



Supplementary Information

Presentation from Ontario Power Generation Inc.

In the Matter of the

Ontario Power Generation Inc.

Application for a licence to construct one BWRX-300 reactor at the Darlington New Nuclear Project Site (DNNP)

**Commission Public Hearing
Part-1**

October 2, 2024

Renseignements supplémentaires

Présentation d' Ontario Power Generation Inc.

À l'égard d'

Ontario Power Generation Inc.

Demande visant à construire 1 réacteur BWRX-300 sur le site du projet de nouvelle centrale nucléaire de Darlington (PNCND)

**Audience publique de la Commission
Partie-1**

2 octobre 2024




*Electrifying
life*

Darlington New Nuclear Project Licence to Construct Application Hearing Part 1

CMD 24-H3.1B

October 2, 2024 • Mark Knutson, SVP Enterprise Engineering and Chief Nuclear Engineer



OPG is qualified to carry on the activities that the licence will authorize and will, in carrying on these activities, make adequate provision for the protection of:

- the environment,
- the health and safety of persons,
- the maintenance of national security, and
- measures required to implement international obligations to which Canada has agreed.

**We generate half
of Ontario's
electricity.**

Our diverse fleet
includes nuclear,
hydroelectric,
thermal, natural
gas, and solar
generation.

**18,225
megawatts**



OPG's Environmental *Stewardship*

We are committed to:

- Environmental sustainability
- Engaging and learning together with Indigenous communities
- Maintaining or enhancing significant natural areas



Green Construction & Environmental Sustainability

- OPG goal of being a net-zero carbon company by 2040
- Achieved by creating Green construction standards, tracking carbon footprint, promoting climate change culture, and engaging the vendors

our climate goals

A net-zero
carbon
company by
2040



A net-zero
carbon
economy by
2050

Darlington New Nuclear Roadmap

BIG things start **small**.



2024

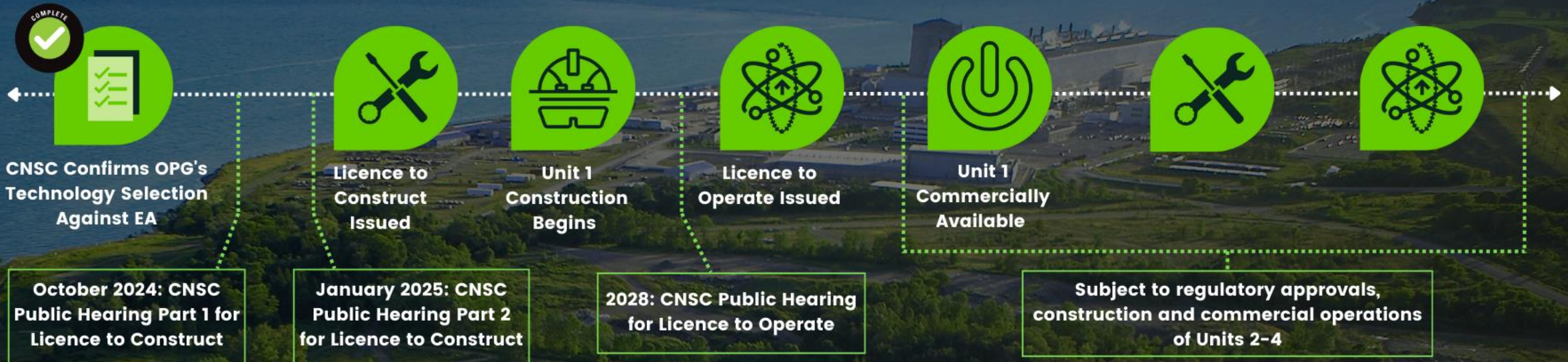
2025

2028

2029

2034

2036



All dates are estimated based on current project schedules



Commitment to Indigenous Nations and Communities

- OPG is committed to working with Indigenous Nations and communities to develop positive relationships and generate shared social and economic benefits through our renewed Reconciliation Action Plan
- We strive to build relationships based on the principles of respect, integrity and mutual responsibility
- While we have made progress, we recognize that the journey with Indigenous Nations and communities will be ongoing



SMR Announcement
July 2023



Alderville First Nation
October 2023



2024 Highlights

- Indigenous Knowledge Study (IKS)
- Permitting
- Offsetting and restoration
- Advancing waste discussions
- Indigenous Relations training for project staff
- Generation for Generations
- Leadership to leadership meeting



Darlington Waste Management Facility August 2024



Alderville First Nation Pow Wow July 2024



OPG's Updated Reconciliation Action Plan

OPG's RAP Pillars:

- 1) Leadership
- 2) Relationships
- 3) People
- 4) Economic Empowerment
- 5) Environmental Stewardship



The future of Indigenous Engagement

Where we are going

2024/2025

- Support the development of an Indigenous Knowledge Study, cumulative effects study, rights impact assessment, as scoped by Williams Treaties First Nations
- Opportunities for increased engagement on environmental topics

- Review of capacity funding agreements

- Environmental monitoring augmentation plans to provide an Indigenous knowledge view
- Restoration planning

- Initial Rights Impact Assessment results



Excellence in Large Projects

- History of excellent project management success
- Utilize lessons learned from other OPG projects
- Leverage expertise from OPG's partners





Darlington New Nuclear Project



Integrated Project Delivery Model



Ontario Power Generation as the licence applicant, owner and operator



GE-Hitachi as the designer of the BWRX-300



AtkinsRéalis as the architect engineer



Aecon as the constructor of the nuclear facility



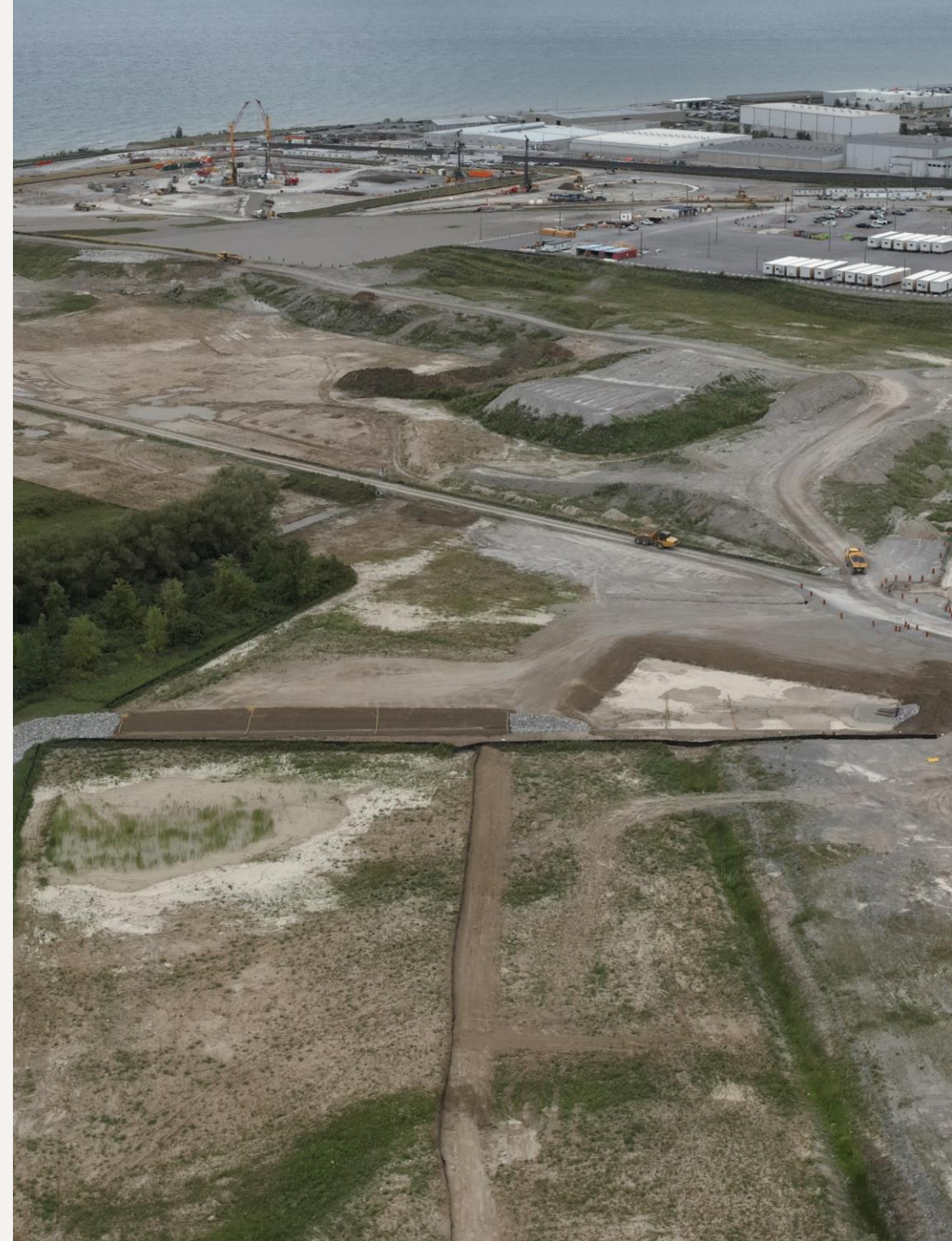
DNNP Site and Preparatory Activities

Darlington Site
1 Holt Road South, Bowmanville, ON

Darlington New Nuclear Site
to the East of the Darlington Station

Licensed Activities

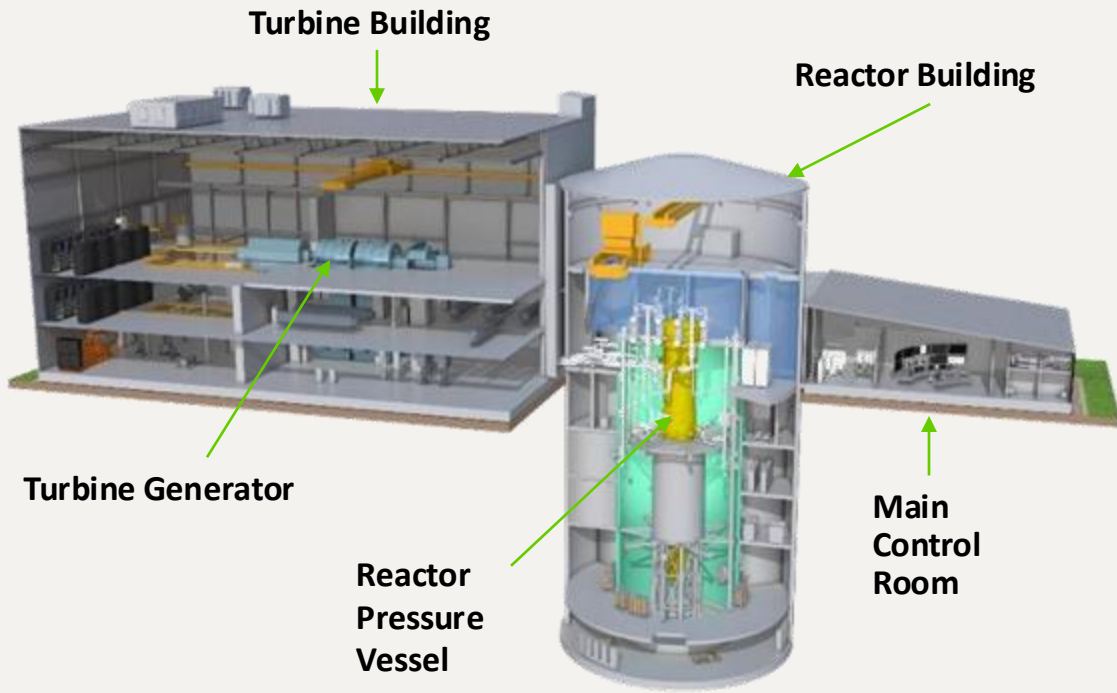
- The **completion of any remaining activities** under the existing Site Preparation Licence;
- The **construction of one BWRX-300 power block** (the structures, systems and components associated with the reactor building, control building, turbine building, radioactive waste building and auxiliaries);
- The construction of the **support structures** for up to four BWRX-300 units;
- The **inspection and testing** of equipment; and
- The **conduct of fuel-out commissioning** (i.e., the commissioning of systems prior to loading fuel in the reactor).



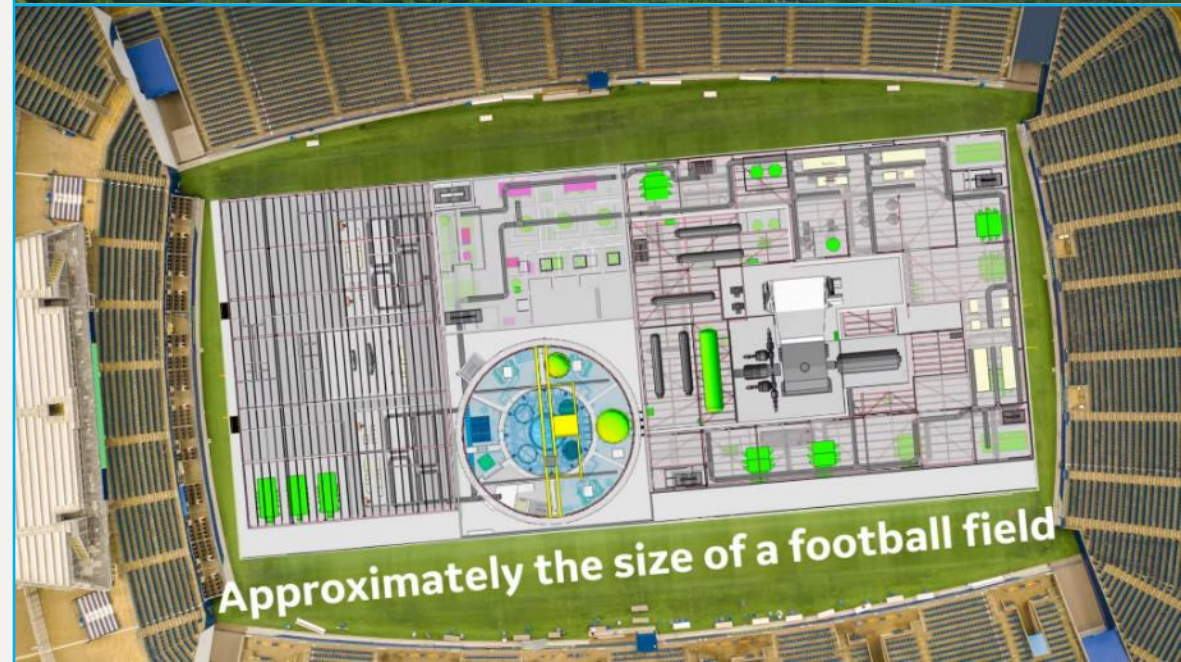
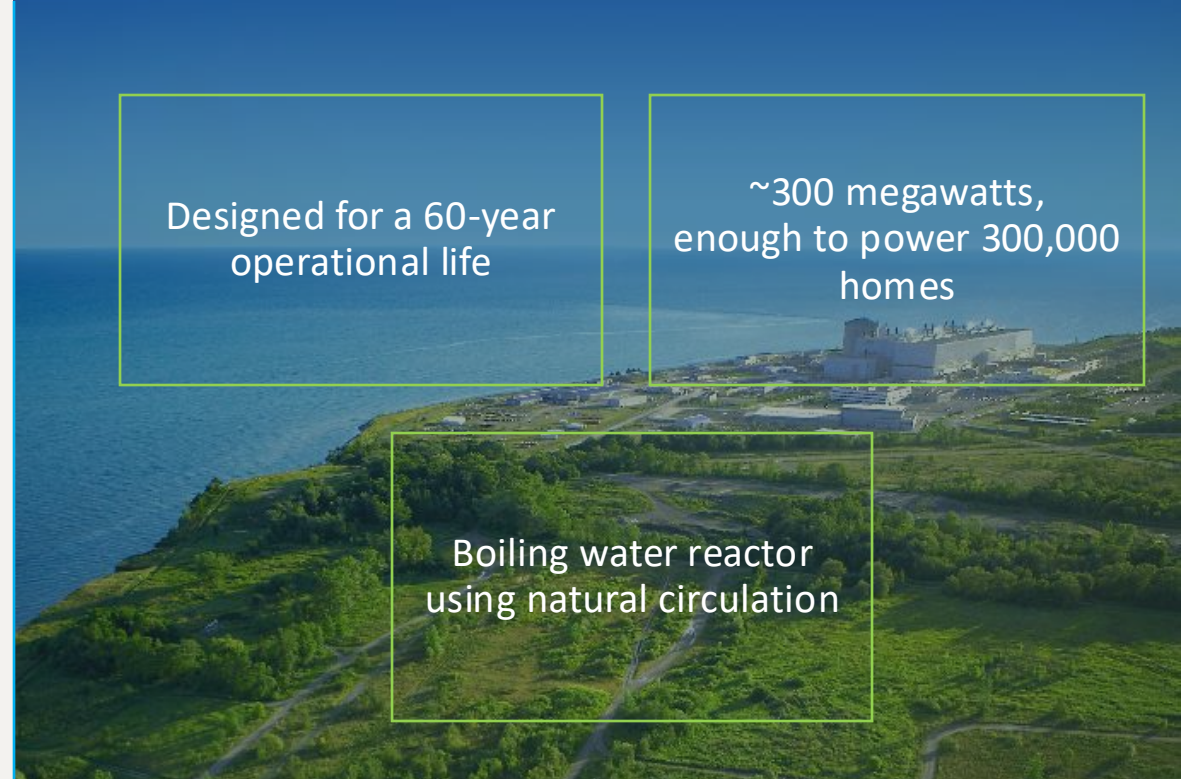


Technology Overview

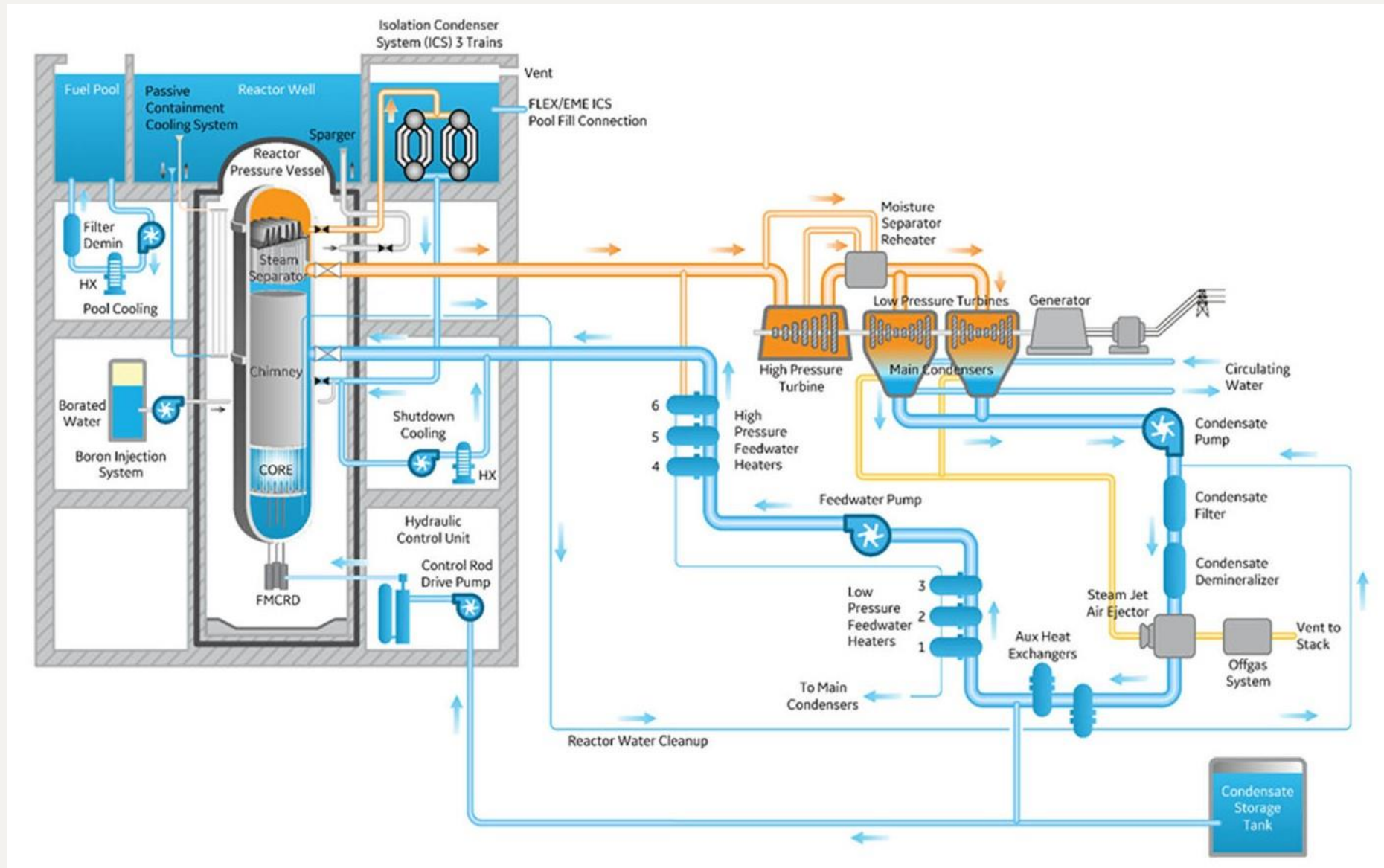
GE Hitachi: **BWRX-300**



GEH SMR Technologies Canada is the Canadian division of the world-leading provider of reactor technology and nuclear services.



Innovative Design Features of BWRX-300



Safety and Control Areas

Applicable SCAs

- 
1. Management System
 2. Operating Performance
 3. Safety Analysis
 4. Physical Design
 5. Radiation Protection Measures
 6. Conventional Health and Safety
 7. Environmental Protection
 8. Emergency Management and Fire Protection
 9. Waste Management
 10. Decommissioning
 11. Security
 12. Safeguards and Non-Proliferation

Safety and Control Areas not applicable to the Power Reactor Construction Licence are Fitness for Service and Packaging & Transport.

OPG's Nuclear Management System

The DNNP will continue to use OPG's well-established Nuclear Management System to:

- Ensure licensed activities during construction are executed safely and with quality
- Ensure OPG has oversight during construction, inspection, and commissioning



Conventional Health & Safety

The DNNP continues to use OPG's rigorous and effective safety management practices to keep safety our top priority.

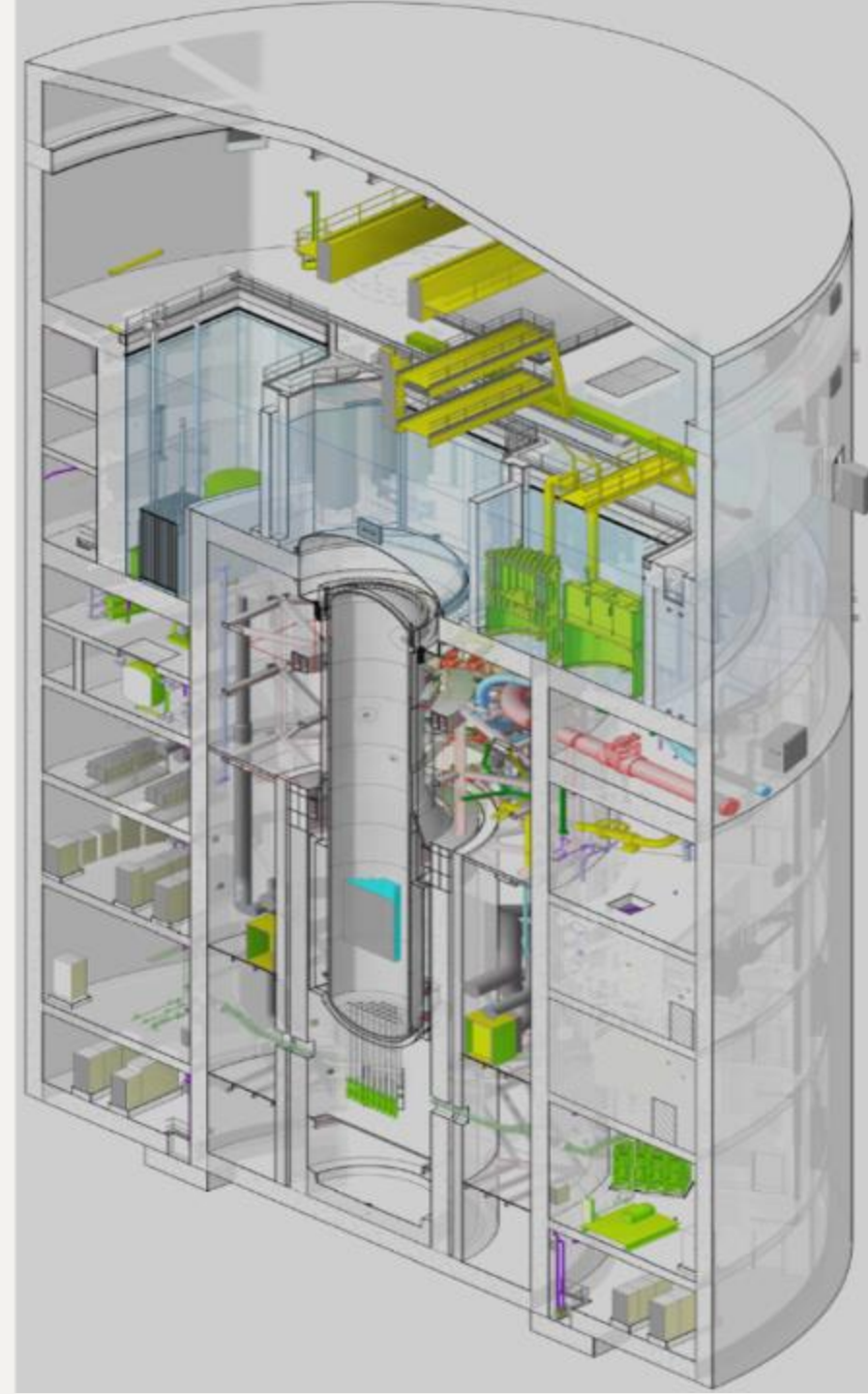
- Manage health and safety and the non-radiological hazards to protect personnel
- OPG will maintain oversight to confirm compliance with legislative and regulatory standards



Physical Design

The DNNP design is managed using rigorous management system requirements.

- Design is conducted using industry standard processes
- Design documents submitted as part of licence to construct application satisfy REGDOC 2.5.2
- OPG conducts review and acceptance of design using a graded approach





Nuclear Safety

The BWRX-300 design meets or exceeds CNSC regulatory requirements.

- Design applies principles of independence, diversity, separation and redundancy to safety systems
- Simplified BWRX-300 design incorporates passive safety features and optimizes safety, operability, and maintainability
- Nuclear Safety is OPG's overriding priority



Safety Analysis

Safety Analysis demonstrates that BWRX-300 meets safety goals and regulatory requirements.

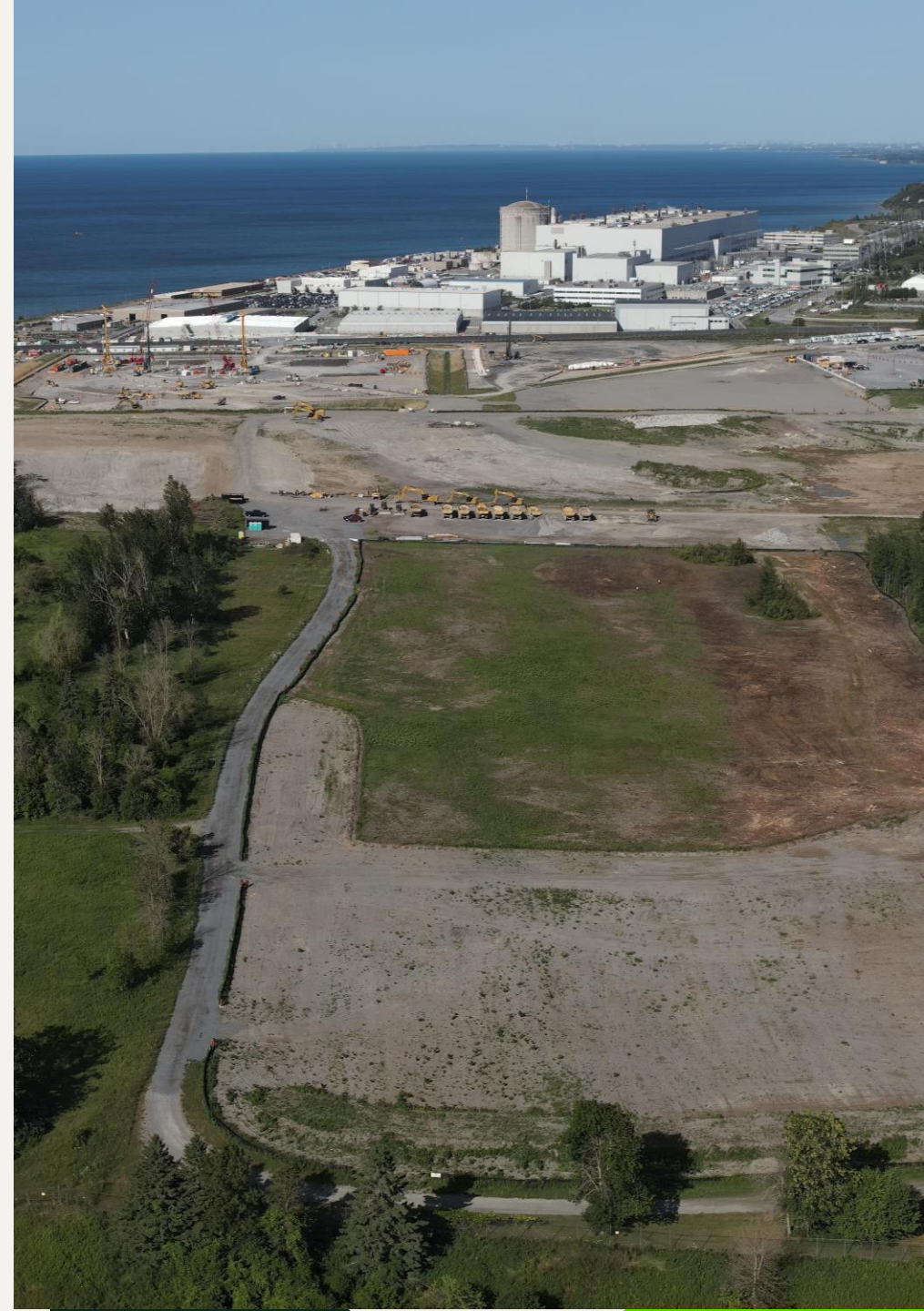
- Safety analysis is comprehensive and rigorous and follows industry recognized methodologies
- Analysis demonstrates a significant margin of safety by using conservative inputs and assumptions
- Safety analysis satisfy REGDOC 1.1.2 and REGDOC 2.5.2
- OPG Ensures independent reviews and conducts acceptance



Emergency Management and Fire Protection

There is no possibility for a radiological emergency during construction of the BWRX-300.

- There is no nuclear fuel on site during construction and ‘fuel-out’ commissioning phase
- Construction contractor oversees the emergency response on the Darlington New Nuclear Project site



Human Performance & Training

The DNNP will use OPG's and IPD partners' strong human performance programs.

- Ensure staff are trained and qualified with the appropriate knowledge, skills, and behaviours for construction
- Building upon industry operating experience
- Monitoring performance to drive excellence
- OPG fosters a culture of continuous learning and improvement



Environmental Protection

**The existing Environmental Assessment is valid for
BWRX-300 design**

OPG's robust and mature environmental protection programs:

- Identify and assess areas of concern
- Implement control measures to eliminate, manage, and reduce risk
- Ensure monitoring and evaluation of environmental parameters
- Involve stakeholders and Indigenous communities



Waste Management

There is no radioactive waste generated during construction.

- OPG plans to store low and intermediate level radioactive waste at the DNNP site during operation on an interim basis
- Used fuel to also remain on DNNP site until transfer to Nuclear Waste Management Organization licensed facility
- OPG has provided information on non-radioactive hazardous materials associated with construction activities



Radiation Protection

- Proposed licensed activities under a construction licence do not include the possession or use of nuclear substances
- BWRX-300 design strategy incorporates the principles of As Low As Reasonably Achievable (ALARA)
- Simple design of the BWRX-300 means less occupational dose during operation and maintenance



Security, Safeguards and Non-Proliferation

- OPG has mature and robust Security and Cyber Security programs which protect people and assets through the construction phase and beyond
- OPG has an effective Safeguards and Nuclear Material Accountancy program
- Program ensures successful implementation of the obligations arising from the Canada/IAEA safeguards agreement and non-proliferation Treaty



Decommissioning and Financial Guarantee

A preliminary decommissioning plan has been developed and the financial guarantee is adequate to fund decommissioning of the construction activities.

- Decommissioning involves restoring the site to brownfield status suitable for industrial re-use
- The Financial Guarantee ensures there are adequate funds to the decommissioning of proposed construction activities
- OPG has an established history of managing and maintaining decommissioning plans and sufficient funds



OPG Commitments

OPG tracks, completes and reports on all of its commitments per the completion timeline including:

- Commitments and actions arising from the DNNP Environmental Assessment
- Formal regulatory commitments made by OPG as part of the CNSC LTC Application review process





Committed to Community Engagement

OPG has been engaging with the local community on all phases of the project through its comprehensive public outreach and communications program.



Project kiosk

Sponsored community swims and skates



Community Advisory Council Tour



DNNP site tour



Tuesdays on the Trail program at Darlington



Project kiosk at the Oshawa mall



Conclusion



A BWRX-300 at the DNNP site:

- leverages operating experience from generations of BWRs, and
- improves on safety due to the inherent design characteristics and passive safety features.

OPG is qualified to construct a BWRX-300:

- in a safe and environmentally sustainable manner,
- has an industry-leading history of large construction project success and safe nuclear operations, and
- has demonstrated regulatory requirements have been met for the requested construction licence.

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OPG