INLA
INTERNATIONAL NUCLEAR LAW ASSOCIATION

Welcome to the

INLA and Nuclear Energy Institute Legal Advisory Committee

Live Joint Session

Inter Jura Congress 2022
The Willard InterContinental Hotel
International Nuclear Law Association - United States Chapter

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Civilian Nuclear Developments at DOE

Sam Walsh, General Counsel

October 24, 2022

U.S. DEPARTMENT OF ENERGY

Agenda

High Assay Low Enriched Uranium (HALEU)

HALEU - Background

- High-assay, low-enriched uranium (HALEU), which is uranium enriched between 5 and 20%, will be required for fuel for most advanced nuclear reactors under development.

- An adequate, reliable supply chain for HALEU does not currently exist.

HALEU - Advanced Nuclear Fuel Availability

- Section 2001(a)(1) of the Energy Act of 2020 directs DOE, through the Office of Nuclear Energy, to carry out “a program to support the availability of HA-LEU for civilian domestic research, development, demonstration, and commercial use.”
- Directs DOE to:
  - Consider various options for acquiring or providing HALEU;
  - Conduct stakeholder surveys biennially to estimate the quantity of HALEU necessary for domestic commercial use over 5 subsequent years;
  - Establish a consortium to partner with DOE to support availability of HALEU for civilian domestic demonstration and commercial use;
  - Have the capability to provide HALEU to members of the consortium beginning no later than January 1, 2026, for commercial use and demonstrations.

HALEU - Inflation Reduction Act (IRA) of 2022

- Section 50173 of the IRA appropriates $700 million to DOE to implement section 2001 of the Energy Act of 2020, available through September 30, 2026.
- Funding is divided into three categories:
  - $100 million to carry out the program elements in section 2001(a)(2)(A)-(C);
  - $500 million to carry out the program elements in section 2001(a)(2)(D)-(H); and
  - $100 million generally “to carry out activities to support the availability of high-assay low-enriched uranium for civilian domestic research, development, demonstration, and commercial use under section 2001. . . .”

HALEU - Recent Activities

- Drawing on responses to an RFI submitted in January, DOE is currently developing plans for HALEU program implementation.
- DOE held an Industry Day on October 14 to gather input for potential acquisition of HALEU from the private sector for use in the HALEU availability program.
- Separate from the HALEU availability program, earlier this year DOE issued a Request for Proposals to complete and operate a centrifuge cascade at the Portsmouth Site near Piketon, Ohio, to demonstrate the production of HALEU with U.S. technology.

Civil Nuclear Credit (CNC) Program Update

Civil Nuclear Credit Program

Background

- Section 40323 of the Infrastructure Investment and Jobs Act (IIJA) appropriated $6 billion over 5 years (FY 2022-2026) to help preserve the existing nuclear fleet.
- First IIJA program launched by DOE.

Recent Developments

- Applications for the first award cycle were due September 6, 2022.
    - Applications currently undergoing review.
- Guidance for the Civil Nuclear Credit Program's second award cycle is currently available for public comment.
    - Public comment period closes November 4, 2022.
    - DOE plans to initiate the second CNC award cycle in the first quarter of Fiscal Year 2023.

Civil Nuclear Credit Program

Impact of Zero-Emission Nuclear Power Production Credit (Nuclear PTC)

- Nuclear PTC in Section 45U of Inflation Reduction Act (IRA) applicable to all CNC-eligible reactors, beginning January 1, 2024.
  - Credit starts at $3/MWh and increases to $15/MWh if prevailing wage requirements are met.
  - Credit scales down based on total revenue/gross receipt amounts. Scaling starts when revenue is greater than a $25/MWh threshold and scales down until revenue equals $43.75, where the credit will equal $0.
- Reactors receiving zero-emissions credits from a "federal, state, or local program" may exclude such credits from total revenue/gross receipts calculations where the "full amount [of the PTC as calculate under 45U] is used to reduce payments from some such zero-emission credit program." Sec. 45U(b)(2)(B).

Two Opportunities for Public Comment

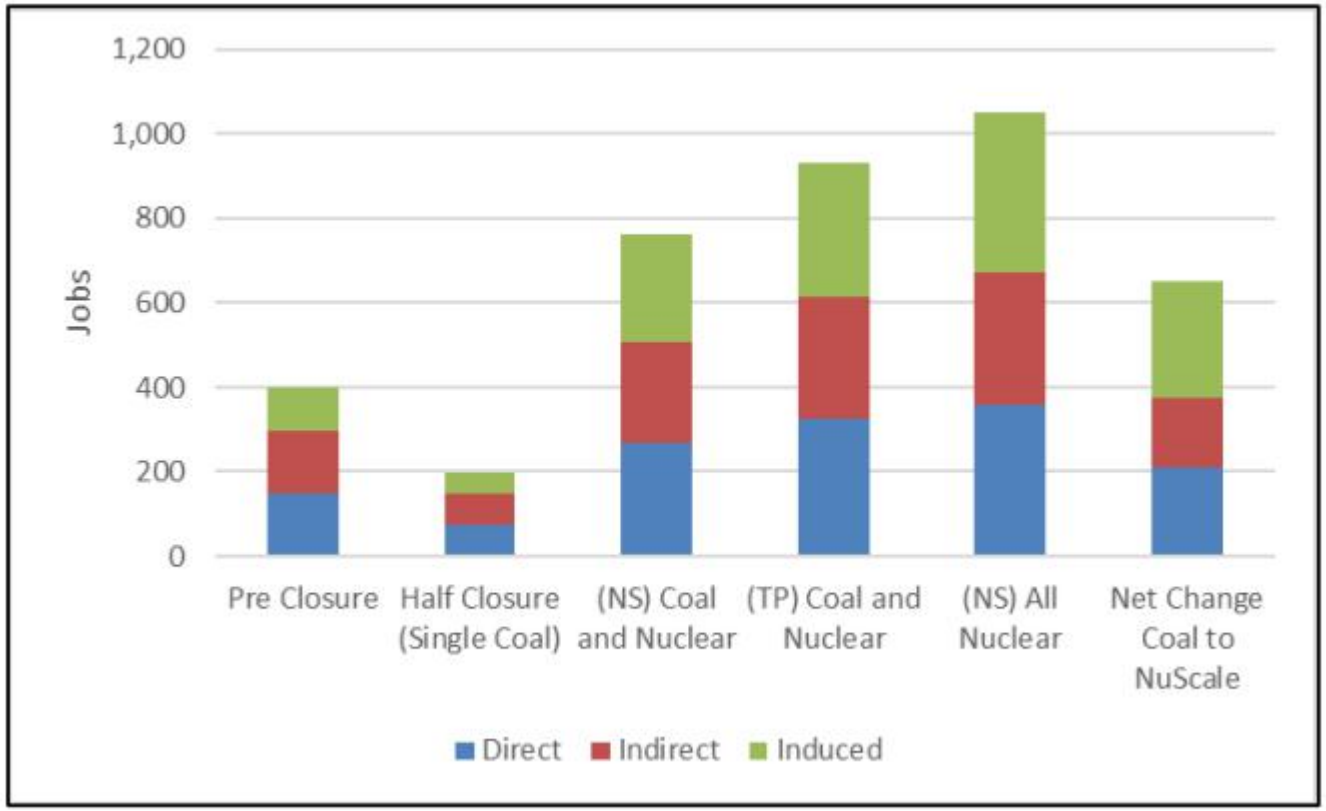
- CNC Program Guidance for the second award cycle provides details on how DOE anticipates accounting for the Nuclear PTC in CNC revenue information (https://www.energy.gov/gdo/civil-nuclear-credit-program).
- Department of Treasury and IRS currently seeking public input on Nuclear PTC (IRS Notice 2022-49).
- Both comment periods close November 4, 2022.

DOE Study on Converting Retiring Coal Plants into Nuclear Plants (Coal-to-Nuclear)

Coal-to-Nuclear Study

- Study identified 157 retired coal plant sites and 237 operating coal plant sites as potential candidates for a coal-to-nuclear transition.
- Study team found regional economic activity could increase by as much as $275 million and add 650 new, permanent jobs to the region of analysis by replacing a coal plant with 924 Mwe (example used was NuScale 12-pack).
- Section 48E(a)(3), Clean Electricity Investment Credit (ITC), permits a 10% increase for qualified investments in “energy communities” (for which many coal communities qualify).
  - Resulting ITC for facilities in qualified energy communities is 40% (base ITC with prevailing wage is 30%).
  - If facility also meets domestic content requirements, ITC is 50%.
- Loan Programs Office Section 1706 Program

Economic Impact - Employment



Dep’t of Energy, *Investigating Benefits and Challenges of Converting Retiring Coal Plants into Nuclear Plants* at Fig. 5-1 (Sep. 13, 2022), https://fuelcycleoptions.inl.gov/SiteAssets/SitePages/Home/C2N2022Report.pdf.

Consent-Based Siting

Consent-Based Siting – Recent Developments

- Consistent with Congressional direction, DOE is developing a Federal consolidated interim storage capability for spent nuclear fuel.

- On December 1, 2021, DOE issued a request for information on using consent-based siting to identify consolidated interim storage sites.
  - DOE received 225 submissions from a wide variety of commenters.
  - On September 15, 2022, DOE issued a Comment Summary & Analysis Report.

- On September 20, 2022, DOE issued a funding opportunity announcement (FOA) to support community engagement.
  - DOE is seeking to award $16 million in 6-8 awards.
  - Applications are due December 19, 2022.

Consent-Based Siting – Next Steps

- In March 2023, DOE anticipates making awards under the FOA.
- DOE is also working on:
  - Further developing the consent-based siting process.
  - Clarifying DOE's broader strategy for an integrated waste management system.

Questions?

Changes made by the Inflation Reduction Act: Provisions Relevant to the Nuclear Industry

Mary Kate Nicholson
Holland & Knight LLP

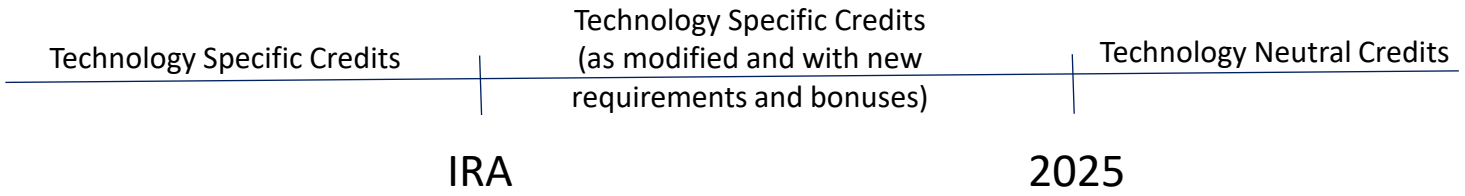
October 24, 2022

Presented to:
Nuclear Energy Institute Legal Advisory Committee

Holland & Knight

Inflation Reduction Act Energy Tax Provisions Overview

- Provided about $369B for energy security and climate change ($205B under IRC)
- Highlights
  - Extended, expanded and modified existing clean energy tax credits
  - Added new technology neutral tax credits
  - Added prevailing wage and apprenticeship requirements
  - Added domestic content bonus
  - Added energy community bonus
  - New monetization options- direct pay and transferability
- Treasury released requests for comments on energy tax incentives on October 5, 2022. Requests comments by November 4, 2022, but will consider later-filed comments if they don't delay issuance.



Prevailing Wage & Apprenticeship Requirements

Certain provisions reduce the available credit to 1/5th of the amount otherwise allowable unless the prevailing wage and apprenticeship requirements are satisfied.

Those requirements are satisfied if any one of the following is satisfied:

- The facility's maximum net output is less than 1 MWac.
- Construction of the facility began prior to (or within 60 days after) the release by Treasury or the IRS of guidance for the implementation of the prevailing wage and apprenticeship requirements.
- The prevailing wage and apprenticeship requirements are satisfied.

Potential loss of 80% of Tax Credit

Energy Community Bonus Requirement

Certain bonus credits may be available for facilities constructed in an energy community, which includes:

- Brownfield sites
- Any census tract (or adjoining tract) that had either a coal mine close after 1999 or coal-fired electric generating unit retired after 2009
- Metropolitan statistical area or non-metropolitan statistical area which
  - At any time during the period after 2009 had areas with 0.17% or greater direct employment or 25% or greater local tax revenues significant employment (post-1999) related to extraction, processing, transport, or storage of coal, oil or natural gas; and
  - Has any unemployment rate at or above the national average unemployment rate for the previous year

Potential 10% Increase in Tax Credit amount

Domestic Content Bonus Requirement

Certain bonus credits may be available if domestic content requirements are satisfied. To satisfy this requirement:

- A taxpayer must certify that any steel, iron or manufactured product that is a component of the facility (upon completion of construction) was produced in the US.
- Manufactured products are deemed to have been produced in the US generally if 40% of costs of the manufactured products are attributed to components mined, produced or manufactured in US.

Bonus Stacking Opportunity:

30% ITC (with PW+A)
10% for location in energy community
10% for using domestic content
50% total ITC

Potential 10% Increase in Tax Credit amount

Section 45 PTC

- IRA extended existing production tax credit (PTC) for renewable power facilities and added eligibility for solar
  - Beginning of construction deadline extended to December 31, 2024 for wind facilities, **solar energy**, closed-loop biomass, open-loop biomass, landfill gas, trash, qualified hydropower, marine and hydrokinetic renewable energy, and geothermal energy.
  - Generally 2.6 cents per kwh for first 10 years (adjusted for inflation)
    - Potentially reduced if prevailing wage and apprenticeship rules not satisfied
  - Does not apply to nuclear
    - Existing rules provided a separate nuclear production tax credit under section 45J

Amendments generally apply to facilities placed in service after December 31, 2021

Section 45Y PTC

- IRA added a new technology neutral electricity production tax credit
  - No specific technologies identified- must be a zero GHG generation facility

- Applies to facilities placed in service after December 31, 2024
  - Phase out of credit over three years beginning no earlier than 2032

- 0.3 cents (or **1.5 cents**) per KWh of electricity produced in US or US possession by taxpayer at a qualified facility and either
  - (a) sold to a unrelated person, or
  - (b) if equipped with a metering device owned and operated by an unrelated person, sold, consumed or stored by taxpayer
  - Credit amount increased for inflation- would be **2.6 cents** in 2022

Section 48 ITC

- IRA extended existing investment tax credit for renewable power facilities and added eligibility for several additional technologies

- Beginning of construction deadline extended to December 31, 2024 for most energy property, including new energy property
  - Energy storage technology
  - Qualified biogas property
  - Microgrid controllers
  - Qualified interconnection property

- ITC equal to 6% (or **30%**) of qualified investment in energy property

- Additional bonus: Increase in ITC for solar or wind facilities that have a maximum net output of less than 5 MWac located in low income community, on Indian land, or part of low income residential building project or low income economic benefit project

Effective for property placed in service after December 31, 2021

Section 48E ITC

- IRA added a new technology neutral electricity credit

- Applies to property placed in service after December 31, 2024
  - Applies to interconnection costs and energy storage technology
  - Phase out of credit over three years beginning no earlier than 2032

- ITC equal to 6% (or **30%**) of qualified investment in energy property for facilities
  - used for generation of electricity;
  - anticipated GHG rate not greater than zero;
  - tangible personal property or other tangible property (not including building or structural components) used as an integral part of the qualified facility; and
  - depreciable or amortizable

Section 45U Zero-Emission Nuclear PTC

- Eligible facility is a nuclear facility which is owned by the taxpayer, which uses nuclear energy to produce electricity, is not an advanced nuclear power facility under Section 45J, and is placed in service before the enactment of Section 45U.
- Credit amount equals:

0.3 cents × KWh of electricity produced by taxpayer and sold to an unrelated person

Less: "reduction amount"

Equals: Amount of section 45U Credit

The "reduction amount" is calculated as follows:

16% x (Gross receipts from electricity produced by facility (including electricity service or products provided in conjunction therewith) and sold to unrelated person (plus certain zero emission credit payments) *Less:* 2.5 cents * KWh energy produced and sold to unrelated person)

Equals: Reduction Amount

- Credit amount multiplied by 5 if prevailing wage and apprenticeship requirements satisfied
- Credit is available for electricity produced and sold for taxable years beginning after December 31, 2023 and before December 31, 2032.

Section 45V Clean Hydrogen PTC

- Construction must begin before January 1, 2033

- Credit equals $0.60 (or **$3.00**) per kilogram of qualified green hydrogen
  - Must produced by the taxpayer
  - Credit reduced for qualified clean hydrogen that results in lifecycle greenhouse gas emission of more than 0.45 kilograms of CO2e per kilogram of hydrogen and no credit if greater than 4 kilograms
  - Can elect ITC
  - Cannot receive the section 45V credit if facility includes carbon capture equipment and taxpayer receives 45Q carbon capture and storage credit

- Qualified hydrogen: produced in US in ordinary course of business, for sale or use

- Credit is available for hydrogen produced after December 31, 2022.

Tax Equity- Choice of transaction structure

- 3 Primary Types
- Partnership Flip
  - Established structure (initially for wind projects)
  - Benefits from Rev. Procs. 2007-65 and 2020-12
  - Adapted for solar and other renewable energy transactions

- Sale-Leaseback
  - Only available for ITC transactions
  - PTCs are only available to an owner that is also operator of the generation facility

- Inverted Lease (aka Lease Pass-Through)
  - Owner/Lessor of generation project is also the developer
  - Owner makes an election to “transfer” ITC to the Lessee/Tenant (tax equity investor)
  - Owner/Lessor retains depreciation benefit

Direct Pay

- If election is made, treated as making a payment against the tax imposed by subtitle A equal to the amount of such credit.
  - Election is made on a per facility/project/equipment basis
- Eligible entities: includes entities exempt from tax imposed by subtitle A, state or local government, the TVA, an Indian tribal government, any Alaska Native Corporation, or certain rural cooperatives.
- Other entities may elect direct pay for years prior to 2033 for 45V (clean hydrogen); 45Q (CCUS); 45X (advanced manufacturing production credit)
- Election (made on a yearly basis) for eligible taxpayer to transfer all (or any portion) of an eligible credit to an unrelated taxpayer
  - Consideration must be paid in cash,
  - Consideration is not includible in gross income of the eligible taxpayer, and with respect to the transferee taxpayer, is not deductible.

Transferability

- Taxpayers who are not eligible for direct pay are eligible for transferability

Why is monetization needed?

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INLA Inter Jura Conference

Reliable Energy - Anywhere

24 October 2022

Washington, DC

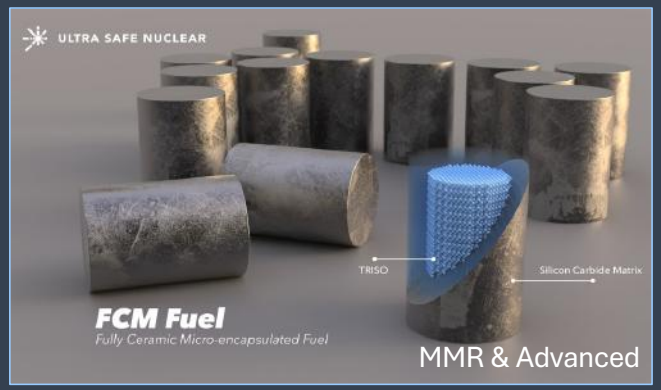
ULTRA SAFE NUCLEAR

Reliable Heat and Power - Anywhere

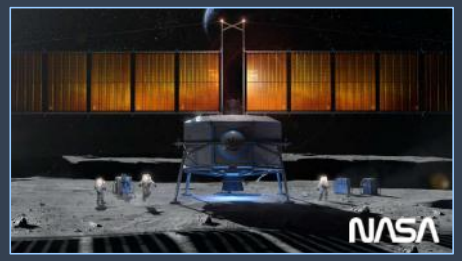
- Family of nuclear heat and power products to address multiple needs
- Carbon-free, Risk-free
  - from Watts to Mega Watts
- All based on Ultra Safe principles & technologies
- Shared manufacturing, deployment operation and services resources

MMR
Earth

TRISO & FCM
Heat & Power



PYLON
Space



WARP
Earth - Mobile

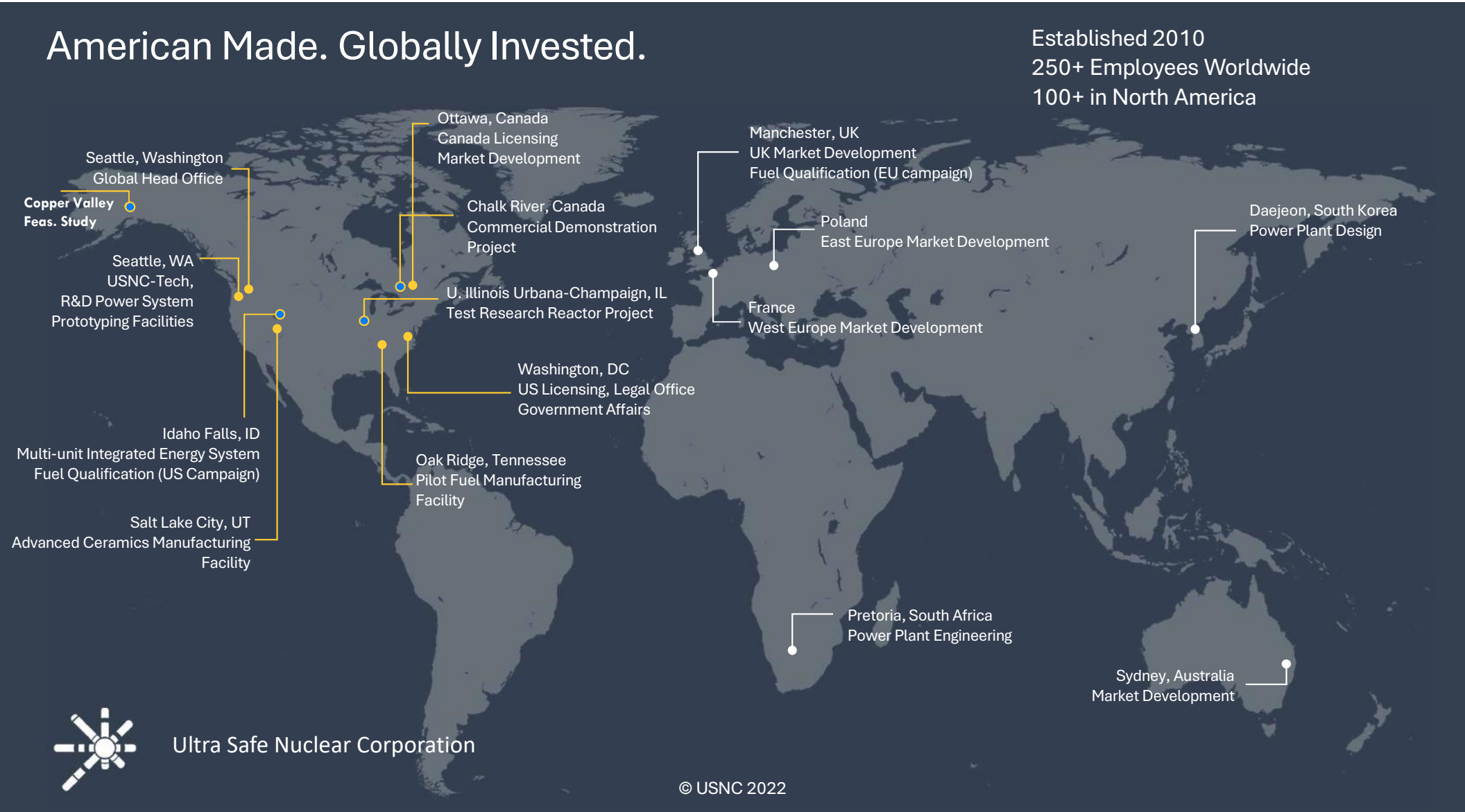
EmberCore
Earth & Space

PADME
Space - Propulsion

10/19/2022

American Made. Globally Invested.

Established 2010
250+ Employees Worldwide
100+ in North America



Ultra Safe Nuclear Corporation

Stakeholder Engagement is Essential from the Outset

What is engagement?

Early: Stakeholder Engagement is a core competency for USNC

Identification of range of stakeholders

Outreach- contact, establish best means of connection

Meet, listen, 2-way dialogue

Ability to hear ‘No’

IAP2 Spectrum of Public Participation

IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world.

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

NRC Part 100 – Reactor Site Criteria

PART 100 PURPOSE – The NRC does not determine where a reactor "should" be built, rather it evaluates whether the site and a reactor design to ensure it provides adequate protection to public health and safety

July 2022 – The NRC Approved New Approach for Siting Advanced Reactors

OUT

"One Size Fits All" Approach
Fixed standard that population density can not exceed 500 persons/mile^2

IN

"Risked Informed Approach"
Sets design-specific source terms and off-site consequences from licensing basis events and specifies a "dosed-based" performance criteria to assess population


[Event / Panel Title]
Reliable Energy - Anywhere
ULTRA SAFE NUCLEAR
Ottawa
12 April 2022

TerraPower

Siting Advanced Nuclear: TerraPower's Natrium™ Reactor

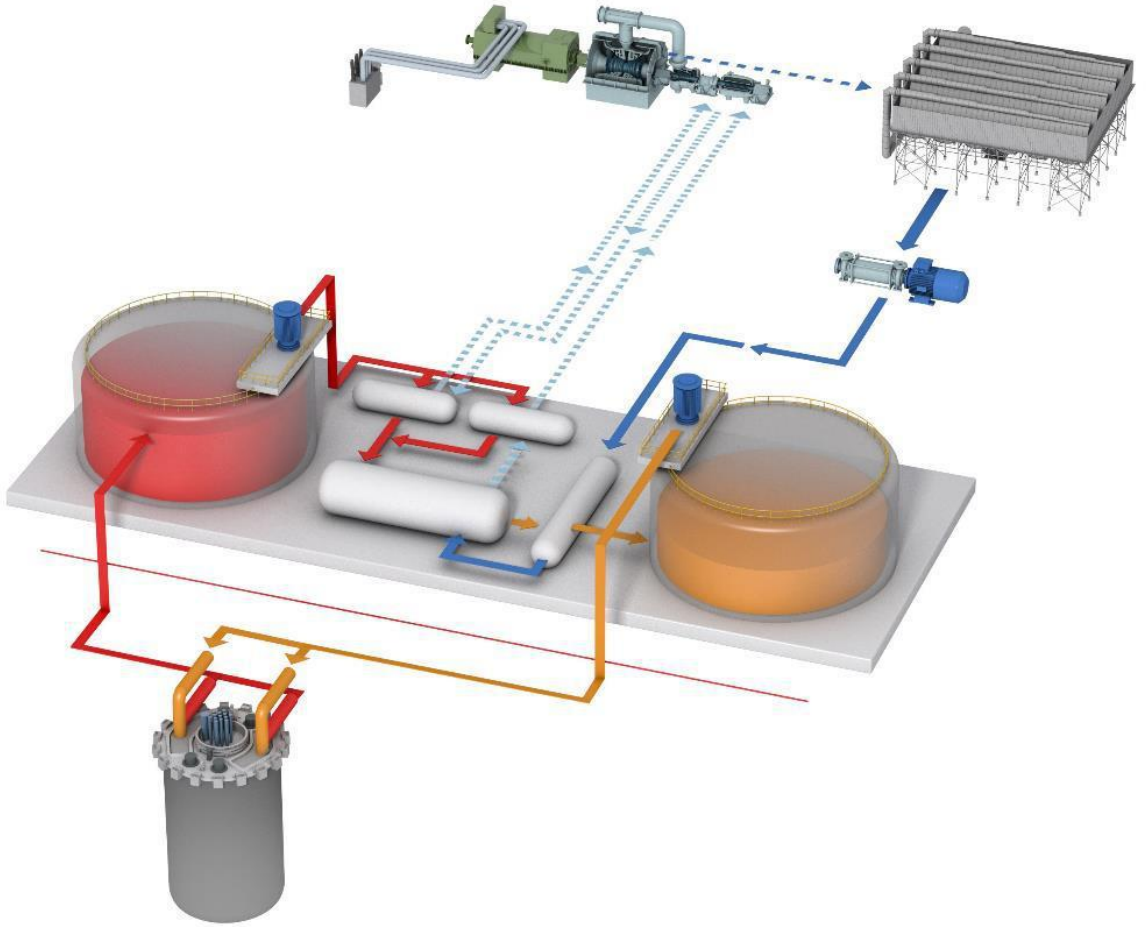
Craighton Goeppele, Senior VP & General Counsel
TerraPower, LLC

October 24, 2022

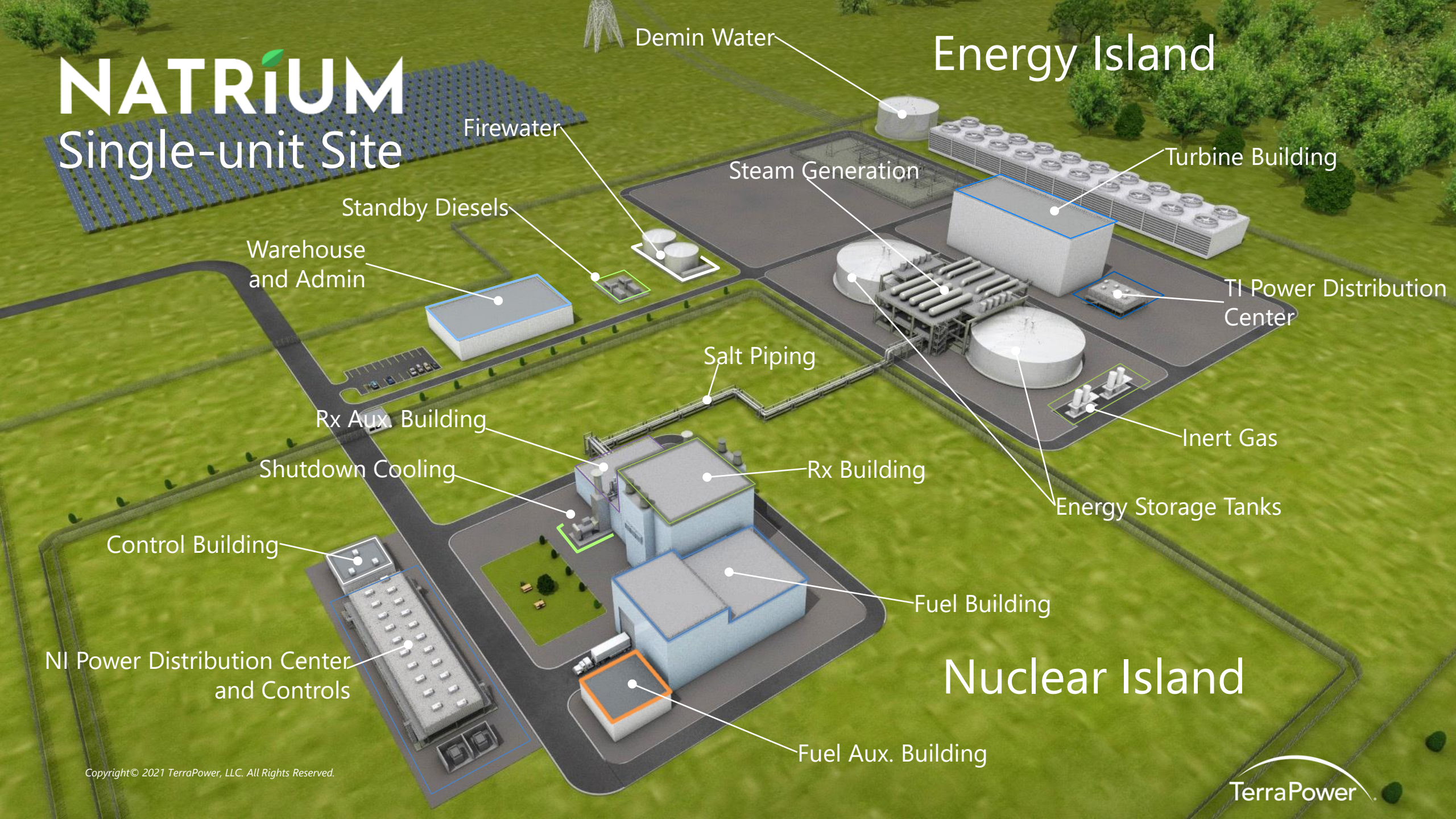
Overview of the Natrium Technology*

- Sodium Fast Reactor
- Integrates on and fortifies grids with high renewables penetrations.
- 345 MWe reactor that can flex to 500 MWe for 5.5 hours when needed.
- Nuclear redefined.
  - Eliminates nuclear “sprawl.”
  - Design to cost.
  - Decoupled approach reduces cost
  - Simplicity.
  - Rapid construction.
  - Design-specific staffing.
  - ~41% net thermal efficiency.

**A TerraPower and GE-Hitachi technology*

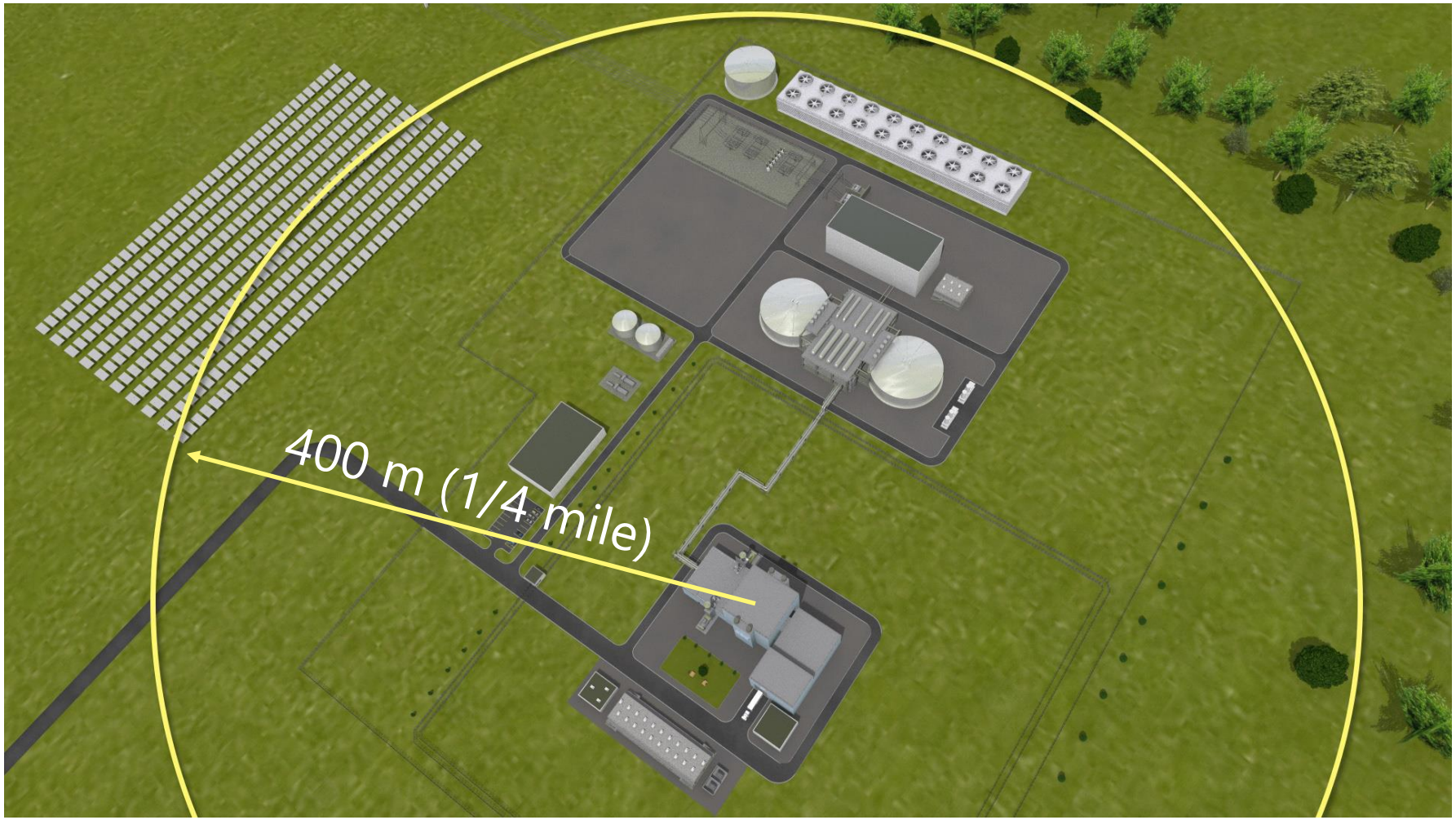


TerraPower



TerraPower

Emergency Planning Zone



TerraPower

Siting of the Natrium Demonstration Reactor

- Selected Kemmerer, Wyoming in November 2021 at retiring coal plant location
- Completing site subsurface investigation October 2022
- Location is near, but not on retiring coal plant; issues to navigate on siting include:
  - Environmental, real estate/zoning, easements, mineral rights
  - Interconnection
  - Water
  - Site characterization/seismic
  - Historic preservation
- Community/Tribal Engagement
  - Benefits of early outreach/town halls with 4 communities—(Do you want a Natrium plant?)—the power of choice in siting; Wyoming government
  - Early tribal engagement; National Historic Preservation Act Sec. 106 & beyond

TerraPower

Siting of the Natrium Demonstration Reactor

Early engagement with the NRC is key, anticipating and communicating any areas requiring confirmation as early as possible. Some key areas include the following:

- Started discussions with NRC, even before we announced preferred site in Kemmerer (including previewing our siting decision).
- Regulatory engagement plan to establish the rules of engagement with the NRC and reduce regulatory uncertainty.
- A lot of focus in discussions with the NRC on reuse of infrastructure and water rights.
- Ensuring that we engage in the required tribal consultations (even more important given the NRC's focus on ESG principles).
- TerraPower will be licensing the Natrium Demonstration Reactor under 10 CFR Part 50.

NUSCALE™
Power for all humankind

SMR EPZ & SITING

Bob Temple
General Counsel
btemple@nuscalepower.com

Acknowledgement and Disclaimer

This material is based upon work supported by the Department of Energy under Award Number DE-NE0008928.

Simplicity Enhances Safety

Natural Convection for Cooling

- Passively safe - cooling water circulates through the nuclear core by natural convection eliminating the need for pumps.

Seismically Robust

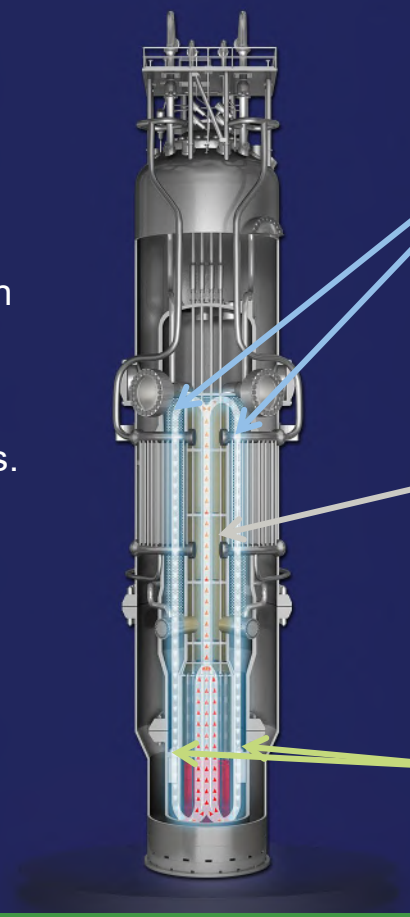
- System submerged in a below-grade pool of water in an earthquake and aircraft impact resistant building.

Simple and Small

- Reactor core is 1/20th the size of large reactor cores.
- Integrated reactor design - no large-break loss-of-coolant accidents.

Defense-in-Depth

- Multiple additional barriers to protect against the release of radiation to the environment.



Conduction **– the water heated by the nuclear reaction (primary water) transfers its heat through the walls of the tubes in the steam generator, heating the water inside the tubes (secondary water) and turning it to steam. This heat transfer cools the primary water.**

Convection **– energy from the nuclear reaction heats the primary water causing it to rise by convection and buoyancy through the riser, much like a chimney effect.**

Gravity / Buoyancy **– colder (denser) primary water "falls" to bottom of reactor pressure vessel, and the natural circulation cycle continues.**

Second-to-none safety case – site boundary Emergency Planning Zone capable

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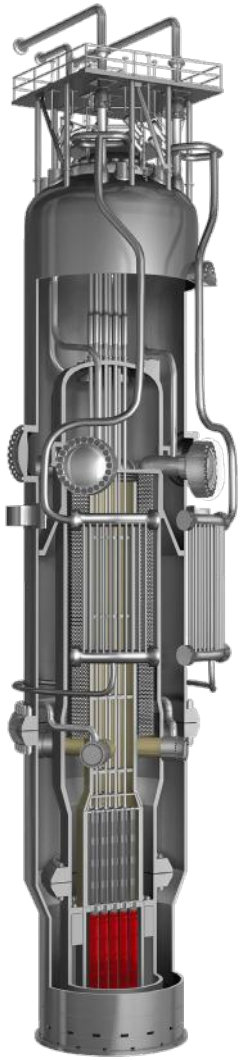
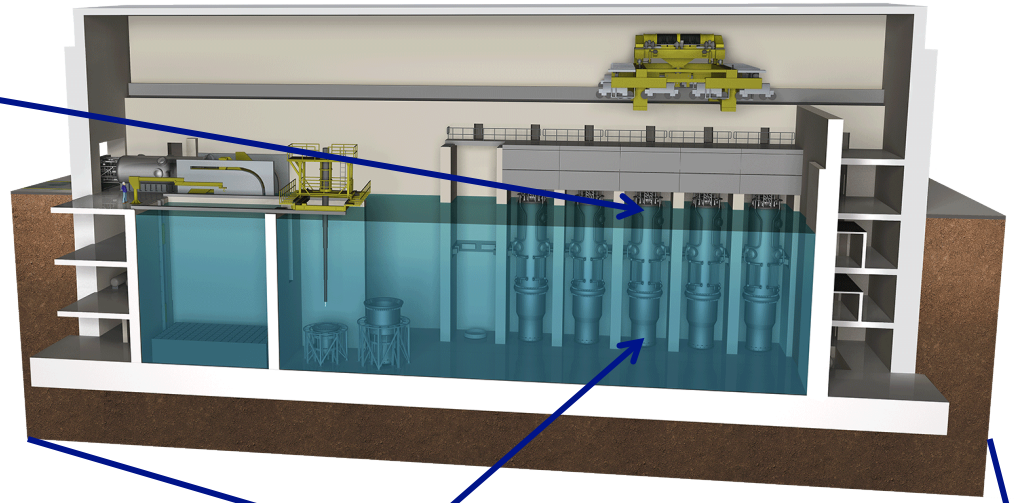
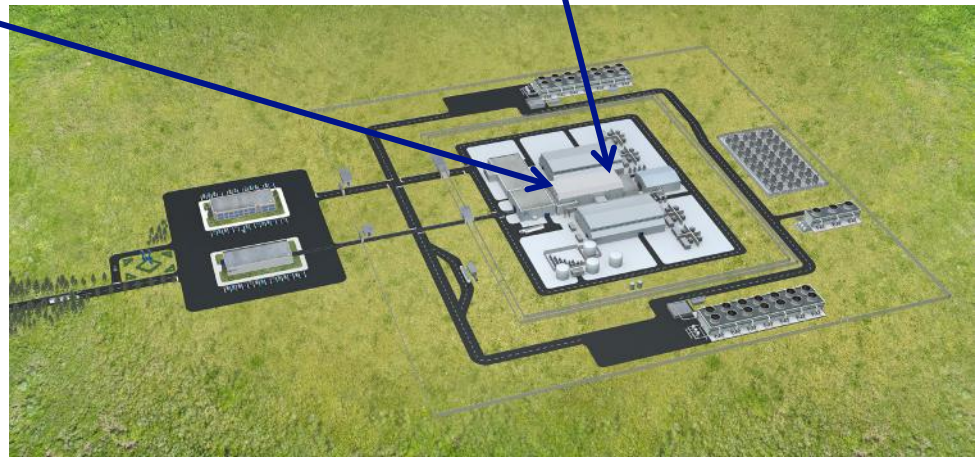
NuScale VOYGR™ Plant Site Overview







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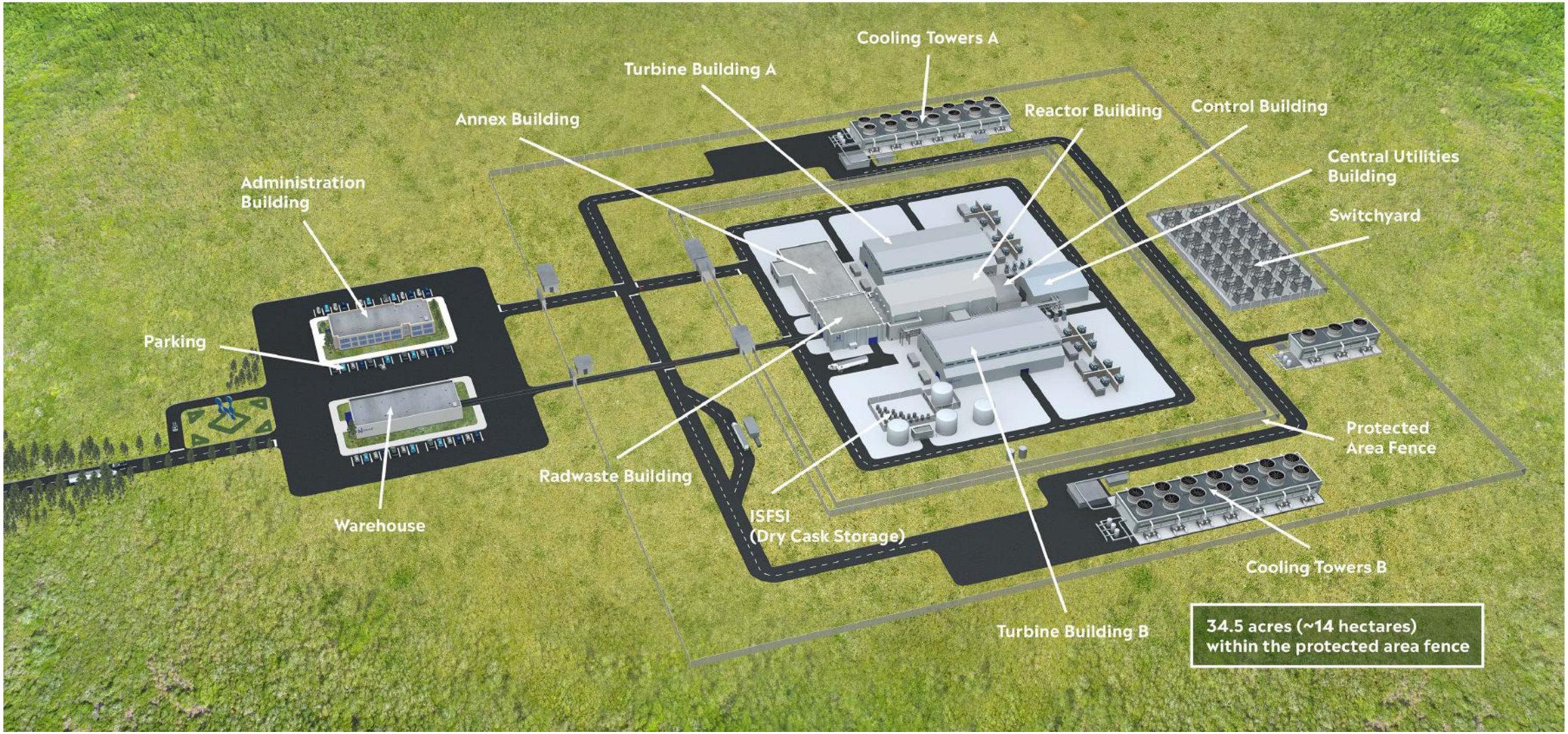
Detailed VOYGR™ Plant Site Layout



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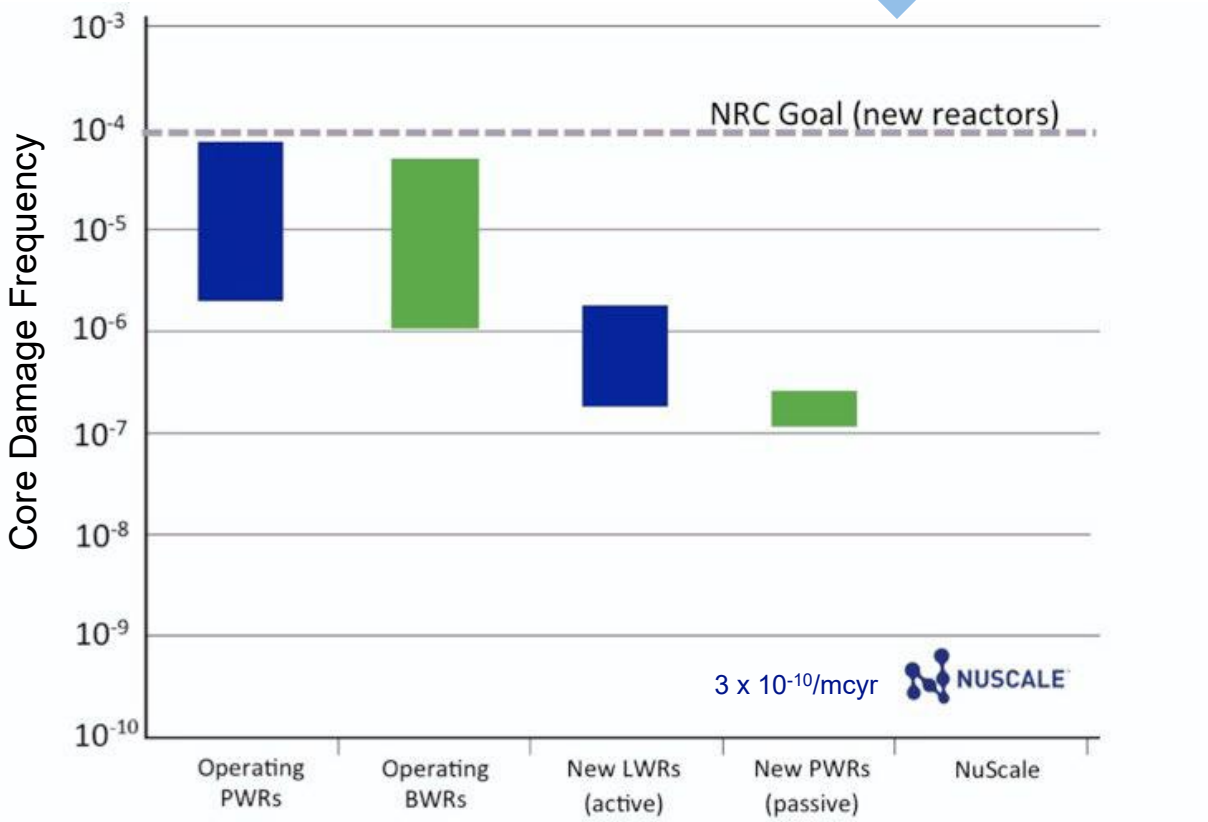
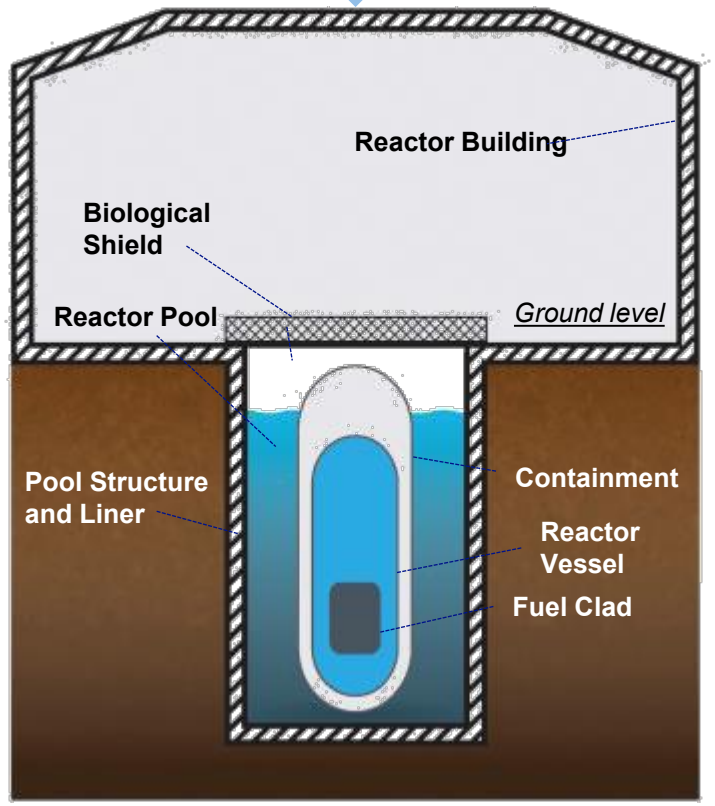
Reducing Plant Risk

Risk = (frequency of failure) X (consequences)



*Probability of core damage (full power, internal events) due to NuScale reactor equipment failures is **1 event per module every ~3 Billion years.***



Four additional barriers to release of radioactivity from a NuScale VOYGR™ plant.

NUSCALE Power for all humankind

NRC Siting & EPZ Regulations Overview

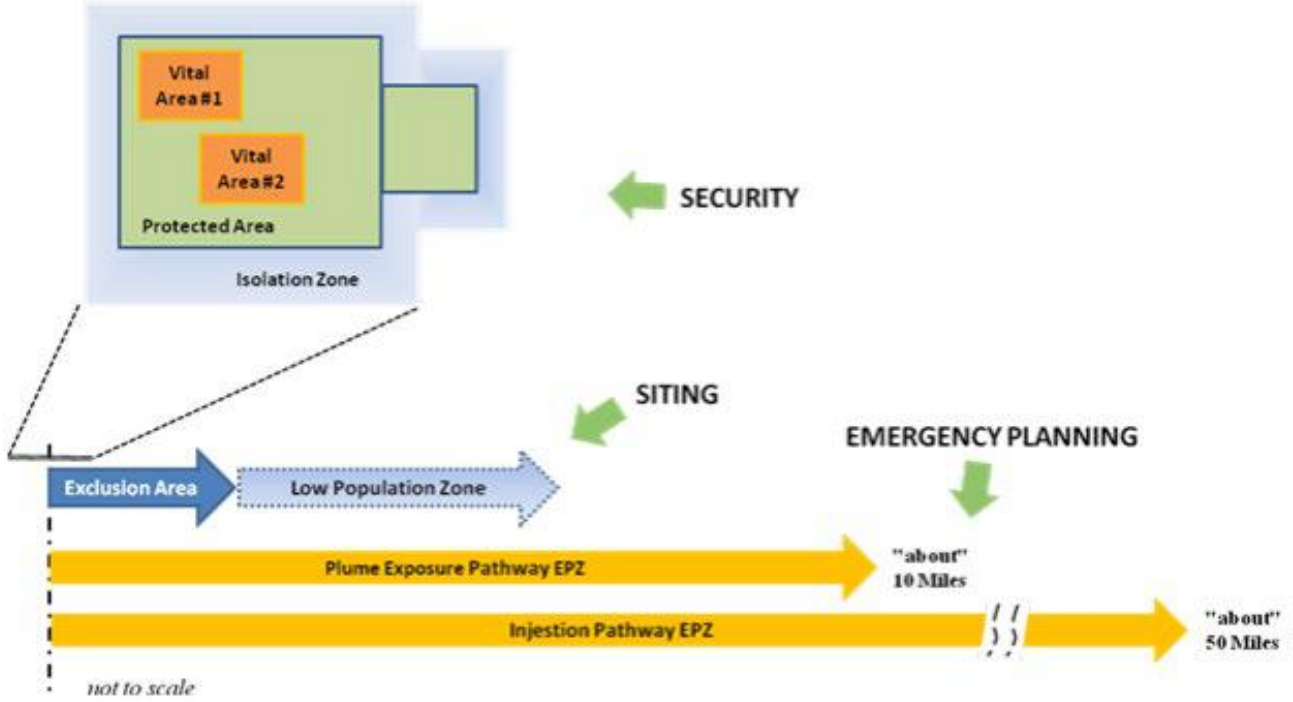


Figure: Idaho National Laboratory

Siting criteria

- Exclusion Area
  - The area controlled by licensee (“site boundary”)
  - Must meet “offsite dose limit” (≤ 25 rem whole body or 300 rem thyroid over 2 hours)
- Low Population Zone (LPZ)
  - This area supports executing emergency plan actions
  - LPZ dose limit (25 rem whole body or 300 rem thyroid over 30 days)

Emergency planning zones

- Plume Exposure Pathway Zone
  - The area in which pre-planned protective actions are developed by licensee (sheltering, evacuations, etc.)
  - Typically ~10 mile radius from the plant
- Ingestion Exposure Pathway Zone
  - Protective action plans for this area are designed to avoid or reduce dose from eating or drinking radioactive material
  - Typically ~50 miles from reactor site

Plus population center distance ≥ 1.33 times distance to LPZ

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NuScale Siting Parameters

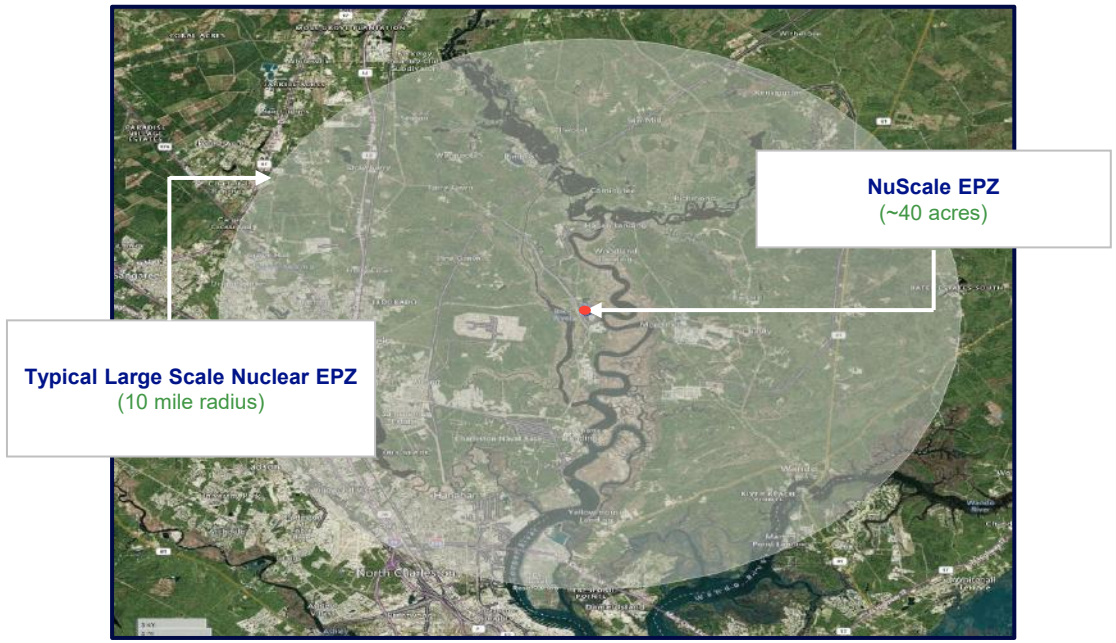
- Approved design certification site parameters:
  - Very small exclusion area (site boundary):
    - 400 ft. radius from reactor building
    - Calculated limiting doses less than 1 rem Total Effective Dose Equivalent (limit = 25 rem)
  - No additional Low Population Zone
    - Same as the site boundary
    - No restrictions on population density outside site boundary
  - As a result, the boundary of nearest population center could be as close as 532 ft. from the reactor building
    - Population center means “a densely populated center containing more than about 25,000 residents”

- Uprated NuScale VOYGR™ SMR Plant will utilize same site parameters in forthcoming Standard Design Approval application

Inherently Safe Design Sets New Industry Standards

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

- Existing commercial nuclear plants have a 10 mile (16 km) radius 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

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NuScale's EPZ Experience: NuScale EPZ Licensing Topical Report (LTR) History

- Lengthy pre-application phase, meetings with NRC in 2014 and 2015
- In December 2015, NuScale submitted a Licensing Topical Report titled, "Methodology for Establishing the Technical Basis for Plume Exposure Emergency Planning Zones [EPZs] at NuScale Small Modular Reactor Plant Sites" (LTR)
- Rev. 1 of the LTR submitted to the NRC in March 2018
  - Substantially revised in response to staff comments regarding reproducibility, clarity of seismic evaluation, applicability of security related events, and RAIs
  - Primary areas of discussion: PRA technical adequacy, defense-in-depth, seismic event screening, severe accident phenomena, and dose criteria for most-probable accidents
  - NuScale requested in late 2019 that NRC suspend review of Rev 1 in order to:
    - review Commission decisions on key EPZ-related activities (the TVA ESP and ongoing NRC EP for SMRs rulemaking)
    - interface with industry to ensure alignment behind proposed methods
- Rev. 2 EPZ topical report submitted Aug. 2020
  - Primary areas of discussion: screening threshold for external versus internal events (especially seismic event screening, applicability to non-LWRs, seismic event frequency screening, PRA uncertainty and acceptability

NuScale's EPZ Experience: LTR and TVA's Clinch River Early Site Permit

- Following the filing of NuScale's LTR, we supported a parallel effort that demonstrated site-boundary EPZ for a plant incorporating NuScale's SMRs was achievable.

- TVA submitted Early Site Permit Application (ESPA) on May 12, 2016, based on a plant parameter envelope (PPE) derived from several SMR designs:
  - BWX Technologies, Inc. (BWXT) mPower™ (Generation mPower LLC design)
  - NuScale (NuScale Power, LLC, design) – [NuScale's information was from its LTR]
  - SMR-160 (Holtec SMR, LLC, design)
  - Westinghouse SMR (Westinghouse Electric Company, LLC, design).

- In the NRC issued Final Safety Evaluation Report (FSER) on June 14, 2019, concluding the Staff's safety review, the FSER at pp. 13-19/20, states that, only with respect to the NuScale Plant design:
  - "[TVA's] evaluation used the EPZ size determination methodology in SSAR Section 13.3 to show that, once a specific SMR design is selected, it is likely that the COL or CP applicant will be able to show that the resulting offsite doses would support a [plume exposure pathway] EPZ size at the site boundary, or alternatively at a 2 mi radius. Because the analysis used information for an SMR design that is at the lower end of the design rated power that would fit the ESPA PPE (i.e., a range of 160 MWt to 800 MWt reactor core/reactor), the accident releases and resulting doses are not bounding for any other SMR design considered in the ESPA."

NuScale's EPZ Experience: NuScale EPZ LTR Approval

- On August 8, 2022, the NRC Staff released their Advanced Safety Evaluation Report (ASER) to the Advisory Committee on Reactor Safeguards, approving NuScale's method by which an Emergency Planning Zone (EPZ) will be determined (as described in the LTR)

- On October 6-7 the Advance Committee on Reactor Safeguards (ACRS) reviewed and recommended approval of NuScale's EPZ methodology

- NuScale awaits the NRC Staff's FSER and will then submit the approved-report package
  - Once submitted, a combined license applicant for the NuScale design may use NuScale's EPZ topical report to determine the site-specific EPZ boundary for its site
  - Our calculations show that an EPZ that only extends to a site boundary is achievable for a wide range of potential plant sites where an applicant may locate a NuScale VOYGR™ SMR Plant
  - We expect that the NRC Staff's FSER will be made public by mid-November

Emergency Preparedness Requirements for Small Modular Reactors and Other New Technologies (EP Rule, 10 CFR 50.160)

- The rule would add new emergency preparedness requirements for SMRs, non-light-water reactors, and non-power production or utilization facilities. It would adopt a scalable plume exposure pathway EPZ approach that is performance-based, consequence-oriented, and technology-inclusive.

- Final rule went to the Commission in January 2022
- Remaining steps, assuming Commission does not remand to staff for rework:
  - Commission votes on rule – estimated January 2023
  - Rule published
- **Does not affect NuScale's EPZ LTR**: our methodology can be used under the existing or new rule

Siting: Land Use by Energy Sources

To generate 1,000 MWe of power, a NuScale SMR power plant would require less than 1% of the land area that renewables such as biomass, wind, solar, and hydropower need for the same amount of generation.

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Siting: 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 protected area of around 34 acres
- 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

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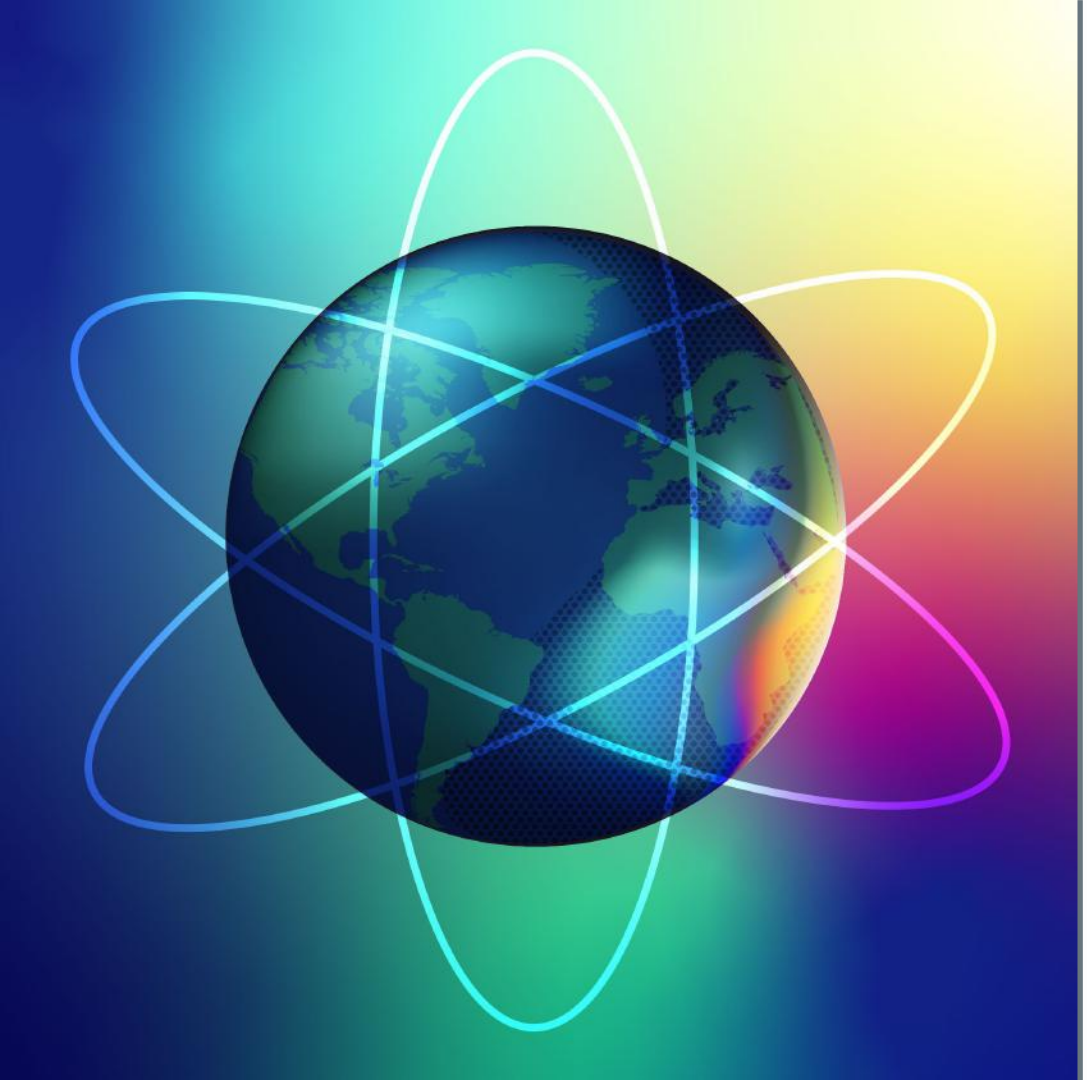
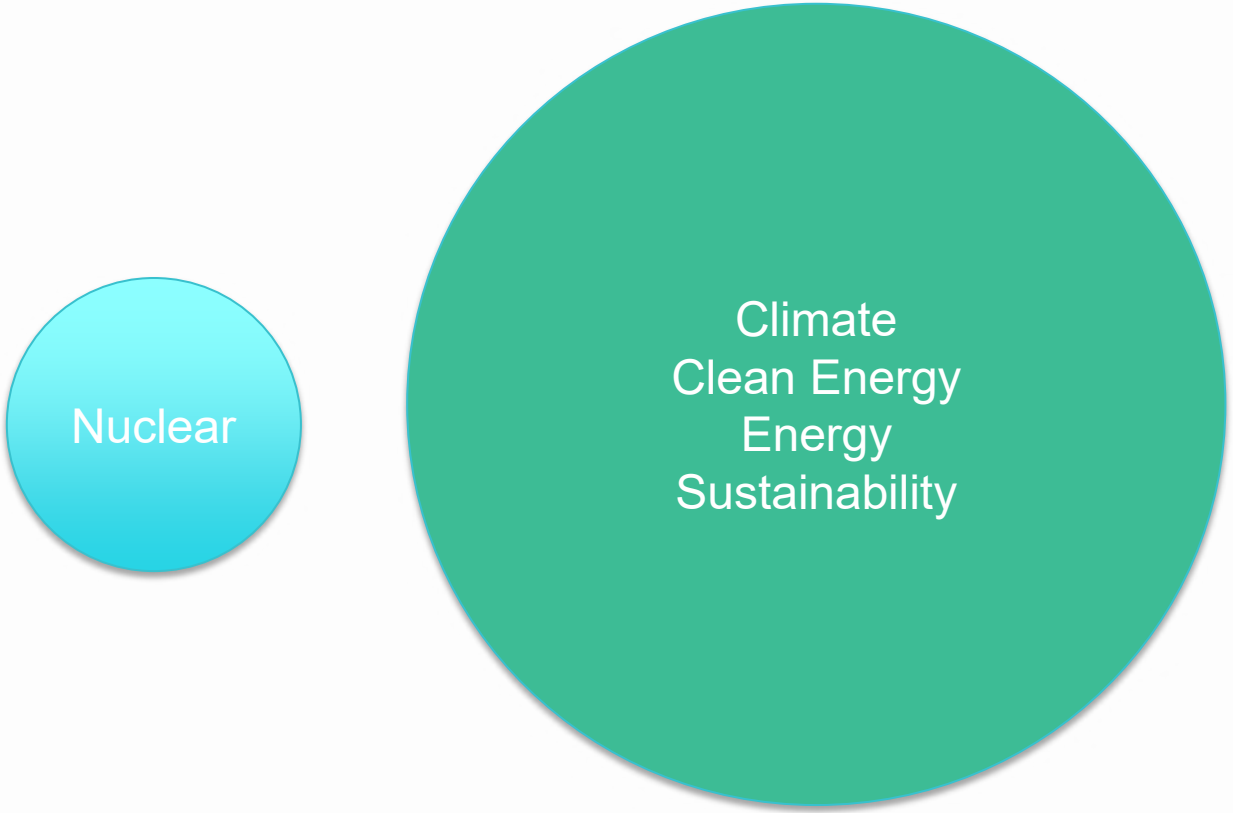


NUCLEAR ENERGY INSTITUTE

The Evolving Nuclear Narrative

Jon Wentzel
Vice President, Communications
October 24, 2022

2017



Strategy

- Recast the conversation: Solutions, not technology
- Expand the circle: Reach new audiences
  - Policy makers and influencers
  - Climate advocates
  - Energy transition thought leaders
  - Innovators in the new economy
  - Financial community
  - Potential customers outside of electric sector

Today


Decade Of
Execution
Arshad Mansoor

TIME

The New York Times

Nuclear Power Gets New Push in U.S., Winning Converts

With challenges in meeting clean energy goals and new electricity demands, politicians in both parties seek to prolong and even expand reactor use.

THE WALL STREET JOURNAL.

FT

Forbes

The Inflation Reduction Act Will Spawn Nuclear Energy's Growth

CNBC

npr

REUTERS

AP

Nuclear industry hopes to expand output with new reactors

By JENNIFER McDERMOTT June 21, 2022

The Washington Post

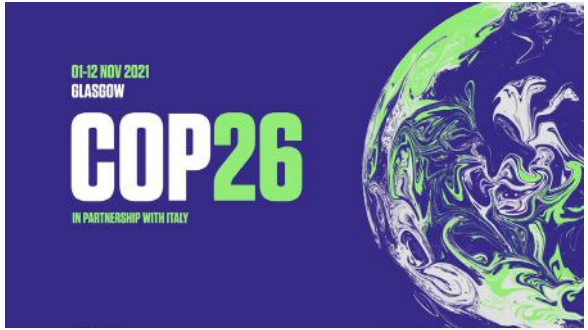
E&E NEWS

Is nuclear energy poised for an ESG-fueled comeback?

By Nico Portuondo | 10/04/2022 06:45 AM EDT

CERAWEEK
by S&P Global

future tense
ASU | NEW AMERICA | SLATE



Next up for the Nuclear Narrative

- Continuing to expand our reach
  - Educating new audiences
- Evolve our story…the nuclear energy brand
  - Recognition and a level playing field
  - Confidence
  - Move from *acceptance* to *demand*