GEOTHERMAL IN NOVA SCOTIA

GreenQuest Power Inc.

Inviting Collaboration To Solve a Global Challenge

April 2023

THESIS / PHILOSOPHY

- build long term reliable RE assets
- maintain environmental standards
- treat all stakeholders with respect
- generously reward stakeholders incl. communities
- respect the role of indigenous communities
- respect the mandate of publicly elected officials
- engineer solutions to technology barriers

Today there are advanced technologies available from drilling and other industries that can be engineered to replace/solve deep drilling tech bottlenecks.

GreenQuest Power is developing a project that can absorb a substantial engineering budget, to:

- gather, adapt, and pair an optimized combination of existing technologies
- enables affordable access to high temperature rock
- Substantially automates a closed geothermal system, supporting predictable (and financeable) outcomes
- delivers reliable low cost stable clean energy to grid

CLEAN ENERGY OBJECTIVES

Geothermal

?	• Location ‘anywhere’	
✓	• Non-intermittent	
✓	• Non-emitting	
✓	• Low environmental impact	
✓	• Stable	24/7, 365, 100 Year < Life
✓	• Reliable	98% available
✓	• Small footprint	2 acres / 20 MW
✓	• Cost Competitive	$40 USD / MWH target (US DOE)

ENERGY earthshots U.S. DEPARTMENT OF ENERGY | Enhanced Geothermal™

Revised: January 25, 2023

DOE's (US) Enhanced Geothermal Shot predicts a cost reduction to less than **$40/MWh** across the United States.

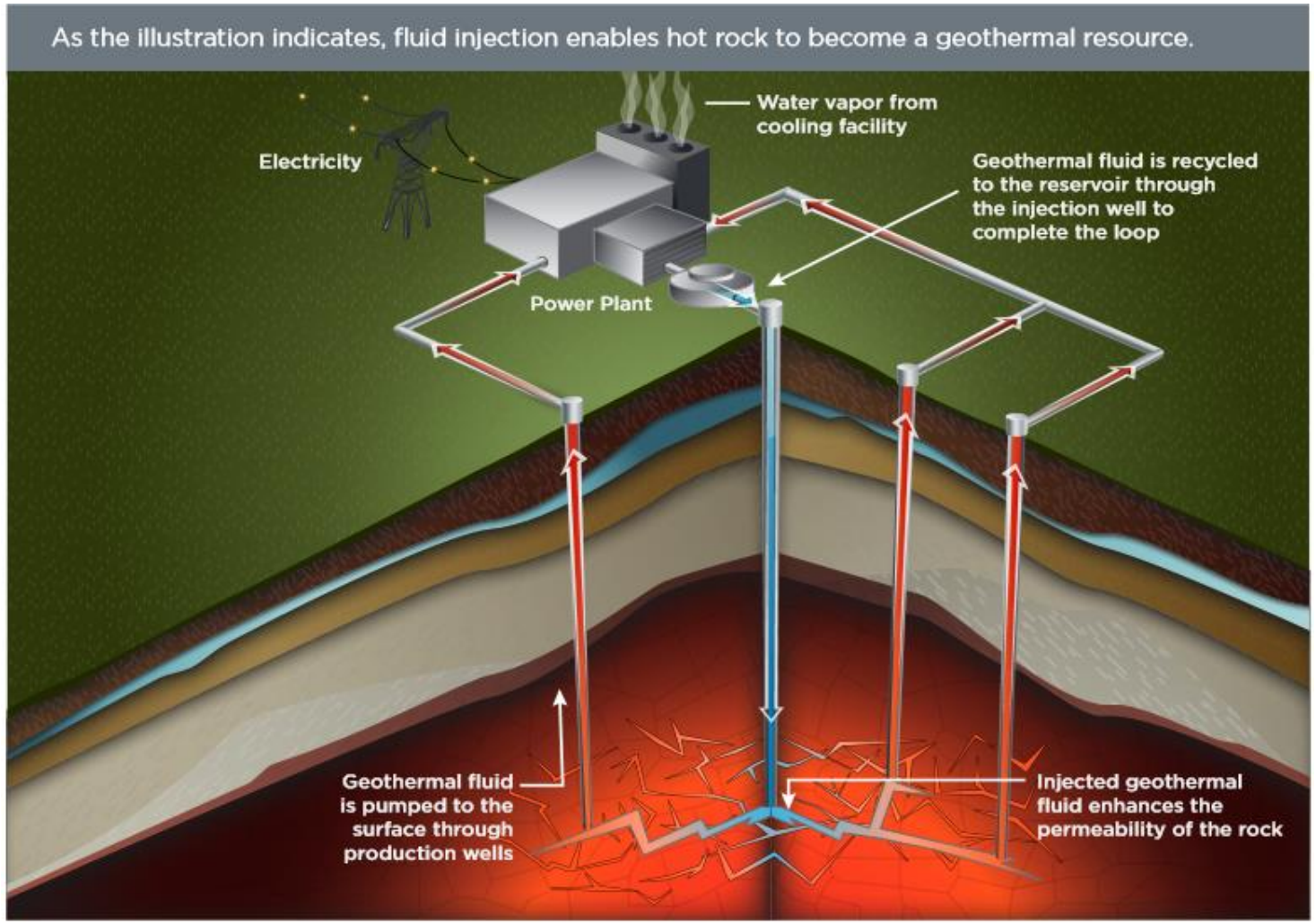
How will DOE work to achieve the Enhanced Geothermal Shot goals? => **$283 Million**

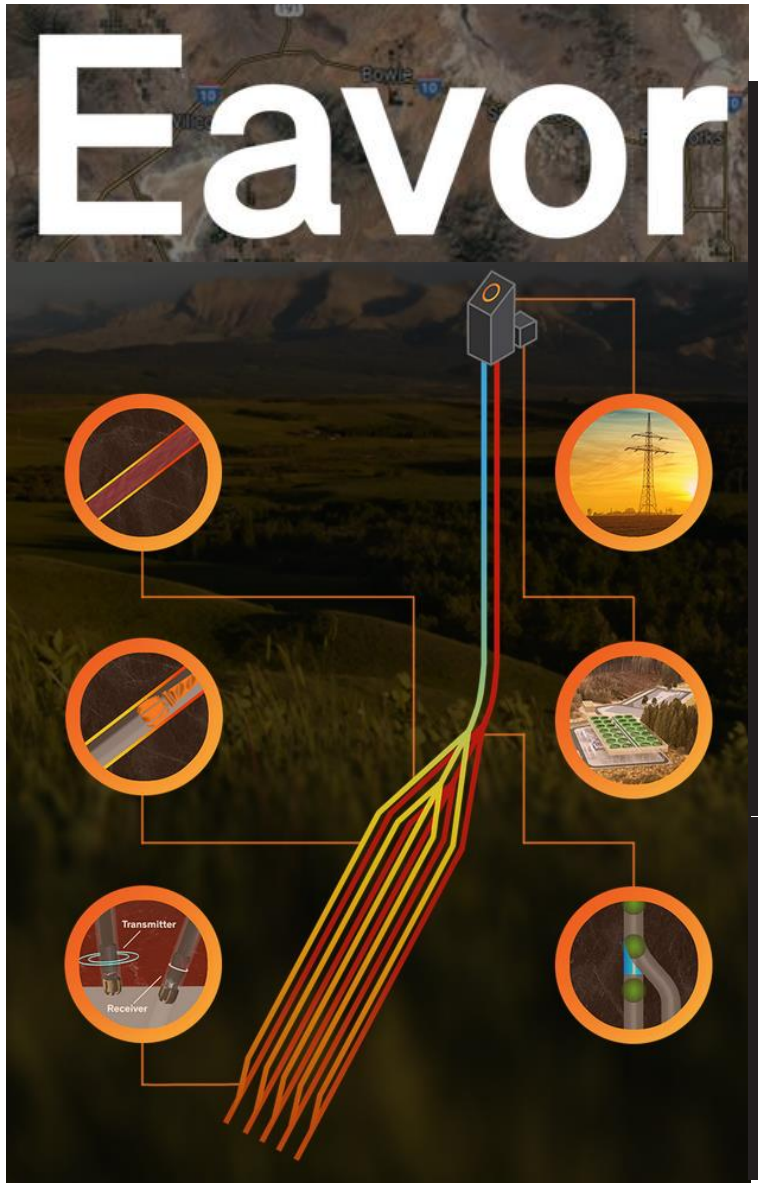
$44 million in new R&D funding

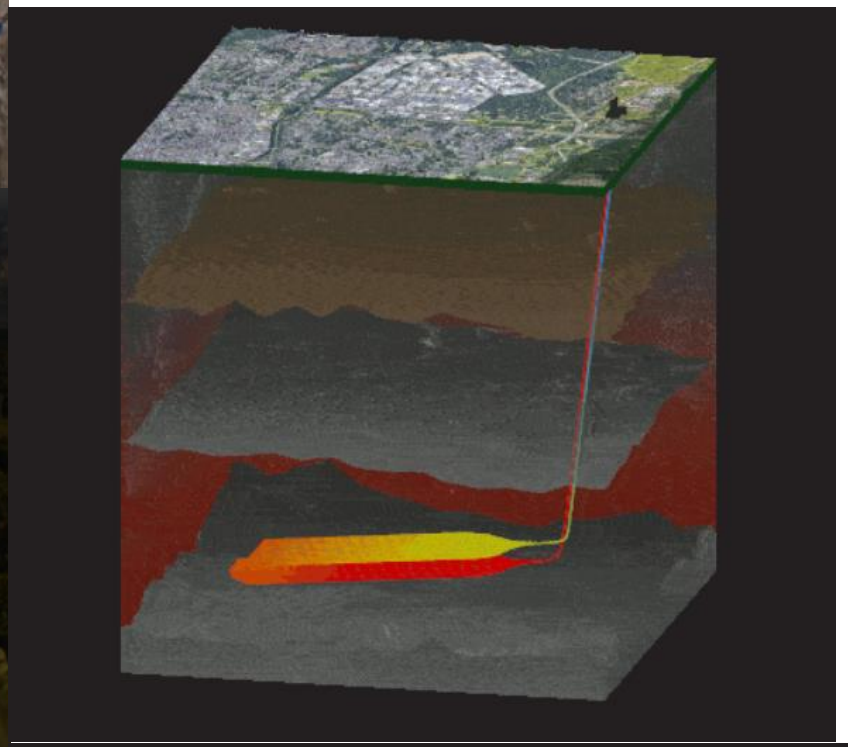
$155 million to transfer best practices and workforce from the oil and gas industry to geothermal energy.

$84 million in funding for **four new EGS demonstration projects**

Oil and Gas – valuable expertise for geothermal


As the illustration indicates, fluid injection enables hot rock to become a geothermal resource.
Water vapor from cooling facility
Electricity
Geothermal fluid is recycled to the reservoir through the injection well to complete the loop
Power Plant
Geothermal fluid is pumped to the surface through production wells
Injected geothermal fluid enhances the permeability of the rock





Technology

Historically, the deeper and higher temperature the rock, the slower and more expensive drilling becomes. The Eavor-Deep™ project is designed to break this paradigm and show linear, and potentially sublinear, drilling costs in super-hot ultra-deep environments: Eavor-Aiki™.

"… is designed to break this paradigm and show linear, and potentially sublinear, drilling costs in super-hot ultra-deep environments. "

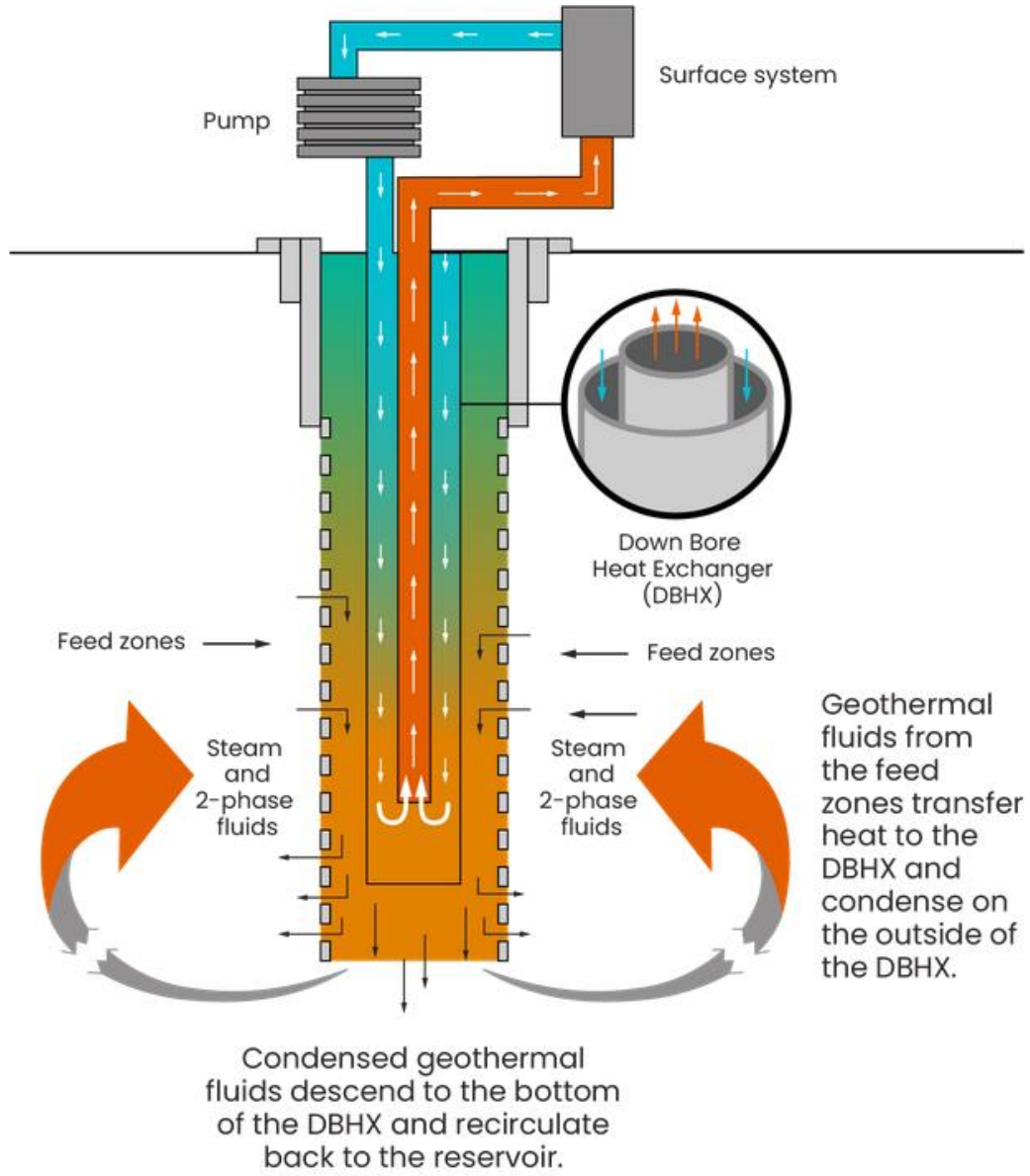
GreenFire Energy

GreenLoop Designs for Power Generation and Direct Use

- Steam GreenLoop
- 2-Phase GreenLoop
- Liquid GreenLoop
- Hot Dry Rock GreenLoop
- Hot Springs GreenLoop

Construction and Installation

- Construction project management
- Permit and concession services
- Well pad preparation
- Drilling
- Equipment installation
- Testing and commission



Steam GreenLoop and 2-Phase GreenLoop Designs

2.2. Low-Temperature Geothermal Power Plant with ORC

CLOSED LOOP ON SUFACE

CLOSED LOOP DOWN-HOLE

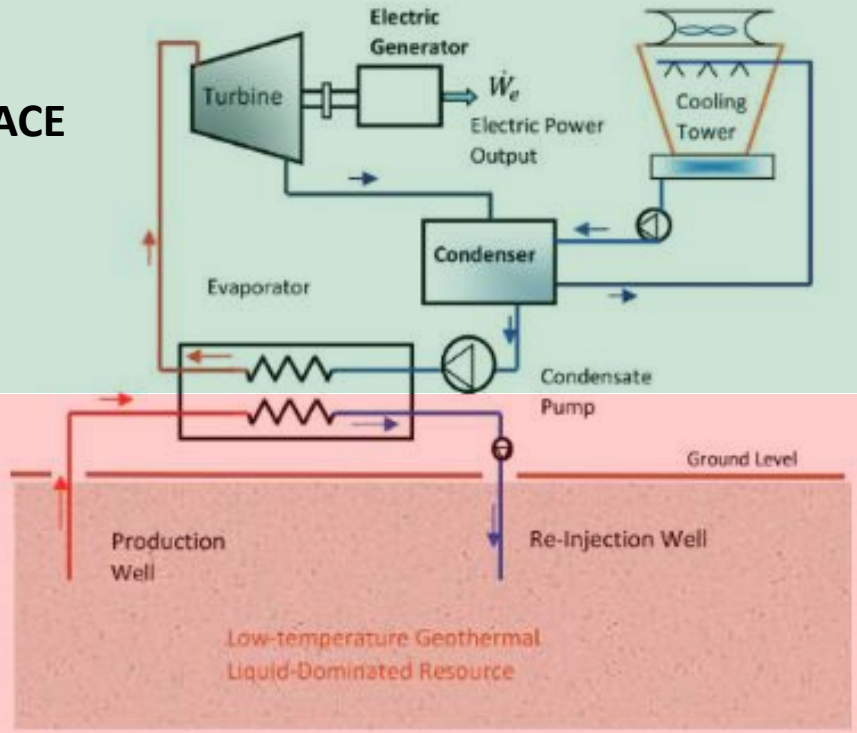


Figure 2 Low-Temperature Geothermal Power Plant with ORC [11]

Technology Requirements

CLOSED LOOP SYSTEM, SURFACE ✓

CLOSED LOOP SYSTEM, DOWN HOLE ✓

DRILLING TO DEPTH (15 KM) => 15 X 20°C => 300°C

- NO TECHNICAL BOTTLE-NECKS LIMITING DEPTH ✗
- LINEAR OR SUBLINEAR COST ✗
- RELIABLE SPEED ✓ TO A DEPTH OF 15 KM ✗
- FIXED COST PER METER CONTRACTS ✓ TO A DEPTH OF 15 KM ✗
- INSURED PROJECTS ✗

Technology Innovation

Incorporating available tech into design solutions: adapting, enhancing, and pairing

- **Drilling-while-casing stringless drill rig**
  - Custom Electric Drilling-while-casing Rig
- **Custom Fit for Purpose Downhole Power and Electrical**
  - Customized Intelligent casing solution
  - Custom high temperature electronics and instrumentation
  - Custom High Temperature Electric Motors
- **Advanced Drill Bit Technology**
  - Custom High Temperature High Performance Drill Bit
- **Advanced high performance fit to purpose DHA**
  - Semi-Autonomous DHA
  - Custom Casing Bit Replacement System
  - Custom cuttings removal and trucking sled
  - Custom instrumentation and fringe computing module
  - Quick replacement system
- **Downhole Services Technology**
  - Robotics for downhole repair and maintenance
  - Deployable tooling and finishing systems
- **Super Deep AI/ML**
  - Custom Super Deep Drilling AI/ML Module
  - Custom Data Management system
  - Custom Hive Downhole interface
- **High temperature drilling-while-casing stringless drill rigs**
  - High Strength High Temperature Rope
  - High Speed Deployable Hoisting system
  - Swap-out and Hoisting Interface Robotics
- **Surface Plant**
  - High level of automation
  - Rapid Deployable Field and Plant modules
  - Field and Plant Assembly tooling
  - Rapid Deployment and Commissioning Plans
- **Specialty**
  - Energy Storage System Modules
  - Carbon Capture System Modules

Solving Deep Drilling Bottlenecks

1. Identify Technology Barriers
2. Design a financial model with a workable large engineering budget
3. Locate regions where the need for and price of power are workable
4. Obtain a long term, power purchase agreement
5. Initiate
6. Replace the technology barriers with other tech
7. Design
8. Construction

GreenQuest Power in Nova Scotia

25 to 29 C / km gradient >300 C at 12 km ✓

Granite rich / magmatic rock formations ✓

Power Purchase Agreement opportunity ✓

- Predicted grid supply deficits, with no path to a solution ✓
- Other proposed new power supply options prices > $100 / MWH ✓
- Legislators are open to supporting new clean tech + new business models i.e. Hydrogen ✓
- No better options, no downside to signing a PPA ✓
- Regulatory pathway ✓
- All levels of government publicly support the initiative Fed ✓ Prov ? HRM ?

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