Eavor™

“Eavor-Loop: Maximizing America's Geothermal Opportunity”

aka

Eavor-Loops: what are they, and how do they impact subsurface water resources?

Malcolm I Ross

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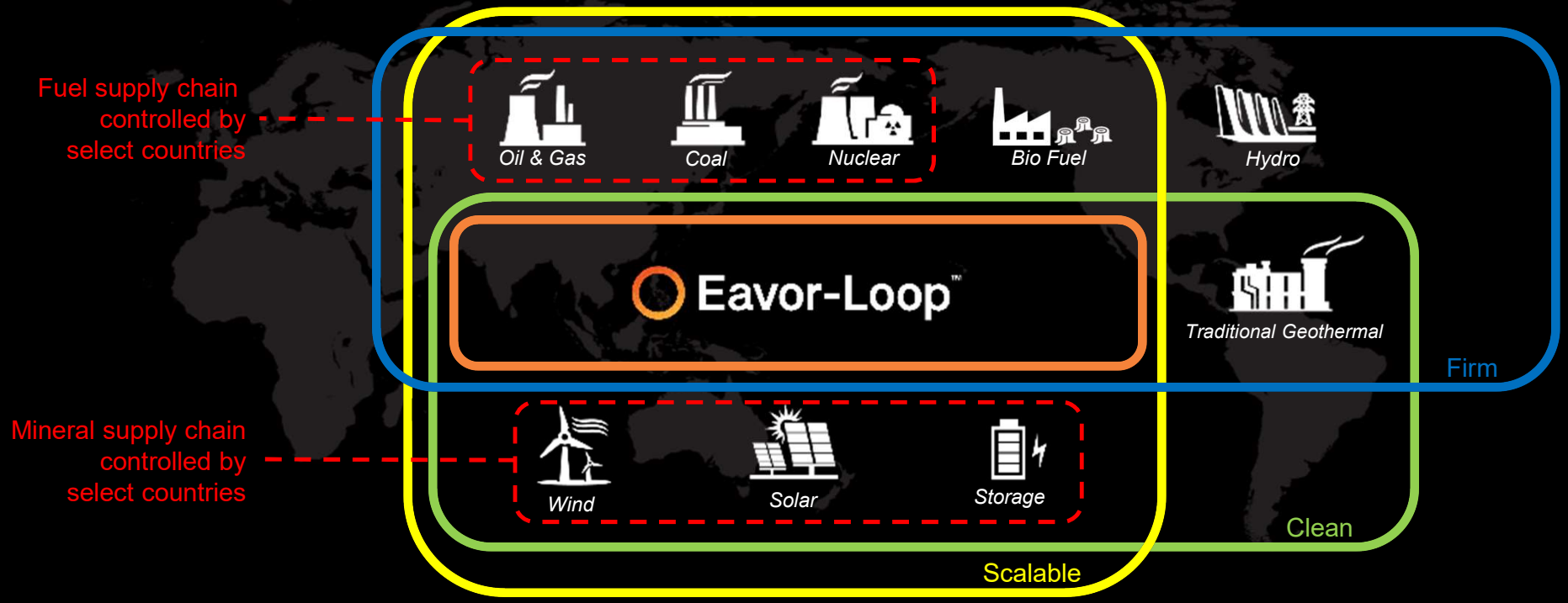
Enabling Local Clean Energy Autonomy. Everywhere.

Eavor-Loop™ – A New Energy Category

Eavor-Loop™ is the world's first and only viable form of firm, clean, lossless-load-following, and scalable energy



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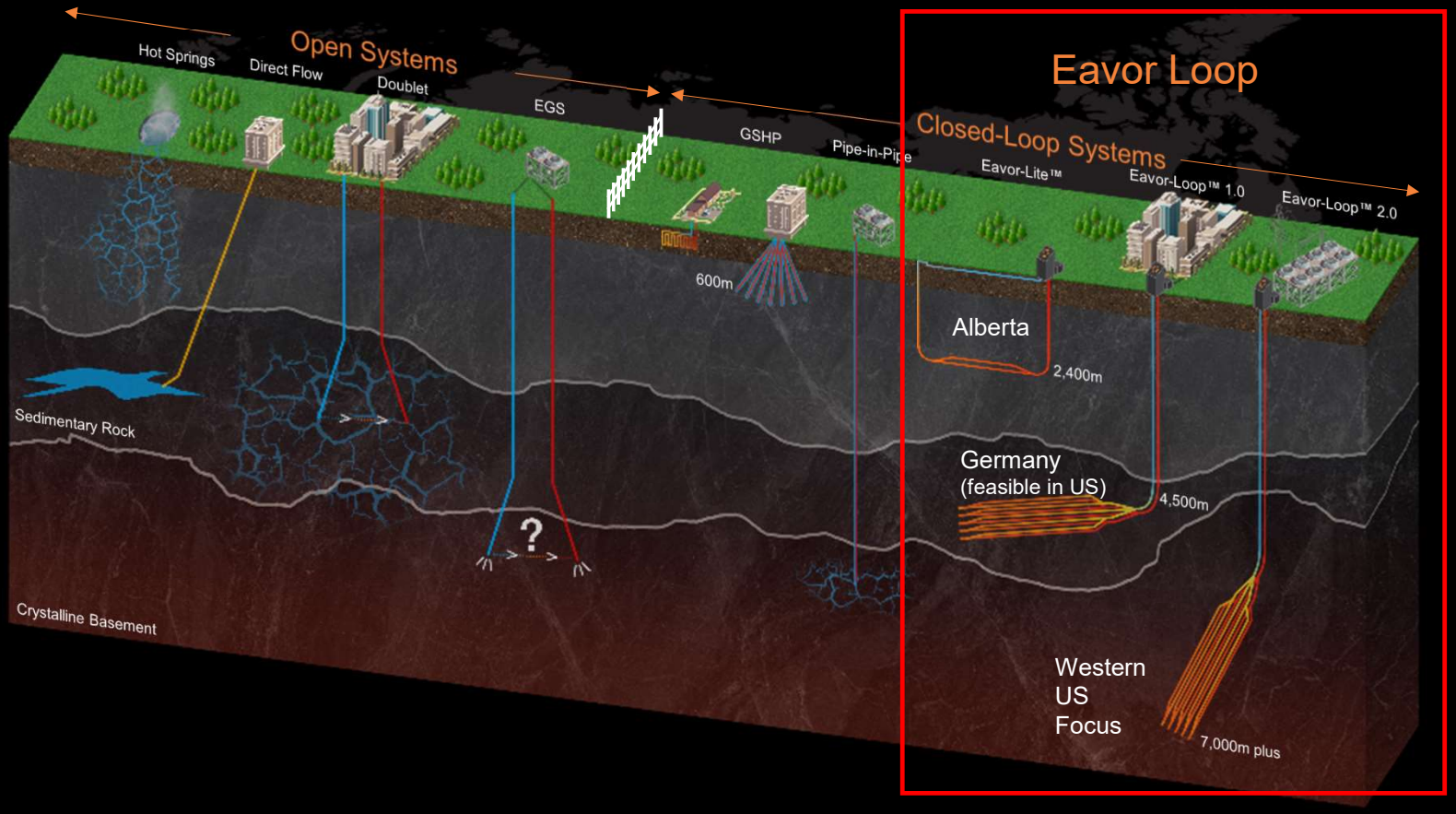
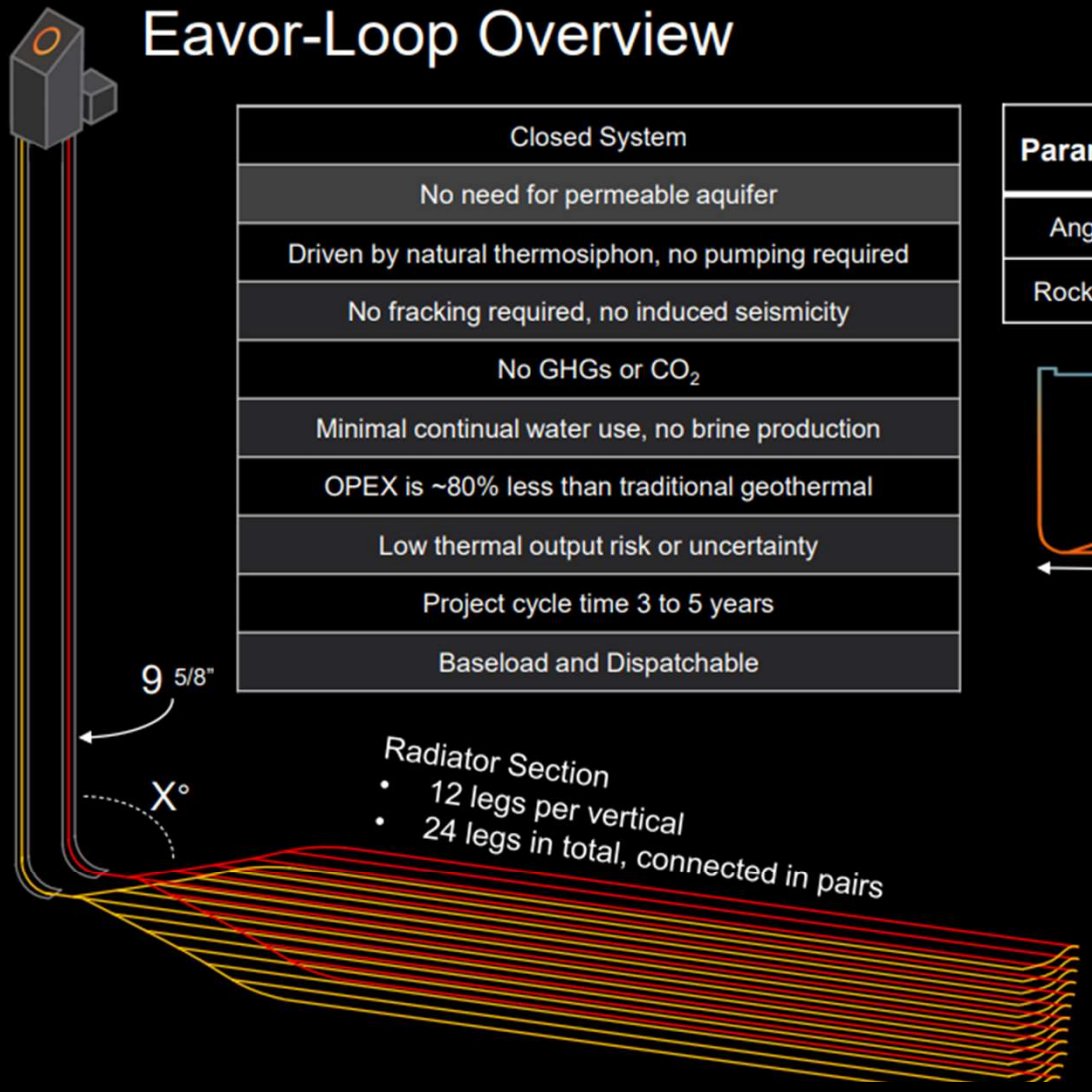
The Geothermal Universe

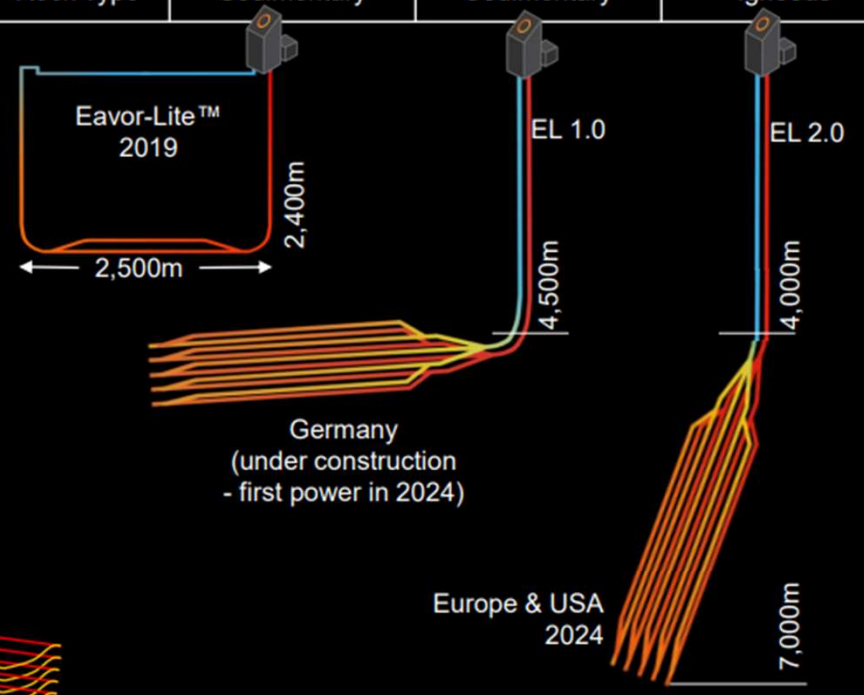


Eavor-Loop Overview

Closed System
No need for permeable aquifer
Driven by natural thermosiphon, no pumping required
No fracking required, no induced seismicity
No GHGs or CO_2
Minimal continual water use, no brine production
OPEX is ~80% less than traditional geothermal
Low thermal output risk or uncertainty
Project cycle time 3 to 5 years
Baseload and Dispatchable

Parameter	Eavor-Lite™	Eavor-Loop 1.0	Eavor-Loop 2.0
Angle X	90°	90°	160° to 180°
Rock Type	Sedimentary	Sedimentary	Igneous





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Eavor-Loop™ vs. Other Geothermal Systems

Eavor-Loop™ is the only truly scalable form of geothermal energy

	Traditional geothermal	Enhanced geothermal systems (EGS)	Eavor-Loop™
Produces firm power	●	●	●
Capable of producing direct-heat, power, or cooling	●	●	●
Low surface footprint	●	●	●
Clean energy source	●	●	●
Low materials intensity	●	●	●
No permeable aquifer required	○	●	●
No circulating pump	○	○	●
No fracking	●	○	●
No induced seismicity	●	○	●
Negligible continuous water use	○	○	●
Highly predictable	○	○	●
Capable of lossless load-following	○	○	●

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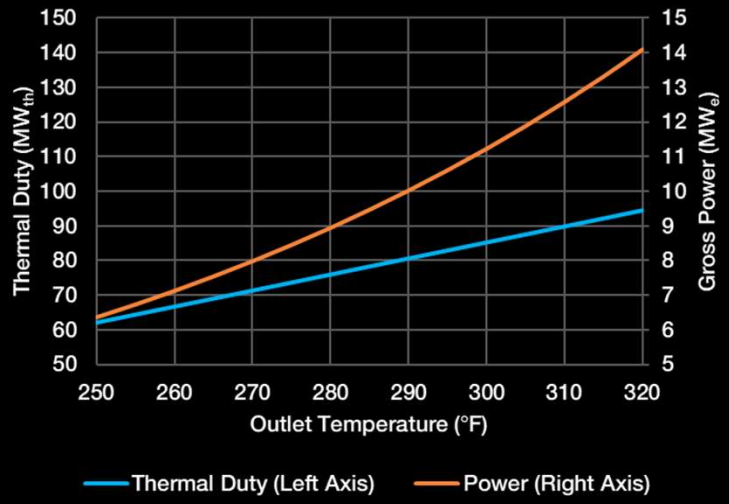
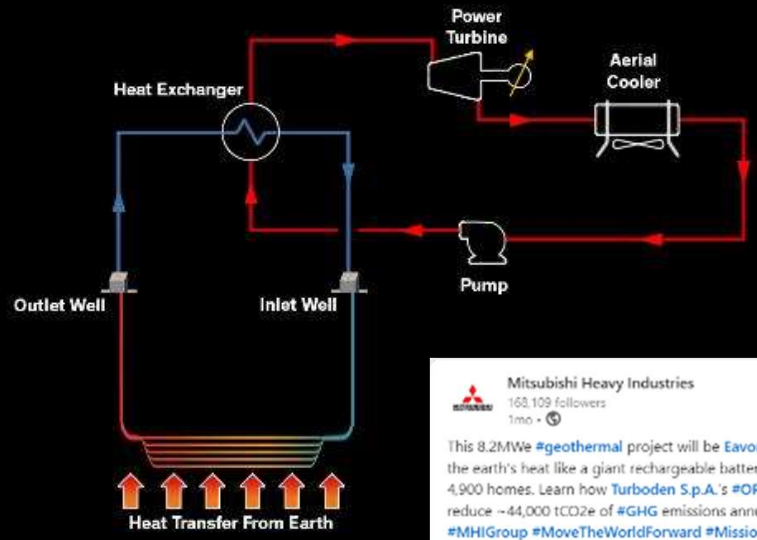
Eavor-Loop™ Heat to Power Production

Heat to Power

- Organic Rankine Cycle (ORC) heat to power system purchased from supplier on a turnkey basis
- Flexibility of Eavor-Loop™ operation enables unique opportunity to optimize surface facilities to improve cost performance and efficiency





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Eavor's IP-Centric Commercial Model

Eavor will enable Eavor Everywhere by Everyone!

- Eavor's Patents can ensure "freedom to operate" for All
  - Eavor will license this IP to any qualified operator
  - Developer or Operator biz model is more closed than Eavor's
  - We're open as need bp, Chevron, BHP, Temasek, etc to scale
- Eavor will also provide tools and services where needed
  - Proprietary Drilling and Construction Technology
    - Rock-Pipe™ to eliminate Casing
    - Insulated Drill Pipe for Shock Cooling
    - Enhanced Magnetic Ranging Tools
  - System and Surface Facilities
    - Optimized modular ORCs
    - Modelling software and control algorithms
  - Design Blueprints and Performance Guarantees
- This is hard, but we can provide the patents, services, tools assets and even land for Eavor Everywhere for Everyone

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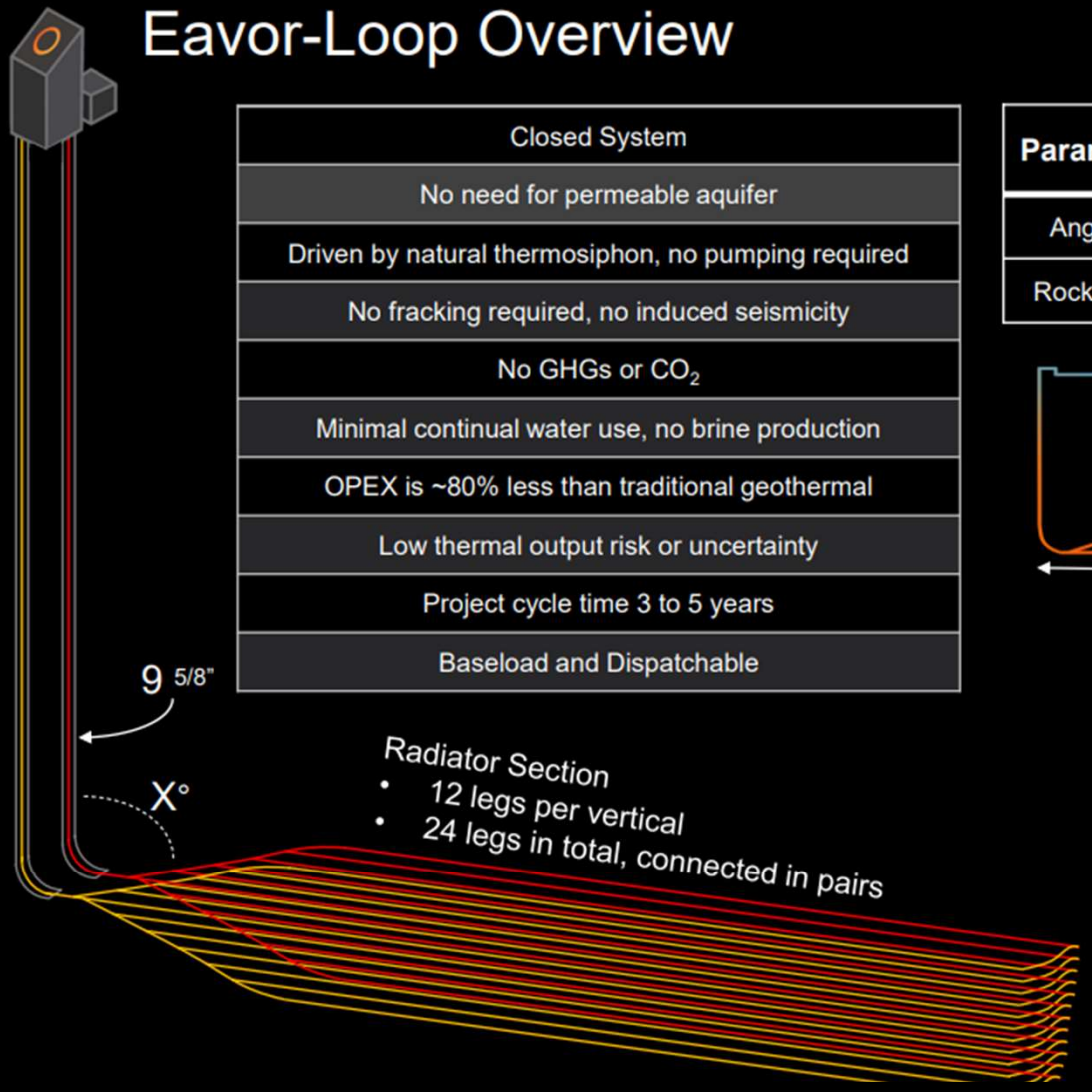

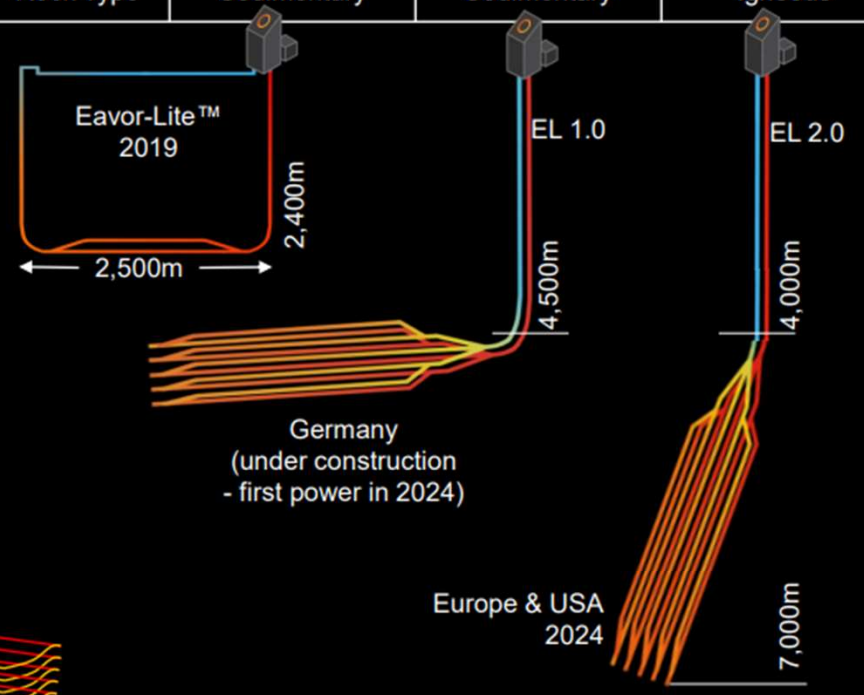

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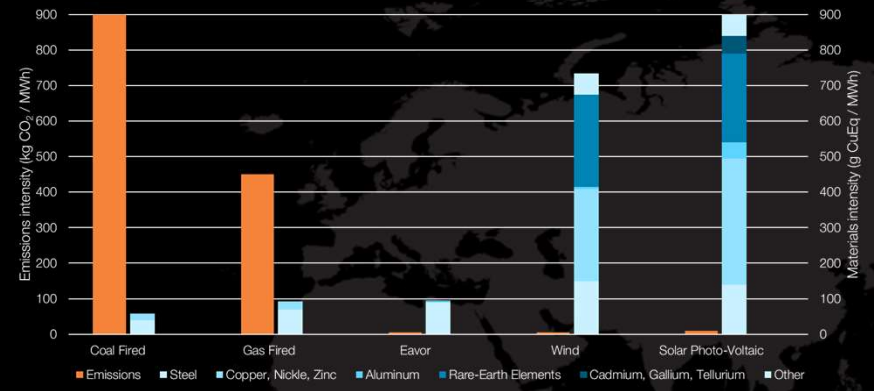
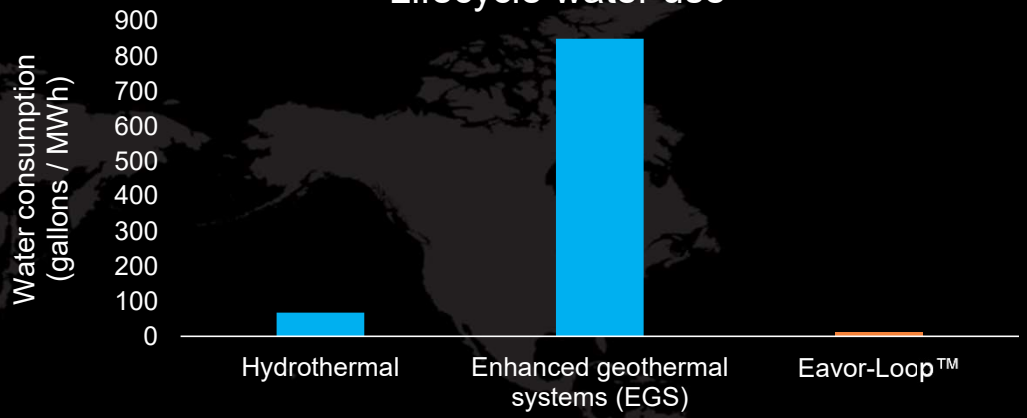
Eavor advantages

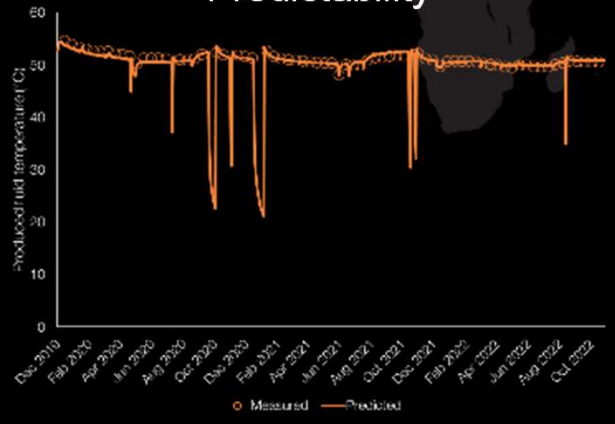
Emissions and materials intensity



Lifecycle water use

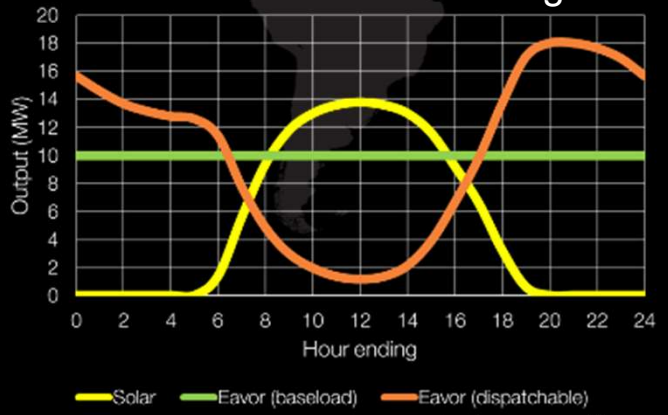


Predictability



Land use

Lossless load following



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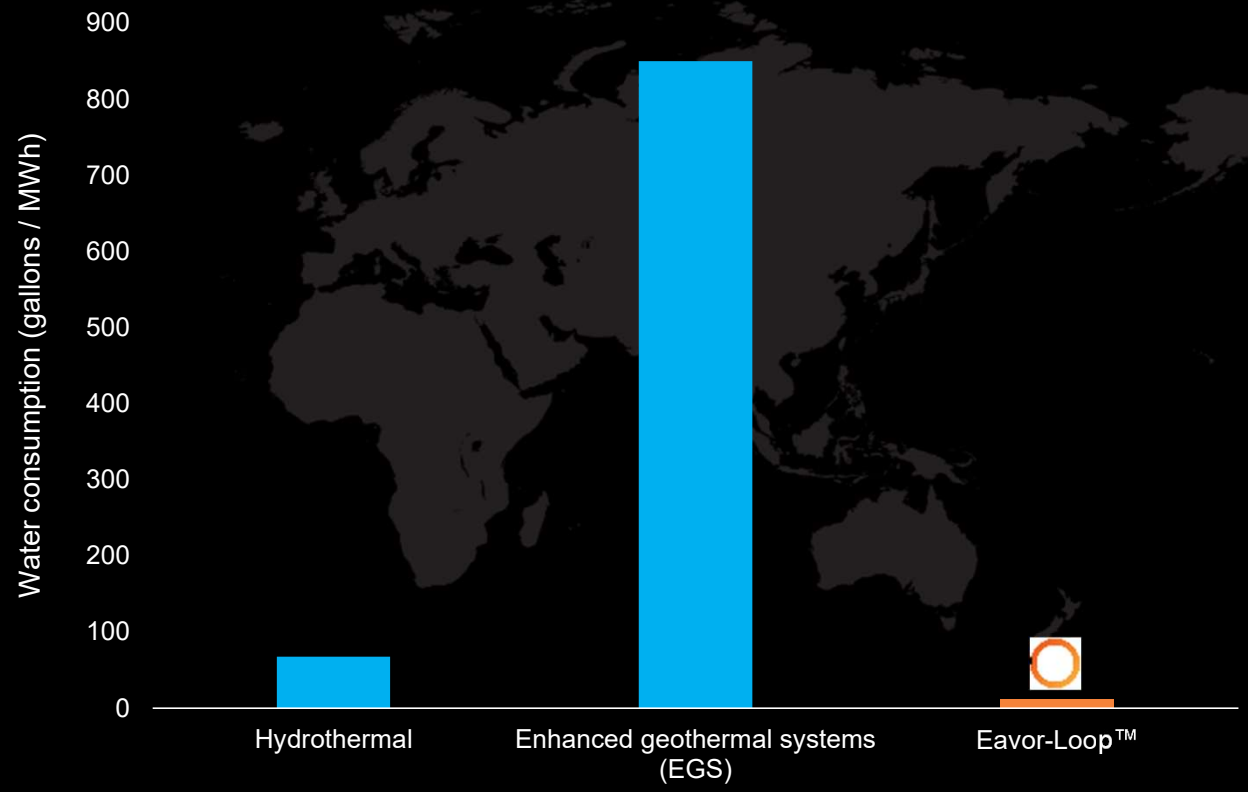
MH2

Eavor Advantage: Lifecycle Water Consumption

Eavor-Loop™ has the lowest lifecycle water usage in category



- Hydrothermal requires water for drilling and for voidage replacement during operations to maintain reservoir health
- Enhanced geothermal systems (EGS) require water for drilling, with a substantial water requirement for fracking, in addition to ongoing water consumption during operations
- Eavor-Loop™ also requires water for drilling but a very small amount for operations

(1) Non-Eavor geothermal values are averaged median data from: NREL, A Review of Operational Water Consumption and Withdrawal Factors for Electricity Generating Technologies, 2011
(2) Eavor data assuming an 8 MW_e facility using Eavor-Loop™ 2.0 geometry including water consumption for drilling and system setup
(3) Values shown are for air-cooled geothermal systems only

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Eavor-Loop™ Footprint vs Wind & Solar

TA0

	Land Use Capacity (MW_{peak} / ha)	Capacity Factor	Land Use **Generated** (MW / ha)
Wind – USA	0.03[1]	0.35[2]	0.01
Solar – USA	0.32[3]	0.29[3]	0.09
Eavor-Loop™ 1.0, average gradient	3.23	0.98	3.17

1. Land-Use Requirements of Modern Wind Power Plants in the United States; NREL, 2009 https://www.nrel.gov/docs/fy09osti/45834.pdf
2. EIA, 2021: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_b
3. 2018 generation of top 35 largest US solar plants, https://www.freeingenergy.com/math/solar-pv-land-acres-hectares-miles-m118/

Reliable Baseload Power

- The Eavor-Loop™ capacity factor is essentially **100%** when operating to produce baseload power

Therefore…

- For the same surface land use, Eavor-Loop™ is expected to generate at least 35x more power than solar and 300x more than wind

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Why Eavor?

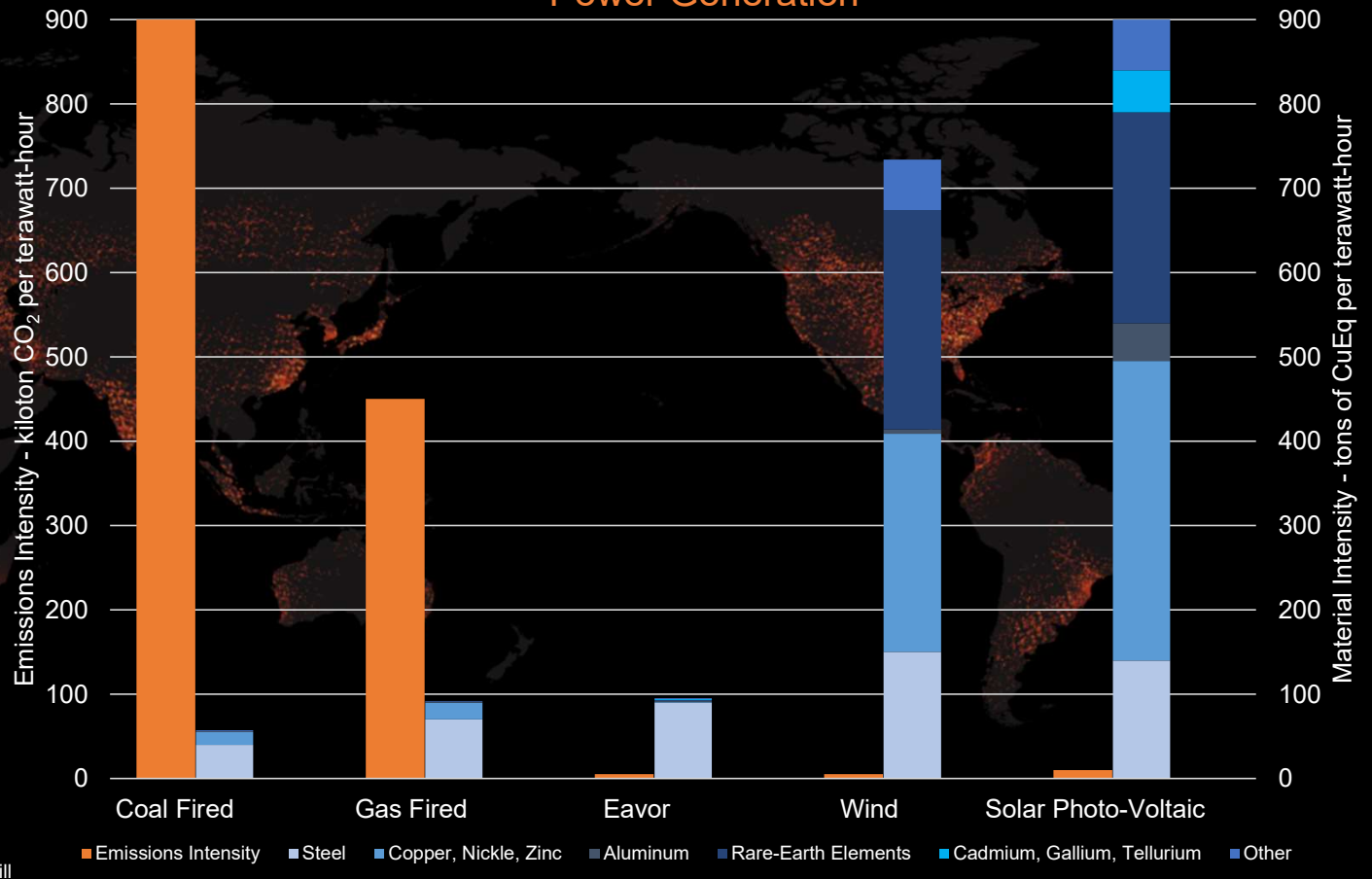
Eavor is Clean and:

- Scalable
- Firm
- Lossless-Load-Following
- Distributable / DER
- Predictable
- Low Footprint
- Heat, Cooling & Power
- No Mining Tail

Only Eavor Enables:

- Decarbonization of direct heat, direct cooling & electricity
- Local energy resilience, independence, security & autonomy

Only Eavor Delivers Low Emissions & Materials Intensity for Power Generation



Source: McKinsey
The raw materials challenge: how the metals and mining sector will be at the core of enabling the energy transition, 2022

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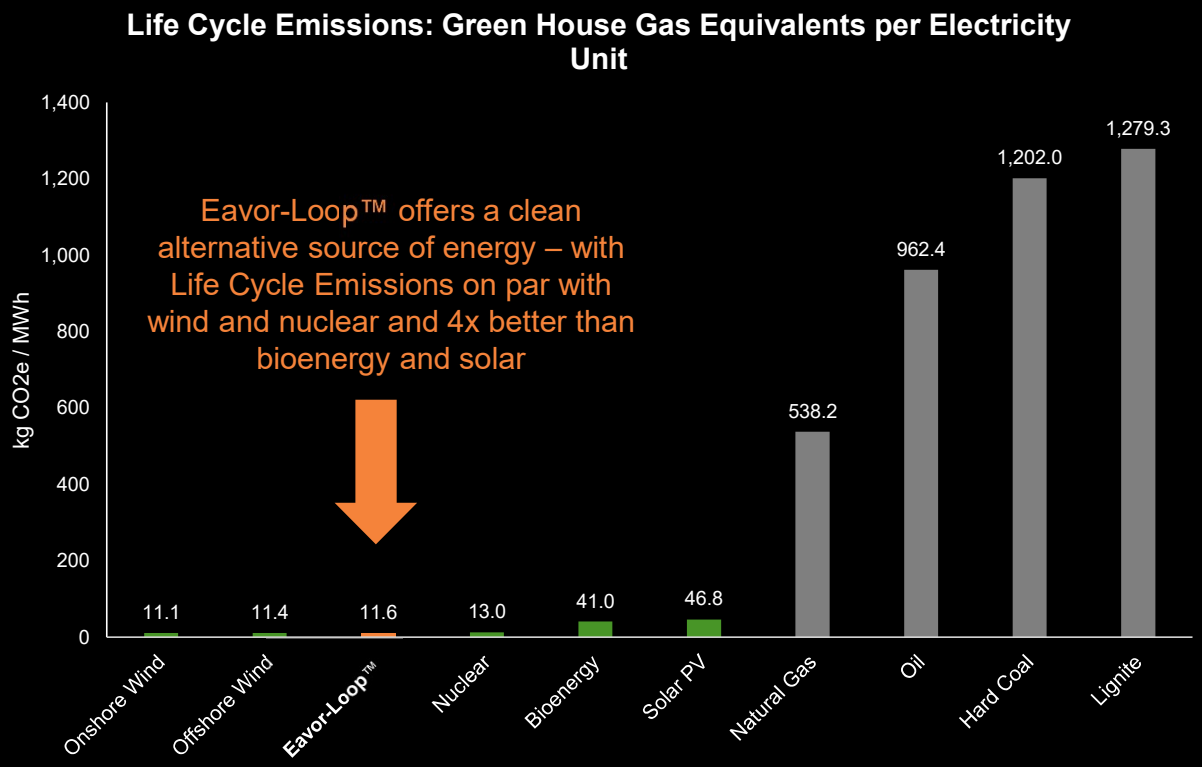
Eavor-Loop™ Positive Environmental Impact



BOUNDLESS
IMPACT RESEARCH & ANALYTICS

"Generating electricity using the **Eavor-Loop™ geothermal system presents lower CO_2 equivalent emissions** compared to scenarios that involve solar-PV power plants, which need integrated backup systems to account for their natural intermittency.

The life-cycle emissions for Eavor's Geretsried, Germany Eavor-Loop™ system were estimated as 11.6 kg of CO_2e emissions per MWh of energy produced. This is, on average, **97% lower** compared to a similar generation system in which a solar-PV system has an integrated BESS, a NGT, or both.

An additional advantage of Eavor's closed-loop geothermal system is that it **does not present the inherent intermittency** of solar and wind energy, providing a renewable source of baseload and dispatchable electric power."

Source: Eavor Climate Impact Profile: Boundless Impact Research & Analytics, 2021. Other technologies: Seckinger, N.; Radgen, P. Dynamic Prospective Average and Marginal GHG Emission Factors—Scenario-Based Method for the German Power System until 2050. Energies 2021, 14, 2527. https://doi.org/10.3390/en14092527. Thermal Energy converted to Electricity using 2019 average operating heat rates from EIA: https://www.eia.gov/electricity/annual/html/epa_08_01.html

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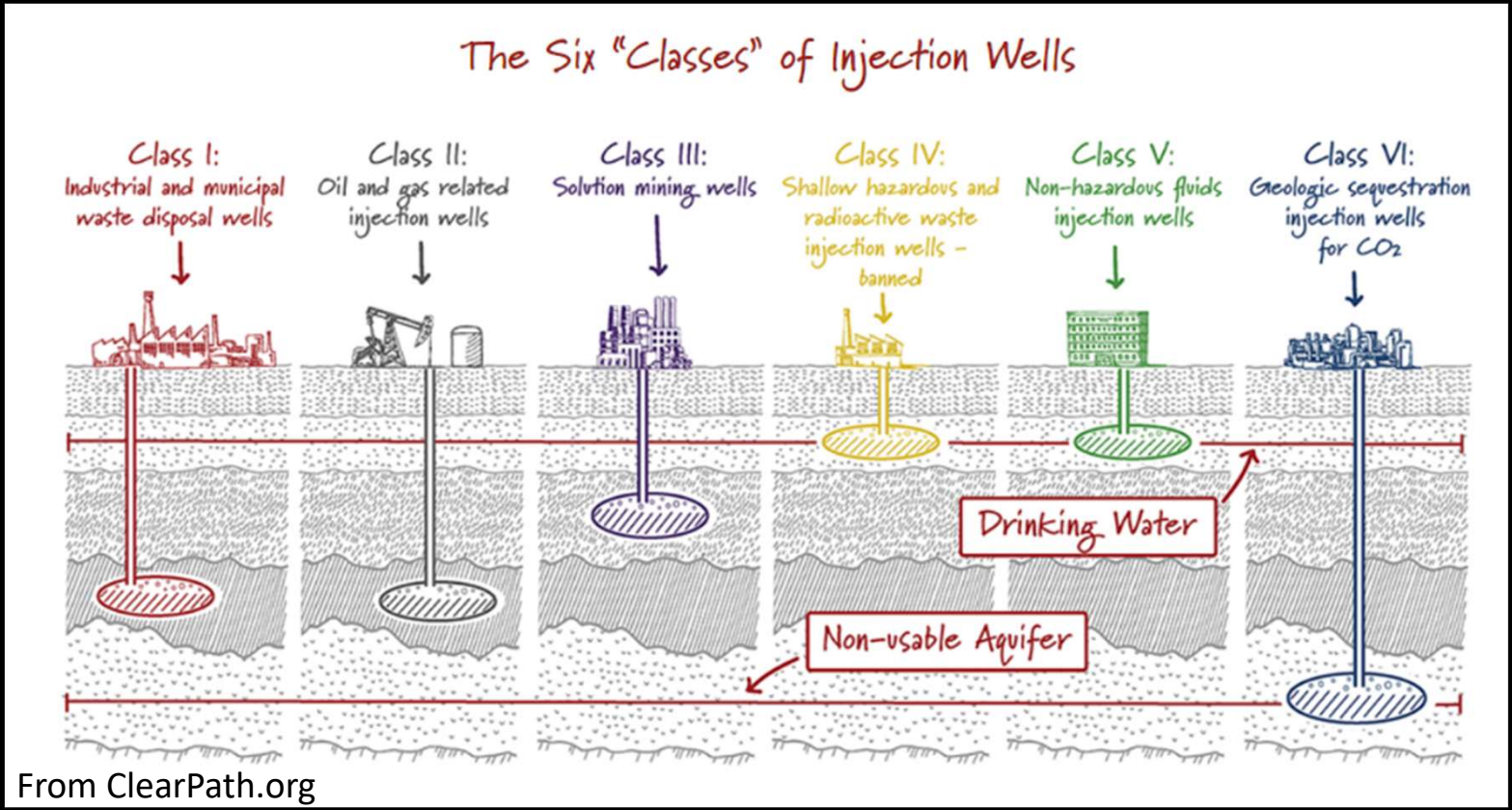
Classes of Injection Wells



From ClearPath.org

Should an Eavor-Loop™ even be classed as an injection well?
And if so, should a new class be made that recognizes that there is **NO** interaction with the aquifer, and the target is often the basement?

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Energy For Eavor™

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