

SB805; HB820 - Pavlak-FAV-Nuclear Task force.v4.pd

Uploaded by: Alex Pavlak

Position: FAV

SB805; HB820 Nuclear Task Force (NTF) Favorable

Traditional nuclear technology was originally optimized for submarines and later adapted for commercial power plants. This resulted in compromises. New-nuclear technology is purpose-built for commercial power, featuring smaller, safer modular cores, simpler designs, and innovative cooling systems, allowing for deployment in industrial areas without the need for containment domes or exclusion zones.

Main Talking Points:

- The tide is changing with the increased political influence of Gen Z who have not been traumatized by Three Mile Island, Chernobyl, and Fukushima. This is evidenced by COP28 (UN's climate change conference in December 2023) which acknowledged the crucial role of nuclear baseload and pledged to triple nuclear capacity by 2050.
- Today's main barriers are cost and fear. Today, nothing competes with natural gas without subsidy. But that will change as the marketplace values clean.
- Public fear of nuclear power stems from outdated perceptions, highlighting the need for improved education, engagement, and familiarity.
- Today America lacks a viable nuclear industry, making it difficult to predictably build new nuclear plants. How we build nuclear plants (Bulk sequential construction, standard design, centralized program management ...) has a substantial impact on cost. The old paradigm needs to change but to what is unclear.
- There are many new-nuclear technology options at various stages of development. Developing a strategic plan will be challenging. Transitioning to sustainable fast neutron fuel cycles is technically proven in Russia, but not in America.
- Maryland requires better analytical tools and modeling to make informed long-term decisions, especially regarding integrating nuclear and offshore wind power.

SUGGESTED AMENDMENTS

- 1) Tweak the title from "Nuclear Task Force" to "New-Nuclear Task Force." The purpose here is to suppress the negative image of legacy nuclear power.
- 2) While SB805/HB820 is acceptable as is, more specific tasking would strengthen it. Consider adding the following tasks to Section 1 (g) (5) (iii) that begins with the phrase: *that nuclear development in the State:*
 3. *strives towards a vision of cost-optimal proportions of base-load and intermittent generation for electric power systems that are both reliable and 100% clean; and*
 4. *is compatible with the long-term vision of a closed, sustainable fuel cycles with minimal waste; and*
 5. *manages risk and cost through consideration of multi-state collaboration and novel procurement and construction management structures and*
 6. *highlights entrepreneurial development opportunities enabled by new nuclear technologies; and*
 7. *employs state-of-the-art emergency preparedness plans.*



February 29, 2024

Amendment elaborations:

#3 Creating the vision - quantifying the proportions of renewables and base-load generators for reliable PJM electric power system up front is very important. This analysis requires system modeling skills that frankly nobody has. There is no federal center of excellence and Maryland is unskilled. Maryland's "Pathways" report and the federal "national grid" concept are based on unvalidated and flawed modeling. The NTF with its engineers will have unique skills to provide oversight. The NTF needs to decide the extent to which we build these skills ourselves, or in collaboration with other States, and/or encourage DoE to set up a model certification center and standard databases.

#4 Since the 1950's physicists have had the vision of fast neutron reactors that create their own fuel. Russia has 400 reactor years' experience with this technology, France has dabbled, and the US has lagged. If the whole world goes nuclear fuel will quickly become expensive, and this transition will happen sooner rather than later. Maryland should anticipate different evolutionary paths, the timing, and be prepared.

#5 The American procurement method is to custom compete every power plant. S Korea and France have shown the substantial benefits of bulk procurement and vertical integration. Vendors love the idea of a sophisticated customer. Regulatory interfaces become simpler. The NTF should explore the range of potential benefits that may result from interstate collaborations and standard modular designs.

#6 New nuclear unleashes a whole raft of new business opportunities such as cellulosic biofuels, municipal waste disposal, engineered geothermal storage... Identifying the big ones early gives Maryland a head start providing growth and jobs.

#7 Nuclear is hazardous and attention needs to be directed to emergency management structures. A bill that was introduced this session, The Radiation and Emergency Preparedness and Protection Act, SP536/HB680 is not well thought out and does not focus on information flows and decision management protocols. The NTF is in a better position to recommend a management structure and influence change.



SB805_Brooks.pdf

Uploaded by: Benjamin Brooks

Position: FAV

BENJAMIN BROOKS
Legislative District 10
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Education, Energy, and the
Environment Committee
Energy Subcommittee

Chair, Joint Electric Universal
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TESTIMONY IN SUPPORT OF SB804 **Nuclear Energy Development Task Force**

Education, Energy and the Environment Committee
February 29, 2024

Chair Feldman, Vice-Chair Kagan and Members of the Committee,

Thank you for the opportunity to testify before you on SB805, Nuclear Energy Development Task Force. The purpose of this bill is to establish a task force to study and make recommendations regarding nuclear power generation.

To meet its ambitious renewable energy goals, Maryland must be bold. Our plans cannot be too little and too late for addressing the climate crisis at hand. Maryland is already experiencing rising seas, rising temperatures, and rising rates.

After much investigation into nuclear power programs in other States and countries, I have seen the immense progress in nuclear technology over the past few decades. It has the potential to be a critical source of power as we move away from gas and coal. At this point, wind and solar cannot entirely supplant electric power generated by fossil fuels, but nuclear power can be the missing link needed to make Maryland's power grid carbon-free.

Nuclear is a zero-emission clean energy source and an important part of an "all of the above" net zero energy strategy. It generates power through fission, which is the process of splitting uranium atoms to produce energy. The heat released by fission is used to create steam that spins a turbine to generate electricity without contributing to climate change.

Currently, Maryland has one nuclear plant, Calvert Cliffs, which accounts for 39% of the state's total electric net generation. Maryland's transition from coal-fired power could come as soon as 2025. Talen Energy intends to close the state's largest remaining coal plant, known as Brandon Shores, by June 2025. The closure of these plants leaves many energy markets looking for a more reliable energy source and many workers looking for jobs.

According to the Department of Energy (DOE)'s latest survey on domestic energy jobs, nuclear power creates tens of thousands of jobs across the country, fueling local economies with millions of dollars in state and local tax revenues. From skilled trades such as welding, pipefitting and carpentry, to roles in cybersecurity and policy analysis, a nuclear power plant requires a variety of jobs and skillsets to meet big picture goals. The nuclear energy industry also offers pathways for workers to enter the pipeline through apprenticeships and labor

partnerships, as the DOE report finds that the industry has the highest unionization rate across energy sources. In addition to a diversity of job types, according to the DOE, the nuclear power industry's workforce is also more diverse than the overall energy workforce.

Recognizing the concerns from the environmental community, SB804 allows us to engage in conversations to outline the positive attributes while also addressing the concerns surrounding waste disposal, so that Maryland can safely integrate this important clean energy resource and innovative workforce.

For these reasons, I am requesting a favorable report on SB805.

With kindest regards,

A handwritten signature in cursive script that reads "Benjamin F. Brooks".

Benjamin Brooks

SB 805 Headlines.pdf

Uploaded by: bill temmink

Position: FAV

Senate Bill 805

Mr. Chairman, Vice-Chairman, Members of the Committee,

I want to thank you for this opportunity to speak. I am speaking as an advocate for HB 820 and SB 805

I am Bill Temmink of 425 Latimer Road, Joppa, MD, 21085. I have been studying clean energy for roughly eighteen years, really since my brother installed geothermal in his home. I have solar. For the last five years I have focused on developments in nuclear energy.

You may have noticed, my written report looks at public misunderstanding of nuclear energy. I'll try to sum up quickly.

Headlines You have Never Seen

Why most people are misinformed about both nuclear energy and climate change. Thus, we need this Task Force.

I suspect you all already know the good news about nuclear energy.

It is the cleanest energy. It is among the safest, approximately tied with solar for safety, ahead of wind and hydro.

It produces energy longer than other renewable sources. It uses less resources. It produces less waste, and safely stores it.

Wages are high in the nuclear field.

As a non-Ph.D., I am here as an environmentalist. I simply want to address some of the concerns fellow environmentalists have, so that we can address these going forward. Frankly, we need to be prepared to address their concerns. This, in my mind, is the main reason to create this Task Force.

- 1. Advances in nuclear energy technology make much of what the public knew, no longer relevant. There are a lot of new nuclear energy options*

available now, and more coming soon.

<https://www.ans.org/news/article-5634/2024-the-state-of-advanced-reactors/>

We simply need to choose from among the best of them. We have to choose those that are available now, and prepare to choose from amongst those that are coming.

I suspect you all also know that getting a clean electricity grid was the so-called low-hanging fruit on the goal to Net Zero. Electricity use is roughly 35%-40% of our total energy consumption. We need more clean energy for that other 60ish%.

<https://www.eia.gov/energyexplained/us-energy-facts/>

I am here though to concentrate on how to counteract negative information about nuclear energy, Should this bill pass, all of this information will become familiar to any who participate in the Task Force. In the meanwhile, there is a misinformed, somewhat frightened public that needs to become informed, if we are going to move forward rapidly enough to mitigate damage resulting from climate change.

I have created a series of mythical headlines, all based in fact. You can use them as guides to gently challenge any misinformed constituent who is frightened by the idea of nuclear.

The problem with nuclear energy is that people do not understand the news media. It is neither the energy, which is clean, nor the wastes, which are safely stored. It is not repeated meltdowns, which are extremely rare and can be contained. It is not wastes being made into weapons, since they are not.

The problem is that people do not understand that the old expression, “If it bleeds, it leads,” is fairly accurate. I would add one modifier to this: “If it is new blood, it is breakthrough blood”. This would account for the fact that any new calamity, even if on a smaller scale than an earlier one, will move towards the top of the headline chart. Very simply, news headlines focus on triggering emotions that sell papers, news shows, or social media links.

Thus, rare, and often relatively minor events can become part of so-called common knowledge, even when there is little, if any, supporting evidence.

Take energy, for example. Here is a quiz you may give when talking about the Nuclear Development Task Force.

Rate the following energy sources, listed alphabetically by their safety record.

Biomass ___ Coal ___ Hydro ___ Natural Gas ___ Nuclear ___ Oil ___ Solar ___ Wind ___ with the safest being first (1) and the least safe being last (8).

So, here are the headline facts you might want to have at your fingertips.

Climate Change is Expected to Cause 3.4 million Deaths per Year

<https://www.v-20.org/new-health-data-shows-unabated-climate-change-will-cause-3.4-million-deaths-per-year-by-century-end#:~:text=Press%20Releases->

There actually is a chance that this could become a headline, but, likely, only after the first year with over a million documented deaths. Scientific studies rarely make for juicy headlines. Why? Editors want second sources to confirm such claims. Confirmation studies, unfortunately, are simply not newsworthy. This is the non-headline we need to keep repeating.

State Mandates Warm Beer and Lights Out at Dusk

https://www.researchgate.net/figure/Economic-development-and-electricity-consumption-graph-constructed-with-data-available_fig1_263036174

Obviously, you are not going to do this. You are, however, likely aware that the negotiated shutdown of the Brandon Shores power facility threatens to cause the PJM grid with collapse. This won't happen because the managers of the PJM grid have the power to override the decision. But, we do want that plant to shut down as soon as a clean, reliable source of energy is available to replace it. We have to eliminate dirty energy as soon as we have reliable clean energy to replace it.

Maryland Has Quietly Had Nuclear Energy for over Forty Years.

<https://www.constellationenergy.com/our-company/locations/location-sites/calvert-cliffs.html#:~:text=Located%20in%20Lusby%2C%20Maryland%2C%20Calvert,more%20than%201.3%20million%20homes.>

This is my first of the headlines you likely will never see. Why not? In Maryland nuclear energy has been safely running for over forty years, providing nearly forty percent of our electricity. There is simply no news value in that.

New Passive Safety Designs in Reactors Eliminate Chance of Human Error

https://en.wikipedia.org/wiki/Passive_nuclear_safety#:~:text=Third%20generation%20designs%20improve%20on,or%20the%20natural%20response%20of

Now, given a tremendous range of reactor designs, this is not true of all of them. It is, however, a criteria to examine when evaluating new design choices. This is another reason we need a Task Force to make correct decisions.

Many New Reactor Designs have Deterministic Risk, not Probabilistic Risk.

<https://www.youtube.com/watch?v=1uXQbeqiisw> At about minute 17, the discussion of risk types is entered. The full video actually argues for something like the Nuclear Development Task Force.

Probabilistic risk means that a disaster will be rare, but could be terrible. Deterministic risk means that the worst possible disaster will be acceptable. In practice, what this could mean is that most current power plants could be safely replaced by appropriate new nuclear energy plants. This would eliminate many of the costs of transmission upgrades and lower the pollution impacts on poor and minority populations.

Nobody Died from the Nuclear Meltdown at Fukushima

<https://www.britannica.com/question/Did-anyone-die-as-a-result-of-the-Fukushima-accident>

Or Three Mile Island

<https://www.energy.gov/ne/articles/5-facts-know-about-three-mile-island>

Quoting the Encyclopedia Britannica, Nobody died as a direct result of the Fukushima nuclear disaster. However, in 2018 one worker in charge of measuring radiation at the plant died of [lung cancer](#) likely caused by [radiation](#) exposure. He is a hero. He knew the risks of measuring radiation every day and did it anyway. But, it was the tsunami and the related evacuations that caused over 20,000 deaths. Most folks in the area have now been allowed to return home, although the danger from tsunami's hitting that area again still exist.

The bottom line here is that this news is a little complicated. Maybe, folks would take time to read it if Americans had one hour lunch breaks. We do not.

Was the Three Mile Island potentially quite dangerous? Yes. However, many interpreted a heated hydrogen bubble to be the equivalent of a hydrogen bomb. That was never true. In fact, so little radiation was actually released that the other reactor on Three Mile Island continued to operate safely for decades.

Another non-headline:

Nobody has Died from Exposure to Wastes from Nuclear Energy.

<https://world-nuclear.org/nuclear-essentials/what-is-nuclear-waste-and-what-do-we-do-with-it.aspx#:~:text=This%20separated%20plutonium%20and%20uranium,radiologica l%20footprint%20of%20their%20waste.>

Everyone I talk to who opposes nuclear energy seems most afraid of nuclear waste. Yes, you would not want to bathe in it. However, all nuclear wastes have been safely stored since the beginning of the nuclear energy era. This is fortunate. We now have the technology to re-use that waste.

And,

Nuclear Wastes Can be Reused, Creating Enough New Energy for Centuries. <https://www.energy.gov/ne/articles/5-fast-facts-about-spent-nuclear-fuel>

Nuclear material is recoverable to make new fuels that will in turn generate their own electricity.

The biggest fears I hear about nuclear waste go something like this: “It will be around for hundreds of thousands of years, No civilization can be expected to control any problem for that long.”

The truth is though, that we can, and should use these wastes to power our civilization with clean energy for the next millennia. There is nearly twenty times the energy stored in these wastes as was used in the original reactor. Until now, it was cheaper to store the wastes and not have the expense of recycling them. Now, we know better.

Maryland will power its grid for five hundred years with the nuclear waste it already has on site. <https://wastetoenergynow.org/waste-to-energy-2/>

If we make a choice to do so, this could easily become a reality. Further, Maryland could then process spent fuel from other East Coast states.

Finally, the headline we can see if we begin to move forward bravely.

World Reaches Net Zero Today

This is certainly possible. It can be done on time. We simply need to overcome our fears of both nuclear and of failure and get the job done.

Fear though, is irrational. It is biological. It helped our ancestors survive despite lions and tigers and bears. Fear can be useful.

On the other hand, fear should not determine all human action. We should have, and often do, move beyond fear to create tools, to risk planting seeds and hoping, to make discoveries that benefit us all.

So, here is a rational conclusion. We need to look at the facts as we make our energy choices. We need to look beyond headlines. We need to rethink our relationship to nuclear energy. 3.4 million annual deaths certainly is greater than zero annual deaths.

This bill will give us the capacity to look ahead and make rational decisions about our energy choices.

Respectfully submitted,

Bill Temmink 425 Latimer Road, Joppa, MD 21085 btemmink@comcast.net
 (410) 679-1524

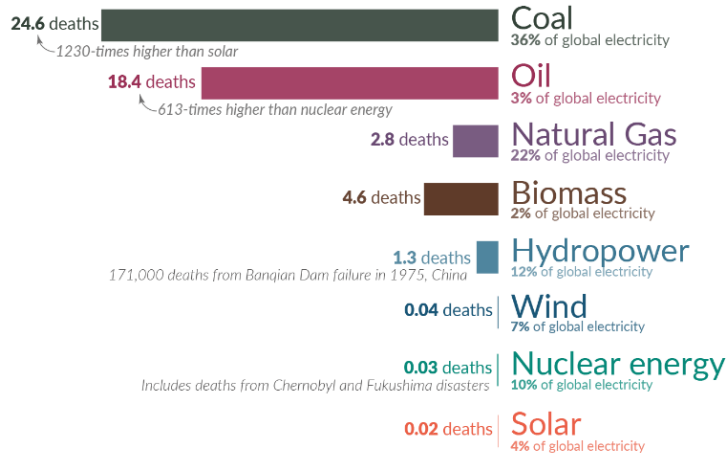
And, the answers to today's quiz... Solar 1, Nuclear 2, Wind 3, Hydropower 4, Biomass 5, Natural Gas 6, Oil 7, Coal 8

By the way, Nuclear has the least emissions, ahead of both wind and solar.

What are the **safest** and **cleanest** sources of energy? Our World in Data

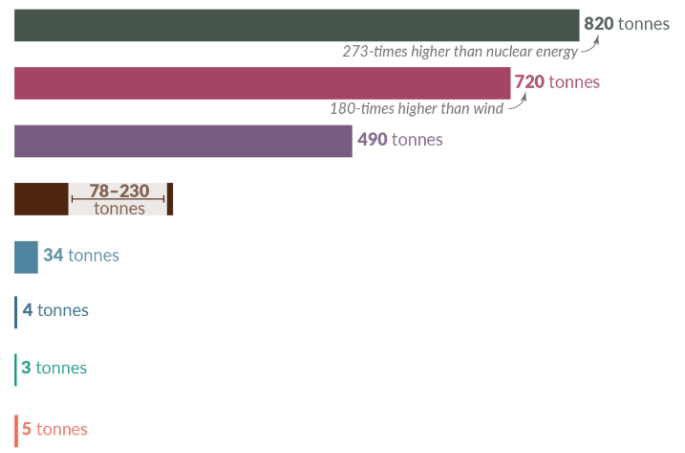
Death rate from accidents and air pollution

Measured as deaths per terawatt-hour of electricity production.
 1 terawatt-hour is the annual electricity consumption of 150,000 people in the EU.



Greenhouse gas emissions

Measured in emissions of CO₂-equivalents per gigawatt-hour of electricity over the lifecycle of the power plant.
 1 gigawatt-hour is the annual electricity consumption of 150 people in the EU.

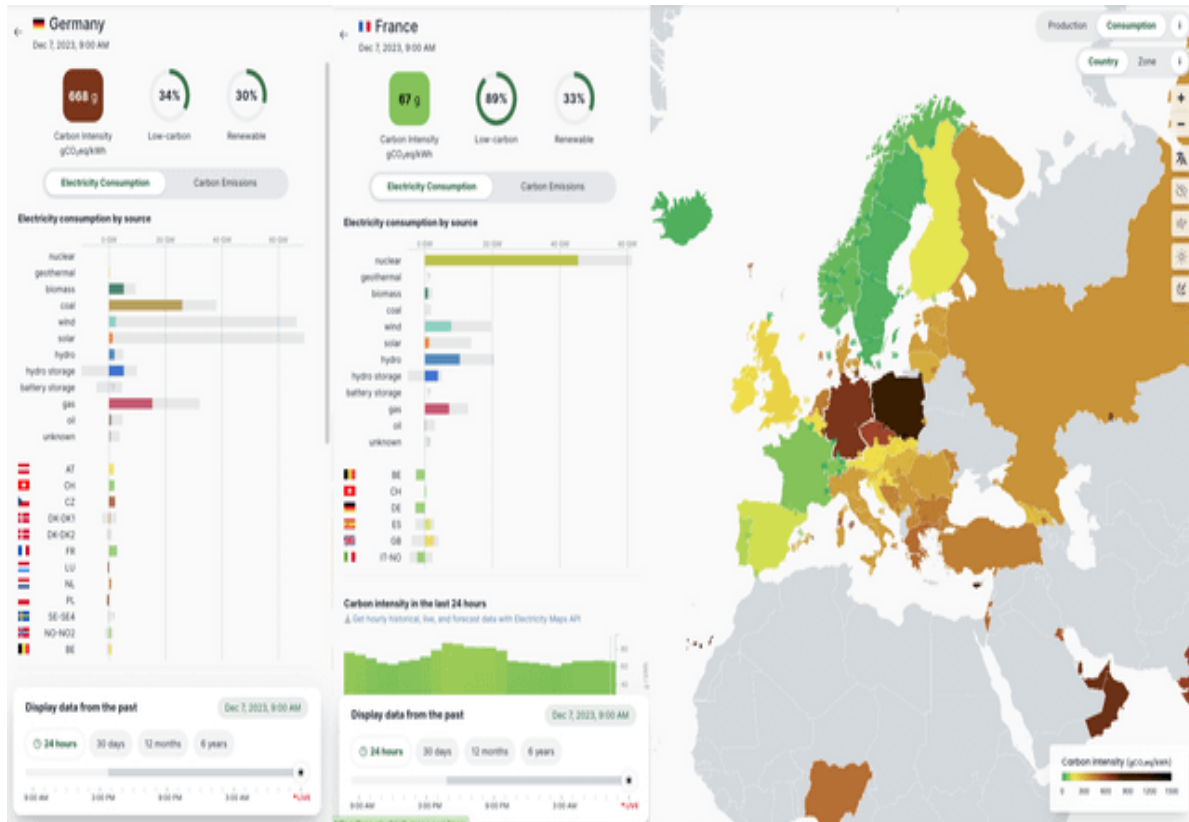


Death rates from fossil fuels and biomass are based on state-of-the-art plants with pollution controls in Europe, and are based on older models of the impacts of air pollution on health. This means these death rates are likely to be very conservative. For further discussion, see our article: [OurWorldinData.org/safest-sources-of-energy](https://ourworldindata.org/safest-sources-of-energy). Electricity shares are given for 2021.

Data sources: Markandya & Wilkinson (2007); UNSCEAR (2008; 2018); Sovacool et al. (2016); IPCC AR5 (2014); Pehl et al. (2017); Ember Energy (2021).

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.



Thus, France’s nuclear energy strategy is roughly 10 times more climate-friendly than Germany’s renewable strategy.

How much does a Nuclear Worker make?

As of Feb 2, 2024, the average annual pay for a Nuclear Worker in the United States is \$87,706 a year. In our area, the average salary for a Nuclear Worker is \$87,706.

Just in case you need a simple salary calculator, that works out to be approximately \$42.17 an hour. This is the equivalent of \$1,686/week or \$7,308/month.

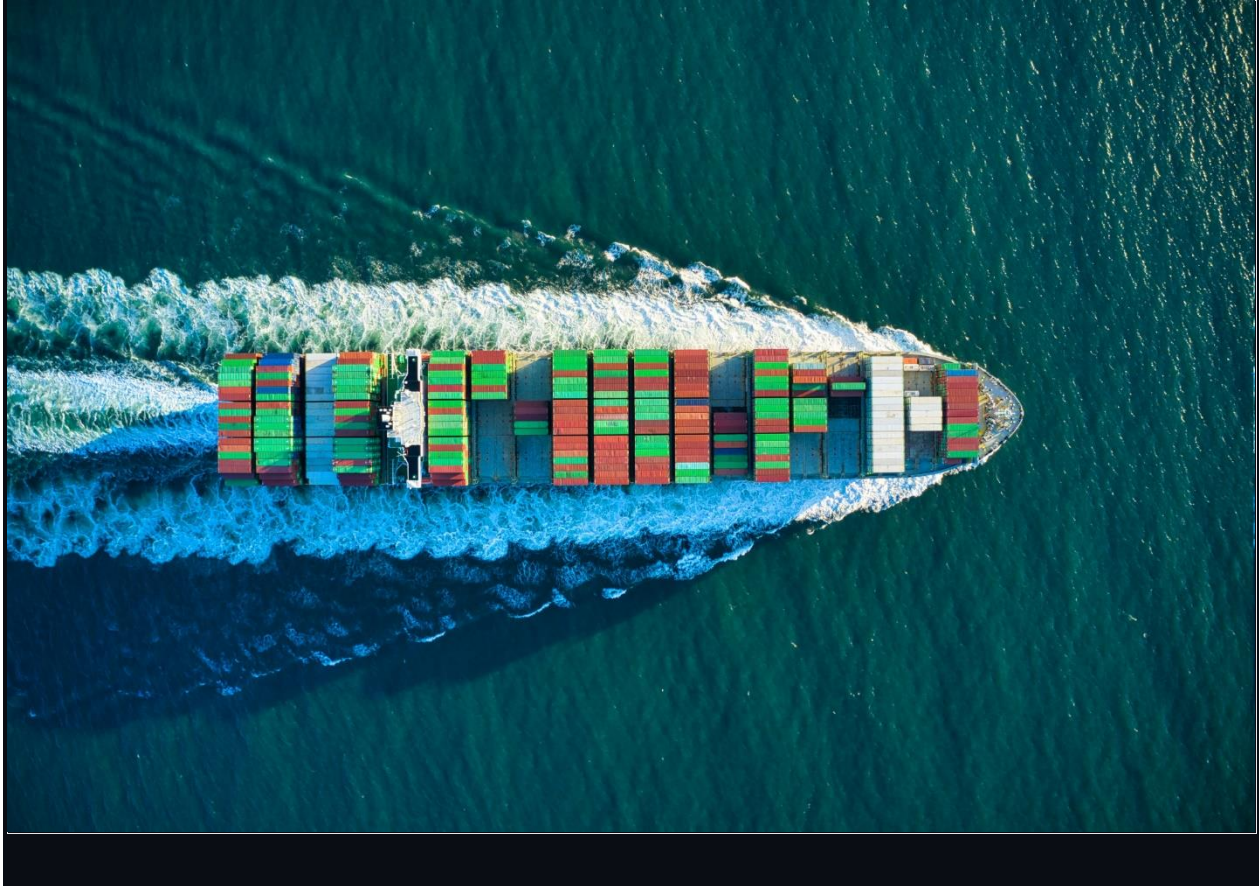
Find your next high paying job as a [Nuclear Worker](#) on [ZipRecruiter](#) today.



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Mr. Chairman, Vice-Chairman, Members of the Committee,

I want to thank you for this opportunity to speak. I am speaking as an advocate for HB 820 . You have my written report. I'll try to sum up here.

I am working on the assumption that the majority of the legislature sees climate change as a major threat. If you live on the Eastern Shore, or anywhere along the tidewaters of the Bay, you can already see that a change is underway.

To avert that threat, we need a Plan, and frankly, a Plan B. While Maryland is already invested in wind, particularly offshore wind. NO COUNTRY in the World has been able to come close to Net Zero powered primarily by variable renewable sources. Thus, I'd like to call your attention to the graph on page 8. Germany decided to shutter its nuclear plants in favor of renewable sources. France thought about that, then decided to increase its reliance on nuclear energy. As you can see Germany emits nearly 1000% more greenhouse gases per mw as does France.

So, whether you think of nuclear energy as Plan A or Plan B, or part of a Plan C, we need to consider it, and thoughtfully. This task force will allow us to do this.

- 2. There is opposition out there, which we will have to address. There are answers to all of the opponents' arguments, which are mostly based upon fears generated by headlines written to sell news. However, these fears are unsupported by the facts. This Task Force will equip us with factual answers to those fears. Further, it is much easier to lead when you have support. Those leaders involved with the Task Force will have the skills, knowledge and abilities to back each other in tougher negotiating situations.***
- 3. There are plenty of new nuclear energy technologies available now. From them, we can choose the/most appropriate and get started. Newer nuclear energy technologies are coming along, and already deployed in other countries. We need to have a plan in place to select from the best of these as they become available. This Task Force and the resulting Commission will equip us to do that.***
- 4. To this date in history, no dominant energy technology has developed with any particular concern for equity. By getting ahead of this, we can educate our children to be among the leaders in***

these new technologies. The reason I put the images from FLIBE energy on pages 9-12 is to give a sense of the possibilities.

5. *As breeder-reactors become available, these will make nuclear energy essentially a renewable resource. Further, they will help us eliminate the current, if-not-as-bad-as-people-think, problem of nuclear waste storage. The only actual issue with nuclear waste storage is cost. The fact is that these would not be called wastes if we used the energy stored in them to create more energy. Maryland, as an example, has enough energy stored as so-called waste, to power our grid for approximately 500 yaars.*

- 6 *The U.S. is a little behind on molten salt nuclear and other breeder reactor technologies but the U.S. is opening the first molten salt test facility this year. The Thorium Energy Association is holding this year's conference at the site of the new facility. So, the technologies are moving ahead rapidly. At a national level, the U.S. is committed to moving forward.*

- 7 **The Nuclear Development Task Force will be the first step in putting Maryland in the lead in these new clean energy technologies. The Commission will keep us there. Participation in both will give our clean energy leaders the information necessary to convince the public that this is essential, safe, and economically advantageous for ourselves, our children and grandchildren.**

- 8 **Thus, I ask again for your support of this bill.**

X energy Testimony

Uploaded by: Carol Lane

Position: FAV

Good afternoon Chairman Feldman and Members of the Education, Energy and Environment Committee,

I am Carol Lane, Vice President of Government Relations for X-energy, a Maryland company specializing in Small Modular Reactor (SMR) reactor design and fuel manufacturing. Our focus is on developing the first next-generation nuclear reactor by the end of the decade. I am honored to voice our support for SB 805 under Senator Brooks' and Senator Klausmeier's sponsorship.

X-energy was founded in 2009 in Greenbelt, Maryland. When I joined in 2015, there were less than a dozen employees. Today, we are located in Rockville, Maryland, have topped 450 employees with over 1000 subcontractor FTEs, and, we are about to open a new Operator Training Facility in Fredrick, Maryland in two weeks. This facility will be a state-of-the-art simulator and virtual reality tool to be utilized to train future operators of all our reactors, regardless of where they are deployed.

Today, as you know, 23% of Maryland energy generation comes from nuclear power and approximately 80% Maryland's carbon free energy comes from nuclear energy. Yet, a 2021 survey of media-attentive and engaged voters statewide, shows that only 54% of them indicate that they are familiar with the Calvert Cliffs nuclear power plant or recognize the clean energy comes from nuclear power and that plant specifically.

This emphasizes the critical importance of a Task Force that brings together diverse representatives from the state, to ensure that community engagement, technical and economic impacts and various incentives for deployment are considered as the state considers moving forward on employing new nuclear energy to meet its future energy needs. SB805 provides an enabling framework.

Today's SMRs offer various technologies, that are distinct from the current fleet of light water reactors and offer some significant advantages. In the case of X-energy, we are deploying High Temperature Gas-Cooled reactors. These HTGRs, as they are called, have characteristics that increase safety, increase economic competitiveness, offer extremely high reliability and can serve new applications and geographic areas that were previously not considered for nuclear reactors. Examples of these advantageous features are:

- Our TRISO fuel (coated particles of uranium) has been called by the Department of Energy, the most robust fuel on Earth - rendering the reactor meltdown-proof.
- Another part of our safety case is that no water is used in our reactor core, but instead helium – an inert gas – is flowed through our reactor core to generate the heat.
- As a result of the safety features, our emergency planning zone is significantly reduced to approximately 400 meters or ¼ of a mile, compared to the 10 miles required for conventional nuclear reactors today. This allows plants to be sited in closer proximity to the energy consumers.
- Our technology produces both electricity and high-quality steam, adaptable for various applications such as industrial processing or production of hydrogen.

Our inaugural plant will be constructed in Seadrift, Texas, at a Dow Chemical facility. Powering their site with nuclear energy will allow Dow to decarbonize their chemical manufacturing by approximately 400,000 tons of CO₂ emissions annually. This first plant is part of the US Department of Energy's Advanced Reactor Demonstration Program designed to reduce cost, schedule and regulatory risk for future customers. X-energy was selected as one of two companies to move forward to deploy an advanced reactor by the end of the decade. This is a 50-50% public-private partnership.

The intended outcome is to provide next in line customers, like Maryland, to consider advanced nuclear reactors with reduced cost and schedule risk to meet the escalating demand for power, driven by data centers, electric vehicles, and the need for replacing retiring coal plants.

In 2022, X-energy received a grant from the Maryland Energy Administration to do a feasibility study on a Maryland site of a retiring coal plant. The study was designed to look at the feasibility of siting a nuclear reactor on a particular site and assess the benefits and costs of that technically. For example, how to take advantage of the infrastructure, transmission lines, etc. that currently exist at a site. Concurrently, Frostburg State University provided a socio-economic analysis of the impact of siting a nuclear plant on a retiring coal plant site. We would be glad to provide a copy of the public report to the Committee.

As a result of conducting this assessment, the Maryland Energy Administration has to capability to do feasibility studies in a cost-effective and efficient manner. Moving forward with feasibility studies in parallel with the Task Force, provides input to the Task Force, and could enhance the deployment timeline.

As the Committee considers advancing this legislation, there are three things we would suggest:

- 1- We believe the schedule for the Task Force recommendations could be shortened. There are several other states that have established task forces with similar scope. We would recommend the report be provided by mid or even early 2025 to enable operations to begin in the early-mid 2030's, if the state decides to move in this direction, to meet state clean energy goals.
- 2- In parallel with the Task Force, we would suggest that some funding be identified for feasibility studies on multiple potential sites. This would allow for potential deployment to align with the early-mid 2030s timeframe, rather than doing this sequentially.
- 3- With the emergence of new advanced reactor technology, we would recommend that nuclear reactor development companies be included as participants in the Task Force. These new advanced reactors offer benefits and opportunities for both electricity and process heat that are significantly different than today's light water reactor fleet. This could be informative to the members of the Task Force. For example, the state of Texas has set up an Advanced Nuclear Energy Working Group with a similar scope to the Task Force in SB 805, and X-energy is a participant on the Working Group.

We strongly endorse Senate Bill 805, recognizing it as a catalyst to expedite the deployment of SMRs in Maryland. This legislative initiative has the potential to play a vital role in fulfilling the state's future energy needs in a manner that is clean, safe, and economically viable.

MD SB0805 -- NEI Support.pdf

Uploaded by: Chris Heck

Position: FAV

Maryland Senate Education, Energy, and the Environment Committee
Nuclear Energy Institute
Public Testimony in Support of SB0805 – Nuclear Energy Development Task Force

February 29, 2024

Good afternoon, Chairman Feldman, Vice Chair Kagan, and members of the committee. The Nuclear Energy Institute (NEI) applauds you for your consideration of SB0805, which establishes a nuclear energy development task force, responsible for studying and making recommendations on the deployment of nuclear power generation resources in the state as well as the establishment of a permanent state nuclear energy commission. As you know, Maryland currently has two nuclear reactors, producing over 38% of the state's energy and accounting for over 78% of the state's carbon-free generation.

This is an important piece of legislation that will not only help achieve its goal of net zero greenhouse gas emissions by 2045, but also help to accelerate the development, demonstration, and deployment of advanced nuclear power systems. SB0805 builds upon the efforts the state recently took in 2022, with the passage of the Maryland Climate Action Now Act, which recognizes nuclear's ability to produce carbon-free energy and the Maryland Energy Administration's study of advanced nuclear deployment.

Maryland won't be going it alone

The energy sector in the United States has undergone significant transformation over the last decade and that transformation will continue. NEI recently conducted a survey of its member utilities and found that these utilities anticipated needing more than 100 gigawatts, equivalent to more than 300 advanced reactors of new nuclear power by 2050 in order to guarantee reliable access to clean energy. Non-electric sectors such as industrial heat and transportation are also considering nuclear energy to transition to a reliable, clean and affordable energy supply. Ensuring that state energy policies are in place that enable commercial deployment of advanced reactors by the early 2030s is essential to ensuring an affordable, secure, and resilient energy sector well into the future.

To that end Idaho, Illinois, Kentucky, Michigan, Montana, Nebraska, New Hampshire, Ohio, Pennsylvania, Texas, Tennessee, Virginia, Washington, West Virginia, and Wyoming among others have set up task forces, working groups, and or commissions to study and implement nuclear energy policy. And the momentum continues to grow -- Last year was a historic year, with 20 states passing legislation to support nuclear energy adding to the 12 states from 2022. Last session Michigan and Minnesota both passed 100 percent clean energy standards that explicitly included nuclear.

Nuclear power is vital to the energy system

New advanced reactor designs are being developed by entrepreneurial U.S. companies seeking to expand the value of nuclear technology to our energy system. These designs will be commercially operational this decade and will be ready for large-scale deployment by the early 2030s to meet domestic and global clean energy needs. Enacting state policies that encourage the use of these new nuclear technologies is particularly timely, as the U.S. Energy Information Administration forecasts the retirement of 140 gigawatts of capacity by 2040 across the U.S. A key focus of the energy sector will be to replace this retired generation with sources that are clean, reliable and affordable.

In a recent study¹, Vibrant Clean Energy found that pairing nuclear with wind and solar is the most cost-effective means to decarbonize electricity generation. This lowest cost scenario projects nuclear energy could provide nearly 43% of all generation in 2050 with wind and solar producing almost 50%. A significant portion of the anticipated 300 GWe of advanced nuclear capacity that is needed could repurpose hundreds of retired fossil generation sites. A second scenario where solar and wind generate 77% of all generation in 2050 and the use of nuclear energy declines would result in over \$400 billion in higher costs to consumers.

Focusing only on the need for additional electricity in the U.S. in the upcoming decades would mistakenly overlook the likelihood of and the need for more energy in other sectors, such as transportation, industrial heat and hydrogen. Nuclear is the only clean, reliable and affordable energy source that can produce heat and steam that is needed for many of these processes.

Nuclear energy is poised to expand in the U.S.

NEI believes our nuclear energy future will include safe long-term operation of our existing nuclear power reactors through subsequent license renewals to allow operation out to eighty years or more.

The existing domestic nuclear fleet is a central part of our nation's critical infrastructure and should not be taken for granted. Policymakers in state capitals and Washington DC have taken action to preserve eighteen reactors that were at risk of closing prematurely, by valuing those reactors for their emissions-free generation. These actions have had the added benefit of preserving more than ten thousand family-wage jobs.

Most recently, the U.S. Congress passed two consequential pieces of legislation, the Bipartisan Infrastructure Law and Inflation Reduction Act, that explicitly recognize advanced nuclear as a critical solution to our energy problems and provide significant financial incentives for the

¹<https://www.vibrantcleanenergy.com/wp-content/uploads/2022/06/VCE-NEI-17June2022.pdf>

deployment of advanced reactors.² States are also taking action to pass policies to support advanced reactors, similar to the options identified in a recent NEI report.³

The United States, fueled by private capital and innovation, has recently experienced a surge in advanced reactor technologies with dozens of projects worth billions of dollars being announced over the past year. One thing is clear, states that have policies that support and encourage the deployment of advanced reactors, also have companies planning projects, which lead to future jobs and economic growth, in addition to reliable, clean and affordable energy.

Advanced reactors are an economic powerhouse

The electric utility sector in the United States is rapidly evolving. NEI believes it is in the best interest of the U.S. that nuclear power remains a significant and growing supply of clean energy as this evolution continues. Therefore, it is imperative that the commercial nuclear industry in the U.S. continue to rapidly innovate new products and designs so that these products are available when the market needs them.

According to a recent SMR Start report⁴, advanced reactors can be a cost competitive and highly valuable part of our future energy system. The report also outlines the tremendous benefits to jobs and the economy, stating:

“Construction and operation of a 600 megawatt SMR plant with multiple reactors is estimated to employ about 900 manufacturing and construction workers for about 4 years and about 300 permanent positions for the 60+ years the SMR operates.” The data shows that each permanent position creates a multiplier effect resulting in 1.66 additional jobs in the local community and 2.36 additional jobs in the rest of the state. Nuclear jobs pay 36 percent more than average salaries in the local area.

“Based upon experience with a 1,000 MWe nuclear facility, a 600 MWe SMR plant is expected to generate over \$500M in direct and indirect economic output annually. This includes over \$270M in the plant’s electricity sales and induced spending at the local, state and national levels of \$10M, \$48M, and \$236M, respectively. The SMR plant is expected to pay about \$10M in state and local taxes and \$40M in federal taxes annually.” The advanced reactor supply chain could also create thousands of jobs to support a domestic and international market.”

²<https://www.nei.org/CorporateSite/media/filefolder/advantages/Current-Policy-Tools-to-Support-New-Nuclear.pdf>

³https://www.nei.org/CorporateSite/media/filefolder/resources/reports-and-briefs/State-Policy-Options-to-Support-New-Nuclear-Energy_NEI.pdf

⁴<https://smrstart.org/wp-content/uploads/2021/03/SMR-Start-Economic-Analysis-2021-APPROVED-2021-03-22.pdf>

According to a recent NEI report⁵, micro-reactors can also be a cost competitive and highly valuable part of our future energy system. These micro-reactors are highly resilient and reliable, clean and environmentally friendly, simple and safe, and are capable of producing electricity and heat through flexible on-demand operations.

Likewise, other reports, such as the aforementioned SMR Start report⁴, similarly conclude that slightly larger advanced reactors can be a cost competitive and highly valuable part of our future energy system. The report also outlines the tremendous benefits to jobs and the economy that an advanced reactor can bring.

Conclusion

We appreciate and applaud Maryland's support for nuclear energy. With this continued support and the dedication of the industry, NEI is confident that the U.S. will regain its leadership role in advanced nuclear technology and generation.

SB0805 will facilitate the development and deployment of innovative nuclear reactor technologies in Maryland and across the nation.

Sincerely,

Christine Csizmadia
Senior Director, State Government Affairs & Advocacy
Nuclear Energy Institute
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(202) 739-8000
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⁵<https://www.nei.org/CorporateSite/media/filefolder/resources/reports-and-briefs/Report-Cost-Competitiveness-of-Micro-Reactors-for-Remote-Markets.pdf>

SB 805 - Nuclear Energy Development Task Force.pdf

Uploaded by: Donna Edwards

Position: FAV



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Secretary-Treasurer

Gerald W. Jackson

**SB 805 - Nuclear Energy Development Task Force
Senate Education, Energy, and the Environment Committee
February 29, 2024**

SUPPORT

**Donna S. Edwards
President**

Maryland State and DC AFL-CIO

Chairman and members of the Committee, thank you for the opportunity to provide testimony in support of SB 805. My name is Donna S. Edwards, and I am the President of the Maryland State and DC AFL-CIO. On behalf of the 300,000 union members in the state of Maryland, I offer the following comments.

The state must explore opportunities to remove barriers to future nuclear energy development. Nuclear energy currently provides 37% of all electricity that is generated in the state. It is our largest source of carbon free energy. If we hope to meet our state's ambitious greenhouse gas reduction goals, nuclear must be a part of the equation. Nuclear also plays a unique role in the future of our renewable grid. Nuclear energy can provide consistent, 24/7, around the clock, predictable, base load energy that is not subject to weather conditions like wind or solar energy.

Sb 805 creates a task force responsible for identifying barriers to the expansion of nuclear power generation in Maryland and issuing recommendations to the General Assembly by December 31, 2025. The task force is required to study different scales of nuclear energy including community scale and utility scale projects. The task force includes diverse representation, including two seats for labor representatives. SB 805 requires the task force to consider incentives and actions to ensure that the state meets its clean energy goals while creating high quality jobs with family-sustaining wages and meeting minority business enterprise participation goals.

We urge a favorable report on SB 805.

Nuclear Matters SB805 Testimony.pdf

Uploaded by: Justin Strength

Position: FAV

Nuclear Matters Testimony
Nuclear Energy Development Task Force
SB 805
Feb. 28, 2024

Maryland is on the cusp of creating a reliable energy grid to help achieve the state's ambitious goals to drastically reduce greenhouse gas emissions by 2031 and set the state up to achieve carbon net neutrality by 2045. The expanded inclusion of nuclear energy, coupled with other clean energy sources, will play a pivotal part in accelerating the state's clean energy progress while balancing affordability and reliability.

Nuclear Matters, a diverse, nationwide community of advocates (1,483 strong in Maryland), applauds Maryland's continued efforts to further integrate nuclear-powered solutions in their energy grid with its consideration to create a Nuclear Energy Development Task Force through HB 820 and SB 805. We urge the Maryland State Legislature and Governor Moore to move forward with creating this future-focused task force.

Nuclear energy is a vital part of America's clean energy portfolio – and Maryland is no exception. The Calvert Cliffs Nuclear Plant generates nearly 39% of all of Maryland's electricity and an astounding 78% of the state's clean, carbon-free electricity. The facility also currently provides over 800 in-state jobs and generates \$22.8 million in state and local taxes which bolster Maryland's economy. With further action from the state, nuclear energy can expand its role as the most reliable, clean energy solution to propel Maryland forward economically while increasing the state's energy independence.

With big aspirations comes the need for bold innovation and solution-oriented thinking. Maryland can properly identify and address the investments necessary to infuse more nuclear energy into the state's energy grid by creating a nuclear energy-focused task force. Given Maryland's geography, vast coastline and the ever-growing threat of severe weather, increasing the state's supply of nuclear energy will prove vital to ensuring its residents have long-term access to clean and reliable energy that enables the state to meet its own climate initiatives.

Nuclear Matters encourages Maryland policymakers to seriously consider the benefits of creating a nuclear task force and the positive impact its reporting could have on accelerating the state toward long-term economic growth and energy independence.

We appreciate the opportunity to comment on Maryland's clean energy future and the vital role the expansion of nuclear energy could have for the state and nation.

SB805 Support.pdf

Uploaded by: Rico Albacarys

Position: FAV

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS - LOCAL UNION No. 24

AFFILIATED WITH:
Baltimore-D.C. Metro Building Trades Council - AFL-CIO
Baltimore Port Council
Baltimore Metro Council - AFL-CIO
Central MD Labor Council - AFL-CIO
Del-Mar-Va Labor Council - AFL-CIO
Maryland State - D.C. - AFL-CIO
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Written Testimony of Rico Albacarys, Assistant Business Agent, IBEW LOCAL 24 Before the Senate Education, Energy, and the Environment Committee On SB 805 Nuclear Energy Development Task Force

Support

February 28, 2024

Chairman Feldman and Committee Members,

My name is Rico Albacarys and I am a member and employee of IBEW Local 24 in Baltimore. I am writing to express our **support** for **Senate Bill 805**, the Nuclear Energy Development Task Force, and its pivotal role in advancing Maryland's energy landscape towards sustainability.

Nuclear power is a proven technology capable of generating significant amounts of electricity with minimal greenhouse gas emissions. SB 805 rightly establishes a task force to study and recommend strategies for deploying nuclear power generation.

SB 805 recognizes the potential of newer technologies like Small Modular Reactors (SMRs) in enhancing the cost-effectiveness and safety of nuclear power. SMRs offer scalability, flexibility, and improved economics compared to traditional nuclear reactors, making them a promising avenue for bolstering our energy infrastructure while meeting emission reduction goals.

This commission would play a vital role in addressing regulatory, financial, and social barriers to nuclear power deployment while ensuring equitable access to renewable energy and fostering job creation with family-sustaining wages. We ask you to give a **favorable** report to **Senate Bill 805** and seize this opportunity to chart a path towards a sustainable energy future for Maryland.

Sincerely,

Rico Albacarys
Assistant Business Agent IBEW Local 24

SB0805 (HB0820) - LOI.pdf

Uploaded by: Landon Fahrig

Position: INFO



Maryland Energy Administration

TO: Chair Feldman, Vice Chair Kagan, and Members of the Education, Energy, and the Environment Committee
FROM: MEA
SUBJECT: Nuclear Energy Development Task Force
DATE: February 29, 2024

MEA Position: LETTER OF INFORMATION

HB820 would initiate a nuclear energy development task force with the end goal of determining barriers to nuclear deployment in the State, along with any potential incentive structures that could be utilized to encourage the growth of nuclear generation in the State.

While generally supportive of maintaining clean, existing and new nuclear power and considering safe and financially viable power in Maryland, MEA would have difficulty with the majority of this bill which would divert important staff and other resources. Extensive staffing and coordination, which would strain MEA resources, would be necessary to manage and staff the Task Force.

Maryland has enacted one of the most ambitious GHG reduction standards in the country – a 60% reduction in GHG emissions is required by the Climate Solutions Now Act (CSNA), and it cannot be achieved without a substantial contribution from the power sector. The State is in need of emissions free energy generation, especially as existing fossil fuel plants retire.

Nuclear energy is one of the few resource types capable of providing large-scale, emissions-free generation that is firm, dispatchable, and can provide 24/7 baseload power to the grid. Furthermore, nuclear facilities can potentially utilize the waste heat from operations or be outfitted for hydrogen production, increasing revenue potential, defraying project costs.

Should the bill move forward, MEA suggests the following amendments to the final version:

- Eliminate the Task Force language.
- Require MEA to manage additional feasibility studies for new nuclear providers that would like to investigate siting a facility in Maryland concentrating on brownfields and retired fossil fuel generator sites. This would provide new firms direct and relevant information that would be needed to make determinations on whether to move forward with any given project.

Our sincere thanks for your consideration of this testimony. For questions or additional information, please contact Landon Fahrig, Legislative Liaison, directly (landon.fahrig@maryland.gov, 410.931.1537).