



**NUSCALE**<sup>™</sup>  
Power for all humankind

# NuScale Power Technology Overview

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# Acknowledgement and Disclaimer

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# NuScale Power by the Numbers

## 1<sup>st</sup>

And Only SMR to Receive  
NRC Standard Design Approval

## 1<sup>st</sup>

And Only Publicly Traded SMR  
Technology Company

## \$341m

Net proceeds after merger with  
Spring Valley to bolster and  
accelerate the commercialization

## \$1.4bn

Cumulative Capital  
Invested to Date

## 15 Years

R&D and Testing  
*Founded in 2007*

## 500+

Employees with Unparalleled  
Nuclear Experience  
*37 PhDs*  
*167 Master in Engineering / Science*  
*Degrees*

## 644

Patents  
*453 Granted, 191 Pending*  
*Extensive Trade Secrets*

## 9

Strategic Investors Supporting  
Global Customer Adoption  
*Established Supply Chain Network*  
*with Continued DOE Support*

### Existing Investors

**FLUOR**

 **GS Energy**

**JGC**

**DOOSAN**

Sargent & Lundy

**S**  
ooo

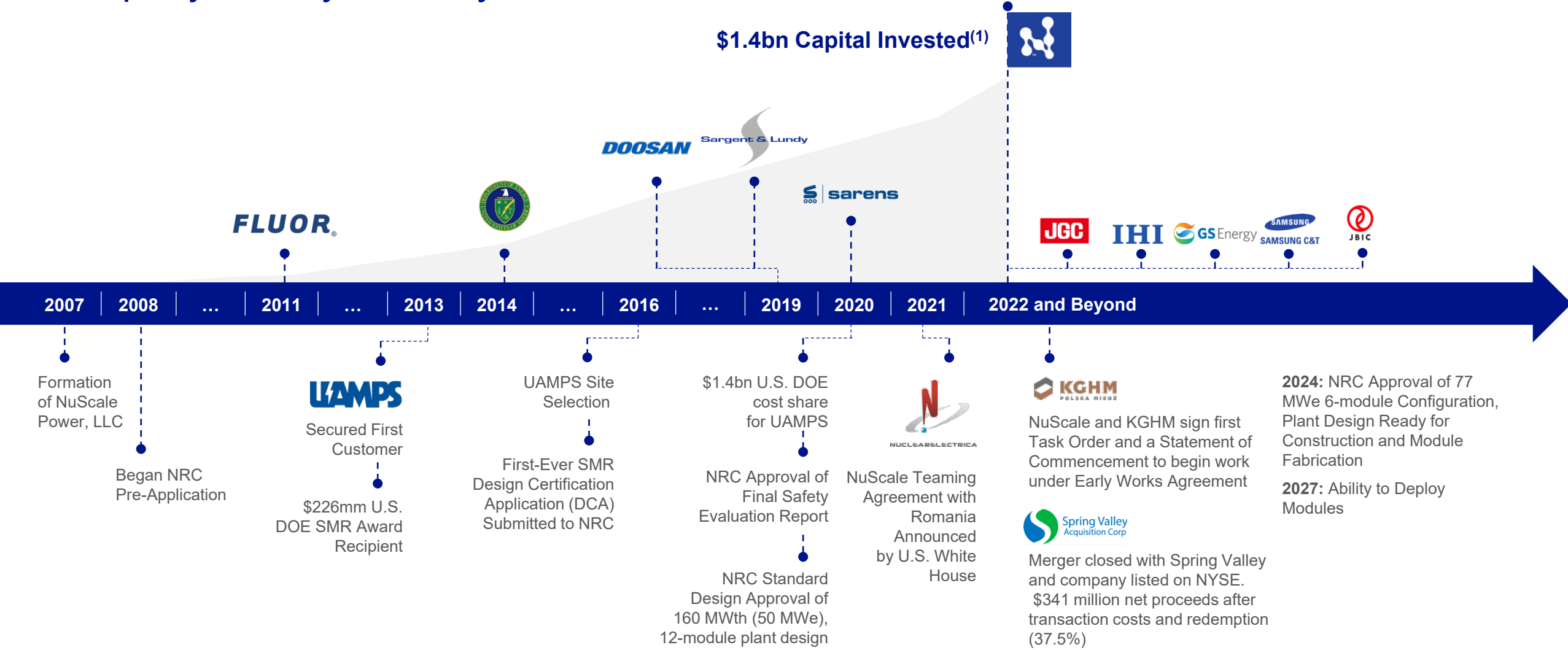
**sarens**

**IHI**

**SAMSUNG**  
SAMSUNG C&T

**JBIC**

# Company History and Key Milestones



Grey shaded area represents actual capital spend by NuScale over time, including both from private investor capital raised and funds received from the DOE cost-sharing program

Note: Logos represent first investment in NuScale.  
 1. Represents cumulative capital invested through December 31, 2021. Includes funding received from the DOE cost-sharing program. Excludes any capital raised as part of a de-spac transaction.

## First SMR to Undergo Licensing in the U.S.

- Design Certification Application (DCA) completed in December 2016.
- Docketed and review commenced by U.S. Nuclear Regulatory Commission (NRC) in March 2017.
- NuScale received standard design approval in September 2020.
- Final Rule Publication Date: August 2022



NuScale Power  
Makes History  
as the First Ever Small  
Modular Reactor to  
Receive U.S. Nuclear  
Regulatory  
Commission  
Design Approval.

### DCA Statistics

- **12,000+** pages
- **14** Topical Reports
- **>2 million** labor hours
- **>800** people
- **>50** supplier/partners
- Over **\$500M**



# Inherently Safe Design Sets New Industry Standards

## Unlimited Coping Period for Reactors

### Comparison of Reactor Coping Period Following an Extreme Station Blackout (loss of both AC and DC power)



#### Generation II Reactors:

4-8 Hours with Significant Operator Actions Required



#### Generation III & III+ Reactors:

Up to 72 Hours with No Operator Actions

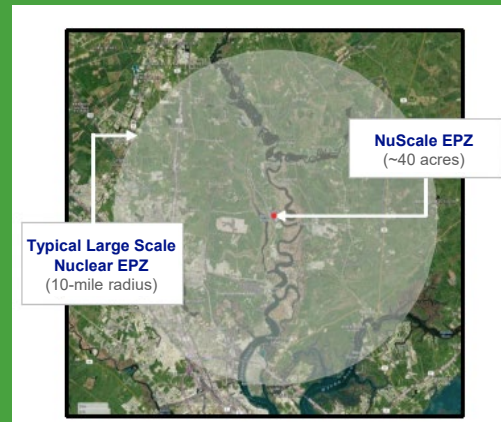


**UNLIMITED** WITH NO OPERATOR ACTIONS OR EXTERNAL SUPPORT



## U.S. NRC-Approved Methodology to Support Site Boundary Emergency Planning Zone (EPZ)

The smaller EPZ enables VOYGR™ SMR power plants to better accommodate siting in close proximity to end-users, which is of particular importance to process heat off-takers and for repowering retiring coal-fired generation facilities



Williams Power Station (Coal),  
South Carolina  
Announced Retirement Date of 2028

## Unparalleled Capability and Performance

### “Black-Start” and “Island Mode” Capabilities

A VOYGR SMR power plant can be started without the need for power from the grid and can operate disconnected from the grid – a first for a nuclear power plant

### First Responder Power

A VOYGR SMR power plant can start-up without power from the grid and can inject power back into the system to support grid restoration

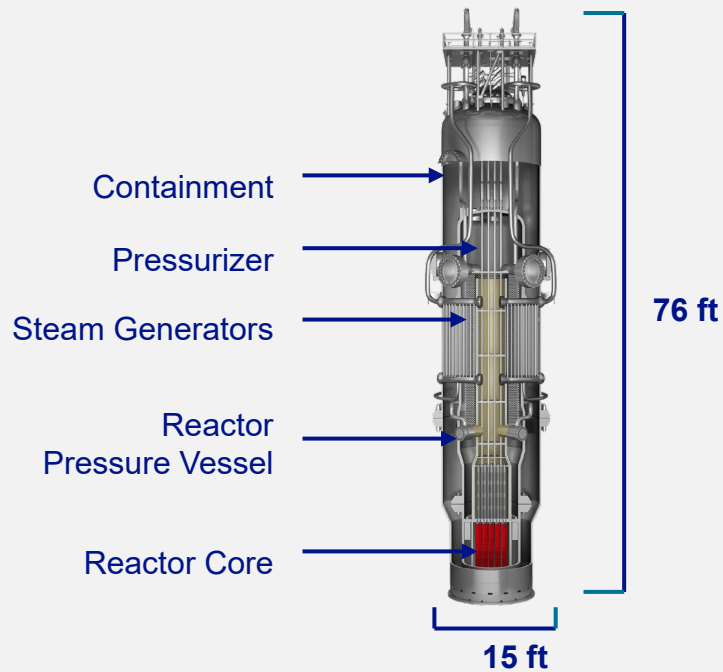
### Delivering Highly Reliable Power

Under a microgrid connection, a VOYGR SMR power plant can provide 154 MWe of power to mission-critical installations at 99.95% reliability over the 60-year plant lifetime

### Adaptable Siting Broadens Opportunity

A VOYGR SMR power plant can be sited at the “end of the line” with only a single grid connection or off-grid

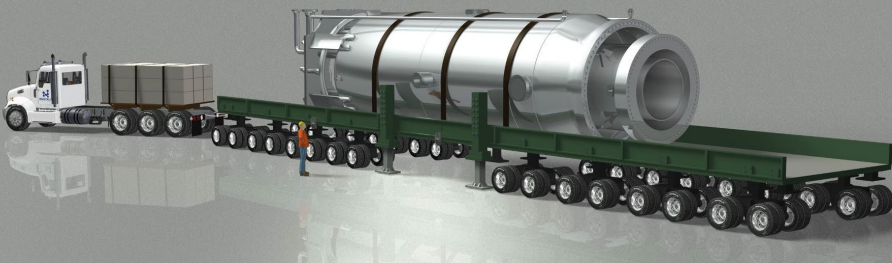
# Core Technology: The NuScale Power Module™



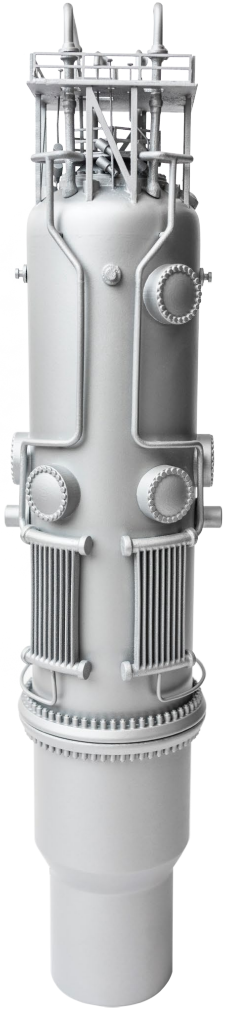
- Groundbreaking technology features a **fully factory fabricated** SMR referred to as a NuScale Power Module™ consisting of an **integral nuclear steam supply system** in which the reactor core, steam generators and pressurizer are all contained in a single vessel
- **Simple design** eliminates reactor coolant pumps, large bore piping and other systems and components found in conventional reactors
- Simplicity results in an extremely **strong safety case** and **reduced capital and operational costs**
- Modules can be incrementally added to match load growth

## NuScale Power Module™ Specifications

Electrical Capacity	77 MWe
Modules per Plant	Up to 12 (924 MWe)
Design Life	60 years
Fuel Supply	Existing light water reactor nuclear fuel
Safety	Walk-away safe
Emergency Planning Zone (EPZ)	Supports site boundary EPZ



# NuScale VOYGR™ SMR Power Plants

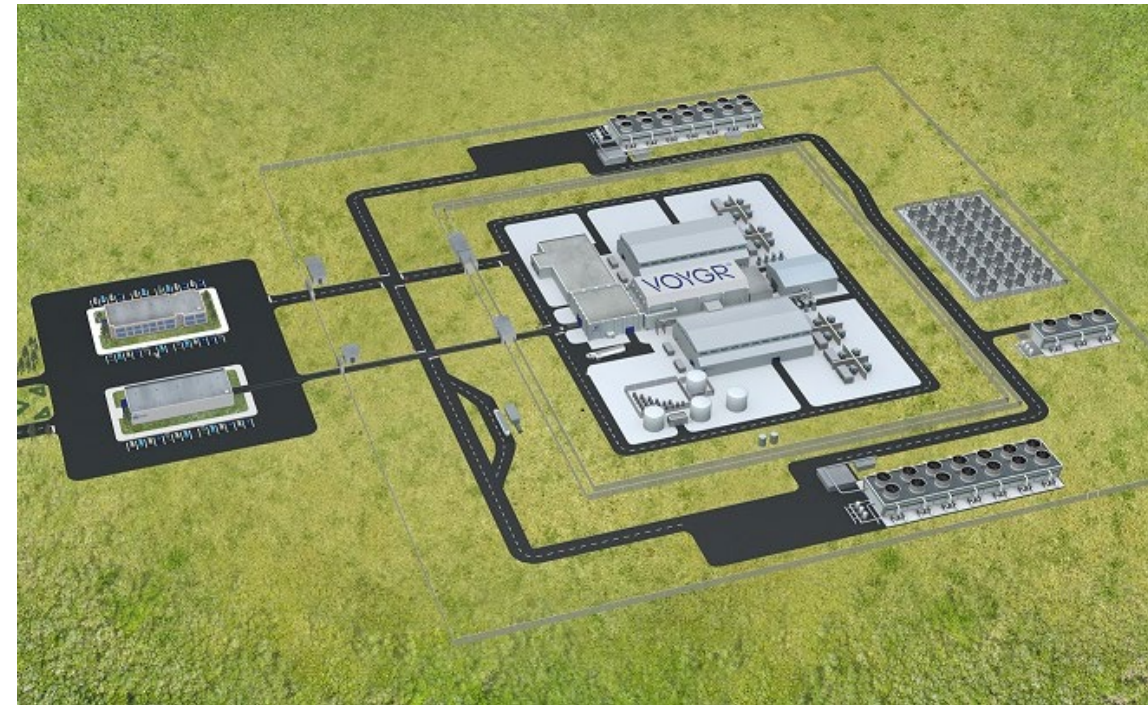


A **fully factory fabricated** small modular reactor (SMR) comprised of an **integral nuclear steam supply system** in which the reactor core, steam generators and pressurizer are all contained in a single vessel

Three power plant sizes to meet customer power needs, infrastructure/grid limitations, and economics:

- VOYGR™-12 (12 module, 924 MWe)
- VOYGR™-6 (6 module, 462 MWe)
- VOYGR™-4 (4 module, 308 MWe)
- Other customized plant configurations to fit customer needs including wet and dry cooling options

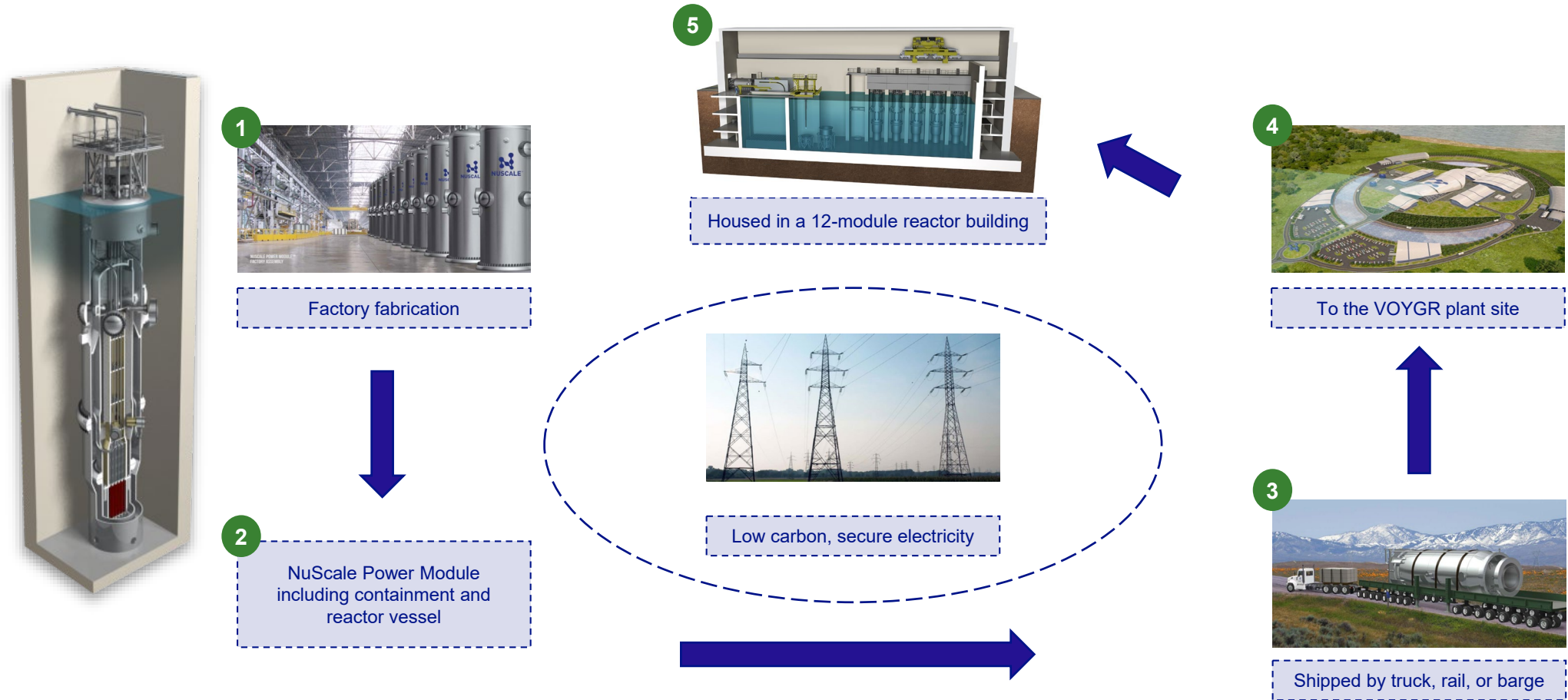
- ✓ Only SMR design approved by the U.S. Nuclear Regulatory Commission
- ✓ Simplicity of design results in an extremely strong safety case and reduced capital and operational costs
- ✓ 77MWe modules can be incrementally added to match load growth
- ✓ Unlimited coping period for reactors, supports site boundary Emergency Planning Zone



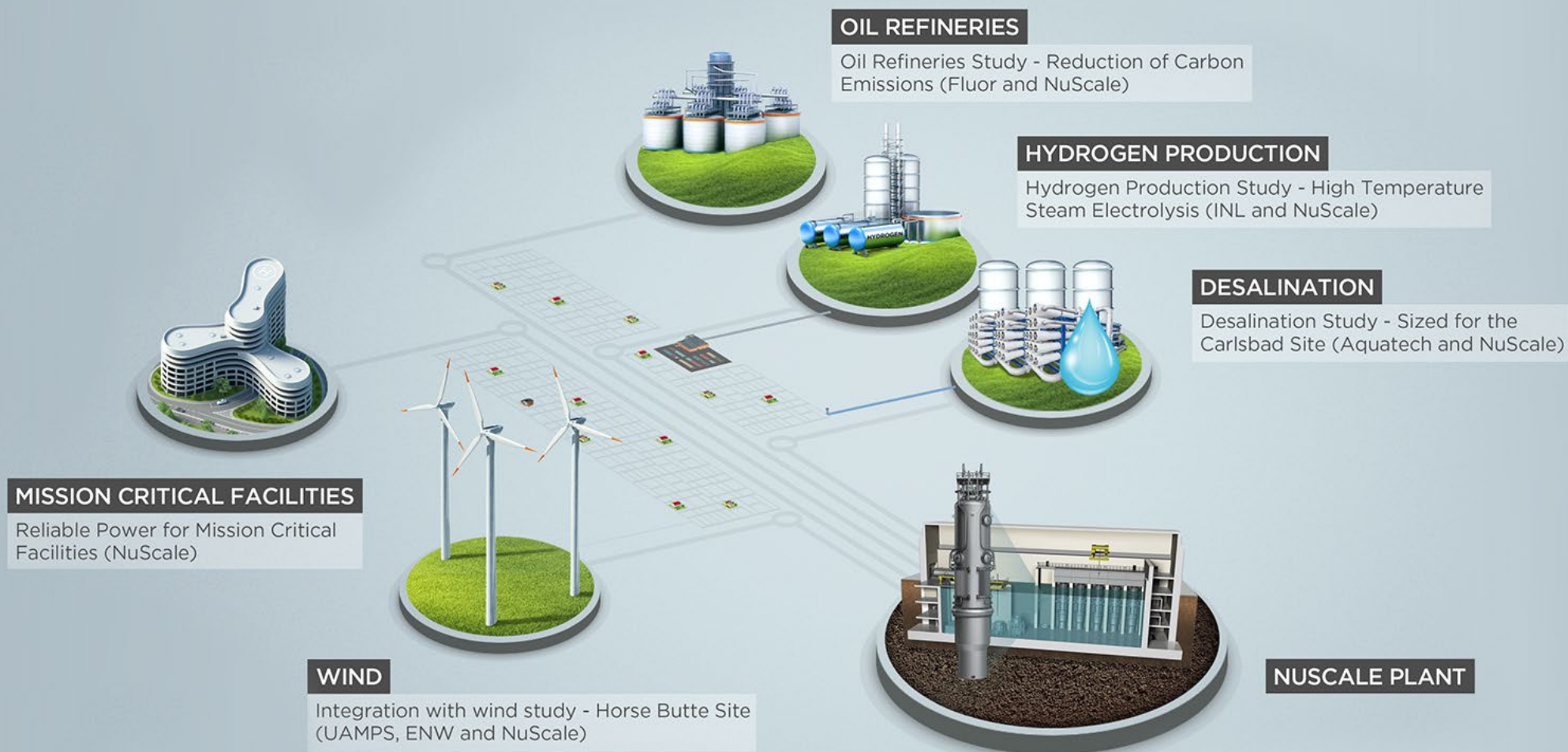


# A New Approach to Construction and Operation

NuScale has revolutionized the nuclear supply chain with modular manufacturing of NPM units in-house that are shipped to sites



# Beyond Baseload: NuScale Diverse Energy Platform



# NuScale is Well Suited for a Range of Applications Critical to the Energy Transition

## Enhancing the Power Grid

### Grid Resiliency



- Adverse weather conditions do not impact operations for a NuScale Plant
- A single module can be black-started and can power the entire plant in case of loss of the utility grid
- On loss of offsite grid, all modules in a NuScale Plant can remain at power and be available to provide electricity upon grid restoration

### Mission Critical Facilities



- A NuScale Plant can provide highly reliable power to mission critical micro-grids (e.g., hospitals, data centers) with 99.95% availability over the 60-yr life
- Off-grid operations enables a plant to supply power without external grid connection

## Energy Transition-Specific Opportunities

### Coal Plant Replacement



- ~132 coal plants in the U.S., representing 140+ GW of capacity, are planned for retirement through 2050
- Opportunity to preserve 41,500 power plant jobs by repurposing this lost coal capacity with over 150 NuScale plants (12 NPM), and create or preserve nearly 37,000 manufacturing jobs per year

### Support for Wind and Solar Development



- NuScale's load-following capabilities well-suited to both solar and wind's intermittency
- Provides critical ancillary services to support electric grid stability

### Carbon Capture & Sequestration (CCS)



- NPMs can power energy-intensive CCS facilities with 100% clean power
- Many global decarbonization pathways anticipate significant CCS deployment
- Direct air capture

### Hydrogen Production



- NuScale NPMs can produce cost effective, green hydrogen at scale
- Hydrogen production by conventional renewables faces challenges of scale and cost

# Repurposing Coal Power Plant Sites



- A NuScale plant can be **built on an existing coal power plant site**
  - 12-module VOYGR™-12 plant has a similar site footprint
- Some coal plant **infrastructure can be repurposed and reused**, such as:
  - Cooling water delivery systems, demineralized water, potable water, site fire protection, switchyard, and buildings (e.g., administrative, training, warehouse)
- **Capital cost savings could be approximately \$100M** depending on site
- Preservation of local tax base; continued economic benefit to community

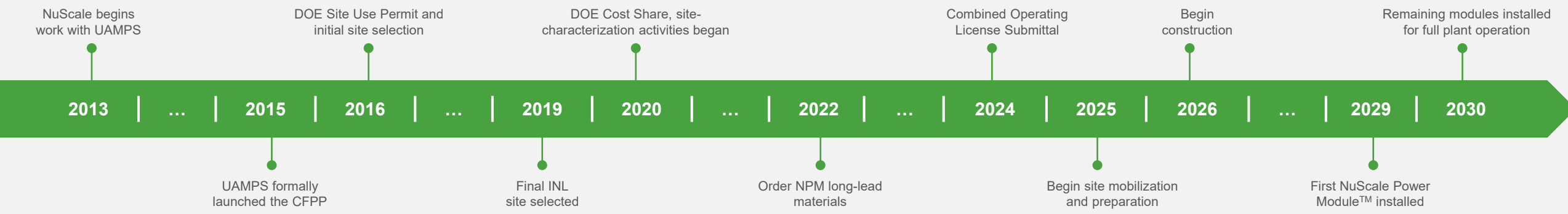
# NuScale Customer Poised to Deploy NPMs in 2029

## Utah Associated Municipal Power Systems (UAMPS) will be among the first commercial deployments of NPMs

- First commercial deployment will be a VOYGR™-6 power plant at the Idaho National Laboratory for the UAMPS Carbon Free Power Project (CFPP)
- UAMPS provides energy services to community-owned power systems throughout the Intermountain West
- 27 of UAMPS’s members, representing 7 states, are currently CFPP participants as of October 2022
- The CFPP will provide safe, reliable, and cost competitive clean energy to UAMPS members at a target LCOE of \$58/MWh (in 2020 dollars), adjustable for cost indices and changes in inflation and interest rates
- In 2020, the DOE awarded a ~\$1.4B cost share grant over ten years to UAMPS to build the CFPP



### UAMPS Carbon Free Power Project Timeline



# Rapidly Expanding Customer Opportunities



- Fermi Energia
- Estonia



- Generation and transmission cooperative
- Wisconsin, USA



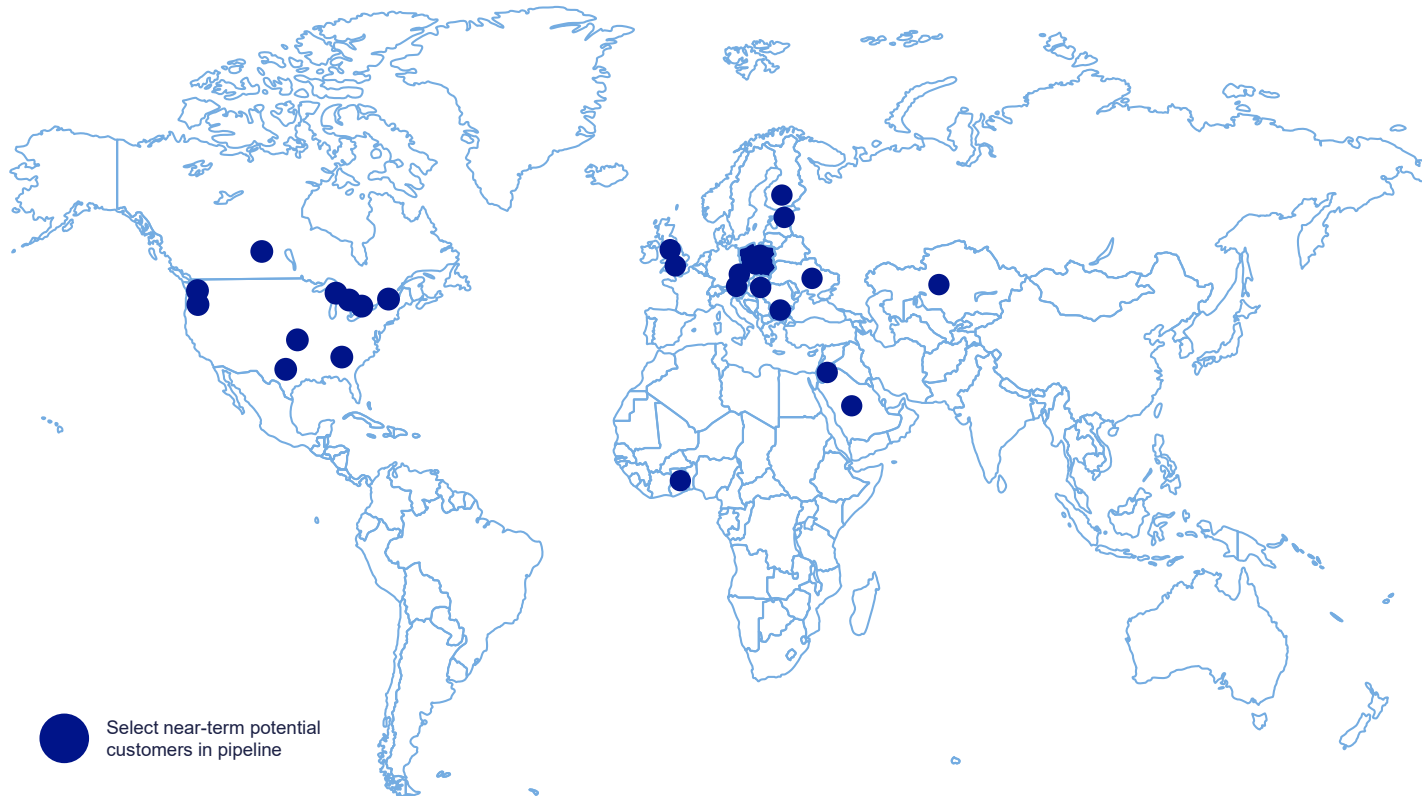

- Commercial nuclear power producer
- Canada



- Canada's only private sector nuclear power producer
- Ontario, Canada



- Associated Electric Cooperative
- Springfield, MO

- Jordan Atomic Energy Commission
- Jordan



- Energoatom
- State-owned nuclear power producer
- Ukraine



- State-owned utility
- Czech Republic




- S.N. Nuclearelectrica
- State-owned utility
- Romania



- Getka Group & UNIMOT SA
- Poland
- Coal plant refurbishment



- KGHM Polska & Piela Business Engineering
- Coal refurbishment & process heat
- Poland



- Kozloduy Nuclear
- Bulgaria

# IRA Provides Significant Tax Credits for Advanced Nuclear, SMRs

Act contains several key provisions that bolster a broad spectrum of new and existing activities in the nuclear industry; nuclear will receive credits that once only applied to wind and solar

- Creates tax credit of 30% towards the cost of building zero-emission advanced nuclear power plants
- Could create up to a 50% reduction in costs for building an SMR at retired coal plant site



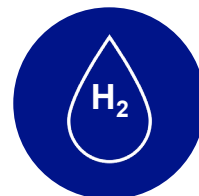
## Loan Guarantee Expansion

- Authorizes DOE's Loan Programs Office to employ up to **\$40 billion** in additional loan authority until September 2026
- Additional **\$3.6 billion** to cover loan guarantee costs



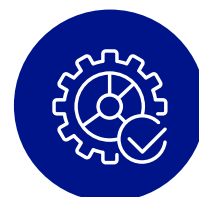
## Clean Electricity Tax Credits

- **30% ITC** (investment tax credit)
- Technology-neutral tax credits include advanced nuclear
- Start in **2025** and phased out in **2032**, or when CO<sub>2</sub> emissions from electricity production are 75% below 2022 levels
- **10% bonus** for facilities sited in certain energy communities (e.g., coal plant communities)
- **10% bonus** for domestic content



## Clean Hydrogen Credit

- **\$3/kg-H<sub>2</sub>** PTC from qualifying facilities producing clean hydrogen
- Facility must begin construction before 2033
- Available for 10 years



## Advanced Energy Project Credit

- **30% ITC** for qualifying manufacturing facilities producing components for clean energy
- Extension of the credit, capped at **\$10 billion**, with \$4 billion required to be located in energy communities

## Community Benefits

- Each VOYGR™-12 power plant will employ about **270 people full-time**, with 1,200 peak construction jobs.
- Permanent nuclear power station positions have relatively high incomes, which boost the sales of goods, services, and real estate in the area.
- For example, NuScale's first plant owned by public power consortium UAMPS in Idaho will have a **significant positive economic impact in the region\***:
  - Construction could increase state and local tax revenues by nearly \$37 million
  - Once built, ongoing operations will add \$48 million to local labor income each year
  - Operations could add nearly \$3 million to local and state tax revenues annually



Artistic concept of the NuScale Power Plant

\*Source: Study by Regional Economic Development for East Idaho (REDI)  
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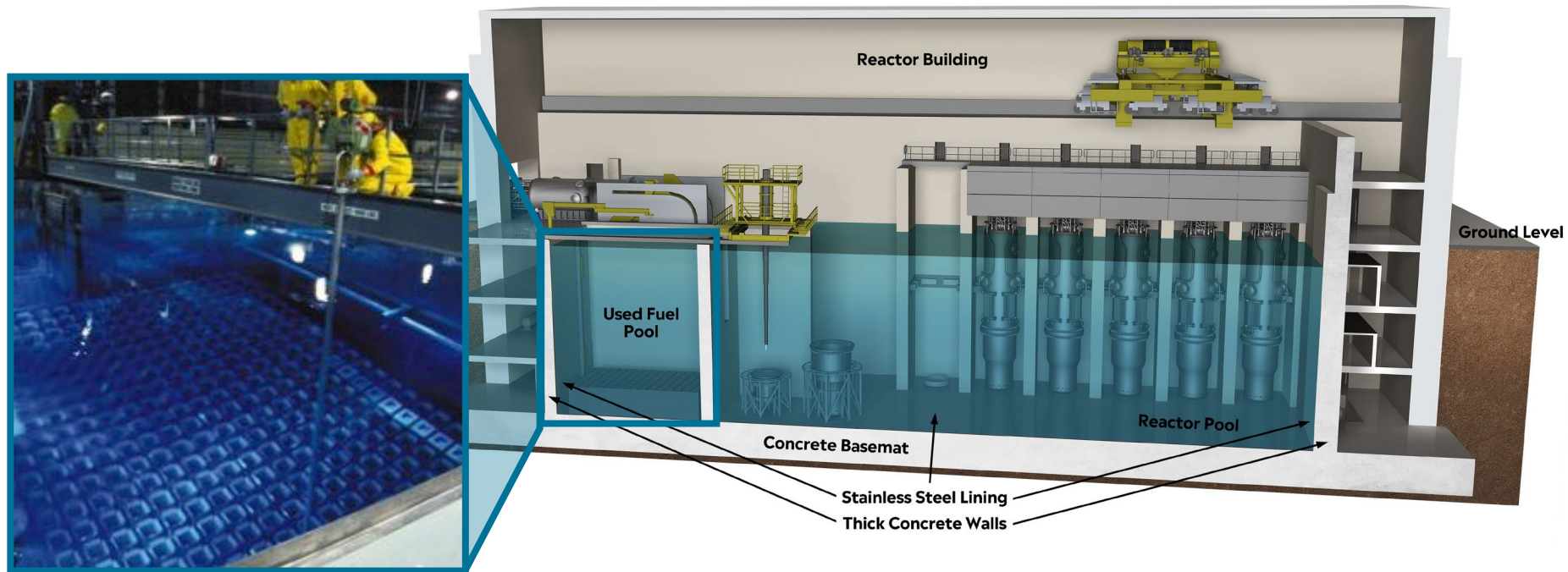


# CHANGING THE POWER THAT CHANGES THE WORLD



## Used Fuel Management at NuScale VOYGR™ Plants

- NuScale reactor building and plant design incorporates a proven safe, secure, and effective used fuel management system.
- Stainless steel lined concrete pool holds used fuel for at least 10 years under 60 feet of water.
- The used fuel is protected both by the ground and the Seismic Category 1 reinforced concrete reactor building designed to withstand an aircraft impact, and a variety of natural and man-made phenomena.



# Used Fuel Storage & Disposal



- After cooling in the spent fuel pool, used fuel is placed into certified casks – steel containers with concrete shells – on site of the plant.
  - NRC’s Waste Confidence Rule states that dry cask storage is a safe and acceptable way to store used fuel for an interim period at the plant up to 60 years beyond the licensed life of any reactor (i.e., for up to 120 years).
  - **NuScale’s standard facility design includes an area for the dry storage of all of the spent fuel produced during the 60-year life of the plant.**
- U.S. Department of Energy (DOE) has responsibility for the final disposal of used fuel under the Nuclear Waste Policy Act.
  - Under the Act, the generators of electricity from nuclear power plants must pay into a fund to be used for the long-term disposal of this used fuel; over \$40 billion is currently in the Nuclear Waste Fund.

