

GIF Webinar Series

2016-2024 EDUCATION
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GENIV International
Forum

Expertise | Collaboration | Excellence



Regulatory Activities in Support of SMRs and Advanced Reactor Systems



Your presenters:

Ms. Paula Calle Vives, IAEA

Mr. Tarek Tabikh, CNSC

Dr. Greg Oberson, NRC

Your moderators:

Dr. Vladimir Kriventsev, IAEA

Dr. Patricia Paviet, PNNL

22 May 2024

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Meet our Moderators

Dr. Patricia Paviet is the National Technical Director of the Molten Salt Reactor program for the US Department of Energy, Office of Nuclear Energy managing research and development to support development of Molten Salt Reactor Systems across six US national laboratories. In addition, she is the Chair of the Generation IV International Forum Education and Training Working Group, which she has managed since November 2015. Efforts of this group focus on the GIF webinar series, the Pitch your Gen IV Research competition, as well Knowledge Management and Knowledge Preservation of advanced reactor systems. She has 30 years of experience on the nuclear the fuel cycle, actinide chemistry and repository sciences. She earned her B.S. and M.S. in Chemistry from the University of Sophia Antipolis, Nice, France and a PhD in Radiochemistry from the University Paris XI, Orsay, France.



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Meet our Moderators

Dr. Vladimir Kriventsev is the Team Leader of Fast Reactor Technology Development Team in the International Atomic Energy Agency and serves as a Scientific Secretary for the IAEA activities on fast reactors, such Coordinated Research Projects (CRPs), Education and Training Workshops, International Conferences, etc.. Dr. Kriventsev has 40 years of experience in the nuclear engineering and fast reactor technology at:

- IPPE (Institute of Physics & Power Engineering, Obninsk, Russia)
- TITech (Tokyo Inst. of Technology)
- JNC (JAEA now, Japan Atomic Energy Agency, O-orai)
- INPE (Institute of Nuclear Power Engineering, MEPhI now, Russia) and
- KIT (Karlsruhe Institute of Technology, Germany, former FZK)

He earned his PhD from Obninsk Inst. for Nuclear Engineering in 1994 and a Dr. Eng. from the Tokyo Institute of Technology in 1999.



Meet the Presenters

Ms. Paula Calle-Vives is the Technical Lead for New Technologies at the IAEA Regulatory Activities Section, managing activities on SMR safety and regulation, fusion and the regulatory track of the IAEA's Nuclear Harmonization and Standardization Initiative.

She also led the review of applicability of the IAEA safety standards to SMR and non-water-cooled reactors and coordinated the Agency plans to consider SMRs in revised and new safety standards, technical publications and training materials. Previously, she was the Lead of Advanced Nuclear Technologies at the Office for Nuclear Regulation (ONR), UK. She also undertook roles on regulation of new build and operating reactors. Before ONR, she worked on operating reactors safety in the UK and France.



IAEA Activities on New Technologies Regulation

Contents



Introduction: what are new technologies and do the safety standards apply?



IAEA activities on safety and regulation



The SMR Regulators' Forum



The Nuclear Standardization and Harmonization Initiative

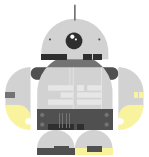
Introduction: What are New Technologies?

New deployment models

New design features



New approaches to safety activities





New Nuclear Technologies



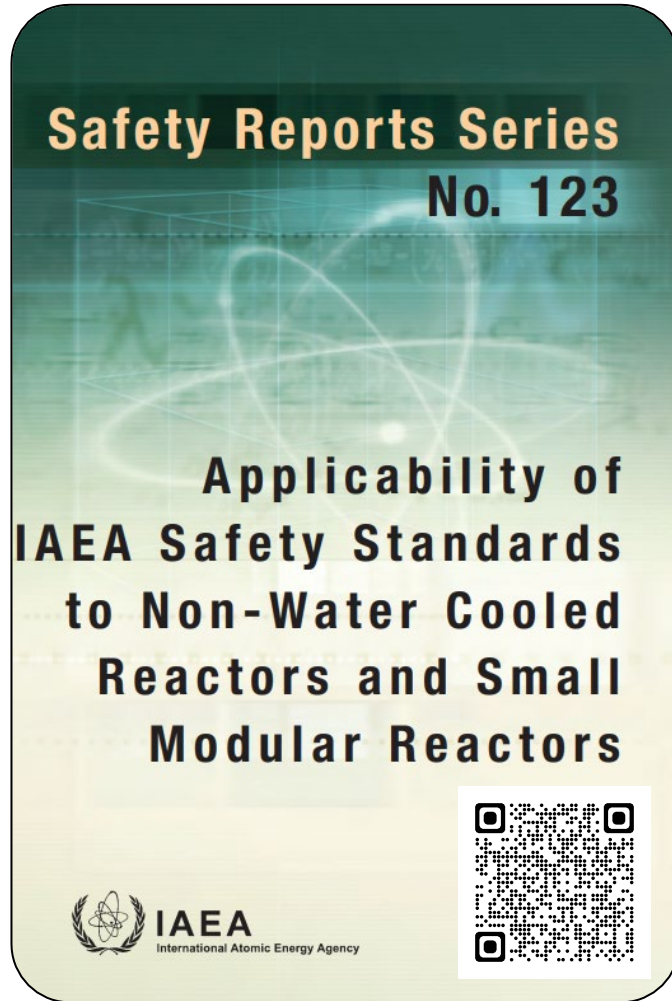
Safety Reports Series
No. 123

Applicability of IAEA Safety Standards to Non-Water Cooled Reactors and Small Modular Reactors



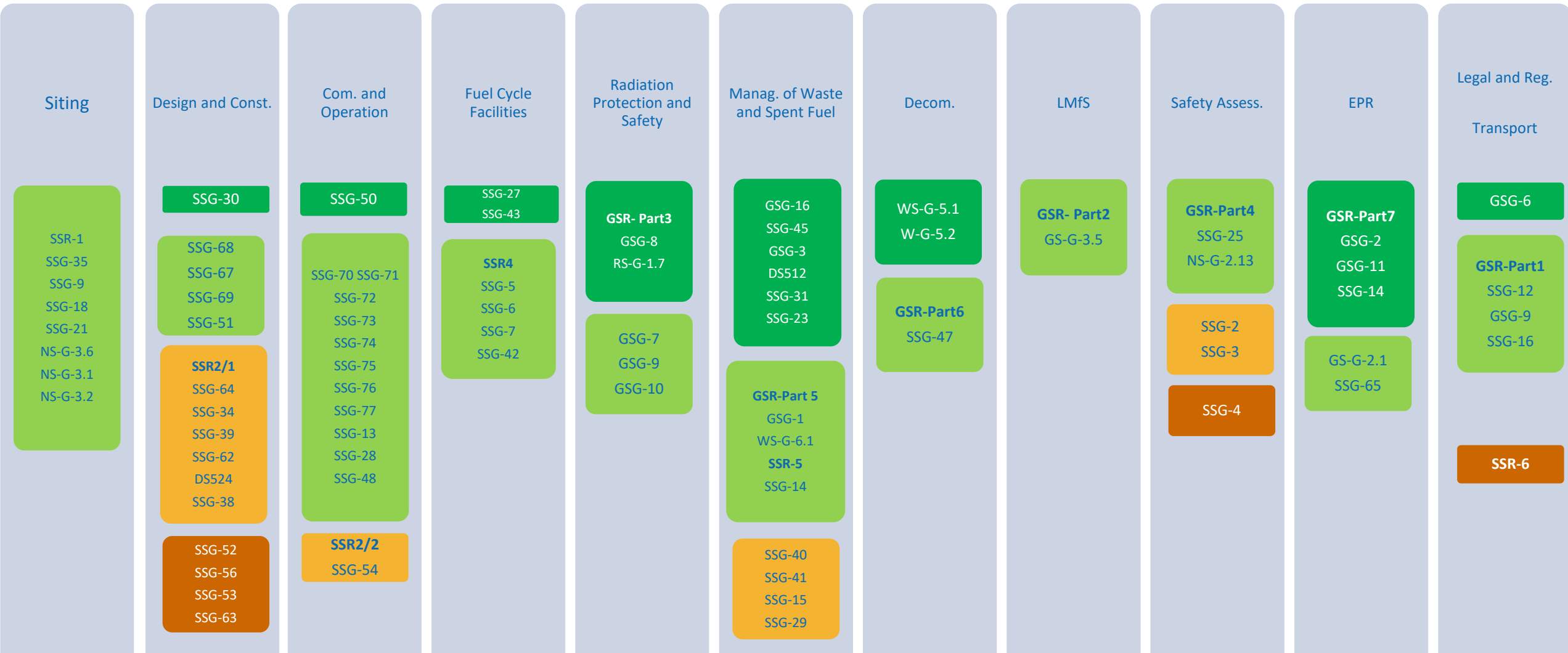
IAEA
International Atomic Energy Agency

Introduction: Do the IAEA Safety Standards Apply to New Technologies?



- Considered:
 - Water cooled SMRs
 - High temperature gas cooled reactors
 - Sodium cooled fast reactors
 - Lead cooled fast reactors
 - Molten salt reactors
- Transportable NPPs considered partially
- The impact of these areas of novelty on the applicability and completeness of the IAEA safety standards is assessed
- Gaps and areas for additional consideration are identified
- Considered the interface between safety, security, and safeguards in the design of these technologies

Introduction: Do the IAEA Safety Standards Apply to New Technologies?



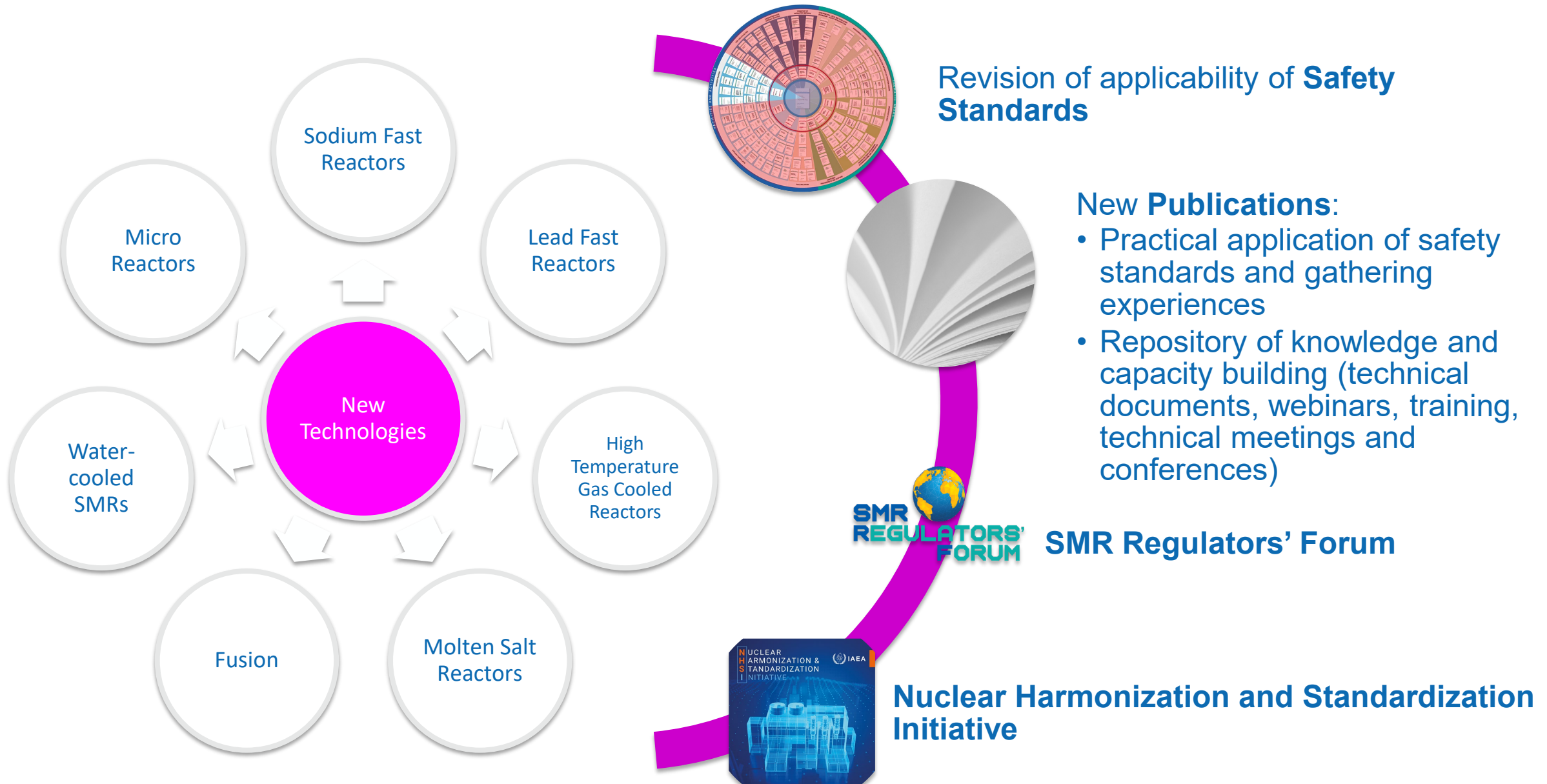
No applicability considerations (areas of non applicability, gaps, areas for further consideration)

Small number of applicability considerations/ very small impact on safety standard

Some applicability considerations/ small impact on safety standard

Numerous applicability considerations/ more than a third of the safety standard impacted

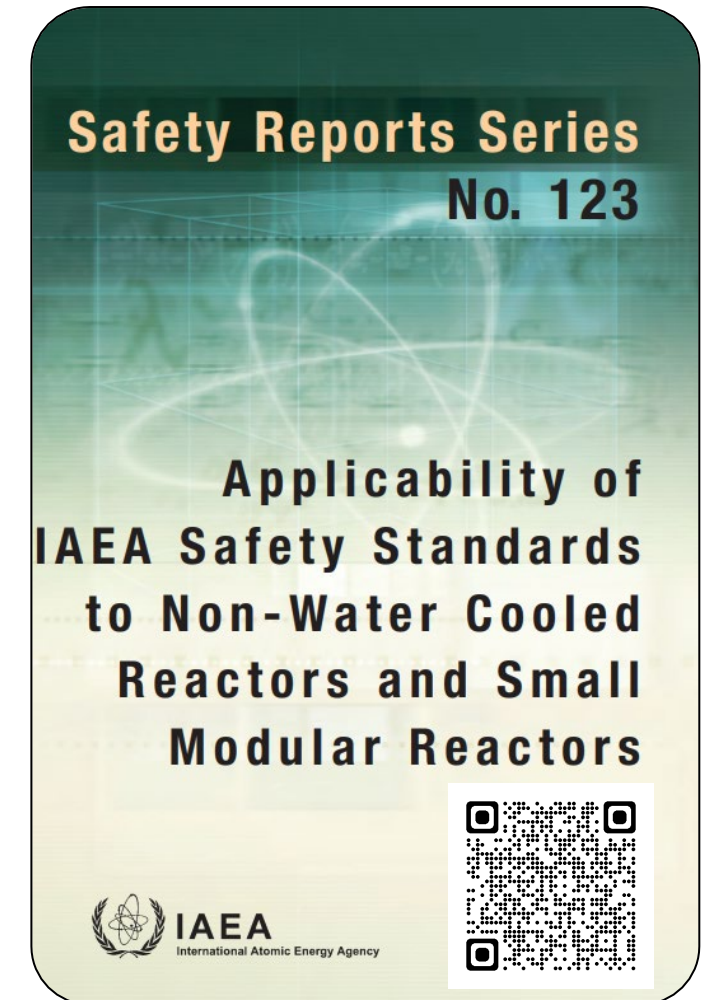
IAEA Activities on New Technologies Safety and Regulation



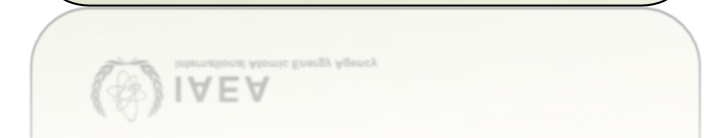
Progress on the Revision of Safety Standards

Safety standards under revision due to MS needs and priorities, will address non-water cooled reactors and SMR applicability issues and gaps identified in SR-123:

Ongoing consideration of SMR issues in safety standards review and technical documents in the area of:		
Commissioning and operation	SSR2/2	Safety of NPPs: Commissioning and operation
Safety assessment	SSG-25	Periodic Safety Review for NPPs
	DS537	New Safety Guide on Safety Demonstration for innovative Technology in Power Reactor Design
Emergency preparedness and response	GS-G-2.1 (revision)	Arrangements for Preparedness for Nuclear or Radiological Response
Legal and regulatory framework for safety	SSG-12	Licensing Process for Nuclear Installations
Waste and spent fuel management	GSR Part 5	Predisposal Management of Radioactive Waste
	WS-G-6.1	Storage of Radioactive Waste
	GSG-3	Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste



Other safety standards revision will follow beyond 2024



New Publications on SMR Safety

Siting

- Tecdoc "Siting and Design aspects of SMRs in relation to External Hazards: special issues in the application of Safety Standards"
- Handbook on siting for SMRs for the NS Roadmap
- Application of Graded Approach for Site Evaluation of Nuclear Installations including Small Modular Reactors

Design Safety, Construction and Safety Analysis

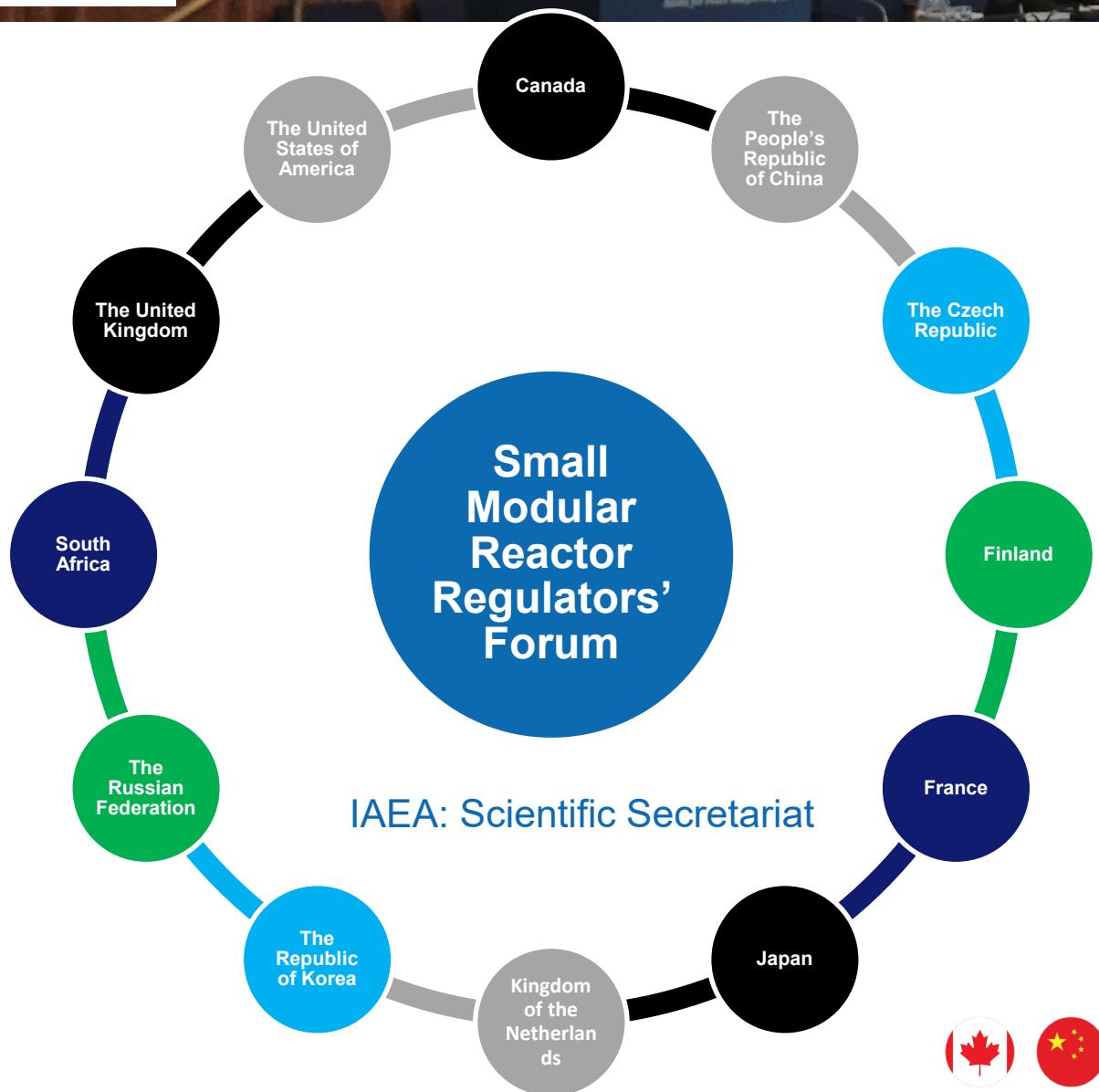
- Considerations on the safety of High Temperature Gas Reactors
- Considerations on the safety of Molten Salt Reactors
- Safety Aspects of Liquid Metal Cooled Reactors
- Safety Assessment and Safety Analysis for Small Modular Reactors
- Considerations Qualification of Advanced Manufacturing and Materials for Components Important to Safety in SMRs and NWCRs
- Analysis and Modelling of Severe Accidents for LMFR: Summary of a Technical Meeting
- Passive Engineered Safety Features in Advanced Small Modular Reactors (outcomes of a CRP)
- Safety, Security and Safeguards by Design in Small Modular Reactors
- Design Safety and Security Considerations for Transportable Floating Nuclear Power Plants

Emergency Preparedness and Response

- Report on the Coordinated Research Project I31029 - Technical Basis for Emergency Planning Zones for Small Modular Reactors

Decommissioning and waste

- Tecdoc "Radiological Environmental Impact Assessment and Regulatory Control of Environmental Discharges for SMRs"
- TECDOC "Safe Management of Radioactive Waste and Spent Fuel from Small Modular and Non-Water-Cooled Reactors"




SMR REGULATORS' FORUM

- Permanent Observers:
- European Commission
 - OECD NEA
 - WNA-CORDEL



SMR Regulators' Forum Objectives and Outcomes

- Share regulatory experience among the Members to:
 - ✓ facilitate efficient, robust, and thorough regulatory decisions
 - ✓ encourage enhanced nuclear safety and security
 - ✓ facilitate international cooperation among regulators performing SMR-related assessments



Generation and sharing of information that regulators can use to enhance their regulatory frameworks and activities



Description of regulatory challenges and discussions on paths forward



Common position statements on regulatory (policy and technical) issues



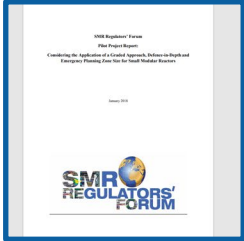
Suggestions for revisions to, or drafting of, the IAEA publications, especially the IAEA Safety Standards regarding SMRs



Suggestions for high level issues to be raised before international codes and standards organizations

SMR Regulators' Forum: Previous Work

Pilot Phase (2015 – 2017)



- Graded Approach
- Defence-in-Depth
- Emergency Planning Zone Size

Phase 2 (2018 – 2020)



- **Licensing Issues:** Key regulatory interventions, first of a kind vs nth of a kind, and licensing multiple module/unit facilities
- **Design and Safety Analysis (DSA):** multiple-unit/module, passive and inherent safety features, beyond design basis aspects
- **Manufacturing, Construction, Commissioning, Operation (MCCO):** manufacturability, supply chain and commissioning, collection and use of experience, conduct of maintenance, co-activities/combined activities on a multiple unit SMR

Phase 3 (2021 – 2023)



- **Licensing Issues:**
 - ✓ mutual recognition of regulators' assessments/Joint assessments/Collaboration
- **DSA:**
 - ✓ safety, security and safeguards from a regulatory perspective
 - ✓ Containment/confinement
- **MCCO:**
 - ✓ Regulatory considerations in pre-licensing engagement for long-lead requests and items and
 - ✓ Conduct of authorised activities: Impact on stakeholders' organisational capabilities

SMR Regulators' Forum

Current Work: Phase 4 (2024-2026)



Licensing Issues:

- collaborative reviews
- leveraging other regulators' reviews



Design and Safety Analysis:

- mechanistic source term and
- continuation of 3S topics



Manufacturing, Construction, Commissioning, Operation:

- manufacturing and deployment in the absence of a Licensee,
- construction oversight,
- organizational capability of a new Licensee (no prior nuclear experience)

SMR Regulators' Forum Webinar Series

Please visit the SMR RF web page:



and subscribe to the SMR RF Newsletter:

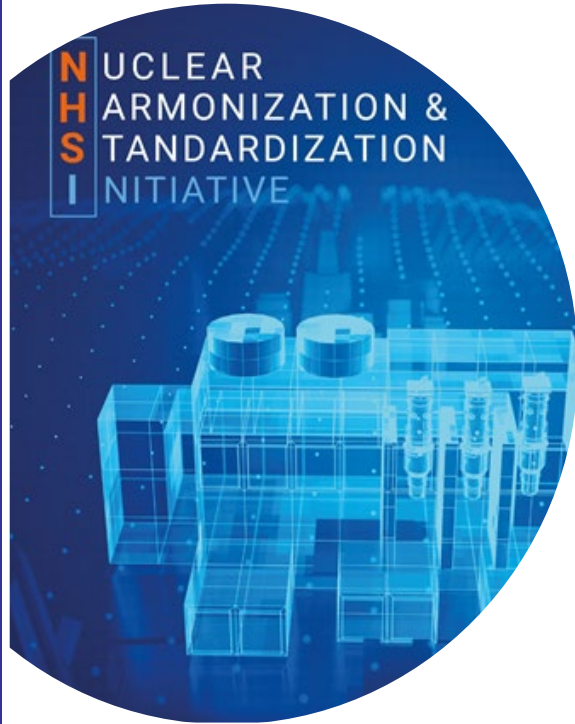
<http://eepurl.com/iAZr0Q>



Nuclear Harmonization and Standardization Initiative (NHSI)



Effective Global Deployment of **Safe and Secure** Advanced Nuclear Reactors



Harmonization of **Regulatory Approaches**

- **WG1:** Framework for information sharing
- **WG2:** Towards harmonization - multinational pre-licensing joint review process
- **WG3:** Two processes increasing cooperation: leveraging existing regulatory reviews; collaboration between national reviews

IAEA as facilitator
within and between the tracks

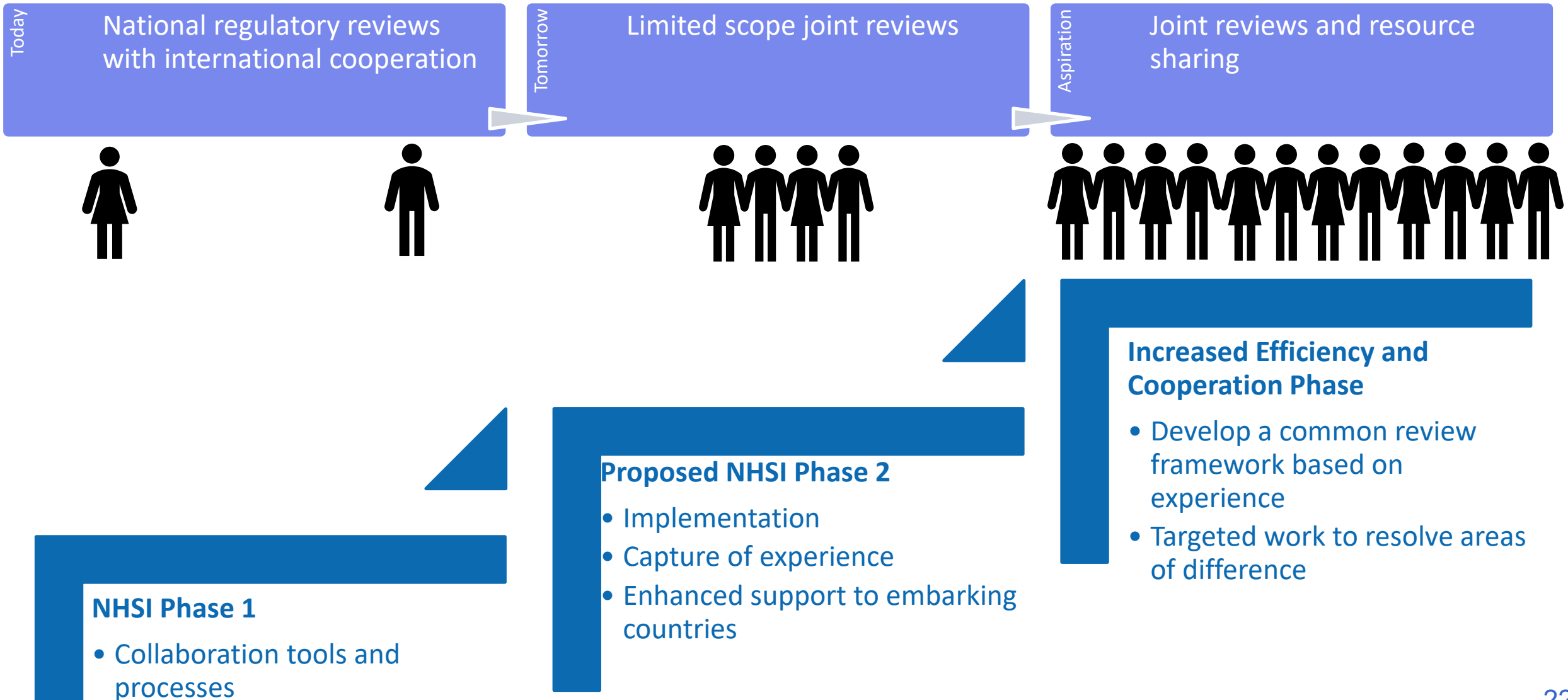
Harmonization and **Standardization of Industrial Approaches**

- **TG1:** Harmonization of high-level user requirements
- **TG2:** Common Approaches to codes and standards
- **TG3:** Experimental testing and validation for design and safety analysis computer codes
- **TG4:** Accelerating the implementation of nuclear infrastructure for SMRs

NHSI Regulatory Track



ASPIRATION (Long Term) : Global framework for regulatory review of advanced reactors



NHSI Regulatory Track Phase I (2022-2024)



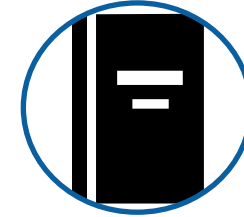
TYPES OF COOPERATION

Collaborative reviews

Joint reviews

Leveraging regulatory reviews

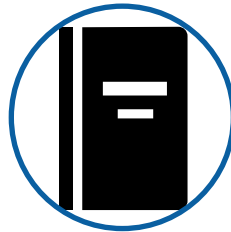
NHSI WG1



Framework for **information sharing**

- Agreements to share controlled information and repository collating publicly available information

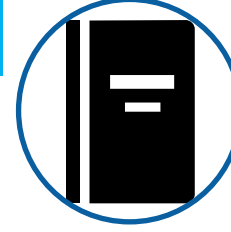
NHSI WG2



Towards harmonization: multinational pre-licensing joint review process

- A single team and a single review outcome
- Early identification of design “showstoppers”
- **Commitment to avoid duplication**

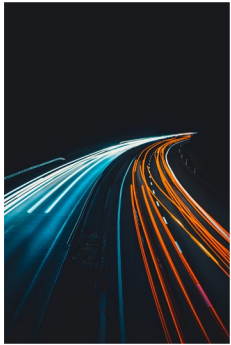
NHSI WG3



Two processes increasing cooperation – building on **current initiatives**

1. Leveraging existing regulatory reviews
2. Collaborative reviews

NHSI RT Phase II Draft Proposals (2025-2027)



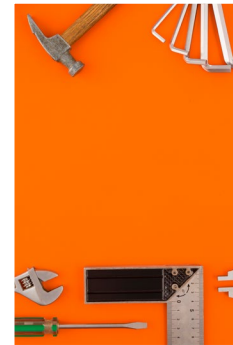
Implementation of pilot review projects



Virtual exchange of good practice for a standardized nuclear reactor deployment (feedback on cooperations and mapping regulatory commonalities and differences)



Regulatory Cooperation Toolkit



SMR Regulation Toolkit



Advancing harmonization of security regulatory approaches

Meet the Presenters

Mr. Tarek Tabikh is the Lead SMR Technical Advisor in the Directorate of Advanced Reactor Technologies (DART) at the Canadian Nuclear Safety Commission (CNSC).

He leads the CNSC's SMR Readiness Program aimed at optimizing regulatory readiness to license novel and advanced nuclear reactor technologies.

He is also involved in international collaboration and cooperation activities on SMRs, including the IAEA's Nuclear Harmonization and Standardization Initiative.



Canada's Approach to Small Modular and Advanced Reactor Licensing and Readiness

Regulatory Activities in Support of SMRs and Advanced Reactor Systems
GIF/IAEA Webinar
May 22, 2024 (virtual)

Tarek Tabikh

Lead SMR Technical Advisor
Directorate of Advanced Reactor Technologies
Canadian Nuclear Safety Commission



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada 



CNSC

Our Mandate

- Regulate the use of nuclear energy and materials to protect health, safety, security and the environment
- Implement Canada's international commitments on the peaceful use of nuclear energy
- Disseminate objective scientific, technical and regulatory information to the public



OVER 70 YEARS OF REGULATORY EXPERIENCE

Independent Commission

Transparent, science-based decision making

- Quasi-judicial administrative tribunal
- Agent of the Crown (duty to consult)
- Reports to Parliament through Minister of Natural Resources
- Commission members are independent and part time
- Commission hearings are public and Webcast
- Decisions are reviewable by Federal Court



The CNSC Regulates all Nuclear Facilities and Activities in Canada...



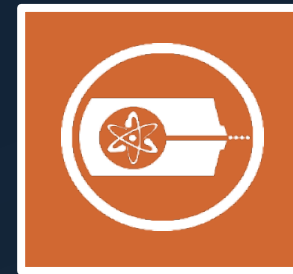
Uranium mines and mills



Uranium fuel fabrication and processing



Nuclear power plants



Nuclear substance processing



Industrial and medical applications



Nuclear research and educational activities



Transportation of nuclear substances



Nuclear security and safeguards



Import and export controls



Waste management facilities

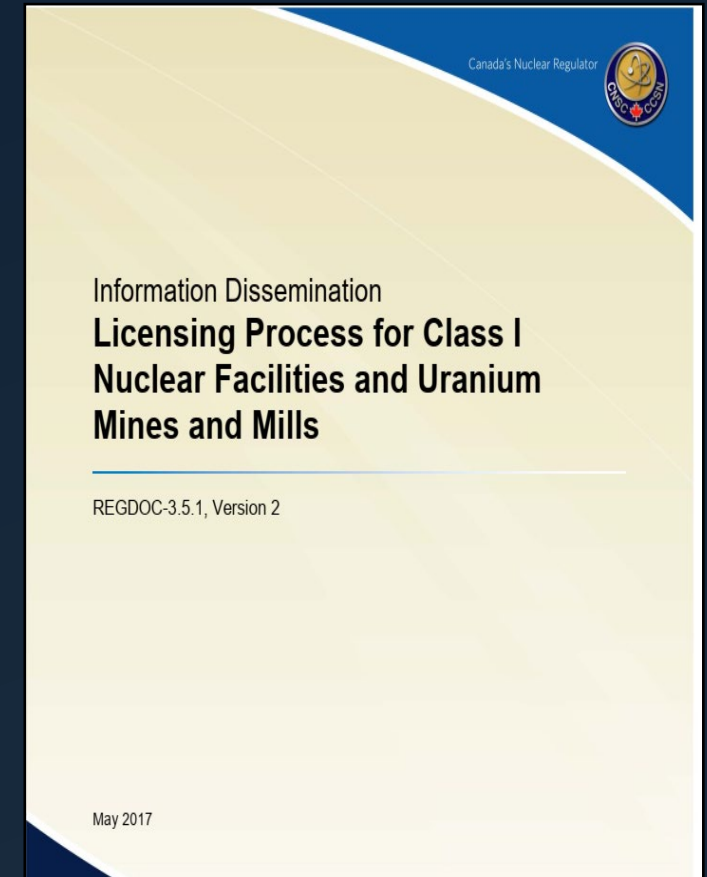
... over the entire Lifecycle



Approach to Licensing

CNSC Licensing Approach

- Small and Advanced Reactors are licenced according to Class I Nuclear Facilities Regulations
- Licensing process requires a licence application that includes sufficient information to demonstrate a reactor can be safely constructed, operated and decommissioned
- CNSC staff provide recommendations on licensing to the Commission, who is the decision maker through a public hearing process
- Staff apply a graded approach to reviews and compliance verification throughout the life cycle of nuclear facilities



Performance-based Regulation

- CNSC follows a performance-based approach to licensing nuclear facilities
- Focuses on desired, measurable outcomes, rather than prescriptive processes, techniques, or procedures
- Benefits:
 - Rules are higher level and rarely need to be changed
 - Still based on real-world experience
 - Allows one to achieve a performance objective via different means including newer ones that are well supported

Meeting CNSC Requirements and Guidance

- While the CNSC sets requirements and provides guidance on how to meet requirements, an applicant or licensee may put forward a case to demonstrate that the intent of a requirement is addressed by other means
- Such a case must be demonstrated with supportable evidence
- The Commission is always the final authority as to whether the requirement has been met
- CNSC staff have developed: REGDOC – 1.1.5: Supplemental Information for Small Modular Reactor Proponents to provide further clarity to SMR licence applicants.





Approach to Readiness

Canadian Nuclear Landscape

CURRENT PROJECTS

- **OPG DARLINGTON SMR PROJECT**
 - Construction application for 1 GE-H BWRX-300
 - Plant Parameter Envelope hearing held January 2024
 - Construction application hearing anticipated Oct 2024
 - Proposed operation by 2029
- **GLOBAL FIRST POWER MMR PROJECT**
 - Site preparation application for 1 USNC MMR unit
 - Proposed operation by 2028
- **NB POWER SMR PROJECT**
 - Site preparation application for 1 ARC-100 SMR
 - Provincial environmental impact assessment
 - Proposed operation by 2030

POTENTIAL FUTURE PROJECTS

- **DARLINGTON SMR PROJECT**
 - Application for BWRX-300 units 2-4
- **BRUCE C PROJECT**
 - Exploring large nuclear expansion
- **SASKPOWER PROJECT**
 - Assessing two potential sites for GE-H BWRX-300
- **SRC NUCLEAR**
 - Assessing sites for Westinghouse eVinci unit
- **OPG NEW NUCLEAR**
 - Assessing both large and small nuclear expansion

Approach to Readiness

Robust Framework

Leveraging CNSC's robust performance-based, risk-informed regulatory framework sets us up for success when licensing novel technologies.



Organizational Change and Priority

Organizational recognition of the importance of proactively preparing for advanced technologies. Implementing organizational changes to support dedicated focus on advanced technologies.



Pre-Licensing Processes

Maintaining awareness of upcoming regulatory challenges through pre-licensing processes (i.e. vendor design reviews, early discussions with proponents), and active engagement with industry and regulators.



SMR Readiness Project

Addressing identified regulatory challenges through a dedicated and integrated readiness project.



SMR Readiness Project

5

Years

Timeline

The project has a 5-year horizon, starting from FY 22-23

Funding

The Government of Canada has pledged \$50.7 million Canadian dollars over the course of the project

\$50.7
mil

New
Staff

Staffing

CNSC hired additional staffing to support the execution of the SMR Readiness Project

Objectives

SMR Readiness will address over 60 objectives, with an evergreen approach to allow for change

60+
Objectives

Mission

1. Optimize the CNSC's readiness to license and regulate SMRs
2. Position the CNSC as an international leader in SMR regulation



Modern



Trusted



Global



Agile

Scope

Significant CNSC Analysis

Over a decade of analysis, review, and preparation for a new nuclear build in Canada



Organization Consultation

Input from all areas of expertise in the CNSC to capture the needs of their technical areas



Industry

Objectives identified as a result of discussions with industry and through VDR reviews



Canada's SMR Action Plan

Objectives CNSC committed to in the action plan



SCOPE

International Collaboration Activities

Objectives identified through the conduct of international collaboration and cooperation activities



Senior Management Direction

Objectives identified by senior management as organizational readiness priorities



SMR Readiness: Project Pillars

Regulatory Predictability

Optimizing the CNSC's regulatory framework for SMR licensing & providing regulatory clarity to SMR proponents.

Capacity and Capability

Improving and expanding the CNSC's technical capability.

Policy and Shared Responsibility

Leveraging opportunities for efficiency improvement and harmonization across Canada's domestic regulatory space.

International Collaboration

Strengthening existing international collaboration efforts and more strongly pursuing international harmonization goals.



Regulatory Predictability

- Total Objectives: 18
- Outcomes:
 - Regulatory framework is up-to-date and adequately addresses requirements and expectations for novel technologies including SMR technologies.
 - The CNSC provides regulatory predictability and clarify to applicants.
- Examples of Scoped-in Projects:
 - Guidance on Transportable NPPs
 - Graded Approach Implementation
 - Clarity on Defense in Depth

Process to
Manage Long
Lead Items

SMR-Focused
Licence to
Construct
Compliance
Plan

Update to
Nuclear
Security
Regulations

Strategic
Review of
Regulatory
Framework
and Efficiencies

Capacity and Capability

- Total Objectives: 28
- Outcomes:
 - The CNSC is resourced to have the capacity and capability to respond to SMR-related innovation.
 - Foster a community of research on novel technologies, including SMR technologies, independent of the CNSC.
 - Training on novel technologies, including SMR technologies, is provided.
- Examples of Scoped-in Projects:
 - Addressing Novel Means of Containment
 - Novel Fuel Qualifications

Significant
Staffing
Actions
Accomplished

Invested over
\$3 Million
across 29
University SMR
Research
Projects

Development
of Systematic
Knowledge
Management
Process

Assessment of
Regulatory
Oversight of
Factory
Constructed
Modules

Policy and Shared Responsibility

- Total Objectives: 6
- Outcomes:
 - Federal Policies are based on sound technical and regulatory advice.
 - CNSC coordinates and supports the development of appropriate federal, provincial and territorial policy and regulatory regimes to support the regulation of SMRs.
- Examples of Scoped-in Projects:
 - Approach for Environmental Reviews on SMR Fleets
 - Policy for Canadian Enrichment
 - Establish and Foster Domestic Partnerships

Identification
of Licensing
Approach for
SMR Fleets

Systematic
Analysis of
Areas of
Collaboration
with Domestic
Partners

Progress on
Impact
Assessment
Readiness with
Federal Partner

International Collaboration

- Total Objectives: 10
- Outcomes:
 - The CNSC contributes to international harmonization efforts for SMRs.
 - Increased harmonization of regulations across the international nuclear regulatory community to enable the sharing of technical expertise for more effective and efficient regulatory reviews.
- Examples of Scoped-in Projects:
 - Collaboration on NHSI and SMR Regulators Forum
 - International Collaboration and Cooperation
 - US NRC
 - UK ONR
 - Poland PAA

Leading the
Regulatory
Cooperation
Forum

5-Party Charter
Joint Review
with US NRC

Support for
Emerging
Nuclear
Nations (ex.
Poland)

Centralization
of
International
Work

In Closing

- The CNSC is prepared for nuclear innovation and expansion in Canada without compromising the safety and security of the environment and the public.
- CNSC will license small modular and advanced reactors using the existing licensing framework.
- CNSC is ensuring readiness through an integrated approach to addressing four key pillars: Regulatory Predictability, Capacity and Capability, Policy and Shared Responsibility, and International Collaboration.



Questions?

SMR Readiness Hub: smr-prm@cncs-ccsn.gc.ca



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada 

Meet the Presenters

Dr. Greg Oberson is the Branch Chief of Advanced Reactor Technical Branch 1 at the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation.

Dr. Oberson has been with the NRC for about 17 years, the majority of which was in the Office of Nuclear Regulatory Research, working on issues related to corrosion in power reactor and spent fuel management systems.

He earned a B.S. in Materials Science and Engineering from Johns Hopkins University and his M.S. and PhD, also in Materials Science and Engineering, from the University of Maryland.



Status of U.S. Nuclear Regulatory Commission Advanced Reactor Licensing Activities

Greg Oberson, Branch Chief Advanced Reactor
Technical Branch 1 Office of Nuclear Reactor
Regulation

Ongoing NRC Licensing Activities

Construction Permit Issued



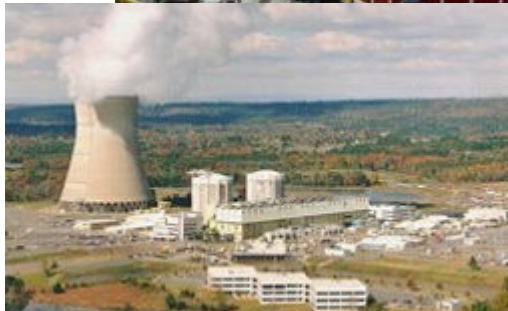
Construction Permit Review Ongoing



Ongoing Pre-Application Activities



Flexible Licensing Pathways



10 CFR Part 50

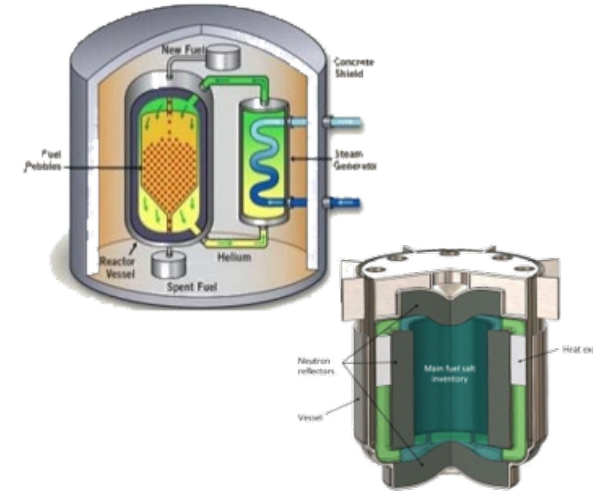
Large majority of operating power reactor and NPUF fleet

Construction Permit + Operating License

10 CFR Part 52

Vogtle AP-1000, NuScale

Early Site Permit, COL, Design Certification, Manuf. License



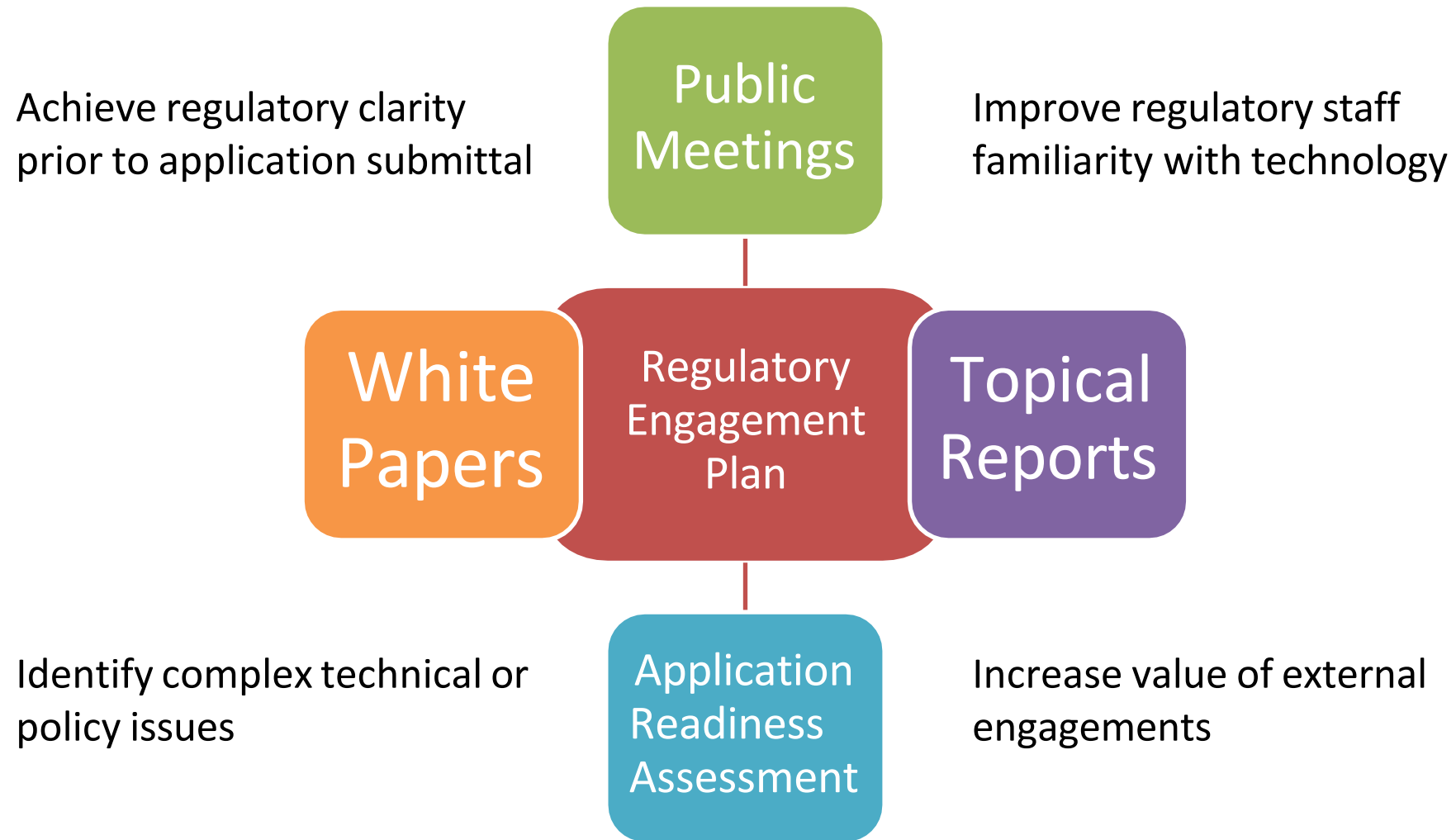
10 CFR Part 53

New licensing framework under development

Technology-inclusive, risk-informed, performance-based framework

Publish by mid-2025

Pre-Application Engagement



Representative Topics for Pre-Application Engagement

Principal design criteria	Materials performance assessment	Fuel qualification
Accident source term	Safety classification of SSCs	Novel design features
Use of consensus codes and standards	Emergency planning	Physical security
PRA methodologies	Regulatory gap assessment	Seismic analyses

NRC feedback can range from general observations to formal evaluation referenceable in license application

Achieving Licensing Efficiencies

- Core review teams
- DOE/industry/international engagement
- Data and analytics
- Consensus codes and standards
- Modeling and simulation
- Streamlined environmental review



Representative Licensing Schedules

The NRC established generic schedules for completing final safety evaluations for various licensing actions

Activity	Reactor Type	Milestone*
Part 50 - Construction Permit	All	36 months
Environmental Impact Statement	All	24 months
Part 50 - Operating License	Non-Light-Water Reactor	36 months
Topical Reports	All	24 months

*Actual schedules may be shorter or longer than the generic milestone schedule based on the specific needs of the licensee or applicant and the staff's resources.

Major Accomplishments

10 NRC/DOE MOUs
focused on advanced
reactor collaboration



Addressing more than
35 policy issues &
created more than **60**
guidance documents



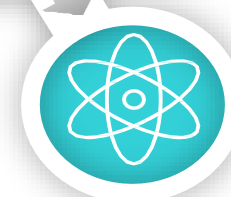
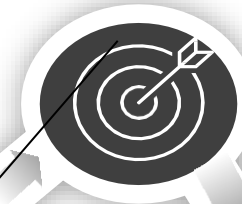
Developed **10**
work plans &
issued **8** joint
reports with
Canada

Completed more than
10 advanced reactor
design computer models



More than **140**
public engagements a
year on advanced
reactor topics

Reviewed about 100 **topical**
report/white paper **33%**
faster than the generic
schedule



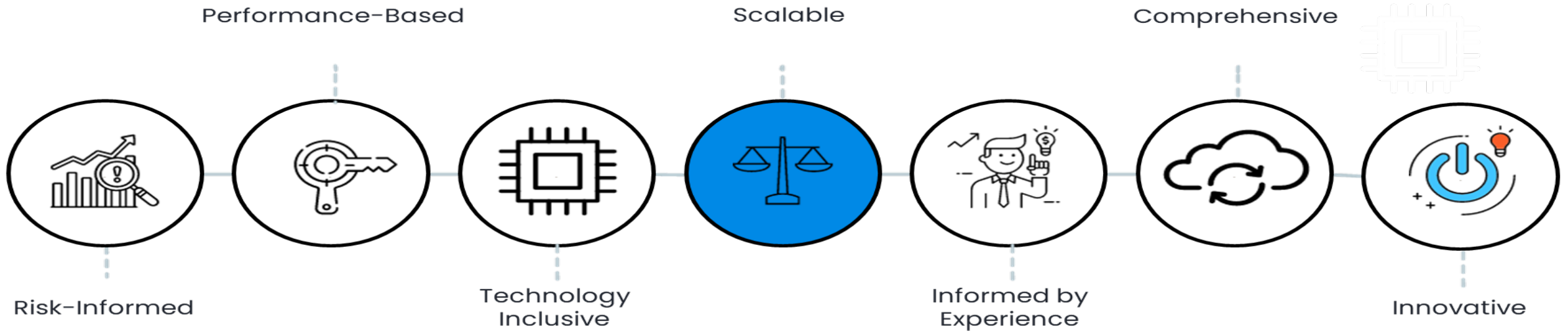
Completed Kairos
construction permit
safety review **50%**
faster than the
generic schedule
goal

Regulatory Framework Modernization

- Part 53
- Physical Security
- Emergency Preparedness
- Generic Environmental Impact Statement
- Siting
- Part 50/52 alignment
- Construction Oversight (ARCOP)
- Fees
- Fusion
- Guidance (TICAP/ARCAP)
- Microreactors



Advanced Reactor Construction Oversight Program



Factory Fabricated Microreactors

Staff seeking Commission policy direction:

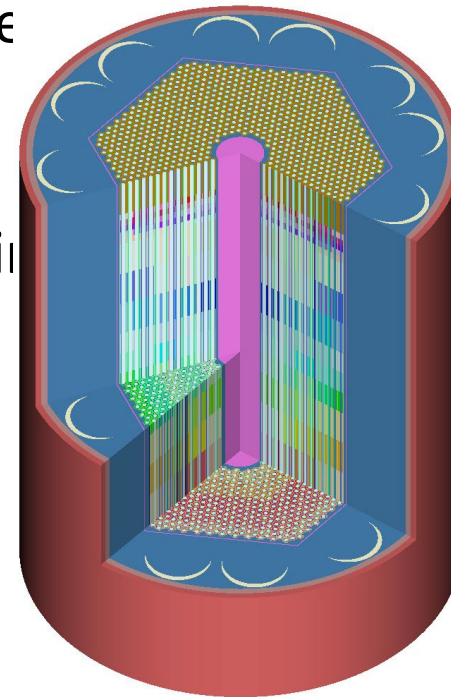
- Factory-based fabrication, fuel loading, operational testing
- Authorities pursuant to manufacturing license and license to possess special nuclear material
- Serialized (nth of a kind) deployment
- Obligations for public participation in safety and environmental review process



Research Program

NRC has expansive research program to ensure readiness for current and future technologies

- High-performance materials and fabrication technologies
- Advanced construction technologies
- Remote and autonomous plant operation
- Online monitoring and prognostics (digital twins)
- Computational modeling and simulation
- Risk assessment tools
- Fuel cycle back end and waste management



Conclusions

- No fundamental regulatory obstacles to advanced reactor licensing
- Staff will accomplish an efficient, predictable licensing process focused on risk-significant issues
- Effective pre-application engagement is highly encouraged
- Collaboration with regulatory counterparts offers potential benefits
- Ongoing research program ensures readiness to address near-term and long-term challenges

Upcoming Webinars

Date	Title	Presenter
05 June 2024	Directed Energy Deposition Process of Corrosion Resistant Coating for Lead-Bismuth Eutectic Environment	Gidong Kim, UNIST, Korea
31 July 2024	On-line Monitoring Development in Support of the Nuclear Fuel Cycle	Amanda Lines and Sam Bryan, PNNL, USA
28 August 2024	International Molten Salt Research in Support of MSR Development	Panel Session