

# Nuclear-Industrial Integration

Energizing the Future with Innovation and Resilience



Daniel Klein

Principal Team Lead  
Advanced Reactor Engineering

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# Advanced Nuclear Technology (ANT) Program Focus

**MISSION:** Accelerating the deployment of nuclear power around the world.

Engineering &  
Construction  
Innovation

Project  
Development  
& Execution

Advanced  
Manufacturing  
& Materials  
Qualification

★  
Advanced  
Reactor Materials  
Reliability

Nuclear Design  
& Fuel Cycle

Commissioning,  
Initial, Operations  
& Maintenance

Nuclear Beyond  
Electricity

3002031739 – ANT  
2025 Product Catalog

ANT is an extension of your team.



VISIT  
[ANT.EPRI.COM](https://www.ants.epri.com)



More than  
90 companies



240+ Past  
Products



Dozens of  
Ongoing Projects

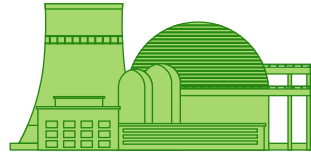
# 2025 ANT Membership

ANT Participation Extended to Over 90 Companies

## NUCLEAR SECTOR BASE MEMBERS



**52** Global Members



**>83%**  
of the world's commercial  
nuclear units



**>340**  
reactors worldwide

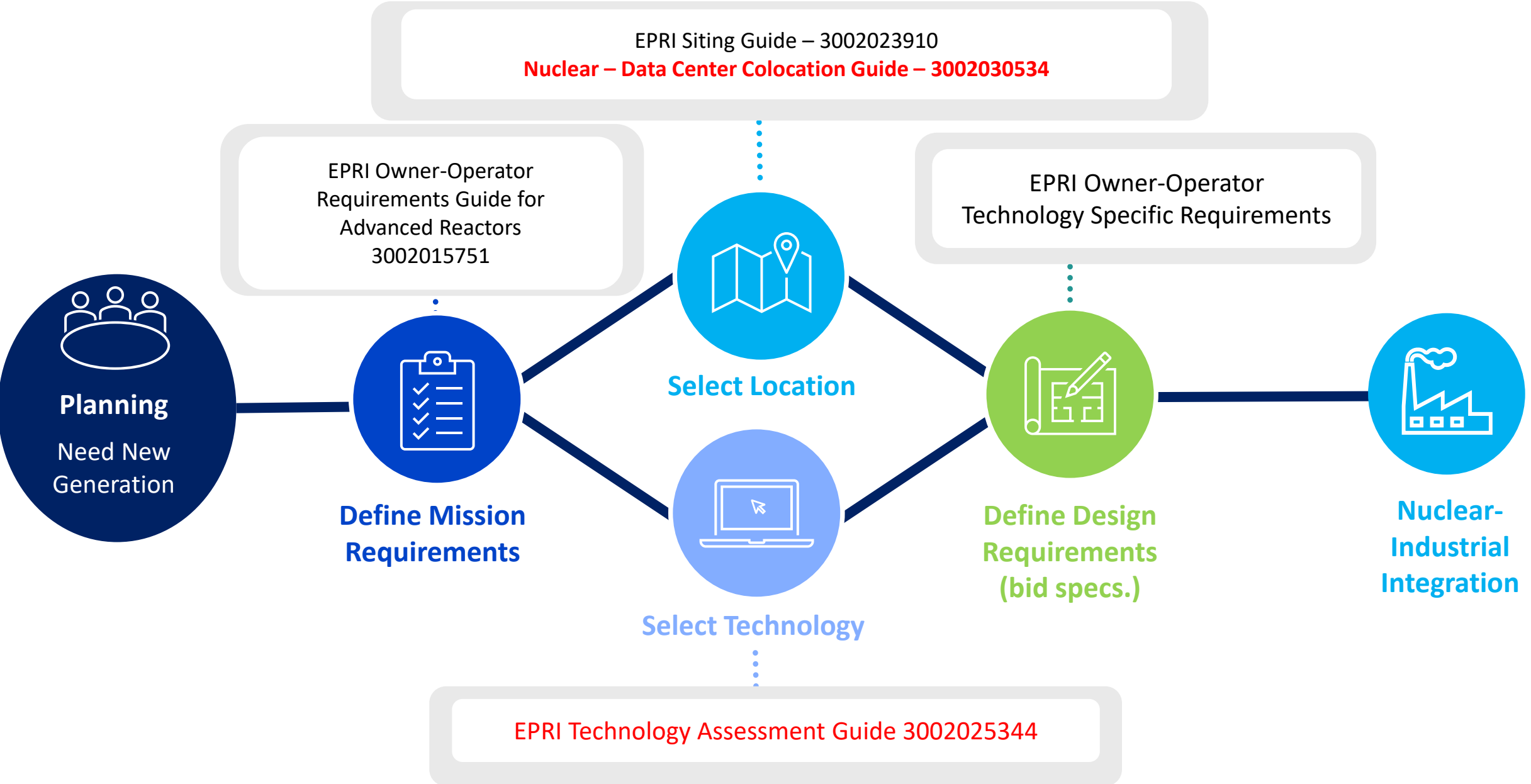
## FULL ANT SPPLEMENTAL MEMBERS



## ADVANCED REACTOR INITIATIVE MEMBERS



# EPRI Guides Overview



# EPRI's Nuclear Beyond Electricity



**Data Centers**



**Process Manufacturing**



**Low Carbon Fuels**



**Energy Storage**



**Water & Wastewater**



**Medical Isotopes**



**District Energy**



**Maritime**

## GOAL

Enable **existing** and **future** nuclear plants to **participate in energy markets beyond the practice of generating baseload electricity.**

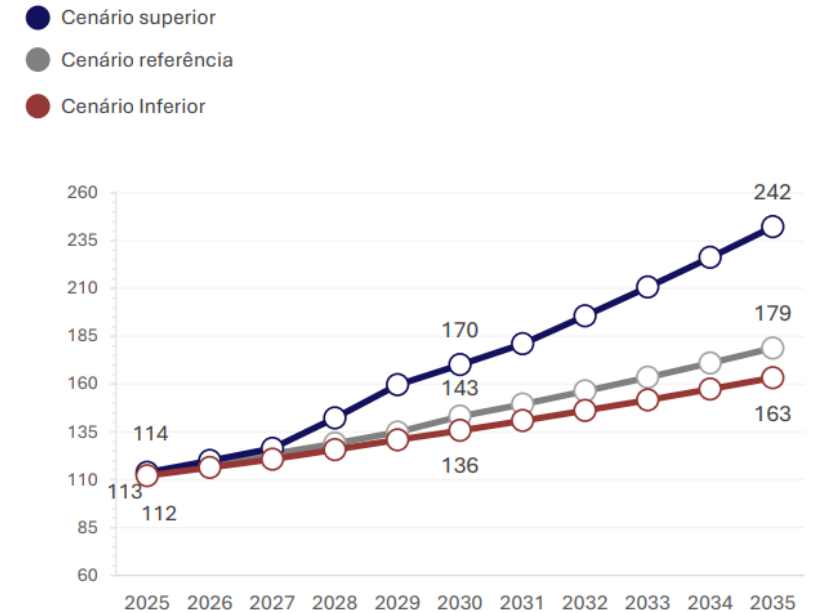


# **Nuclear Beyond Electricity in Brazil**

# Expected Electricity Demand Growth

- Electricity consumption is projected to grow about **3.3% per year through 2035** in the reference scenario.
- Total **demand increase** between ~**30-40 %** (lower and reference scenario) to **>100 %** (high case scenario) .
- **Key drivers** are **industrial growth, data centers and AI infrastructure, green hydrogen, electrification of transportation**, commercial and residential growth and expansion of **mining and metals processing**.
- Electrical **grid needs to meet demand growth at this rate**
- **60+ NPP** are under construction worldwide (China, India, Egypt, Korea, Turkey, Russia, Bangladesh, USA, Canada, Romania, and UK).

Consumo comercial (TWh), Brasil



Note: Demanda de Eletricidade, Setembro 2025 (source [Ministry of Mines and Energy](#))

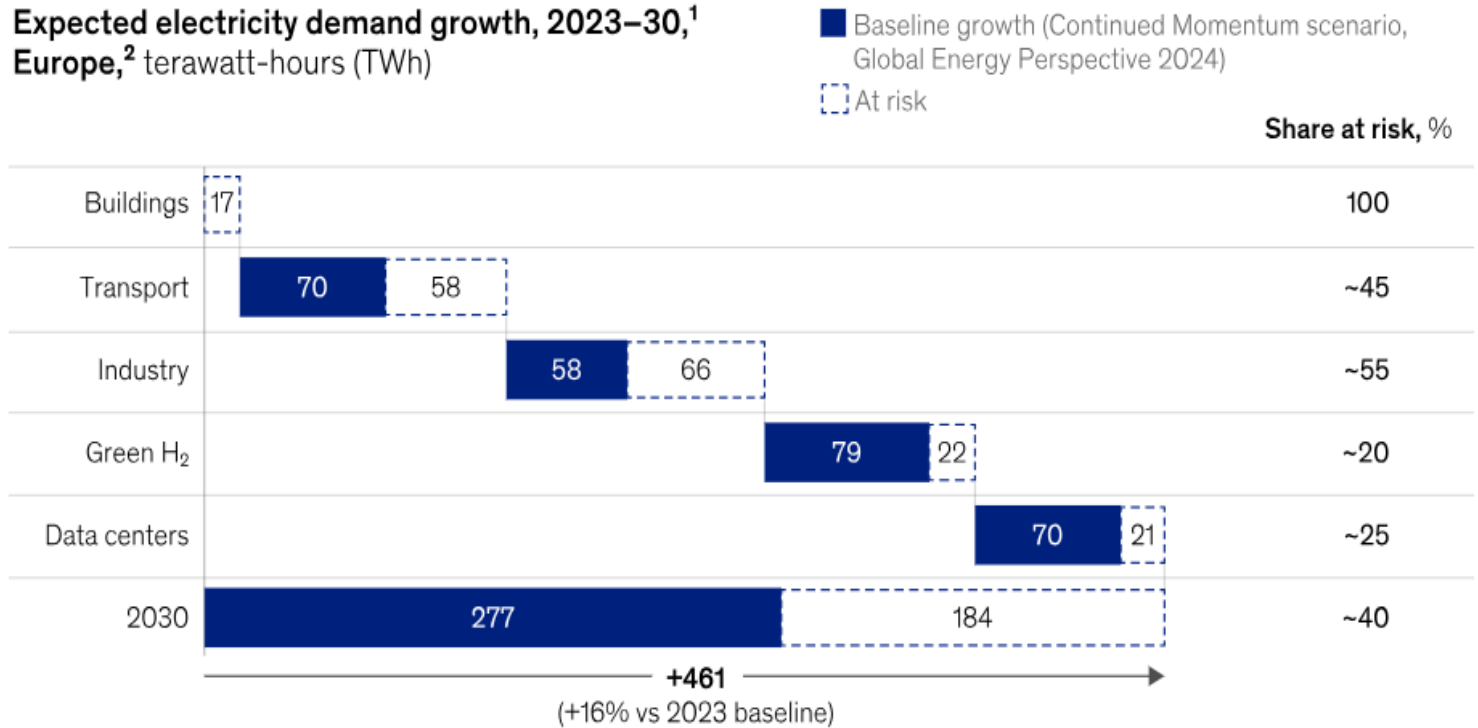
Nuclear installed capacity is ~2 GW (Angra 1 and 2)

**Big numbers and uncertainty exists**

# Uncertainties and Risks by 2030 – European Example

- Industry ~55%
- Transportation (EVs) ~45%
- Green H<sub>2</sub> (~20%)
- Data Centers (~25%)

Expected electricity demand growth, 2023–30,<sup>1</sup> Europe,<sup>2</sup> terawatt-hours (TWh)



<sup>1</sup>Base case projection from McKinsey's Continued Momentum 2024 scenario; demand at risk estimated with a sensitivity to technology adoption rates and industrial output reductions.

<sup>2</sup>EU-27, Norway, Switzerland, and the United Kingdom.

Source: *Global Energy Perspective 2024*; team analysis

## Cost and Demand Uncertainty

# Nuclear Process Heat Demand

- Industrial:
  - ARs and LWRs with heat augmentation can **provide high temperature heat to industries that where not achievable before.**
  - Process heat demand between 100-700°C results in **~8,000-10,000 TWh/year** (3x global nuclear energy contribution).

Country	Plant / Reactor	Existing cogenerations
Switzerland	Beznau	District heating (~150 GWh <sub>th</sub> /year)
China	Haiyang, Shandong, Yanlong	District heating
Russia	VVER-1200, BN-1200, KLT-40	Industrial heat, district networks
Ukraine	Zaporizhzhia	City district heating
France	Bugey	Urban heating (Lyon) via steam extraction
Canada	Bruce	Industrial facility steam/heating
India	Madras	Desalination: ~6,300 m <sup>3</sup> /day using hybrid MSF + RO
USA (future)	Dow/X-energy	Process heat in chemical/refinery

**Competing against fossil fuel- Need to develop regional business cases**

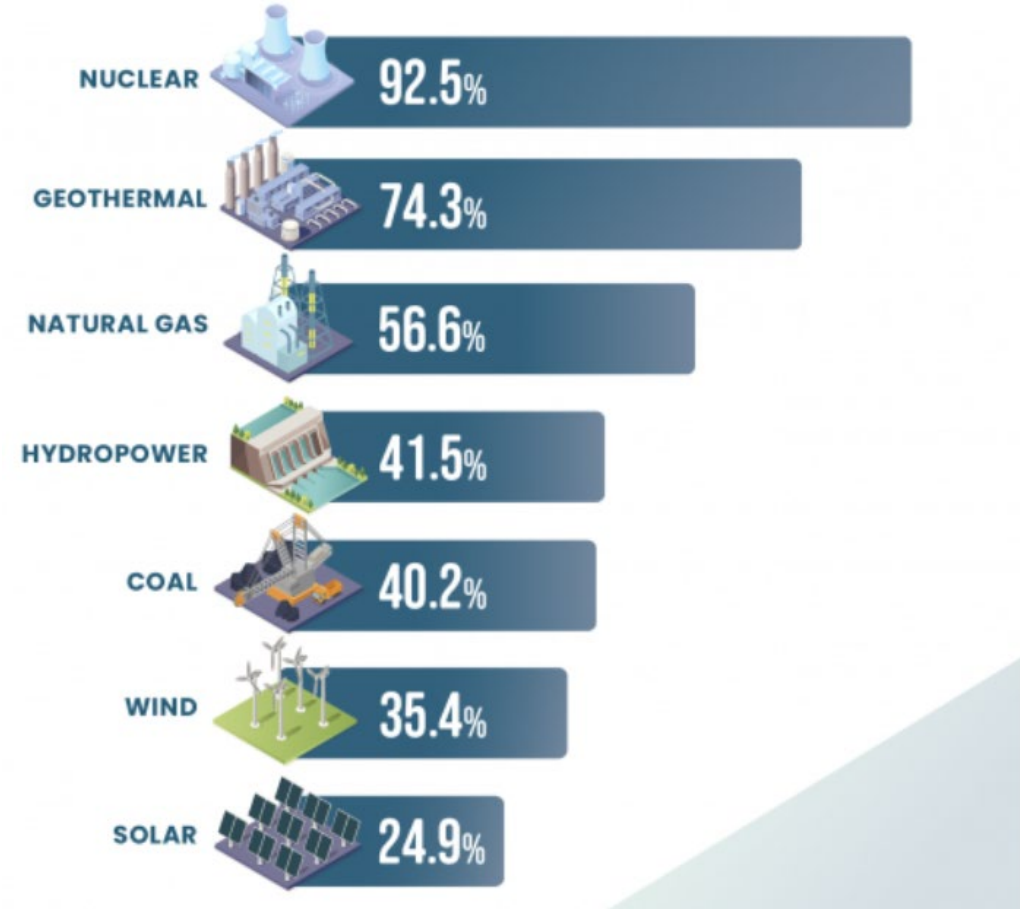


# Nuclear Heat and Electricity Integration

# Why Nuclear - Capacity Factors by Energy Source

Nuclear power has the highest capacity factor according to the U.S. Energy Information Administration.

- ~2x higher than Natural Gas and Coal
- ~3x higher than Wind and Solar
- Nuclear is a zero-carbon emitting technology

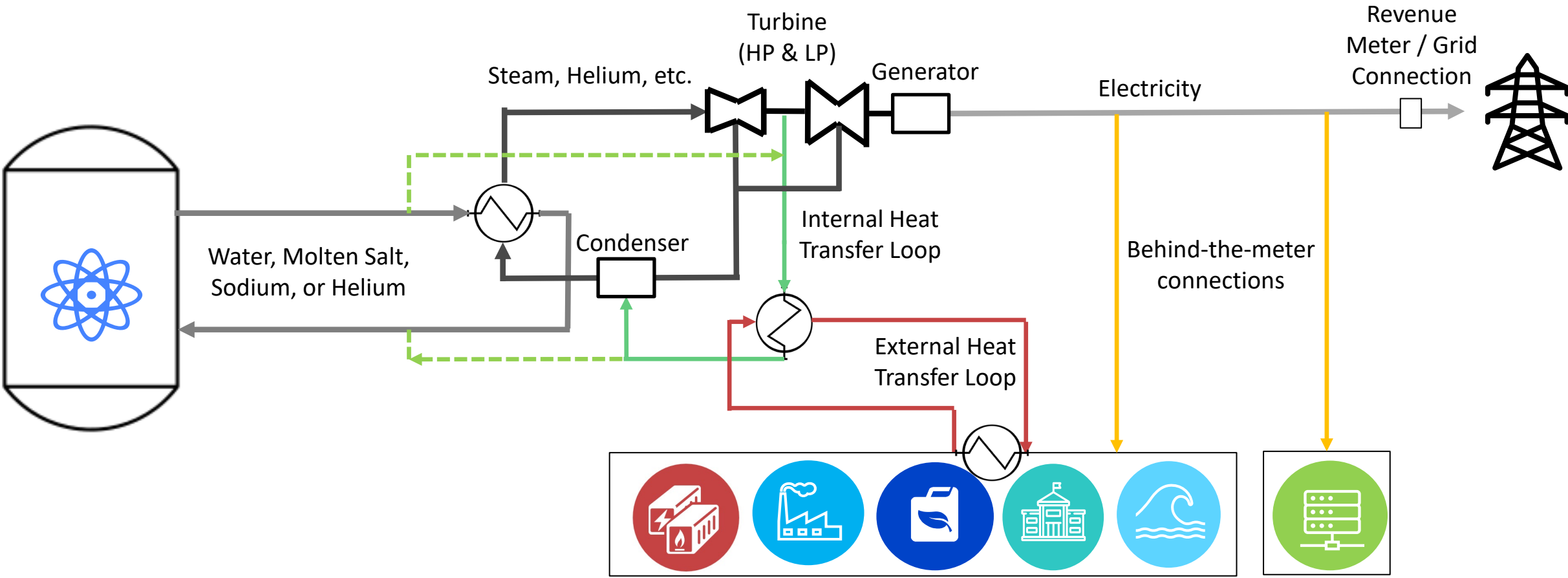


Source: EIA and Department of Energy,  
[https://www.eia.gov/electricity/monthly/epm\\_table\\_grapher.php?t=epmt\\_6\\_07\\_a](https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_a) and  
[https://www.eia.gov/electricity/monthly/epm\\_table\\_grapher.php?t=epmt\\_6\\_07\\_b](https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_b)

**Reliable power is needed for industrial processes**

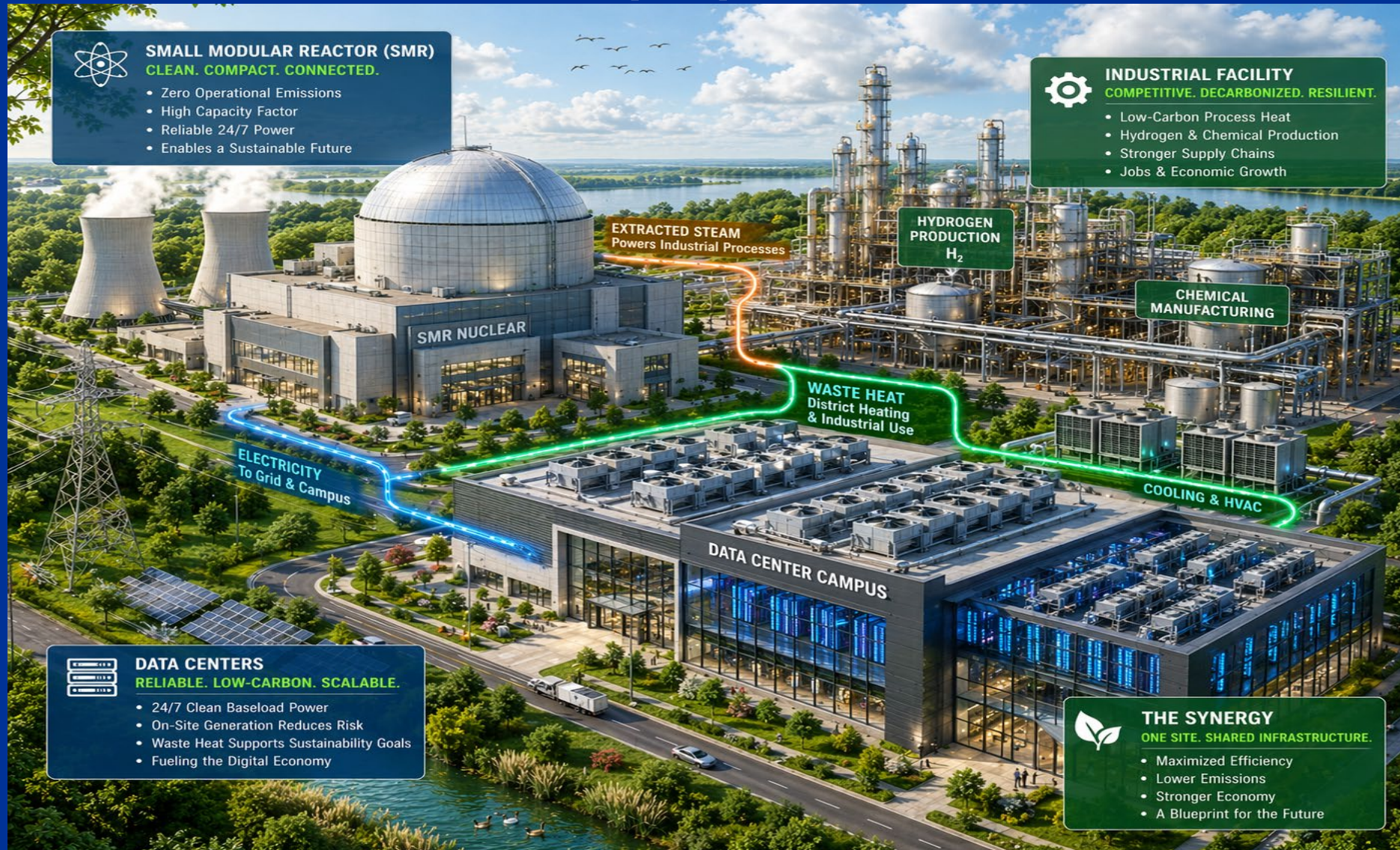
# Nuclear-Industrial Integration

## Generic Example of Nuclear Cogeneration:

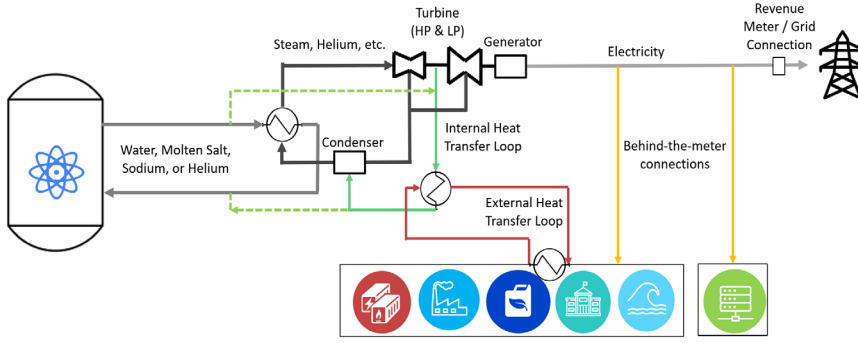
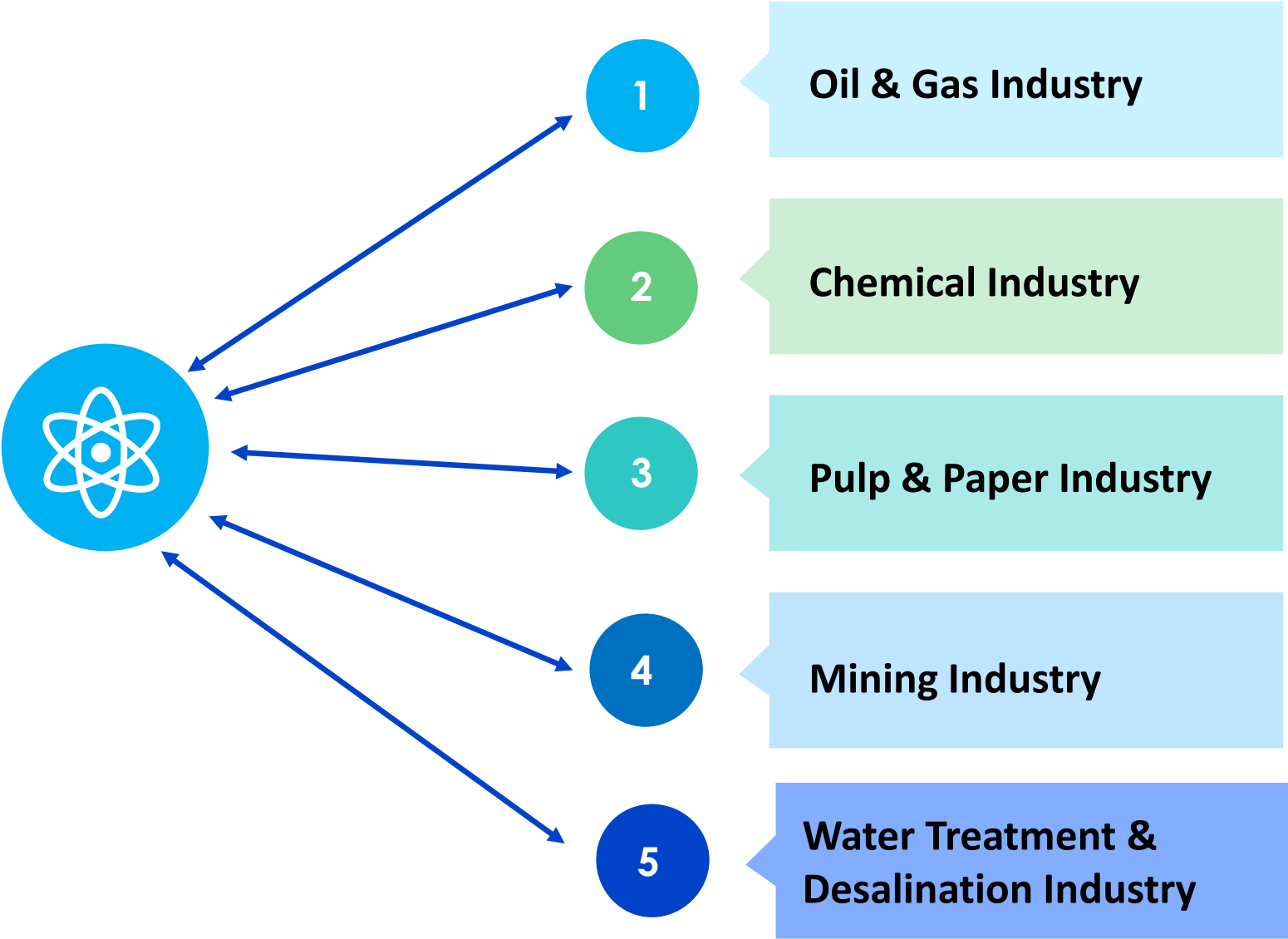


Note: The shown concept is for illustration purpose only. The specific integration depends on the reactor design, power conversion cycle (Rankine or Brayton) and application.

# NBE Enables Economic Nuclear Industrial Integration and Deployments



# EPRI's Nuclear-Industrial Integration Focus Area



# NBE Roadmap

Addresses challenges identified during the Nuclear for Industrial Integration Workshops

Technical



01

Operational



02

Financial



03

Ownership



04

Policy / Regulatory



05

Permitting



06

Project Development & Execution



07

Security



08

Public Awareness

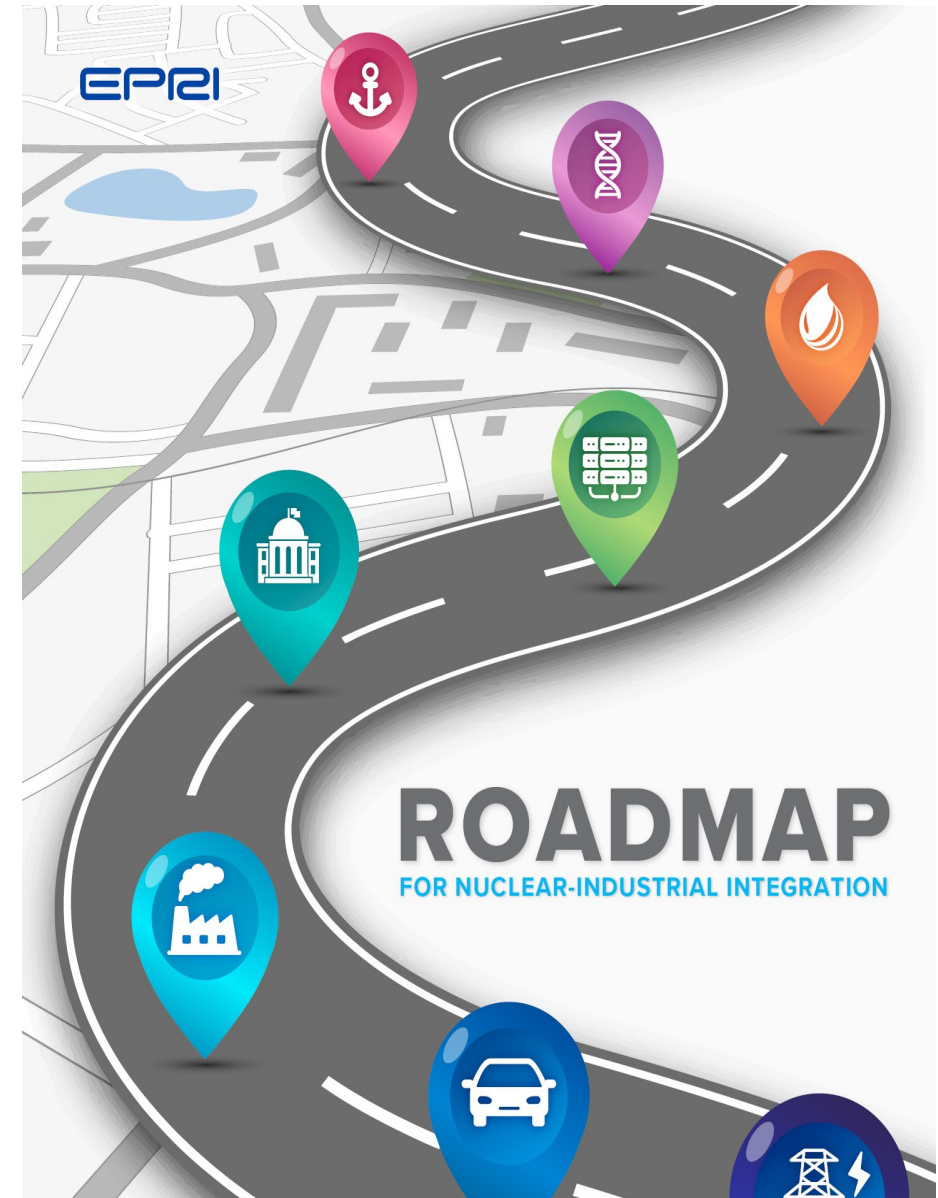


09

Insurance



10

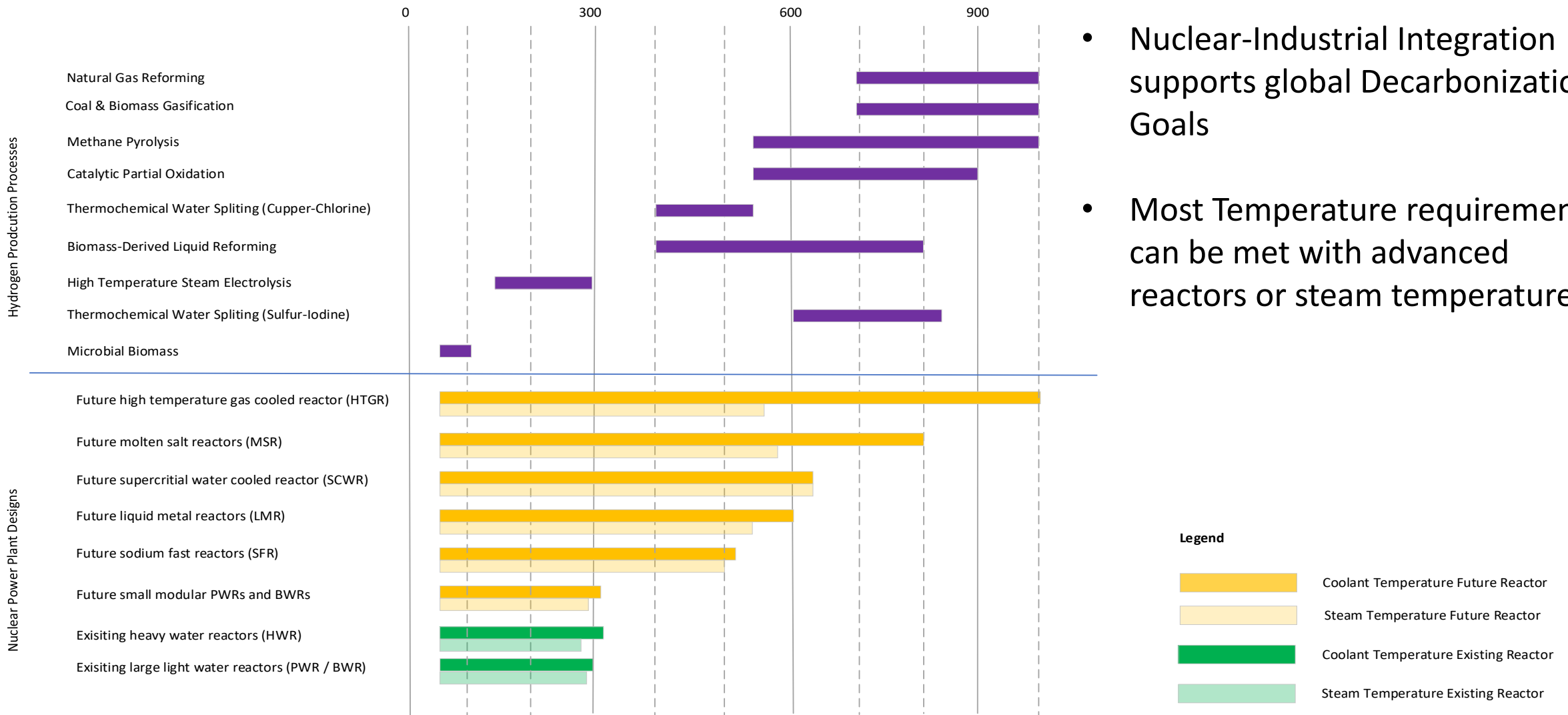


The background is a solid blue gradient with a subtle pattern of white stars and faint lines, suggesting a space or technology theme. In the center, a pair of hands is shown holding a globe of the Earth. The globe is semi-transparent, revealing a grid of latitude and longitude lines. The hands are positioned as if supporting the globe from below, symbolizing care, stewardship, or global impact.

# **Integrated Nuclear Hydrogen Production**

# Match NPP heat with hydrogen production processes

Process and Supply Range [°C]



- Nuclear-Industrial Integration supports global Decarbonization Goals
- Most Temperature requirements can be met with advanced reactors or steam temperature lift.

**Most LWR designs can benefit from a steam temperature lift to cover a wider range of processes**

# Reports on Nuclear Integrated Hydrogen Production

## ■ **Methods of Nuclear Integrated Hydrogen Production ([3002027703](#))**

The following nuclear integrated hydrogen production methods are addressed:

- **Steam Methane Reforming**
- **Autothermal Reforming**
- **Biomass-Derived Liquid Reforming**
- **Partial Oxidation**
- **Coal & Biomass Gasification**
- **Methane Pyrolysis**
- **Chemical Looping Reforming**
- **Thermochemical Water-Splitting (S-I and Cu-Cl)**

## ■ **Conceptual Design Guide for Developing a Nuclear-Integrated Hydrogen Facility ([3002026514](#))**

This guide provides general input and considerations for electrolyzer technology selection:

- **PEM, Alkaline, SOEC**
- **Hydrogen plant design**
- **Nuclear plant integration design**
- **Overall project planning**

# Technical Considerations for H2 production

## General Planning

### Technology Selection

Electrolytic

Gasification / Pyrolysis

Thermochemical

Footprint and Configuration

Stack / Component Degradation

Startup and Shutdown

Ramping Ability

Design Parameters

Performance Characteristics

### Site Selection Considerations

### Separation / Security Considerations

### Operational Concepts

## Hydrogen Plant Design

Hydrogen Systems

Cooling Systems

Water Systems

Building Requirements

Utility Gas Systems

Electrical Systems

Structural Requirements

## Nuclear Plant Integration

Thermal Extraction

Electrical Integration

Cooling Water Integration

Controls Integration

Safety Evaluations

## Project Planning

Schedule Development

Training

Codes and Standards

Maintenance

Construction

Licensing and Permitting

Procurement

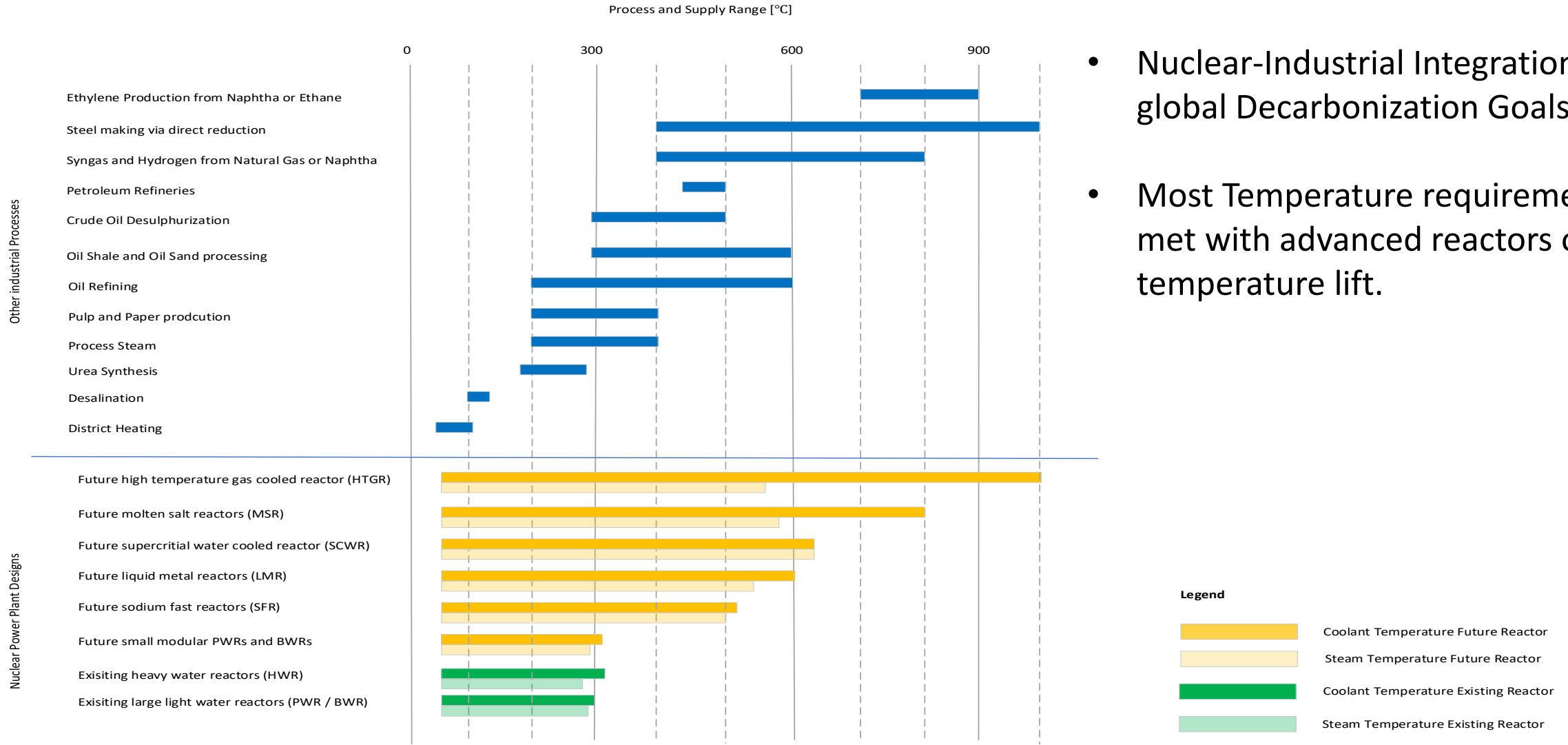
Engineering and Design



# Options for Delivery of High Temperature Heat from Nuclear Power Plants

3002032244

# Match NPP heat with key industrial processes



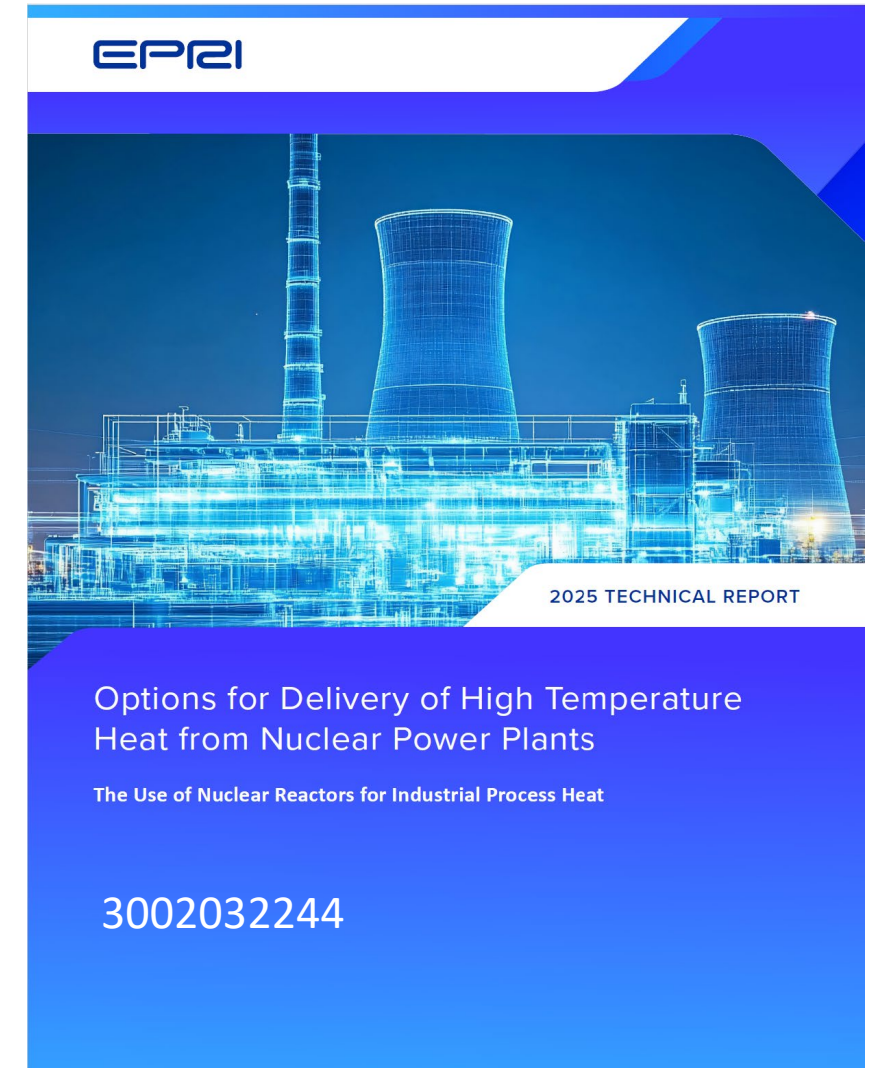
- Nuclear-Industrial Integration supports global Decarbonization Goals
- Most Temperature requirements can be met with advanced reactors or steam temperature lift.

**Most LWR designs can benefit from a steam temperature lift to cover a wider range of processes**

# Options for Delivery of High Temperature Heat from Nuclear Power Plants

## Outline of Report

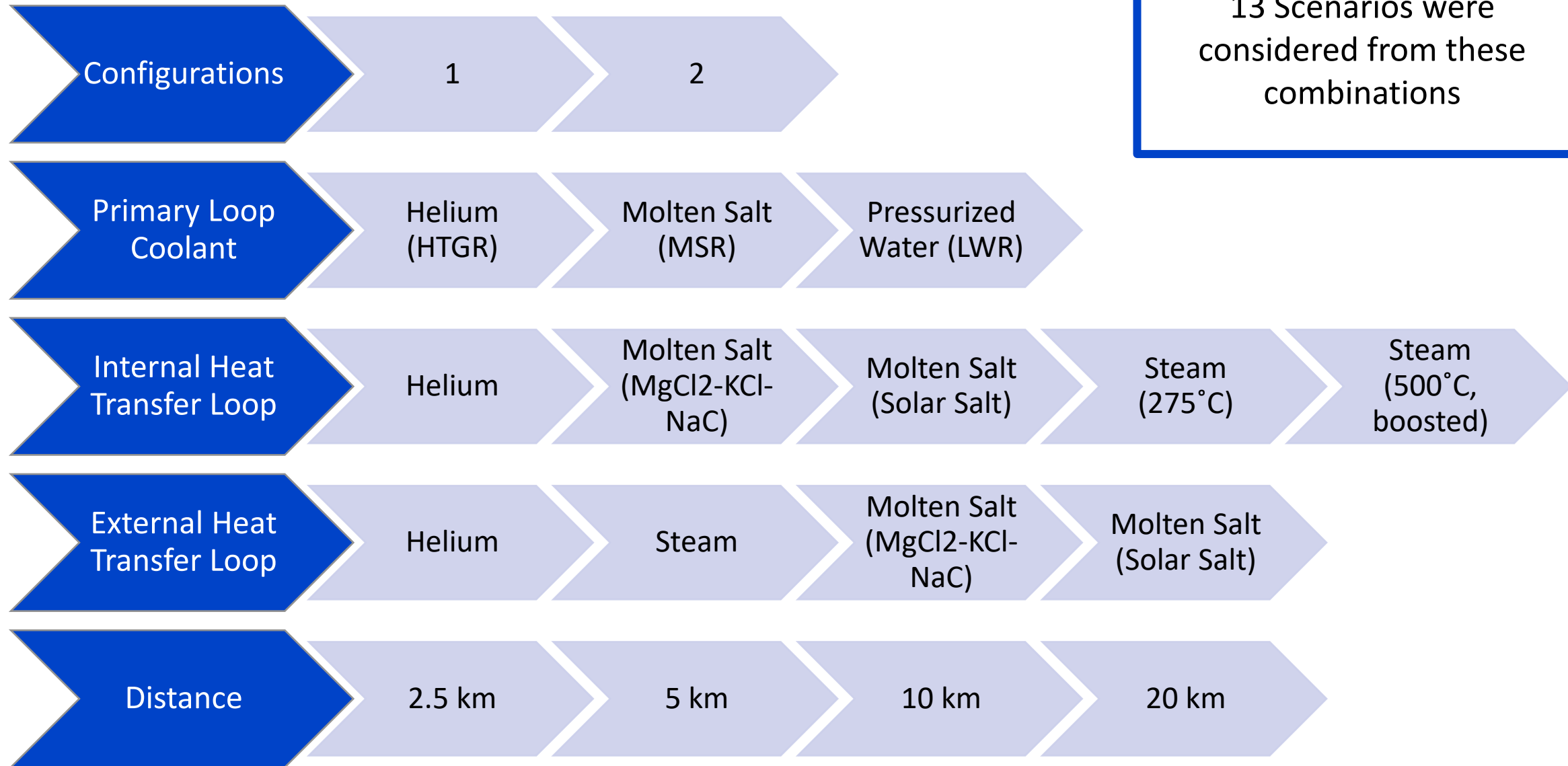
- Evaluates **13 combinations of fluid types** in the primary, secondary, and external (from NPP to industrial facility) loops.
  - **Helium, molten salt, high and low temp steam**
- Calculated heat delivery conditions for distances of **2.5 km, 5 km, 10 km, and 20 km between the NPP and industrial facility**
- Rough order of magnitude **equipment costs** (pumps, heat exchangers) for the various arrangements and fluid combinations



**Report supports nuclear cogeneration and colocation**

# Scenarios

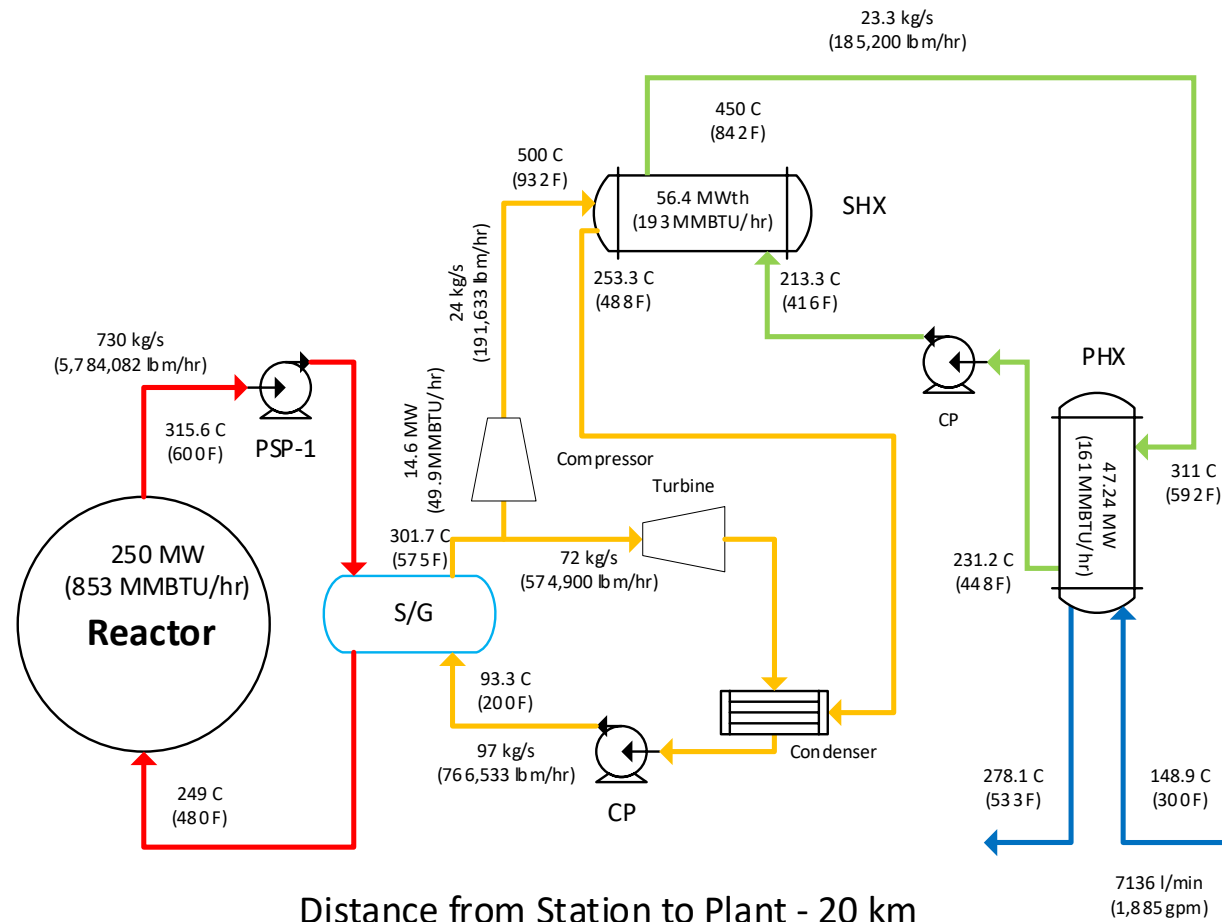
13 Scenarios were considered from these combinations



# Options for Delivery of High Temperature Heat from Nuclear Power Plants

For each of the 13 scenarios we calculated:

- Intermediate, secondary, and process heat exchanger duties
- Pipe sizes
- Heat loss and pressure drop
- Delivered inlet and outlet temperatures
- Heat exchanger estimated cost
- Pumping power estimated cost



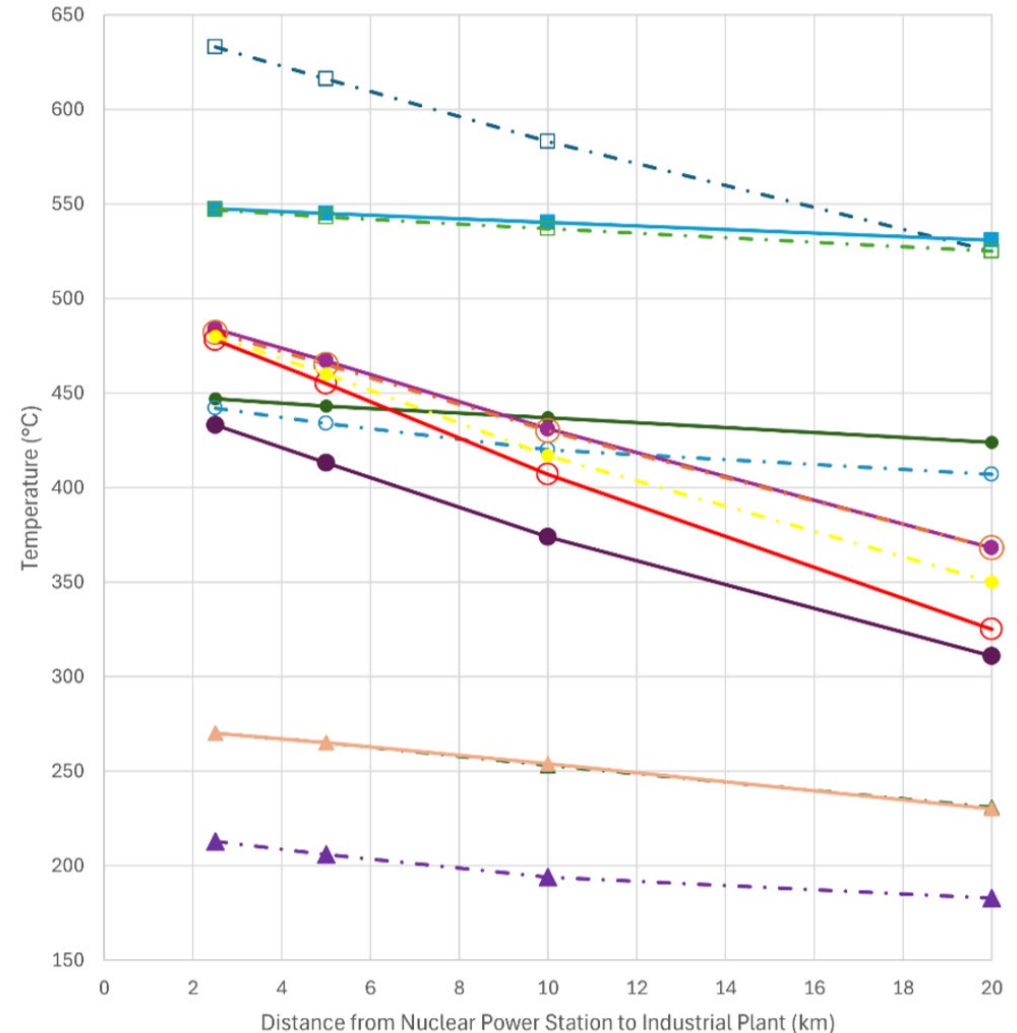
Example: LWR Primary Loop, High Temperature Steam Intermediate Heat Transfer Loop, Steam External Heat Transfer Loop

# Options for Delivery of High Temperature Heat from Nuclear Power Plants

## Results that can be shared:

- **Steam is a cost-effective heat carrier, but results in lower delivery temperatures than molten salt or helium**
- **Molten salt is an effective heat carrier over long distances, but the cost can be prohibitive and trace heating is required.**
- **Helium can deliver high temperatures, but pumping power is costly even over short distances and leakage is a concern.**

Process Heat Exchanger Hot Side Inlet Temperature



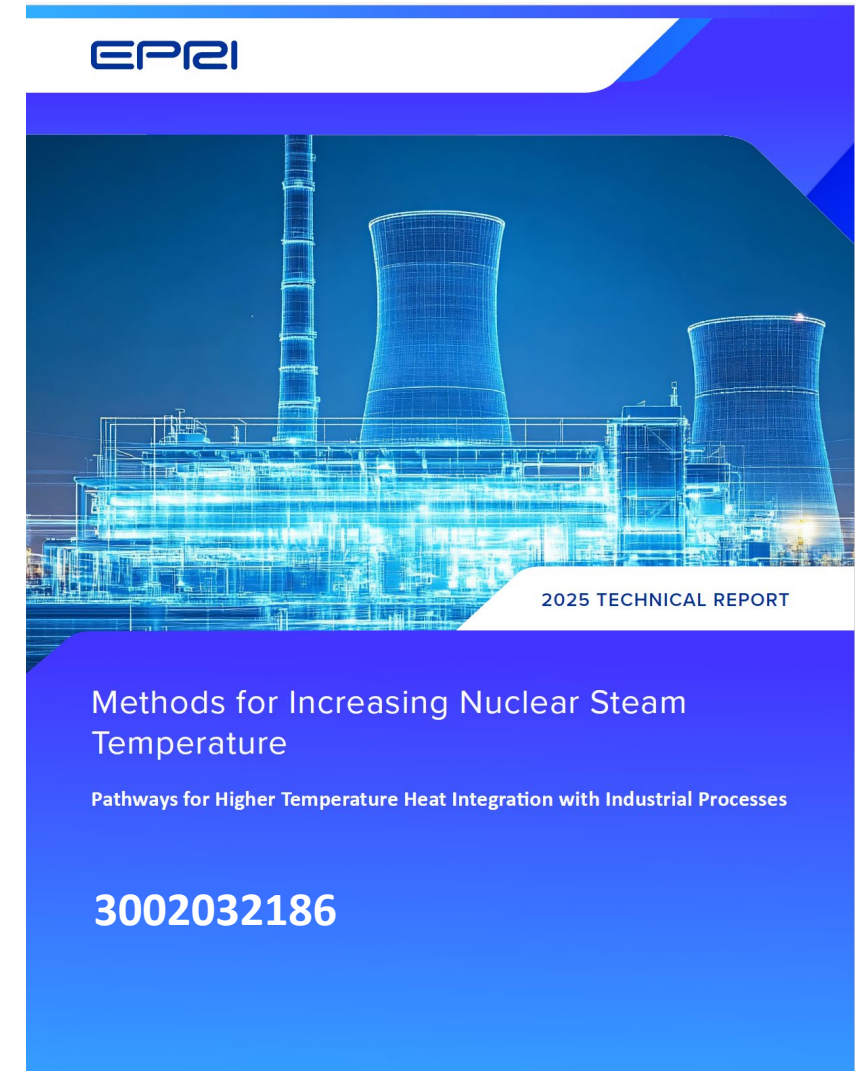


# **Methods for Boosting Nuclear Integrated Steam Temperature**

**(3002030534)**

# Methods for Boosting Nuclear Integrated Steam Temperature

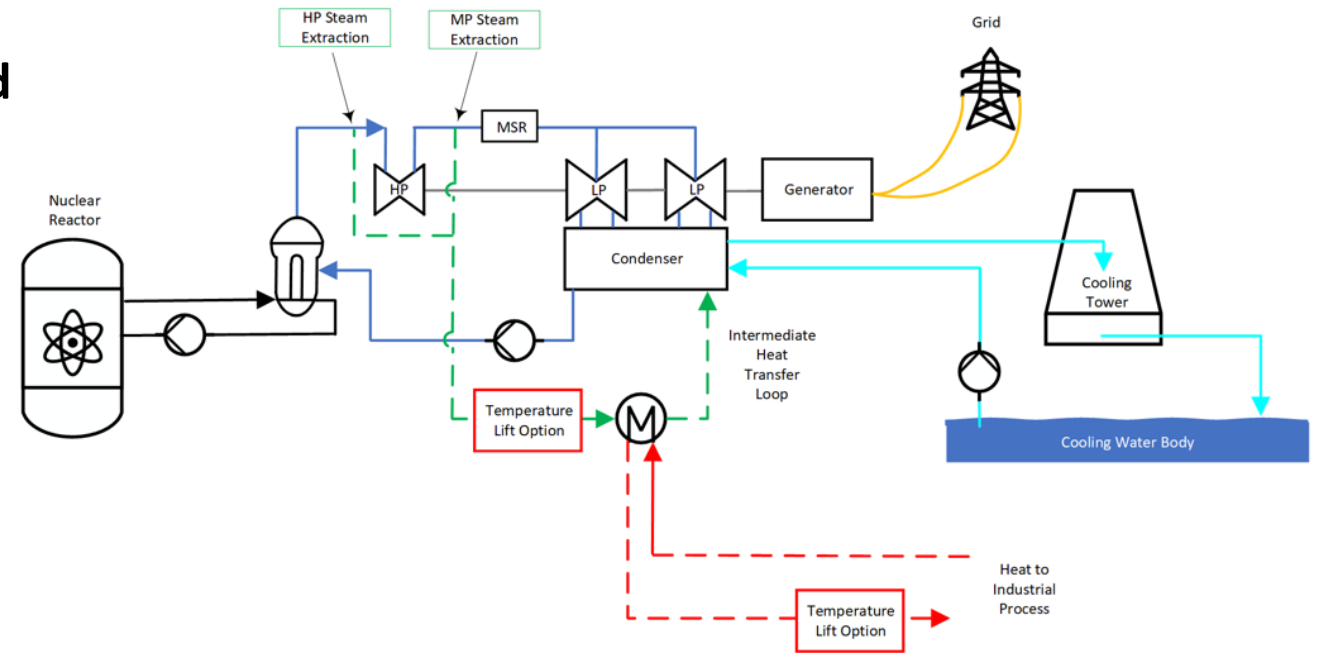
- Evaluates concepts and considerations to increase available steam temperature from light water based Small Modular Reactors ( $\sim 300^{\circ}\text{C}$ ) to  $>500^{\circ}\text{C}$  for industrial heat end users.
- Outlines **Process Heat Demands for key industrial processes:**
  - Oil Recovery (via enhanced steam stimulation methods)
  - Hydrogen Production
  - Oil and Chemical Refinery Processes



Increasing process heat temperature of light-water based Small Modular Reactors

# Methods for Boosting Nuclear Integrated Steam Temperature

- **10% steam mass flow rate** of a representative light water based small modular reactor (LWR-SMR) concept in the **300 MWe range was used as input.**
- Technologies considered to increase steam temperature:
  - **Industrial Boilers**
    - Hydrogen Fueled
    - Syngas Fueled
    - Ammonia Fueled
  - **Electric Heating**
  - **Very-High Temperature Heat Pumps**
  - **Adiabatic Compression**

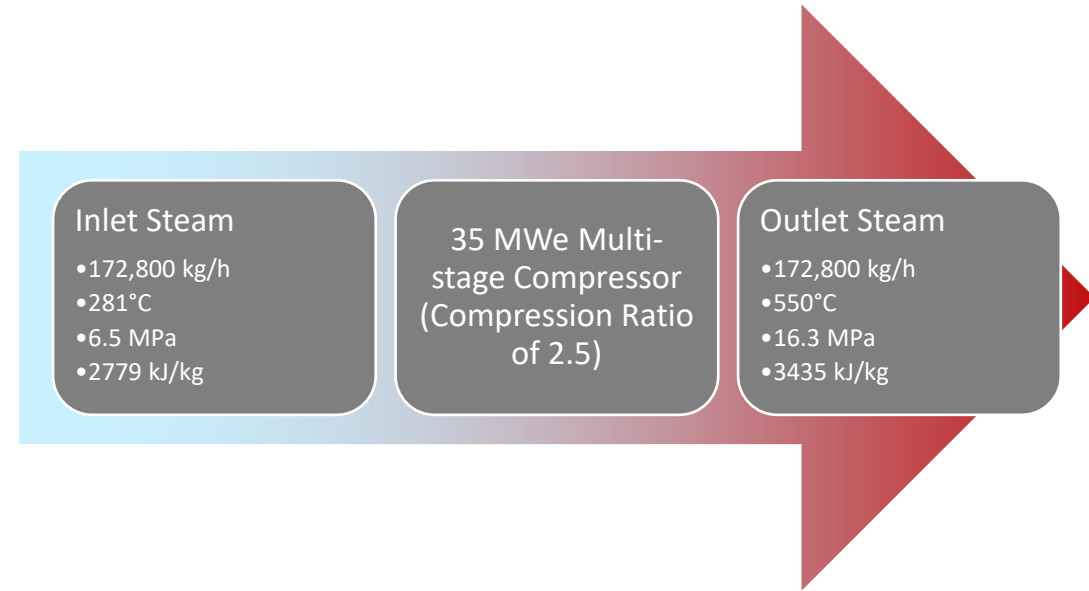


**Temperature lift option can be integrated at the plant or end user site**

# Methods for Boosting Nuclear Integrated Steam Temperature

For each technology evaluated:

- **Technical Readiness (TRL)**
- **Technical Feasibility** (advantages / disadvantages)
- **Nuclear Integration**
- **Component Size / Floorspace**
- **Cost Considerations** (Initial & Recurrent)



Parameter	Value
<b>Physical Footprint - Area</b>	65-233
<b>(m<sup>2</sup> [ft<sup>2</sup>])</b>	(700-2,512)
<b>Capital Cost</b>	~35,000,000
<b>(\$USD)</b>	
<b>Annual Electricity Cost for 8,000 Hours</b>	~8,400,000
<b>(\$USD)</b>	
<b>Annual O&amp;M Cost for 8,000 Hours</b>	~700,000
<b>(\$USD)</b>	

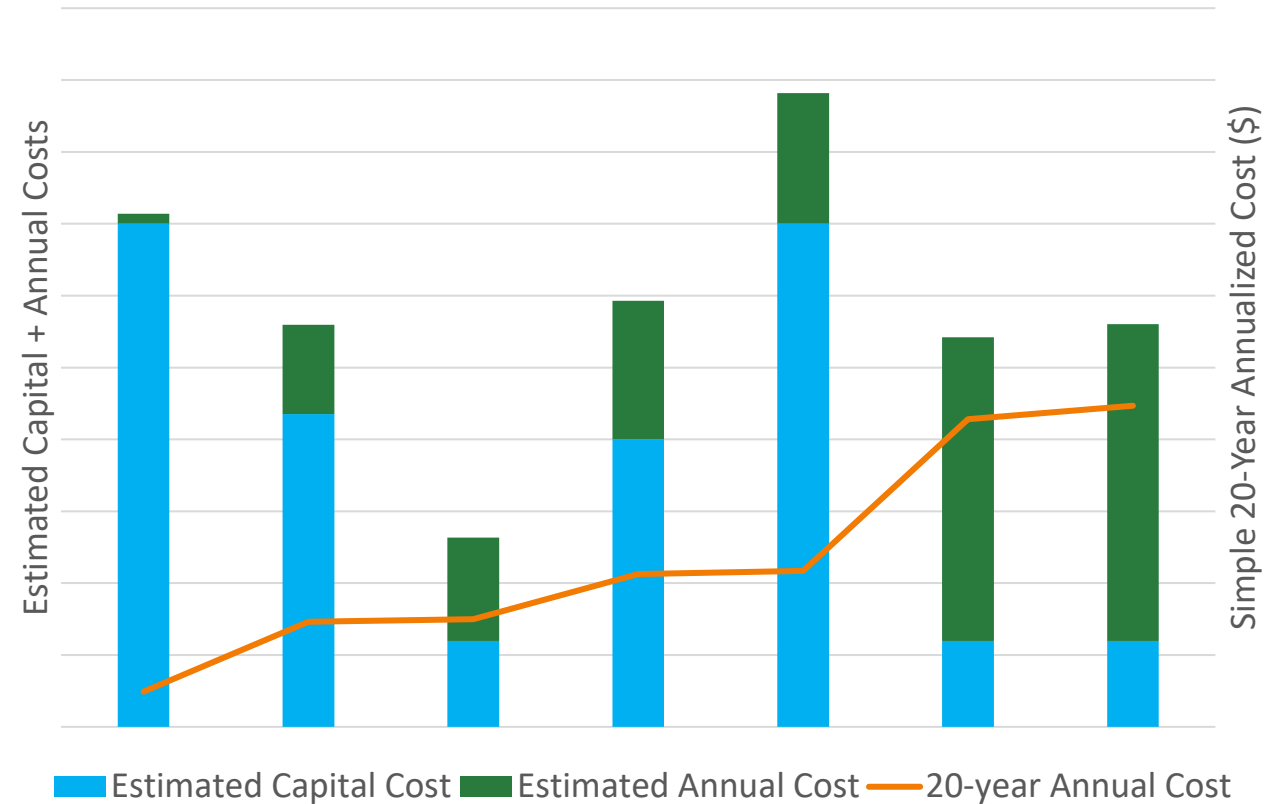
Example: Steam temperature lift with an adiabatic compressor.

**Increasing process heat temperature of light-water based Small Modular Reactors**

# Methods for Boosting Nuclear Integrated Steam Temperature

Results that can be shared:

- **Industrial boilers that burn clean fuel are the most expensive option** due to the relatively high fuel cost.
- **Electric heating provides the highest possible temperature lift** of the options studied, **but it also requires the largest footprint.**
- **VHTHP and adiabatic compressors are at a comparatively lower TRL to industrial boilers / electrical heaters to produce greater than 550°C steam.**
- **Total cost of steam must include cost for steam generation + temperature lift cost.**



Cost Results (values redacted)

**A combination of technologies should be considered for greatest efficiency**

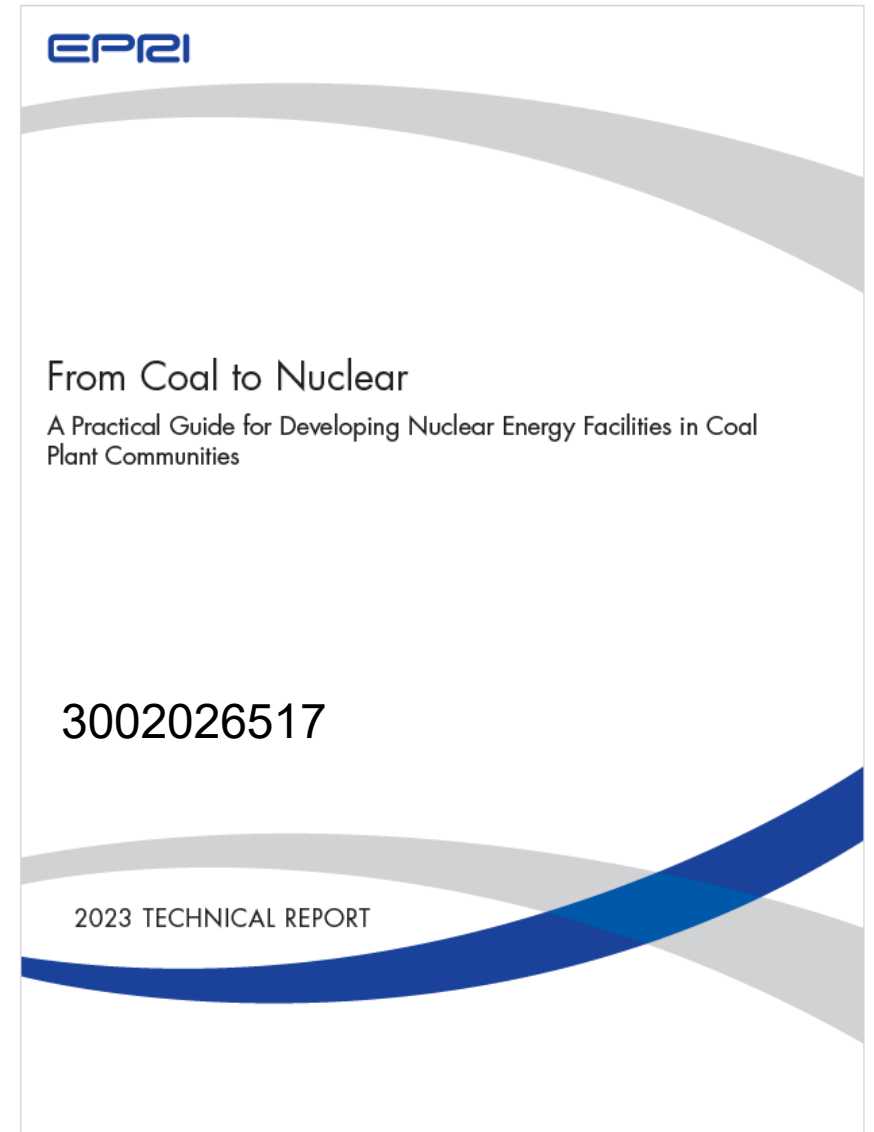


# **Practical Guide for Coal to Nuclear**

**(3002026517)**

# From Coal to Nuclear

- The report provides a practical guidance **for the future deployment of a nuclear energy facility on or near an existing coal plant site.**
- Benefits:
  - **Reuse of water use and environmental permits, land, transportation and transmission infrastructure systems.**
  - **Reuse of existing buildings, e.g. warehouse and administrative buildings**
  - **Repurposing of available workforce (leverage existing skilled labor, e.g. technicians)**



**Results in potentially lower cost and faster deployment**

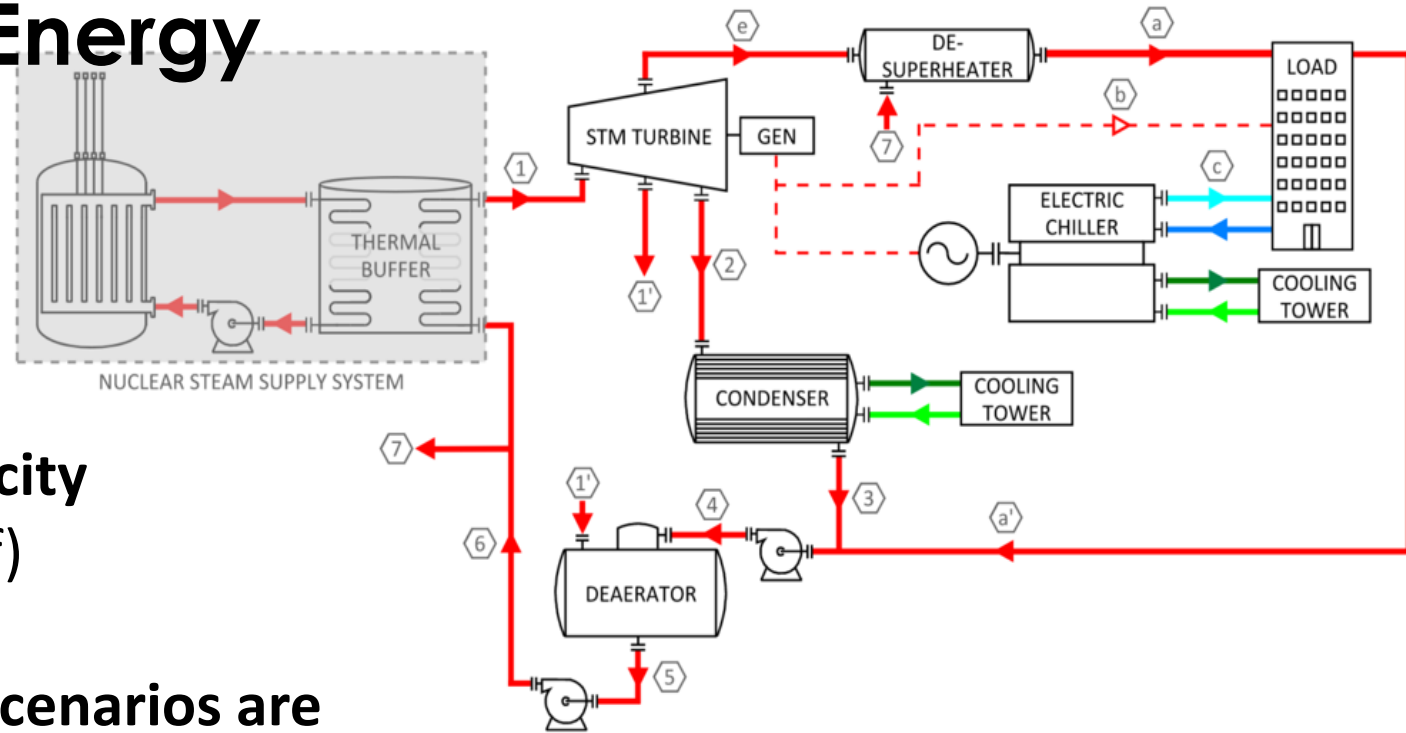


# **Microreactors in District Energy**

**(3002026568)**

# Microreactors in District Energy

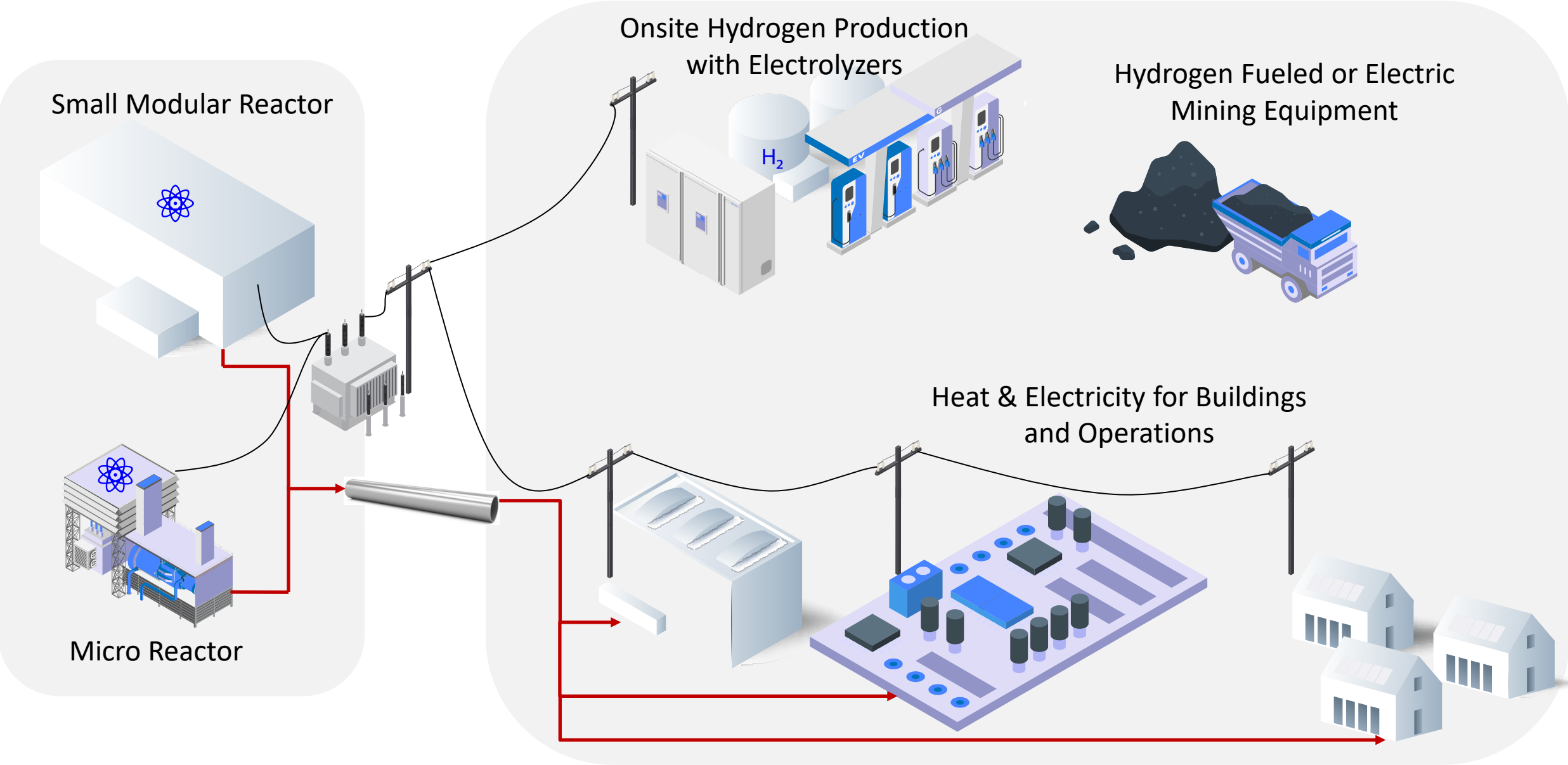
- Evaluated **microreactors (15 and 50 MW<sub>th</sub>)** for representative campuses.
- Analyzed **heating, cooling, and electricity** production (incl. combinations thereof)
- Out of the 24 analyzed scenarios, **18 scenarios are more cost effective with nuclear**, compared to natural gas, over 30 years accumulated cost; even without incentives and carbon emission penalties.
- Representative **carbon emission penalties from Europe** results in **cost breakeven point in less than 17 years.**



The background is a deep blue gradient with a subtle pattern of white stars and constellations, suggesting a space or technology theme. In the center, a pair of hands is shown holding a globe of the Earth. The hands are rendered in a lighter blue, semi-transparent style, and the globe is also semi-transparent, showing the continents and latitude/longitude lines. The overall aesthetic is clean, modern, and futuristic.

# **Nuclear for Mining Applications**

# Nuclear Integration Options for Mining Operations





# Research Outlook

# Examples of Ongoing Projects

## Probabilistic Risk Assessment of Colocated Nuclear Power Plants with Industrial Facilities

### Purpose and Scope:

- **Assess new events or hazards that are introduced by colocating NPPs with industrial facilities** (e.g., petrochemical or large electrical consumers)
- Determine if **new events change the magnitude, frequency, or consequences of accident scenarios.**
- Build off existing reports, **add unaccounted transients and expand to larger industries.**
- **Recommend technical and operational solutions to properly model and mitigate potential changes** in accident frequencies and consequences.
- Results can **provide a framework for regulators to make decisions based on realistic risks to a nuclear plant.**

## Conceptual Guide for Nuclear Integration with a Chemical Plant

### Purpose and Scope:

- Explore the integration of a nuclear reactor with a chemical plant to **provide carbon free heat and electricity.**
- Leverage **Aspen process modeling for component sizing.**
- Provide considerations for **nuclear site selection, physical separation between the NPP and the chemical plant, electrical integration, I&C integration, accident transients, physical and cyber security, licensing & regulatory, and project planning**
- Perform **technoeconomic analysis to support business case.**

# Examples of Ongoing Projects

## Siting Tool for Energy System Integration

### Purpose and Scope:

- Develop a **state-of-art, user friendly tool, for site screening to support nuclear colocation and deployments.**
- **Accessible interactive siting tools and data visualization tools will become increasingly important as non-nuclear industry players enter the market.**
- **Tool will include EPRI research data, results, and methodologies in combination with public geographic information system (GIS) data, plus industry specific data layers.**
- **Incorporate an AI framework.**

## Develop Industry Standard for Levelized Cost of Heat

### Purpose and Scope:

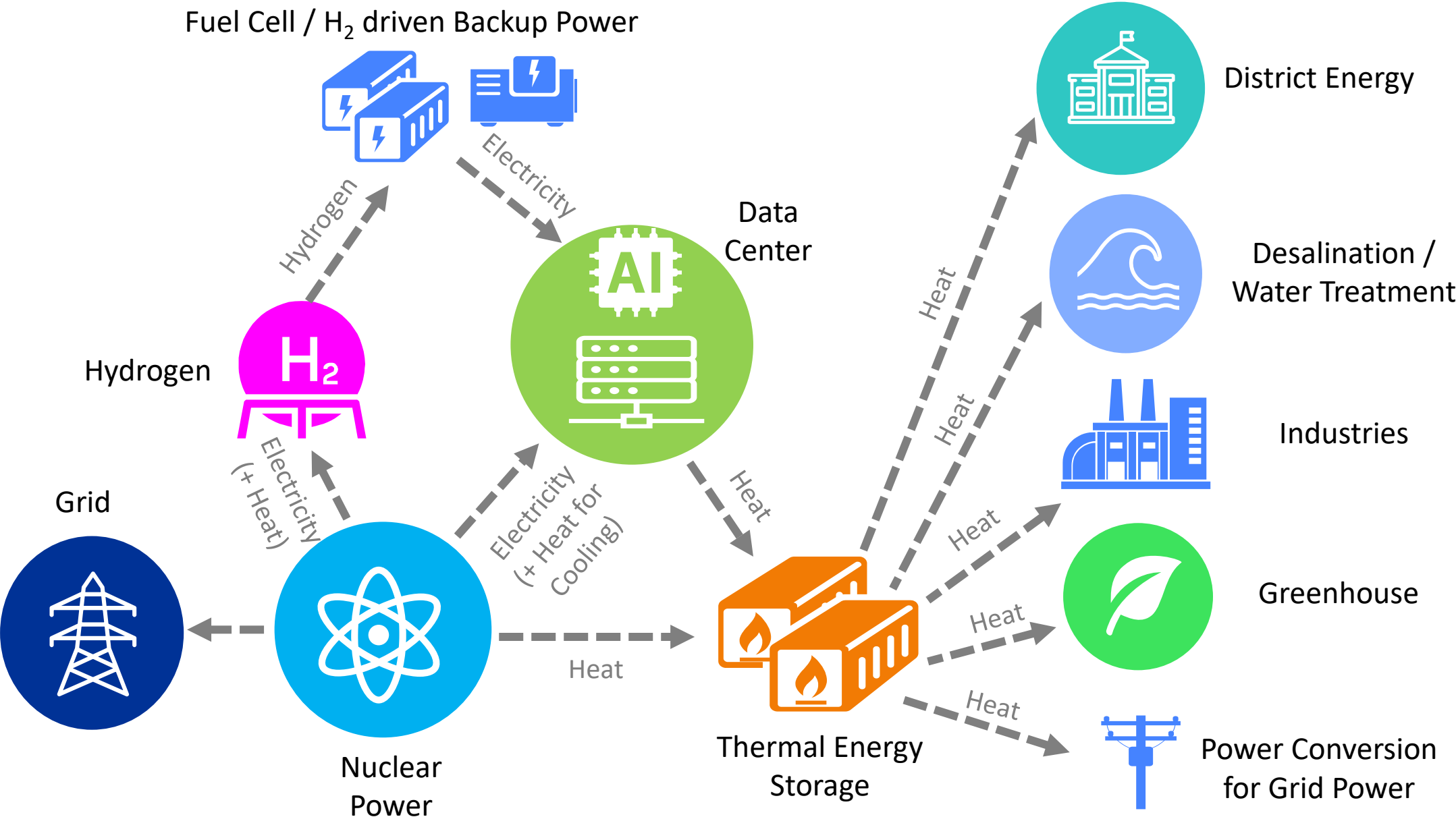
- **There is no standardized way to calculate the value of the heat produced by the power plant and the cost to transport it to the end user.**
- **Difficult to compare the cost of nuclear energy to other conventional heat generating technologies** (such as other fossil fuel boilers).
- **Develop a methodology for calculating the levelized cost of heat including considerations such as distance between the plant and the end user, heat quality, and heat quantity.**
- **Perform a sensitivity analysis to estimate the impacts of each variable on the final cost.**

**We are leveraging the depths of EPRI and our Collaboration Partners**

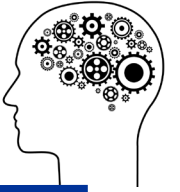


# Nuclear – Data Center Integration

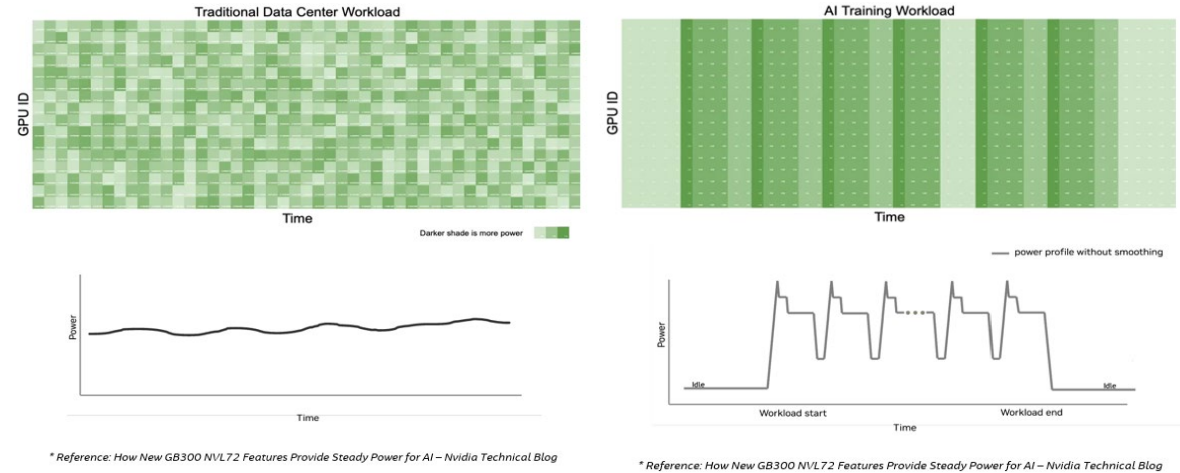
# Vision: Integration Concepts – Leverage Synergies



# Challenges with AI Training and Fluctuating Loads

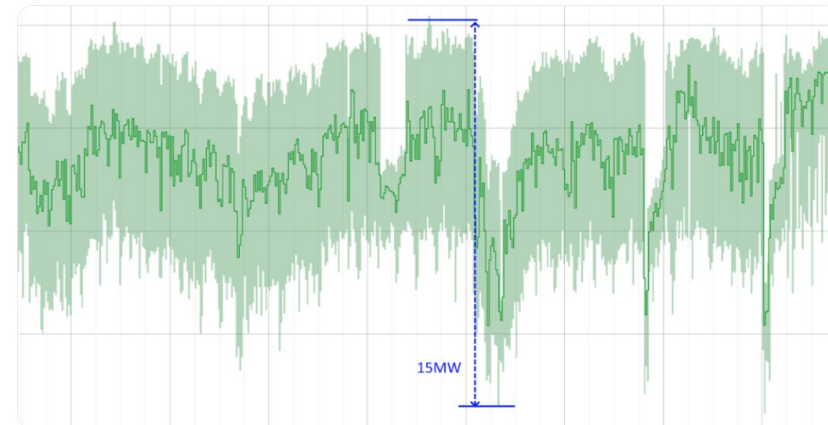


- Power spikes are **caused by GPU synchronized computation demand**.
- These shapes can be **different for different entities** and depends on how their models are trained.
- These can **trigger unwanted oscillations as well as flicker / power quality issues**.



\* Reference: How New GB300 NVL72 Features Provide Steady Power for AI – Nvidia Technical Blog

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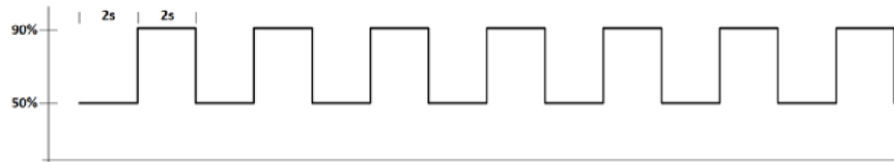


\* Reference: Mitigating power and thermal fluctuations in ML infrastructure | Google Cloud Blog

## Known and measured load fluctuations

# Generator Resonance Risks caused by AI Fluctuations

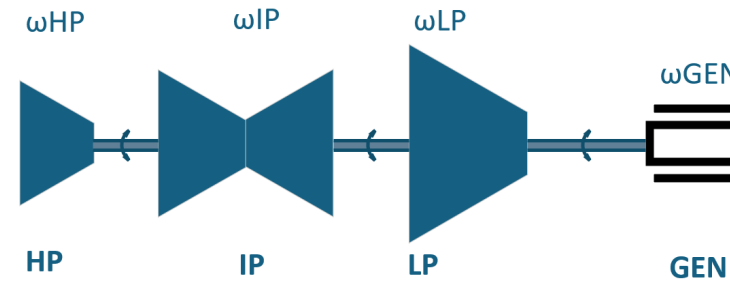
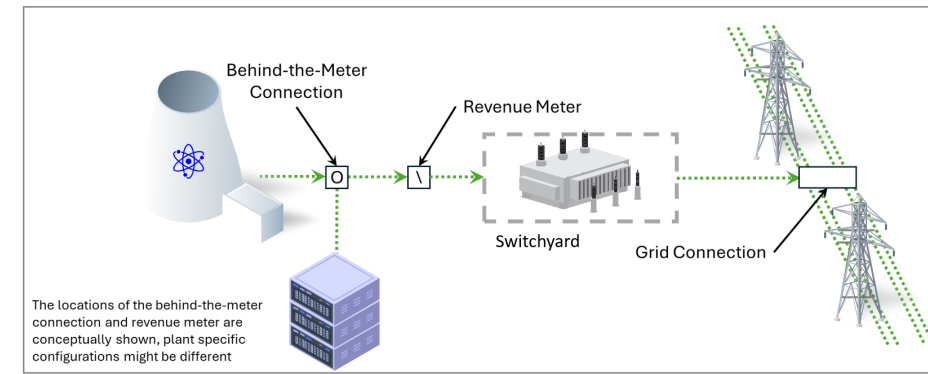
AI power load profile zoom view:



AI power load profile macro view:



Example AI training load



Steam turbine torsional model

- Conventional generators have torsional modes<sup>1)</sup> of oscillations in the 5-55 Hz range (oscillations between different turbine sections and the generator).
- AI training / loads create pulsating loads which can excite these torsional modes.**
- Over an extended period, this can cause fatigue and even damage the turbine shaft.**

Note <sup>1)</sup>: A torsional mode is a specific, natural, angular vibration pattern that occurs around the axis of a rotating shaft or structural component



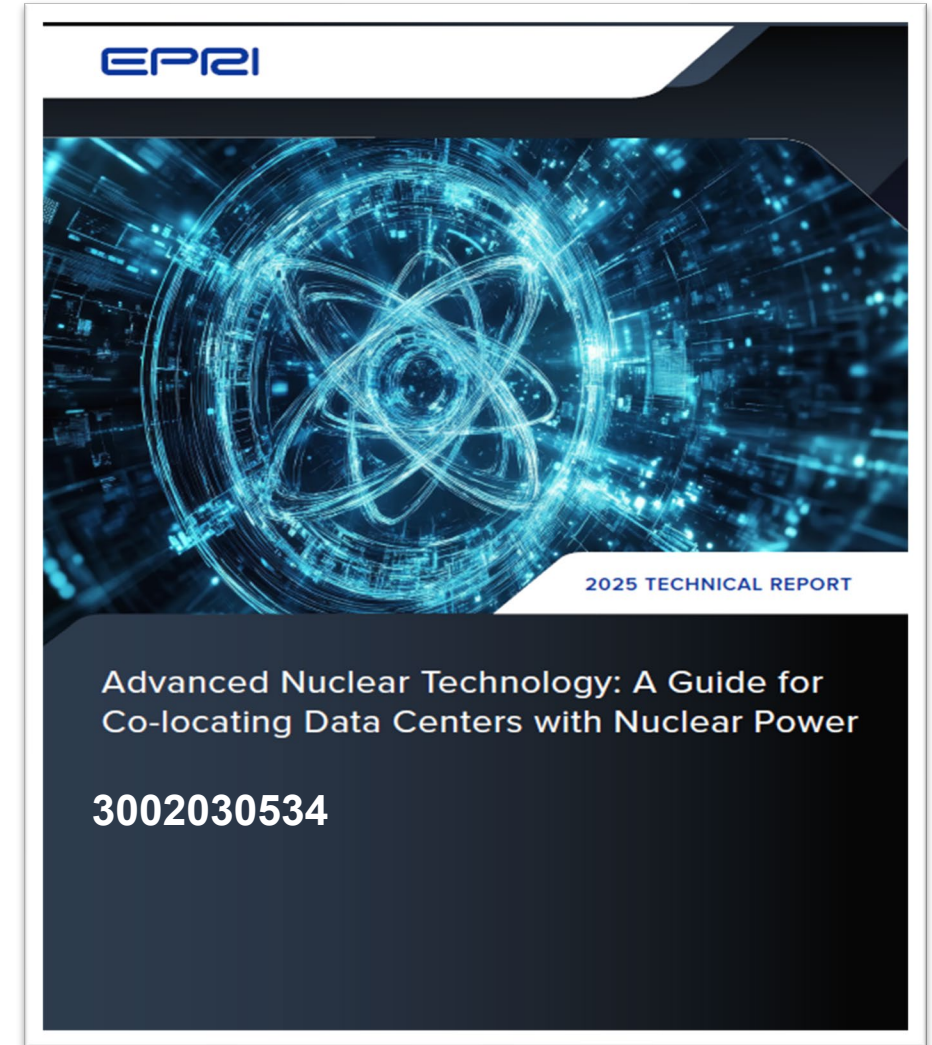
# **Guide for Co-locating Data Centers with Nuclear Power**

**(3002030534)**

# Guide for Co-locating Data Centers with Nuclear Power

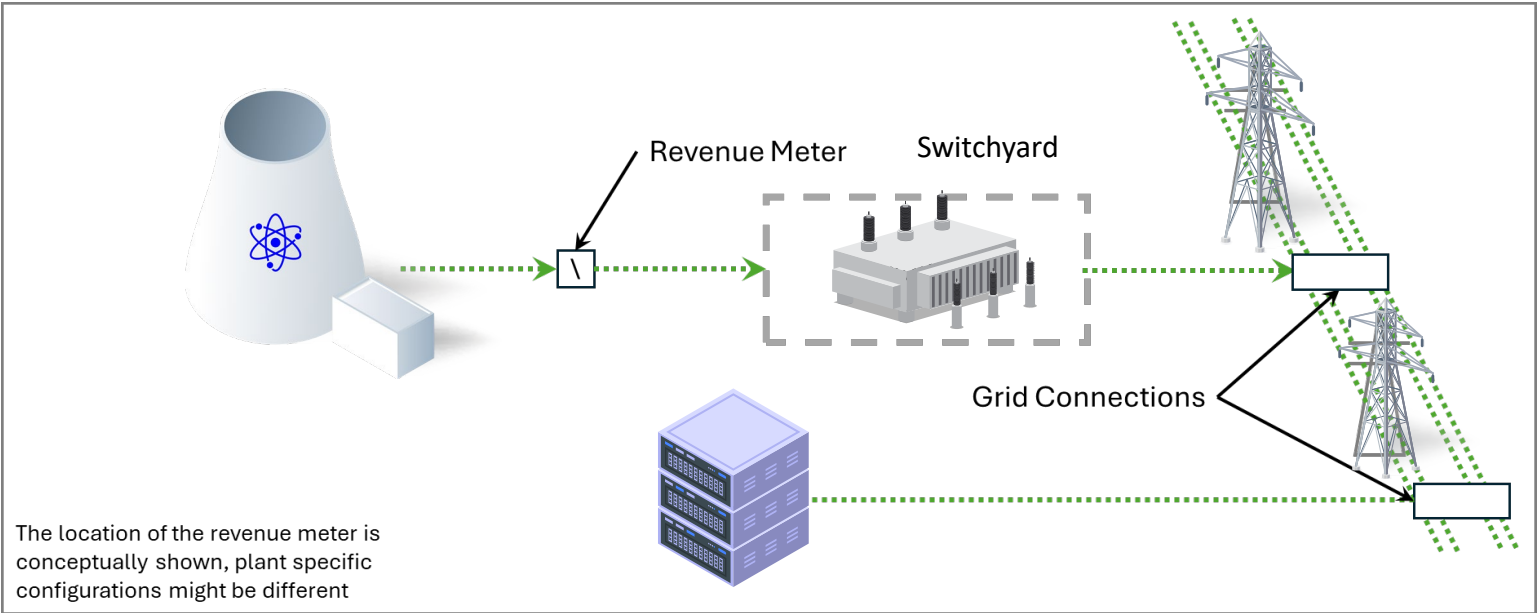
## Key Areas addressed by this Guide

- Developed with input from the Nuclear Energy Institute, Data Center Companies, and EPRI SMEs
- **Practical, logistical, and safety topics** that must be considered when developing **new nuclear assets** or **using existing nuclear assets** to power a data center.
- Provide guidance for **grid connection, a behind-the-meter connection, or direct connection.**
- **Regulatory and Community Engagement.**
- Guide is **free to the public.**



**Your Starting Point for Nuclear Co-location**

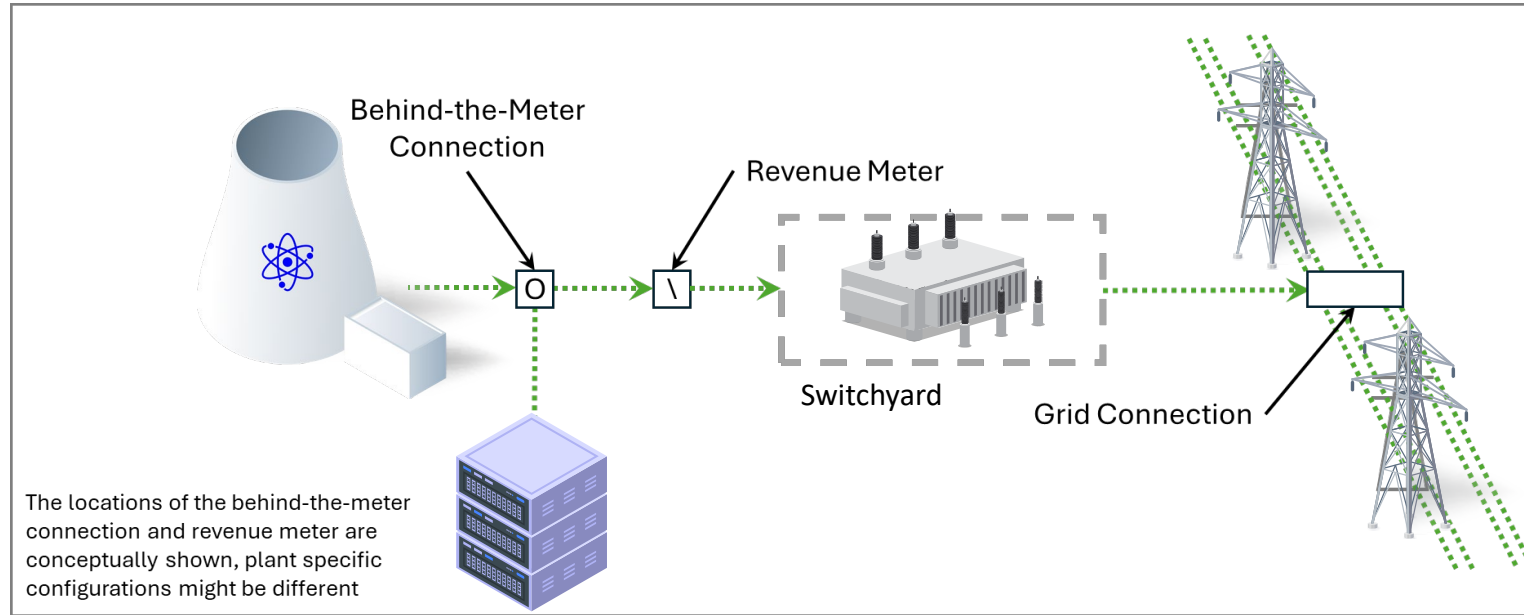
# Option 1: Connect to the Grid



Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Access to firm base load power</li> <li>• Inertia provides high quality power</li> <li>• High-capacity factors for reliable power</li> <li>• Nuclear is non-carbon emitting</li> <li>• Power Purchase Agreements may be available</li> </ul>	<ul style="list-style-type: none"> <li>• Requires new transmission and distribution</li> <li>• Requires new generation</li> <li>• Fossil power generation emits greenhouse gases</li> </ul>

**Connecting to the grid provides maximum of flexibility for future growth**

# Option 2: Behind-the-Meter



## Advantages

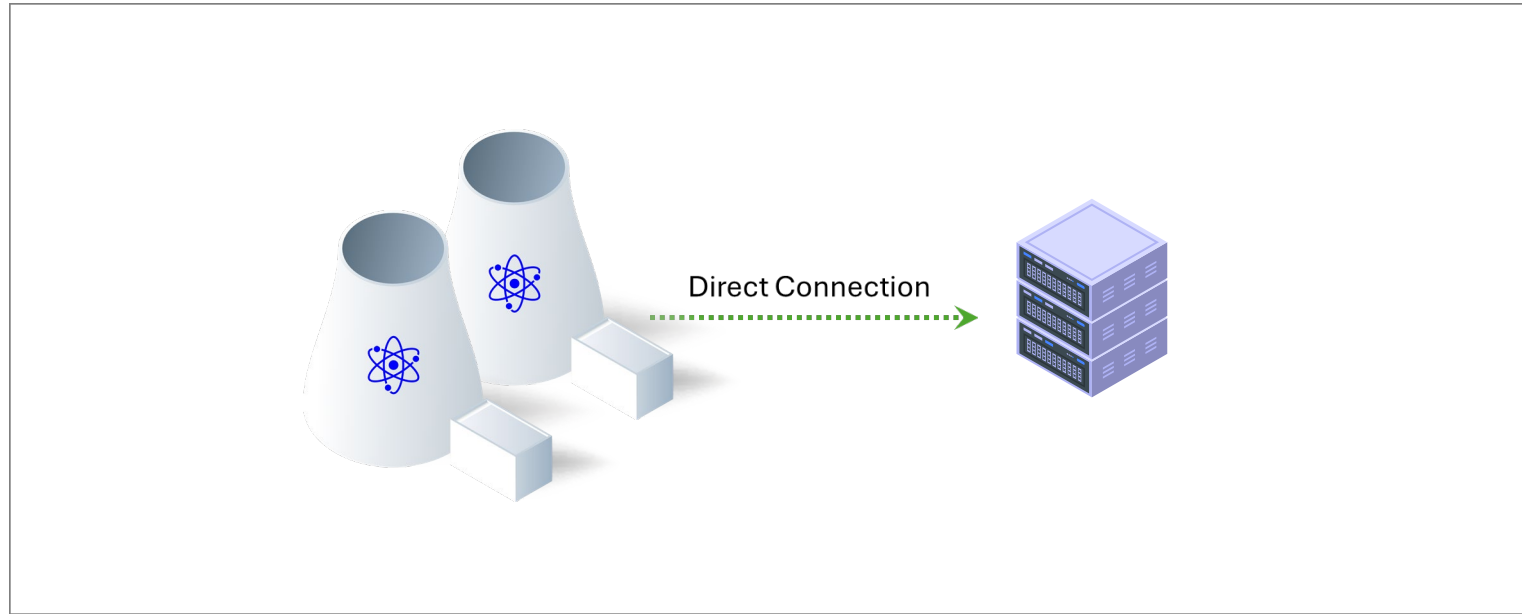
- Minimizes new transmission and distribution
- May reduce electricity costs for data centers
- Option for greenfield and new generation that is not bound by existing Interconnection Agreement
- Grid efficiency improves when large loads are located closer to its power supply

## Disadvantages

- Restricts possible sites for data centers
- Limited to existing nuclear plants for now
- Limited by current regulations
- May negatively impact the grid or the nuclear plant due to transients

**Behind-the-meter connections can provide cost reductions, but there are challenges**

# Option 3: Direct connection (Microgrid or Island Mode)



## Advantages

- Minimizes new transmission and distribution
- Independent from grid operation
- Could be an option in isolated areas

## Disadvantages

- Load rejection and load flicker can impact the nuclear plant
- Requires backup capability
- Limited redundancy
- Risk is transferred from the grid to the NPP to ensure supply certainty

**A direct connection increases the challenges but may be needed in some scenarios**

# Modular Construction Approach (without Grid Support)

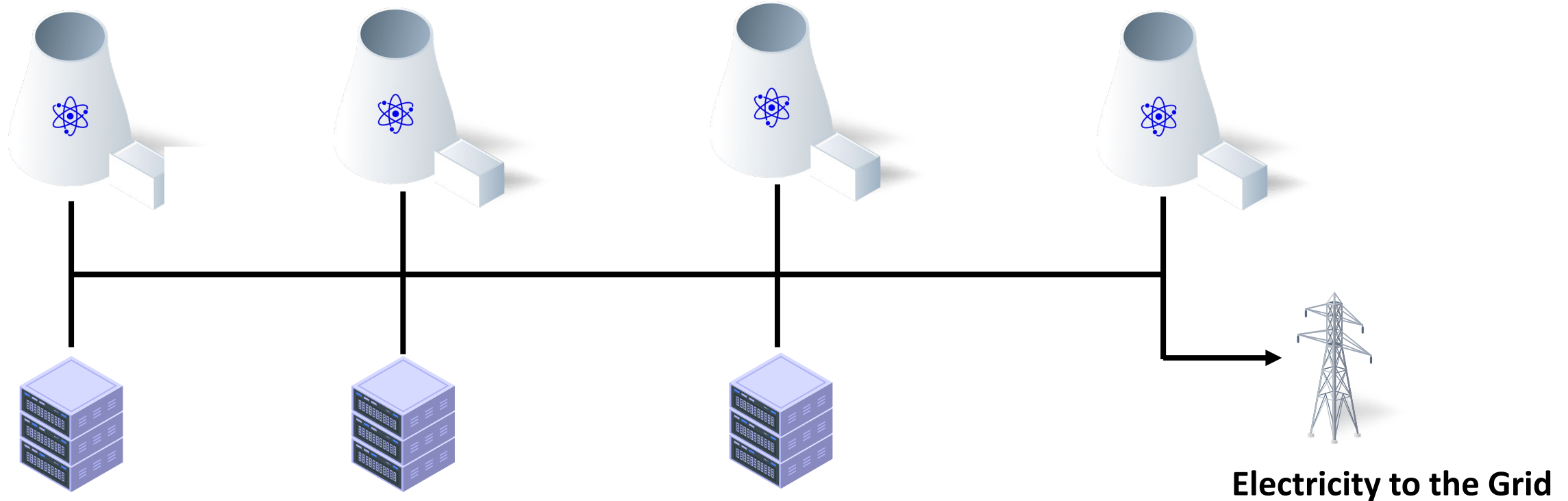
1. SMR / Module

2. SMR / Module

3. SMR / Module

4. SMR / Module

N+1 for 99.99% reliability



Assumed capacity factor for each nuclear plant is 90%, based on existing NPP operational experience.  $R_{system} = 1 - (1 - R)^n$

**Build out the data centers as new reactors become available. Grid supply increases reliability.**



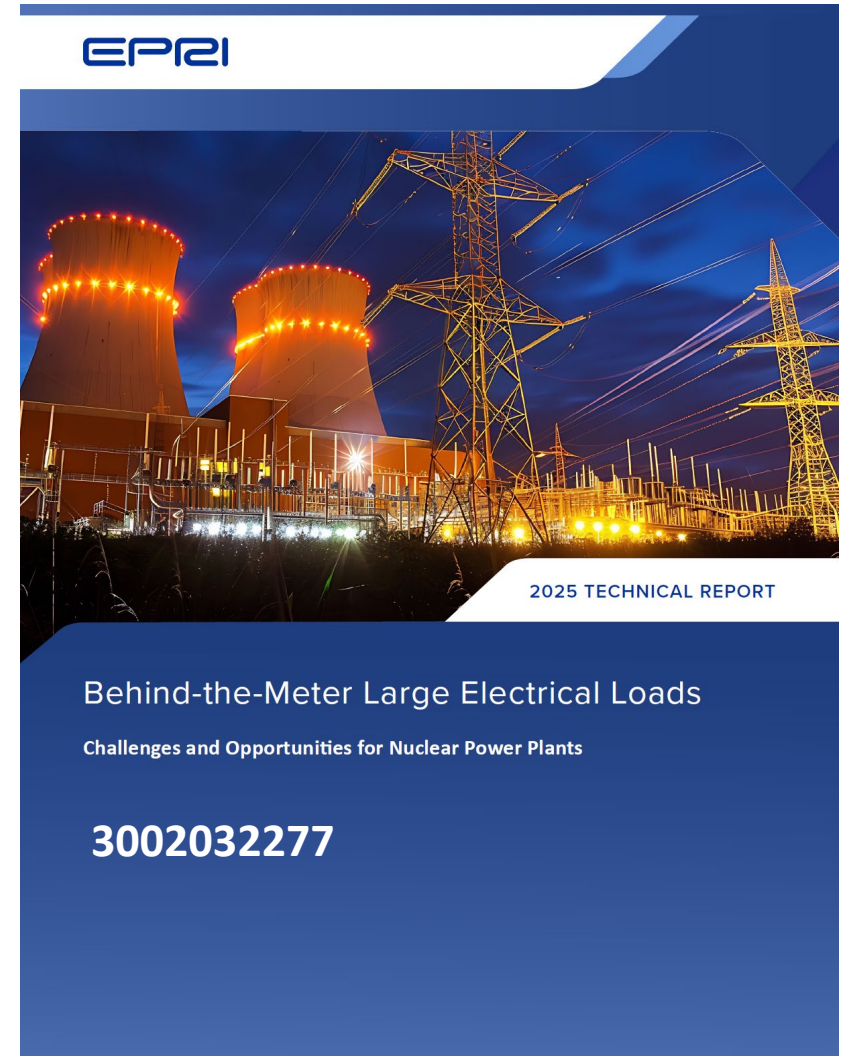
**Behind-the-Meter Large Electrical Loads:**

**(3002032277)**

# Behind-the-Meter Large Electrical Loads

## Outline of Report

- Provides **concepts and considerations for adding a behind-the-meter large electrical load** to Nuclear Power Plants.
- Collaboration from **Utilities, INPO, and Engineering Architects**
- Concepts for **existing and new nuclear**
- **Modifications to physical arrangements and protection systems.**
- **Legal and regulatory considerations incl. FERC and Nuclear Regulatory Commission (NRC).**
- **Lists business and financial considerations.**



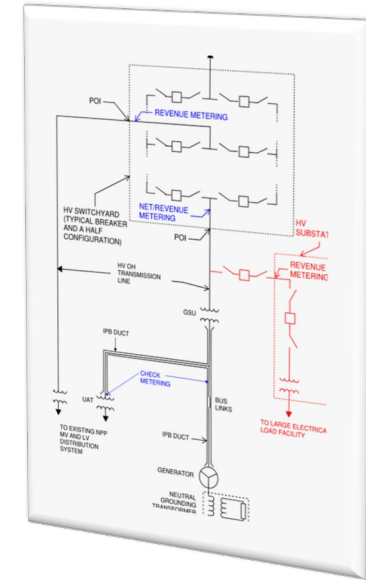
**Critical information for electrical engineers and new nuclear designers**

# Behind-the-Meter Large Electrical Loads

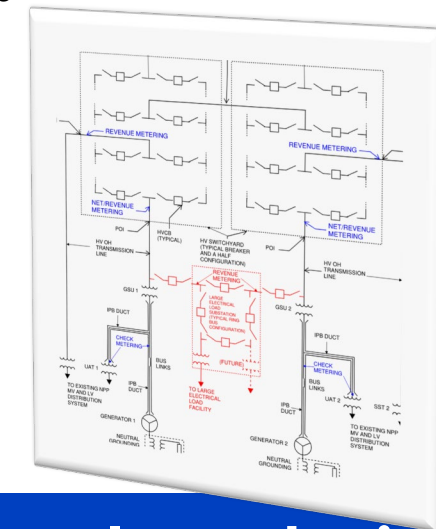
## Content examples

- Recommended Electrical Interconnections for
  - **High Voltage (HV) Tie-in Connection and HV Revenue Metering, Single and Two Generators**
  - **HV Tie-in Connection and Medium Voltage Revenue Metering**
- **Impact on the available short circuit current.**
- **Physical site and cyber security.**
- **Additional monitoring, serviceability, and maintenance of HV and interconnect equipment.**
- **New and existing modifications to protective relaying and metering systems.**
- **Expected Steady State and Transient Impacts (Stability, Short Circuit and Arc Flash, Harmonics, Protective Device Coordination Analysis)**
- **Impact Analysis of Protection System, Load Rejection, NERC standards, 50.59, Interconnection Agreements, and more...**

Option: HV Tie-in Connection and HV Revenue Metering, *Single Generator*



Option: HV Tie-in Connection and HV Revenue Metering, *Two Generators*



**Critical information for electrical engineers and new nuclear designers**



# Research Outlook

## Nuclear – Data Center Integration

# Examples of Ongoing Projects

## Thermal Energy Storage System for Nuclear Integrated Data Centers

### Purpose and Scope:

- Most Data Centers **reject heat** generated from the IT load to the environment by mechanical cooling equipment **without economic use**.
- **Several European and regional initiatives** exist today that **encourage or require waste heat utilization of data centers**.
- Goal is to explore the opportunities and challenges of **capturing otherwise wasted heat** from data centers, **coupled with a Thermal Energy Storage (TES) system and nuclear heat topping**, to provide process heat to industrial processes.

## Guide for Nuclear Power Plant Integration with Data Centers

### Purpose and Scope:

- Develop a **practical and understandable guide** that lists and describes options, concepts, and considerations **for integration between the NPPs and DCs**.
- The **NPPs** to be considered **will include all sizes** including large light water, small modular, and micro reactors.
- Consider **load follow limitations** and options to **account for AI load demands**.
- **Integrated Cooling, TES, Backup and Construction Schedule** concepts
- **Staff Optimization** and **Siting Considerations**

**We are leveraging the depths of EPRI and our Collaboration Partners**

# Examples of Ongoing Projects

## Probabilistic Risk Assessment of Colocated Nuclear Power Plants with Industrial Facilities

### Purpose and Scope:

- **Assess new events or hazards that are introduced by colocating NPPs with industrial facilities** (e.g., petrochemical or large electrical consumers)
- Determine if **new events change the magnitude, frequency, or consequences of accident scenarios.**
- Build off existing reports, **add unaccounted transients and expand to larger industries.**
- **Recommend technical and operational solutions to properly model and mitigate potential changes** in accident frequencies and consequences.
- Results can **provide a framework for regulators to make decisions based on realistic risks to a nuclear plant.**

## Siting Tool for Energy System Integration

### Purpose and Scope:

- Develop a **state-of-art, user friendly tool, for site screening to support nuclear colocation and deployments.**
- **Accessible interactive siting tools and data visualization tools will become increasingly important as non-nuclear industry players enter the market.**
- **Tool will include EPRI research data, results, and methodologies in combination with public geographic information system (GIS) data, plus industry specific data layers for data centers and other industries.**
- **Incorporate an AI framework.**

# Examples of Ongoing Projects

## Impact assessment of Data Center driven Load Bursts on direct electrical connections with NPPs

### Purpose and Scope:

- **Direct electrical integration** of data centers with NPPs **remains an option** for existing and new construction NPPs.
- **Proactively identify and mitigate potential power quality challenges** associated with direct connections between data centers and NPPs.
- **Develop and recommend technical and operational solutions** to reduce or eliminate negative impacts on power quality and NPP operation.
- **Develop** framework for **microgrids**.

## Options for NPP and Data Center Integrated Cooling Concepts

### Purpose and Scope:

- **Colocation of NPPs with large IT load data centers can strain available cooling water sources** and ultimate heat sinks such as rivers, lakes, or oceans.
- Evaluate the **feasibility, efficiency, and potential challenges & benefits of shared ultimate heat sink and cooling systems, structure, and components** between a new NPP and a large-scale Data Center.
- **Operational (normal operation and outages), regulatory, and financial aspects** will be considered.

**Reach out if you are interested in supporting future work**

# Upcoming NBE Workshops

**Nuclear Energy for Data Centers – August 18-19  
in Charlotte, NC**

**Nuclear Energy for Industrial Applications – Sep 29-30  
in Houston, TX**

**Two days of critical information from EPRI SME's, industrial representatives and  
historically 70+ participants**



**TOGETHER...SHAPING THE FUTURE OF ENERGY®**