

THE IDAHO CASE:

UAMPS | INL | Fluor | NuScale | Idaho Falls

... A highly-relevant story with lots of people, places, and partners—23 years and counting ...

UAMPS



INL Idaho National Laboratory

FLUOR®



**IDAHO
FALLS**

The Idaho Case: Geography Lesson



NuScale Site

Site Plan Overlay



The Idaho Case: Multiple Stakeholders

- UAMPS | CFPP
- NuScale Power
- Fluor
- DOE / INL
- Idaho Falls
- Idaho Line Commission
- Idaho State Delegation
- Shoshone Bannock Tribes



The Idaho Case: Panelists



Shawn Hughes
UAMPS



Chris Colbert
NuScale



Mark McClure
Fluor



John Revier
INL/DOE



Mayor Rebecca Casper
Idaho Falls



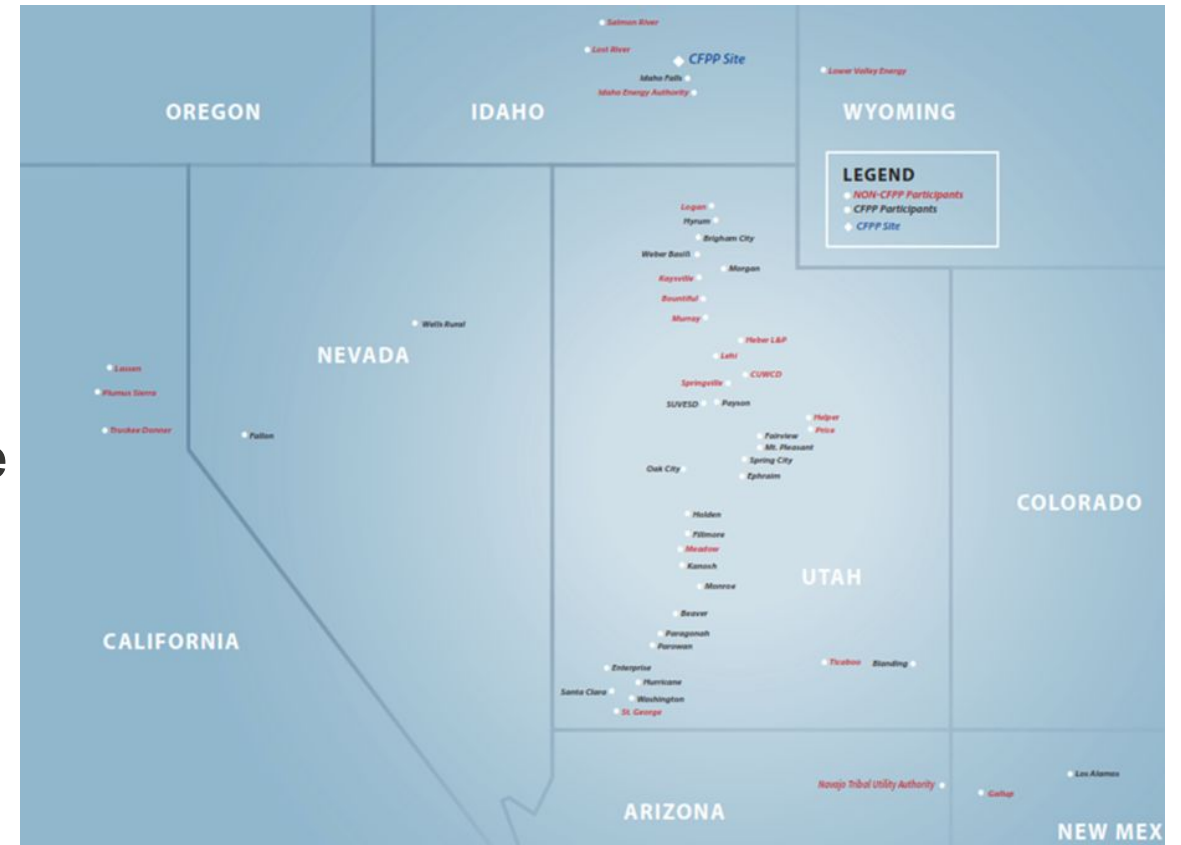
John Kotek
NEI
Moderator



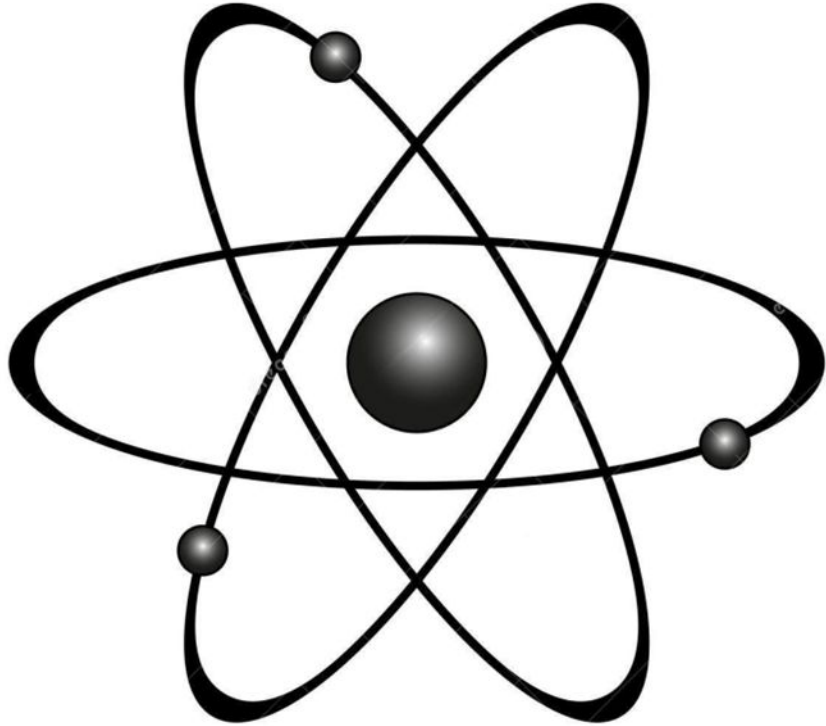
Presenter
Shawn Hughes
UAMPS

UAMPS

- Project-based organization formed in 1980
- 50 public power utilities in seven Western states
- Develop, finance and operate projects for generation and transmission
- Experience facilitating transaction to meet the needs of members
- New generation resources focused on zero carbon resources



WHY NUCLEAR



- Replacement for retiring baseload resources
- Physical hedge against reliance on uncertain future market purchases
- Zero carbon emitting
 - Regulatory benefits
 - Customer's desire for cleaner resources and rate stabilization benefits
 - Minimal environmental footprint
- Flexible baseload resource that can interplay with a western market with increasing levels of renewable penetration

Nuclear Resource Development

October 2009 Calvert Cliff Tour with Board

March 2010 Large Scale Nuclear Site Study with
Unistar

June 2013 Teaming Agreement with NuScale

February 2016 Site Agreement with DOE INL

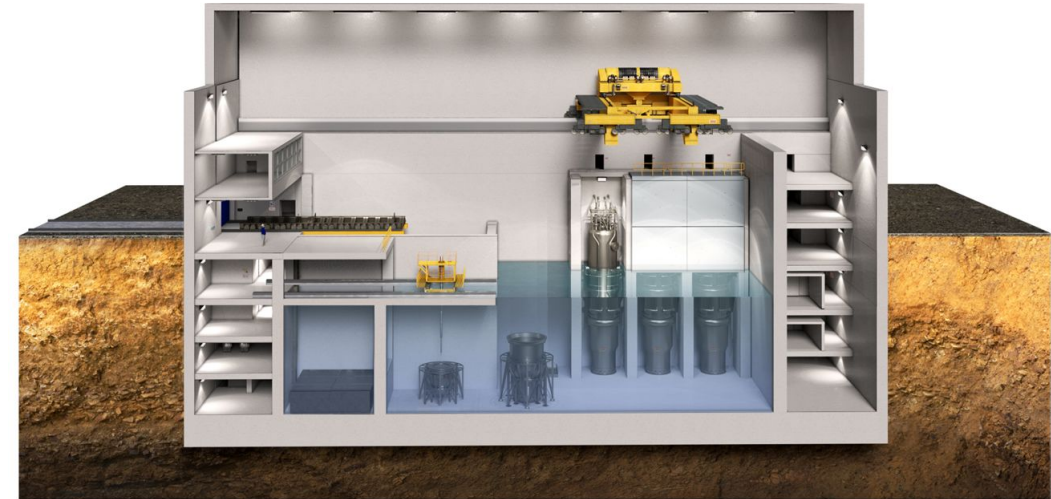
July 2019 Power Sales Contract Became Effective

August 2020 NuScale Design Certification

October 2020 CFPP DOE Award

December 2020 EPC Development & Development
Cost Reimbursement Agreements

January 2022 Operator Term Sheet



UAMPS Put Together a Team with Nuclear Experience!

**UAMPS
CFPP LLC**

**NuScale Power
Fluor**

Xcel Energy

**Owners
Engineers**

**Nuclear
Regulatory
Commission**

**U.S. Congress
Bi-Partisan
Support**

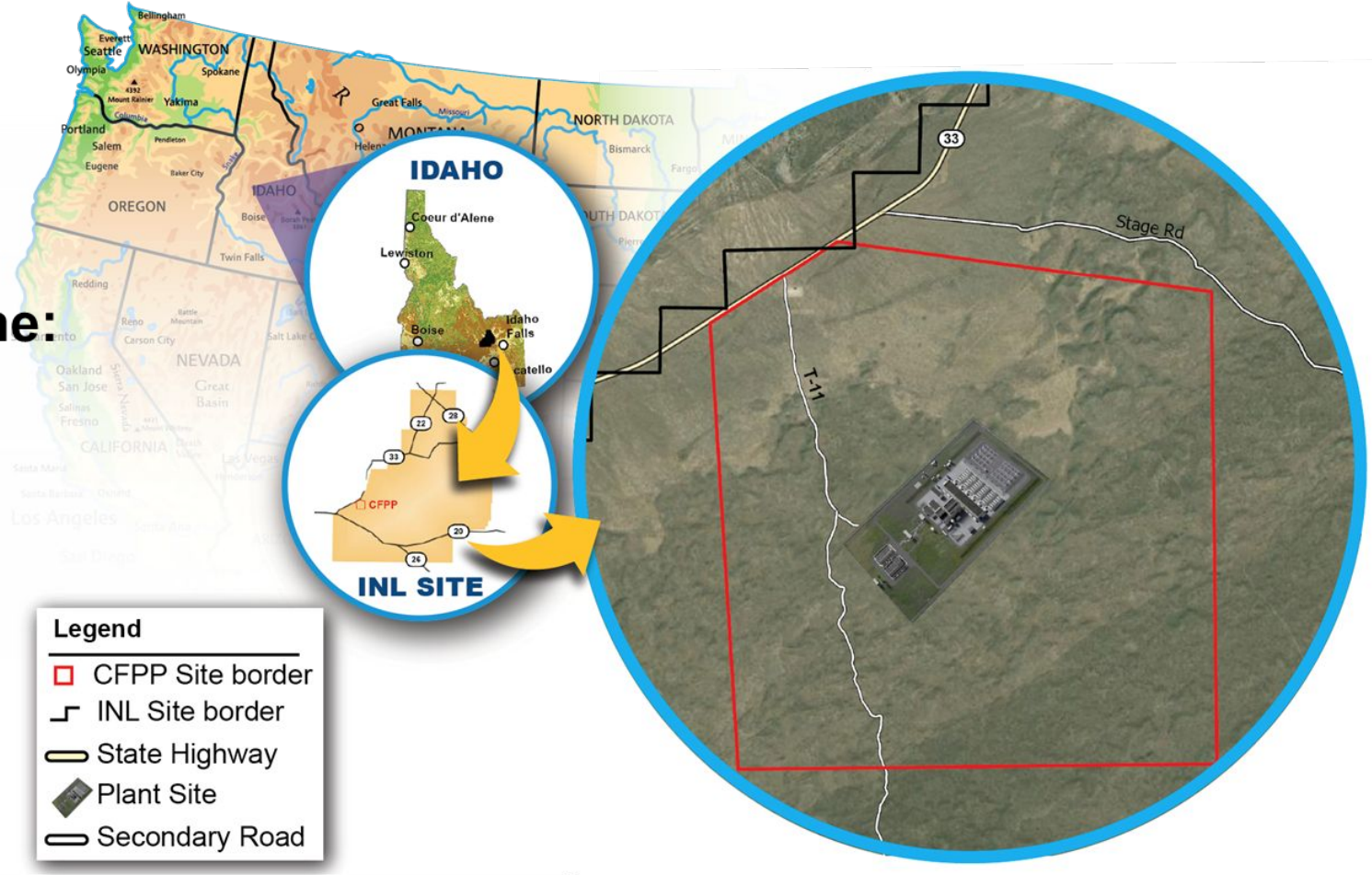
State of Idaho

**Department of
Energy**



Progress Made on Project Timeline:

- Site Plan Developed/Approved
- Core Boring Plans Developed/Approved
- Well Drilling Plans Developed/Approved
- Site Characteristic Work Completed





Presenter
Chris Colbert
NuScale

NuScale Power by the Numbers

1st

And Only SMR to Receive
NRC Standard Design Approval

1st

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

485+

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

639

Patents
*443 Granted, 196 Pending
Extensive Trade Secrets*

9

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

Existing Investors

FLUOR



JGC



Sargent & Lundy



sarens

IHI



UAMPS

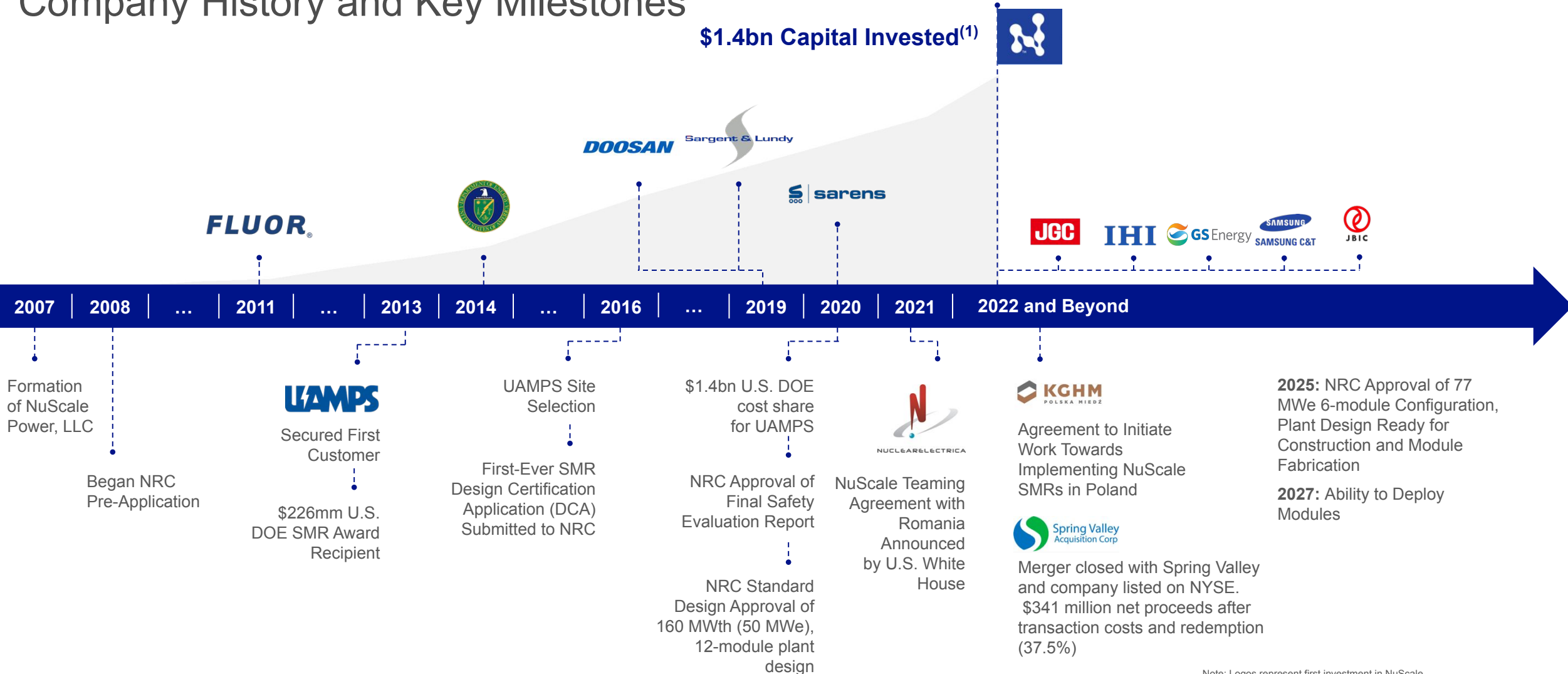


Idaho National Laboratory

FLUOR



Company History and Key Milestones

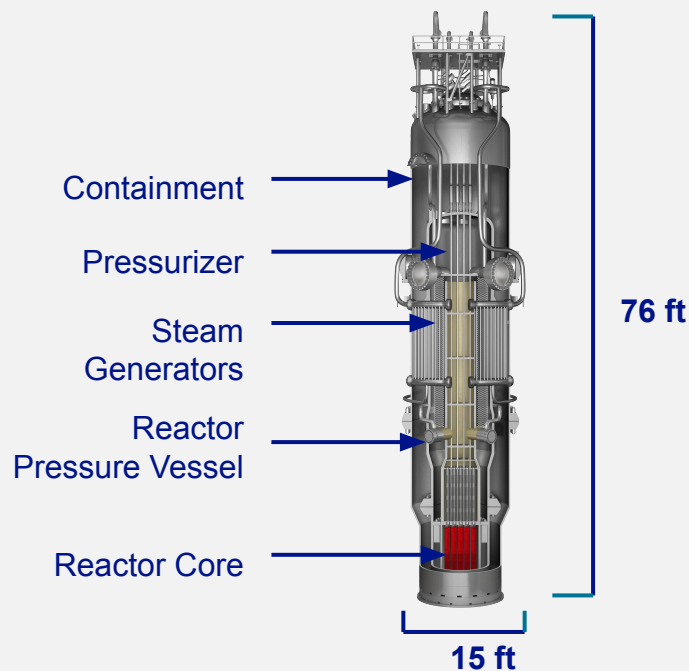


Grey shaded area represents actual capital spend by NuScale over time, including both from private investor capital raised and funds received from the DOE cost-sharing program

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.



NuScale's 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


Inherently Safe Design Sets New Industry Standards – Triple Crown of Nuclear Plant Safety™


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 ✗

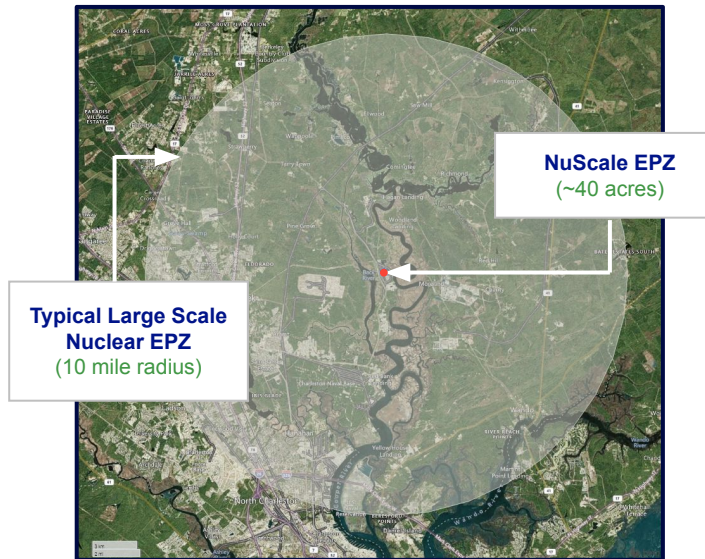
 **Generation III & III+ Reactors:**
Up To 72 Hours With No Operator Actions ✗

 **Generation IV Reactors Advanced LWR:**
8 Hours With No Operator Actions ✗

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

Only SMR that Supports U.S. NRC Site Boundary Emergency Planning Zone (“EPZ”)

The smaller EPZ enables NuScale Plants to be sited in close proximity to end-users, which is of particular importance to **process heat off-takers and repowering retiring coal-fired generation facilities**



Williams Power Station (Coal, 650 MW), S. Carolina
Announced retirement date of 2028

Unparalleled Capability and Performance



Capable of “Black-Start” and Operation in “Island Mode”

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



Deliver Highly Reliable Power

Under a microgrid connection, a 12-module NuScale plant can provide over the 60-yr plant lifetime 154 MWe of power to mission critical installations at 99.95% reliability

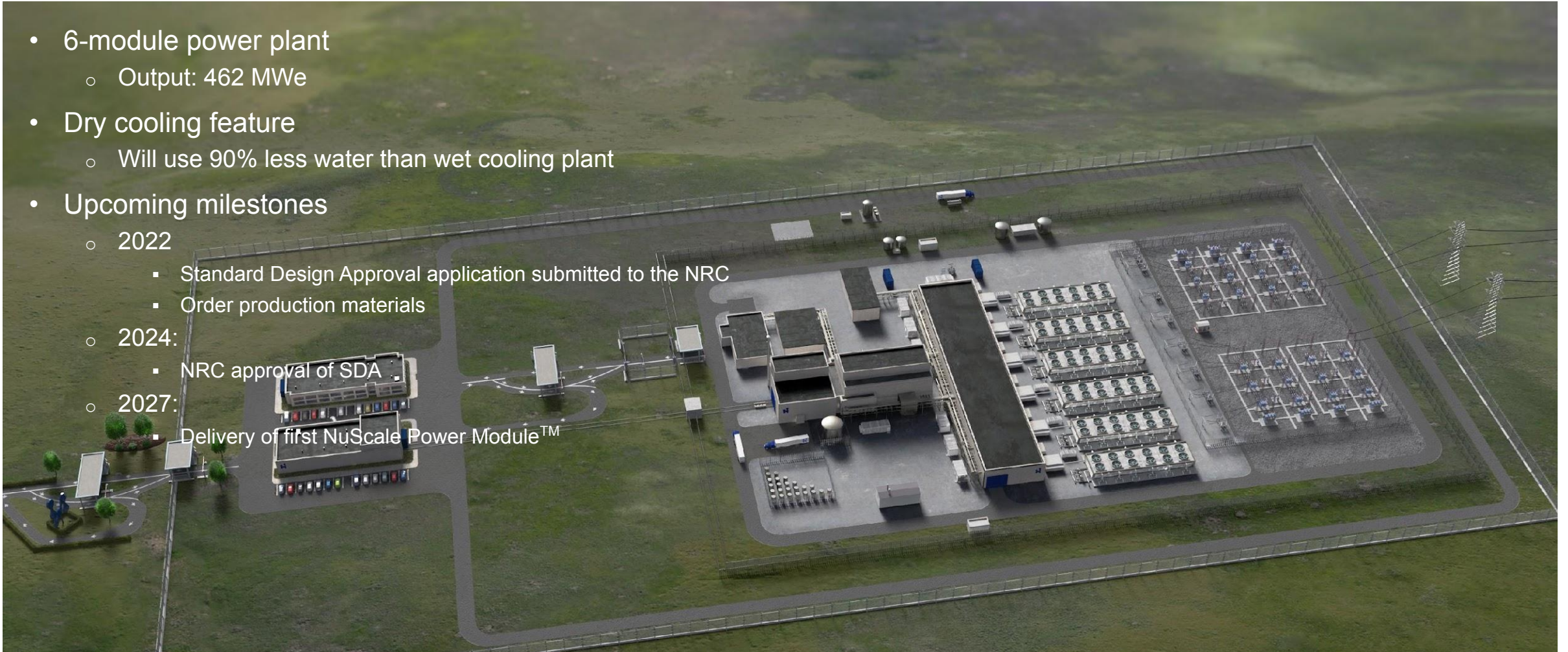


Flexible Siting Options

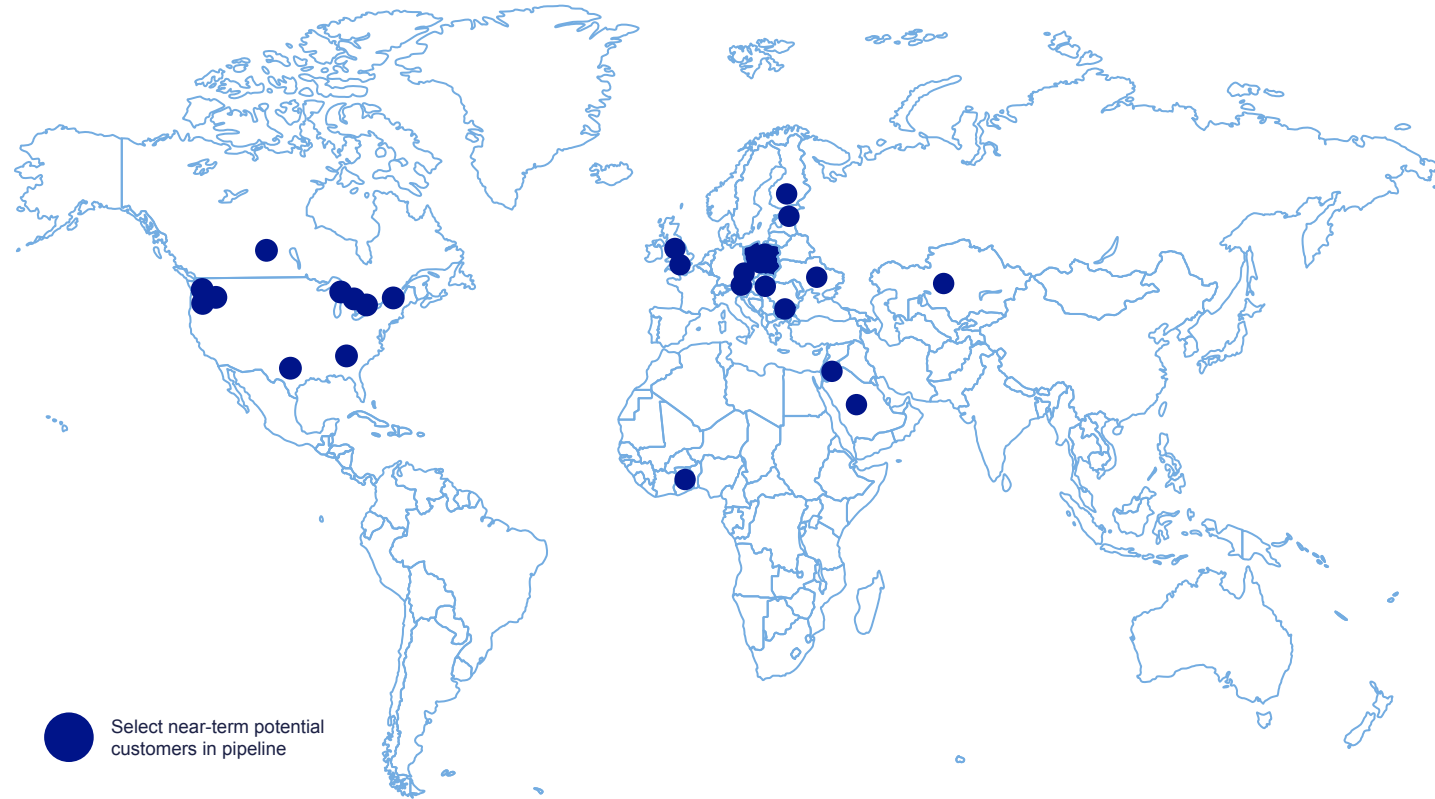
A NuScale plant can be sited at the “end of the line” with only a single grid connection, or off-grid

VOYGR™-6 Site Layout for CFPP

- 6-module power plant
 - Output: 462 MWe
- Dry cooling feature
 - Will use 90% less water than wet cooling plant
- Upcoming milestones
 - 2022
 - Standard Design Approval application submitted to the NRC
 - Order production materials
 - 2024:
 - NRC approval of SDA
 - 2027:
 - Delivery of first NuScale Power Module™



The World is Watching Idaho



Grant PUD

- Public electric utility
- Washington, USA

MOU

DAIRYLAND POWER CO-OPERATIVE

- Generation and transmission cooperative
- Wisconsin, USA

MOU

PRODIGY CLEAN ENERGY

- Commercial nuclear power producer
- Canada

MOU

BrucePower

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

MOU

SHEARWATER

- NuScale SMR paired with wind to produce power & H₂
- U.K.

MOU

هيئة الطاقة الذرية الاردنية
Jordan Atomic Energy Commission

- Jordan Atomic Energy Commission
- Jordan

MOU

aecci
Associated Electric Cooperative Inc.
A TruGreen Energy Company

- Associated Electric Cooperative
- Springfield, MO

MOU

ENERGOATOM

- Energoatom
- State-owned nuclear power producer
- Ukraine

MOU

АЕЦ КОЗЛОДУЙ
НОВИ МОЩНОСТИ ЕАД
Нове силе друженима!

- Kozloduy Nuclear
- Bulgaria

MOU

CEZ GROUP

- State-owned utility
- Czech Republic

MOU

NUCLEARELECTRICA

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

MOU

GETKA UNIMOT

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

MOU

KGHM POLSKA MIEDZ

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

MOU

NuScale and Nuclearelectrica Partnership

In partnership with NuScale, Romania has the potential to be the first deployment of SMRs in Europe



The **United States and Romania** will announce today plans to build a “**first-of-a-kind**” **small modular reactor (SMR) plant in Romania in partnership with U.S. NuScale Power**, bringing the latest civil nuclear technology to a critical part of Europe.

The partnership will bring SMR technology to Romania, **positioning U.S. technology to lead in the global race for SMR deployment.**

The commercial agreement will include a six-module NuScale plant, initially creating over 3,700 U.S. and Romanian jobs, including possible union jobs, with the potential to create **30,000 U.S. and Romanian jobs** as the project grows.

Deployment of SMR technology will be an important contributor to a decarbonized power sector and net zero future.”



November 2, 2021



NUCLEARELECTRICA



In 2019, NuScale and Nuclearelectrica signed a memorandum of understanding (MOU) to evaluate the development, licensing and construction of a NuScale SMR in Romania

On November 2021, NuScale and Nuclearelectrica signed a teaming agreement to advance the deployment of NuScale's VOYGR™-6 plant in Romania as early as 2027-2028

In May 2022, NuScale and Nuclearelectrica announced agreement with owner of preferred site for first SMR site in Romania

Nuclearelectrica is a national Romanian energy company that produces electricity, heat and nuclear fuel

- Contributes over 18% of Romania's total energy in the form of nuclear power and 33% of Romania's total carbon-free energy

NuScale and KGHM Partnership

NuScale announces a historic agreement with KGHM to initiate the deployment of the first SMR in Poland



KGHM is proud to lead the initiation of a 100% carbon free energy project, delivering on its commitment to lead efforts to decarbonize. **The SMR technology will increase the company's cost efficiency and transform the Polish energy sector**"

- Marcin Chludziński, President of the Management Board of KGHM Polska Miedź S.A



We are always thrilled when we see **U.S. companies furthering our country's energy leadership** by advancing our innovative technologies for global applications"

- Andrew Griffith, U.S. DOE Deputy Assistant Secretary for Nuclear Fuel Cycle and Supply Chain

February 14, 2022



NuScale and KGHM signed a landmark agreement in February 2022 to initiate work towards implementing SMRs in Poland

Under the agreement, NuScale will work with KGHM to support the deployment of the first NuScale VOYGR™ power plant in Poland as early as 2029, which will help Poland avoid up to 8M tons of CO2 emissions per year

KGHM is a Poland-based leader in copper and silver production and a large industrial energy user

The agreement will position KGHM as a clean energy implementation leader with the first deployment of SMRs in Poland





Presenter
Mark McClure
Fluor

Fluor Nuclear Experience Summary

**75 years of
experience in the
nuclear industry**



**Services on the entire
nuclear plant life cycle.**

Modifications
and maintenance

90
facilities

Designed

3
units

Constructed

8
plants

Supported
construction

10
units

Reactor
decommissioning

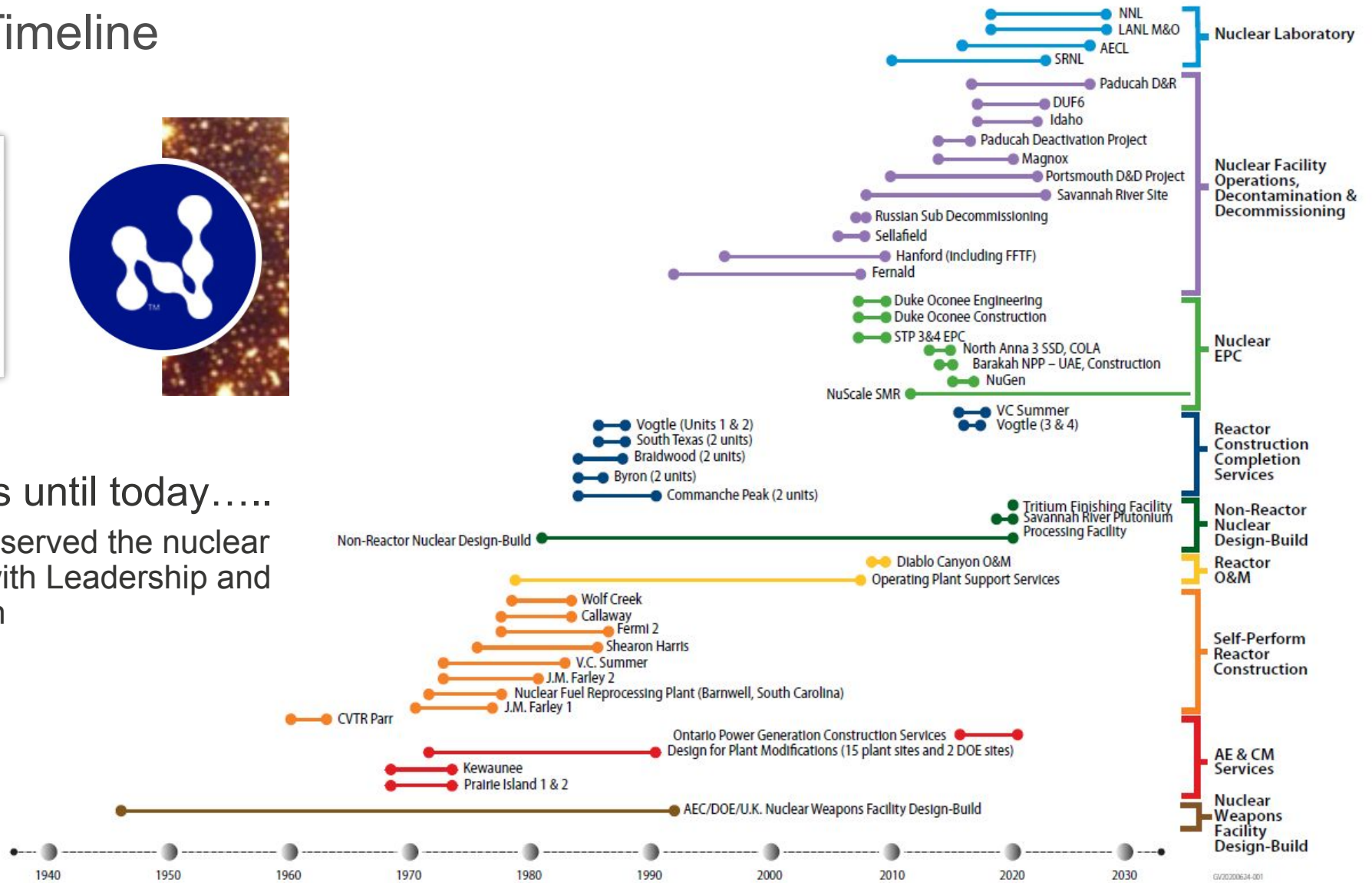
32
reactors



Fluor's Nuclear Timeline



- From the 1940's until today.....
 - Fluor has served the nuclear industry with Leadership and Innovation



Fluor's History in Idaho and work with DOE National Labs

- Our history with DOE dates back over a quarter century with the Manhattan Project and continues today with work at;
 - Savannah River Site
 - Los Alamos National Laboratory
 - Naval Nuclear Laboratory on behalf of NNSA in 5 locations throughout US.
 - Strategic Petroleum Reserve – since 2014.
- Our engagement in Idaho dates back to 1950 with working on innovative nuclear facilities, including building of three major, productive and enduring facilities;
- Materials Test Reactor - 2nd reactor built at INL
- Advanced Test Reactor – Still in use today
- New Waste Calcine Facility - 1978
- Our most recent Idaho Cleanup Project (2016 – 2021)
- Continues today with Naval Nuclear Laboratory, Maintenance & Support with FBI building in Pocatello and now working with UAMPS on the Carbon Free Power Project.

Why NuScale?

- Fluor is currently working to deliver CFPP, a first of a kind SMR facility meant to provide safe, secure, and resilient carbon-free power
- Today's new energy marketplace is dynamic and requires power generation diversification and technological innovation for continued success.
- Fluor is invested in the successful commercialization of NuScale and their small modular reactor (SMR) technology and is currently a majority investor in NuScale
- Combining NuScale's smarter, cleaner, safer, and economical SMR technology with Fluor's world-class engineering, procurement, and construction services
- A critical part of the CFPP effort is community engagement in the form of outreach and communication.

Global Community Affairs



We are dedicated to our global responsibilities, proactively addressing the relevant and vital issues that confront today's world.

- Fluor and the Fluor Foundation have contributed **more than \$218 million** over its history.
- In 2021, Fluor and the Fluor Foundation contributed **\$5 million** to community initiatives and programs.
- Together, Fluor and its employees enabled **more than 176,000 individuals and students** to receive **1 million hours of STEM** education and workforce readiness training.
- **Environment** supporting organizations that protect natural resources and habitats through conservation, restoration and beautification.
- **Volunteerism** and encouraging Fluor employees to tens of thousands of hours every year in various capacities.



What does Fluor bring?

- Fluor's 41,000 global employees provide professional and technical solutions.
- While Fluor's core business centers on designing, constructing and maintaining complex and challenging capital projects, Fluor also helps to build a better world by giving back to the communities where we live and work around the globe.
 - Provide opportunities for local suppliers and contractor engagement
 - Opportunity for over 1,500 local building trades job opportunities through the construction period
 - Form partnerships with regional technical schools, training programs, and local chambers of commerce
 - Support initiatives that improve job readiness and help individuals acquire gainful employment



Presenter
John Revier
INL/DOE

Our Heritage: *The National Reactor Testing Station drove nuclear innovation in the U.S. and around the world*

1st

Nuclear power plant

U.S. city to be powered by nuclear energy

Submarine reactor tested; training of nearly 40,000 reactor operators until mid-1990s

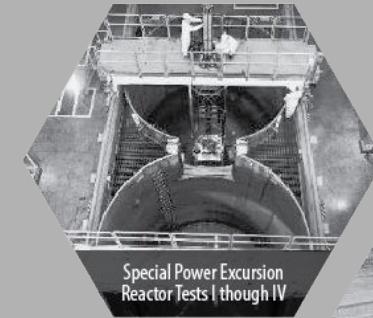
Mobile nuclear power plant for the army

Demonstration of self-sustaining fuel cycle

Basis for LWR reactor safety

Aircraft and aerospace reactor testing

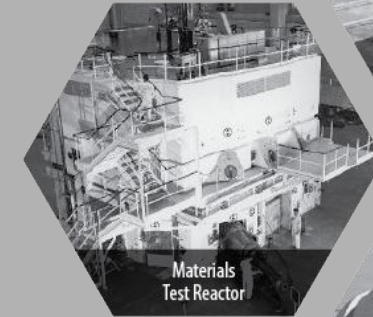
Materials testing reactors



Special Power Excursion Reactor Tests I through IV



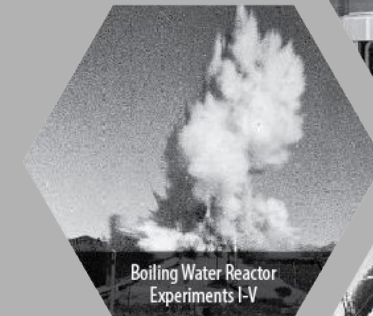
Experimental Breeder Reactor-I



Materials Test Reactor



Loss of Fluid Test Facility



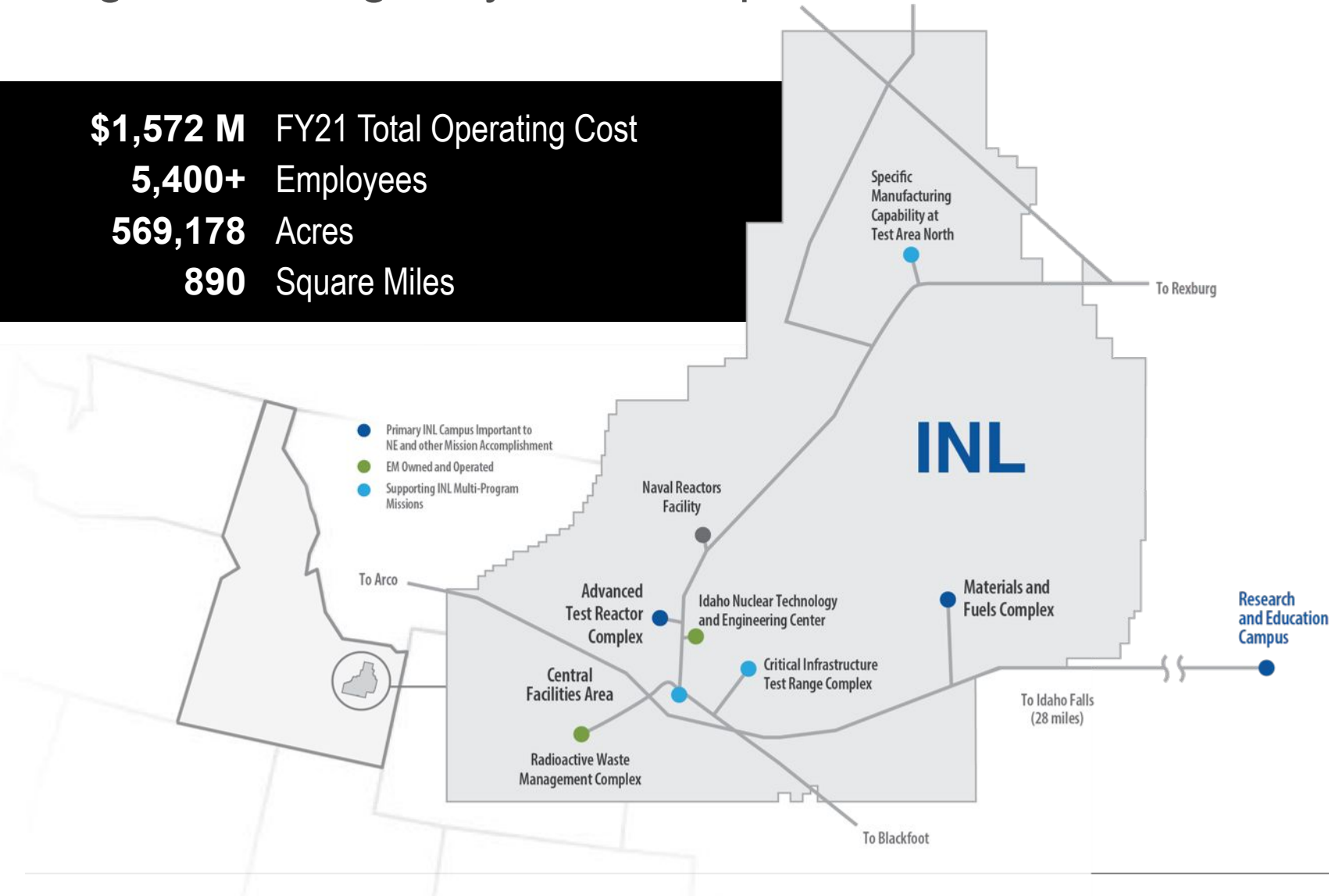
Boiling Water Reactor Experiments I-V



S1W - aka Submarine Thermal Reactor

Largest, and arguably most complex, site in the DOE laboratory enterprise

\$1,572 M FY21 Total Operating Cost
5,400+ Employees
569,178 Acres
890 Square Miles



4 Operating reactors

12 Hazard Category II & III non-reactor facilities/ activities

50 Radiological facilities/activities

17.5 Miles railroad for shipping nuclear fuel

44 Miles primary roads (125 miles total)

7 Substations with interfaces to two power providers

128 Miles high-voltage transmission lines

3 Fire Stations

Creating a secure, resilient, clean energy future



Advanced Test Reactor Complex



Energy & Environment Science & Technology



Nuclear Science & Technology

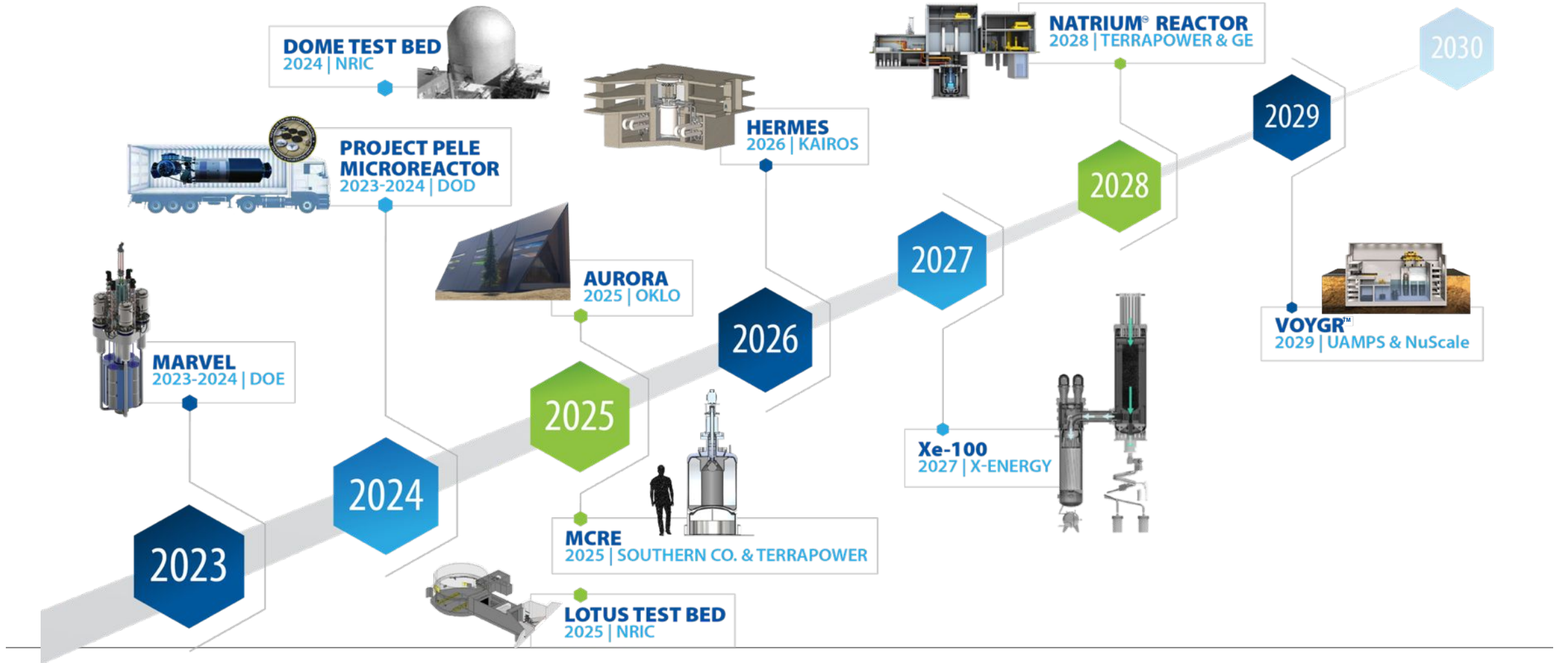


Materials and Fuels Complex



National & Homeland Security Science & Technology

Accelerating advanced reactor demonstration & deployment



Integrating heat, electricity, and energy storage to increase the grid reliability and advance industrial applications





Presenter
Mayor Rebecca Casper
Idaho Falls

Idaho Falls: A Public Power Utility

Community Owned



- Ratepayer Responsive
- Frugal



Not-for-Profit

- Local Control
- Accountable
- Flexible

Joint Action



- Advocacy
- Access
- Professional Staff

Partnerships and Memberships

- Coordinated visits to Capitol Hill and Forrestal
- Participation in national forums
- Invitations and travel to educational events examining new technology--including visits with NuScale (leadership trips to Corvallis)
- State Legislative engagement
- Idaho Governor's LINE Commission
- ECA programs and Peer Exchanges
- Regional Leadership visit to Plant Vogtle
- Eastern Idaho Nuclear Consortium



The Idaho Falls Experience

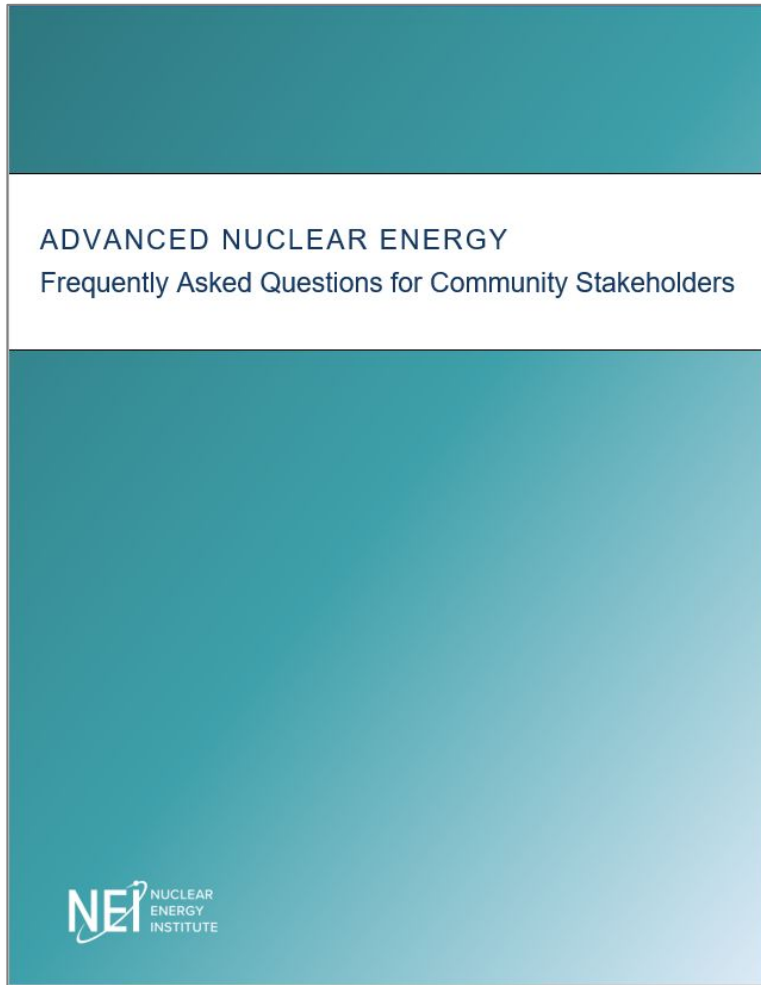
Learning Along the Way

- How to **ENGAGE** and Build Relationships with DOE
- How to **LEVERAGE** existing technical competencies of federal facilities or other energy agencies in the Community, State, and Region
- How to **ALIGN** the project with state carbon-free/portfolio standards or net-zero targets.
- How to **PLAN** for community growth and increased demand on essential infrastructure as project develops?
- How to **RECRUIT, EDUCATE, and TRAIN** the next generation of skilled workforce



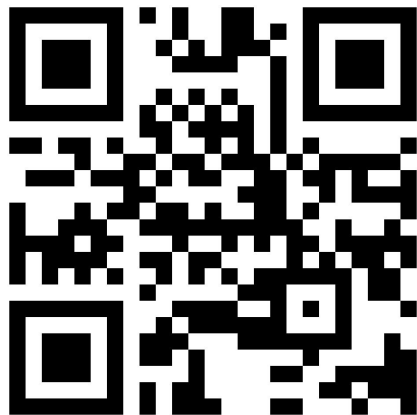
Presenter
John Kotek
NEI & Moderator

A New Resource for Communities



- **Audience:** Community leaders and involved citizens
- **Topics:**
 - What is nuclear energy's role in the future of electricity?
 - How does nuclear work with other sources of energy?
 - Is it safe to live near an advanced nuclear plant?
 - Will these plants generate nuclear waste?
 - Are advanced nuclear plants expensive?
 - When will advanced nuclear be ready?
 - What can I do if I'm interested in advanced nuclear energy in my community?
- www.nei.org/communityfaq

Scan to Join Nuclear Matters!



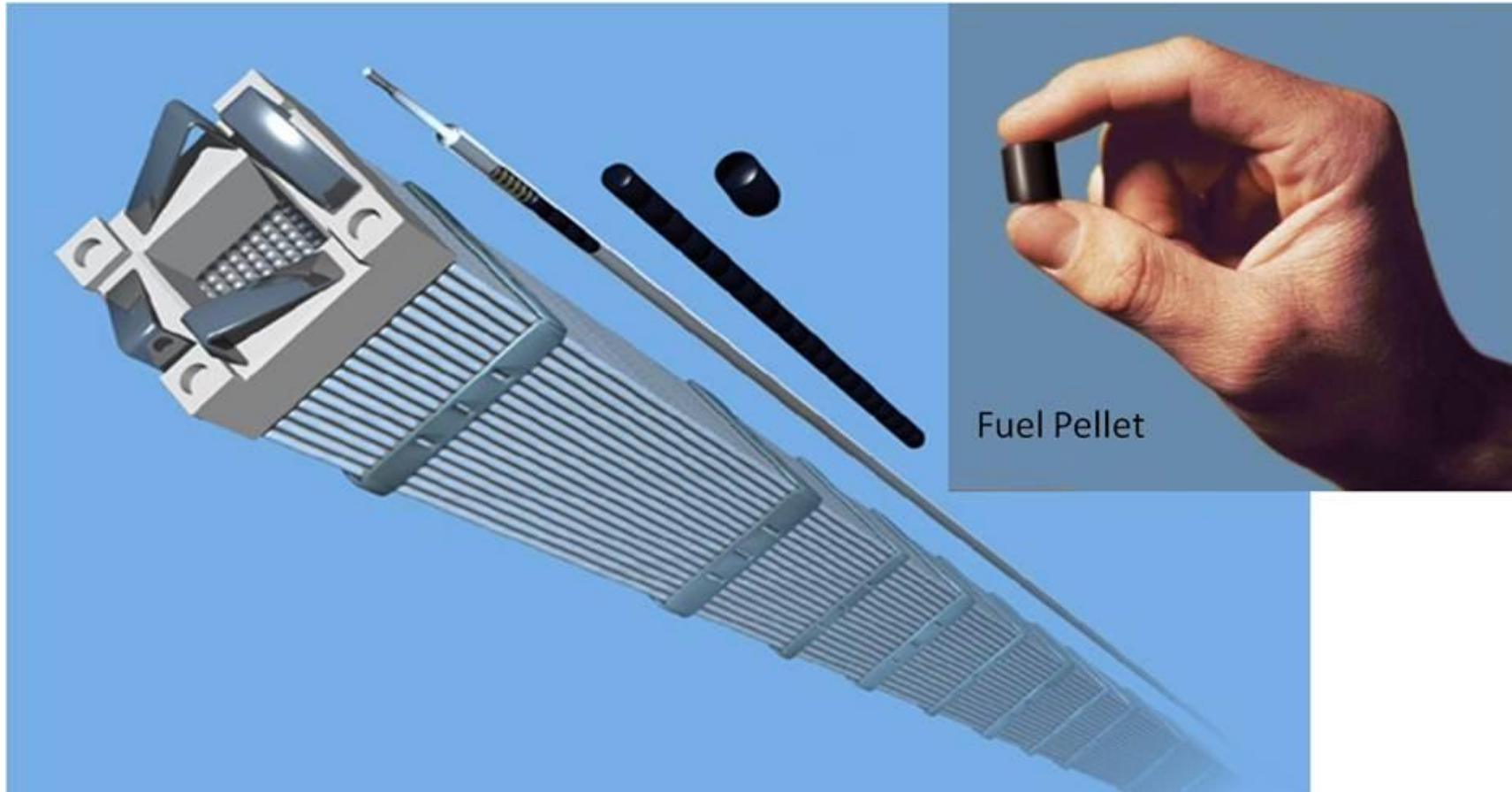
OR

Text CARBONFREE to +1 (202) 914-5764

NUCLEAR MATTERS® 

Questions?





(source: <https://nuclear.duke-energy.com/2014/02/11/do-we-have-enough-nuclear-fuel>)



(source: <https://nuclear.duke-energy.com/2016/10/05/the-facts-about-used-nuclear-fuel>)

The 40 used fuel casks hold all the fuel from 29 years of Connecticut Yankee operations



If the electricity produced by this fuel instead came from natural gas, the emitted CO₂ would fill the Superdome. More than 3,000 times.

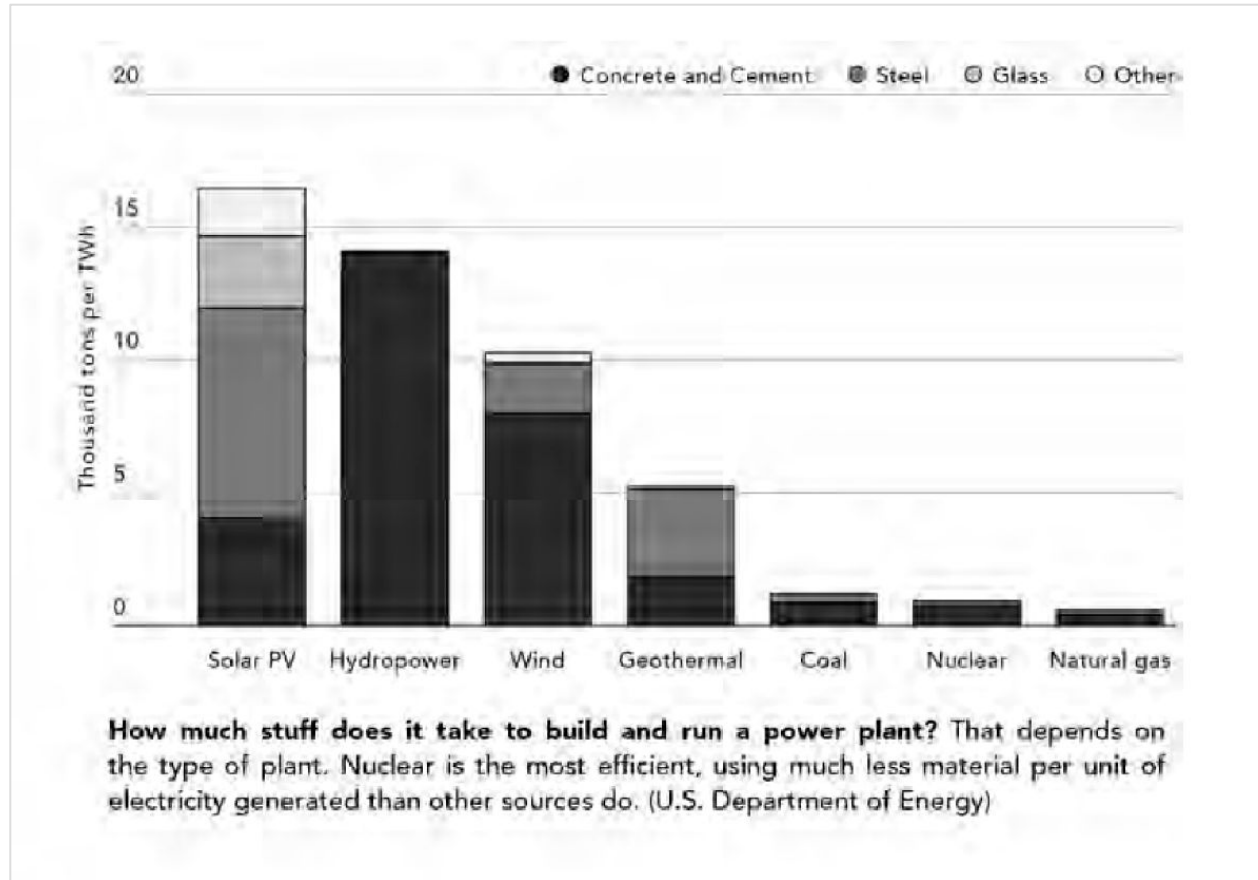
(source: http://www.connyankee.com/html/fuel_storage.html)

Toward a Durable, Integrated Spent Fuel Management Program

- Congress – consider the future of the NWPA
- Biden Administration:
 - Take steps to stand up an organization to resume management of the nuclear waste program
 - Seek Congressional authorization and funding to begin implementation of an integrated nuclear waste management system that allows for private consolidated interim spent fuel storage approaches

\$>\$40B AVAILABLE IN THE NUCLEAR WASTE FUND

Raw Material Inputs per TWh



Source: *How to Avoid a Climate Disaster*, Bill Gates, 2021