

# Common Positions from the SMR Regulators Forum

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# The Beginning of the SMR Regulators Forum

- The idea was first raised at an International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) Dialogue Forum on Licensing and Safety Issues for Small and Medium-sized Reactors (SMRs) in Vienna, Austria in 2013
- At the time, there were multiple SMRs being designed and proposed in multiple countries, many of them very different from operating large reactors
- It was decided there would be benefit to creating a forum for regulators to discuss issues related to the safety and licensing of SMRs due to their unique designs and approaches



# What Is the Forum?

- Regulator-to-Regulator group with 9 participating countries
- Canada, China, Finland, France, Republic of Korea, Russian Federation, Saudi Arabia, United Kingdom, and United States
- Meets twice a year and currently consists of a Steering Committee and 3 working groups



# Forum Objectives

Share regulatory experience amongst Forum members preparing to:

- Facilitate efficient, robust, and thorough regulatory decisions
- Encourage enhanced nuclear safety and security
- Facilitate international cooperation among regulators performing SMR-related assessments



# Forum Objectives, Continued

- Identify and discuss common safety issues that may challenge regulatory reviews associated with SMRs and, if possible, recommend common approaches for resolution
- Advise the International Atomic Energy Agency (IAEA) on the need for revision of development of new IAEA publications on safety of SMRs





# Outcomes

- Position statements on regulatory (policy and technical) issues
- Suggestions for revisions of, or drafting of, IAEA documents, especially on potential enhancements to the IAEA Safety Standards with respect to SMRs
- Generation and sharing of information that regulators may use to enhance their regulatory framework
- Description of regulatory challenges and discussion on path forward
- Suggestions for high level issues to be raised to international codes and standards organizations for dispositioning



# How Does the Forum Work?

- The Working Groups decide which issues to collaborate on, with input from the Steering Committee
- Assess approaches in member countries, what already exists, and what can be leveraged or built upon
- Produce issue-specific report with common positions



# First Phase of the Forum

- The pilot phase was from March 2015 to May 2017
- Topics of the Working Groups were:
  - Graded Approach
  - Defense in Depth
  - Emergency Planning Zone
- Reports were issued on the website





# Second Phase of the Forum

- The second phase was from May 2017 to December 2020
- Topics of the Working Groups were:
  - Licensing Issues
  - Design and Safety Analysis
  - Manufacturing, Construction, Commissioning, and Operations
- Interim Reports have been issued on the website



# Examples of Common Positions in Forum Reports

- There is clear recognition that although SMRs are smaller in size than other nuclear power plants (NPPs), the hazards from the inventory and energy contained in an SMR core are significant enough to require a disciplined application of a set of safety and control measures to ensure the risk from activities involving these reactors remains acceptably low
- As a fundamental principle for ensuring nuclear safety, the defense in depth (DiD) concept is valid for SMRs and should be a fundamental basis of the design and safety demonstration of SMRs
- Special attention needs to be paid to factory-fueled and sealed transportable reactor modules because introducing nuclear material in the factory triggers a step change in nuclear safety risk and therefore the licensing and regulatory approach need to be commensurate with any other facility that handles fissile material
- The licensee needs to instill an appropriate nuclear safety culture amongst its suppliers and contractors, at all tiers in the supply chain



# Topics for Phase 3

## Licensing Working Group

- Mutual recognition of regulators' assessments/Joint assessments/ Collaboration
- Identification of legal constraints
- Organizational capabilities

## Design and Safety Assessment Working Group

- Security by design, interface with safety
- Safeguards by design
- Containment/confinement

## Maintenance, Construction, Commissioning and Operation Working Group

- Regulatory oversight of long lead SSC procurement
- Organizational stakeholders' capabilities (Designers, Vendors, Manufacturers, Supply chains, Operators)



# IAEA Work on SMR Safety Requirements

- Applicability of the IAEA Design Safety Requirements, SSR-2/1 (Rev.1) to SMRs;
- Applicability of the IAEA Design Safety Guides to SMRs
- Approach and methodology for development of Regulatory Safety Requirements for the Design of SMRs
- Overarching Technology Neutral Safety and Regulatory Framework for innovative reactors (including SMRs)



Nuclear installations





# IAEA Work on SMR Regulation

- Compiling experience of MS who have gone through the process of licensing SMRs or have worked intensively in preparing to licence SMRs





# Summary

- There is a significant amount of activity worldwide related to SMRs, including at the IAEA
- The SMR Regulators' Forum has been a useful and productive group for exchanging information among regulators
- The information produced by the Forum has been helpful for the members of the Forum, other regulators, and industry
- The Forum looks forward to continuing its work and meeting its purpose of “enhancing safety, security, and efficiency in SMR regulation”



# SMR Regulator's Forum Web Page

<https://www.iaea.org/topics/small-modular-reactors/smr-regulators-forum>



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## Small Modular Reactor (SMR) Regulators' Forum

### Small modular reactors

- > Small Modular Reactor (SMR) Regulators' Forum
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[Small Modular Reactors \(SMRs\)](#) are advanced reactors that produce electricity of up to 300 MW(e) per module, which is less than current power generation reactors. Many SMRs can be made in factories and transported by truck or rail.

The establishment of regulatory controls for this relatively new type of reactor requires focused and consistent attention. The SMR Regulators' Forum, created in March 2015, provides support by enabling discussions among Member States and other stakeholders to share SMR regulatory knowledge and experience.

The Forum enhances nuclear safety by identifying and resolving common safety issues that may challenge regulatory reviews associated with SMRs and by facilitating robust and thorough regulatory decisions.

### Related resources

-  [SMR Regulator's Forum Terms of Reference](#)
-  [SMR Regulator's Forum \(Restricted Site\)](#)
-  [Meeting Materials](#)
-  [SMR Database](#)
-  [Regulatory Activities Section](#)

