Standards for small modular reactors (SMRs)

Why SMRs?

44% growth
in electricity demand
expected in Canada between 2023-2050[1]

$5.3 billion
potential market value
for SMRs in Canada between 2025-2040[2]

Wide range of applications
grid-scale power generation, combined heat and power generation for heavy industry, replacement for diesel use in remote communities and industrial applications[3]

Standards-based solutions establish technical requirements and guidance that can support SMRs as safe, reliable, zero-emission energy sources.

How can CSA Group help?

- Manage development and revision of standards and guidelines to address priority topics for SMRs
- Conduct research to explore the need for new standards-based solutions, expedite standards development, and provide interim guidance for SMRs
- Facilitate harmonization of standards to support Canada's international leadership in SMRs
- Enhance standards-related awareness, engagement, and knowledge transfer
- Provide transparent, accessible opportunities for the public to review CSA Group nuclear safety standards

Why work with CSA Group?

850+
volunteer members, experts from government, industry, and general interest groups, help develop CSA Group nuclear standards

70+ standards
and related documents in use and in development address the full lifecycle of nuclear facilities

more than 90%
of CSA Group nuclear standards are referenced in regulatory and licensing documents for Canadian nuclear facilities[4]

[1] Canada's Energy Future 2026, Canada Energy Regulator
[2] SMR Roadmap, Canadian Small Modular Reactor Roadmap Steering Committee
[3] A strategic plan for the deployment of small modular reactors
[4] as of April 2026

CSA Group SMR-related standards and research

Research reports assessing standardization needs for SMRs

- The Role of Standards in Facilitating Deployment of SMRs in Canada
- Evaluation of Canadian Requirements for Management of Waste from Small Modular Reactors
- Applicability of CSA N299 Quality Assurance Standards for Small Modular Reactor Supply Chain
- Advanced Manufacturing for Small Modular Reactor Applications



Existing standards that can directly apply to the deployment of SMRs in Canada

- CSA N286:12 (R2022), *Management system requirements for nuclear facilities*
- CSA N290.7:21, *Cyber security for nuclear facilities*
- CSA N294:25, *Decommissioning of facilities containing nuclear substances*

Standards-based solutions developed and updated to address SMR needs

- CSA N293:23, *Fire protection for nuclear power plants* (including application to small modular reactors)
- CSA N285.0S1:26, *Supplement No. 1 to N285.0:23, General requirements for pressure-retaining systems and components in CANDU nuclear power plants* (technology neutral requirements)

About CSA Group

CSA Group is a global organization dedicated to safety, social good, and sustainability. We are a leader in North American Standards and in Testing, Inspection and Certification around the world. Our mandate is to hold the future to a higher standard.

The mission of CSA Group's Standards organization is to enhance the lives of Canadians through the advancement of standards in the public and private sectors. We are a leader in standards research, development, education, and advocacy. The technical and management standards developed with our more than 11,000 members help improve safety, health, the environment, and economic efficiency in Canada and beyond.

Learn more

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