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# Energy Technology Proving Ground: Clean, Secure Energy Demonstrations at CFA

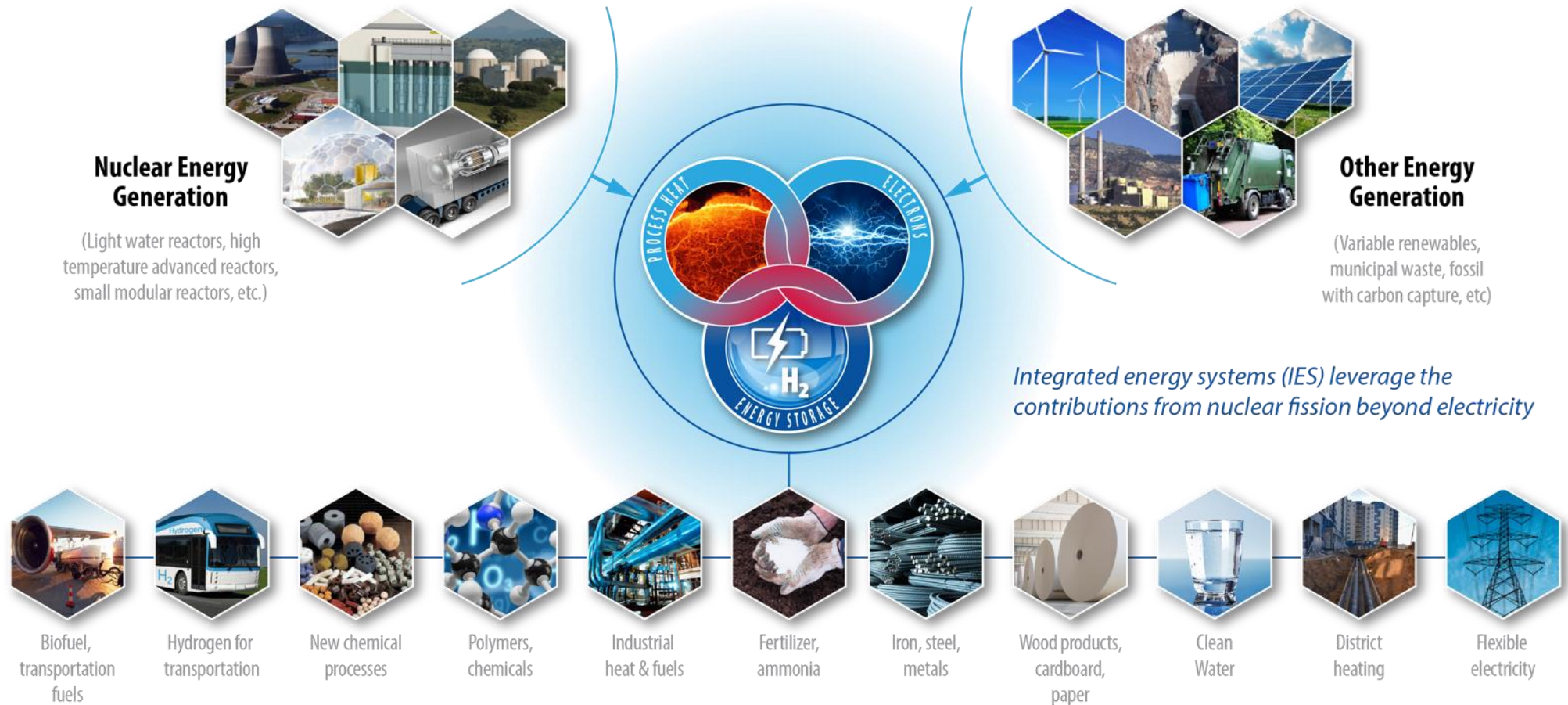
Idaho Falls, ID

Battelle Energy Alliance manages INL for the  
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Idaho National Laboratory

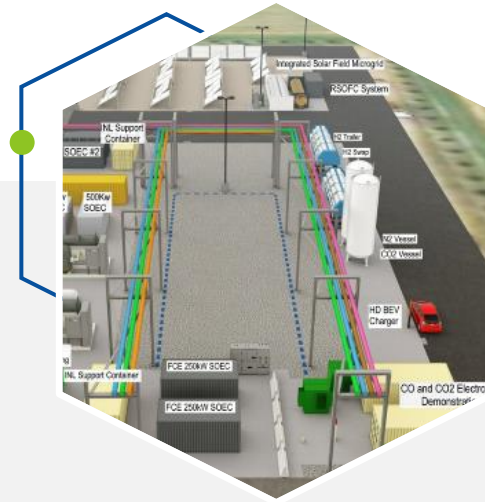
# Integrated Energy Systems (IES) strategy requires fundamental research and continued scale-up



# High Temperature Electrolysis (HTE) with nuclear power sets the stage



25 kW High Temp Electrolysis Stacks V&V



100-500kW Modular High Temp Electrolysis Pilot Plant Demonstration

“The GAP”

## 2-10 MWe Modular HTE Units

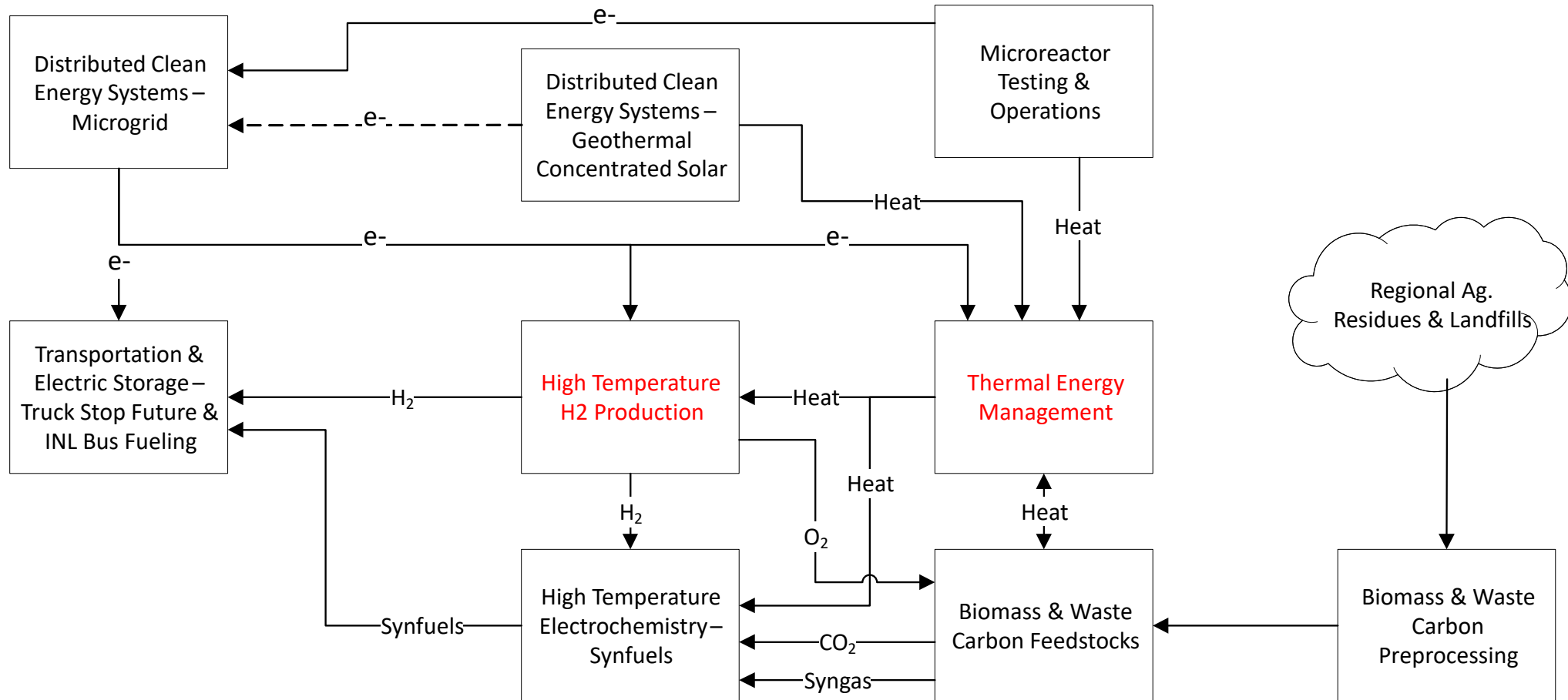
- Integrated proof of operation system
- Hydrogen supply for user technology demonstrations
- Accelerates high temp H<sub>2</sub> production pathway to commercialization



## Wide Commercial Deployment:

- Hydrogen production at nuclear power plants
- Industry-embedded hydrogen production and use

# Leading to other IES research focus areas at CFA



# Energy production, capture and utilization

- The hydrogen production facility supports early demonstration of a net zero “community” to support technology adoption and clean energy transition
  - *Provides a model for community adoption by de-risking industry*
- Provides the foundation for future infrastructure such as:
  - Hydrogen fueling to support INL coach fleet
  - Decarbonizing local utilities with carbon-free H<sub>2</sub> production and utilization
  - Microreactors for clean, industrial thermal and electrical energy uses
  - Bio-CO<sub>2</sub> capture, and landfill material uses for synthetic fuels production
  - Microgrid integration of multiple clean energy generators (nuclear, wind, solar, geothermal)

# Initial aerial view of the Energy Technology Proving Ground



**SKID- Staging Building:**  
Preliminary Assembly / Integration / Checkout  
2-Door High Bay; with 5 ton crane

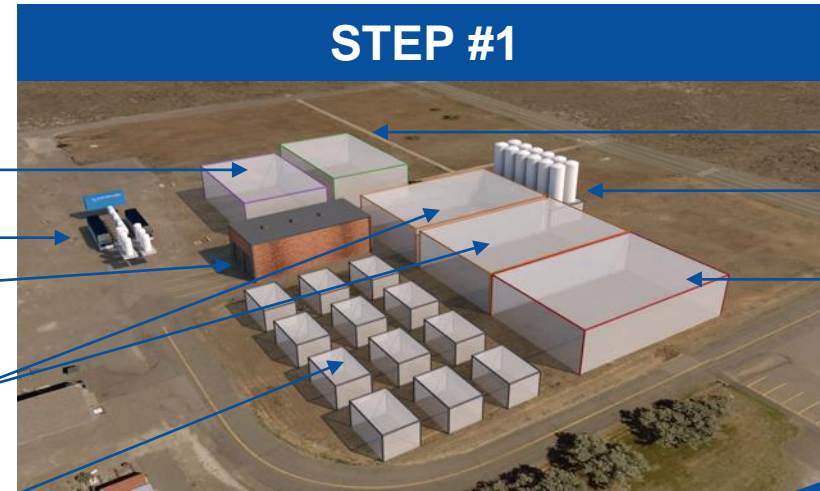
Advanced Nuclear Host Site

Multi-State DRI Demo

Bus H2 Fueling

Integrated Methanol, Ammonia (Simplot). & Sustainable Fuels Production

Modular HTE V&V Layout: Bloom, FCE, Cummins, Others



**STEP #1**

About ~6.5 acres of greenfield

Biomass Waste Gasifier

Product Storage

Solid Oxide Fuel Cell / RSOFC

← Reactor Dome

INL Medical & Fire Station (0.25 miles)

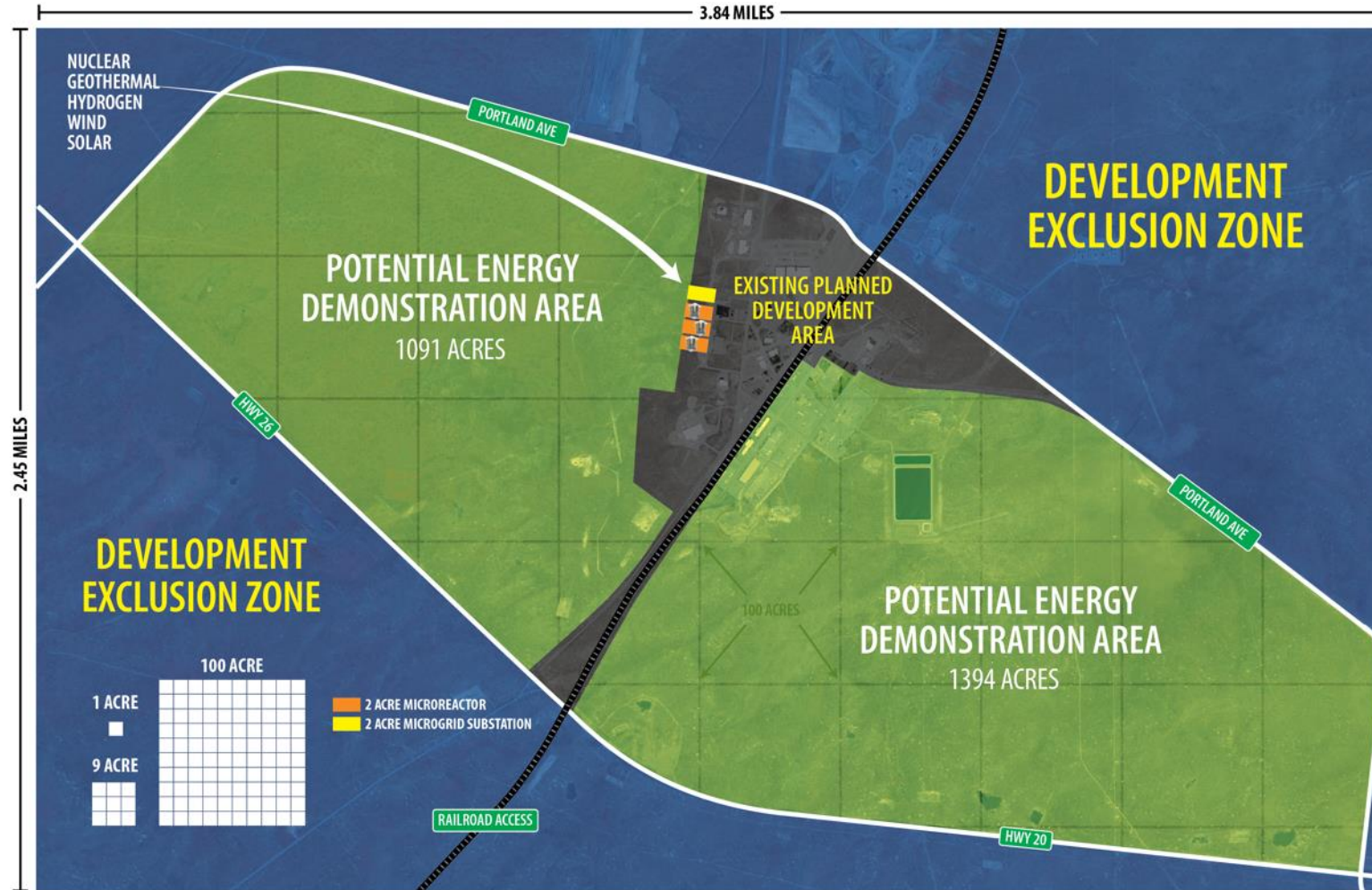
INL Coach Operations (0.25 mile) →

# Central Facilities Area

Home of the new Energy Technology Proving Ground (ETPG)



# CFA region



## CFA region with notional layout options

- ~2500 acres of land available for growth
- Leverages existing infrastructure (highway) and INL investment in necessary infrastructure upgrades
- 15 MWe to be available from existing substation and transmission upgrades
- Supports testing and demonstration of energy users and thermal island well in advance of micro reactor installation





# Idaho National Laboratory

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