



**OCED**

Office of Clean Energy Demonstrations

Office of  
**NUCLEAR ENERGY**

THE OFFICE OF

**CLEAN ENERGY DEMONSTRATIONS**

**&**

THE OFFICE OF

**NUCLEAR ENERGY**



**Generation III+ Small Modular Reactor  
Notice of Intent Informational Webinar**

July 9, 2024

# Disclaimer

*Only publicly available information provided in the OCED Notice of Intent (NOI) is discussed in this webinar.*

*Attending the webinar and watching the recording is completely voluntary and will not impact an applicant's selection.*

*This webinar is not a rule or regulation. If there are any inconsistencies between the NOI and the statements in this webinar, the NOI is the controlling document.*

# Today's Webinar Will Cover



**Nuclear Energy at the  
Department**



**Gen III+ SMR Notice of  
Intent Details**



**Next Steps and Resources**



# Nuclear Energy at the Department



***In its Pathways to Commercial Liftoff series, the Department of Energy estimates the U.S. will need 700-900 GW of additional clean, firm capacity to reach net-zero by 2050.***

***Nuclear power is among the proven options that can deliver this magnitude of zero-carbon, baseload energy at scale.***

# Current DOE Nuclear Energy Portfolio

## Office of Nuclear Energy



Advances nuclear energy science and technology to meet U.S. energy, environmental, and economic needs

### Example Programs

- Coal-to-Nuclear Transitions
- HALEU Availability Program
- *NEW! Gen III+ SMR Tier 2*

## Office of Clean Energy Demonstrations



Supports the commercial-scale demonstration of advanced reactors through cost-shared partnerships with U.S. industry

### Example Programs

- Advanced Reactor Demonstration Projects
- *NEW! Gen III+ SMR Tier 1*

## Loan Programs Office



Provides debt financing for large-scale energy projects, including nuclear reactors and supply chain, in the U.S.

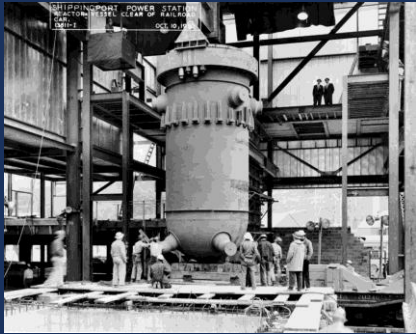
### Example Programs

- Vogtle Units 3 and 4
- Palisades Restart
- *POTENTIAL Gen III+ SMR Follow-on Financing*

# Evolution of Nuclear Power

## Gen I

### Early Prototype Reactors



- Shippingport
- Dresden, Fermi I
- Magnox

## Gen II

### Commercial Power Reactors



- LWR-PWR, BWR
- CANDU
- VVER / RBMK

## Gen III

### Advanced LWRs



- ABWR
- System 80+
- AP600
- EPR

## Gen III+

### LWRs w/ Improved Performance & Economics



- AP1000
- Gen III+ SMRs

## Gen IV

### Non-LWRs w/ Improved Performance, New Use-Cases

- *Advanced Reactor Demos*

Gen I

Gen II

Gen III

Gen III+

Gen IV

1950

1960

1970

1980

1990

2000

2010

2020










2030

# Gen III+ SMR Definition

Generation III+ Small Modular Reactors are defined as a nuclear fission reactor that:

- ✓ Uses light water as a coolant and low-enriched uranium (LEU) as a fuel
- ✓ Has a power output of approximately 50-700 megawatts-electric (MWe) in a single or multiple unit plant
- ✓ Intends to maximize factory fabrication approaches for nth-of-a-kind units
- ✓ Possess significant improvements compared to reactors operating on December 27, 2020, including ...

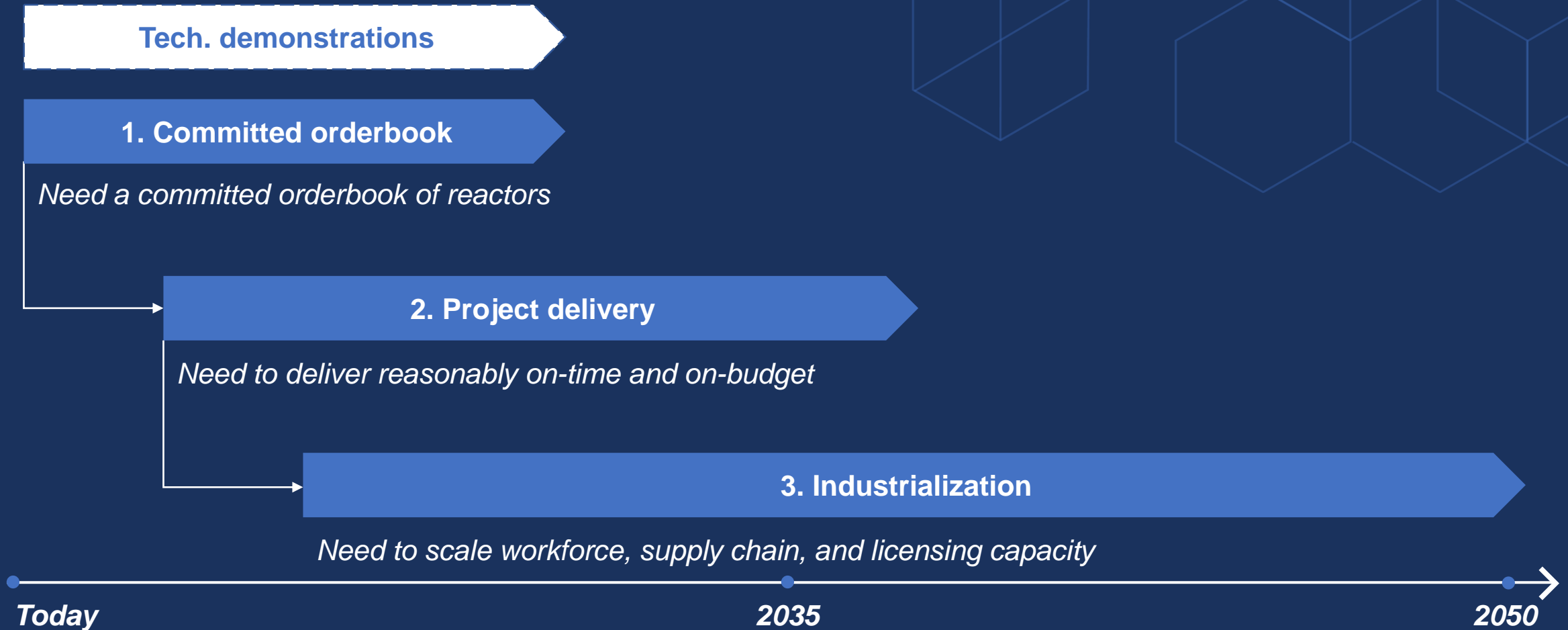
## Gen III+ SMR Improvements

	Increased Thermal Efficiency
	Load Following to Complement Intermittent Renewable Power Generation
	Integrability with Electric and Non-electric Applications
	Improved Fuel and Material Performance
	Scalability to Match Power Demand
	Additional Inherent Safety Features
	Increased Tolerance to Loss of Fuel Cooling
	Improved Proliferation Resistance
	Enhanced Reliability or Improved Resilience
	Lower Waste Yields
	Reduced Environmental Impacts



# Targeting Investments to Spur Fleet-wide Nuclear Deployment

DOE plans to design this funding opportunity to help break the commercial liftoff stalemate by prioritizing funding for the following needs identified in the Pathways to Commercial Liftoff report.



Visit [liftoff.energy.gov](https://liftoff.energy.gov) to learn more.



# Gen III+ Small Modular Reactor Notice of Intent

# Two Tiers of Funding



**Program Goal:** Focus DOE and non-federal resources on a credible and sustainable pathway to fleet-level deployment of Generation (Gen) III+ small modular reactors (SMR) by offering funding through two tiers:

	<b>Tier 1</b> <i>Gen III+ SMR First Mover Team Support</i>	<b>Tier 2</b> <i>Fast Follower Deployment Support</i>
<b>Leading Office</b>	Office of Clean Energy Demonstrations	Office of Nuclear Energy
<b>Eligibility</b>	Consortium that consists of not less than one Gen III+ technology developer, and two or more deployment partners, one of which must be a utility. The prime applicant should be a utility or end user.	Utility or end user or those capable of improving key gaps in the domestic supply chain to deploy new nuclear.
<b>Overview</b>	Near-term utility commercial deployments of a Gen III+ small modular reactor technology in the United States.	Support design, licensing, supplier development, and site preparation of a grid-scale Gen III+ reactor design that can be deployed no later than 2030.
<b>Anticipated Project Number</b>	Up to two	Multiple awards across different focus areas
<b>Available Funding</b>	Up to \$800 million	Up to \$100 million
<b>Funding Mechanism</b>	Other Transactions Agreement	Other Transactions Agreement and/or Cooperative Agreement

# Tier 1 – First Mover Team Support



**Objective:** Leverage \$800M as a catalyst to accelerate utility, technology provider, and end-user partnerships and facilitate an orderbook to achieve nth-of-a-kind costs.



## Characteristics of strong projects include:

- **Teams that include legally binding agreements** between a utility (or utilities), reactor vendor, end-users/off-takers, and a constructor
- **Documented agreement on pursuing a preferred reactor technology** with a replicable design
- **Full subscription** to the electricity, steam, or other form of power to be produced by the project;
- **A strategy for financing the reactor project**, including the anticipated sources of funding and a breakdown between debt and equity at each project stage;
- **Identified mechanism(s) to navigate risk** on cost-overruns;
- **A plan for meaningful engagement** with the host community;
- **A plan for multiple reactor deployments**, and a timeline for how procurements and construction would be staged for each subsequent project;
- **A mechanism to leverage the first-of-a-kind learnings** to facilitate cost reductions in nth-of-a-kind projects;
- **Use of domestic supply chains** with demonstrated capacity and capability to support planned orders as well as potential future growth, to the extent possible; and
- **Timeliness of the proposed deployment**, including mechanisms such as use of an existing site with the potential for expansion or existing engagement with the NRC including pre-application engagement, submission of a permit or license application, and/or receipt of design certification.

# Placing Projects on a Pathway to Deployment

While these funds will likely amount to only a portion of the funds necessary to complete a new nuclear project, they can be particularly impactful moving projects forward.

Applicants may wish to complement funds with:

- **Additional non-federal support**, such as private investment and/or state incentives
- **Private risk-sharing mechanisms**, such as agreements among team members or insurance products
- **Loans**, either through conventional lenders or a federal program, such as LPO
- **Tax credit revenue**

***Awards made under this tier may be configured to allow recipients to access financing from the Loan Programs Office (LPO).***

Applicants will be asked to specify where they would like to apply available funds for greatest impact.

# Tier 2 – Fast Follower Deployment Support



**Objective:** Leverage \$100M to strengthen the domestic foundation such that it can support next movers in building-out an orderbook to achieve nth-of-a-kind pricing.



## Application Priorities:

- **Reduce risks** for those looking to pursue initial orderbooks for SMR deployments
- **Improve domestic supply chain capabilities and capacities** such that they become ready to support near-term SMR deployments
- **Reduce timelines** to deploy follow-on SMRs

### Tier 2.1 – SMR Site Selection and Preparation

Supports siting initiatives which can help lead to a multi-reactor orderbook of advanced SMRs.

### Tier 2.2 – SMR Supply Chain Development

Accelerates the cost/schedule-competitiveness, technical capability, and/or industrial capacity of the U.S. nuclear supplier industrial base in support of future Gen III+ SMR deployments.

### Tier 2.3 – SMR Project Improvement

Increases the confidence of cost and schedule estimates of Gen III+ SMR projects.

# Options for Deployment

## Funds Disbursed

### Other Transactions Agreement (OTA)

- OTA is defined as neither USG procurement nor as financial assistance.
- OTAs offer DOE **flexibilities during the solicitation and award process**, including, the opportunity to meet with applicants to discuss their proposed projects.
- DOE anticipates leveraging OTAs for **Tier 1 and 2 awards**.
- Visit [energy.gov/management/other-transaction-authority](https://energy.gov/management/other-transaction-authority) to learn more.

### Cooperative Agreement

- Cooperative Agreements are defined by the Grants and Cooperative Agreements Act and the implementing regulations of 2 CFR parts 200 and 910.
- Cooperative agreements entail **substantial involvement between the Department and the recipient** during the performance of the funded activity.
- DOE may consider leveraging cooperative agreements for **Tier 2 awards**.



# Next Steps and Resources





### Program Announcement

Summer 2024:

- NOI Release
- Industry Day
- One-on-One Meetings with potential applicants
- Solicitation Release



### Applications

Fall – Winter 2024:

- Open conversation period with potential applicants
- Quiet Period
- Offers Due



### Evaluations

Winter – Spring 2025:

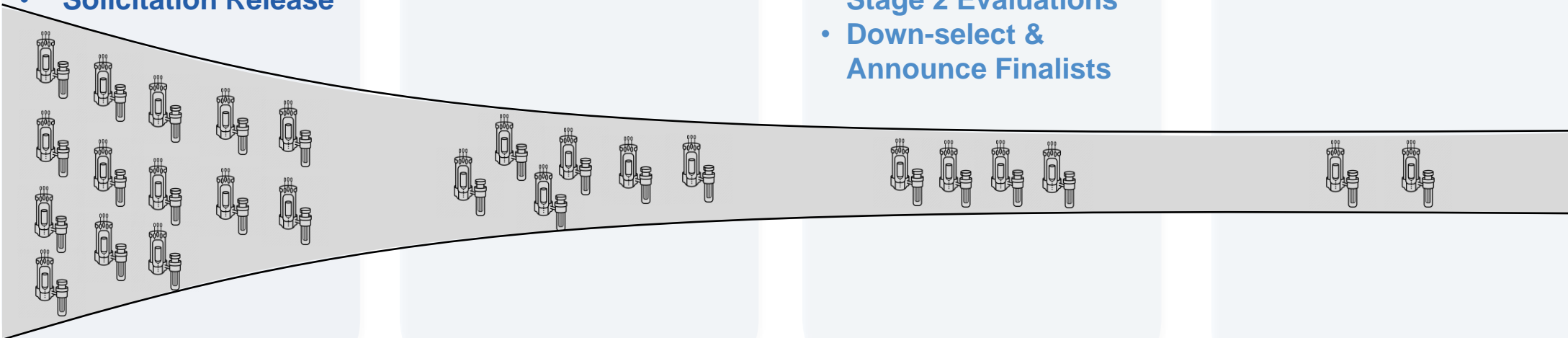
- Stage 1 Evaluations
- Down-select to most meritorious proposals
- Finalists Oral Presentations and Stage 2 Evaluations
- Down-select & Announce Finalists



### Award

Summer 2025:

- Final Application due
- Evaluations and Negotiations
- Award



# Industry Day

DOE invites all interested potential applicants and team members to attend this event where DOE, along with Nuclear Regulatory Commission (NRC) staff, will present and answer questions on:

- **Tier 1 and 2 priorities**, including objectives for teaming and establishing an orderbook
- Details around the **anticipated solicitation process** and how to submit an application
- Permitting and **licensing strategies**



**Mid-August 2024**



**In-person in Washington, D.C.**



**To request an invitation, please email [Gen3PlusSMR@hq.doe.gov](mailto:Gen3PlusSMR@hq.doe.gov) with the subject line "Industry Day."**



**To learn more, visit: <https://www.energy.gov/oced/generation-iii-small-modular-reactor-program-engagement-opportunities>**

# Meet with DOE on a Project

*DISCLAIMER: Participation in the Gen III+ Small Modular Reactor Industry Day and related activities is purely voluntary. They are not a prerequisite for eligibility to participate in the forthcoming Gen III+ Small Modular Reactor solicitation. Only informal questions and feedback can be addressed through these fora. Details on how to submit formal questions and comments will be provided in the solicitation, when issued.*

DOE is available to meet with potential eligible applicants to discuss their project concepts.

To request a meeting, please email [Gen3PlusSMR@hq.doe.gov](mailto:Gen3PlusSMR@hq.doe.gov).

- **Tier 1:** Meeting requests must include representatives of at least two different types of entities interested in forming a project team, such as a utility and a constructor, a technology provider and an end-user, or any other permutation of eligible entities for the purposes of this opportunity.
- **Tier 2:** Meetings may be held to discuss questions potential applicants may have.



**For more information**

- [Notice of Intent](#)
- [Press Release](#)
- [Advanced Nuclear Pathways to Commercial Liftoff Report](#)
- [Office of Nuclear Energy, Coal-to-Nuclear Transitions](#)
- [Required Registrations](#) (under “How to Apply”)
- Reach out at any time to [Gen3PlusSMR@hq.doe.gov](mailto:Gen3PlusSMR@hq.doe.gov)