GLOBAL FIRST POWER

# Virtual Open House

## Agenda & speakers

**About GFP & the project**
Jos Diening
President and CEO

**About the project**
Kaela Esseghaier
Project Director

**Licensing**
Jordan Black
Licensing Director

**Project update**
Patrick Greer
Manager - Design Engineering

GLOBAL FIRST POWER

## Acknowledgement and commitment to Indigenous communities


## Global First Power: Who we are

- Canadian company
- Jointly owned by Ontario Power Generation and Ultra Safe Nuclear Corporation
- Small but dedicated team
- Based in Ontario

USNC
ULTRA•SAFE•NUCLEAR

ONTARIO POWER GENERATION

GLOBAL FIRST POWER

GLOBAL FIRST POWER


## What we're doing

- Building Canada's first micro-modular reactor (MMR)
- Designed by USNC
- New, innovative technology
- Alternative to fossil-fuel generation

## Why build an MMR?

MMRs can play a role in addressing climate change and energy access issues by:

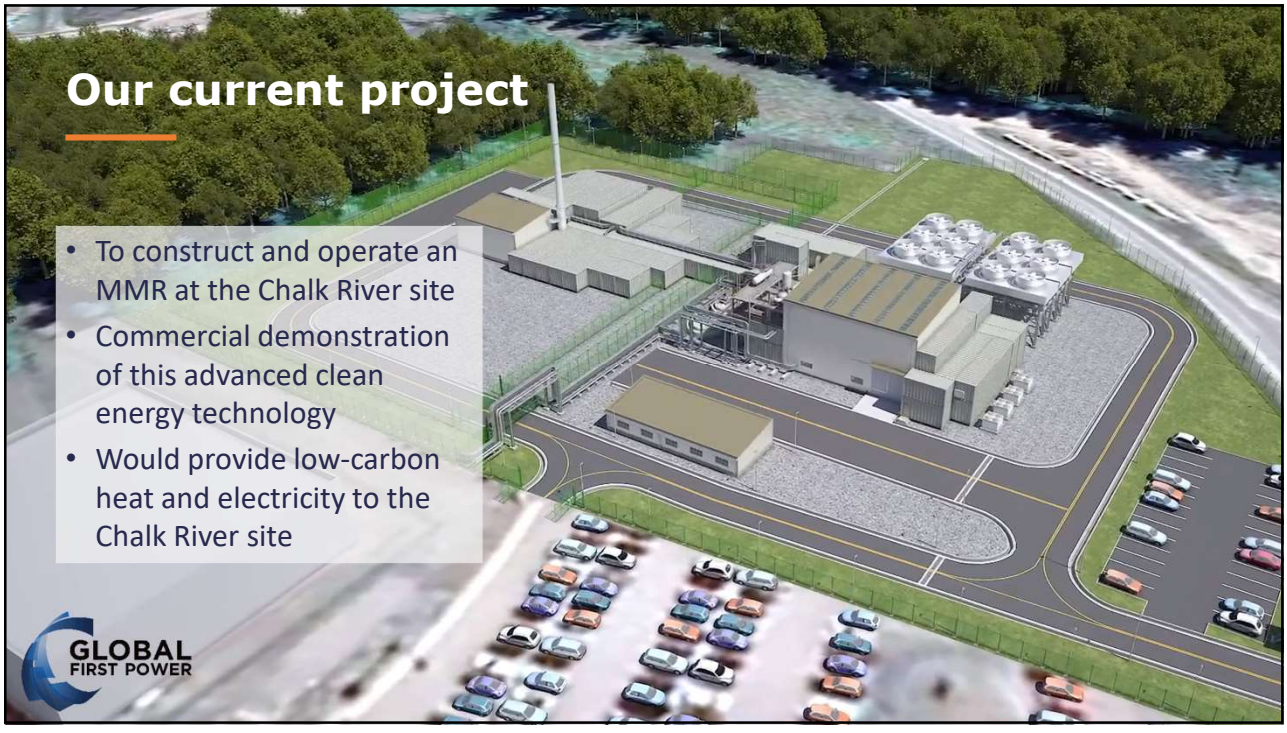
- Helping to decarbonize remote industrial activities and energy-intensive operations like data centres
- Providing an alternative to diesel for remote communities

***1 MMR could replace 1.2 B litres of diesel***

GLOBAL FIRST POWER

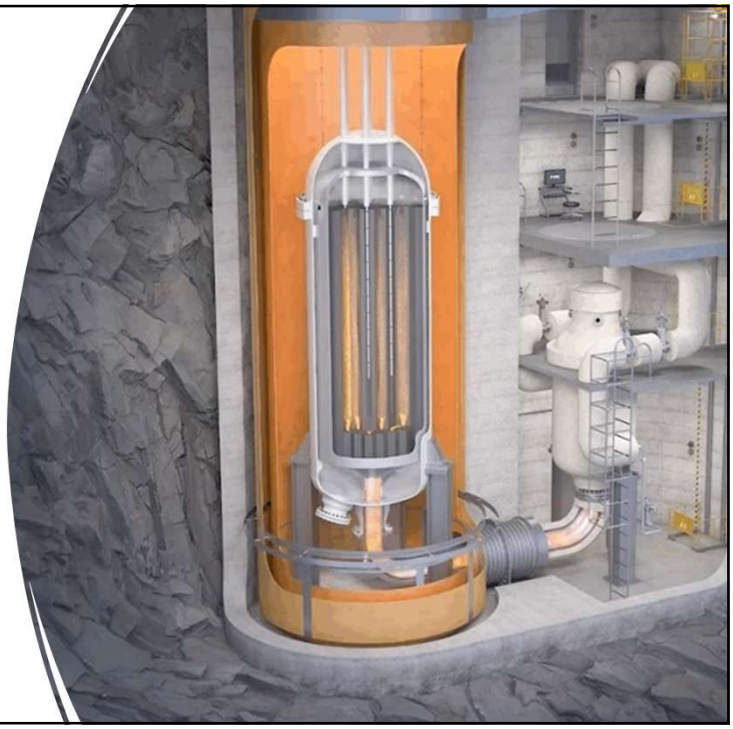
# Our current project

GLOBAL FIRST POWER

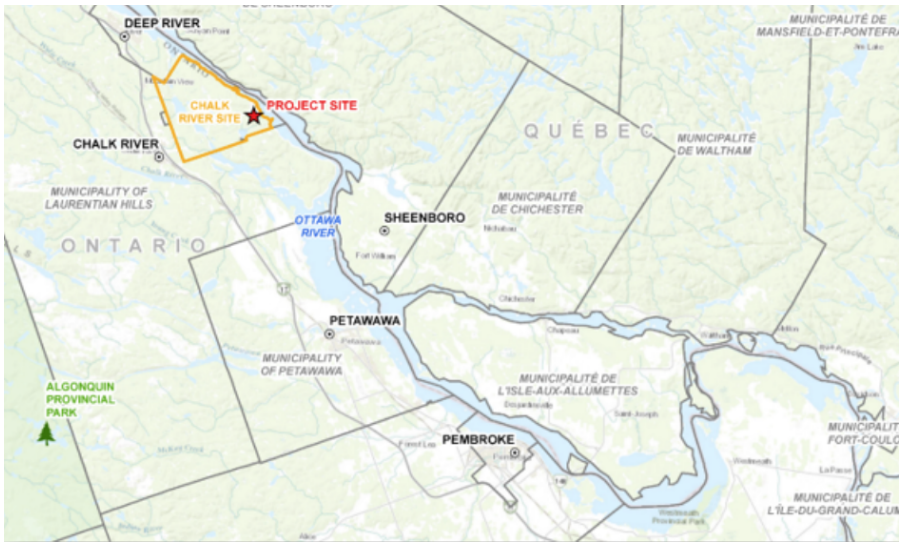


## About the MMR

- Smaller, more advanced version of traditional nuclear reactors
- Advanced, passive safety systems
- Minimal operations and maintenance requirements
- Scalable and modular – can suit different site/energy needs
- Based on proven technology in use for several decades in countries like the U.S., Germany, Japan and China



## Project location

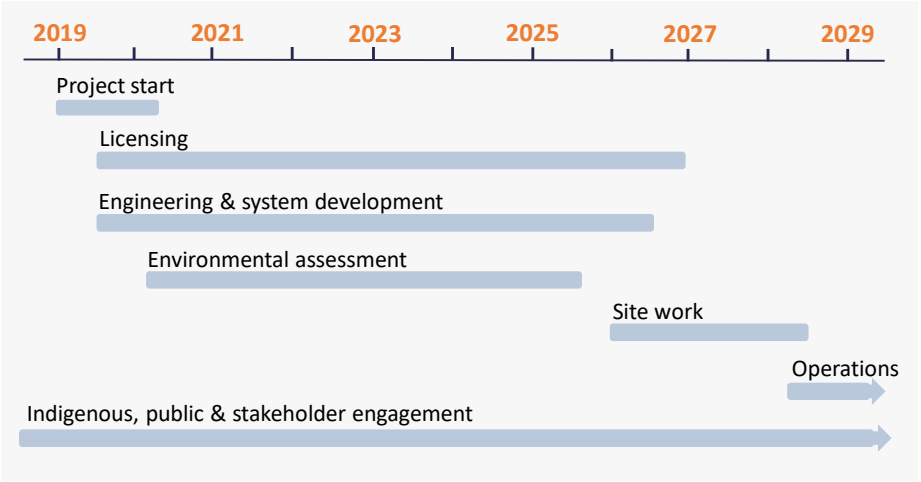



GLOBAL FIRST POWER

# Project location

*The project site consists primarily of an employee parking which is bordered by an adjacent wooded area*


# Target project timeline




GLOBAL
FIRST POWER

# Project update

## MMR design updates – overview

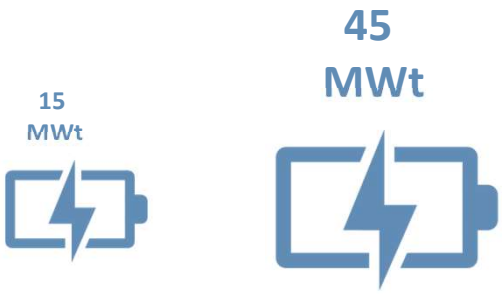
*The inherent safety features are maintained and supported by these updates to the design*

| | Original design | Updated design |
|---|---|---|
| **Output** | 15MW thermal<br>5MW electrical | 45MW thermal<br>Up to 15MW electrical |
| **Service life** | 20 years | Up to 40 years |
| **Refueling** | No | Yes |
| **Fuel assembly** | Indirect cooling | Direct cooling |
| **On-site fuel storage** | No | Short-term |
| **Core shielding** | Yes | Yes<br>Increased capability |

## MMR design updates – uprating

*Uprating from 15 MWt to 45 MWt*

- Meets broader market demand for greater electrical and heat output
- Improved economics
- Can be designed with operating capacity flexibility, depending on application requirements




GLOBAL FIRST POWER

## MMR design updates – lifespan

*Operating life of the facility has increased from 20 to 40 years*

Aligns with industry practice

Supports economics

Enabled by introducing fuel handling equipment and the ability to refuel

GLOBAL FIRST POWER

# MMR design updates – defueling/refueling

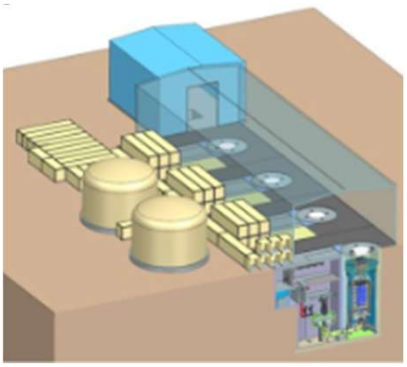
*The reactor will require periodic refueling*

**Refueling requires temporary on-site storage of:**

- New, incoming fuel
- Used fuel

**Storage plan**

- Is fully secure and in line with industry practice (fuel is transferred from the reactor's core barrel to a fueling machine to dry storage casks)
- Fuel is housed within reactor services building and maintenance enclosure
- Continuing to develop a longer-term storage plan with industry partners to integrate with existing storage facilities



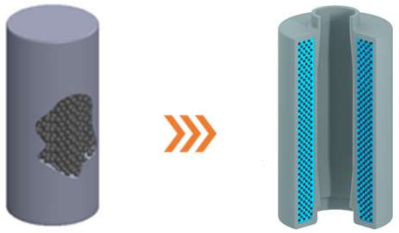
GLOBAL FIRST POWER

# MMR design updates – fuel

*Changing the fuel design and how the fuel is cooled enables the uprating without significantly changing the design or size of the reactor core*

The changes result in:

- A reduction of thermal stresses in the fuel at a higher power density
- Better transfer of heat
- Higher power from the fuel with a similar volume
- Lower fuel temperature to achieve the same thermal operating temperatures



**Solid fuel pellet**

**Annular fuel pellet**

GLOBAL FIRST POWER

# Environmental Assessment and Licensing

## Licensing – overview

***Regulated by:***
***Canadian Nuclear Safety Commission (CNSC)***

***Our project: Class I facility***

**5 licences:**
- Site preparation
- Construction
- Operating
- Decommissioning
- Abandonment

**Environmental assessment:** Reviews entire lifecycle of the project

**Stakeholder engagement:** Required throughout project lifecycle; critical for project success

# Licensing – current status

**2019** ✓

Preliminary application for a Licence to Prepare Site (LTPS) submitted to CNSC

Environmental assessment commenced

**2021** ✓

Portions of Management System submitted to CNSC (includes processes, procedures and controls)

**June, 2023** ✓

Licence to Prepare Site application – Part 1 submitted to CNSC (available on GFP's website for public review)

GLOBAL FIRST POWER

# EA underway

- The project is subject to an EA, in accordance with the *Canadian Environmental Assessment Act (CEAA 2012)*
- It must demonstrate the project is not likely to cause significant adverse environmental effects, considering available mitigation measures

***GFP has been conducting studies and preparing a draft Environmental Impact Statement (EIS) since 2021.***

***New EA information will be available in 2024.***

# Licensing and EA – next steps

## 2024, Spring

Complete Licence to Prepare Site application submitted to CNSC

Environmental Impact Statement (EIS) submitted to CNSC

## 2024, ongoing until completion of process

CNSC application review process, including:

- Technical review
- Public consultation
- Public comments on draft EIS
- GFP revisions of draft EIS
- CNSC final decision on the Licence to Prepare Site application
- Public comment

GLOBAL FIRST POWER

***Public consultation and opportunities to comment occur at multiple stages throughout the CNSC review process. Details will be posted to www.cnsc-ccsn.gc.ca***

# Thank you

## Your feedback is important

To share your feedback virtually, scan the QR code or visit gfpcleanenergy.com and click "Share comments."