General Assembly of the Commonwealth of Pennsylvania
Joint State Government Commission
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Short summary in response to House Resolution 238 of 2022
Benefits of Nuclear Energy and Development of Small Modular Reactors – Staff Study

House Resolution 238 was adopted on November 15, 2022 and directed the Joint State Government Commission to conduct a study on the benefits of nuclear energy and small modular reactors and how to maximize those benefits within the Commonwealth.

The report presents a brief history of the nuclear power industry in Pennsylvania and the challenges and successes it has faced so far. Currently, nuclear power comprises a third of the electricity generated within the Commonwealth. Nuclear power is notable for having a variety of positive traits such as providing base load power which supports grid stability, low refueling costs due to its high fuel density, efficient land use, low volume of waste per unit of energy produced, and is the largest source of emission-free energy. Discussions over difficulties in financing, constructing, and operating nuclear plants are presented and accompanied by information on new techniques and practices which could help overcome these obstacles.

New small modular reactor (SMR) designs have the potential to change the way nuclear plants are constructed in the United States. Instead of enormous, difficult to build reactors, numerous small ones can be constructed inside factories and shipped on truck beds to sites where multiple units are joined together. Smaller, simpler designs also allow for new passive safety features capable of limiting the risk to nearby communities. SMRs could also unlock new ways to use nuclear power, such as industrial heat application, desalinization, or generating hydrogen. Detailed information on the cost effectiveness and practicality of SMR nuclear power plants is limited. SMRs are believed to be approximately six years away from commercial release in the U.S.; questions remain around their licensing, cost, and fuel supply chains.

Finally, the report examines the potential for adapting retiring coal-fired electric sites to house SMRs. Preliminary research suggests this could save on construction costs and bring economic benefits to communities facing plant closures. Given Pennsylvania's rich history in both coal and nuclear energy production, this arrangement holds great potential. Converting coal to nuclear plants is a topic of study that should be examined in greater detail as SMR technologies mature.

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