High Assay Low Enriched Uranium (HALEU) Down-blend Project

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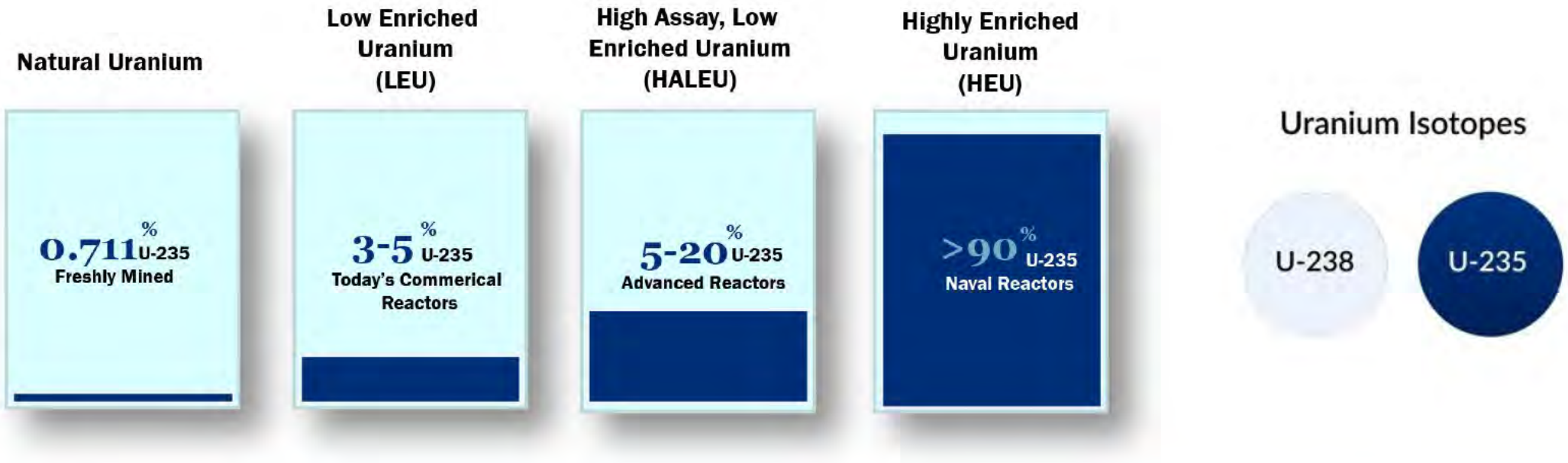
What is HALEU?

- Uranium that has been enriched so that the concentration of the fissile isotope U-235 is between 5 and 20 percent of the total mass.
  - U-235 in the main fissile isotope that produces energy during a chain reaction.
  - Existing reactors utilize Low Enriched Uranium (LEU), which has a U-235 concentration up to 5%
  - HALEU is needed as a fuel source for most of the new advanced reactor designs currently in development.
  - Highly Enriched Uranium (HEU) is the term used once we reach enrichment levels above 20%.



HALEU Down-blend Project

- **Mission:** Down-blend existing HEU supply into HALEU.
  - Sign a Memorandum of Agreement between the Office of Environmental Management and Office of Nuclear Energy – February 2023

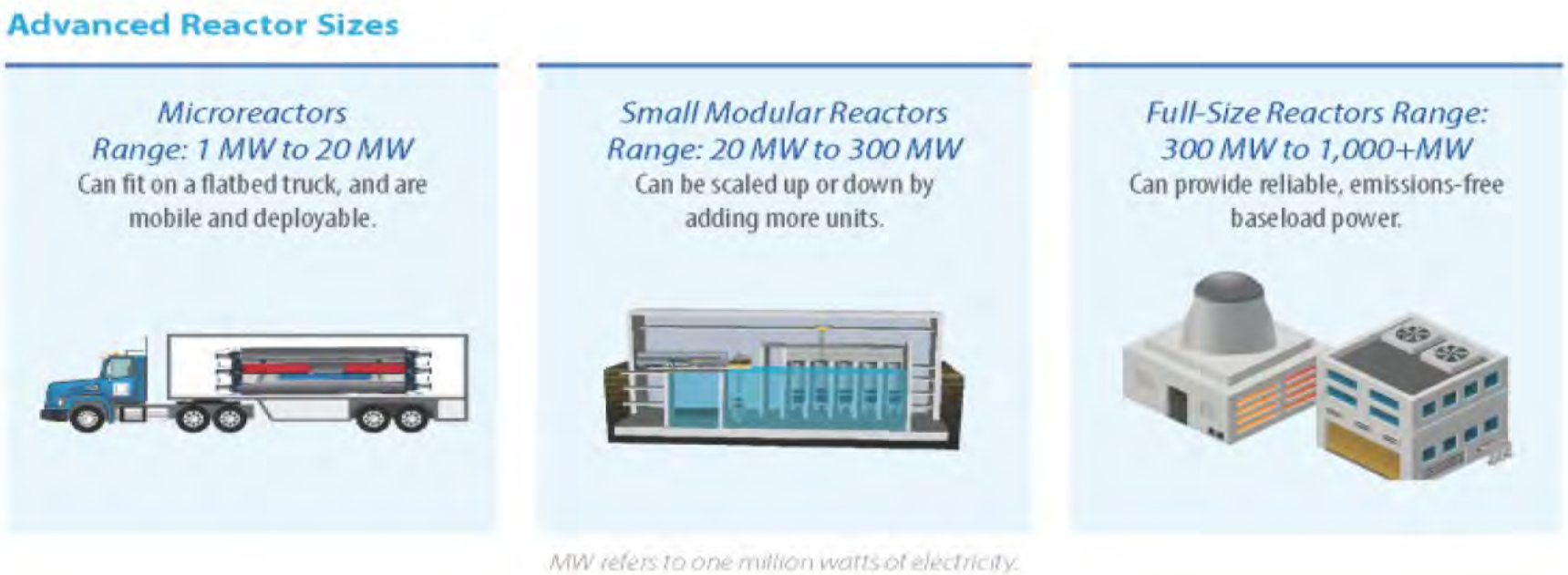
- Scope:
  - Restart of H-Canyon Outside Facilities
    - *Inspection and repair of systems*
    - *Training of Operators*
    - *Revision of procedures*
    - *Readiness Assessment to begin operations*
    - *Start-up testing (cold runs)*
  - Certification of HALEU shipping containers
    - *Identify and certify containers to be used to transport HALEU to a designated fuel fabrication facility*
  - HALEU Production/Shipping complete
    - *Integrate with fuel fabrication facility to develop delivery schedule*

H-Canyon Prior HEU Mission

- Previous uranium recovery operations produced enough HEU that could be blended-down to between 2-3 metric tons of HALEU.
- H-Canyon used to provide LEU to the Tennessee Valley Authority (TVA) for fuel in their reactors.
  - Approximately 14.9 MT of LEU was blended-down between the years of 2003 – 2011.
  - Last shipment of LEU to TVA occurred in 2011.
- Blend-down systems from 2011 are still intact.

HALEU Down-blend Project Benefits

- **Nuclear Energy Benefits:**
  - Providing a limited source of HALEU for near term use in the demonstration of advanced reactor concepts until a domestic commercial HALEU enrichment capability can be established.



HALEU Down-blend Project Benefits

- **Environmental Management (Savannah River) Benefits:**
  - Eliminates need to find a disposition path for existing HEU material.
    - *Current alternate path is to discard into the Liquid Waste system.*
    - *Results in the need for an additional Sludge Batch.*
    - *Eliminates creating additional Glass Waste Canisters to accommodate material.*
  - Eliminates security risk associated with storage of HEU material.
  - Results in revitalizing the down-blending system.