



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

Canada



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# CANADIAN NUCLEAR SAFETY COMMISSION

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**Jason K. Cameron**

Vice-President, Regulatory Affairs, and Chief Communications Officer

NARUC Summer Policy Summit – Committee on International Relations

July 15, 2018 – Scottsdale, Arizona



# OUR MANDATE



Regulate the use of nuclear energy and materials to protect **health, safety,** and **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



# 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



# CNSC STAFF LOCATED ACROSS CANADA



**Headquarters (HQ) in Ottawa**  
**Four site offices at power plants**  
**One site office at Chalk River**  
**Four regional offices**

## Fiscal year 2017–18

- Human resources: **857** full-time equivalents
- Financial resources: **\$148 million**  
(~70% cost recovery; ~30% appropriation)
- Licensees: **1,700**
- Licences: **2,500**



## 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
- Staff presentations in public
- Decisions are reviewable by Federal Court



# THE CNSC'S NEW PRESIDENT



Ms. Rumina Velshi appointed President and Chief Executive Officer for a five-year term effective August 22, 2018



**MS. RUMINA VELSHI**

President and Chief Executive Officer  
Canadian Nuclear Safety Commission



**DR. MICHAEL BINDER**

President and Chief Executive Officer  
Canadian Nuclear Safety Commission  
January 2008 to August 8, 2018

Replaces Dr. Michael Binder, who has served as President and Chief Executive Officer since January 2008





# COMMISSION MEMBERS



**MR. TIMOTHY  
BERUBE**

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Appointed  
March 12, 2018  
Four-year term



**DR. SANDOR  
DEMETER**

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Reappointed  
March 12, 2018  
Five-year term



**DR. MARCEL  
LACROIX**

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Appointed  
March 12, 2018  
Four-year term



**MS. KATHY  
PENNEY**

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Appointed  
March 12, 2018  
Four-year term



**MS. RUMINA  
VELSHI**

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Reappointed  
March 12, 2018  
Five-year term



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# CANADA'S URANIUM MINES AND MILLS

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# MINING OPERATIONS



## ACTIVE URANIUM MINING OPERATIONS (SASKATCHEWAN)

- Key Lake Mill (Cameco)
  - McArthur River Mine (Cameco)
  - Rabbit Lake Mine/Mill (Cameco)
    - announced suspension – April 2016
  - Cigar Lake Mine (Cameco)
  - McClean Lake Mine/Mill (Orano)
    - licence renewed until June 30, 2027
- On 10-month suspension starting Feb 1, 2018



Above: Key Lake Mill, below: McArthur River Mine

**Increased interest in exports to China and India**  
**Global price not supportive of production – Low demand and oversupply**



# MINING PROJECTS



## URANIUM MINING PROJECTS (NORTHERN SASKATCHEWAN)

### Environmental assessment review complete

- Midwest (northern Saskatchewan) (Orano)
  - awaiting application

### Projects under review

- Millennium (northern Saskatchewan)
  - on hold for economic reasons
  - tailings management inspections ongoing



Top: Midwest Project; bottom: Millennium Project



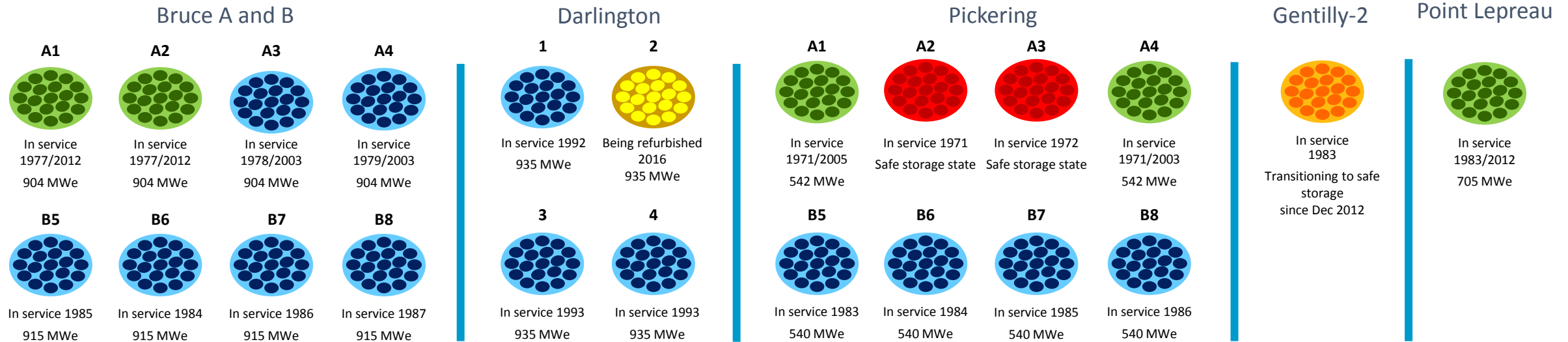
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# CANADA'S NUCLEAR POWER PLANTS

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# Canada's Nuclear Energy Profile



- In service within design life
- Refurbished and returned to service
- Safe storage state
- Transitioning to safe storage
- Refurbishment in progress

## Typical share of nuclear energy in total electricity generation



Canada - 16.6% (CNA Factbook 2017)



Ontario - 63% (IESO, 2017)



New Brunswick - 33% (CNA Factbook 2017)



# CANADA'S NUCLEAR POWER PLANTS



Bruce Nuclear Generating Station, Bruce A (at top), Bruce B (at bottom)

## BRUCE NUCLEAR GENERATING STATION (ONTARIO)

- Licence expires on May 31, 2020. Letter of intent for refurbishment filed on June 30, 2017
- Public Commission hearing (Part 2) held May 28 to 31, 2018



# CANADA'S NUCLEAR POWER PLANTS



Darlington Nuclear Generating Station

## DARLINGTON NUCLEAR GENERATING STATION (ONTARIO)

- Licence expires on November 30, 2025
- Refurbishment project began in October 2016 and is scheduled for completion by 2026



Pickering Nuclear Generating Station

## PICKERING NUCLEAR GENERATING STATION (ONTARIO)

- Licence expires on August 31, 2018
- Application for a 10-year licence renewal during which time Pickering will undergo permanent shutdown. Public Commission hearing (Part 2) held June 25 to 29, 2018



Point Lepreau Nuclear Generating Station

## POINT LEPREAU NUCLEAR GENERATING STATION (NEW BRUNSWICK)

- Licence expires on June 30, 2022
- Refurbishment completed – Returned to service November 2012





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# CANADA'S NUCLEAR LABORATORIES

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Chalk River Laboratories

## CHALK RIVER LABORATORIES (ONTARIO)

- Licence expires on March 31, 2028
- Commission hearing for renewal of Chalk River Laboratories' operating licence took place in January 2018



Proposed Near Surface Disposal Facility, Chalk River Laboratories

## THREE ENVIRONMENTAL ASSESSMENTS UNDER WAY FOR DECOMMISSIONING PURPOSES

- Near Surface Disposal Facility Project (Chalk River)
- Decommissioning of the Whiteshell Reactor #1 (Pinawa)
- Nuclear Power Demonstration Closure Project (Rolphton)



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# WASTE MANAGEMENT

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# WASTE MANAGEMENT



OPG used fuel dry storage containers at the Western Waste Management Facility

## ONTARIO POWER GENERATION (OPG) WASTE MANAGEMENT FACILITIES

- **Western** – Licence valid until May 31, 2027
- **Pickering** – Licence valid until August 31, 2027
- **Darlington** – Licence valid until April 30, 2023



# WASTE MANAGEMENT



Aerial view of Port Hope and Granby

## PORT HOPE AREA INITIATIVE

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**Port Hope and Port Granby –  
Implementation phase (facility  
construction ongoing)**

- Port Hope waste nuclear substance licence – Valid until December 31, 2022
- Port Granby waste nuclear substance licence – Valid until December 31, 2021



# OPG DEEP GEOLOGIC REPOSITORY (DGR) FOR LOW- AND INTERMEDIATE-LEVEL WASTE



- Joint review panel environmental assessment report – May 2015
- In November 2015, Minister of Environment and Climate Change requested additional information and further studies on environmental assessment
- On August 21, 2017, the Minister requested additional information from OPG on the potential cumulative effects of the DGR project on physical and cultural heritage of the Saugeen Ojibway Nation (SON) – the SON considers this as reconciliation in action



# NUCLEAR WASTE MANAGEMENT ORGANIZATION (NWMO)



## FINDING A SITE FOR HIGH-LEVEL RADIOACTIVE WASTE

There are 5 communities remaining in the NWMO's Learn More process (out of 22 original communities – 19 in Ontario, 3 in Saskatchewan)

- **2023** – A single preferred site is identified
- **2028** – Licence applications submitted
- **2040 to 2045** – Operations begin





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# OTHER REGULATORY MATTERS

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## Fukushima Action Plan — Regulations

- Regulations governing Class I facilities, uranium mines and mills, radiation protection Cabinet approved – published in the *Canada Gazette, Part II* on October 4, 2017

## Regulatory modernization — Regulatory documents

- **Discussion paper DIS-16-04**, *Small Modular Reactors – What We Heard Report* published September 2017
- **Discussion paper DIS-16-03**, *Radioactive Waste Management and Decommissioning – What We Heard Report* published December 2017
- **Discussion paper DIS-17-01**, *Framework for Recovery in the Event of a Nuclear or Radiological Emergency* – Public comment period closed in January 2018
- **REGDOC-2.2.4**, *Fitness for Duty, Volume II: Managing Drug and Alcohol Use* – Published December 2017
- **REGDOC-2.1.2**, *Safety Culture* – Published April 2018
- **REGDOC-2.11.1**, *Waste Management, Volume II: Assessing the Long Term Safety of Radioactive Waste Management* – Published May 2018
- **REGDOC-1.1.5**, *Licence Application Guide: Small Modular Reactor Facilities* – Publication forthcoming



# GOVERNMENT REVIEWS



**New legislation tabled, covering Bill C-68:** To amend the *Fisheries Act*

**Bill C-69:** To enact the *Impact Assessment Act and the Canadian Energy Regulator Act*, to amend the *Navigation Protection Act* – Important component yet to come: Project list

**Generation Energy led by Minister of Natural Resources**  
– **Nuclear is part of the mix**

14-member Generation Energy Council created in December 2017 to prepare report to inform the development of Canada's energy policy and energy future



# INDIGENOUS RECONCILIATION



**Cabinet Committee on Diversity and Inclusion** looks at initiatives to strengthen relationships with Indigenous Canadians

**Working group of six ministers** to ensure that Canada's laws, policies and programs protect Aboriginal and treaty rights

***United Nations Declaration on the Rights of Indigenous Peoples***

– Free, prior and informed consent Prime Minister's speech on February 14, 2018 and commitment to support Bill C-262

**CNSC's Indigenous engagement forums** – more formal, and structured approach  
– will continue to strengthen relationships with Indigenous peoples in Canada

## Small modular reactors (SMRs)

- Expression of interest from ten vendors for vendor design reviews
- The CNSC completed the Phase 1 review for Terrestrial Energy's 400-thermal-megawatt integral molten salt reactor in late 2017
- The CNSC participating in the pan-Canadian SMR road map and associated workshops
- A draft licence application guide for SMR facilities will be published soon for comment



Example of an SMR technology: Facility cross-section  
Terrestrial Energy Integral Molten Salt Reactor (IMSR-4000) –  
(Courtesy of Terrestrial Energy)



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# CANADA / U.S. NUCLEAR EMERGENCY MANAGEMENT COORDINATION

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- **Proximity of nuclear power plants**
- All of Canada's operating nuclear power plants are located near the border with the U.S.
- The U.S. has six operating nuclear power plants near the U.S.-Canadian border
- **Transboundary planning zones**
- Public safety concerns on both sides of the border (e.g. Fermi II and Pickering)
- Public interest on both sides of the border in emergency management





# Cross-Border Collaboration Efforts



## Between nuclear regulators

- Memorandum of understanding in place that covers information sharing during an emergency
- Participate in each other's emergency exercises
- Exploring inspector exchanges on emergency management

## Between federal governments

- Canada / U.S. Joint Radiological Emergency Response Plan
  - Provides for early notification, coordination of activities, and provision of mutual aid in the event of a nuclear emergency (Department of Homeland Security / Federal Emergency Management Agency and Public Safety Canada)

## Between provinces and states

- Under the Province of Ontario's Implementing Plan for a Transborder Nuclear Emergency, the province is contacting the affected U.S. State Emergency Operations Centres to discuss the option of deploying liaison teams in a nuclear emergency





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# Communications

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- Outreach – Indigenous and targeted audiences
- Digital presence: YouTube, Twitter, Facebook, LinkedIn, CNSC website
- Emergency communications
- Public and media inquiries
- Regulatory oversight of licensee public communications



*Our vision: To be the trusted source of information on nuclear safety in Canada*



“We will never  
compromise safety...

...it's in our DNA”



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