Update on Advanced Small Modular Reactor Development

Fundy Shores Mayor and Council

March 15, 2023

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Energy Change Drivers

1. Climate Change
2. Energy Security
3. Cost
4. Economic Benefits
5. Innovation Mindset

SNC Forecasted 2050 Net Zero Generation Mix Scenario

As a result:

- >100 SMRs to satisfy energy needs
- A LOT of renewable energy

Source:
[SNC Lavalin – Net Zero 2050 scenario]

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Obligation to Supply Power to NB

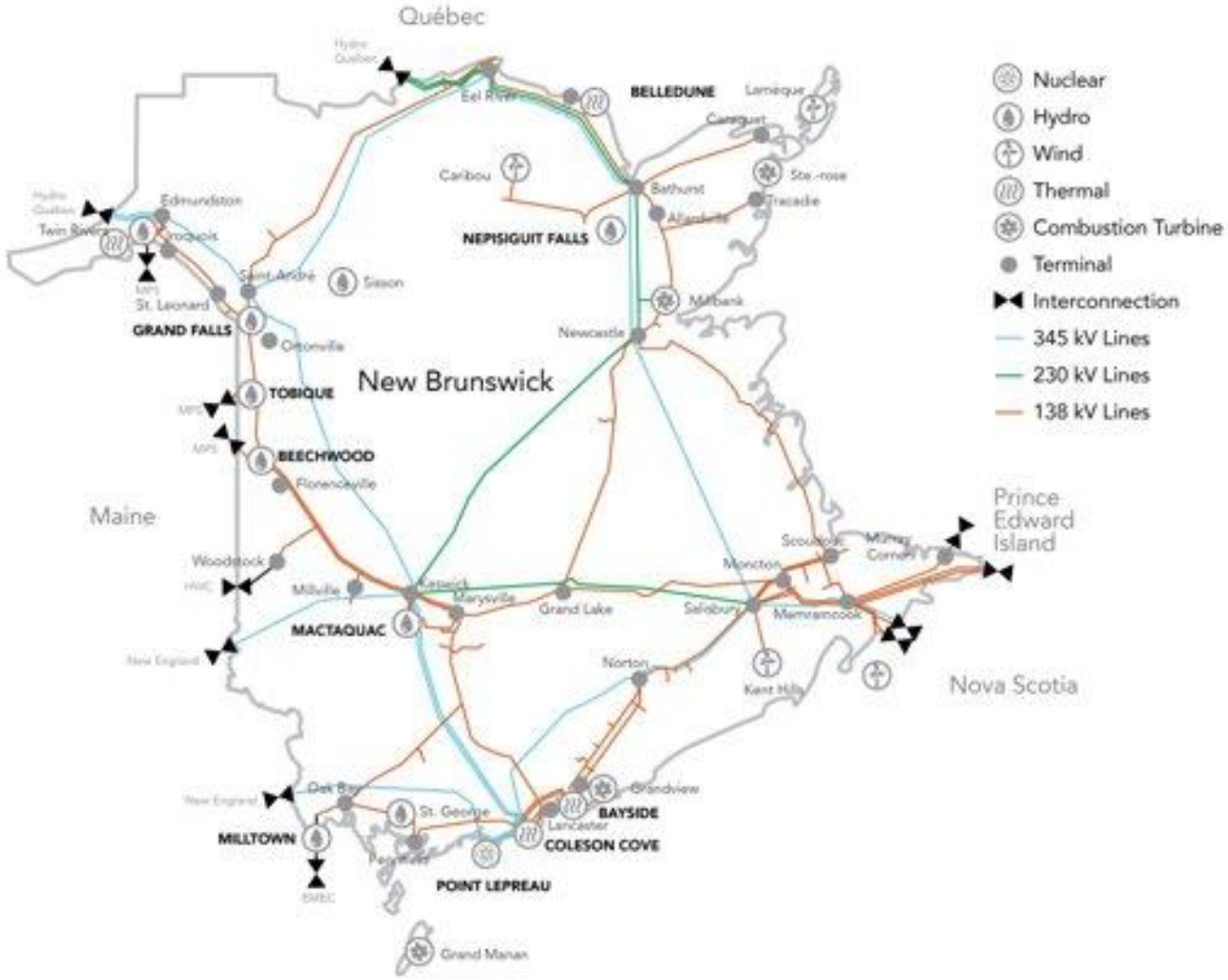
Highest demand in NB happened the morning of Feb 4, 2023 – 3432 MW
Regulated Obligation = 3432 MW + 20% ≈ 4000 MW

Clean Energy ≈ 1900 MW

- *Hydro*
- *Nuclear*
- Biomass
- Wind
- Solar
- Imports

Fossil ≈ 2100 MW

- Belledune – Coal
- Coleson Cove – Heavy Oil
- Millbank and St. Rose – #2 Oil
- Bayside – Gas



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Vision

- Demonstrate advanced reactor technologies at Point Lepreau between early to mid 2030s
- Fleet deployment in New Brunswick / Canada / International markets
- Centralized fleet support centre in NB
- Establish supply chain in NB and Canada

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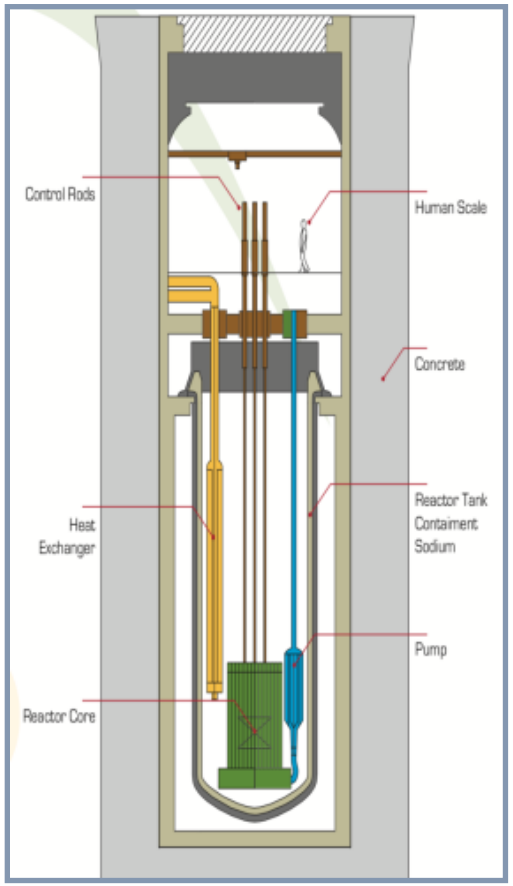

ARC-100
Sodium Cooled Fast Reactor

- 150 MWe non-pressurized pool reactor
- Inherent safety characteristics and passive safety features
- Based on 30-year operation at EBR-II
- 20 year fueling cycle and could recycle its used fuel
- Superior load following capability
- Ideally suited for electricity and Super heated steam for co-gen / hydrogen / synthetic fuel production
- Good neutron spectrum for isotope production
- Proposed deployment at Point Lepreau site expected around 2030
- Subsequent units in NB, potentially in western Canada and for export

ARC-100
Current Activities

- Pre-project phase:
  - Completed Phase I of CNSC VDR process, working through Phase II
  - Site evaluation activities progressing
- LTPS to be submitted June 30 2023
- LTPS application submission will officially start the project and environmental assessment

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ARC-100
Sustainability and Well-Being Assessment

- A Sustainability and Well-being Assessment (SWA) is being conducted for the potential development of one ARC commercial demonstration advanced small modular reactor at Point Lepreau
- Evaluates the potential positive and adverse effects on social, economic, and human health conditions associated with the lifecycle of the SMR
- Involves engagement and collaboration with local community members within a defined study area (predominantly Charlotte and Saint John Counties) and with Indigenous communities from across NB

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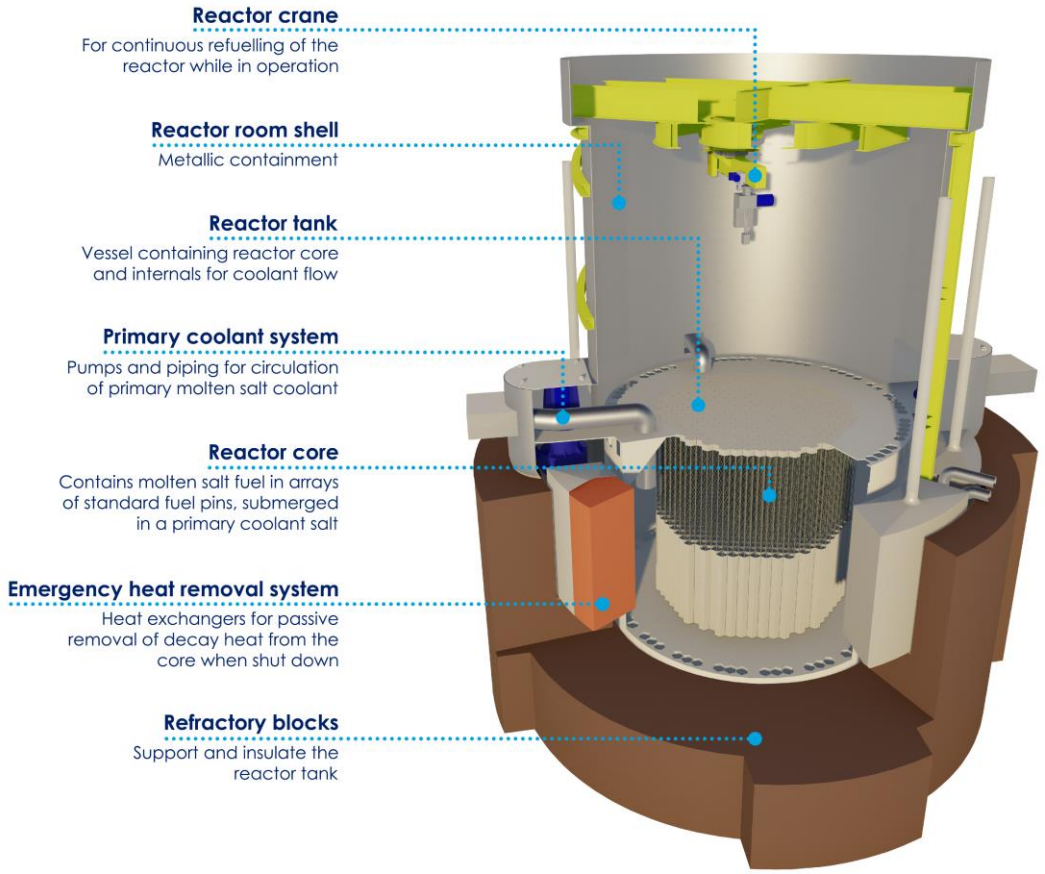
Moltex Energy SSR-W
Molten Salt Fast Reactor



- 300 MWe non-pressurized pool reactor
- Fuelled online
- Fueled by used CANDU fuel and can recycle its used fuel
- Inherent safety characteristics and passive safety features
- Benefits related to high level radioactive waste disposal
- Grid reserve storage system
- Super heated steam for co-gen / Hydrogen / synthetic fuel production
- Proposed deployment at Point Lepreau site expected in mid 2030’s
- Potential subsequent deployment in Ontario and for countries with used fuel stocks

Moltex SSR-W / WaTSS
Current Activities

- Conceptual design and research and development phase
- Completed Phase I of CNSC VDR process, working to move on to Phase II
- Will require a Federal Impact Assessment for fuel recycling

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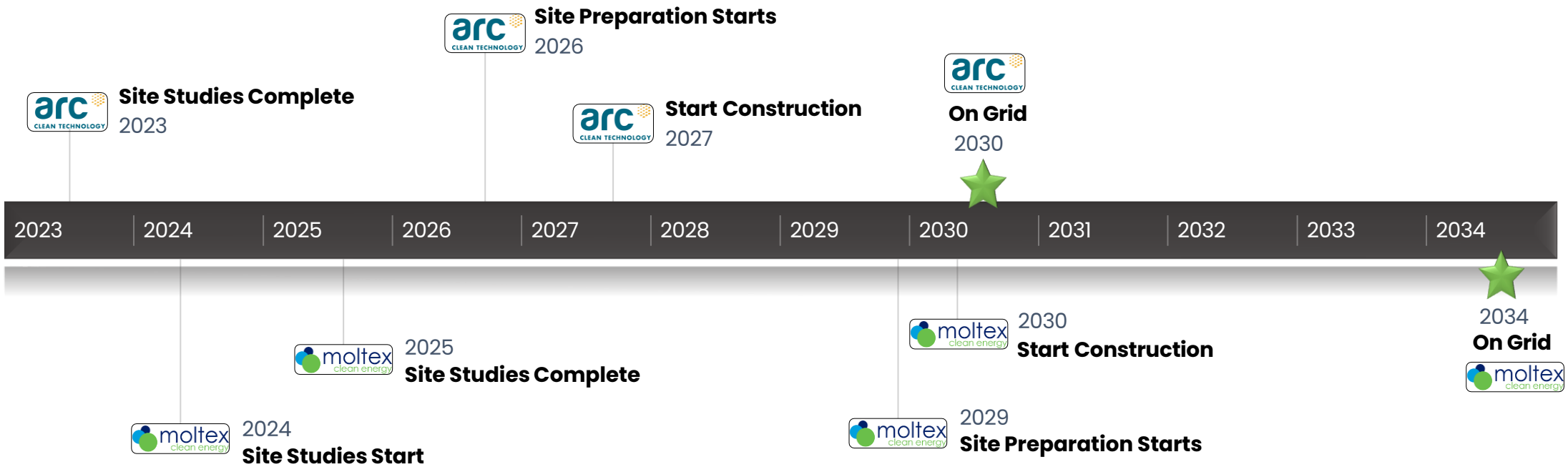
Current Timelines



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Supply Chain Sectors

- Manufacturing and Assembly
- Engineering and Technology Support
- Materials
- Labour
- Planning and Management
- Quality Assurance, Environmental and Safety
- Transportation
- Ongoing Technical and Fleet Support

SMALL MODULAR REACTORS
IN NEW BRUNSWICK

Small reactors.
Big opportunities.

PETITS RÉACTEURS MODULAIRES
AU NOUVEAU-BRUNSWICK

Petits réacteurs.
Grandes possibilités.