

# ARC/CME Webinar

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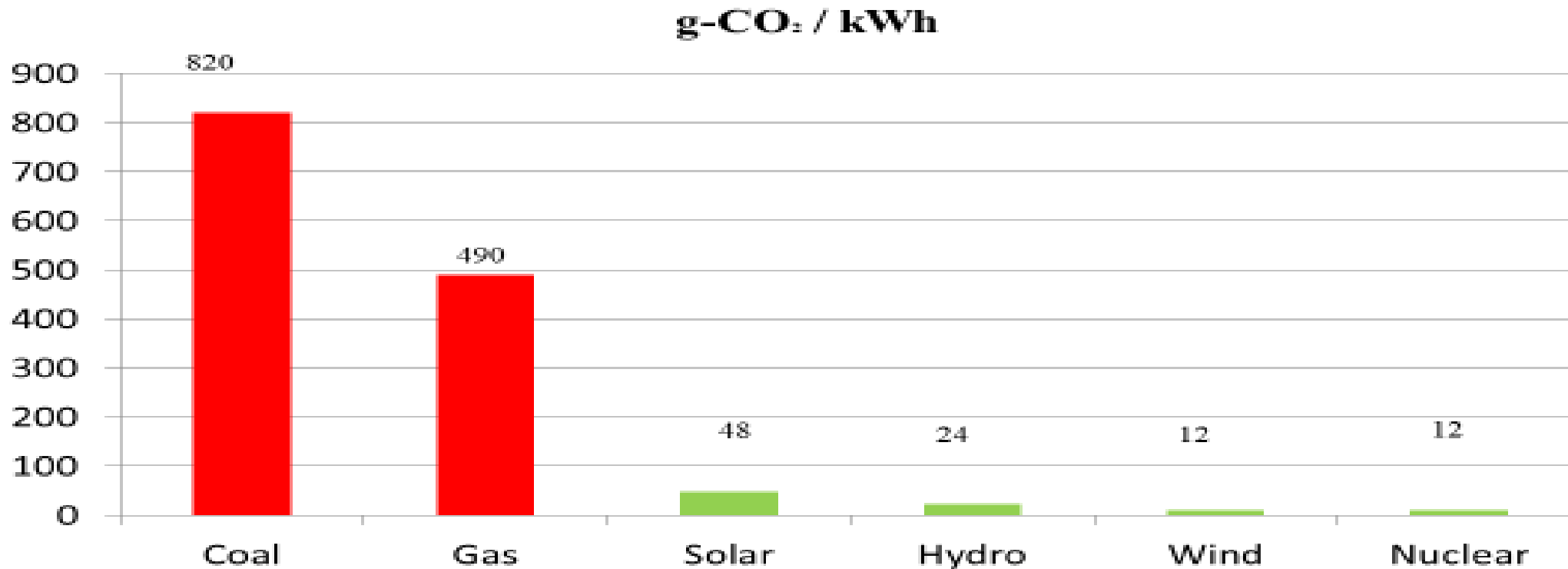
# Why Nuclear?

## Climate Change

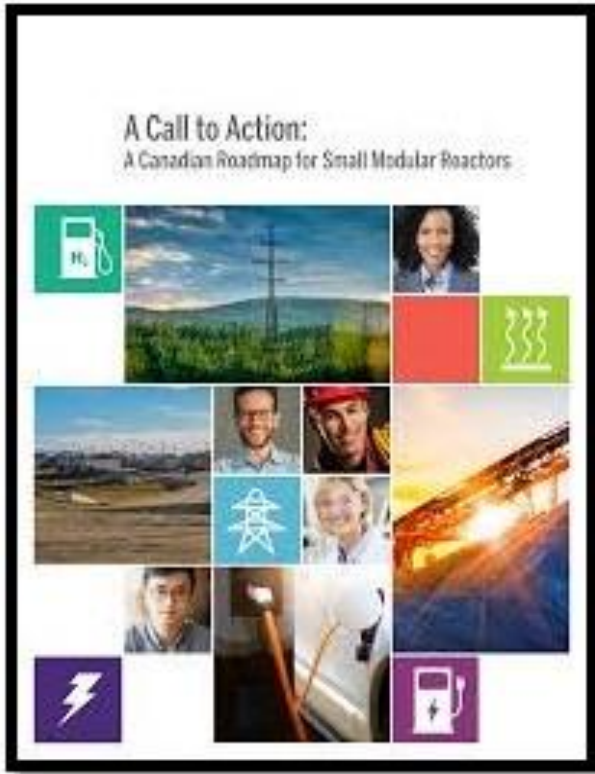
- Nuclear is **low** carbon emission - future regulation and fees on carbon
- Supports electrification of industries – vehicles
- Retirement of older stations
- Integrates with renewables
- Nuclear is available 24 hours per day
- Built for external hazards – weather resistant

# Nuclear Generation Landscape

CO<sub>2</sub> Equivalent Emissions View  
(United Nations 2014 Intergovernmental Panel on Climate Change IPCC)



IPCC April 2018; today's nuclear capacity would need to quadruple to meet world's climate goals.



# Collaboration

- SMR Roadmap
- New Brunswick financial commitment
- CEO SMR Forum & various Industry groups
- Inter Provincial MOU
- Supply chain Assessments
- SMR Action Plan
- Feasibility Study
- University Collaboration
- Interprovincial Nuclear Expertise
- NB Nuclear Cluster MOU



# SMR Pan-Canadian Approach for Canada

## Stream 1

- On-Grid “ready deployable” SMR by late 2020’s at Darlington

## Stream 2

- On-Grid Advanced SMRs being developed in **New Brunswick** that bring additional benefit for deployment in early to mid 2030.

## Stream 3

- VSMR for resource extraction and remote communities.



# Activities in New Brunswick

- **ARC and MOLTEX** have established offices in Saint John
  - Advance the designs through the CNSC Vendor Design Review Phases
  - Assess feasibility of establishing supply chains
- **UNB** - R & D in collaboration with CNL
- **Supply Chain Meetings** with First Nations and NB suppliers
- **Public and First Nations** engagement
- **Atlantic Clean Energy Alliance** formed
- **CNL/NB Power** MOU
- **Vendor** collaboration MOU



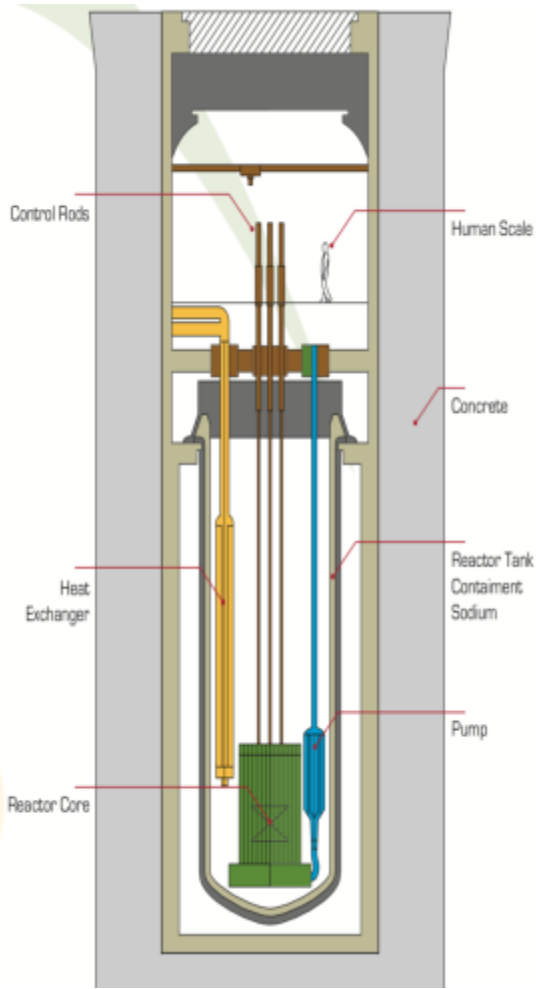
# Why ARC Advanced Nuclear?

- **Clean Energy** – necessary part of climate solution
- **Inherent safety** characteristics and passive safety
- **Simple** design/**low cost**/affordable energy
- Potential to **recycle it's own used fuel** thus less waste and less radiological toxicity
- Support **renewables** and energy storage such as **hydrogen**
- **High temperature** steam
- **Supply chain**, fleet export market, economic growth



# ARC 100

## Sodium cooled Fast Reactor



- 100 MWe
- Depressurized pool reactor
- Based on 30-year operation at EBR-II
- Inherent safety characteristics & Passive safety features – proven on EBR-II
- Can recycle its used fuel
- 20 year fueling cycle
- Superior load following
- Super heated steam





# Economic Impact 2020-2060

## Opportunity to grow a new sector

- To develop, manufacture, construct, operate FOAK units, then roll out of both fleets to Canada and internationally
- For New Brunswick:
  - Over 105,000 person-years of Direct and Indirect employment
  - Over \$11B on Provincial GDP (Direct and Indirect)
  - Over \$1.2B of Provincial tax revenues
- For all of Canada (including NB):
  - Over 537,000 person-years of Direct and Indirect employment
  - over \$59B on Federal GDP (Direct and Indirect)
  - Over \$5.2B of Federal tax revenue



# The Challenge of Advanced Designs

## Funding

- **Long Game** – investors need to know there is certainty from the government
- **Human Nature** of short term returns versus long term benefits
- **Fear** of Nuclear Power – Lack of communications and understanding

# Future Partnerships and Collaboration

## **ENERGY (integration)**

- Renewable energy
- Peaking Systems
- Hydrogen generation
- Oil production
- Electrification
- Remote Heating
- Cogeneration
- Desalinization

