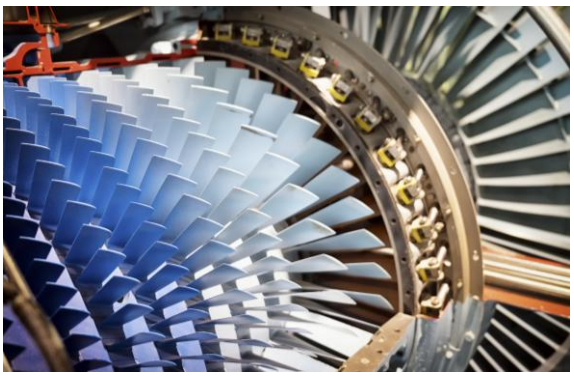
CASE STUDY 501

PROCUREMENT STRATEGY FOR A GEOTHERMAL POWER PLANT



ABOUT THE CLIENT

Industry	Utilities / geothermal power
Revenues	$25M+
Employees	100
Location	United States
BOS Service or Solution	Procurement Strategy, Sustainability

Key Challenges

- R-134a leakage was increasing, with 2025 emissions 2.7x the 2022 rate.
- AIM Act HFC production caps scheduled to tighten again in 2029, increasing material price and availability risk.
- HFO bridge options to reduce GWP would carry PFAS / TFA regulatory exposure over a 20–30 year PPA horizon.
- Hydrocarbon alternatives, which could lower emissions and cost, would require major safety and engineering changes.

Why Boston Strategies International was Selected

- Prior procurement experience in power industry and geothermal clients in particular.
- Expert knowledge of refrigerant, hydrocarbon and fuels chemistries, and their supply chain dynamics and suppliers.
- Deep and hands-on knowledge of federal, state, CARB regulations and emerging restrictions and conditions of use and plant maintenance.

Project Scope

- Refrigerants (working fluids): Hydroflourocarbon (HFCs), Hydrofluoro-olefins (HFOs), and Hydrocarbons
  - R-134a
  - R-1234yf
  - R-1234ze(E)
  - R-1233zd(E)
  - R-513A
  - R-600a
  - R-601a / n-Pentane
  - R-290
- Regulations: American Innovation & Manufacturing (AIM) Act, EPA's 2024 Emissions Reduction and Reclamation rule, California Air Resource Board (CARB)regulations, Climate Alliance actions, US Federal anti-dumping tariffs on HFCs from China.

Project Approach

- Calculated the historical and current carbon footprint.
- Evaluated current and proposed federal and state regulations affecting refrigerants across all industries with specific relevance to geothermal power.
- Performed a technical and commercial evaluation of eight working-fluid options across HFC, HFO, blend and hydrocarbon alternatives.
- Mapped supply chains and distributors for R-134a and all possible substitutes.
- Forecast wholesale and retail prices, including economies of scale in procurement, and effects of long-term contracting.
- Defined procurement, contracting, retrofit and repowering scenarios and recommended a strategy.

Financial Benefits Realized

- Recommended path shifts from price containment alone to supply optionality, R-134a exit planning with potential co-investment.

Operational Benefits Realized

- Lifecycle repowering business case made and supported.
- Recommended approach will reduce refrigerant-related CO_2e footprint by >99% versus the 2025 R-134a leakage case.