



Canada's BWRX-300 Project Update
& General Introduction

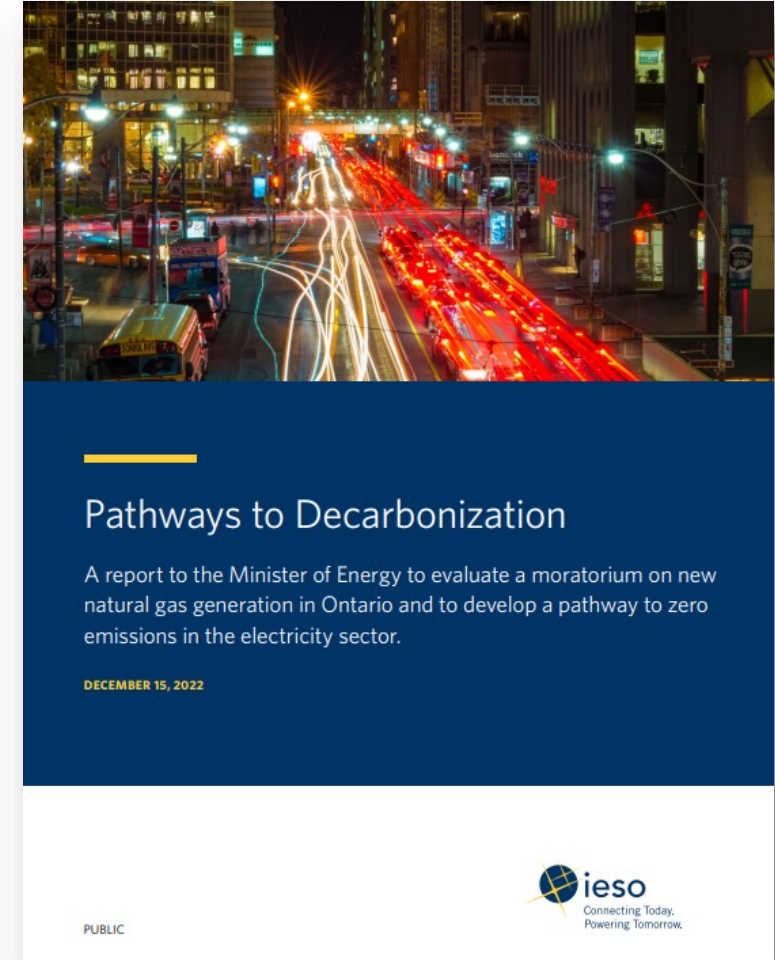


Aecon

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VP Nuclear Strategy, Business Development & Services

5th Annual Conference Fermi Energia
February 7, 2024

Canada's SMR Action Plan / Roadmap



Pathways to Decarbonization 2050

Commitment to Nuclear

Decarbonizing Ontario's Electricity System

Bridging the work of today with the needs of a decarbonized world will be challenging and complex. Ontario's electricity system is well positioned to make the transition, but will need to address a series of challenges in order to achieve decarbonization.

System Capacity Today
42,000 MW

Pathways to Decarbonization
2050 Scenario
88,000 MW

MANAGE COSTS
\$400 billion over 2.5 decades

PREPARE FOR SITING AND LAND USE
Siting requirements **14 times** the size of Toronto

FOCUS ON INDIGENOUS PARTNERSHIPS
Increased role beyond current **20%** participation rate in electricity projects

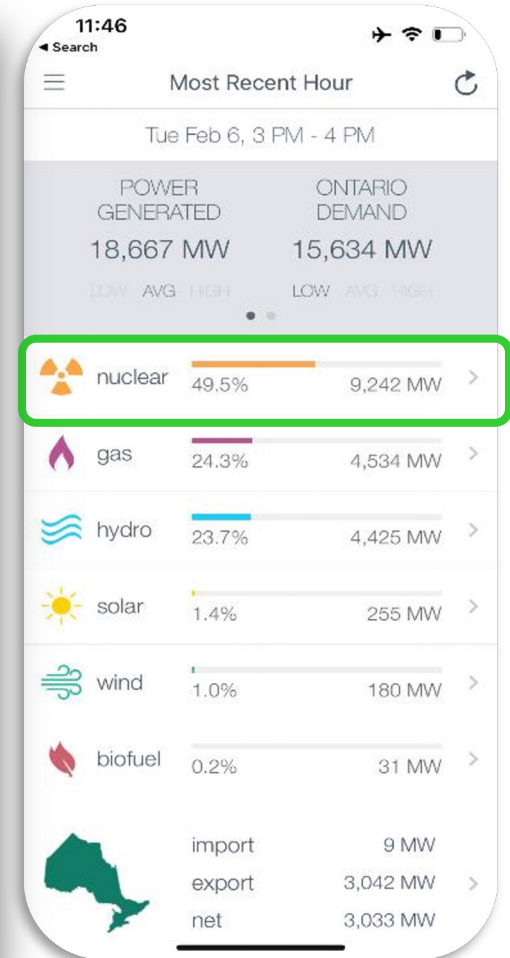
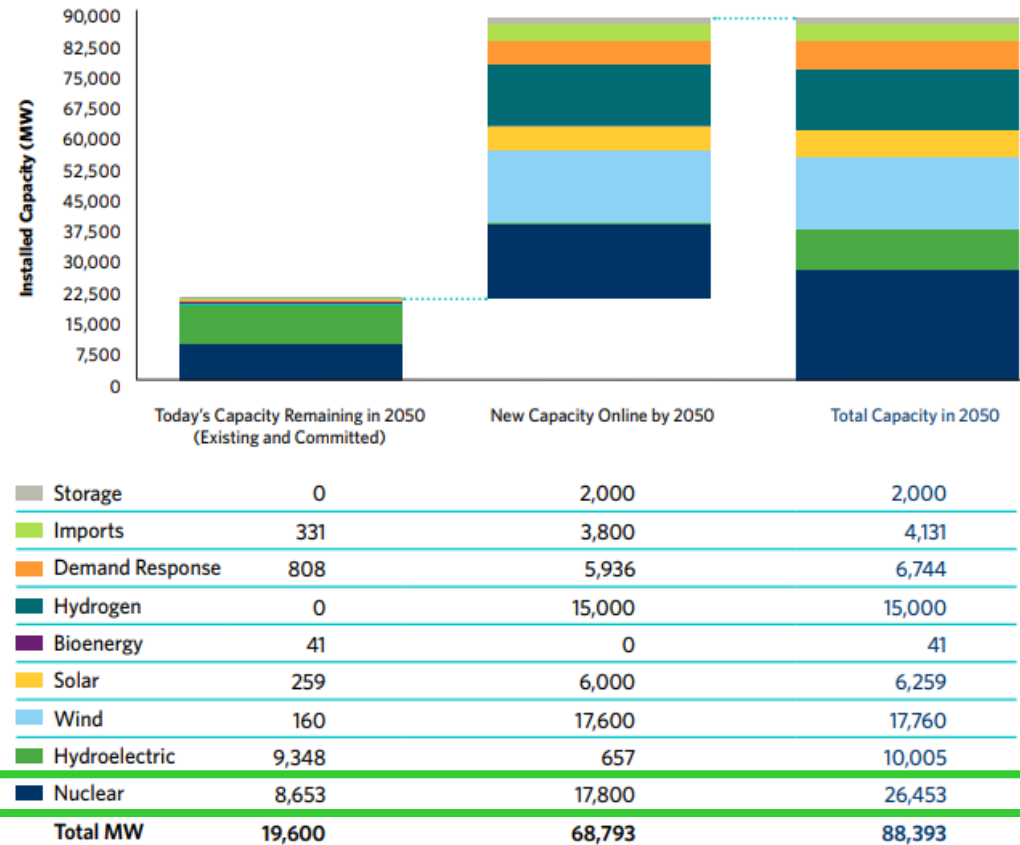
DEVELOP CAPITAL/LABOUR RESOURCES
A potential **six-fold increase** in existing workforce to build projects

FOCUS ON INNOVATION
New technologies to drive new supply such as **15,000 MW** of hydrogen capacity

INCREASE POLICY CERTAINTY
Near and long-term certainty to drive **private sector investment** in infrastructure and technology

STREAMLINE REGULATORY PROCESSES
Streamlined siting and regulatory processes keeping the **local perspective** at the core

Figure 12 | Pathway Scenario - Installed Capacity in 2050



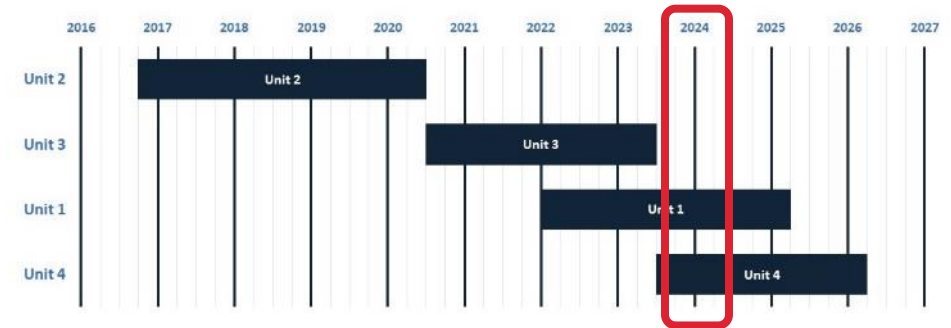
Ontario's \$26B Candu Refurbishment Commitment to Nuclear

Aecon

Aecon is Canada's largest Nuclear Constructor:

- ✓ Lead constructor for Ontario's Fleet Refurbishment
 - 4 Units at OPG's Darlington Refurbishment (RFR & TGR)
 - 6 Units at Bruce Power (FCFR & SGR)
- ✓ Proven capability to deliver complex, large scale nuclear projects, on-time and on budget through collaborative contracting models with project owners and partners
- ✓ Demonstrated success delivering continuous improvement on unit over unit nuclear programs (~30% Cost Reduction and Schedule Compression)
- ✓ Aecon announced as construction partner on OPG's Darlington SMR BWRX-300 new build project

ONTARIO
POWER
GENERATION



BrucePower
Innovation at work



Ontario's \$26B Candu Refurbishment Partnership Success

CANATOM
POWER GROUP


SHORELINE
POWER GROUP

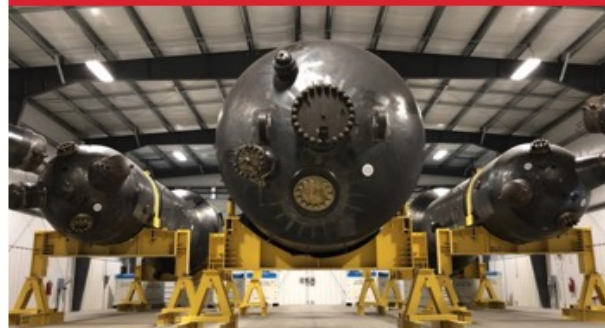
SGRT
STEAM GENERATOR
REPLACEMENT TEAM



Fuel Channel & Feeder Replacements
(RFR & FCFR)



Steam Generator Replacement (SGR)



Turbine Generator Refurbishment (TGR)



Hydroelectric
Aggregates
Site Preparation & Foundations
Tunneling
Roads & Asphalt

AECOM Civil



Nuclear Management Systems
Nuclear Quality Assurance Program
Fabrications and Modular Systems
New Build, Refurbishment, Maintenance
Decommissioning Expertise & Waste Management

AECOM Nuclear



AECOM Utilities



Power Distribution
Fiber Optic
Water Distribution & Sewer Collection Systems
Gas Pipeline Systems
Telecommunication Infrastructure

AECOM Industrial



Cogeneration Energy
Renewable Energy
Natural Gas Distribution Systems
Oil and Gas
Water Treatment Systems
Shop & Field Fabrication & Module Solutions

Leverage a 'One-Aecon' approach to enable successful
BWRX-300 FOAK and NOAK deployment

UTILITIES

CIVIL
Civil West
Civil East

NUCLEAR

INDUSTRIAL

SMR Darlington New Nuclear Project (DNNP)

Partnership to deliver first grid-scale Small Modular Reactor in North America.

Aecon, GE Hitachi and Atkins Realis entered into a long-term alliance agreement with Ontario Power Generation (OPG) under an **Integrated Project Delivery (IPD)** model whereby:



OPG will serve as license holder and maintain overall project responsibility, including operator training, commissioning, Indigenous engagement, stakeholder outreach and oversight



HITACHI

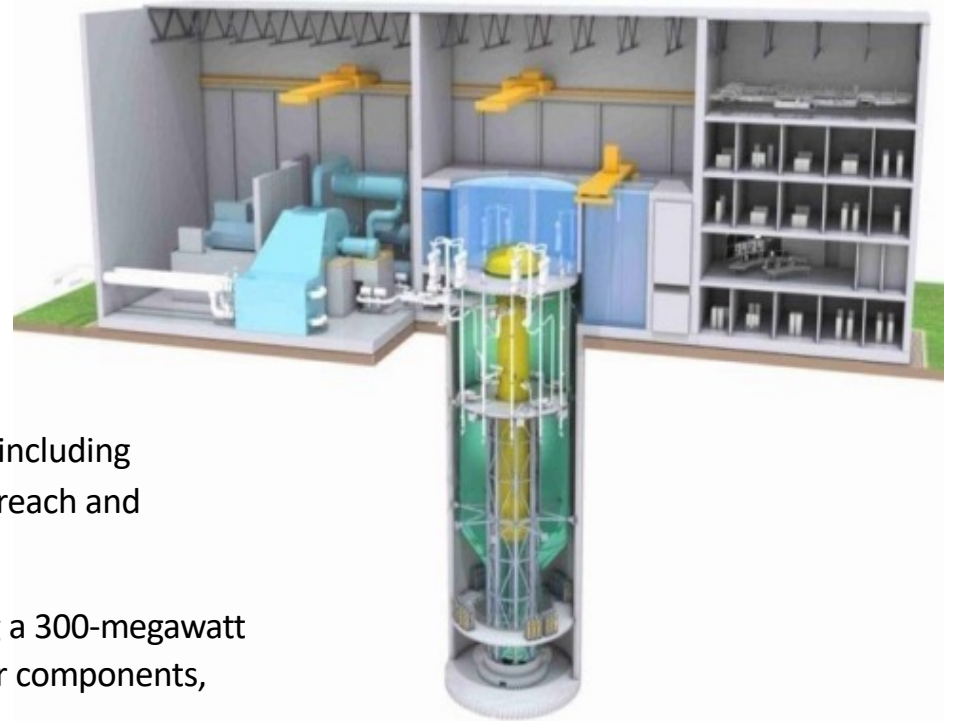
GE-Hitachi will be the technology developer and design authority delivering a 300-megawatt BWRX-300 reactor, and will be responsible for design, procurement of major components, engineering, and support.

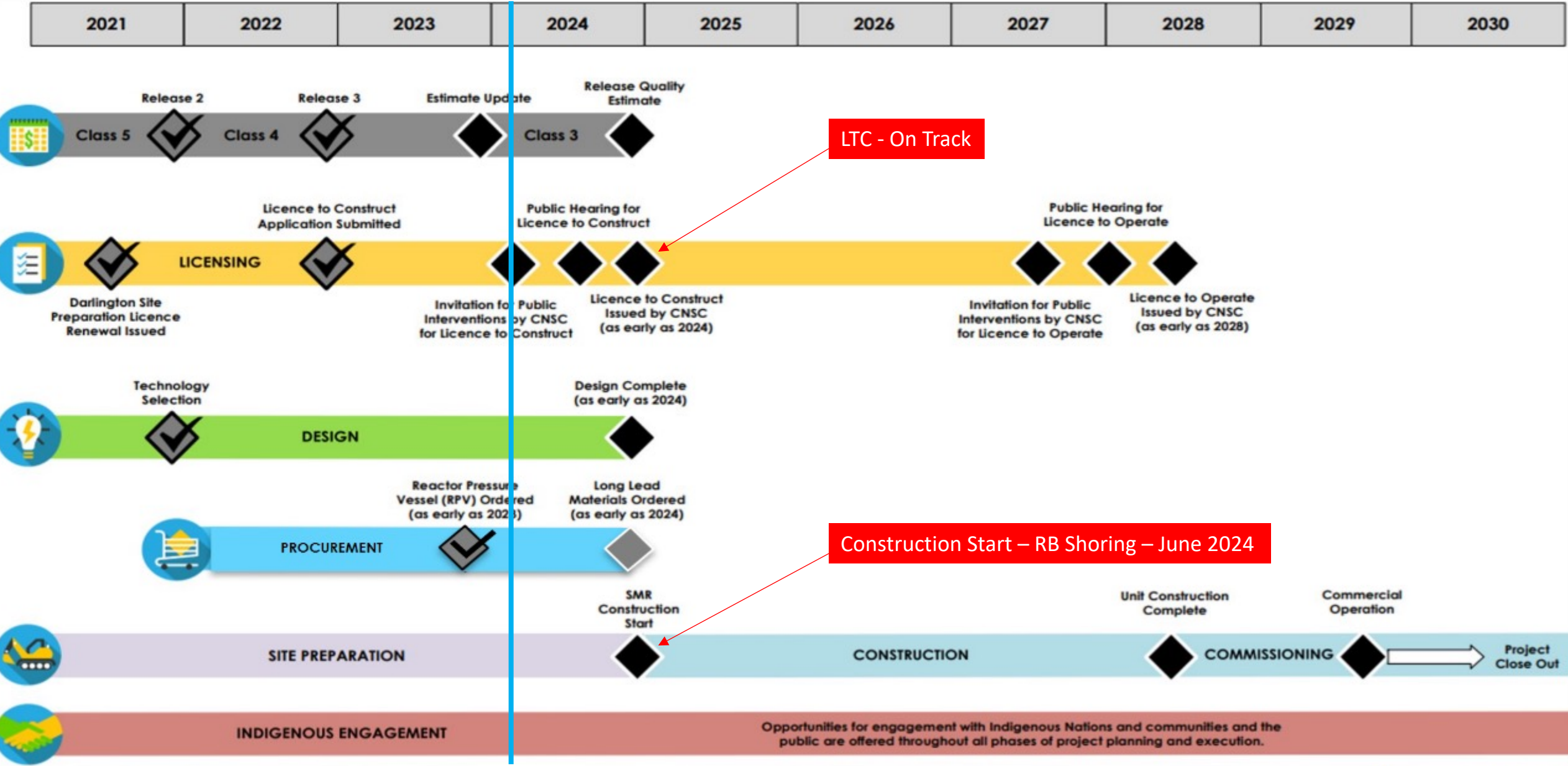


Atkins Realis will serve as architect engineer, providing design, engineering, and procurement support

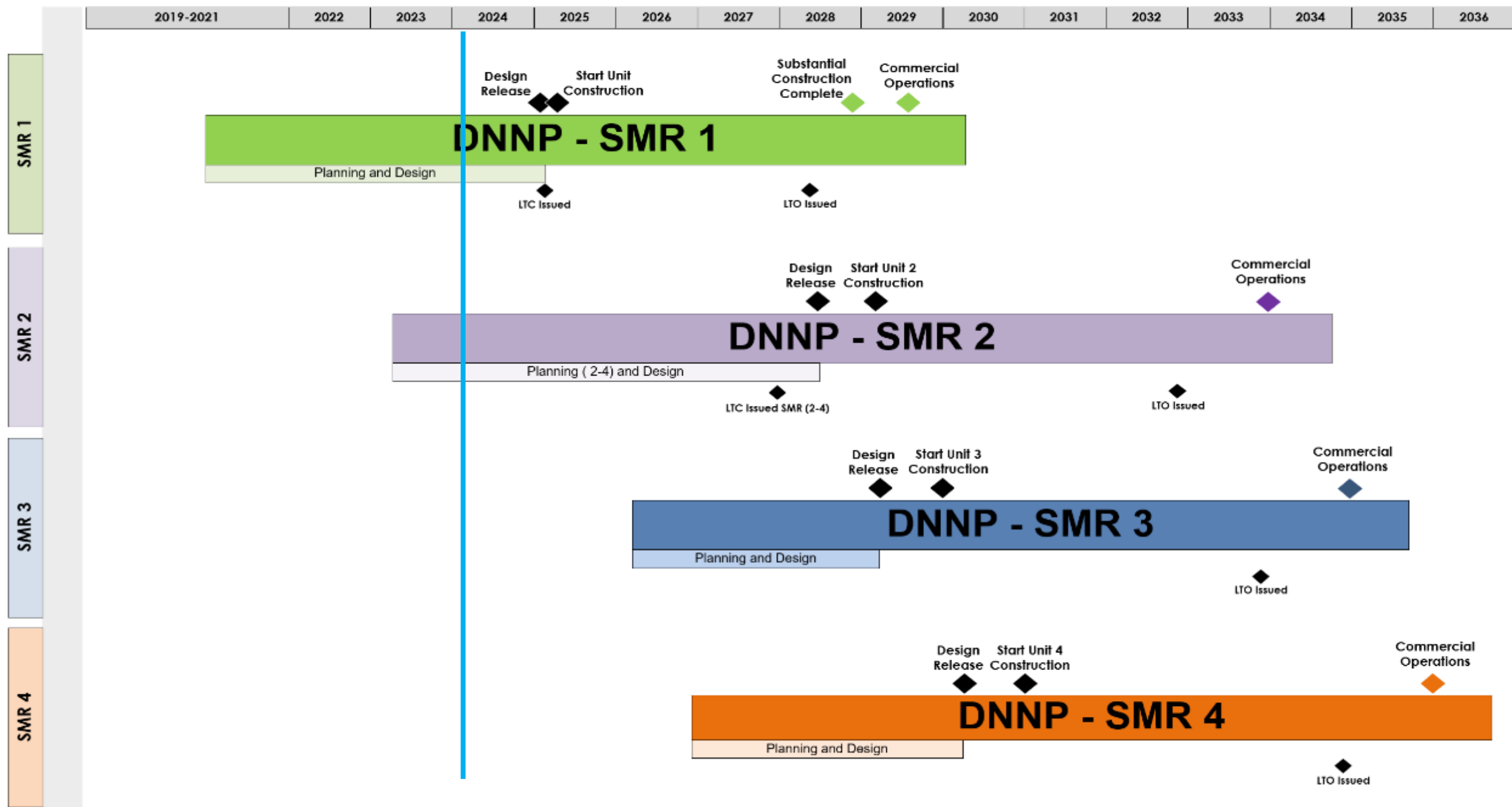


Aecon will lead all construction services and fabrication, including project management, procurement, modular fabrication, construction planning, and execution





Darlington New Nuclear Project Timeline – SMR 1-4 | Illustrative Roadmap



DARLINGTON NEW NUCLEAR PROJECT



*your
2023
highlights*

EARLY WORKS SCOPE COMPLETED

Site grading,
construction power
and storm water
management
systems completed
on time and on
budget

Attracted and hired
top talent, and
delivered BWR-300
training to
165 EMPLOYEES

The province of Ontario
announced support for
**SMRs 2, 3
and 4**

Interacted with over
10,000
community members
via kiosks, site tours, info
sessions, festivals and more

508

IR responses accepted
for Licence to
Construct

Introduced our IPD
model and came
together as the
SMR-X TEAM

Projects approved at
the gate: **24**
Schedules created: **28**
Control accounts
forecasted: **237**

**\$236
million**
spent to progress our
project



PHASE 1

Climate
change
assessment
completed

Class 4 Check
Estimate
completed ✓

400+

students engaged in
energy literacy talks with a
focus on SMRs

**Moved
600,000
cubic metres
of soil**

Major
milestones
met: **31**

*Indigenous Engagement
and Consultation 101*

800+
team members participated

Implemented an
innovative DPSC
approach to replace
steel bricks

Added nearly 10 per
cent additional
projected generation:
327 mW



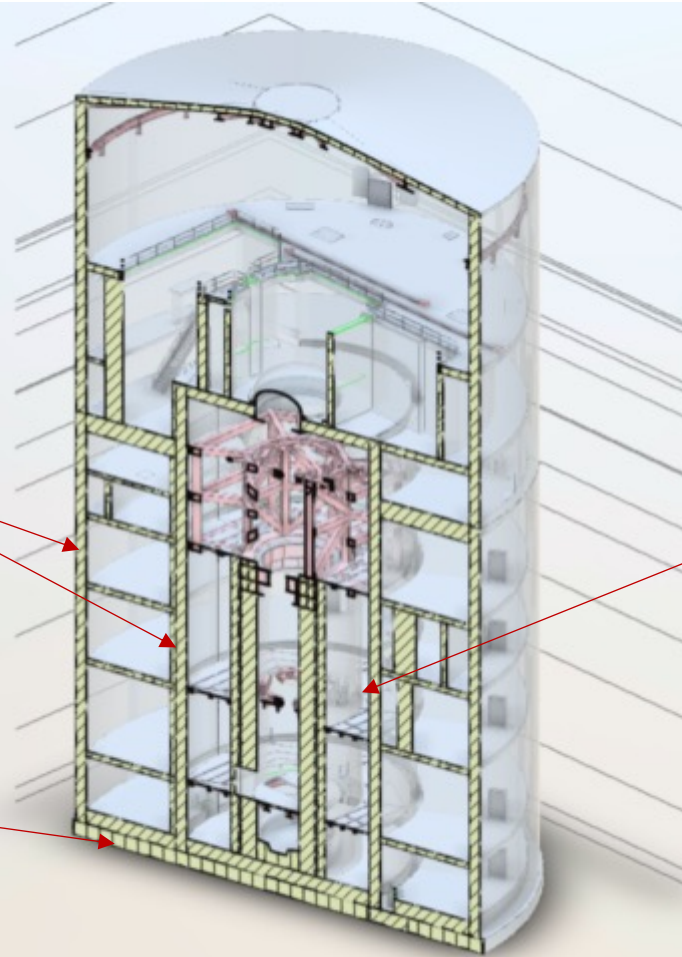
Baseline 1
design milestone
delivered

Design Phase Manufacturing Development

Reactor Building Construction

Curved Wall Elements

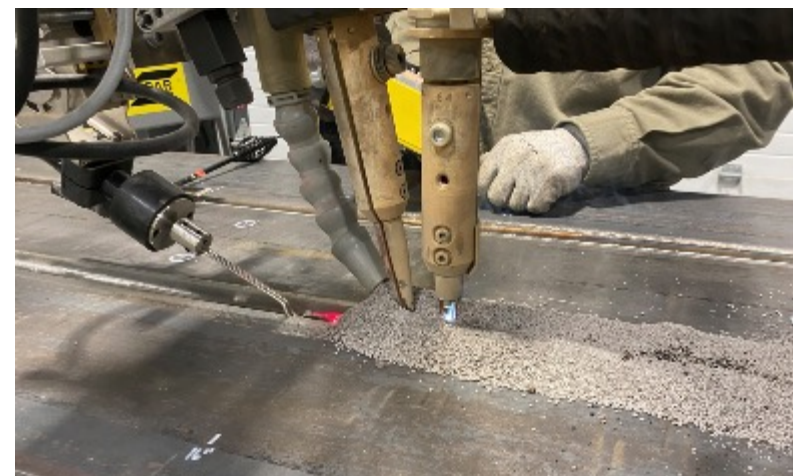
Thick Floor Sections



High strength containment

Design Guidance Manufacturability Through R&D

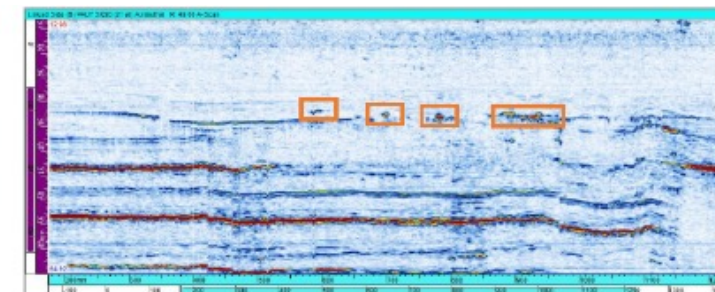
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Weld Process Development

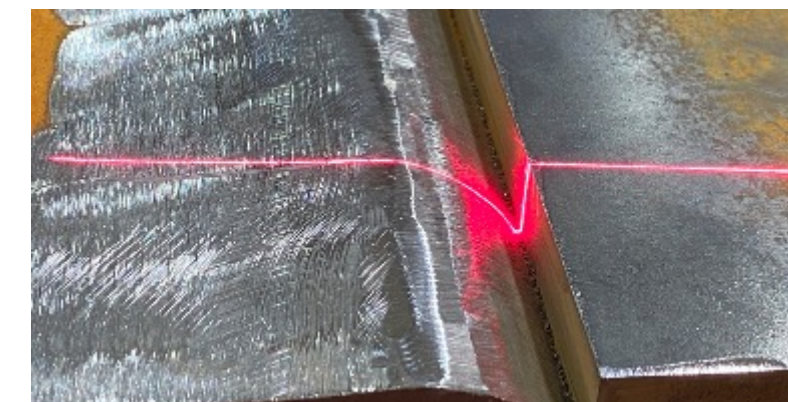


Robotic Assessment



An important portion of the weld joint is visually unacceptable (underfill), which makes all sort of different signal coming from the underfill which were not evaluated.

Phased Array Ultrasonic Testing Development



Weld Joint Laser Profile Measurement



Weld Deposit Optimization



Stud Welding Trials

TOGETHER WE ARE SAFER

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Design Guidance Manufacturability Through R&D



DPSC Scale - Model Wall Fabrication

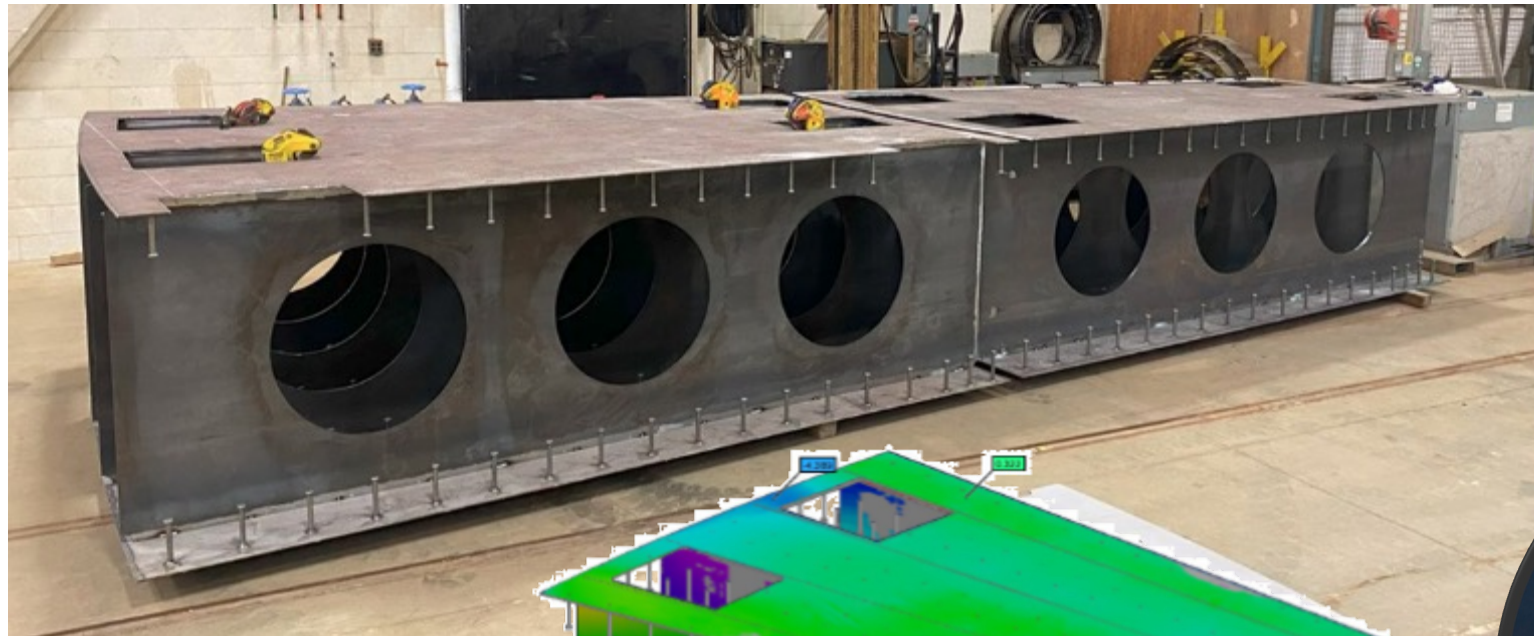


Basemat Scale Fabrication



Fabrication Tooling Development

Design Guidance for Manufacturability Through R&D

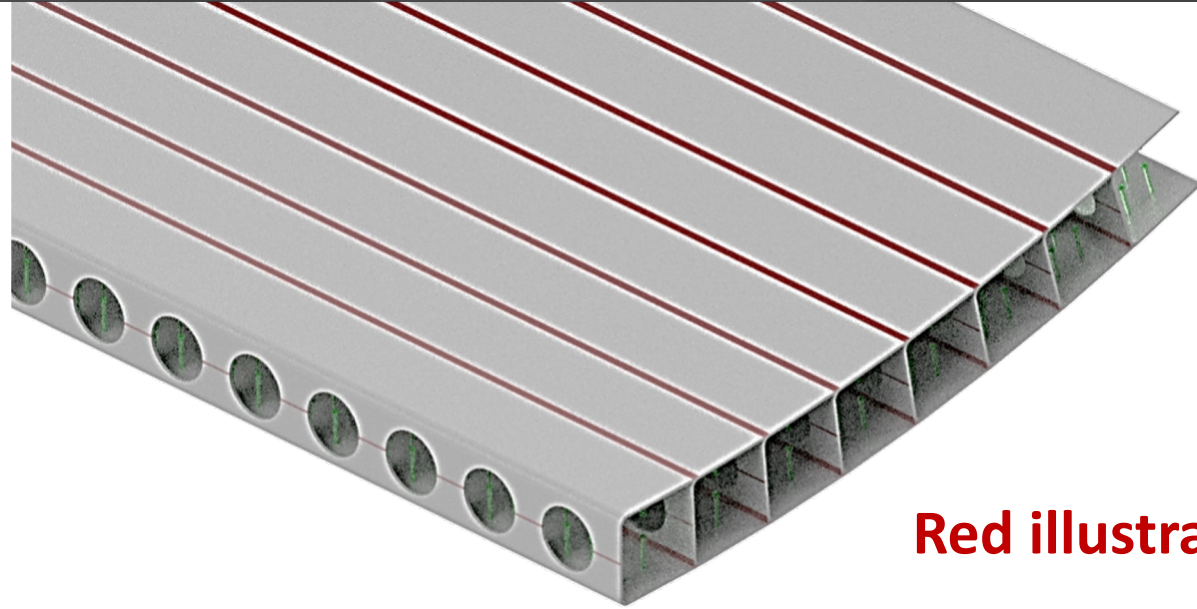
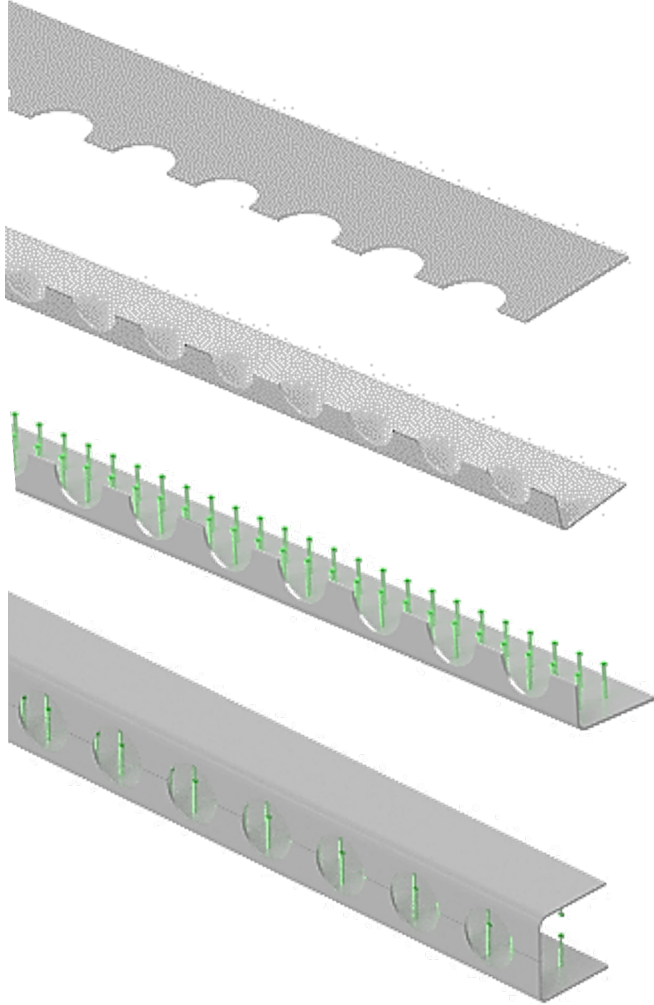


**Metrology
Assessment**

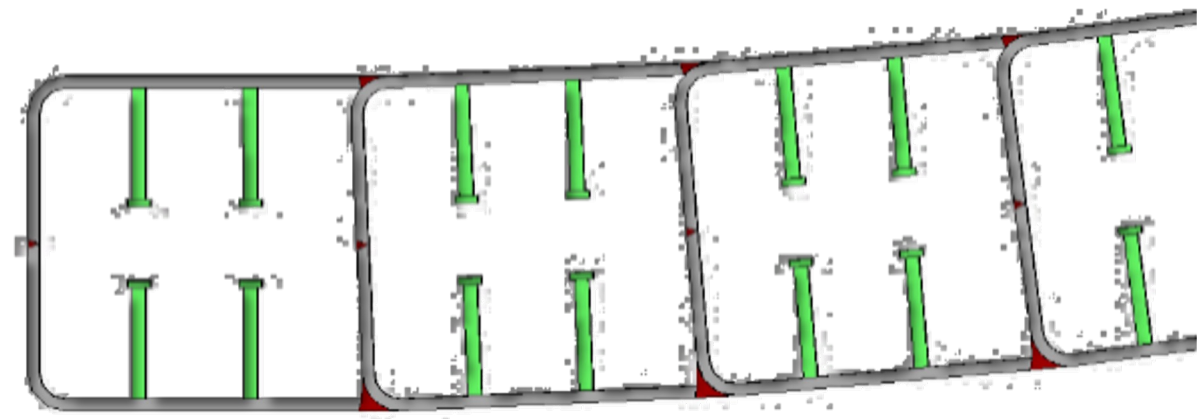


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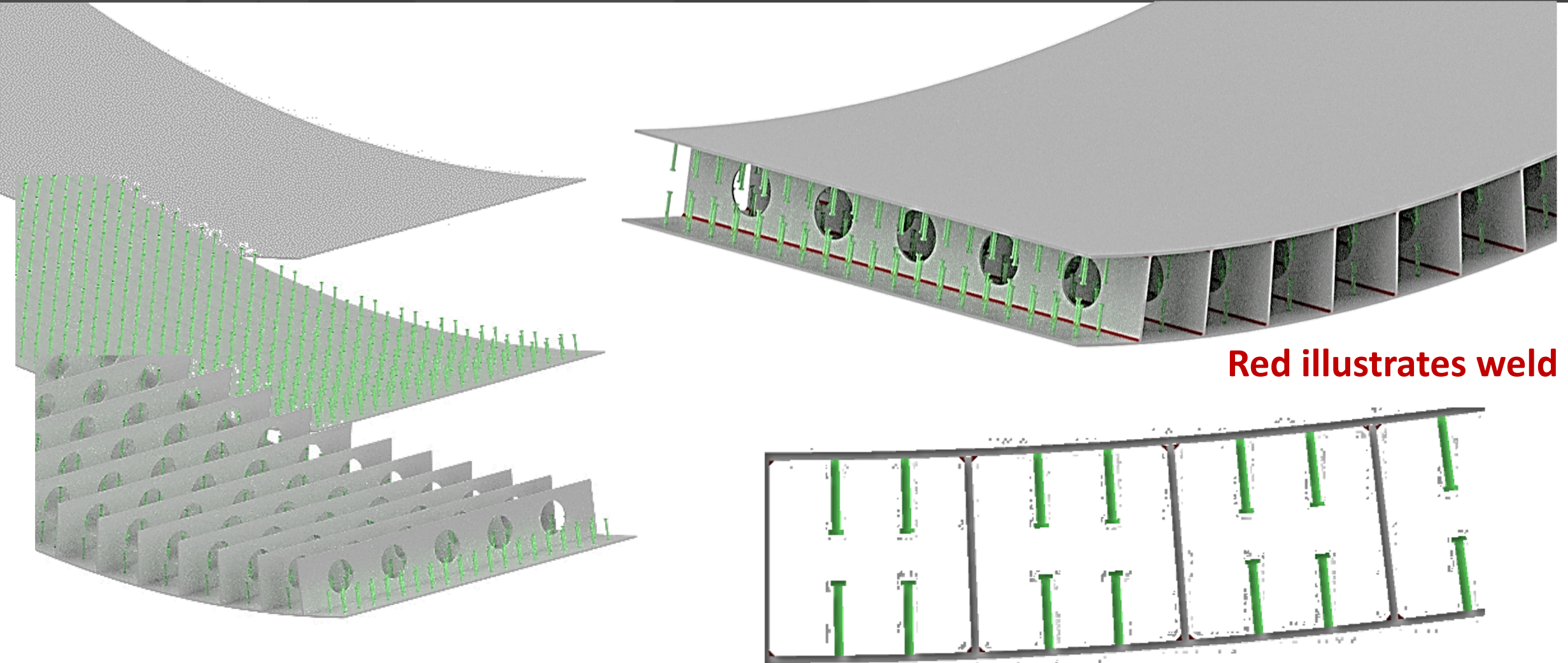
Steel Bricks Fabrication



Red illustrates weld

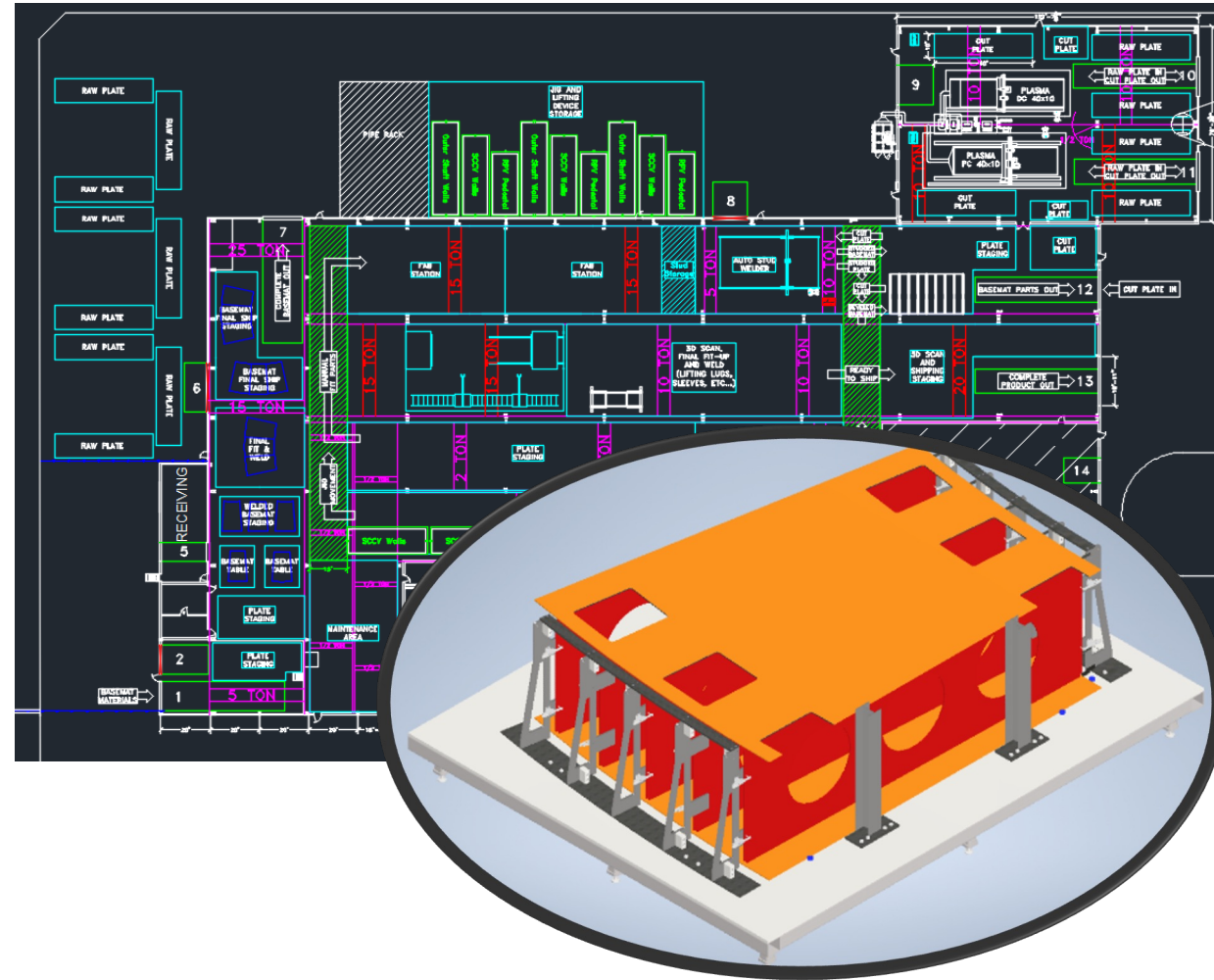


Diaphragm Plate Steel Composite (DPSC) Fabrication



Modular & Transferrable Manufacturing Model

- Fabrication process and machinery are easily able to be scaled up/down as needed and moved to new locations
- DPSC modules can be manufactured in a varieties of factory spaces/layouts
- Production system is modular and reconfigurable
- Custom tooling, jigs, fixtures and welding systems ensure repeatability with new crews in different locations



Our Role & Vision

Canada's premier Nuclear Fabrication & Construction Partner we are committed to:

- Deliver the FOAK Unit 1 at Darlington within our Integrated Project Delivery (IPD) model
- Continue to lead with manufacturability, supply chain, constructability and drive value into the design and pre-execution planning supporting project success
- Take a Program View vs Project Focus (4 Unit Commitment + Deployment)

Supporting Deployment of BWRX-300

- Foster Collaborative Contracting & Delivery Models with Owners and Partners
- Support Project Set-Up, Planning & Development – bring value from our FOAK experience
- Ensure Lessons Learned / Optimizations are 'hard coded' into Standard Plant / Site Specific, activities resulting in a repeatable, de-risked approach with focus on localization
- Focus on Partnerships and seek teaming arrangements with complimentary capabilities, capacities with aligned values and commitment to the Project / Program