

# Innovation in New Nuclear Construction Oversight

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Canadian Nuclear  
Safety Commission

Commission canadienne  
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Canada 

# Canadian Landscape

## TODAY

**17 Operating CANDU reactors**

**2 CANDU's under refurbishment**

**OPG DARLINGTON SMR PROJECT**

Construction application for 1 GE-H BWRX-300.

**GLOBAL FIRST POWER PROJECT**

Site preparation application for 1 USNC MMR demonstration unit

**NB POWER PROJECT**

Site preparation application for 1 ARC-100 SMR

## NEXT 5 YEARS

**DARLINGTON SMR PROJECT**

Application for units 2-4

**BRUCE C PROJECT**

Exploring large nuclear expansion (up to 4800 Mwe).

**SASKPOWER PROJECT**

Assessing two potential site. Selected GE-H BWRX-300.

**Saskatchewan Research Council NUCLEAR**

Assessing sites for Westinghouse eVinci demonstration unit.

**OPG NEW NUCLEAR**

Assessing both large and small.

**Continued CANDU refurbishment**

**KEY TO REGULATORY SUCCESS WILL BE EFFECTIVE COMPLIANCE OVERSIGHT**

# SMR Readiness Project

5 Years

40+ new  
staff

\$50.7  
million



**Mission to optimize CNSC readiness and position CNSC as an international leader in SMR regulation**

# Regulatory Predictability Objective 5

## Construction Compliance Oversight

- Compliance plan developed for BWRX-300.
- First new build construction since 1980's.
- Collaboratively developed with experts from Operations and Technical Support Branch (Two-key Approach).
- Leveraged:
  - international guidance (IAEA TECDOC 1980 Application of Graded Approach in Regulating Nuclear Installations).
  - international OPEX (USNRC Vogtle project, IAEA SMR Regulatory Forum).
  - lessons learned from refurbishment (Bruce and Darlington Units).
- Plan broken into phases (Construction, Installation/testing, Commissioning) to ensure flexibility and minimize impact from licensee's project schedule changes.
- Compliance activities rated using Risk Informed Decision-Making process and all Safety and Control Areas are risk ranked. This ensures CNSC is focused on critical activities.



# CNSC Inspection Activities

- Inspection activities key to compliance oversight
- CNSC uses multiples types of inspection activities:
  - Programmatic review to verify how licensee programs comply with requirements
  - Program outputs to verify how programs are implemented in the field
  - Desktop Inspection
  - Field inspection to verify activities
- Inspection program provides flexibility to consider innovation and new licensee approaches
- Multi year inspection plans

**CNSC INSPECTION PROGRAM SUPPORTS  
INNOVATION AND NOVEL APPROACHES**



# CNSC – NRC Collaboration

- CNSC – NRC collaboration is the global model for bilateral cooperations
- Allows for sharing of expertise, developing common approaches and supporting decisions
  - Joint Review of BWRX-300 Licence Topical Report
- Working groups collaborate on:
  - Advancement of construction techniques
  - Quality control and monitoring
- Sharing OPEX from Vogtle and the lessons learned by USNRC allows CNSC to update regulatory oversight in response to ever-changing industry



**LIFECYCLE COLLABORATION IS KEY**

## Building Trust

- CNSC continuously strives to be a trusted regulator, recognized as independent, open and transparent, and as a credible source of scientific, technical and regulatory information.
- Through our reconciliation action plan and our trust building strategy CNSC has developed regulatory expectations which requires licensees to incorporate indigenous knowledge into environmental compliance programs.
- Indigenous Nations and communities participate in the CNSC's Independent Environmental Monitoring Program.
- Pilot project to include members of indigenous Nations as observers in compliance activities in support of CNSC's trust initiative.

**CONFIDENCE IN COMPLIANCE OVERSIGHT  
SUPPORTS TRUST BUILDING**



## Conclusion

- CNSC is committed to innovative, and risk informed decision-making processes when building compliance programs
- Integrating international lessons learned is key
- Lifecycle international collaboration can bring regulatory efficiency
- Period of growth for the CNSC
  - Building capacity and capability for multiple simultaneous projects will be a challenge
  - Building culture for change critical





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