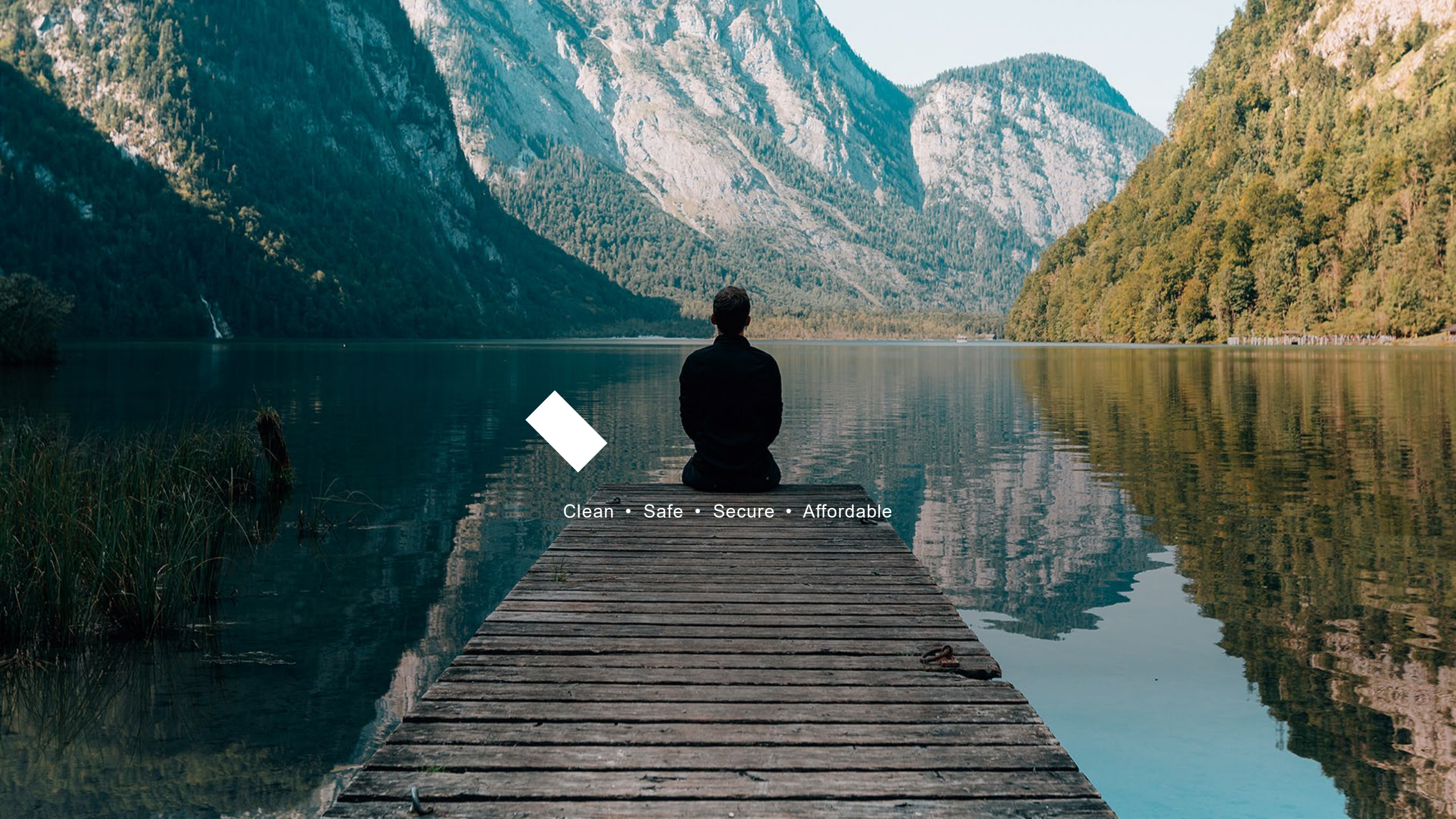
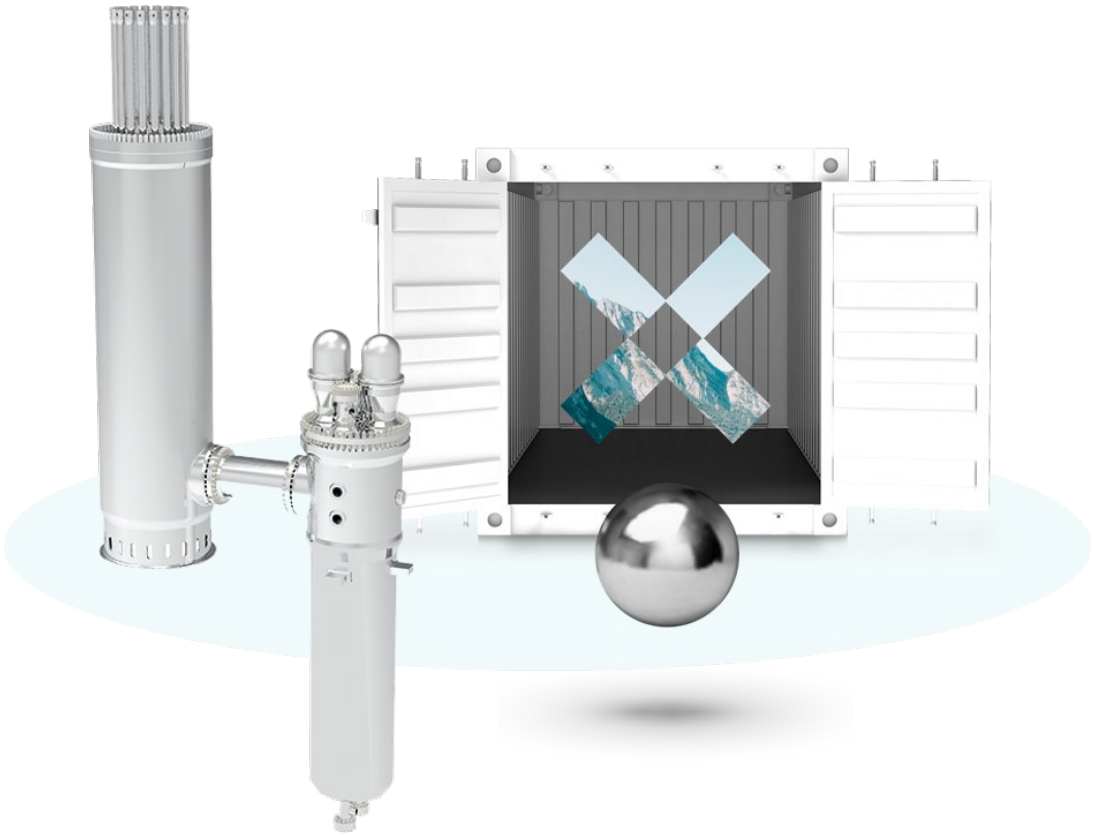

Clean • Safe • Secure • Affordable

We design & build reactors and the fuel that powers them



Reactor: Xe-100

We're deploying the first Gen-IV reactor in the U.S., a High-Temperature Gas-cooled Reactors (HTGR), with advantages in sustainability, economics, reliability, and safety.

Reactor: Xe-Mobile

To address the need for ground, sea, and air transportable small power production. We've developed reactor concepts with potential military, civilian government, remote community, and critical infrastructure applications.

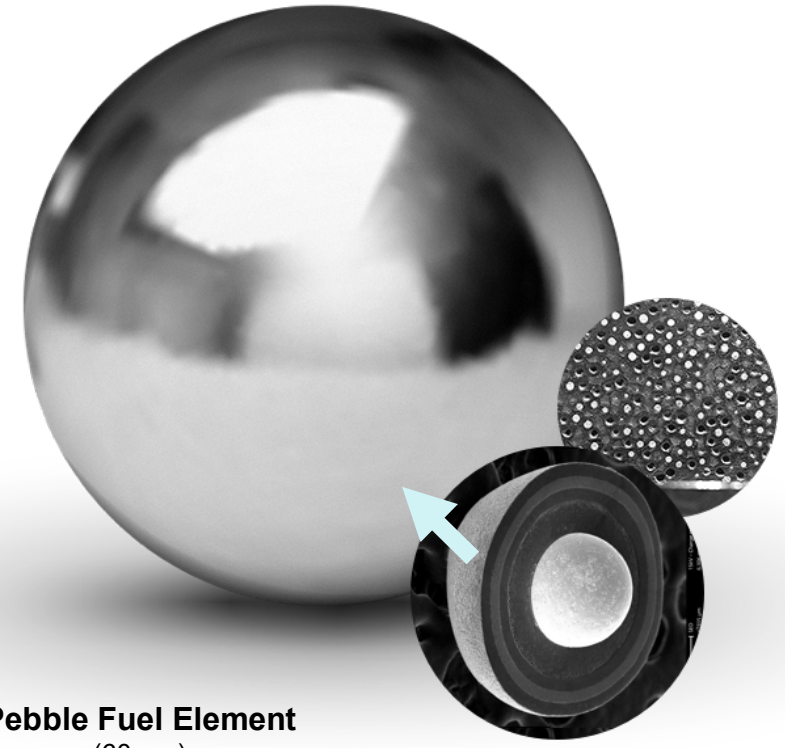
Fuel: TRISO-X

Our reactors use tri-structural isotropic (TRISO) particle fuel, developed and improved over 60 years. We manufacture our own proprietary version (TRISO-X) to ensure supply and quality control.

Space Applications

NASA, DOE, and DOD are exploring our technology and fuel for nuclear thermal propulsion and fission power for the lunar surface.

Intrinsic Safety: Our Fuel



Pebble Fuel Element
(60mm)

TRISO Fuel particle
(≈1mm)

We manufacture our own proprietary TRISO encapsulated fuel (TRISO-X) to ensure supply & quality control.

The U.S. DOE describes TRISO fuel as “the most robust nuclear fuel on Earth,” it retains waste and fission products within the fuel during ALL conditions **and cannot melt**, even during worst-case scenario accidents.

Why is this important?

- Because TRISO-X Fuel is the containment vessel we do not rely on traditional expensive, gigantic concrete & steel structures for the reactor, which must be built, maintained, and decommissioned.
- TRISO has been tested up to 1800ºC, proving that it cannot melt, even without active cooling.
- TRISO particles retain 99.999% of fission products.
- TRISO fuel has been demonstrated over 40+ years in prototype and full-scale reactors. **This is a proven safety approach.**
- The low reactor power density and self-regulating core design (i.e., if cooling stops, the core shuts down), ensures the reactor is always ‘walk-away safe.’

Physics, not mechanical systems, ensures 100% of safety.

Simple Design

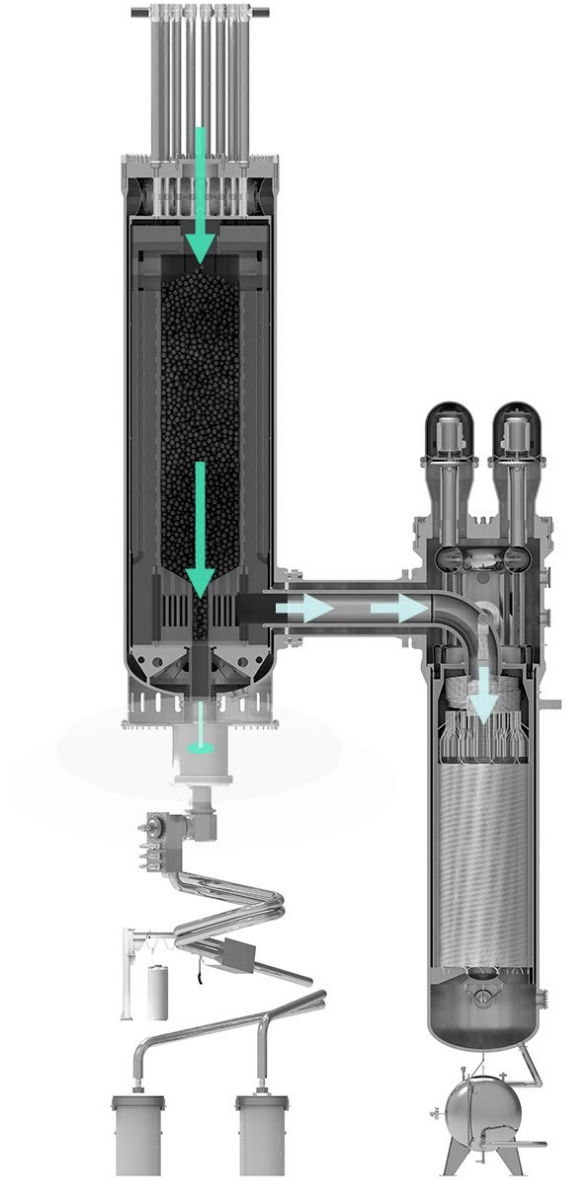
Relying on inherently safe designs allows for a drastic reduction of components.

Reduction of components enables predictability on costs & significant reduction of regulation barriers, as well as a much smaller physical plant footprint.

Why is this important?

- Results in a Levelized Cost of Electricity well under $60/MWh-e and deployment in less than five years.
- 80 megawatt-electric modules optimized for the ‘sweet-spot’ size
- Standard 4-pack provides 320 MWe with load-following capabilities like a natural-gas plant
- High-quality outlet steam at 565ºC and 16.5 MPa in the standard design with higher temperatures attainable
- Deployment for **electricity or process heat**

1/10th the components of a traditional nuclear plant



Xe-100 Reactor (80 MWe)

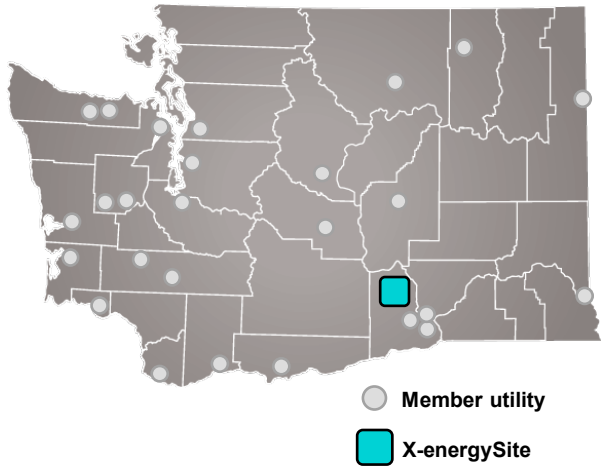
Advanced Reactor Demonstration Program – 2027

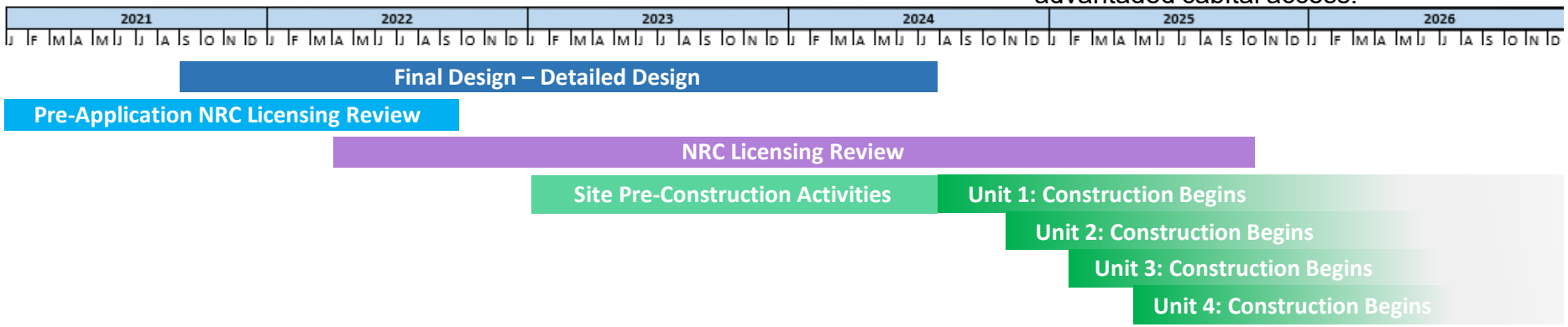
Advanced Reactor Demonstration Project

- In May 2020, the Department of Energy announced the Advanced Reactor Demonstration Program (ARDP)
- X-energy and TerraPower were selected as program winners in October 2020
- Program designed as a public-private partnership:
  - Government provides winning bids with 50% cost share for first-of-a-kind advanced nuclear plant
  - Plant must be commercial (*not* demonstration)
  - Plant must be ready for deployment by 2027
  - ✓ Government motive? Kick-start advanced nuclear industry
- **X-energy partnered with Energy Northwest, a top-tier customer awarded $1.2B from the Department of Energy**

Energy Northwest

- Membership includes 28 public power utilities, including 23 of Washington state's 29 public utility districts.
- **State law mandates zero carbon grid by 2045, with limited additional upside in Washington state for renewables.**
- EN is a public agency with tax-advantaged capital access.





2027
4 Units Operating

We have made incredible progress

Left: X-energy's Triso-X production line at Oak Ridge National Laboratory

Right: Xe-100 control room simulator in Rockville, MD

ARDP First Reactor Site

Site 1
Clay Sell, CEO,X-energy and
Kevin Nord, CEO, Grant County
Public Utility District

Artist Rendering of Xe-100 Plant

Meeting with Local 598

Xe-100 Flexibility

(1) Right size

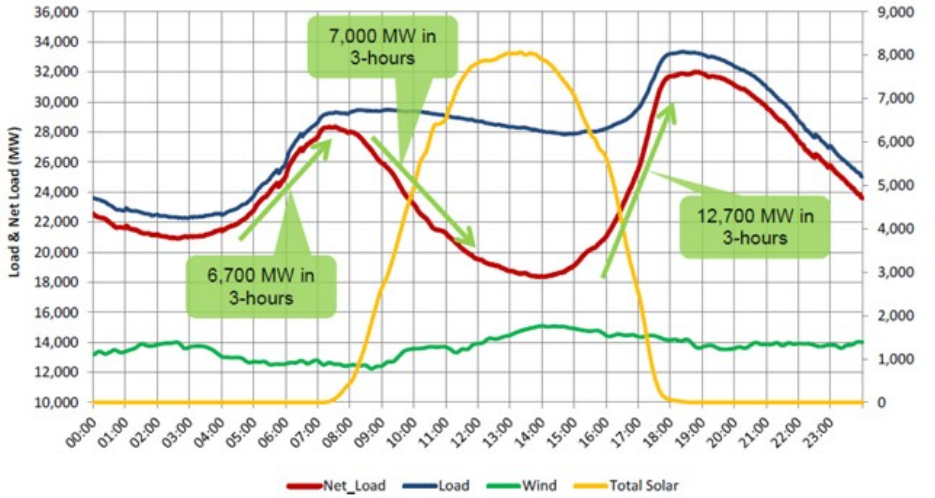
The reactor size of 200MWt (80MWe) has been designed to address the largest possible market providing a good fit for replacement of existing carbon-based heat sources such as coal and gas.

(2) Broad range of applications

The nuclear island has been designed to be independent of the end use making our solution deployable for electricity and many other process heat applications, such as:

- Hydrogen production;
- Petrochemical processing;
- Desalination; and
- District heating.

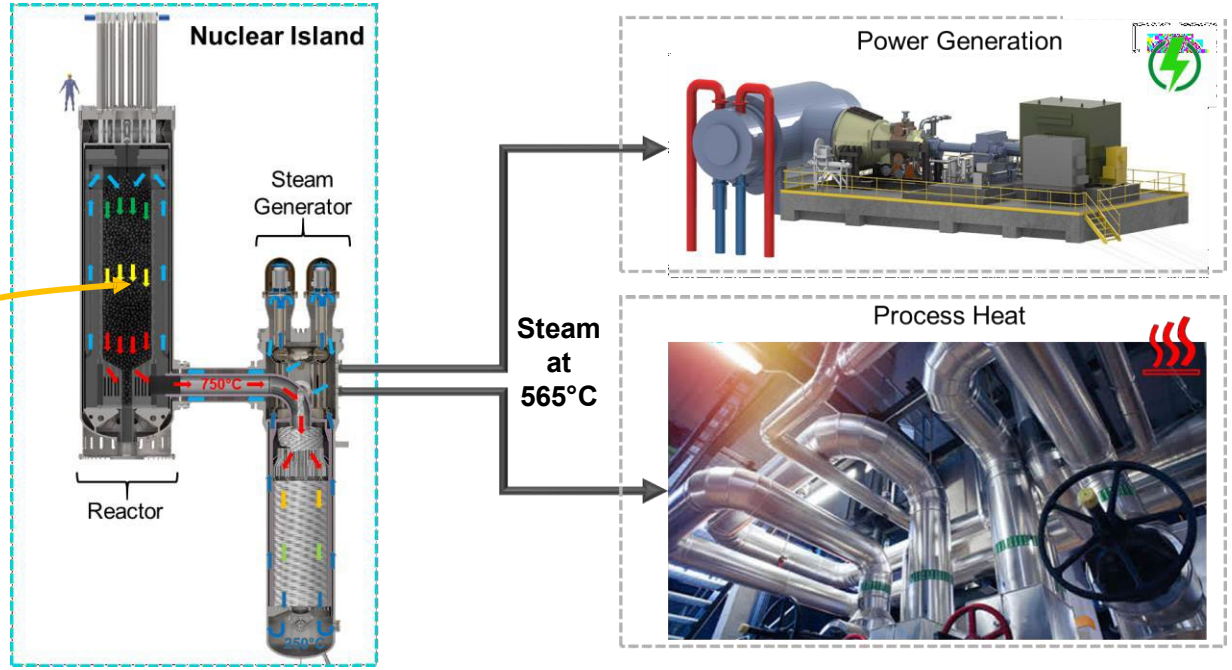
The Xe-100 can do both simultaneously or switch between applications.



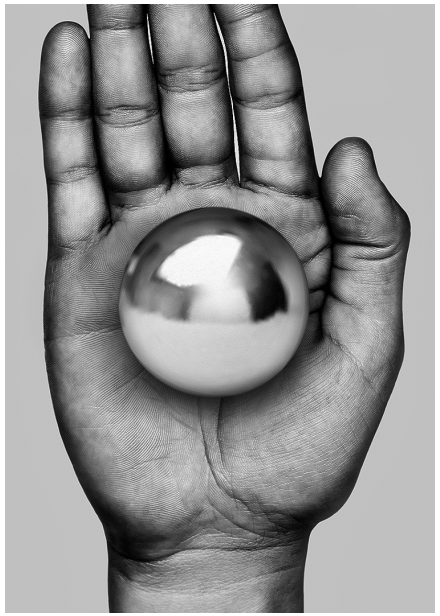
(3) Flexible power delivery

Designed to be capable of fast and efficient load following thus supporting the intermittency of solar and wind

Heat is generated in the pebble fuel through fission and transferred to the steam generator using helium that cannot become radioactivate.

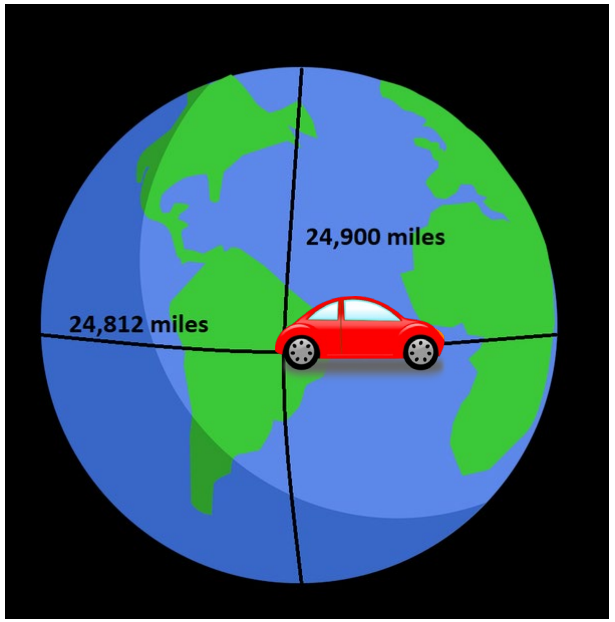


The Power of the Pebble



1 pebble produces 27.4 megawatt hours

This would also power 28 Maryland homes for a month



This is enough electricity to power an electric car for 98,640 miles which is 4 times the circumference of the Earth

Photo sources:

- https://www.quora.com/How-many-miles-around-is-the-earth
- https://www.pexels.com/search/houses/


empowering earth
Clean • Safe • Secure • Affordable