, 1966 and was shut down in 1972. Years later, on May 20, 2006. Fermi 1 caught on fire due to sodium leaking from piping.
NRC Licensee Event Report Regarding May 20, 2006 Fermi Fire - Document Date 6/19/08
<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML081790166>
DOE document "Summary of Treatment and Management of Fermi I Sodium-Bonded Spent Nuclear Fuel"- Document Date 5/20/21
<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21140A434>

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<https://www.ucsusa.org/sites/default/files/2021-03/advanced-isnt-always-better-full.pdf>

"Thorium: the wonder fuel that wasn't" Robert Alvarez DOE Senior Policy Advisor

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"Thinking About Thorium" Dr. Gordon Edwards, Ph.D.

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http://www.ccnr.org/thorium_hype_2021.pdf

"Thorium Fuel: No Panacea for Nuclear Power" Dr. Arjun Makhijani, Ph.D.

<https://ieer.org/wp/wp-content/uploads/2012/04/thorium2009factsheet.pdf>

"Ten Myths About Thorium as a Nuclear Energy Solution"

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<https://theecologist.org/2016/apr/12/new-nuclear-reactors-same-old-story>

"Thorium - history and dangers"

<https://thoriumnuclear.wordpress.com/2015/04/02/thorium-history-and-dangers/>

"Thorium Riskier than We Thought"

<https://www.popularmechanics.com/science/energy/a11907/is-the-superfuel-thorium-riskier-than-we-thought-14821644/>

"An Open Letter to Bill Gates About his Wyoming Atomic Reactor" Arnie Gunderson, nuclear engineer

<https://www.counterpunch.org/2021/08/20/an-open-letter-to-bill-gates-about-his-wyoming-atomic-reactor/>

Reprocessing - Contamination, Waste, Proliferation Problems

● Reprocessing involves chemical processes to separate uranium and plutonium from highly radioactive irradiated reactor fuel. This uranium and plutonium can be used to fuel reactors but also to make nuclear weapons. A simple nuclear weapon can be made from less than 20 pounds of plutonium. Nuclear proliferation is the reason why the U.S. abandoned reprocessing in the 1970s and signed the Nuclear non-Proliferation Treaty.

● Reprocessing is extremely **expensive**.

● **Reprocessing does NOT reduce the volume of radioactive waste.** Depending on the reprocessing techniques used, the volume of highly radioactive waste can actually be increased which increases the need for waste storage and disposal.

● New York is the only state to ever set up its own nuclear development authority/agency which built the only nuclear waste reprocessing plant in the U.S. at **West Valley, NY**. The facility was a disaster and only operated for six years from 1966-1972 before permanently closing due to fires, high worker exposure and radioactive releases. Clean up has cost the state of New York and the federal government \$3 billion for partial remediation and is expected to take decades and billions of dollars more for cleanup to prevent contamination of the Great Lakes.

● **Reprocessing has been a disaster around the world including Sellafield, England (formerly Windscale); Rokkasho, Japan; La Hague, France; Kyshtym, Russia**

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<https://www.ucsusa.org/resources/nuclear-reprocessing-dangerous-dirty-and-expensive>

"Reprocessing increases total volume of nuclear waste"

<https://www.ucsusa.org/resources/reprocessing-nuclear-waste>

"Federal Register Notice As of 7/29/21 NRC Discontinuing Rulemaking Activity on Nuclear Spent Fuel Reprocessing Sought by the Nuclear Industry"

<https://www.federalregister.gov/documents/2021/07/29/2021-16173/spent-fuel-reprocessing>

"Congressional Research Service "Nuclear Fuel Reprocessing U.S. Policy Development"

<https://crsreports.congress.gov/product/pdf/RS/RS22542>

"Reprocessing - The Dirty End of the Nuclear Fuel Chain"

<https://beyondnuclear.org/reprocessing-the-dirty-end-of-the-nuclear-fuel-chain/>

"Nuclear Fuel Reprocessing Pamphlet"

<http://static1.1.sqspcdn.com/static/f/356082/6963800/1274119098123/ReprocessingIgl.pdf?token=jkC3WA7HX4lwnoaVdQle2QNalwc%3D>

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West Valley, NY

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"La Hague: France's Nuclear Waste Nightmare and Extreme Greenwashing"

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Kyshtym, Russia

"The Day Russia Nuked Itself: The Kyshtym Disaster"

<https://dyatlovpass.com/kyshtym-disaster>

"Kyshtym Nuclear Disaster"

<https://devastatingdisasters.com/kyshtym-nuclear-disaster-1957/>

"Kyshtym Disaster"

https://www.nuclear-heritage.net/index.php/Kyshtym_Disaster

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<https://www.powermag.com/nrc-dismisses-application-for-oklo-advanced-nuclear-reactor/>

"Prospects for SMRs"

<https://www.nuclearconsult.com/wp/wp-content/uploads/2019/07/Prospects-for-SMRs-report-2.pdf>

10/21/20 Webinar "Debunking the Myths of SMRs"

<https://www.youtube.com/watch?v=d-lhV-gAEUc&feature=youtu.be>

Power Point Slides "Debunking the Myths of SMRs"

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"Small Modular Reactors: Safety and Security Issues" Dr. Ed Lyman, Ph.D

<http://static1.1.sqspcdn.com/static/f/356082/28362528/1603477761157/smr+webinar+lyman+10+21+20.pdf?token=XgAAE0ID%2Badq%2FNSjXR09UTr6j1g%3D>

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