PUBLIC UTILITIES COMMISSION
OF GUAM

Suite 207, GCIC Building
Post Office Box 862

Hagåtña, Guam 96932
Telephone: (671) 472-1907
Fax: (671) 472-1917

September 15, 2023

Senator Sabina F. Perez
Chairperson on Environment, Revenue and Taxation, Labor, Procurement, and Statistics, Research, and Planning
163 Chalan Santo Papa
Hagatna, Guam 96910
Via email: office@senatorperez.org

SUBJECT: **Testimony of Chairman Jeffrey Johnson, Guam Public Utilities Commission, Re: Bill 151-37 (COR)**
An Act to Add a New Chapter 54C to Division 2, Title 10, Guam Code Annotated, Relative to Prohibiting the Production and Use of Nuclear Energy on Guam

Dear Senator Perez:

Of particular interest to the Guam Public Utilities Commission is the prohibition in Bill No. 151-37 on Small Modular Reactors (SMRs). The Bill would prohibit the construction and use of SMRs in Guam.

In 2010, the PUC opened GPA Docket 10-07, Small Nuclear Power Reactors. The purpose of opening that docket was to research and consider whether such SMRs were a technology that could possibly produce power for Guam. Possible benefits of such technology were that small plants of 25MW size could be constructed, and that such plants would be carbon free. At that time, the technology was not well developed and there were no such functioning plants. The PUC passed a Resolution approving investigation of the SMR technology.

The PUC did not actively pursue implementation of the SMR technology in 2010, nor is it presently doing so today. It has no present intent to recommend build out of SMRs in Guam.

However, it does appear that advancements in the SMR technology have been made in recent years. According to a report by the Nuclear Energy Agency (NEA), SMRs have the potential to provide a range of benefits, including lower capital costs, shorter construction times, and greater flexibility in deployment. The United States has recently approved the design of an SMR developed by NuScale Power, which is expected to be deployed in Idaho by 2029. SMRs "hold significant promise as a low-carbon alternative to traditional nuclear power plants." SMRs have numerous advantages, as explained in a recent article of the International Atomic Energy Agency dated September 13, 2023 (attached hereto).

At the public hearing on this bill, you indicated that currently nuclear energy production does not exist in Guam. The bill apparently addresses a threat or harm that does not presently exist. It is not necessary for the Legislature to pass such a bill at the present time.

It is ill-advised for the Legislature to presently ban SMRs. There may be incredible innovations and discoveries in the future which could make SMRs and nuclear power a reliable and safe solution to power generation issues in Guam. Why should even the possibility of considering such technologies be foreclosed through the political system? This bill would forever prevent any possibility of utilizing SMRs or other nuclear technology, even though they may provide potential solutions to providing power generation to the people of Guam.

There are still issues as to how to dispose of spent fuel from SMRs. But there certainly may come a day when science can lead to solutions for this issue. The United States Department of Energy Argonne lab and Idaho national laboratories indicate that managing waste from SMRs would have few challenges compared with traditional light water reactors. The Argonne National Laboratory indicates that it is just beginning to study the nuclear waste attributes of SMRs. We should let science determine when SMRs or other nuclear technology are safe and reliable, rather than enacting blanket legislative prescriptions.

The Legislature should not prohibit a fair and open consideration of all technologies that can potentially provide benefits to the island wide power system. We urge the Legislature not to pass Bill No. 151-37 (COR).

Sincerely,

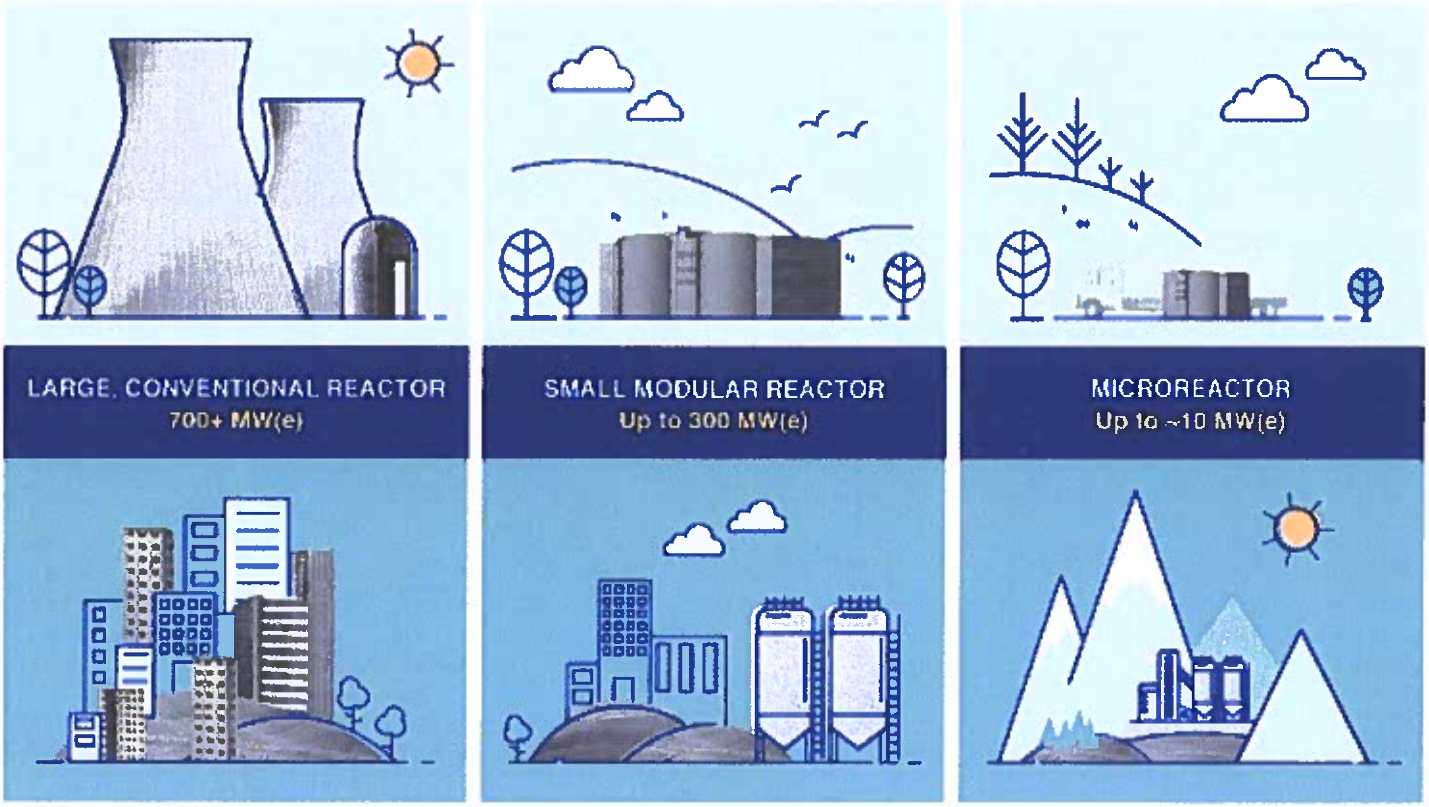
Jefrey C. Johnson
Chairman
Guam Public Utilities Commission

What are Small Modular Reactors (SMRs)?

Nuclear Explained

13 Sep 2023

Joanne Liou, IAEA Office of Public Information and Communication



(https://www.iaea.org/sites/default/files/styles/original_image_size/public/smr-vs-npp-v5.png?itok=T0hG-c-M)

Small modular reactors (SMRs) have a power capacity of up to 300 MW(e) per unit. Many SMRs, which can be factory-assembled and transported to a location for installation, are envisioned for markets such as industrial applications or remote areas with limited grid capacity. (Image: A. Vargas/IAEA)

Small modular reactors (SMRs) are advanced nuclear reactors that have a power capacity of up to 300 MW(e) per unit, which is about one-third of the generating capacity of traditional nuclear power reactors. SMRs, which can produce a large amount of low-carbon electricity, are:

- **Small** – physically a fraction of the size of a conventional nuclear power reactor.
- **Modular –** making it possible for systems and components to be factory-assembled and transported as a unit to a location for installation.
- **Reactors –** harnessing nuclear fission to generate heat to produce energy.

Learn more about nuclear fission and energy (/newscenter/news/what-is-nuclear-energy-the-science-of-nuclear-power).

Advantages of SMRs

Many of the benefits of SMRs are inherently linked to the nature of their design – small and modular. Given their smaller footprint, SMRs can be sited on locations not suitable for larger nuclear power plants. Prefabricated units of SMRs can be manufactured and then shipped and installed on site, making them more affordable to build than large power reactors, which are often custom designed for a particular location, sometimes leading to construction delays. SMRs offer savings in cost and construction time, and they can be deployed incrementally to match increasing energy demand.

One of the challenges to accelerating access to energy is infrastructure – limited grid coverage in rural areas – and the costs of grid connection for rural electrification. A single power plant should represent no more than 10 per cent of the total installed grid capacity. In areas lacking sufficient lines of transmission and grid capacity, SMRs can be installed into an existing grid or remotely off-grid, as a function of its smaller electrical output, providing low-carbon power for industry and the population. This is particularly relevant for microreactors, which are a subset of SMRs designed to generate electrical power typically up to 10 MW(e). Microreactors have smaller footprints than other SMRs and will be better suited for regions inaccessible to

clean, reliable and affordable energy. Furthermore, microreactors could serve as a backup power supply in emergency situations or replace power generators that are often fuelled by diesel, for example, in rural communities or remote businesses.

In comparison to existing reactors, proposed SMR designs are generally simpler, and the safety concept for SMRs often relies more on passive systems and inherent safety characteristics of the reactor, such as low power and operating pressure. This means that in such cases no human intervention or external power or force is required to shut down systems, because passive systems rely on physical phenomena, such as natural circulation, convection, gravity and self-pressurization. These increased safety margins, in some cases, eliminate or significantly lower the potential for unsafe releases of radioactivity to the environment and the public in case of an accident.

SMRs have reduced fuel requirements. Power plants based on SMRs may require less frequent refuelling, every 3 to 7 years, in comparison to between 1 and 2 years for conventional plants. Some SMRs are designed to operate for up to 30 years without refuelling.

Nuclear Power: The Road to a Carbon Free Future