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BWX Technologies, Inc.

Licensing Advanced Reactor Technology for Domestic Deployment

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BWXT employs nuclear technology to solve some of the world's most important problems

OUR MISSION

- Global Security
- Clean Energy
- Nuclear Medicine
- Space Exploration
- Environmental Remediation

$2.4B+
Estimated 2023 Revenues

415
Reactors delivered for Naval Nuclear Power

300+
Commercial nuclear steam generators

~7800
Employees

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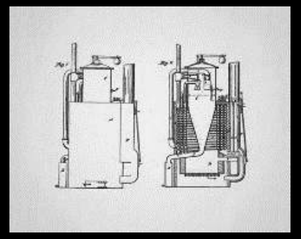
75-Year History of Nuclear Technology



1856
Stephen Wilcox patented the water tube boiler

1953
Designed and fabricated components for the world's first nuclear powered submarine the USS Nautilus

2015
Delivered the 385th nuclear core to the Navy

2017
Awarded NASA Nuclear Thermal Propulsion Reactor Design contract

2018
Entered the nuclear medicine market

2019
Awarded first Columbia-class contract

2020
Awarded Savannah River Site cleanup contract

2022
DoD contract to build Pele the first microreactor in the United States

2023
BWXT to provide nuclear reactor engine and fuel for DARPA NASA DRACO space project

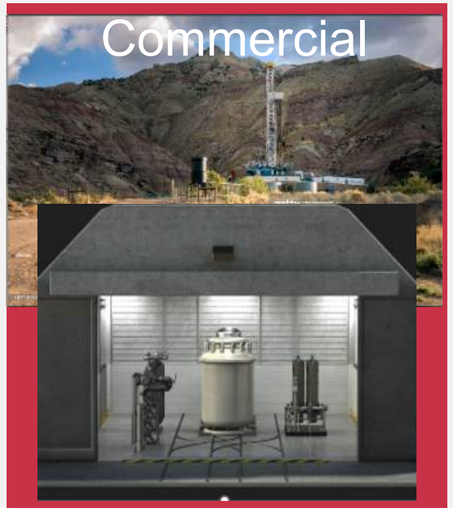
NON-NUCLEAR | NUCLEAR | **BWXT ERA**

BWXT Capabilities

Land

Electric & Thermal Energy Generation

- Military operations
- Reduced vulnerabilities and signature



- Resilient power
- CANDU
- SMR supplier
- Small footprint
- Mining, oil & gas sites, data centers

Sea

Naval Nuclear Propulsion

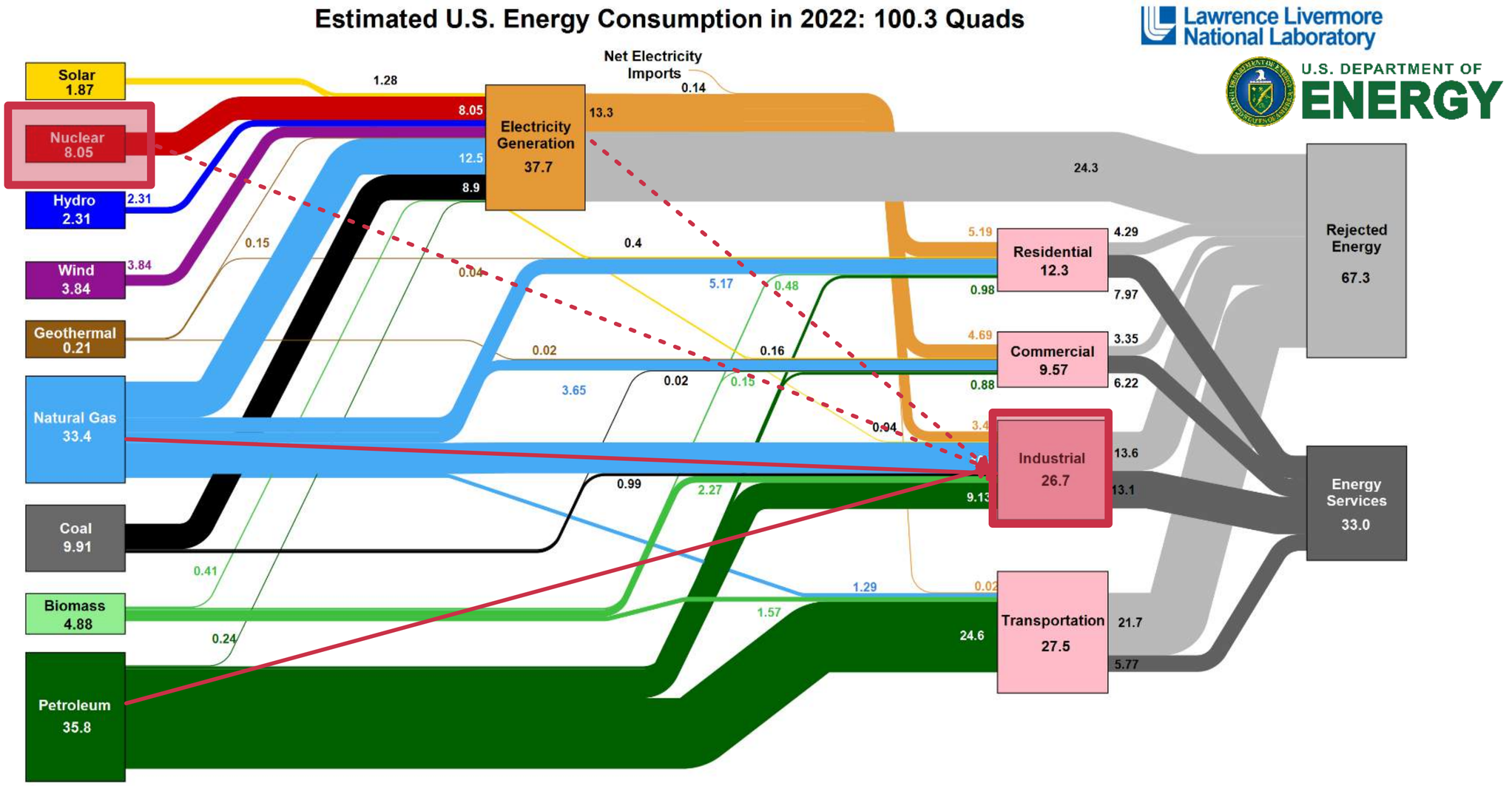
- Naval nuclear reactors and components
- Nuclear fuel & materials

Space

Propulsion & Power

- Thermal propulsion for rapid transit
- Deeper space exploration
- Mission power

Market: There's a Significant Demand for Reliable & Clean Energy



Source: LLNL July, 2023. Data is based on DOE/EIA SEDS (2021). If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports consumption of renewable resources (i.e., hydro, wind, geothermal and solar) for electricity in BTU-equivalent values by assuming a typical fossil fuel plant heat rate. The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 0.65% for the residential sector, 0.65% for the commercial sector, 0.49% for the industrial sector, and 0.21% for the transportation sector. Totals may not equal sum of components due to independent Rounding. LLNL-MI-410527

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TRISO

- TRISO allows for an inherently safe reactor that can withstand external attacks without creating a large evacuation zone
- TRISO has been thoroughly tested and has proven to withstand temperatures up to 3,100 degrees Fahrenheit
- TRISO significantly reduces radiation released by a kinetic attack, with scheduled kinetic testing and modeling during Phase II of Pele.
- TRISO is low enriched (<20% U235) reducing diversion and proliferations risks
- Fuel structure deters use as an improvised weapon such as a dirty bomb

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Advanced Microreactor Deployment: Project Pele

- HALEU (19.75% U-235 enriched) UCO TRISO Reactor
- 1-5 MWe of Electrical Power
- High Temperature Gas Reactor (HTGR)
- Deployment at Idaho National Lab (INL)
- Transportable – within commercially available shipping containers (Multi-mode)
- 20ft CONEX Boxes
- Rapidly deployed and decamped

Team includes Rolls Royce Liberty Works, Northrop Grumman, Torch Technologies, Inc.

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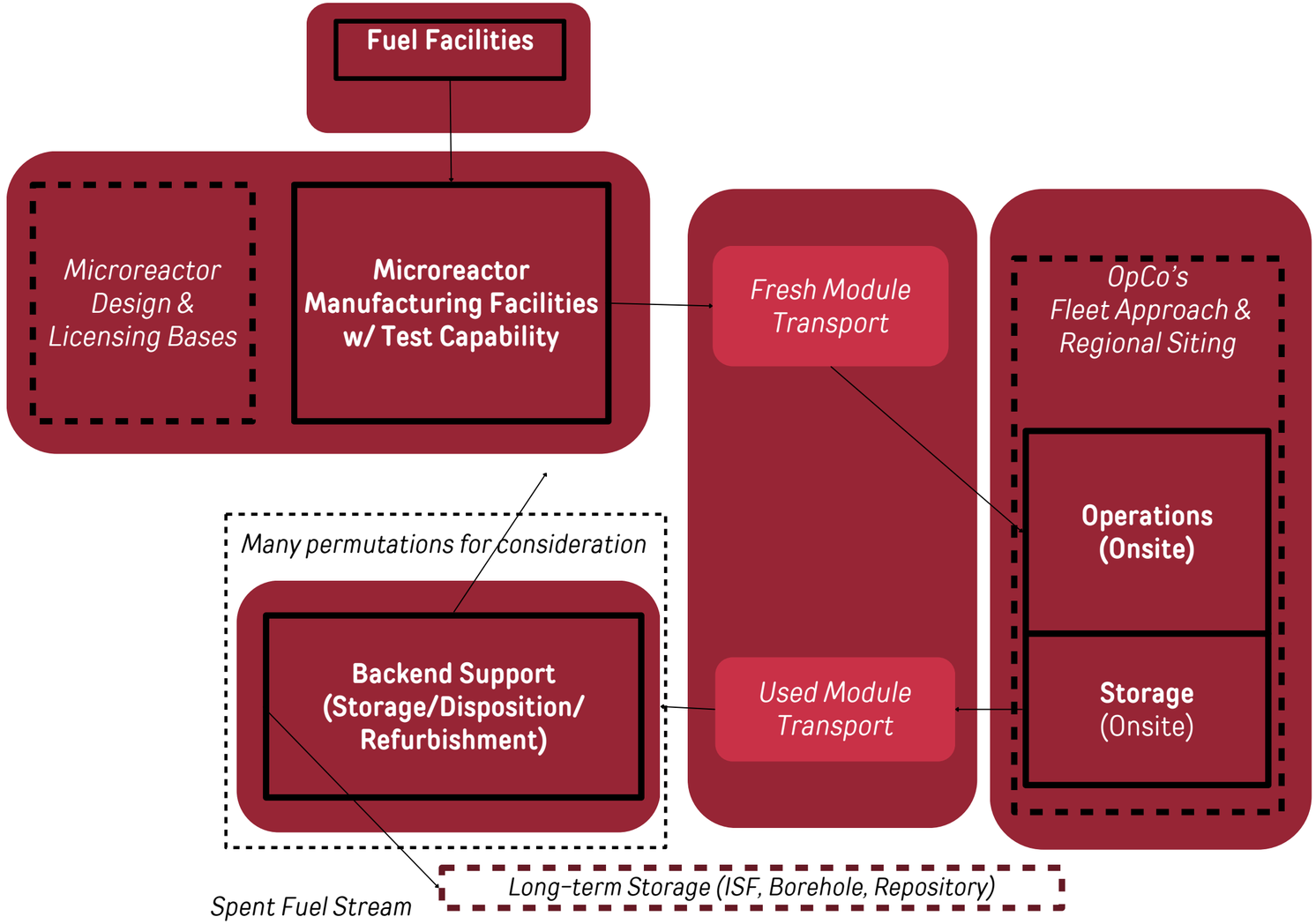
Commercial: BWXT Advanced Nuclear Reactor (BANR)

50 MWth per reactor, scalable

- Flexible power conversion: heat, electricity or co-generation
- High temperature gas reactor technology (HTGR)
- High density, BWXT-fabricated fuel enables 5+ year refueling cycles
- Passive inherent safety
- Design for transportability, project deliverability, and economics

Deployment Models: Products, Projects, and Regulatory Frameworks

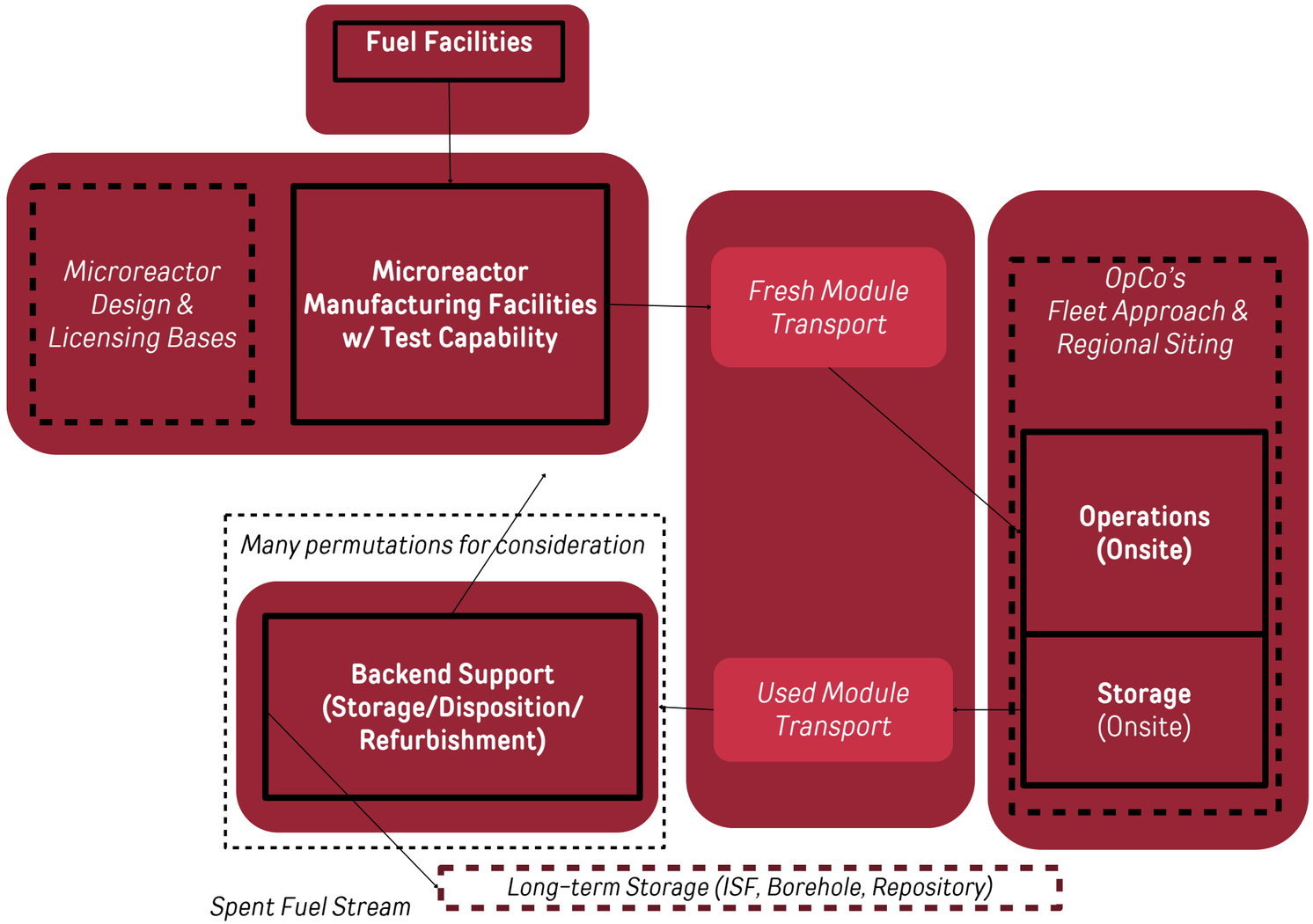
- Microreactor business/deployment models incorporate a full lifecycle of activities from manufacture through end-of-life considerations: regulator has multiple touchpoints.
- Each element represents a potential “mode” for the microreactor and intersection with the regulatory framework.
- Commercial success for any concept will depend on effective regulatory resolutions to each element and their transitions.



Deployment Models: Domestic Regulatory Framework Elements

Resolution of microreactor-specific topics generically will allow demonstration of implementation through the many licensing actions of the deployment model. Example:

- BANR Design: Part 52 Manufacturing License
- BANR Manufacturing: Part 70 Material License
- BANR Test Facility/Capability: Part 50 Test Rx License
- BANR Fuel Fabrication: Part 70 Fuel Fab. Facility
- Transportation: Build on Part 71 framework
- Site Licensing: Many options in Parts 50 or 52.
  - Fleet-implementation of Operating programs
  - Bounding site parameter envelope to deploy efficiently
- Backend: Recognize there will be facilities to facilitate receipt, storage, disposition, and either disposal or refurbishment of used reactor modules with a path for spent fuel management



Project Hotshot: Opportunity to Address Microreactor Regulatory Issues

Participation in Project Hotshot offers a test case to address the resolution of identified microreactor regulatory topics with a prospective business case (NOVSP), technology (BANR), and deployment model to meet end-user identified project constraints.

- Objective: Clarity on resolutions to microreactor regulatory issues by early 2025 to support NOAK deployments in the early 2030's with licensing actions executed within 6 months of final site selection and 1% of project cost.
- NEI's list of Microreactor Regulatory Topics (~34) all intersect with an element of the deployment model:
  - Technology development & Safety case demonstration,
  - Operating Company (Owner/Operator) Fleet-level management of many microreactors,
  - Need to accommodate efficient site characterization, environmental permitting, and site licensing to meet market constraints,
  - Microreactor-unique regulatory matters recognized by industry and the NRC.
- Resolutions will provide clarity for reactor developers to implement in the technology development cycle to improve regulatory engagement effectiveness (improvements in topics, timing, and level of detail) beyond the current advanced reactor regulatory framework elements like ARCAP.

NEI: Regulatory Topics That Potentially Need Alternative Approaches

Bucket 1 (Site License)		Bucket 2 (Technical)		Bucket 3 (Operations)		Bucket 4 (Non-Urgent)	
Issue	**Potential**	**Issue**	**Potential**	**Issue**	**Potential**	**Issue**	**Potential**
1) Environment	High	7) Meteorology	High	12) Lic. Review Fees	High	23) ML Scope	Medium
2) ITAAC	High	8) Seismic	High	13) Annual Fees	High	24) Flooding	Med-Low
3) Site License	Med-High	9) Aircraft Impact Assessment	Medium	14) NRC Oversight	Med-High	25) Other External Hazards	Low
4) Const. at Docketing	High	10) Testing at the Factory	Med-High	15) On-site staffing	Medium	26) Population Siting	Low
5) Mandatory Hearing	Med-High	11) Transport of Fueled Reactor	Med-High	16) Autonomous operations	Medium	27) Physical Security	Medium
6) Contested Hearing	High			17) Remote monitoring	Medium	28) Emergency preparedness	Low
				18) Remote operations	Medium	29) Insurance & Liability	Low
				19) Cyber security	Medium	30) Contractors and ML	Medium
				20) Radiation Protection	Med-Low	31) Preclude Criticality	Medium
				21) FFD/Access Authorization	Medium	32) Loading Fuel at Factory	Medium
						33) Replace Modules at Site	Med-Low
						34) Storing Used Fuel at Site	Med-Low

Only 16 of previously identified issues (22) are included in this scope, and some of these 16 require expansion to address the O&G upstream business needs.

BWXT Advanced Technologies Commercial Microreactor Programs

DOE Advanced Reactor Demonstration Program (ARDP)

- Technology development & architecture
- Enhanced fuel form for longer core life and higher core power
- Advanced sensors for semi-autonomous controls
- Commercialization & supply chain development

WEA Project Phase 1 (under contract)

- Microreactor design
- Supply Chain assessment
- Licensing roadmap

WEA Project Phase 2 (under contract)

- Lead unit conceptual design
- Supply Chain demo & QA evaluation
- Regulatory engagements

WEA Project Phase 3 (future)

- Complete design
- Site preparation, licensing
- Build & demonstration

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Thank you