

Low Energy Ejector Desalination System (LEEDS)

Joseph Kanzleiter

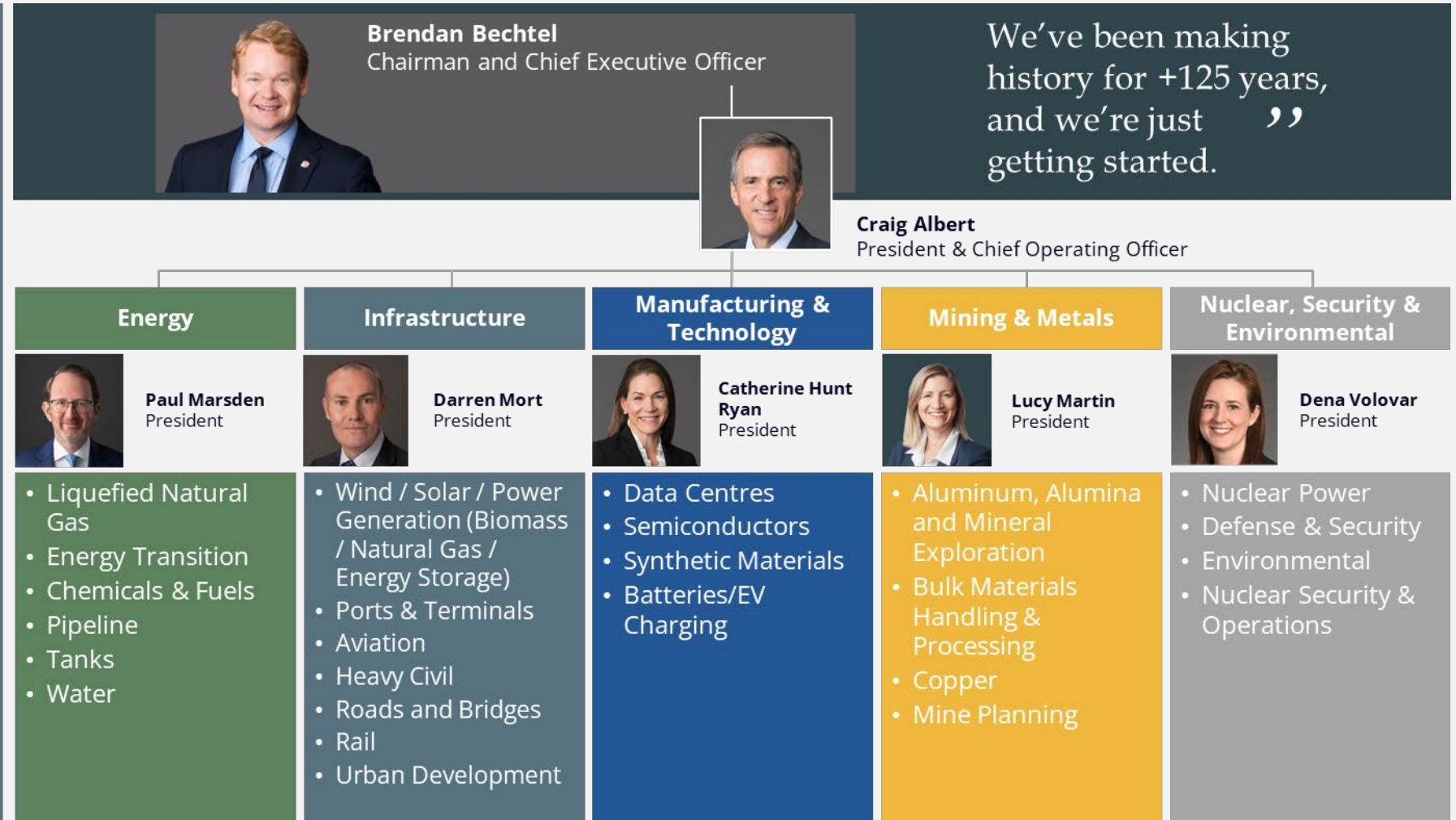
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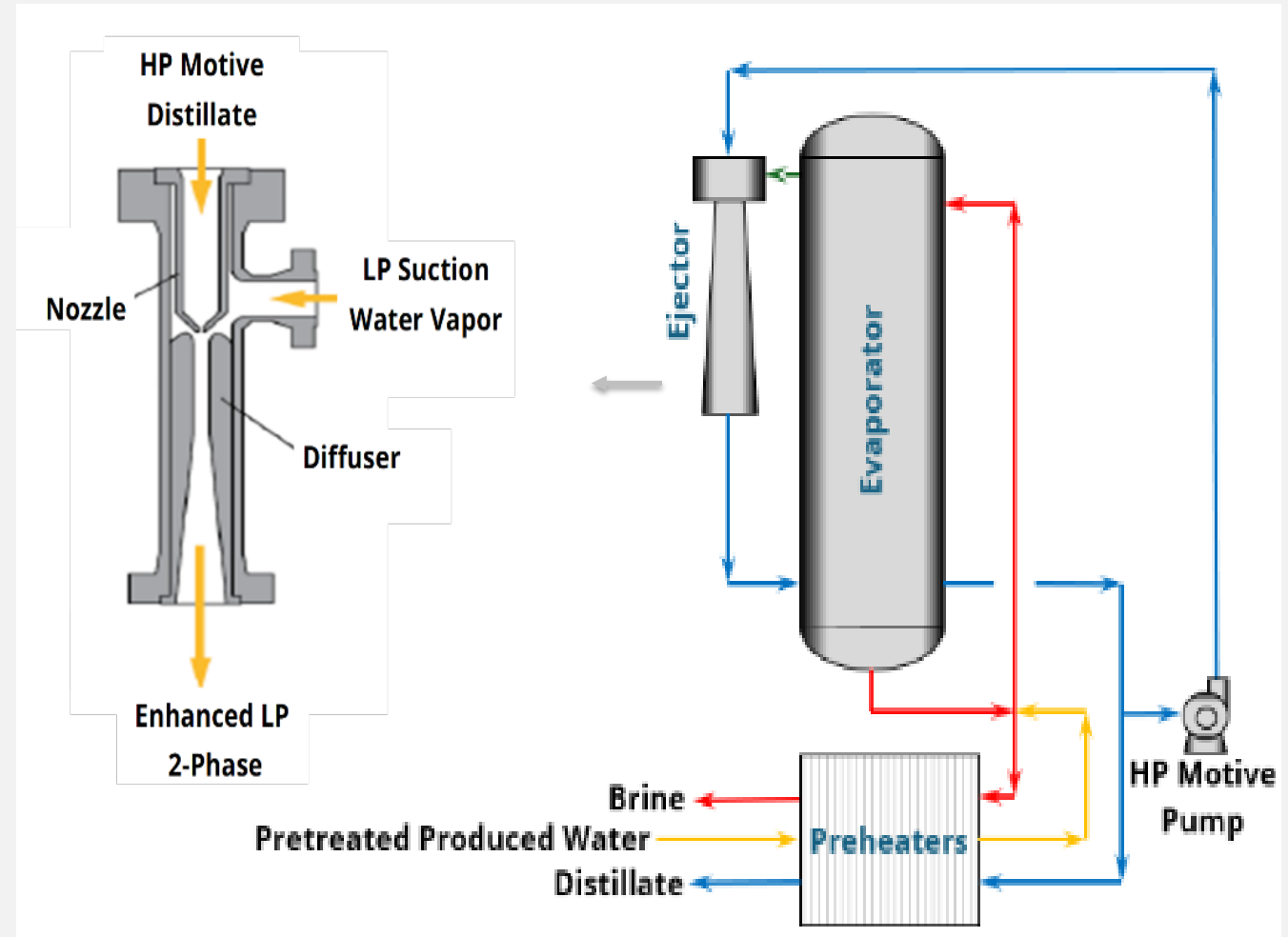


LEEDS Technology Description

- Thermal Desalination System Designed for Produced Water Treatment
- Liquid Motive-Gas Ejector Replaces Mechanical Vapor Compressor
- First US Patent Granted Aug 2021 (Pat. No. US-11097203-B1)

LEEDS Benefits

- Higher Operational Availability & Lower Maintenance
- All Electric & No Supplemental Heating Source Required
- Process Simplicity and Scalability



Design Overview

Key Information	
Scope	LEEDS Commercial Unit (15K BPD)
Produced Water FEED to LEEDS	<12% - 20+% Total Dissolved Solids (“TDS”) Pretreated Produced Water
MOC	2507 DSS, Hastelloy C276, 316L & 304 SS, CS with Coating Options
Products From LEEDS	Distillate Water <ul style="list-style-type: none">• 100 ppm or less TDS
	Brine Water <ul style="list-style-type: none">• 24% TDS Density Control & Conductivity• Near Atmospheric Evaporator• CIP System
Energy Target	<ul style="list-style-type: none">• 3 – 5 kWh/BBL (19 – 30 kWh/m³)

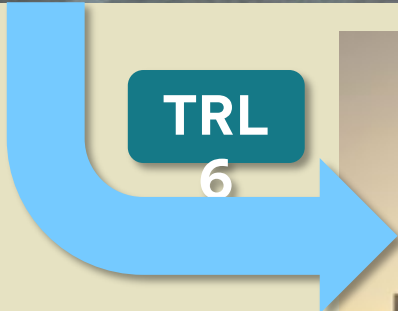


Design Improvements, TRL & Evolution to Commercial Unit



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- **2018–2019:** Technology Prototype Design.
- **2020–2022:** Pilot Unit #1:
 - 350 BPD prototype testing.
- **2023–2024:** Pilot Unit #2:
 - 350 BPD, 6-month field operation on 12–19% TDS produced water.
- **Present:** Commercial Unit
 - 15,000 BPD, FEED complete
 - Continuing design optimization



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Midland, TX
LEEDS Pilot Site



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Target Markets

Permian Produced Water

Non-Permian Produced Water

Semiconductor Manufacturing

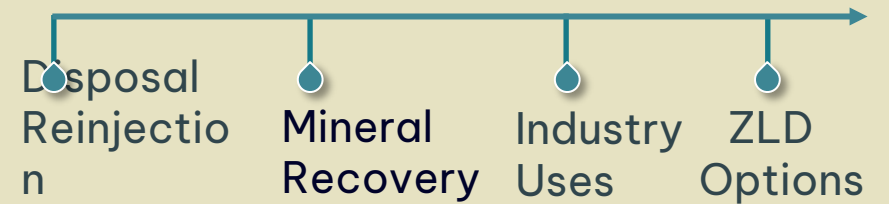


LEEDS Commercial Model

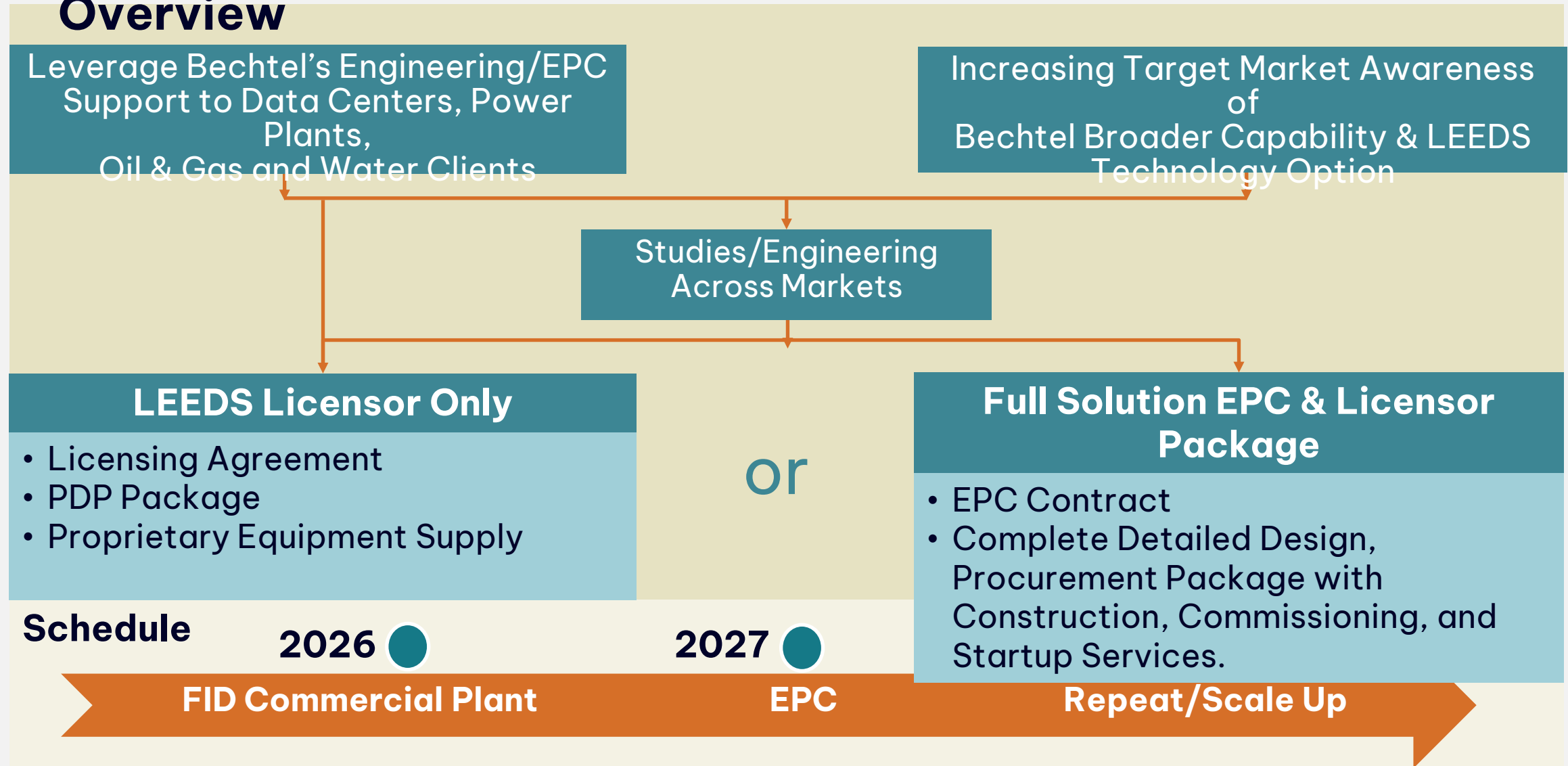
Distillate Water – Beneficial Uses



Brine Water



Go-To-Market Strategy & Schedule Overview



For More Information



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