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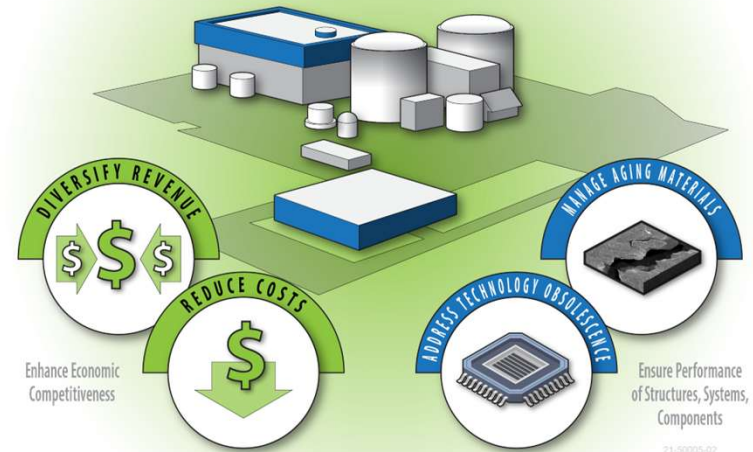
# **US Strategic Capacity Expansion Roadmap (Expanding Fleet Output by 5+ GW by 2030 and 10+ GW by 2035)**



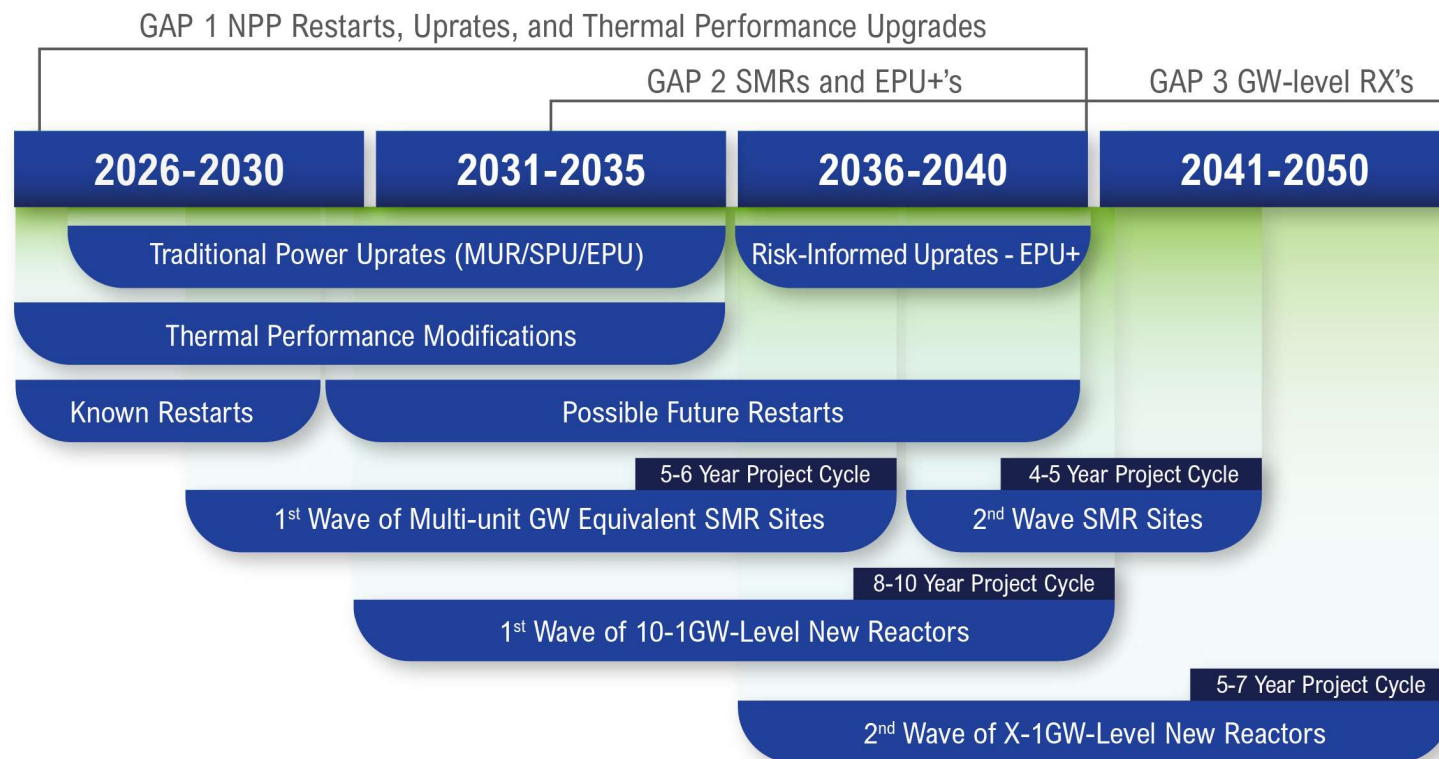
# Roadmap - Purpose and Objectives

Industry stakeholder update on DOE-directed nuclear capacity expansion roadmap with emphasis on a Nuclear Capacity Expansion Roadmap:

- Outlines credible strategic pathway elements to meet Executive Order 5 GW 2030 target through plant restarts, power uprates, thermal performance modifications, and improving fleet capacity factor.
- Identifies constraints to meeting Executive Order targets and recommends enabling strategies (including incentives) for Department of Energy consideration.
- Addresses uprate stakeholder business case considerations



# Expanding the Existing Fleet Output in Context



# Types and Magnitude of Existing Fleet Expansion



# Types and Magnitude of Existing Fleet Expansion

**Path A:** Thermal Power Uprate (higher licensed power level - MWt)



## MUR

### Measurement Uncertainty Recapture

- Increases licensed power level by less than 2%
- Improved techniques for calculating reactor power by more accurately measuring feedwater flow

**3-4 Years**



## SPU

### Stretch Power Uprate

- Increases licensed power level by between 2% and 7%
- Typical to change instrument settings
- Not typical known for major plant modifications

**3-5 Years**



## EPU

### Extended Power Uprate

- Increases licensed power level by 7% and as much as 20%
- Requires significant modifications to major pieces of non-nuclear equipment like:
  - HP Turbine
  - Condensate Pumps
  - Main Generator Transformers
  - Moisture Separator Reheaters

**6+ Years**



# Types and Magnitude of Existing Fleet Expansion

## Path B: Electrical Capacity Increase (no MWt changes)



### Fuel Cycle Optimization

- 24-month fuel cycle
- Considered a capacity factor improvement

4-5 Years



### Thermal Performance Upgrades

- Turbine retrofits
- Moisture Separator Reheaters replacement
- Condenser improvements
- Repairing, recapturing, and restoring known thermal losses

3-5 Years

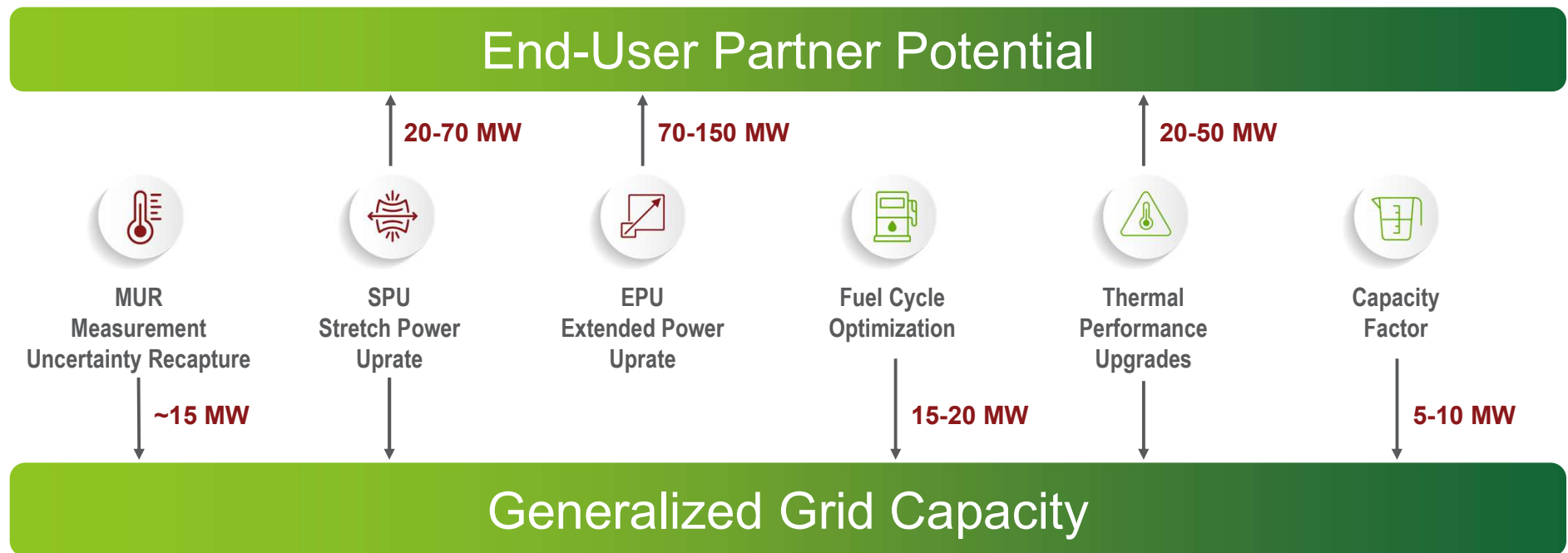


### Capacity Factor






- Refueling outage optimization
- Plant Reliability improvements
- BOP repairs and upgrades to recover lost MWs

2-3 Years

## End-User Dedicated vs. Generalized Grid Capacity



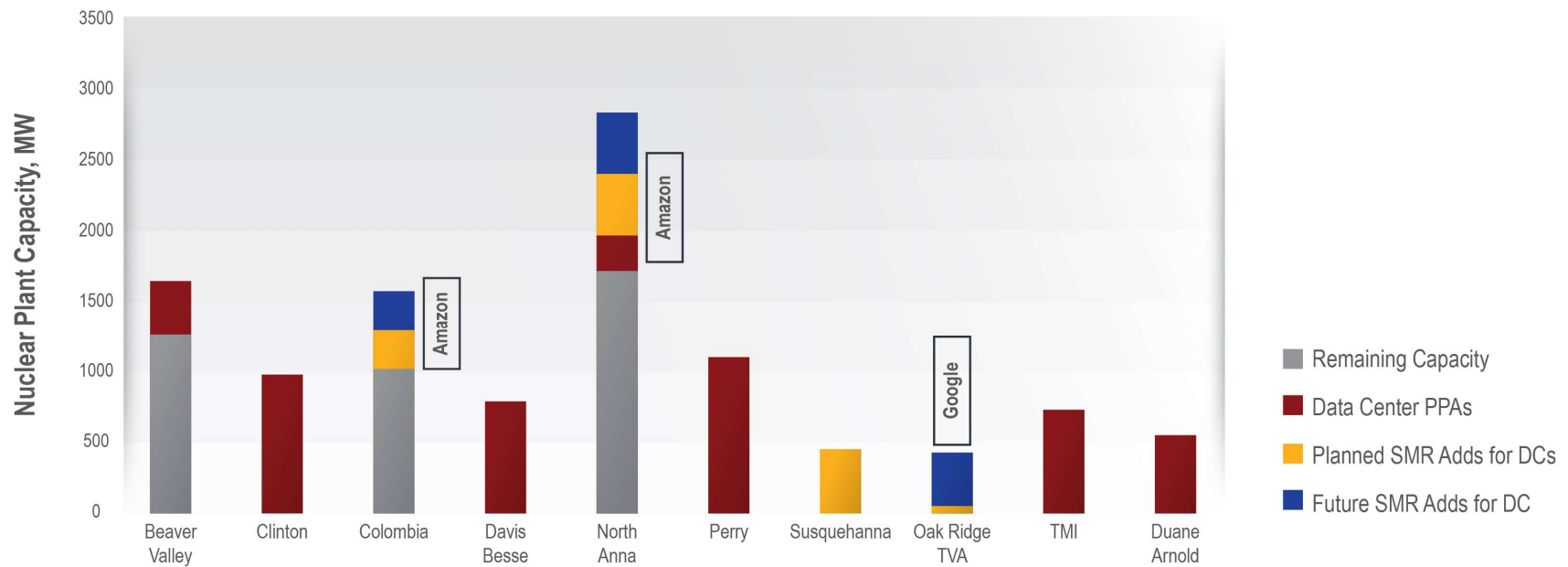
## 2030 Potential – All Sources (With and Without Acceleration)

Pathway	Potential Contribution	Certainty Without New Acceleration	Certainty With New Acceleration	Acceleration Area
 Restart of previously retired reactors	2.2 GW	High	High	Financial
 Increase Fleet Capacity Factor (incentive enabled)	0.75 to 1.0 GW	Low	High	Financial
 Thermal Performance Upgrades (Incentive-Enabled)	0.78 GW	Medium	High	Supply Chain
 LAR Uprates (MUR/SPU/EPU)	1.08 GW	Medium	High	Supply Chain & Financial
 24-month Fuel Cycles+	0.19 GW	Medium	High	Regulatory
Total	5.0 to 5.25 GW			

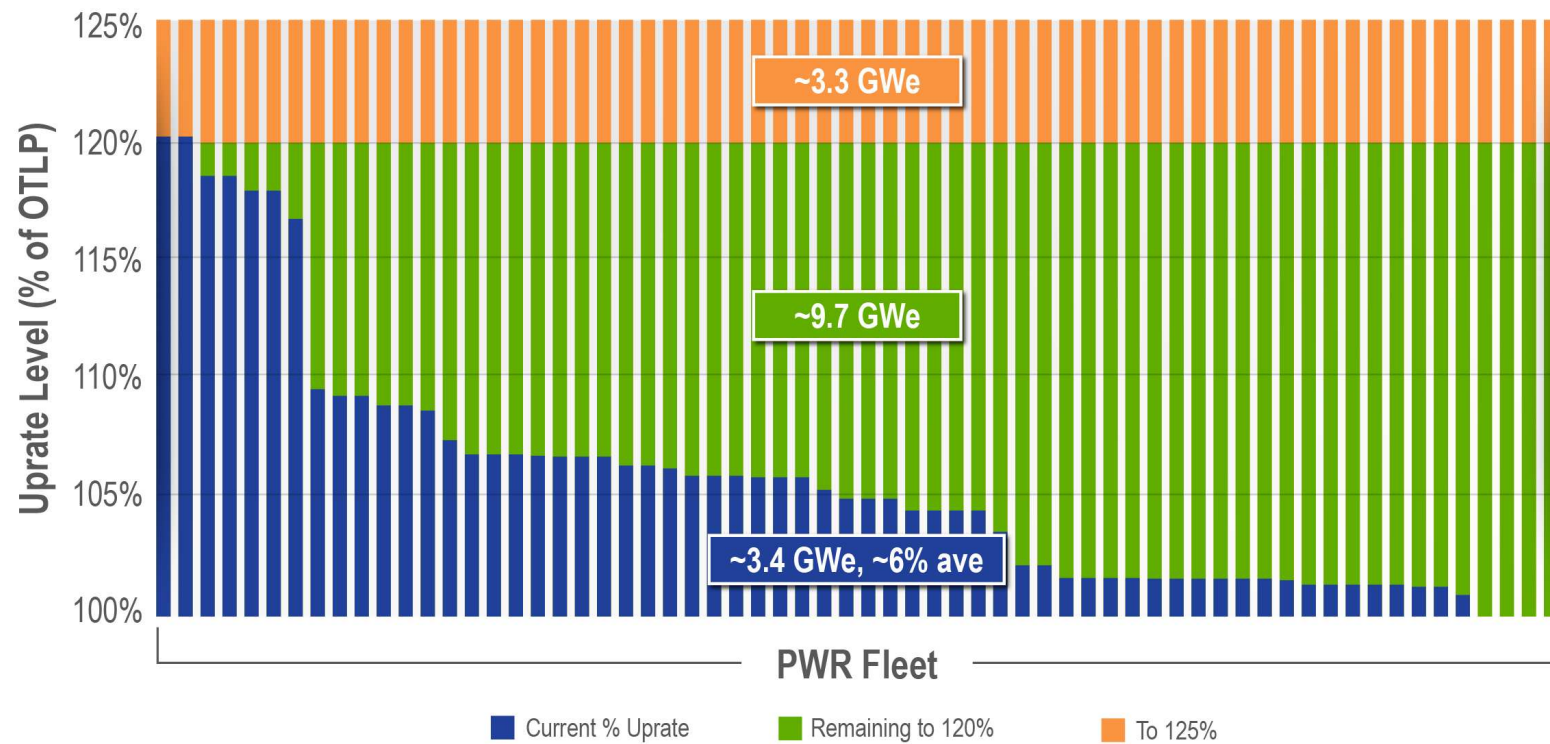


# Announced Unit Restart and Uprate Partnerships

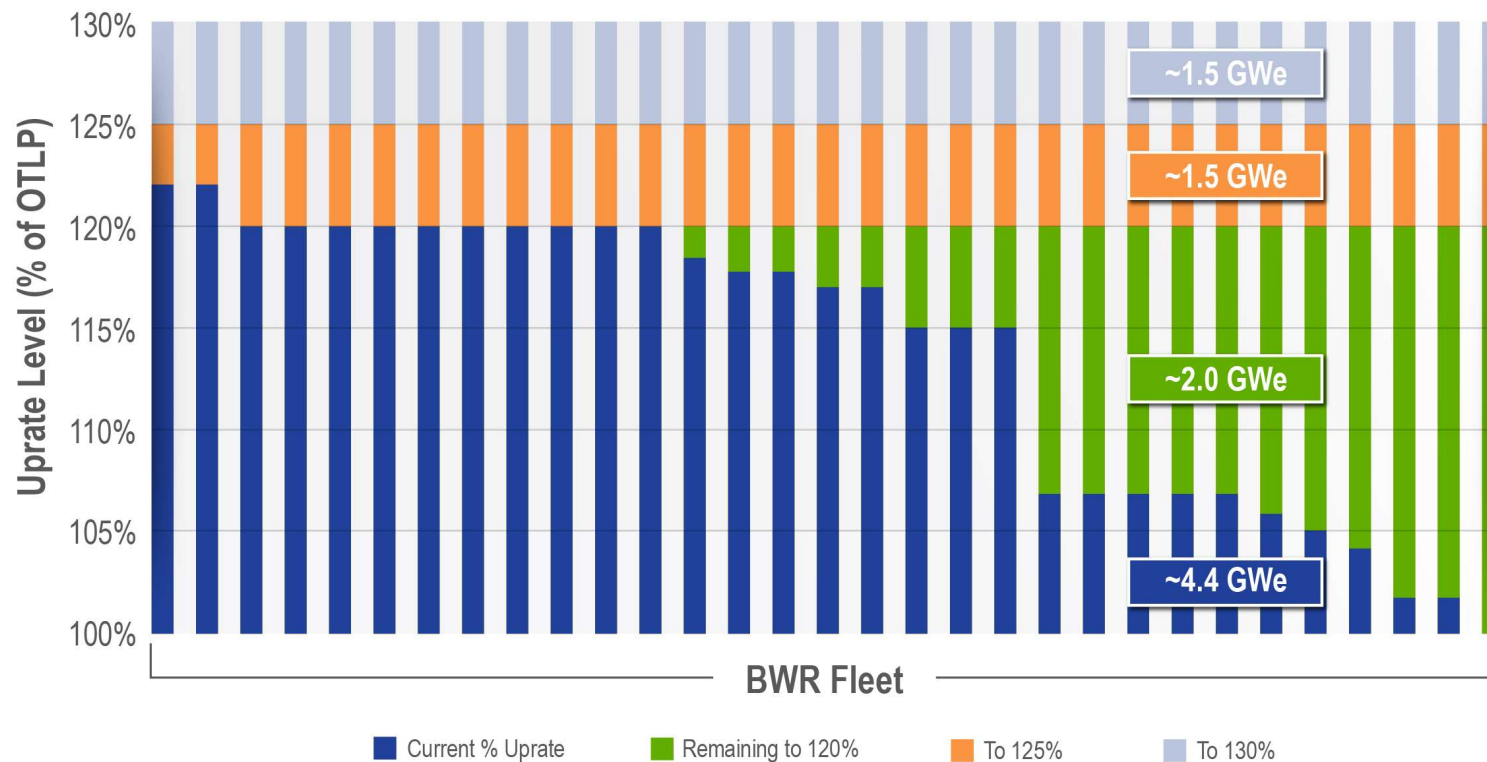
Nuclear Plant PPAs and SMRs for Data Centers



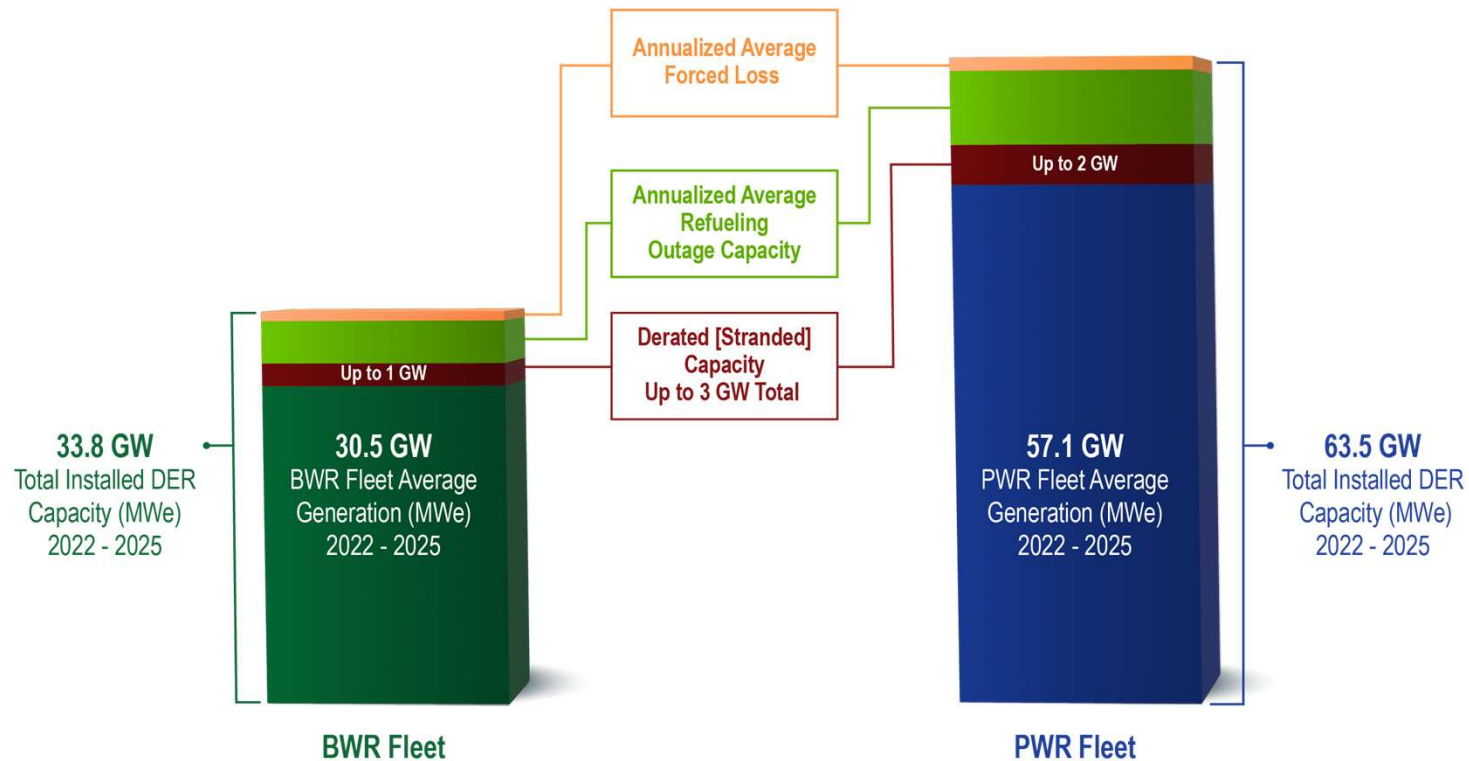
# Fleet Margin Available for EPU's – PWR Fleet



## Fleet Margin Available for EPU's – BWR Fleet



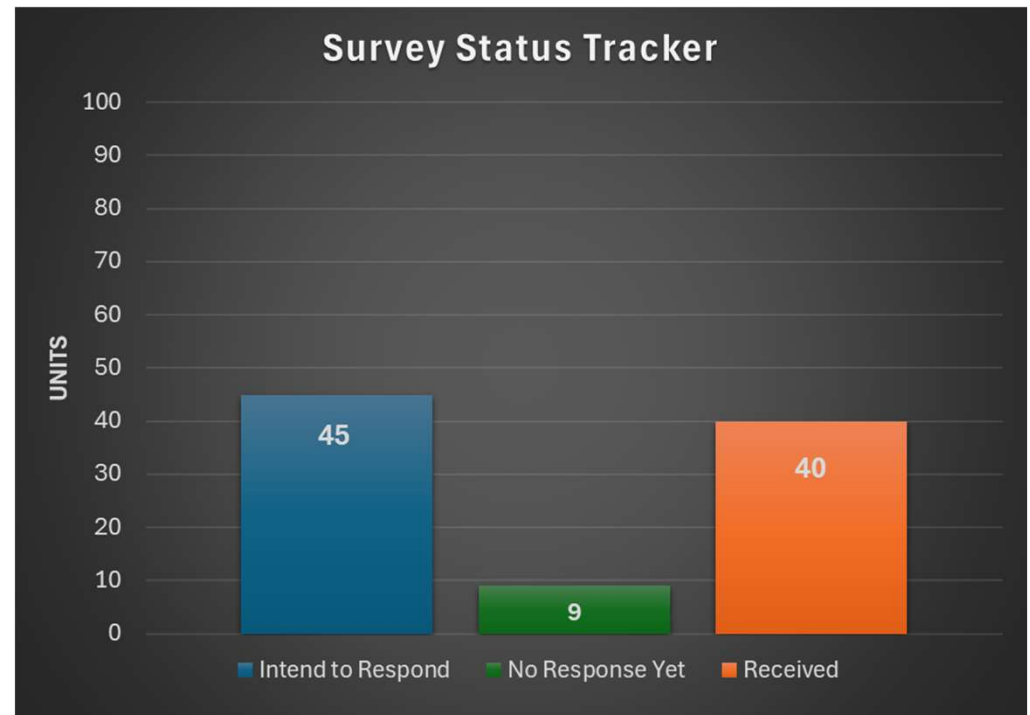
# More on the Potential for Recovery of Stranded Fleet MW











Condenser tube repair/replacement heat transfer margin recovery project.

## Industry Assessment of Stranded MWe

- Industry-wide survey transmitted to utilities representing all 94 currently operating units in May 2026
- Survey requests:
  - Opportunity description
  - Estimated MWe loss
  - Barriers/actions to recover
  - Recovery timeline
- Results will be used to inform recovery feasibility



# Utility Power Reactor Scalability Effort (UPRISE)

UPRISE – Accelerated path to 2.5 GW by end of 2027 (Aspirational)		UPRISE – Accelerated path 5.0 GW by the end of 2029 (Aspirational)	
Pathway	Potential Contribution	Pathway	Potential Contribution
 Reactor Restarts (Three Mile Island, Palisades)	1.6 GW	 Reactor Restarts (Three Mile Island, Palisades and Duane Arnold)	2.2 GW
 Increase Average Fleet Capacity Factor by .5% - Lost MW Recovery Project	0.5 GW	 Increase Average Fleet Capacity Factor by 1% - Lost MW Recovery Project - 24-Month Fuel Cycle Transitions	Approx. 1.0 GW
 Thermal Performance Upgrades (e.g., MSRs and Turbines)	0.28 GW	 Thermal Performance Upgrades (e.g., MSRs and Turbines)	0.28 GW
 Planned Licensed Thermal Power Upgrades	0.14 GW	 Planned Licensed Thermal Power Upgrades	1.0 GW
Approximate Total	2.5 GW	Approximate Total	5.0 GW



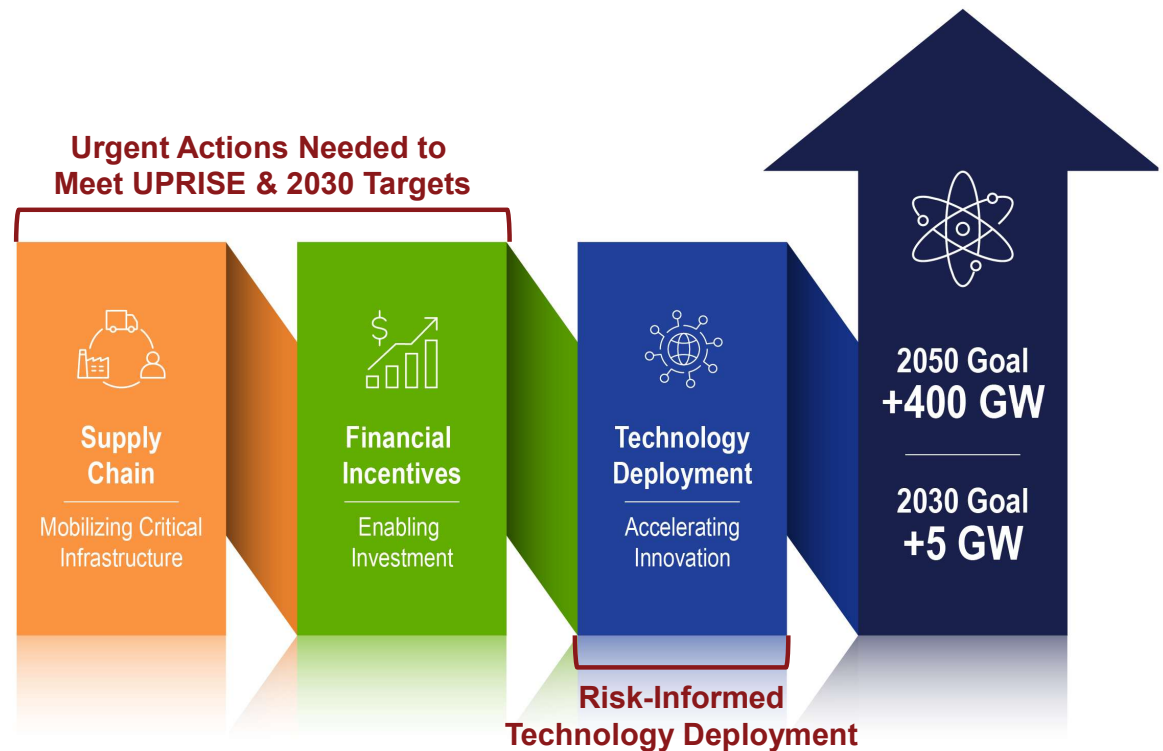
# Common Enabling Action Areas - Sprints

## Supply Chain Focus

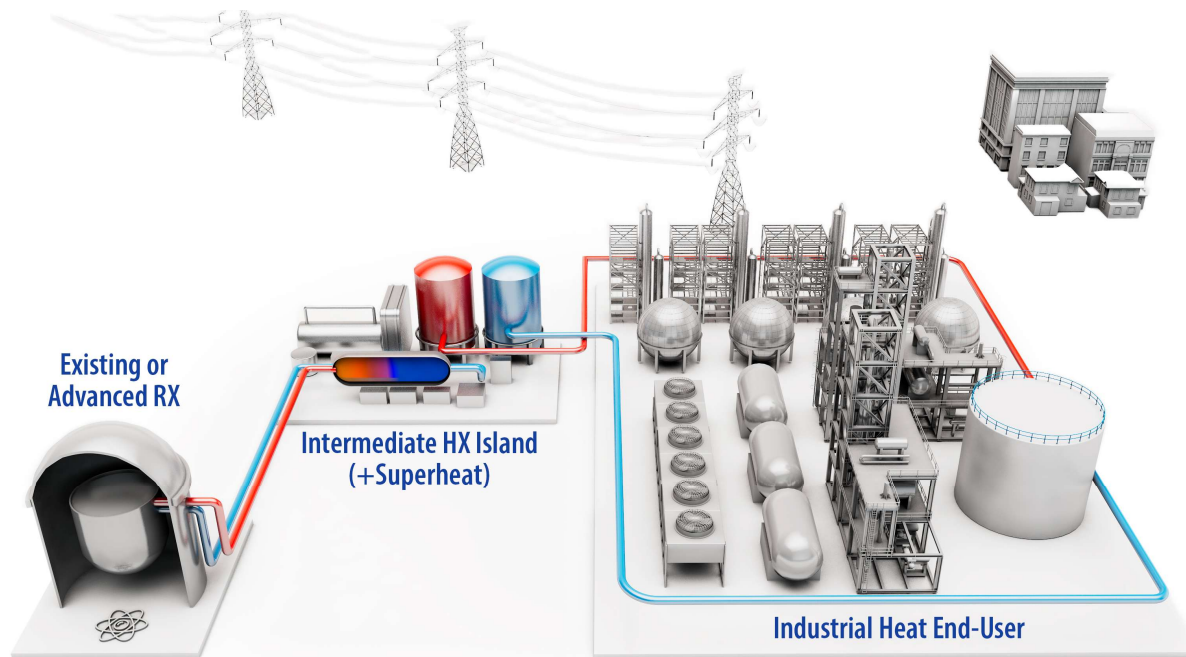
- Breaking down critical uprate equipment manufacturing and procurement bottlenecks

## Incentive Focus

- Financial tools, incentives, and partnership models that reduce uprate business case risk and accelerate investment decisions



# Delivering Nuclear Heat for Industrial Applications



- Producing industrial steam (primarily by NG) consumes ~15% of global primary energy
- LWR heat extraction research shows:
  - Saturated steam can practically be extracted and routed to nearby industrial users
  - Compression and electrical trim heating equipment can be paired to meet nominal industrial superheat needs

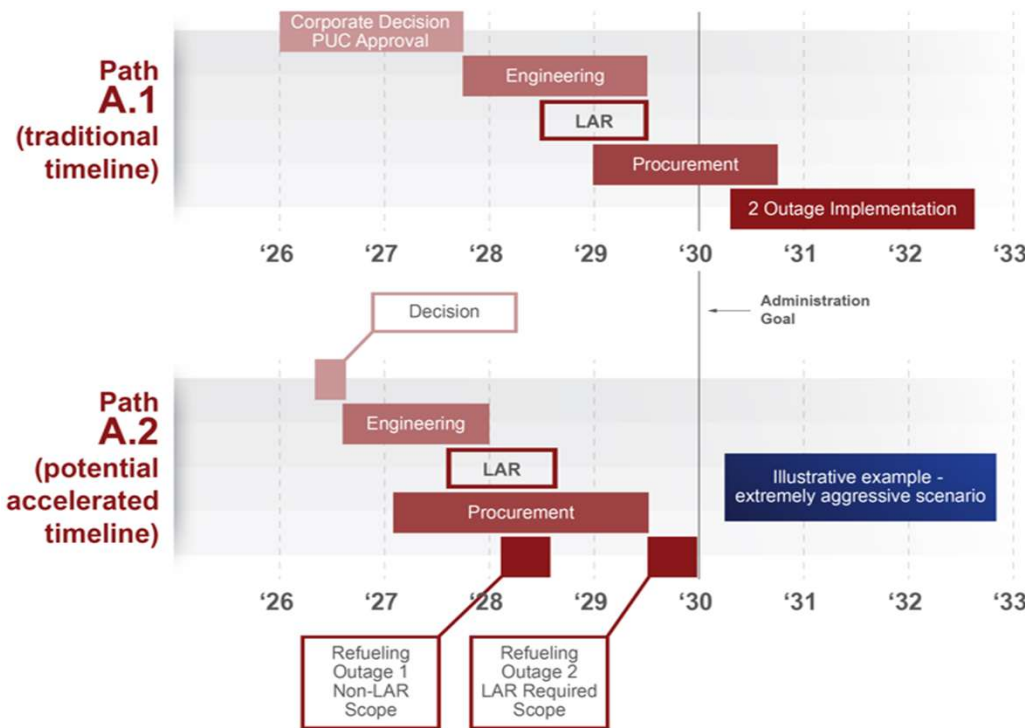


## Sustaining National Nuclear Assets

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# Opportunities to Accelerate Licensed Thermal Upgrades



## Limits of 2030 Acceleration

- Regulated business case approval acceleration
- Engineering and licensing approval timing
- Supply chain acceleration for major components
- Practical ability to implement in 2-refueling outages by the end of 2030
- *No utility incentive beyond ITC/PTC to do so...*

# Historical Power Uprates by Year, Type, Cumulative

