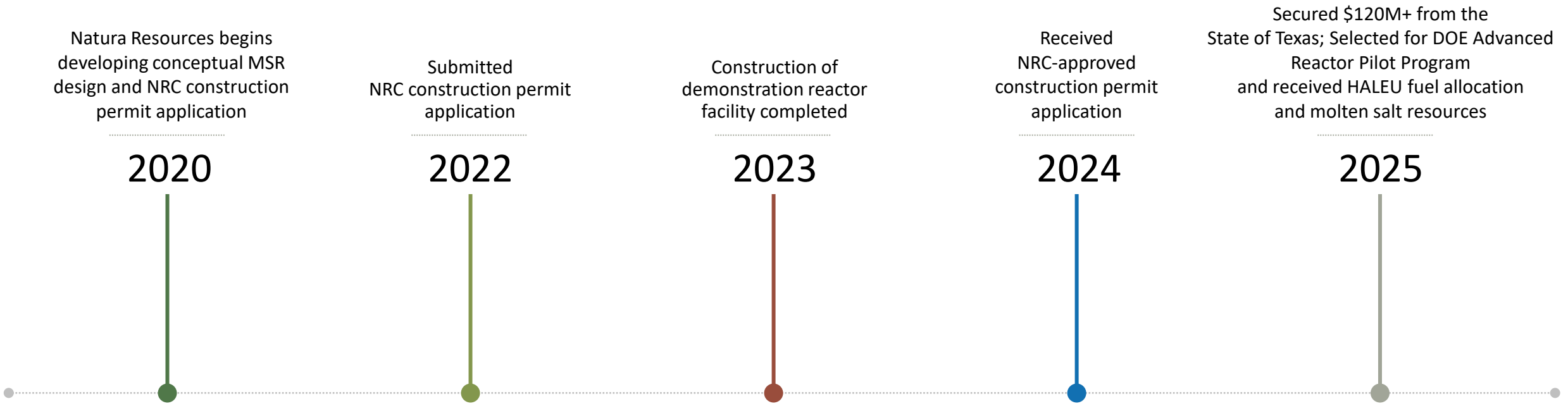
Nuclear Energy & Produced Water Nexus

Natura Resources

Real Projects. Real Power.

Clear Path to be an Advanced Reactor Leader



MSR-1 Demonstration Reactor: Technology Overview

Completed demonstration reactor facility in Abilene, TX

First NRC-Approved Liquid-Fueled Rector

Validating Licensing Pathway

De-Risking Commercial Scale-Up

Full-scale component testing

Proving Critical Differentiators

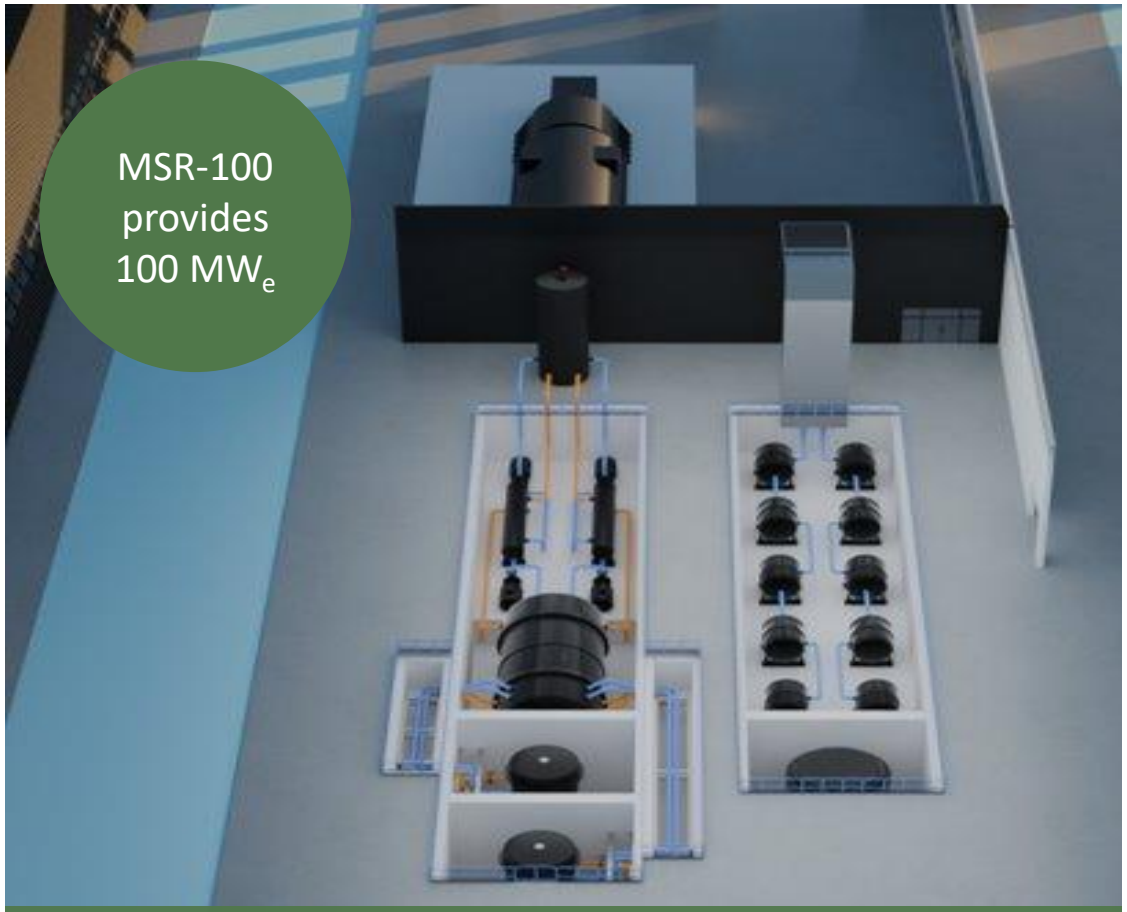
Online refueling and walkway safety

Platform for Regulatory and Market Leadership

MSR-1 data fast-tracks MSR-100 approval

MSR-1 Technical Specifications	
Thermal Output	1 MW_{th}
Average Core Temp	600°C
Fuel	UF_4 - 19.5% enriched HALEU
Moderator	Graphite
Fuel Salt	$LiF\text{-}BeF_2\text{-}UF_4$ (FLiBe with Uranium)
Construction Material	SS 316 H
Reactor Enclosure Size	~10 ft diameter × ~20 ft tall
Features	• Passive shutdown & cooling • Off-site, modular construction

MSR-100 Commercial Reactor: Technology Overview



Rendering of MSR-100 single module and twin pack commercial reactors.

Regulatory Pathway De-Risked

Licensing built on MSR-1 data with NRC

Standardized Modular Design

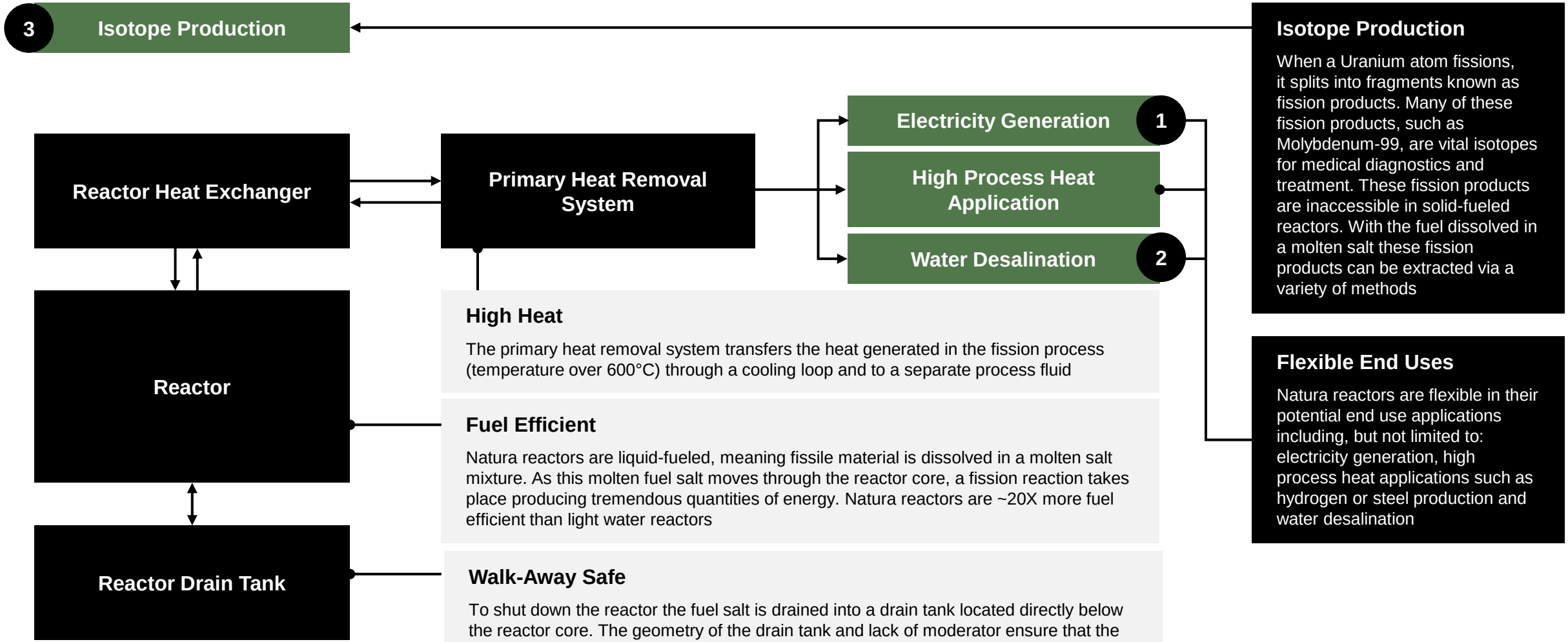
~70% of design characteristics will carryover from MSR-1

Superior Economics

Lower LCOE vs. Gen IV peers; high efficiency at 600°C

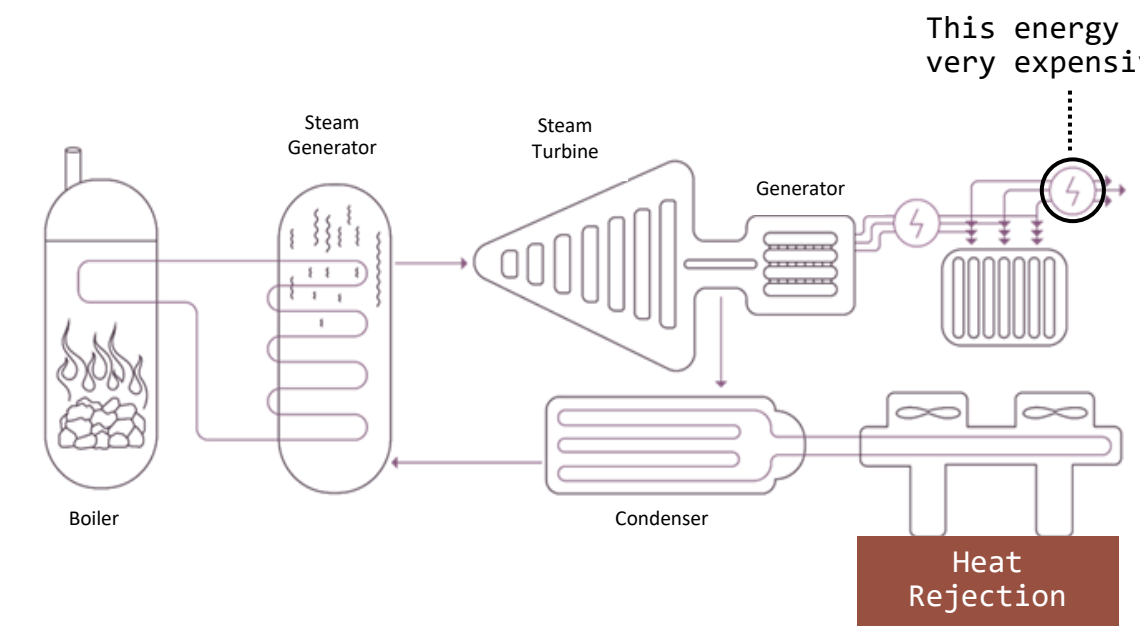
MSR-100 Technical Specifications	
Thermal Output	250 MW_{th}
Electric Output	100 MW_e, 12-pack 1GWe
Average Core Temp	600°C
Capacity Factor	>95%
Fuel (baseload) Fuel (refuel)	UF_4 - <8% enriched LEU+ 19.5% enriched HALEU
Moderator	Graphite
Fuel Salt	LiF-BeF_2-UF_4 (FLiBe with Uranium)
Construction Material	SS 316 H
Reactor Enclosure Size	~14 ft diameter × ~30 ft tall
Site Boundary (12-pack)	50 acres

Natura's Technology Performs

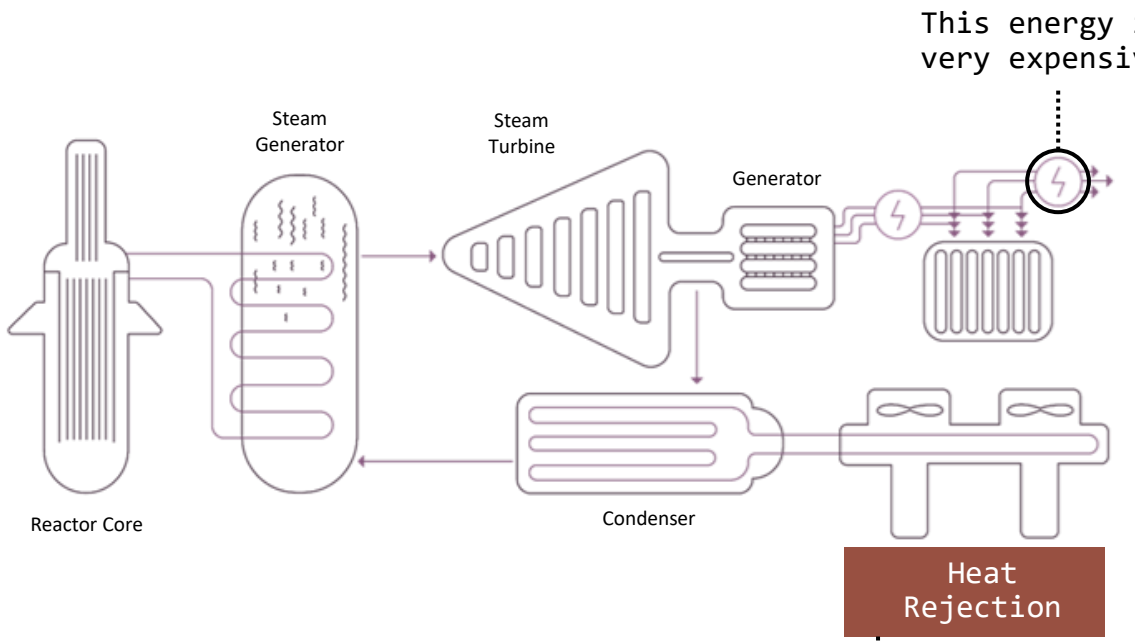


Rankine Cycle Heat Rejection

Fossil Plant



Nuclear Plant



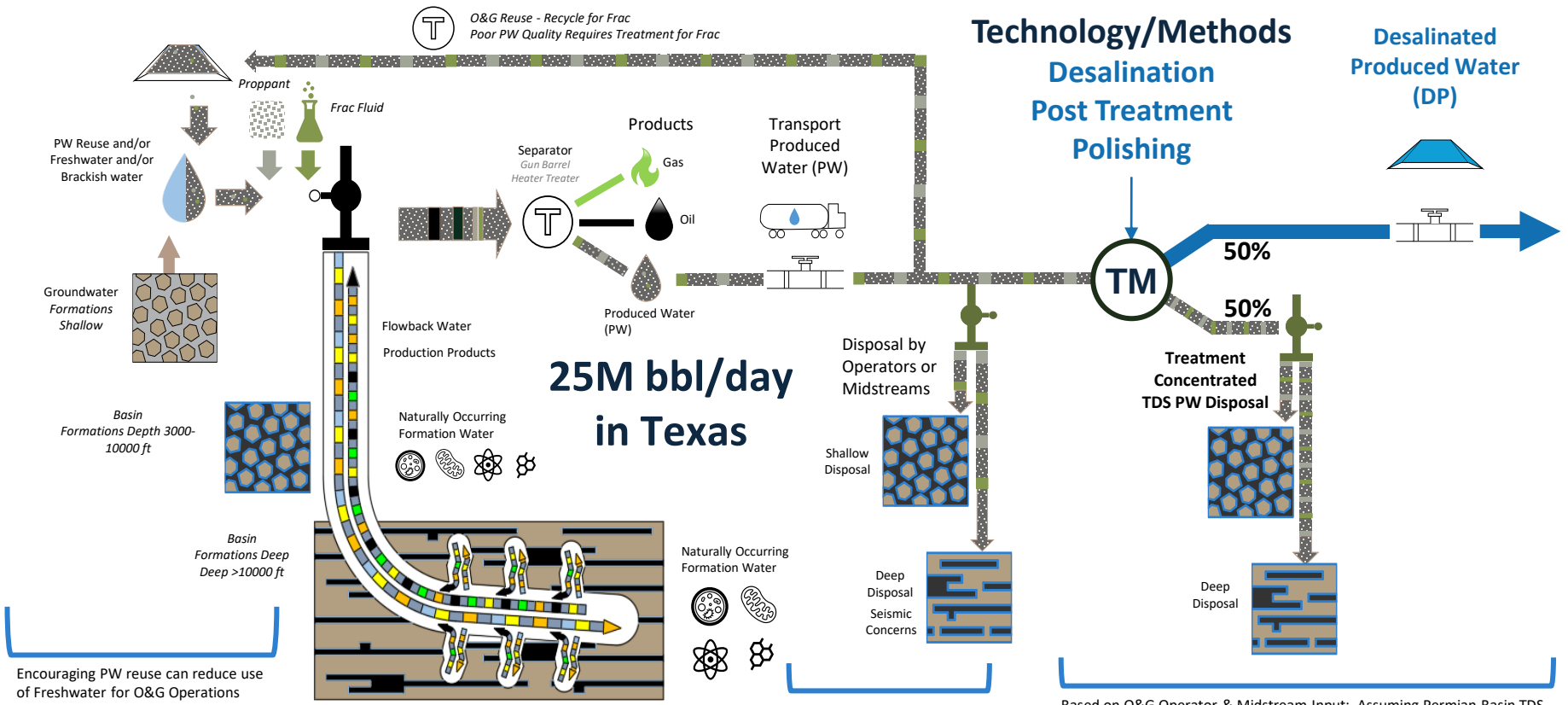
Reject energy is “free” and very close to thermal distillation operating temperatures.

Source: https://energyeducation.ca/encyclopedia/Rankine_cycle

Beneficial Use of Desalinated PW

12.5M bbl/day
= 525M gal/day
= 588k ac-ft/yr
in Texas

Tight Formation
Unconventional Hydraulic Fracturing



Encouraging PW reuse can reduce use of Freshwater for O&G Operations and improve outlook for Texas Water Plan identified freshwater needs.

Decreasing Disposal Well volumes by treating PW can help mitigate seismic concerns.

Based on O&G Operator & Midstream Input: Assuming Permian Basin TDS >120,000 mg/L, 50% of PW volume can be treated to Fit for Purpose Standard for Potential Beneficial Use. The remaining 50% with highly concentrated TDS is disposal well injected due limited markets for treatment process waste products and surface storage challenges.

Source: Texas Produced Water Consortium Content

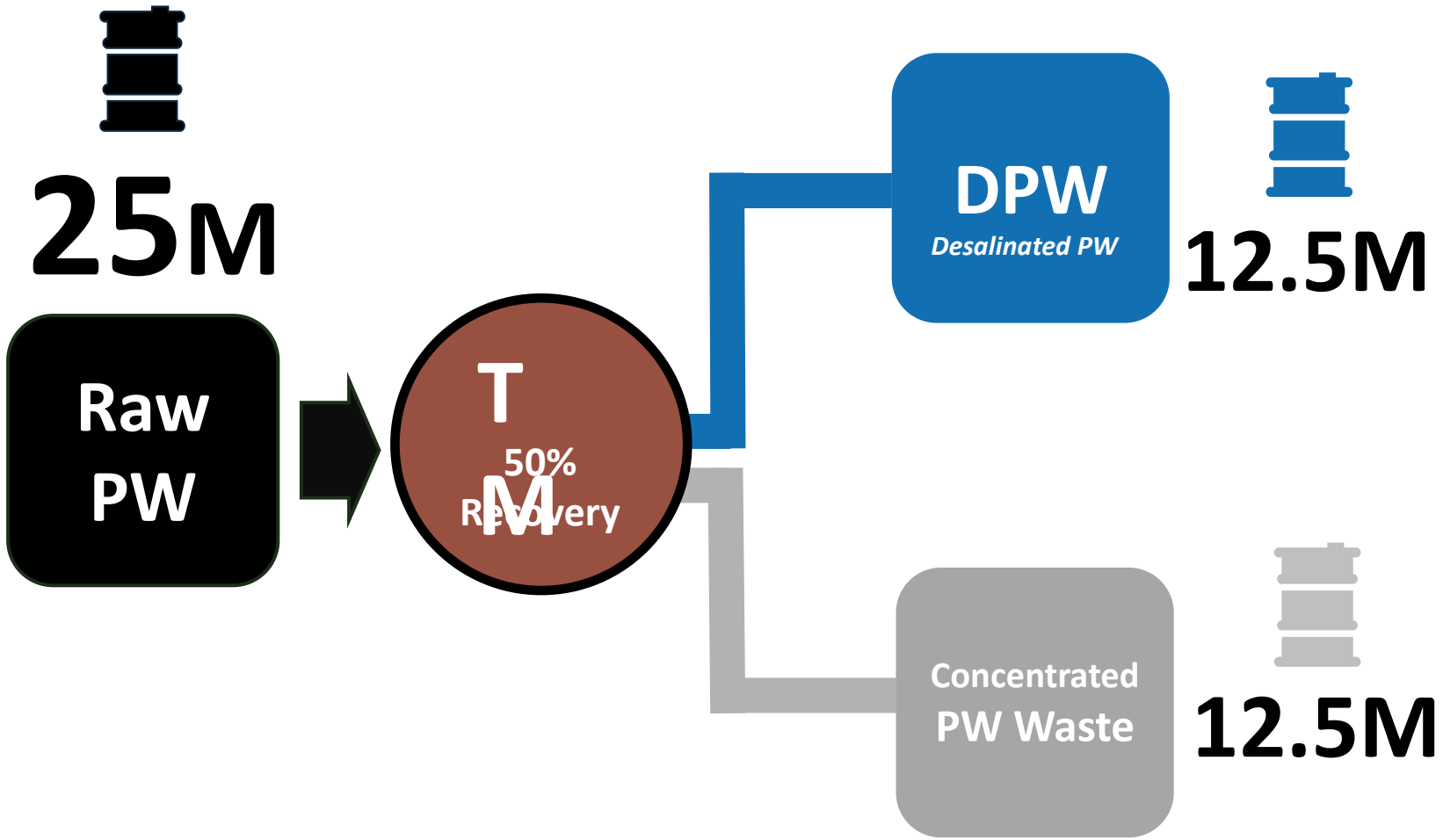
DPW Potential Beneficial Uses

- Oil & Gas Production Reuse
- Industrial (Not O&G)
- Construction
- Power Generation
  Cooling Water…
- Mineral Extraction Products
- Irrigation
  Human/Non-Human Contact, Edible/Non-Edible Crops, Rangeland
- Livestock Watering
  Milking, Non-milking animals
- Blending with Reclaimed Water
  Blended with other treated water
- Groundwater
  ASR, Injection…
- Surface Water
  Discharge, Runoff…
- Potable Water
  Direct Use

Policy is not uniform across potential TPW beneficial uses due to differences in hazards/risks, potential human contact, environmental context, and agency defined jurisdictions. Per the existing MOU between RRC and TCEQ, TCEQ becomes more involved once the TPW is used by the potential beneficial use and is to be discharged. Depending on the potential TPW use, RRC and TCEQ can both be involved, along with TDA, and other Federal agencies.

Texas PW Treatment Potential

Converting 25M bbl/day into 12.5M bbl/day distillate and 12.5M bbl day of concentrated brine, will require on the order of 12-17 GW of Thermal Energy or 2-3 GW of Electrical Energy.

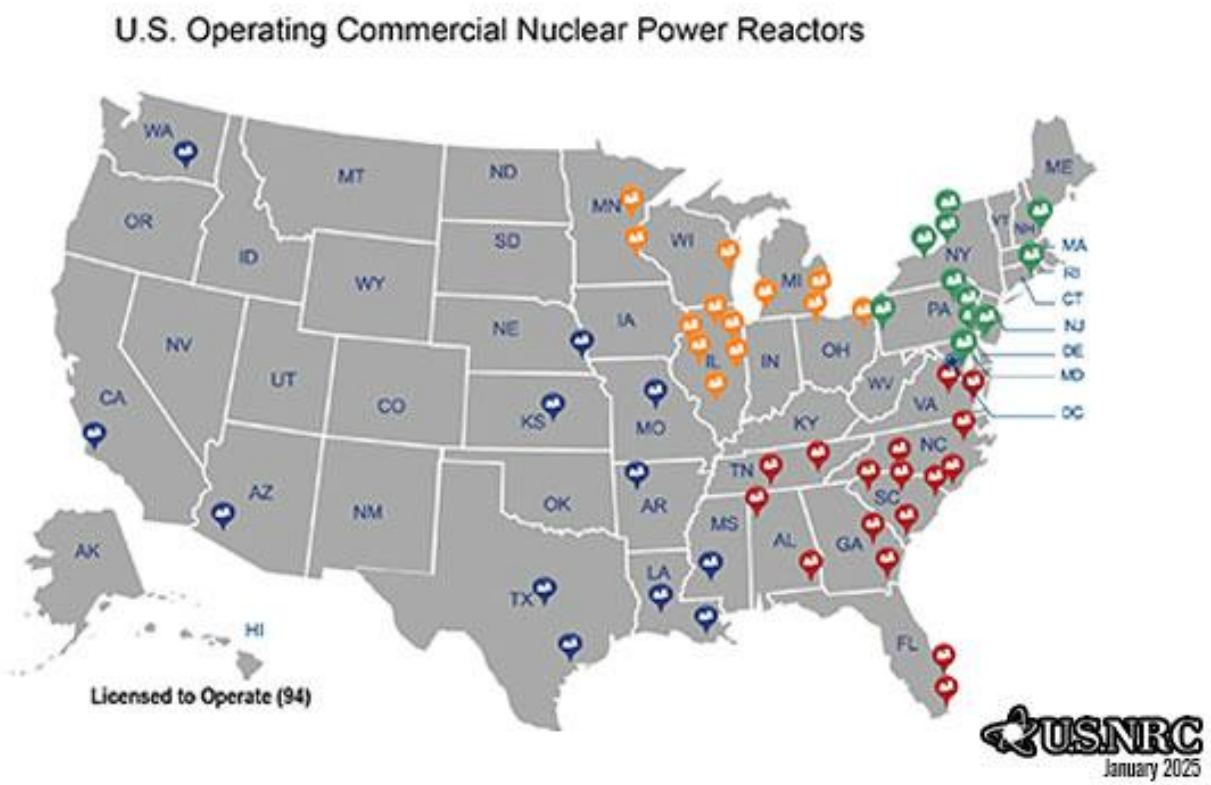


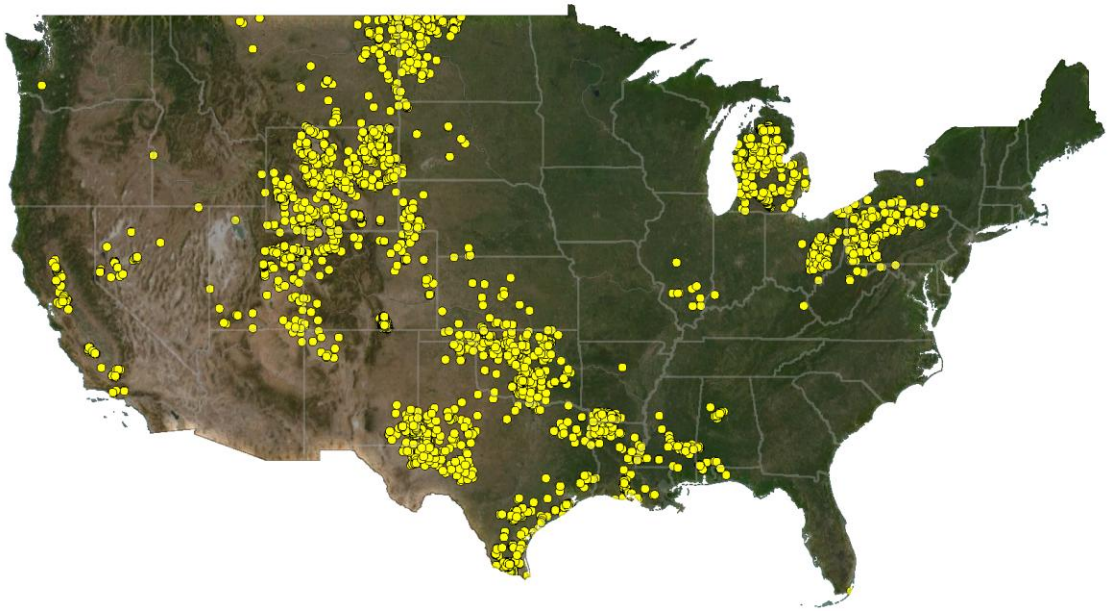
Example: Palo Verde Nuclear Generating Station

At its location in the Arizona desert, Palo Verde is the only nuclear generating facility in the world that is not located adjacent to a large body of above-ground water. The facility evaporates water from the treated sewage of several nearby municipalities to meet its cooling needs.

Source: https://energyeducation.ca/encyclopedia/Rankine_cycle

American West is not Nuclear = Lack of Water!





Source: USGS

So what? What's the point?

1. Electrification of W. Texas is here, abundant Natural Gas, Data Centers, Exceptional Workforce, etc.
2. Produced water treatment is not a growth opportunity, partly because energy costs make it prohibitively expensive.
3. Nuclear facilities need water to operate and can provide waste heat to reduce the energy input costs (50% of treatment cost?)
4. Federal incentives could reduce the cost of water treatment facilities and enable "free" energy source for treatment.
5. Pairing nuclear with water treatment, reducing capex recovery for water treatment facility and substantially lowering energy input costs. (>50%/bbl?)
6. Geographically, advanced nuclear can support centralized or decentralized water treatment facilities.

Natura + NGL Fit

Natura Brings

- Reliable thermal platform
- Potential long-duration heat offtake
- Power + thermal integration
- Need for utility water and boiler-feed support
- Need for a bankable non-power use case

Together

- Produced water liability becomes firm water supply
- Thermal energy becomes a monetizable water product
- Water supports Natura operations and offsite reuse
- Combined platform is more financeable than either standalone

NGL Brings

- Massive produced-water feedstock
- Existing water infrastructure and field presence
- Desalination and treatment operating need
- TPDES, discharge, and reuse pathway
- Ability to create contracted water demand

This is not just a desal project or a reactor project – it is an integrated energy-water infrastructure platform.

Thank you

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