



ONTARIO POWER
GENERATION

Update from the New Nuclear Development Department

Pickering Community Advisory Council
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New Nuclear Development Department

- Formed in January 2018
- Portfolio includes:
 - Darlington New Nuclear Project
 - Exploring potential business development opportunities for OPG including Small Modular Reactors (SMRs)



Darlington New Nuclear Project

- 2006: Province directed OPG to initiate federal approvals process for new nuclear
 - Ontario Power Authority's Integrated Power System Plan called for new nuclear to maintain nuclear generating capacity at 14,000 MWe
- OPG began application process for up to 4,800 MWe at Darlington
- Extensive studies and consultation in support of environmental impact statement
- 2011: Environmental assessment (EA) conducted by Joint Review Panel (17-day hearing)
- 2012: Acceptance of EA; CNSC issued 10-yr site preparation licence (SPL) to OPG
- 2013: Long Term Energy Plan deferred new nuclear; OPG to maintain SPL



Darlington New Nuclear Project

- 10-year Site Preparation Licence (SPL) expires in August 2022
 - Site licensed for up to 4,800 MWe
 - Ongoing monitoring and site improvements
- Mid-term report on SPL activities to be submitted in September
 - Report to be reviewed at CNSC public meeting in 2018



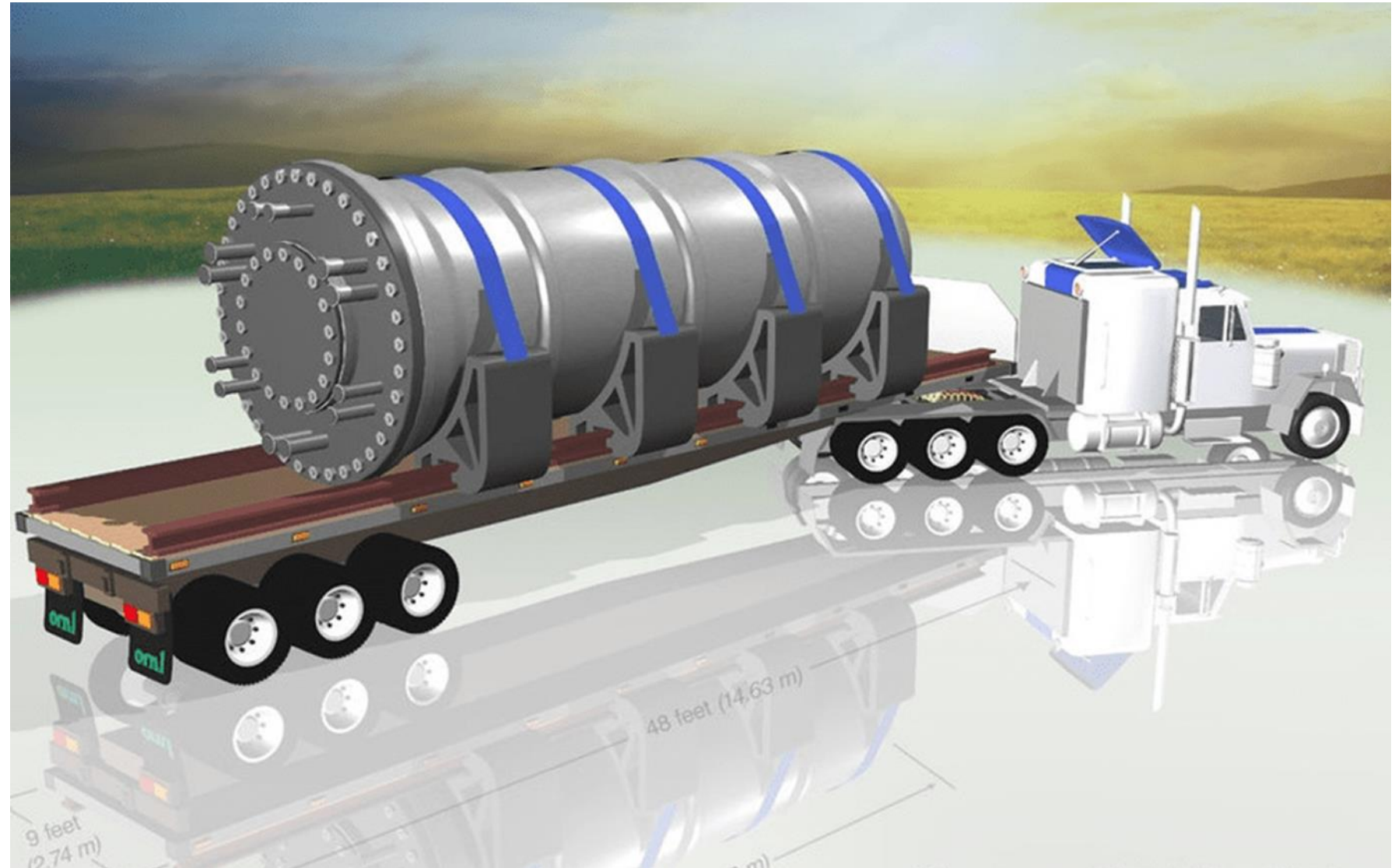


A Significant Asset

- For the Province of Ontario: To maintain Ontario's energy supply mix
- For OPG: Only licensed nuclear power site in Canada currently available for building
- OPG has advised CNSC of intent to renew SPL
 - 10 year renewal being sought (2022-2032)
 - Ensures DNNP is “shovel ready”



Small Modular Reactors (SMRs)





SMRs vs Grid-Sized Reactors

- Additional, passive safety features
- Smaller size, smaller footprint
- No requirement for grid connection or water source
- Low staffing requirements (including Security)
- Small waste profile
- Defined in the range from community scale (<10 MW) to utility scale (~300 MW)
 - Pickering – 515 MWe net; Darlington – 885 MWe net





Advantages of SMR Technology

- Clean, reliable electricity at manageable cost and very low risk for on and off-grid communities
- Enables Canada to meet environmental climate change, social and economic goals
- Canadian Nuclear Safety Commission pre-licensing vendor design review (VDR) process
 - 10 vendors currently in process

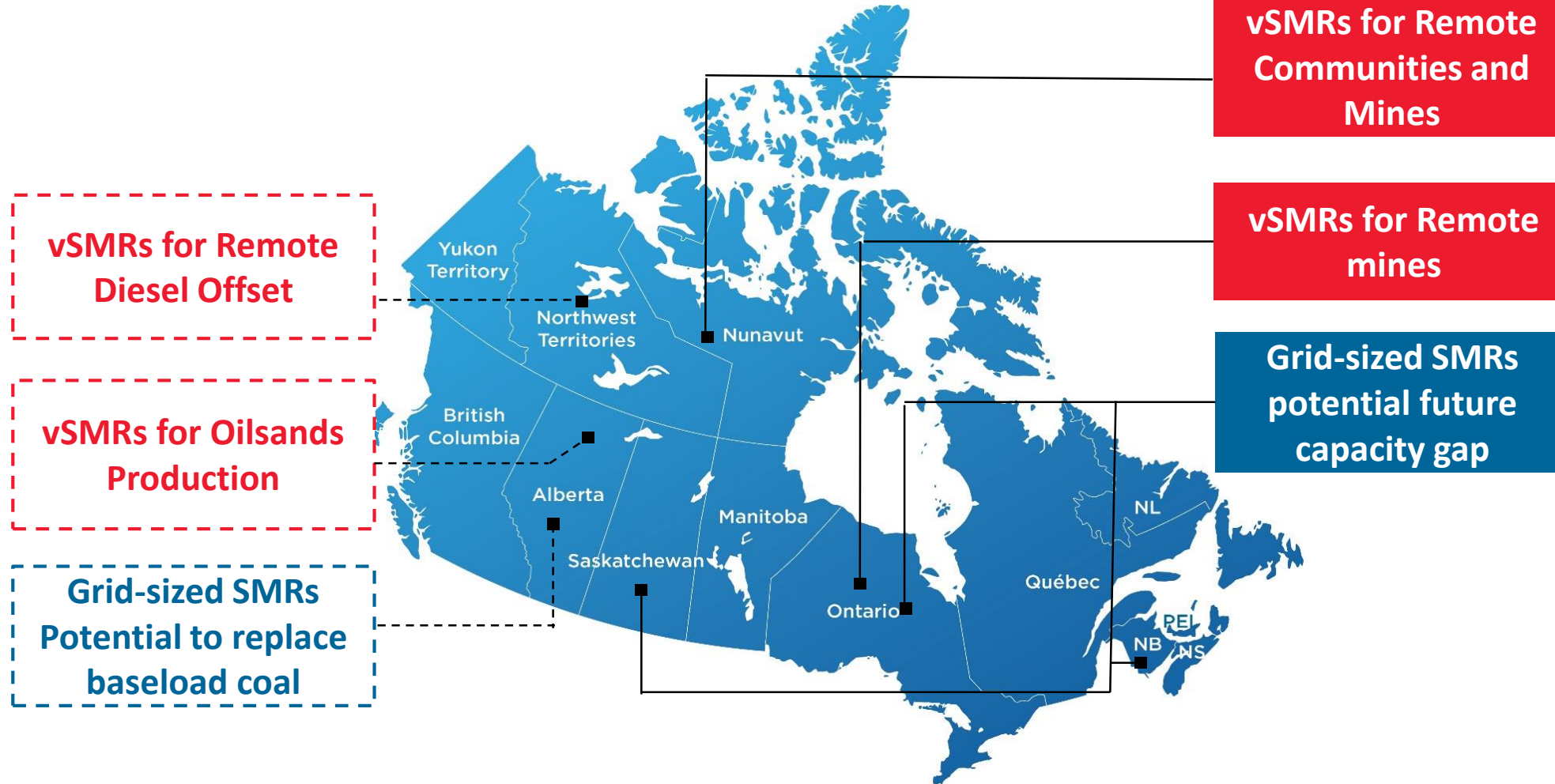


Potential Uses in Canada

- On grid: Non-emitting source of electricity; enables greater electrification and development of renewables
- Off-grid: Greatly reduces dependency on diesel; promotes health, social development and economic benefits in northern, remote areas
- Heavy industry: Mining and oil production (including oil sands) to reduce emissions



The Potential Market - Canada





OPG's Role in SMR Industry Activities

- Leading many industry partnership activities
- Natural Resources Canada (NRCan) & industry “SMR Roadmap”
 - Developing framework for SMR deployment in Canada
 - OPG employees active on steering committee and chairing many working groups
- OPG chairing Candu Owners’ Group (COG) SMR Technology Forum
- Many SMR vendors looking to OPG for support and input
 - Leveraging OPG’s extensive operating and project experience and capability