MISSOURI HOUSE OF REPRESENTATIVES

WITNESS APPEARANCE FORM

BILL NUMBER: **HB 1684**	DATE: **1/26/2022**
COMMITTEE: **Utilities**	

TESTIFYING: ☑ IN SUPPORT OF ☐ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **ARNIE C. AC DIENOFF-STATE PUBLIC ADVOCATE**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **arniedienoff@yahoo.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/18/2022 11:32 PM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

All House and Senate Members Beware of this Proposal. Some thing is Fishy and Smell Like A Rat to Get around the State Regulation on the State Statue. There NEEDS to be a lot of Study and Questions Asked by the State Department of Natural Resources and the Public Service Commission!

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

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WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **CHRISTINE CSIZMADIA**	PHONE NUMBER: **202-352-3489**
BUSINESS/ORGANIZATION NAME: **NUCLEAR ENERGY INSTITUTE**	TITLE: **DIRECTOR, STATE GOVERNMENT AFFAIRS AND ADVOCACY**
ADDRESS: **1201 F STREET NW, SUITE 1100**	
CITY: **WASHINGTON**	STATE: **DC** ZIP: **20004**

EMAIL: **cmc@nei.org**	ATTENDANCE: **Written**	SUBMIT DATE: **1/18/2022 8:18 PM**

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Dear Chairman Kidd: I am writing in support of House Bill 1684. Please refer to recent reports for additional information: • NEI's Gone With the Steam: How new nuclear plants can re-energize communities when coal plants close • SMR Start: State Options to Support New Nuclear Plants We appreciate and applaud the support for nuclear energy that inspired HB 1684 and look forward to continued discussion of the future of nuclear energy in Missouri. Thank you for your consideration. Sincerely, Christine Csizmadia Director, State Government Affairs & Advocacy

MISSOURI HOUSE OF REPRESENTATIVES

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WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **EWELL LAWSON**		PHONE NUMBER: **573-864-6694**	
REPRESENTING: **MISSOURI ASSOCIATION OF MUNICIPAL UTILITIES & MISSOURI JOINT MUNICIPAL ELECTRIC**		TITLE: **LOBBYIST**	
ADDRESS: **2200 MAGUIRE BOULEVARD**			
CITY: **COLUMBIA**		STATE: **MO**	ZIP: **65201**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/26/2022 12:00 AM**	

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MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☑ IN SUPPORT OF ☐ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **FRED DREILING**		PHONE NUMBER: **816-806-6335**	
REPRESENTING: **CITY UTILITIES OF SPRINGFIELD**		TITLE: **LOBBYIST**	
ADDRESS: **1025 WEST 64TH TERRACE**			
CITY: **KANSAS CITY**		STATE: **MO**	ZIP: **64113**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/26/2022 12:00 AM**	

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MISSOURI HOUSE OF REPRESENTATIVES

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WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **REBECCA EICHELBERGER**		PHONE NUMBER: **573-230-1458**	
REPRESENTING: **ASSOCIATION OF MISSOURI ELECTRIC COOPERATIVES**		TITLE: **LOBBYIST**	
ADDRESS: **2722 EAST MCCARTY STREET**			
CITY: **JEFFERSON CITY**		STATE: **MO**	ZIP: **65101**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/19/2022 12:00 AM**	

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

MISSOURI HOUSE OF REPRESENTATIVES

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WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **SCOTT RAMSHAW**		PHONE NUMBER: **314-267-4992**	
REPRESENTING: **UA 562 PLUMBERS & PIPEFITTERS**		TITLE: **GOVERNMENT RELATIONS 7 BUSINESS DEVELOPMENT**	
ADDRESS: **3640 COPROATE TRAIL DRIVE**			
CITY: **EARTH CITY**		STATE: **MO**	ZIP: **63045**
EMAIL: **sramshaw@local562.org**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 10:19 AM**	

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UA 562 Plumbers & Pipefitters are insupport of creating a path forward for Missouri's new energy options & future discussions.

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **ALETA LANIER**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **aleta.marie3@gmail.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 1:36 PM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

I feel strongly that a business should cover their own investment costs upfront, rather than charging ratepayers for facilities are operational.

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **ARNIE C. AC DIENOFF-STATE PUBLIC ADVOCATE**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **arniedienoff@yahoo.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/26/2022 10:43 PM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

This a Very Bad and Evil Bill Asked for by the Power Energy Companies and Big Lobbyists. This Will By-Pass the Public Service Commission and Will Rake Customers Over the Coals, While the Fat Cat Energy Executives Get Richer Off Of Missourians.

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **DEBRA COE**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **debbiecoe@mac.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 9:45 AM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

I am opposed to paying the cost of construction that any corporation or utility should expect of me. I often do not get to decide who these investors are in my community so I object to bankrolling their investment.

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **EDWARD SMITH**		PHONE NUMBER: **314-705-4975**	
BUSINESS/ORGANIZATION NAME: **SIERRA CLUB**		TITLE:	
ADDRESS: **8917 MORITZ AVE**			
CITY: **BRENTWOOD**		STATE: **MO**	ZIP: **63144**
EMAIL: **esmith326@gmail.com**	ATTENDANCE: **In-Person**	SUBMIT DATE: **1/18/2022 12:35 PM**	

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Please disregard my registration as an individual that I submitted on 1/17/2022.

MISSOURI HOUSE OF REPRESENTATIVES

WITNESS APPEARANCE FORM

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **JAMES OWEN**		PHONE NUMBER: **417-496-1924**	
REPRESENTING: **RENEW MISSOURI**		TITLE: **LOBBYIST**	
ADDRESS: **409 VANDIVER BUILDING 5, SUITE 205**			
CITY: **COLUMBIA**		STATE: **MO**	ZIP: **65202**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/26/2022 12:00 AM**	

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MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **JAY C HARDENBROOK**		PHONE NUMBER: **816-810-2066**	
BUSINESS/ORGANIZATION NAME: **AARP MISSOURI**		TITLE: **ASSOCIATE STATE DIRECTOR FOR ADVOCACY**	
ADDRESS: **4031 PARKER AVE, 63116**			
CITY: **SAINT LOUIS**		STATE: **MO**	ZIP: **63116**
EMAIL: **jay.hardenbrook@gmail.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/26/2022 5:10 AM**	

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In other states, financing schemes like CWIP have led to high rates, cost overruns, and in at least one case, a plant sitting idle while ratepayers foot the bill. The very reason that the potential of SMRs is so attractive is their relative low-cost and ease of regulatory approval. Missouri utilities have wisely avoided being "early adopters" of new technologies which has led to our current low-cost, high reliability market. The Missouri General Assembly should wait to see if new technologies are proven and reliable in highly regulated, grant funded "proof of concept" environments before we make any drastic changes to utility rate decisions.

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

REGISTERED LOBBYIST:

WITNESS NAME: **JAY HARDENBROOK**		PHONE NUMBER: **816-810-2066**	
REPRESENTING: **AARP**		TITLE: **ADVOCACY DIRECTOR**	
ADDRESS: **9200 WARD PARKWAY**			
CITY: **KANSAS CITY**		STATE: **MO**	ZIP: **63116**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/19/2022 12:00 AM**	

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MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **KATHLEEN DOLSON**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **kdolson1@aol.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 8:35 AM**

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I am STRONGLY OPPOSED to any Construction Work in Progress build. We voted overwhelmingly AGAINST this and it has been in place for over 40 years. Charging ratepayers to cover the cost of nuclear energy plants before the plants are actually operational is beyond absurd. A business should cover their own investment costs upfront.

MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **MARIE RICHEY**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **econotego1@gmail.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/18/2022 4:55 PM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

January 19, 2022Marie Richey6320 N London AveKansas City MO 64151RE: Written Testimony to the House Utilities Committee Regarding HB 1684To Mister Chairman, and Members of the Committeel wish to oppose this bill for safety concerns.Undeniable, we are in a climate crisis – and we need to focus on clean energy – period.Anytime we act – we should ALWAYS ask... is this good or bad for our environment,We have cheaper, safer, and healthier methods to produce power with wind and solar. Not only is Clean"Nuclear" more expensive it is also puts us at risk with the Uranium it uses to build with this poison,Once build we always have a chance of accidents, meltdowns, leakage etc. and when thathappens it is catastrophic.Remember 3Mile Island, Chernobyl, and most recently Fukushima Japan disaster of 2011.The proximate cause of the disaster was an earthquake and tsunami. We now have concerns overFukushima releasing their toxic water into the pacific in the near future.Missouri has The New Madrid Seismic Zone and it is still active and averaging more than 200measured seismic events per year. Are you truly willing to take ANY chance at this point?When voting as elected leaders you have a responsibility to make healthy choices for all of us as our climatecrisis is undeniable. Our actions speak louder than words. We need to be proactive NOT Reactive.Please vote against HB1684. Thank youWith respect,Marie Richey, Registered Voter and very concerned citizen,

MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **NICOLE COOPER**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **ncooper020@gmail.com**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 8:55 AM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

I am against nuclear energy and believe a business should pay for their own investment costs upfront.

MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **PHILIP FRACICA**		PHONE NUMBER: **816-752-6630**	
BUSINESS/ORGANIZATION NAME: **RENEW MISSOURI**		TITLE: **DIRECTOR OF PROGRAMS**	
ADDRESS: **409 VANDIVER DRIVE, BUILDING 5, SUITE 205**			
CITY: **COLUMBIA**		STATE: **MO**	ZIP: **65202**
EMAIL:	ATTENDANCE:	SUBMIT DATE: **1/19/2022 12:00 AM**	

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MISSOURI HOUSE OF REPRESENTATIVES

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TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **SOPHIE WATTERSON**		PHONE NUMBER: **314-727-0600**	
BUSINESS/ORGANIZATION NAME: **MISSOURI COALITION FOR THE ENVIRONMENT**		TITLE: **POLICY COORDINATOR**	
ADDRESS: **725 KINGSLAND AVE, SUITE 100**			
CITY: **ST. LOUIS**		STATE: **MO**	ZIP: **63130**
EMAIL: **swatterson@moenvironment.org**	ATTENDANCE: **Written**	SUBMIT DATE: **1/18/2022 3:21 PM**	

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

January 18, 2022 Representative Bill KiddUtilities CommitteeMissouri House of Representatives201 W Capitol Ave., Rm. 402Jefferson City, MO 65101 Dear Chairman Kidd and Members of the Committee, The Missouri Coalition for the Environment is a statewide, advocacy nonprofit organization that works to empower Missourians to protect their environment and health. House Bill No. 1684 would allow utilities to charge customers for new power plants before they are completed and operational. For this reason, we respectfully ask that you oppose HB 1684.This bill would undo the long-standing ban on Construction Work In Progress (CWIP) that passed in 1976 under Proposition 1 with 63% of the statewide vote.(1) The bill language is specifically written to "enable the construction of clean baseload electric generating plants" defined as "new nuclear-fueled electric generating facilit[ies]". This does not account for the fact that new nuclear generators are an economically unwise decision. Nuclear power is so risky that banks will not lend for nuclear reactor construction and insurance companies will not cover operating nuclear reactors due to the exorbitant cost of a severe disaster. A recent example is the VC Summer nuclear project in South Carolina. The project was abruptly abandoned in 2017 after the utility stated it was over budget and behind schedule. In total, more than $9 billion was collected from ratepayers before the project was canceled.(2) The bill sponsor, Rep. John Black, represents the 137th district, which is not serviced by Missouri's major electric utilities but rather by rural electric co-ops. Therefore, his constituents would not experience the consequences of CWIP, such as footing the bill for a failed nuclear project. The stated purpose of the bill is "to enable the construction of clean baseload electric generating plants or facilities that utilize renewable sources to produce energy". This disregards the fact that nuclear energy is not a clean energy source, nor is CWIP necessary to build more renewable energy sources. Nuclear reactors may not directly produce carbon dioxide emissions, however, from an environmental and community health perspective, nuclear energy is not clean. In 2008, Missouri voters passed a renewable energy standard (RES) with 66% of the statewide vote,(3) which defined renewables and did not include nuclear power. Milling and mining uranium to produce nuclear power has documented negative health impacts for workers and surrounding communities.(4) Nuclear energy produces radioactive waste, and improper radioactive waste management has had devastating legacy pollution impacts on Missouri communities. For example, in North County, St. Louis, where radioactive waste from the Manhattan Project was buried in the West Lake Landfill and numerous other sites, hundreds of residents have been affected by rare forms of cancer, autoimmune diseases, birth defects, and other illnesses.(5, 6) Spent nuclear fuel is a high-level radioactive waste and safe long-term storage would be another costly proposition for Missouri.Furthermore, CWIP is not needed to build more renewable energy. For instance, Ameren brought the largest wind farm in the state - the High Prairie Renewable Energy Center - online without the use of CWIP.(7) Missourians support a clean energy future for our state, without paying in advance

for environmentally and economically unsound nuclear generation projects. MCE encourages our legislators to prioritize energy efficiency, energy storage, and low- and no-carbon energy sources in order to build a clean energy future. HB 1684 is not needed to support that. Missouri's monopoly electric utilities are required to file Integrated Resource Plans with the Missouri Public Service Commission (PSC) every three years. None of these utilities have plans to build nuclear reactors in their most recent IRPs.Finally, low-income ratepayers would be most impacted by CWIP. Home energy burden is the percentage of household income that goes towards energy costs like electricity. In 2018, Missouri households with incomes below 50% of the Federal Poverty Level (FPL) paid 29% of their annual income towards home energy bills, while Missourians at 125-150% FPL paid 9%.(8) In other words, low-income Missourians experience a much greater home energy burden. The Missouri Public Service Commission (PSC) recently approved rate increases for two of Missouri's major electric utilities, Ameren and Evergy. If the Missouri Legislature repeals the ban on CWIP, Missourians can expect electric rates and the subsequent home energy burden to continue increasing. Once again, the Missouri Coalition for the Environment asks you to vote "no" on HB 1684 in order to protect Missourians from the economic, health and environmental concerns related to this bill. Thank you for your time.Sincerely,Sophie WattersonPolicy CoordinatorMissouri Coalition for the Environmentswatterson@moenvironment.org(314) 727-0600 ext. 113Sources:1: https://ballotpedia.org/Missouri_Electric_Utility_Rate,_Proposition_1_(1976)2: https://theintercept.com/2019/02/06/south-caroline-green-new-deal-south-carolina-nuclear-energy/3: https://www.sos.mo.gov/CMSImages/ElectionResultsStatistics/AllRacesGeneralNovember2008.pdf, 234: https://www.epa.gov/navajo-nation-uranium-cleanup/health-effects-uranium 5: Shumei Y, Schmaltz CL, Gwanfogbe P, Homan S, Wilson J, Analysis of cancer incidence data in eight zip code areas around coldwater creek, 1996-2011, Missouri Department of Health & Senior Services (2018), http://health.mo.gov/living/healthcondiseases/chronic/cancerinquiry/reports.php#coldwater6: http://www.stlradwastelegacy.com/262/7: https://www.ameren.com/missouri/company/environment-and-sustainability/wind. 8: https://static1.squarespace.com/static/52981fcae4b0a2f014149d84/t/5ca9118e9b747a5233d23eb3/1554583951592/Missouri+2018+HEAG+Fact+Sheet.pdf

MISSOURI HOUSE OF REPRESENTATIVES

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COMMITTEE: **Utilities**	

TESTIFYING: ☐ IN SUPPORT OF ☑ IN OPPOSITION TO ☐ FOR INFORMATIONAL PURPOSES

WITNESS NAME

INDIVIDUAL:

WITNESS NAME: **SUSAN LAMMERT**	PHONE NUMBER:	
BUSINESS/ORGANIZATION NAME:	TITLE:	
ADDRESS:		
CITY:	STATE:	ZIP:

EMAIL: **susanlammert@att.net**	ATTENDANCE: **Written**	SUBMIT DATE: **1/19/2022 10:42 AM**

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

Utilities should cover cost of new facilities not the customers. This will force them to consider the wisdom of building them.

MISSOURI HOUSE OF REPRESENTATIVES

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WITNESS NAME

BUSINESS/ORGANIZATION:

WITNESS NAME: **DANIEL SHEA**		PHONE NUMBER: **303-856-1534**	
BUSINESS/ORGANIZATION NAME: **NATIONAL CONFERENCE OF STATE LEGISLATURES**		TITLE: **PROGRAM PRINCIPAL - ENERGY**	
ADDRESS: **7700 EAST 1ST PLACE**			
CITY: **DENVER**		STATE: **CO**	ZIP: **80230**
EMAIL: **daniel.shea@ncsl.org**	ATTENDANCE: **Written**	SUBMIT DATE: **1/25/2022 12:32 PM**	

THE INFORMATION ON THIS FORM IS PUBLIC RECORD UNDER CHAPTER 610, RSMo.

Missouri House of Representatives, Utilities CommitteeRe: Missouri House Bill 1684February 25, 2021Written testimony of:Dan Shea Program PrincipalNational Conference of State LegislaturesChairman Kidd and members of the Committee, thank you for the opportunity to submit testimony on Missouri House Bill 1684. My name is Dan Shea. I am a program principal in the energy program at the National Conference of State Legislatures (NCSL), where I have covered nuclear energy policy for NCSL since 2015 and have also worked on utility regulatory issues.NCSL is the only bipartisan organization serving all state legislators and legislative staff in the 50 states, commonwealths and territories. NCSL does not take a position on Missouri House Bill 1684 but submits this written testimony for informational purposes. I will provide background on Construction Work in Progress (CWIP) laws, in addition to providing some information on the broader transitions and state policies that are reshaping the energy sector in the United States. House Bill 1684 and CWIP LawsCWIP is a financing mechanism which enables utilities to finance capital projects by allowing them to incrementally collect costs from customers throughout the course of construction, with approval and oversight from the state utility regulatory commission. These laws lower the risk to utility companies and shareholders and can reduce the overall amount needed to finance a project. Due to the high up-front costs of developing nuclear power plants, CWIP has been instrumental in helping developers overcome financing hurdles, although opponents argue that it shifts too much risk onto customers. Missouri and New Hampshire are the only two states in the U.S. with outright bans on CWIP. Idaho and Texas have enacted legislation to discourage its use, but ultimately leave it to the discretion of state utility regulatory commissions. In Georgia and South Carolina, state lawmakers decided to repeal CWIP laws designed specifically to support new nuclear power projects following cost overruns on projects developed under the policies. As introduced, House Bill 1684 would provide an exemption to the state's ban on CWIP by allowing developers of new nuclear power plants and renewable power facilities with a rated capacity of 200 megawatts (MW) or greater to apply for advanced cost recovery on these projects. The bill, if enacted, would enable a new financing mechanism for larger capacity carbon-free power projects and encourage the development of these types of resources.The Energy TransitionTwo decades ago, coal accounted for more than half of electricity generation in the U.S., while nuclear and natural gas together made up another 35%. Since then, an enormous shift has begun as some states and utilities have moved to decarbonize the electricity sector. Natural gas now makes up the majority of generation and coal now generates just over 20% of total electricity. Meanwhile, renewable generating capacity has grown; wind and solar generated 13% of total electricity in 2021, according to the U.S. Energy Information Administration. These shifts have taken place due to a complex set of circumstances that include:• Sustained

low natural gas prices resulting from the development of new domestic resources through innovative drilling techniques in the late 2000s, known as the Shale Revolution;• State and federal policies to support and grow renewable generation such as solar and wind, aided in recent years by the falling cost of renewable projects;• Federal and state regulation of greenhouse gas emissions (GHGs), including the U.S. Environmental Protection Agency's Mercury and Air Toxics Standards (MATS), which applied primarily to coal units and went into effect in 2014;• Market dynamics and competition, with low-cost natural gas and renewables driving power prices below the threshold at which legacy resources can compete economically in wholesale power markets.All of these factors have created an economic environment that has been unfavorable to traditional, legacy resources, such as coal and nuclear power plants. A number of states have worked to preserve existing nuclear plants through policies that compensate those resources for their carbon-free attributes, while Congress recently enabled a similar mechanism at the federal level through the Infrastructure Investment and Jobs Act. The bipartisan $1.2 billion infrastructure package includes up to $6 billion to support existing nuclear reactors, in addition to a $3 billion carve-out to support the development of advanced nuclear projects.However, the coal industry has continued to decline as utility initiatives and public policy, driven by public sentiment, have shifted to embrace cleaner resources. These dynamics are likely to continue—and even accelerate—in the coming years due to the current economic environment and the implementation of new federal and state policies to further reduce carbon emissions in the electric sector. Relevant State Policies House Bill 1684 would permit CWIP financing for new nuclear power and renewable facilities rated at 200 MW electric generating capacity or greater, facilitating the development of carbon-free resources for the state's utilities. Over the past decade, many states have enacted policies to incentivize the development of carbon-free resources. I will outline several of the most relevant policies below.Renewable Portfolio Standards & Clean Energy Standards To date, 30 states, Washington, D.C., and three territories have adopted renewable portfolio standards (RPS) that set renewable energy requirements and goals for their electric utilities. Over the past several years, more than a dozen of those states and territories have set aggressive targets nearing and up to 100% renewable or carbon-free by 2050. Many of the states that have established targets of 100% have expanded the types of resources that qualify under those programs to include "carbon-free" or "carbon-neutral" resources, which allows for nuclear power or fossil fuel-fired generation with carbon capture and sequestration (CCS) technology to help meet portions of those requirements. Utility carbon-reduction goals have complimented many of these state policy initiatives. At least 64 electric utilities in the U.S., representing nearly 70% of total electric customers, have publicly committed to carbon or emissions reduction. Of those, 40 utilities have established goals to be carbon-free or net-zero emissions by 2050. Most of the goals set by utilities are defined broadly enough to include nuclear or fossil fuel-fired generation with CCS.Support for Dispatchable, Low-Carbon Resources As utilities conduct resource planning, their decisions are clearly influenced by state laws and regulations, in addition to the economic landscape. Lately, the economic landscape has favored natural gas and renewables, which are cheaper and easier to build than most alternatives. However, some states, like Wyoming, have sought more of a like-for-like replacement of baseload power, citing reliability concerns. The Wyoming legislature, in 2020, took an alternative approach with the passage of HB 200, directing the state utility commission to establish a portfolio standard for "dispatchable and reliable low-carbon" resources. Under the law, these are defined to mean power generated using CCS technology, while also establishing financial incentives for utilities that retrofit existing coal units with CCS technologies. North Dakota enacted several policies in 2021 to encourage research and development of technologies to reduce carbon emissions from coal-fired power plants through a Clean Sustainable Energy Fund (HB 1452), and by adopting a resolution that expresses the legislature's support for CCS technologies (SCR 4012). Support for SMRs & Advanced ReactorsIn recent years, several states have enacted legislation to support the development of small modular reactors (SMRs) and advanced reactors. These technologies are generally rated at under 300 MW electric generation and are designed to benefit from modular factory fabrication of components and economies of series production to reduce costs.The Wyoming legislature enacted HB 74 in 2020, a law clarifying the state's preference for what type of resources eventually replace its coal units: nuclear power. The new law authorizes the replacement of coal- or natural gas-fired power with small modular nuclear reactors (SMRs) of lesser or equal capacity on the same site. Indiana is currently considering a similar bill (SB 271) that would incentivize the development of SMRs on the site of retired coal or gas generators. Montana decided to study the feasibility of replacing certain coal-fired units with advanced nuclear generation when it adopted SJR 3 last year. Meanwhile, Nebraska LB 84, enacted in 2021, extended existing incentives for renewable generation under the ImagiNE Nebraska Act to apply to companies that build advanced nuclear reactors.Utah and Idaho have also passed legislation in support of the development of SMRs in recent years, often citing the potential economic benefits that the advanced nuclear industry could bring to their states. Idaho, in particular, enacted two tax exemptions to support the development of an SMR project planned in the state.Opening the Door to New NuclearThere are

currently 13 states with restrictions or moratoriums on the construction of new nuclear facilities. In recent years, three states have repealed these statewide restrictions on the development of new nuclear power facilities. Montana is the latest state to repeal such restrictions through the enactment of HB 273 in 2021. Kentucky and Wisconsin repealed similar restrictions in recent years, while West Virginia is currently considering a similar repeal. While these do not provide direct incentives to companies interested in building new nuclear, these measures do open the door to the development of nuclear power facilities in these states in the future.ConclusionOnce again, I would like to thank Chairman Kidd and the members of the Committee for the opportunity to submit testimony on Missouri House Bill 1684. Please feel free to reach out to me with any questions or research requests. You can reach me either by email (daniel.shea@ncsl.org) or phone (303-856-1534).

MISSOURI HOUSE OF REPRESENTATIVES

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Executive Summary The Missouri Nuclear Clean Power Act (HB 1684 in the 2022 regular session) allows electric corporations to charge ratepayers for the cost of building clean baseload generating plants (specifically new nuclear-fueled facilities) or renewable source generating facilities rated at 200 megawatts or more (including wind, hydropower, solar power, landfill methane, biomass, or any other renewable source of power that does not produce significant carbon emissions) before they are operational. This repeals Section 393.135, RSMo which prohibits electrical corporations from charging for non-operational properties, including construction and financing.Highlights: Currently, 9% of Missouri's electricity generation comes from renewable sources, and 11% of Missouri's electricity generation comes from its single nuclear power plant, the Callaway Nuclear Generating Station.Nuclear energy could be used as a carbon-free energy source to provide consistent, baseload energy, as Missouri increases use of intermittent renewable energy such as solar and wind power.Disadvantages of nuclear power include problems with long-term waste storage, public perception of safety, and excess costs during construction.Limitations: New nuclear reactors may improve economic viability and safety, but this technology is still developing. There is no long-term national plan for the storage of spent nuclear fuel.Research Background: Renewable and Nuclear Energy in MissouriRenewable energy is energy that comes from a source that is naturally replenishing.(1) Major types of renewable energy include solar, wind, hydropower, geothermal, and biomass. Several challenges exist when attempting to shift to renewable forms of energy. They can suffer from intermittency (solar and wind), dependence on geography (hydropower and geothermal), or scalability issues (biomass).(2,3) Nuclear power is a carbon-free energy source that is reliable at a large scale and can be produced almost anywhere on Earth. Nuclear power does rely on a fuel source, however, and thus is not considered to be a renewable energy source. Uranium and plutonium can both be used as nuclear fuels but currently the United States does not use plutonium.(4) A report by the Nuclear Energy Agency and the International Atomic Energy Agency predicts that there is enough uranium for nuclear fuel for over 250 more years.(5)Missouri currently generates most of its electricity from fossil fuels, primarily from coal. A large portion of this coal (>90%) is imported from out-of-state.(6) The Callaway Nuclear Generating Station is currently Missouri's only nuclear power plant and in 2020 generated 11% of the state's net electricity.(7) It has been in operation since 1984. Renewable energy sources (including hydroelectric, solar, wind, and biomass) generate approximately 9% of Missouri's electricity. Of the renewable energy sources, wind energy is responsible for more than half the energy generation, followed by hydroelectric energy. Notably, electricity generation from solar energy has tripled since 2014.7 Solar energy production is predicted to continue growing nationwide in the years to come.(8)Intermittent and Firm Energy SourcesTraditional electricity generation sources have been classified based on their

costs per energy produced and how often they are called on to meet demand (aka “load”). “Baseload” power sources serve to meet the minimum electricity demands on a grid experienced over a span of time. Nuclear energy fits into this category. Other sources serve to respond to changing electricity demand, and have been classified as “load-following” or “peaking” resources. The penetration of intermittent wind and solar into the energy market challenges the traditional categorizations of energy sources.(9) This has led some researchers to develop new categorizations of energy producing technologies. “Firm” energy sources are described as those that are able to reliably produce electricity to meet demand during any season for long durations. Nuclear power, hydroelectricity, coal, and natural gas fit into the “firm” category. One study investigated the role of firm energy sources with low-carbon output, such as nuclear energy and natural gas with carbon capture and sequestration, in conjunction with other renewable and conventional fossil fuels in electricity generation and different decarbonization goals.(9) They investigated nearly 1,000 scenarios, accounting for different potential future costs for renewable and other energy technologies, different CO_2 emissions targets down to zero emissions, the impact of flexible electricity demand scheduling, and various long-distance transmission capacities. The researchers found that low-carbon, firm energy sources consistently lowered the price of electricity in the scenarios that were evaluated. In fully decarbonized scenarios, electricity costs decreased by 10-62%.Nuclear Energy Safety Concerns Nuclear Energy AccidentsWhile catastrophic nuclear reactor accidents such as the Fukushima and Chernobyl disasters do occur, the overall mortality rate per terawatt-hour (TWh) of nuclear energy is 0.07.(10,11) As reference, the mortality rate per TWh for coal is 24.62, natural gas is 2.82, solar is 0.02, and wind is 0.04. These mortality rates account for deaths due to accidents and also increases in mortality due to air pollution. Because of the long lasting nature of radiation, nuclear reactor accidents have long-term ecological effects. Radioactive strontium and caesium will continue to remain in the vicinity of the Chernobyl nuclear power plant for decades.(12) Plutonium and americium will persist for thousands of years, though their human exposure is low. There is evidence that several species in the area have experienced mutations that impact their ability to survive.(13)Regulations for nuclear reactors are updated after tragic events occur. After the most recent major nuclear accident at Fukushima, Japan, the U.S. Nuclear Regulatory Commission updated regulations for plants to include plans for more rare and extreme events.(14) Spent Nuclear FuelSpent nuclear fuel is still highly radioactive and dangerous to humans. The radioactivity of nuclear materials naturally reduces overtime via a process called radioactive decay, but radioactive waste can still be dangerous to humans for thousands of years. Therefore, proper disposal of waste is essential.(15) All U.S. nuclear reactors store spent fuel in concrete reinforced pools that serve to cool the fuel and act as a radiation shield.(16,17) After 5-10 years, the fuel is moved to a dry cask made of steel and concrete designed to cool the fuel and shield the radiation. As of 2019, approximately 86,000 metric tons of spent fuel is stored on-site at reactor facilities.(17) Currently there is no long-term plan for storage of spent nuclear fuel in the United States. (18,19) Partly as a result, 13 states currently have restrictions on the construction of new nuclear energy facilities, with the majority awaiting identification of high-level waste disposal, although three states (Montana, Kentucky, and Wisconsin) have lifted restrictions in the last 6 years.(20)Economic Viability of Nuclear EnergyRecent expansion in electricity generation from natural gas has led to lower electricity prices.(21) In combination with weak growth in electricity demand, electricity production from nuclear power plants has become less competitive, leading to closures and challenges in financing to build new plants.(21-23) Additionally, construction costs for many nuclear reactors become more expensive than initially estimated, with an average increase in cost of 117% (for comparison, hydroelectric is 71%, wind 8% and solar 1%).(24) One alternative to large nuclear reactors is the development of small, modular reactors which may require less upfront costs; however, this technology is still developing.(25)The U.S. currently has 93 nuclear reactors. Twelve have shut down since 2013.(22) The Watts Bar Unit 2 reactor in Tennessee began operation in 2016 and was the first new reactor in nearly two decades.(21) Small single reactor plants that produce less than 1,000 megawatts in restructured energy markets are the most vulnerable to closure.(23,26) In most restructured markets, electricity is sold on a competitive market. In traditional markets, public utilities commissions exert oversight and regulatory authority over investor-owned utilities’ rates.State Legislation Related to Nuclear EnergyThirteen states have restrictions on nuclear energy. Most of these states have conditions for the construction of a nuclear facility, including requiring a plan for the disposal of spent nuclear fuel, approval by the state legislature, or approval by voters.(27) Minnesota adopted an outright ban on the construction of new facilities, and New York adopted a ban in a limited area of the state.The National Conference of State Legislatures compiled a list of policies which support nuclear energy generation.(28) Illinois and New York have both approved policies that would give zero emissions credits to nuclear plants based on megawatts of carbon free electricity generated. Twenty-nine states and the District of Columbia have mandated renewable portfolio standards (RPS) which specify that a portion of a utility’s electricity generation must come from carbon free or low-carbon sources. These policies incentivize electricity generation with reduced carbon generation, such

as nuclear energy. Missouri has a RPS (RSMo 393.1030) that mandates that electric utilities must generate at least 15% of their electricity from renewable sources. Florida, Georgia, and South Carolina have implemented policies related to advanced cost recovery. These policies allow utilities to collect costs for construction projects before they are finished. This is similar to the proposed Missouri Nuclear Clean Power Act (HB 1684).References1. U.S. Energy Information Administration (EIA). (2021, May 20). Renewable energy explained. U.S. Energy Information Administration - Independent Statistics & Analysis. Retrieved January 18, 2022, from https://www.eia.gov/energyexplained/renewable-sources/ 2. Jacobson, M. Z., Delucchi, M. A., Cameron, M. A., & Frew, B. A. (2015). Low-cost solution to the grid reliability problem with 100% penetration of intermittent wind, water, and solar for all purposes. Proceedings of the National Academy of Sciences, 112(49), 15060–15065. https://doi.org/10.1073/pnas.1510028112 3. FIELD, C., CAMPBELL, J., & LOBELL, D. (2008). Biomass Energy: The scale of the Potential Resource. Trends in Ecology & Evolution, 23(2), 65–72. https://doi.org/10.1016/j.tree.2007.12.001 4. U.S. NRC. (2020, March 19). What is plutonium? . United States Nuclear Regulatory Commission - Protecting People and the Environment. Retrieved January 19, 2022, from https://www.nrc.gov/reading-rm/basic-ref/students/science-101/what-is-plutonium.html 5. Nuclear Energy Agency, & International Atomic Energy Agency. (2020). (rep.). Uranium 2020: Resources, Production and Demand. Retrieved January 18, 2022, from https://www.oecd-nea.org/jcms/pl_52718/uranium-2020-resources-production-and-demand. 6. U.S. Energy Information Administration (EIA). (2021, October 4). Annual Coal Distribution Report. U.S. Energy Information Administration - Independent Statistics & Analysis. Retrieved January 18, 2022, from https://www.eia.gov/coal/distribution/annual/ 7. U.S. Energy Information Administration (EIA). (2021, May 20). Missouri State Profile and Energy Estimates. U.S. Energy Information Administration - Independent Statistics & Analysis. Retrieved January 18, 2022, from https://www.eia.gov/state/analysis.php?sid=MO 8. U.S. Energy Information Administration (EIA). (2021, February 18). EIA projects renewables share of U.S. electricity generation mix will double by 2050 . U.S. Energy Information Administration - Independent Statistics and Analysis. Retrieved January 18, 2022, from https://www.eia.gov/todayinenergy/detail.php?id=46676 9. Sepulveda, N. A., Jenkins, J. D., de Sisternes, F. J., & Lester, R. K. (2018). The role of firm low-carbon electricity resources in deep decarbonization of power generation. Joule, 2(11), 2403–2420. https://doi.org/10.1016/j.joule.2018.08.006 10. Markandya, A., & Wilkinson, P. (2007). Electricity Generation and Health. The Lancet, 370(9591), 979–990. https://doi.org/10.1016/s0140-6736(07)61253-7 11. Sovacool, B. K., Andersen, R., Sorensen, S., Sorensen, K., Tienda, V., Vainorius, A., Schirach, O. M., & Bjørn-Thygesen, F. (2016). Balancing safety with sustainability: Assessing the risk of accidents for modern low-carbon energy systems. Journal of Cleaner Production, 112, 3952–3965. https://doi.org/10.1016/j.jclepro.2015.07.059 12. World Health Organization. (2005, September 5). Chernobyl: The True Scale of the accident. World Health Organization. Retrieved January 19, 2022, from https://www.who.int/news/item/05-09-2005-chernobyl-the-true-scale-of-the-accident 13. Mousseau, T. A. (2021). The Biology of Chernobyl. Annual Review of Ecology, Evolution, and Systematics, 52(1), 87–109. https://doi.org/10.1146/annurev-ecolsys-110218-024827 14. U.S. NRC. (2018, September 17). Backgrounder on NRC response to lessons learned from Fukushima. United States Nuclear Regulatory Commission - Protecting People and the Environment. Retrieved January 18, 2022, from https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/japan-events.html 15. U.S. Energy Information Administration (EIA). (2021, December 17). Nuclear Explained - Nuclear power and the environment. U.S. Energy Information Administration - Independent Statistics & Analysis. Retrieved January 18, 2022, from https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php 16. U.S. NRC. (2019, July 23). Backgrounder on Radioactive Waste. United States Nuclear Regulatory Commission - Protecting People and the Environment. Retrieved January 18, 2022, from https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/radwaste.html 17. U.S. Government Accountability Office, Commercial Spent Nuclear Fuel: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution (2021). Retrieved January 18, 2022, from https://www.gao.gov/products/gao-21-603. 18. Environmental Protection Agency (EPA). (n.d.). Nuclear Power Plants. United States Environmental Protection Agency. Retrieved January 18, 2022, from https://www.epa.gov/radtown/nuclear-power-plants 19. Suman, S. Hybrid nuclear-renewable energy systems: A review. J. Clean. Prod. 181, 166–177 (2018).20. Scott Hendrick, K. H. (2021, August 17). States Restrictions on New Nuclear Power Facility Construction. National Conference of State Legislators. Retrieved January 18, 2022, from https://www.ncsl.org/research/environment-and-natural-resources/states-restrictions-on-new-nuclear-power-facility.aspx 21. Scott, M. Nuclear Power Outlook. U.S. Energy Information Administration https://www.eia.gov/outlooks/aeo/npo.php (2018)22. Holt, M., & Brown, P., Congressional Research Service (2021). Retrieved January 18, 2022, from https://crsreports.congress.gov/product/pdf/R/R46820/4. 23. Hartman, K., & Shea, D. (2017, May 30). State Options to Keep Nuclear in the Energy Mix. National Conference of State Legislatures. Retrieved January 18, 2022, from https://www.ncsl.org/research/energy/state-options-to-keep-nuclear-in-the-

energy-mix.aspx 24. Gilbert, A., Sovacool, B. K., Johnstone, P. & Stirling, A. Cost overruns and financial risk in the construction of nuclear power reactors: A critical appraisal. Energy Policy 102, 644–649 (2017).25. Cho, A. Smaller, safer, cheaper: One company aims to reinvent the nuclear reactor and save a warming planet. Science. https://www.sciencemag.org/news/2019/02/smaller-safer-cheaper-onecompany-aims-reinvent-nuclear-reactor-and-save-warming-planet (2019).26. Brown, P., & Holt, M., Financial Challenges of Operating Nuclear Power Plants in the United States (2016). Congressional Research Service. Retrieved January 18, 2022, from https://crsreports.congress.gov/product/pdf/R/R44715.27. States Restrictions on New Nuclear Power Facility Construction. National Conference of State Legislatures. (2021, August 17). Retrieved January 19, 2022, from https://www.ncsl.org/research/environment-and-natural-resources/states-restrictions-on-new-nuclear-power-facility.aspx 28. Shea, D., & Hartman, K. H. (2017, January 26). STATUS OF U.S. NUCLEAR REACTORS. National Conference of State Legislatures. Retrieved January 19, 2022, from https://www.ncsl.org/research/energy/state-action-in-support-of-nuclear-generation.aspx