State of Play

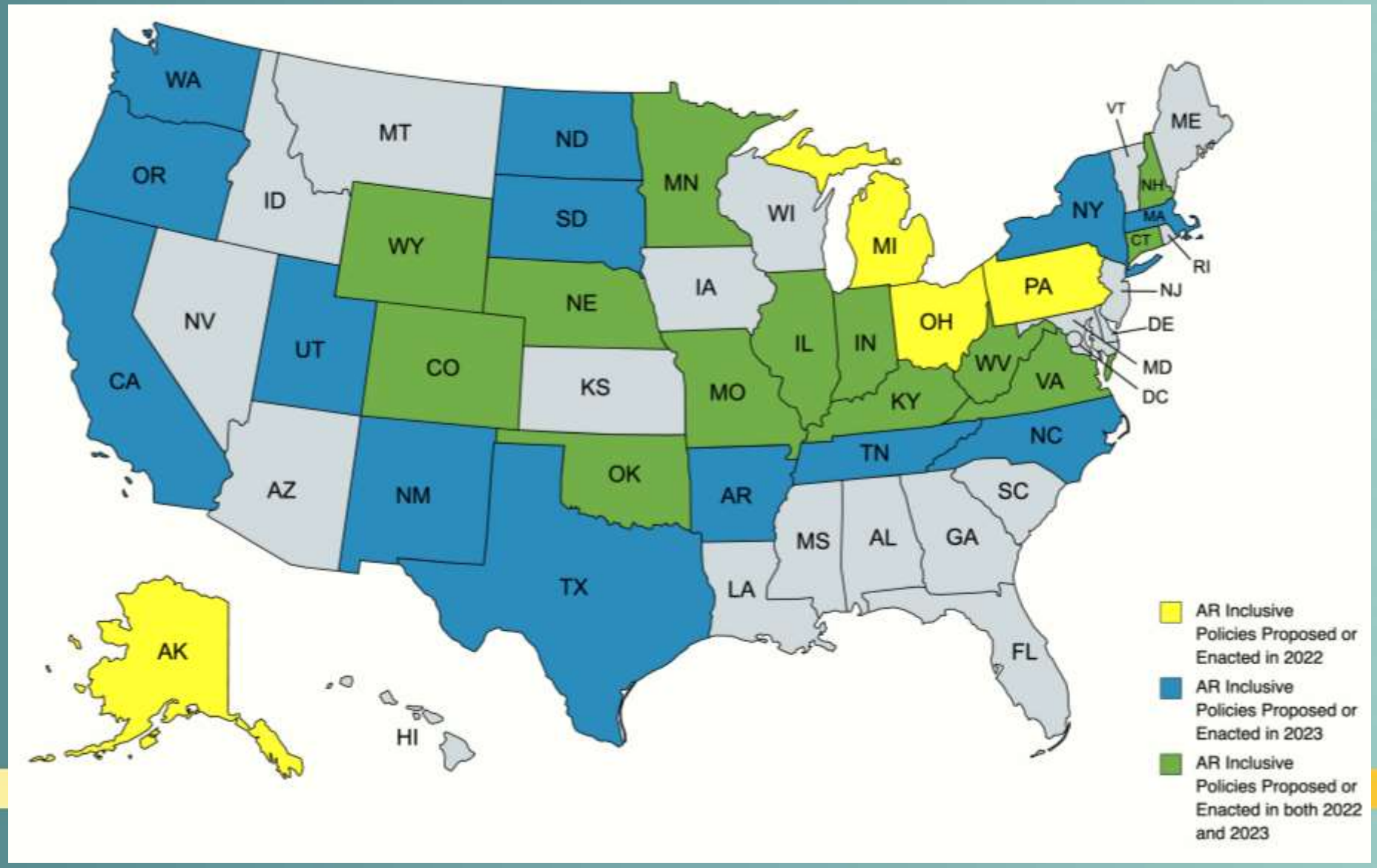
There are many opportunities to encourage & enable advanced nuclear energy construction

- e.g., through technology-inclusive Clean Energy Standards, feasibility studies, creating legislative committees or working groups, and creating labor and education programs.
- these initiatives originate from different offices; ex) governors and state legislators.

Recent actions include:

- Kentucky – signed SJR 79 to create a permanent nuclear energy development organization
- Illinois – the Governor vetoed moratorium repeal
- Arkansas – signed into law HB1121 which will explore nuclear waste recycling program
- Texas – Governor Abbott has directed the PUC to explore SMR deployment
- North Carolina legislature overrode the Governor's veto of replacing "renewable energy" with "clean energy"

What else is going on at the state-level?



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NIA Advanced Nuclear Techology Map - North America

Developer

- ARC Clean Technology
- BWXT
- GE-Hitachi
- Holtec
- Kairos Power
- Nuclear Energy eXper...
- NuScale Power
- Oklo
- TerraPower
- Terrestrial Energy
- To Be Determined (TB...
- Ultra Safe Nuclear Co...
- Westinghouse
- X-energy

Status

- [x] (All)
- [x] Development Agreem...
- [x] DoD Demonstration
- [x] Due Diligence
- [x] MOU
- [x] PPA
- [x] RFP
- [x] Selected
- [x] Site Agreement
- [x] TBD
- [x] Test Reactor
- [x] University Research ...

tableau

Advanced nuclear energy adds flexibility and versatility in comparison to conventional nuclear through innovative design

Conventional Nuclear Energy		Advanced Nuclear Energy
Predominantly Large: More than 1000 MW_e	Reactor Size	Versatile: 1.5 MW_e to 300+ MW_e
Predominantly Light-Water Reactors	Reactor Technology	Wide Variety of Reactor Technologies
Primarily Baseload Generation	Generation Type	Flexible and Dispatchable Generation
Designed with Active Safety Systems	Safety Approach	Designed with Inherent Safety Systems

Definition of advanced nuclear energy includes a variety of nuclear technologies with different advantages

Thermal Fission

Advanced Light-Water Reactors

Evolutionary design from existing reactors with inherent safety features

High-temperature reactors (HTRs)

High temperatures drive high efficiency, well-suited for process heat or hydrogen production. Uses TRISO fuel

Thermal or Fast Fission

Molten Salt-Fueled Reactors (MSRs)

Using molten salt for coolant and a fuel form, MSRs can bring significant safety benefits

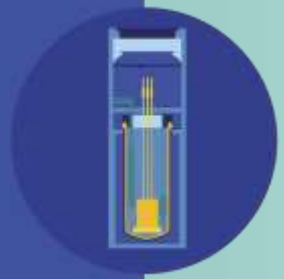
Fast Fission

Gas-cooled fast reactor (GFR)

An evolution of HTRs, GFRs operate at very high temperatures while using a more sustainable fuel cycle

Sodium-cooled fast reactor (SFR)

With many existing experimental reactors, SFRs offer increased fuel efficiency, reduced waste, and passive safety features



Lead-cooled Fast Reactor (LFR)

Similar in design to SFRs, LFRs are advantageous as lead is operationally safer than sodium