

# Radioactive Waste Management in Canada: Demonstrating Commitment Through Our Actions and Achievements

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Natural Resources  
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Ressources naturelles  
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Canada 

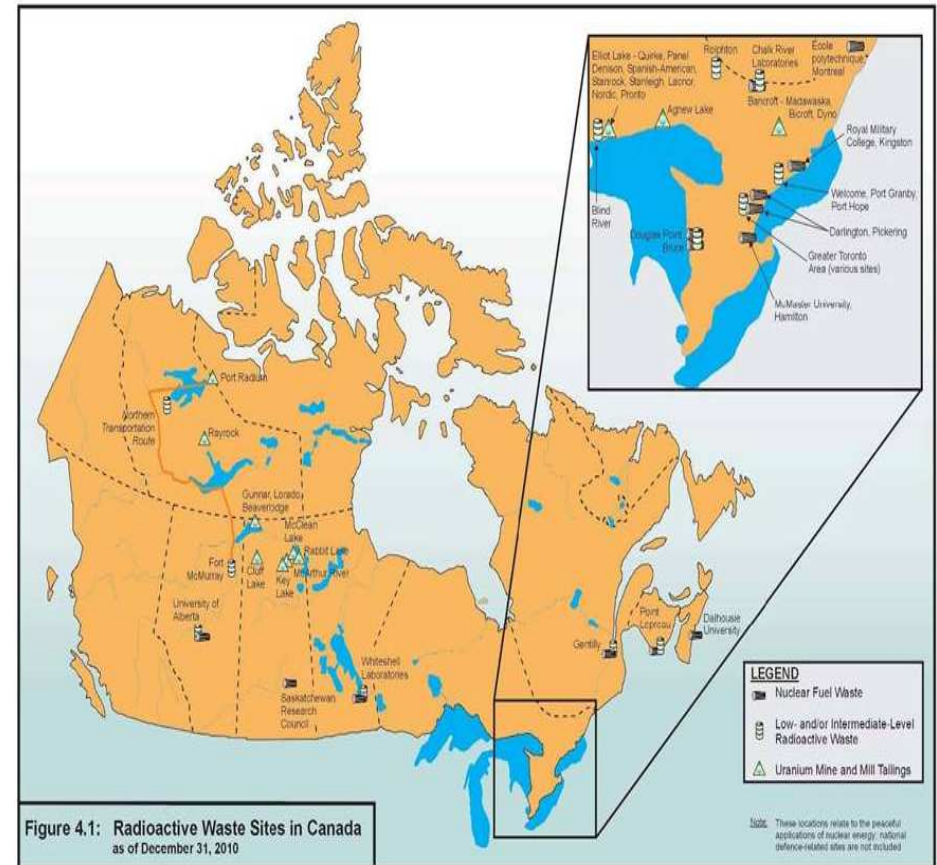
# Role of the Nuclear Sector

- Nuclear energy plays an important role in Canada's overall energy mix
  - Uranium resources fuel nuclear development here and abroad
- Requirements for ongoing and future use
  - A key element – building public confidence
  - Comply with legislation, regulations and policies
  - Ensure safe operation and use of the technology
  - Develop and implement long-term management solutions for all types of radioactive waste



# Canada's Good News Story on Radioactive Waste Management

- Safely and securely managed where currently located
- Steady progress being made on long-term management
  - From Nuclear Fuel Waste to Low- and Intermediate-Level Waste to Uranium Mine Tailings
  - Different management approaches
  - Hard work and dedication is beginning to bear fruit



# Built on a Solid Foundation of Policy

- Canada's Radioactive Waste Policy Framework (1996)
  - Waste owners
    - responsible for funding and managing their waste
    - responsible for developing and implementing long-term solutions
  - Federal role
    - ensure long-term waste management is carried out in a safe, environmentally-sound, comprehensive, cost-effective manner
    - develop policy, regulate, and oversee waste owners' compliance with legal, financial, and operational requirements

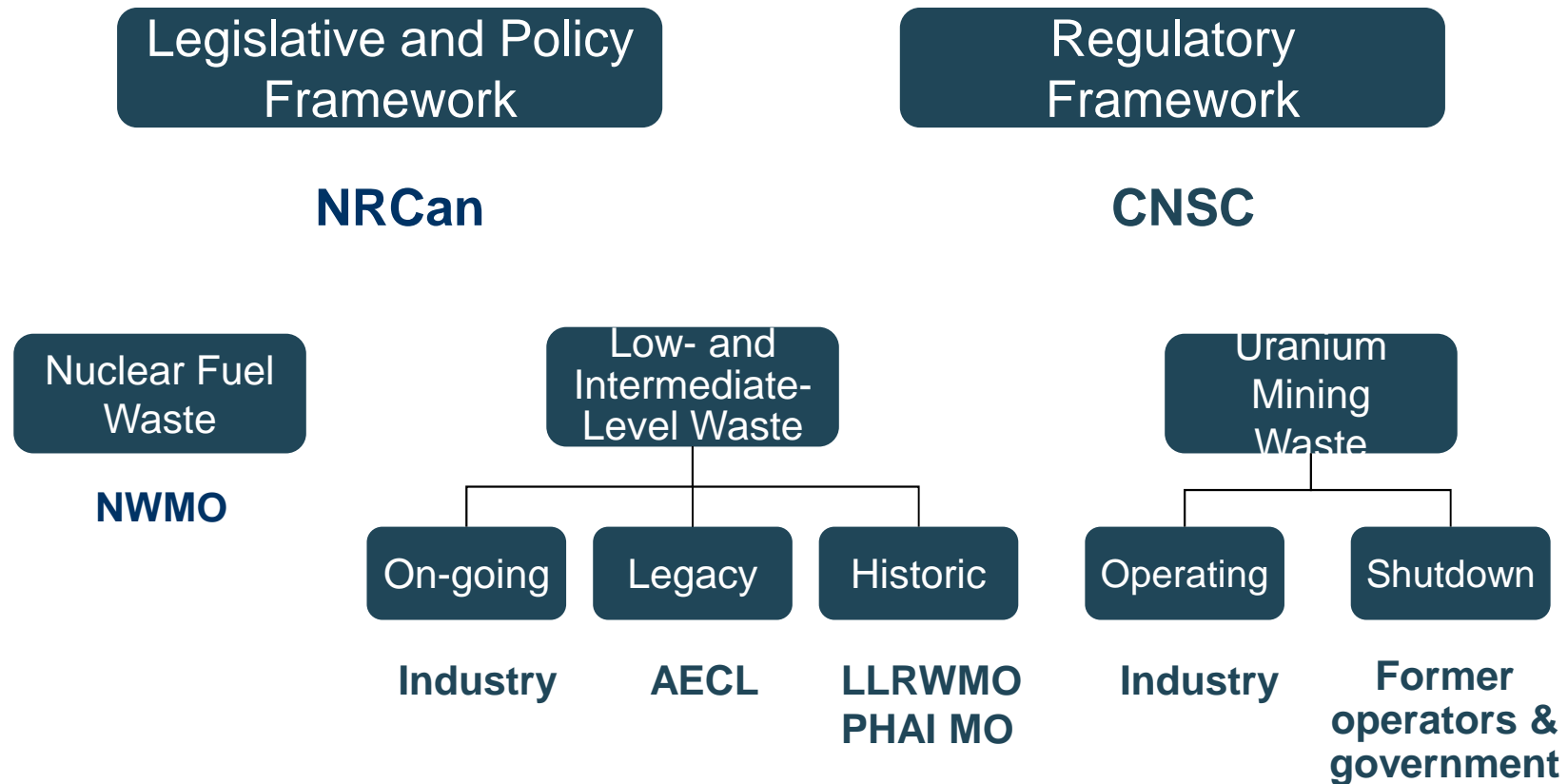


# ... and Legislative Framework for Nuclear Energy

- Nuclear comes under federal jurisdiction:
  - General advantage of Canada
- Four key elements of legislative framework:
  - *Nuclear Safety and Control Act*
  - *Nuclear Fuel Waste Act*
  - *Nuclear Energy Act*
  - *Nuclear Liability Act*
- Other elements: Acts regarding environmental assessment, transport of dangerous goods, etc.



# Responsible Agencies for Radioactive Waste Management in Canada



# Radioactive Waste Management Initiatives Underway – Actions and Plans

- Long-Term Management of Nuclear Fuel Waste
  - NWMO's Adaptive Phased Management approach
- Low- and Intermediate-Level Radioactive Waste
  - Ontario Power Generation's (OPG) Deep Geologic Repository at Kincardine, Ontario
- Legacy Waste
  - Nuclear Legacy Liabilities Program
- Historic Waste
  - Port Hope Area Initiative
  - Northern Transportation Route
  - Gunnar Mine and Mill Site Clean-up





# Public Engagement Critical to Success



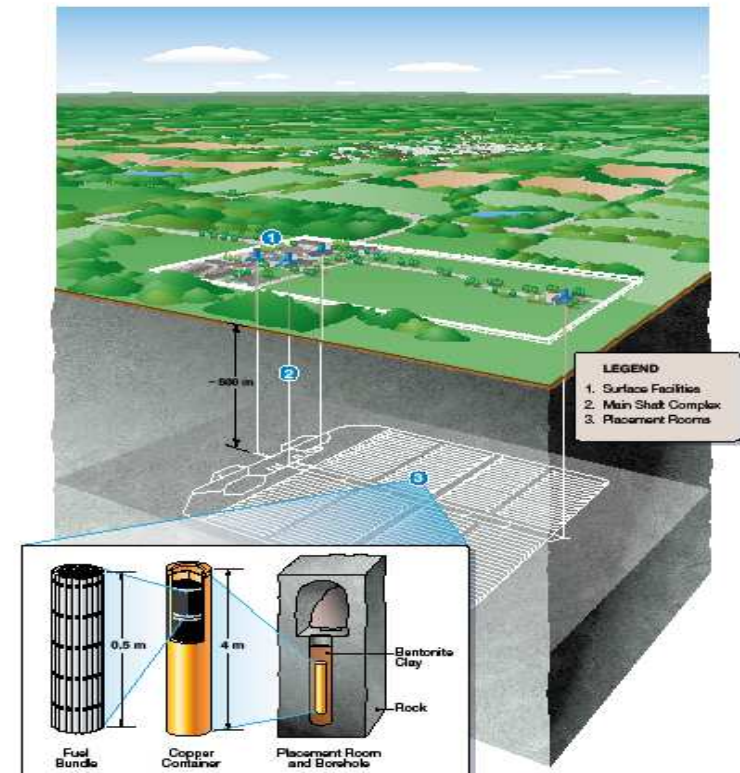
- Strong culture of public and stakeholder engagement and involvement
- Significant emphasis is placed on communication and outreach
- Processes and procedures are built on openness, inclusiveness, and transparency
- Adoption of sound science and robust technical solutions





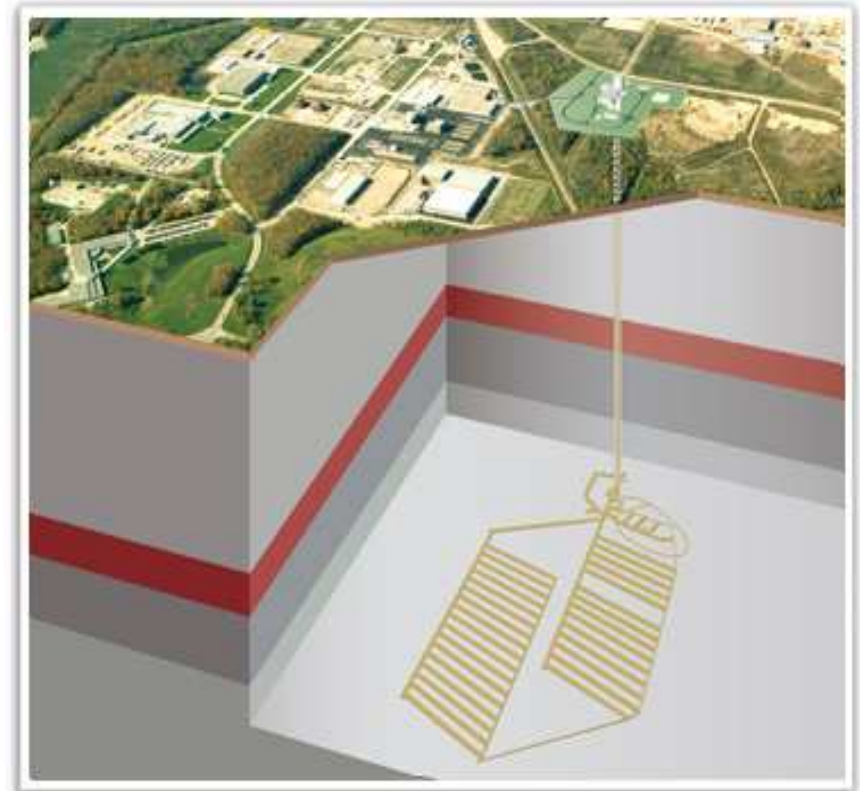
# Making Strides – Long-Term Management of Nuclear Fuel Waste

- In 2007, the Government selected the Adaptive Phased Management approach
- NWMO responsible for its implementation pursuant to the *Nuclear Fuel Waste Act*
  - Siting process is underway to find voluntary community with suitable site willing to host a Deep Geologic Repository
  - Positive interest to date
- Government oversight of implementation continues



# Making Strides – OPG's Deep Geological Repository

- OPG has proposed a DGR for its low- and intermediate-level radioactive waste at Kincardine, Ontario
  - EIS, Safety Assessment submitted April 2011
- Joint review panel established January 2012
  - Next step - Public hearings



# Making Strides – Legacy Wastes

- Nuclear Legacy Liabilities Program (NLLP)
  - New 70-year, long-term strategy adopted in 2006
  - Currently recognized as \$3.6 B liability (NPV) in Public Accounts of Canada
- Initiated in 2006 with \$520 million, 5-year start-up phase
- NLLP renewed in 2011 with 3-year, \$439 million second phase (to March 2014)



# Making Strides – Legacy Wastes

- NLLP addresses legacy waste, disused research facilities and related infrastructure, and lands affected by past practices at AECL sites, including:
  - Chalk River Laboratories (CRL), Ontario – about 70%
  - Whiteshell Laboratories (WL), Manitoba – about 20%
  - Three prototype reactors, Ontario and Quebec – about 10%





# Making Strides - NLLP Progress to Date



- Risks and liabilities reduced
  - Outdated research facilities, infrastructure removed (21,000 m<sup>3</sup> footprint)
  - High-hazard buried waste recovered and safely managed
  - Environmental restoration projects completed to remediate selected contaminated areas
- New waste management facilities established
  - Clearance, Handling and Storage Facilities
  - Equipment, Facility to recover, dry, repackage and store research reactor fuel



# Making Strides – Canada's Historic Waste: Port Hope Area Initiative (PHAI)

- PHAI established in 2001
  - Government of Canada signed a Legal Agreement with the Municipalities of Port Hope and Clarington.
  - Provides local, long-term solution for ~1.7 million m<sup>3</sup> of Historic Waste in the Port Hope area
  - Based on municipal concepts for local solutions
- Phased approach to delivery
  - Planning phase – completed in 2011
  - Implementation phase
  - Monitoring and maintenance for the long-term



# Making Strides – Canada's Historic Waste: Port Hope Area Initiative

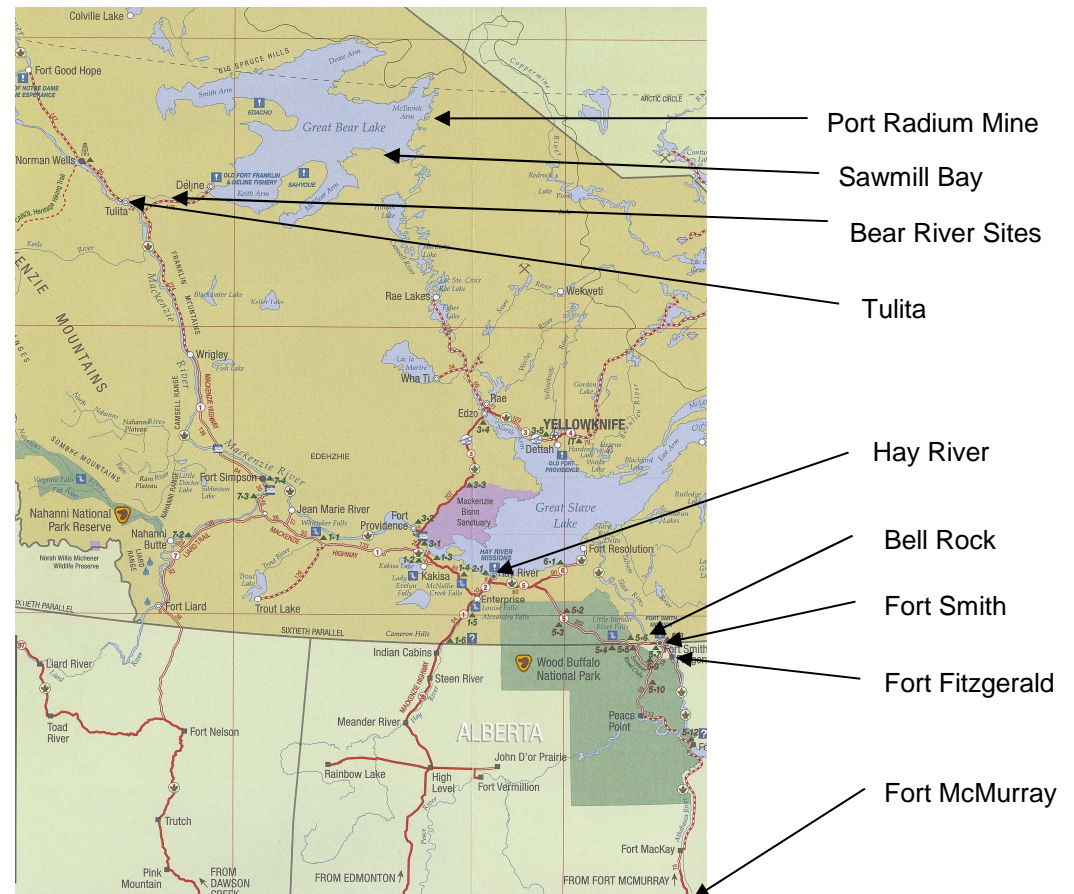
- Government launched Implementation Phase in January 2012
  - \$1.3 B over 11 years
- Licences in place
- Construction of long-term waste management facilities to commence in 2013
- Clean-up of historic waste sites scheduled to begin in 2015





# Making Strides – Canada’s Historic Waste: Clean-Up of Northern Transportation Route

- The Northern Transportation Route
  - Port Radium, NWT, to Fort McMurray, Alberta
  - Transported U ore, beginning in 1930s.
- Canada is working with all stakeholders on interim measures and long-term solutions
- Recent successes – cleanups in Tulita, Fort Smith, Fort Fitzgerald – build community support for long-term solutions



# Making Strides – Uranium Mine and Mill Tailings

- NRCan has Memorandums of Agreement (MOA) with Ontario and Saskatchewan to share costs to cleanup abandoned uranium mines
- Ontario MOA: uranium mining sites where former operator is unable to finance cleanup
- Saskatchewan MOA: Cold War legacy uranium mining sites where former operator no longer exists
- Canada and Saskatchewan are sharing the cost to cleanup the Gunnar mine site in northern Saskatchewan



# Making Strides - Gunnar Mine Site Rehabilitation Project

- Mine closed in 1963 without decommissioning
- 4,400,000 tonnes of uncovered tailings
- Environmental assessment is underway
- Costs to be shared by federal and provincial governments



# Requirements for Continued Progress

- Governance
  - Responsible organizations and management structures
  - CNSC provides rigorous regulatory oversight, sound science-based decisions
  - Appropriate level of Government oversight
  - Policy advice and direction from Government
- Ongoing Public Involvement
  - Outreach and awareness activities
  - Openness, transparency and inclusiveness in processes and plans
- Consultations with Aboriginal Peoples
  - Special relationship within Canada
  - Duty to consult
- Safe Transportation of Waste
  - Greater public awareness and education
  - Involvement of transportation agencies
  - Cross boundaries issues (provincial, federal, municipal)



## Closing Remarks

- Nuclear is crucial part of clean energy mix
- Waste Management vital to continued success of nuclear
- Government of Canada remains committed to providing the policy and program support necessary to demonstrate that it takes radioactive waste management seriously

