

Improved Safety and Economics with ATF and Higher Efficiency Fuels

Commission Meeting - Overview of Accident Tolerant Fuel Activities

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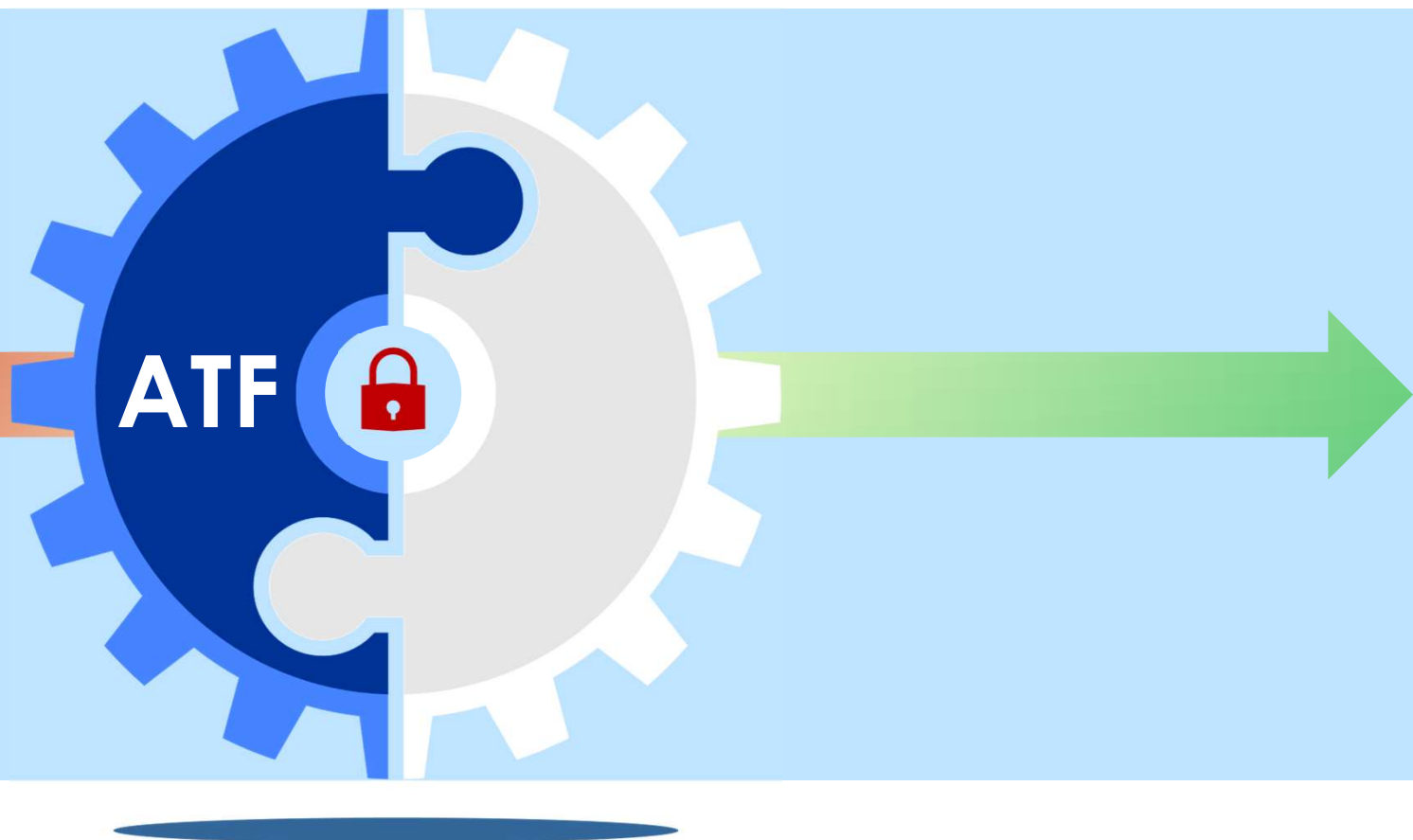
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Benefits of ATF

- ✓ Increased Safety
- ✓ Increased Fuel Reliability
- ✓ Increased Maneuverability
- ✓ Increased Flexibility

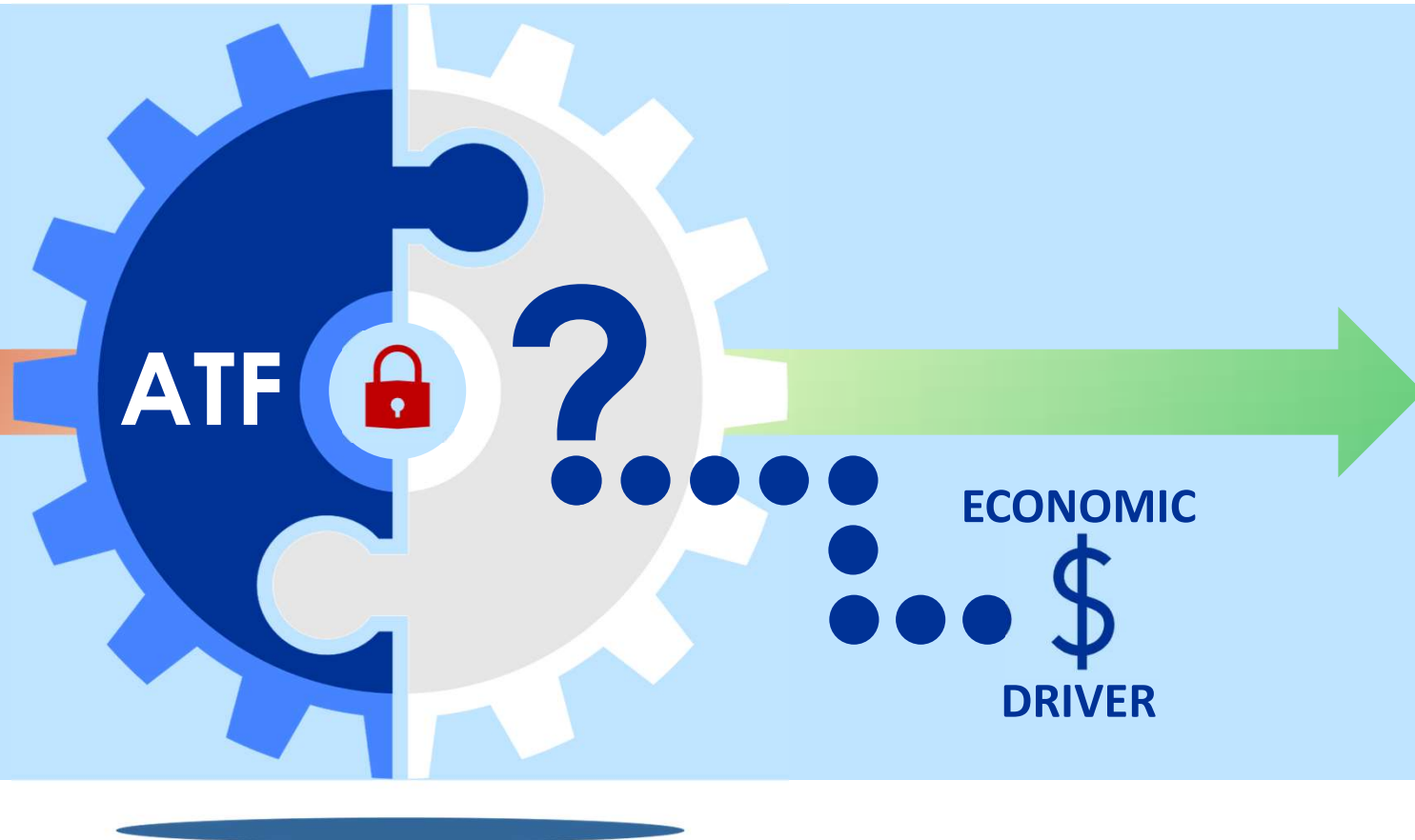
DEPLOYMENT



The missing factor to implementation

- ✓ Increased Safety
- ✓ Increased Fuel Reliability
- ✓ Increased Maneuverability
- ✓ Increased Flexibility

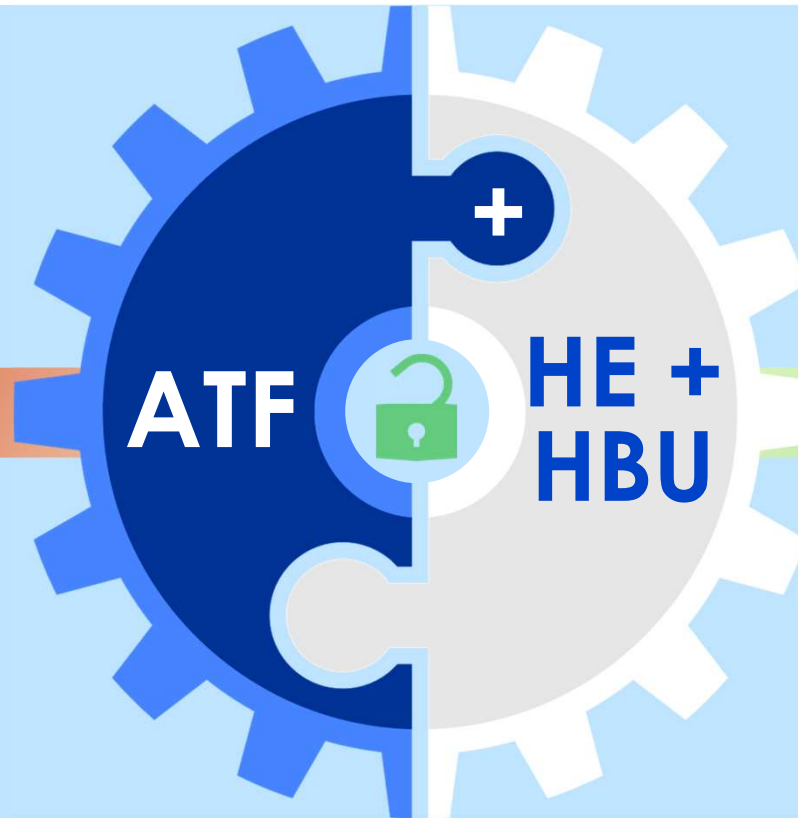
DEPLOYMENT



Transformative Benefits: Combining ATF & Higher Burnup/Higher Enrichment

- ✓ Increased Safety
- ✓ Increased Fuel Reliability
- ✓ Increased Maneuverability
- ✓ Increased Flexibility

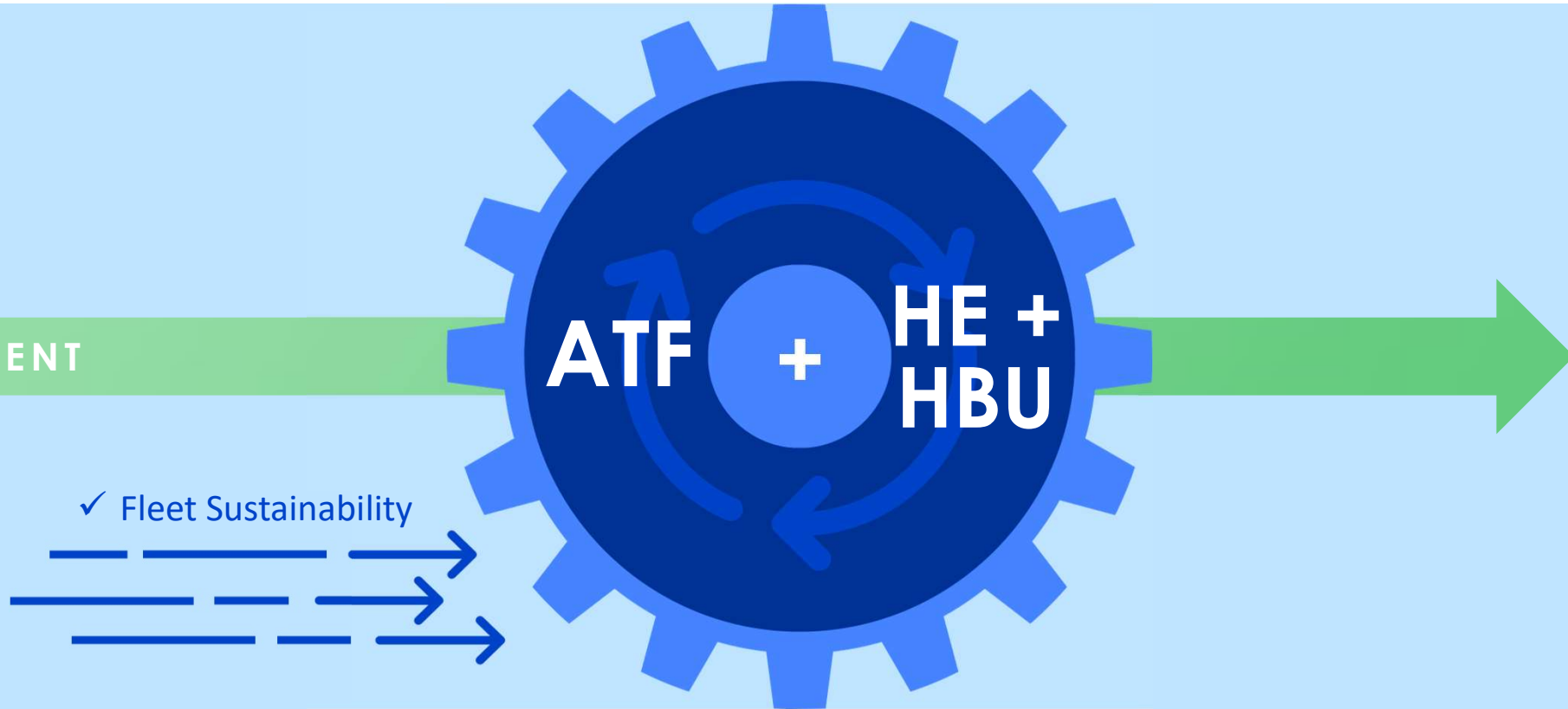
DEPLOYMENT



- ✓ Better Fuel Utilization
- ✓ Improved Fuel Efficiency
- ✓ Operational Flexibility
- ✓ Reduced Reload Costs
- ✓ Reduced Waste
- ✓ Longer Cycle Lengths

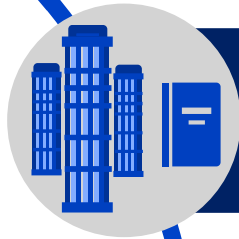
Combining ATF & Higher Burnup/Higher Enrichment → DEPLOYMENT

DEPLOYMENT

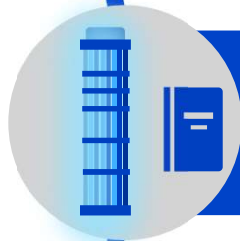


EPRI's Role

R&D Across the Entire Fuel Cycle to Inform and Accelerate Understanding



Accident Tolerant Fuel Feasibility Studies



Higher Burnup and Enrichment Feasibility Studies



Technical Workshops

Accelerated Implementation through Cooperative Research

Coated Cladding

DEPLOYMENT

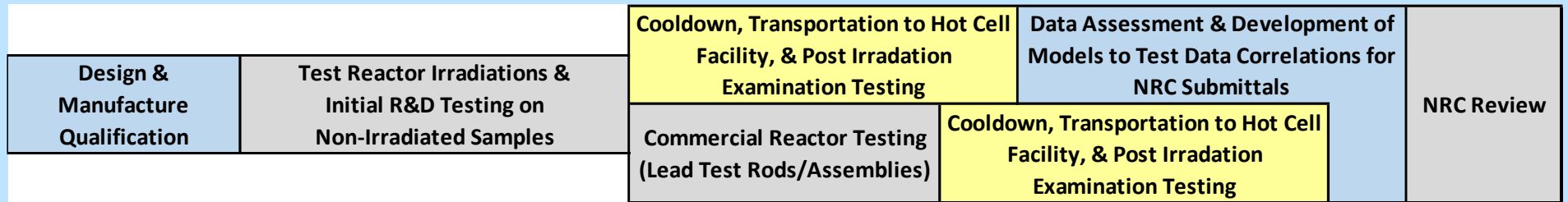


Cooperation + Collaboration + Coordination

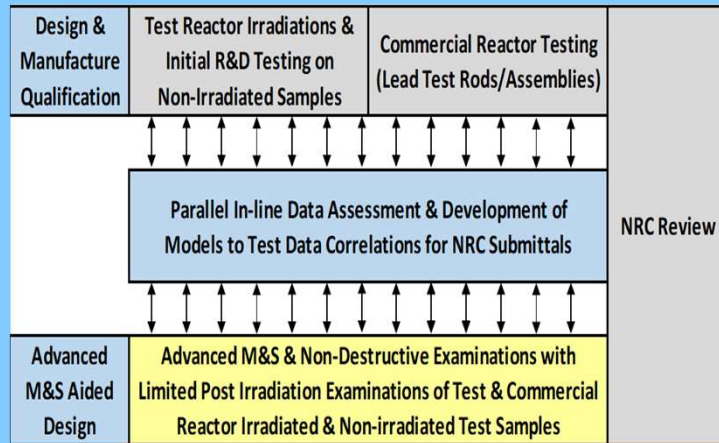
Key Message from April 2018 Commission Briefing

Year 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

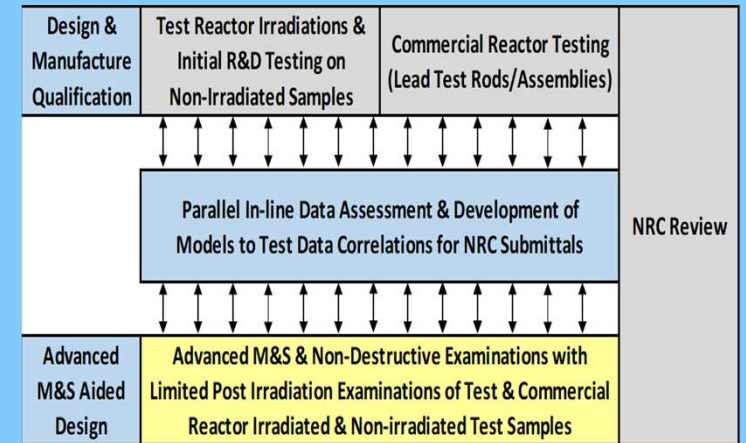
TRADITIONAL



COATED CLADDING

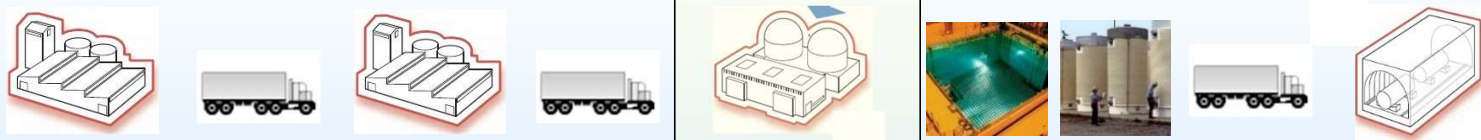


ATF + HE + HBU



PARALLEL APPROACH

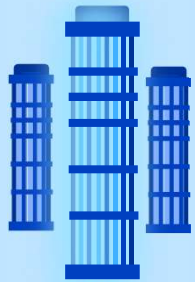
Holistic Technical & Regulatory Challenges



ATF Concepts	U ₂₃₅ Levels	Enrichment Facility	Transport	Fuel Fab Facility	Transport	Rx Performance		Spent Fuel Pool	Dry Storage	Transport	CISF/ Repository	Safety & Economic Benefits
		Part 70/73/74/76	Part 71	Part 70/73/74	Part 71	Fuel Part 50	Cladding Part 50	Part 50	Part 72	Part 71	Part 72/60/63	
Coated Zr / UO ₂	≤ 5%	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Yellow
	> 5%	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Green
Non-Zr Clad / UO ₂	≤ 5%	Green	Green	Green	Green	Green	Yellow	Green	Yellow	Green	Green	Yellow
	> 5%	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
Non Zr / New Fuels	≤ 5%	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Green
	> 5%	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green

PRESENTED IN 2018

Conclusion

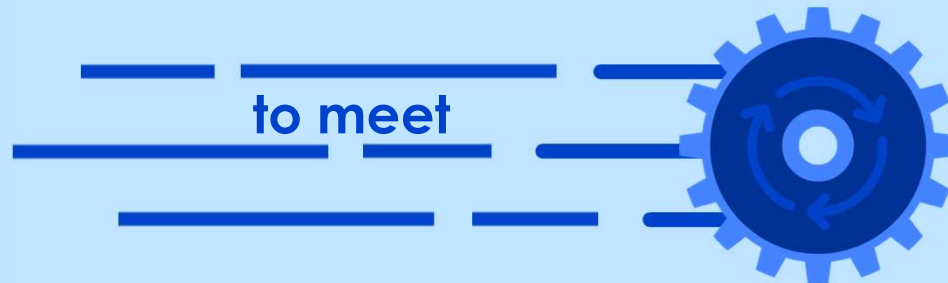


NEAR-TERM
A T F +
HE+HBU



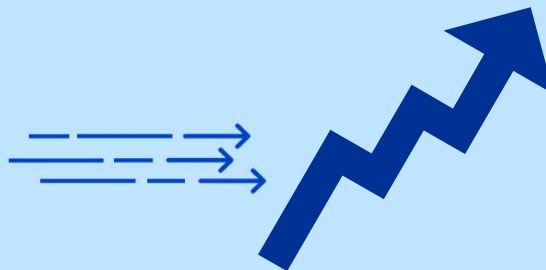
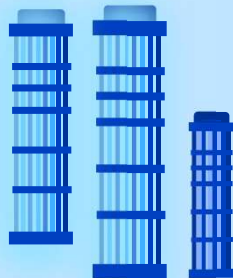
SAFETY & ECONOMIC
BENEFITS

RESEARCH
COORDINATION
CRITICAL



AGGRESSIVE
timelines
for the **BUSINESS**
CASE

MORE
FUEL DESIGN
RESEARCH



MORE TRANSFORMATIVE
f u t u r e
BENEFITS

Together...Shaping the Future of Electricity