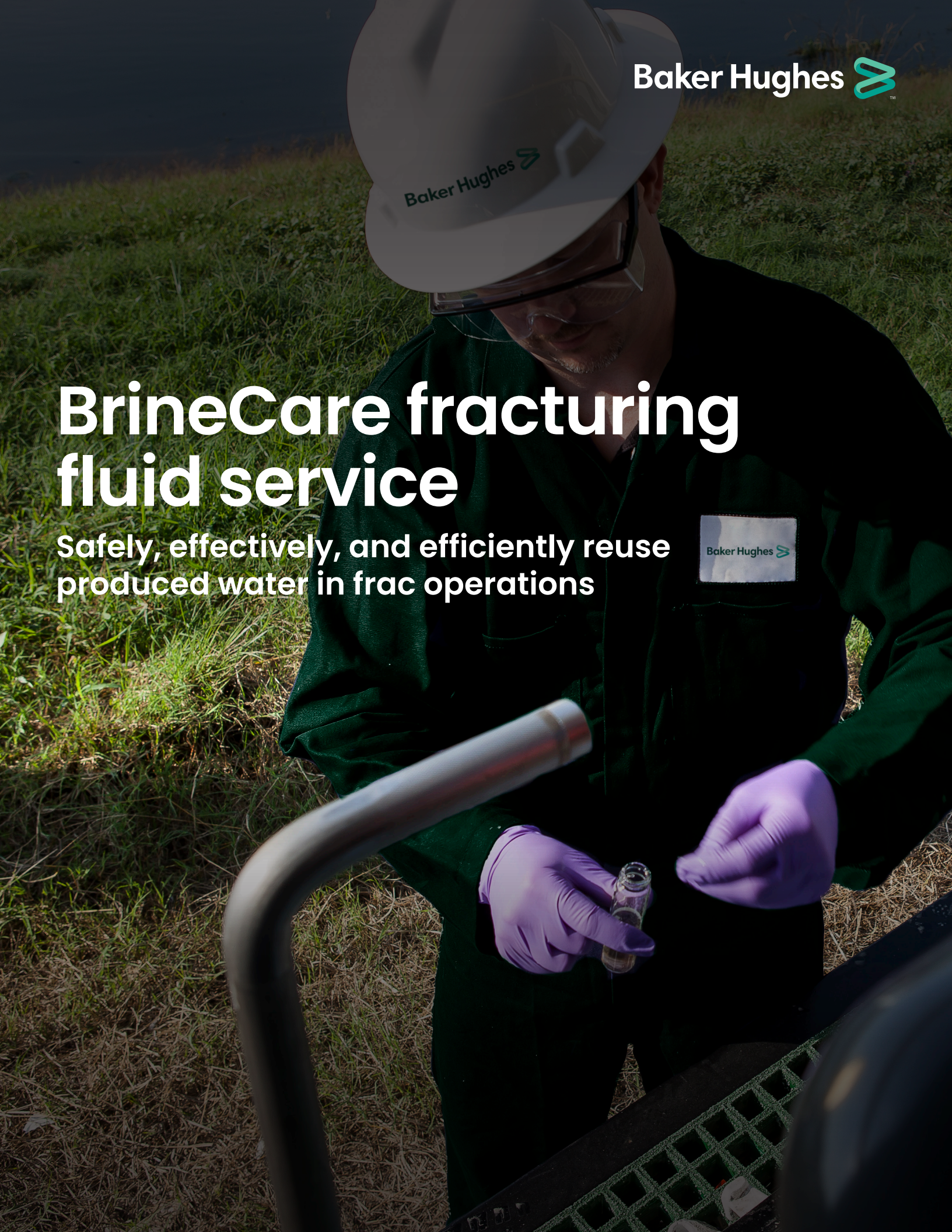


Baker Hughes 

# BrineCare fracturing fluid service

Safely, effectively, and efficiently reuse  
produced water in frac operations

Baker Hughes 





# Minimize freshwater acquisition costs while maximizing fracturing efficiency

Estimates place the average cost for North America freshwater sourcing and transportation for fracturing operations at more than USD 3/bbl. Even greater is the cost associated with the treatment, storage, and disposal of produced water. Clearly, a simple, effective means for reusing produced water in fracturing operations offers a significant cost savings opportunity for many operators.

With the BrineCare family of fracturing fluids, identifying the proper frac fluid system for use is as simple as gathering a sample of the produced water for analysis.

With this sample, Baker Hughes experts can quickly and efficiently determine the optimal BrineCare system based on the total dissolved solids in the water and the temperature of the targeted formation to be treated.

Baker Hughes has developed highly effective fracture fluids, and has used them in thousands of real-world fracturing operations. Our teams know how to turn your produced water into the effective fracturing fluid you need. And, if our screening identifies the need for any treatment of the water prior to application, our experts will develop a program to

treat the water just enough for reuse—striking the perfect balance between the highest-quality fracturing treatment and the most cost-effective water reuse program.

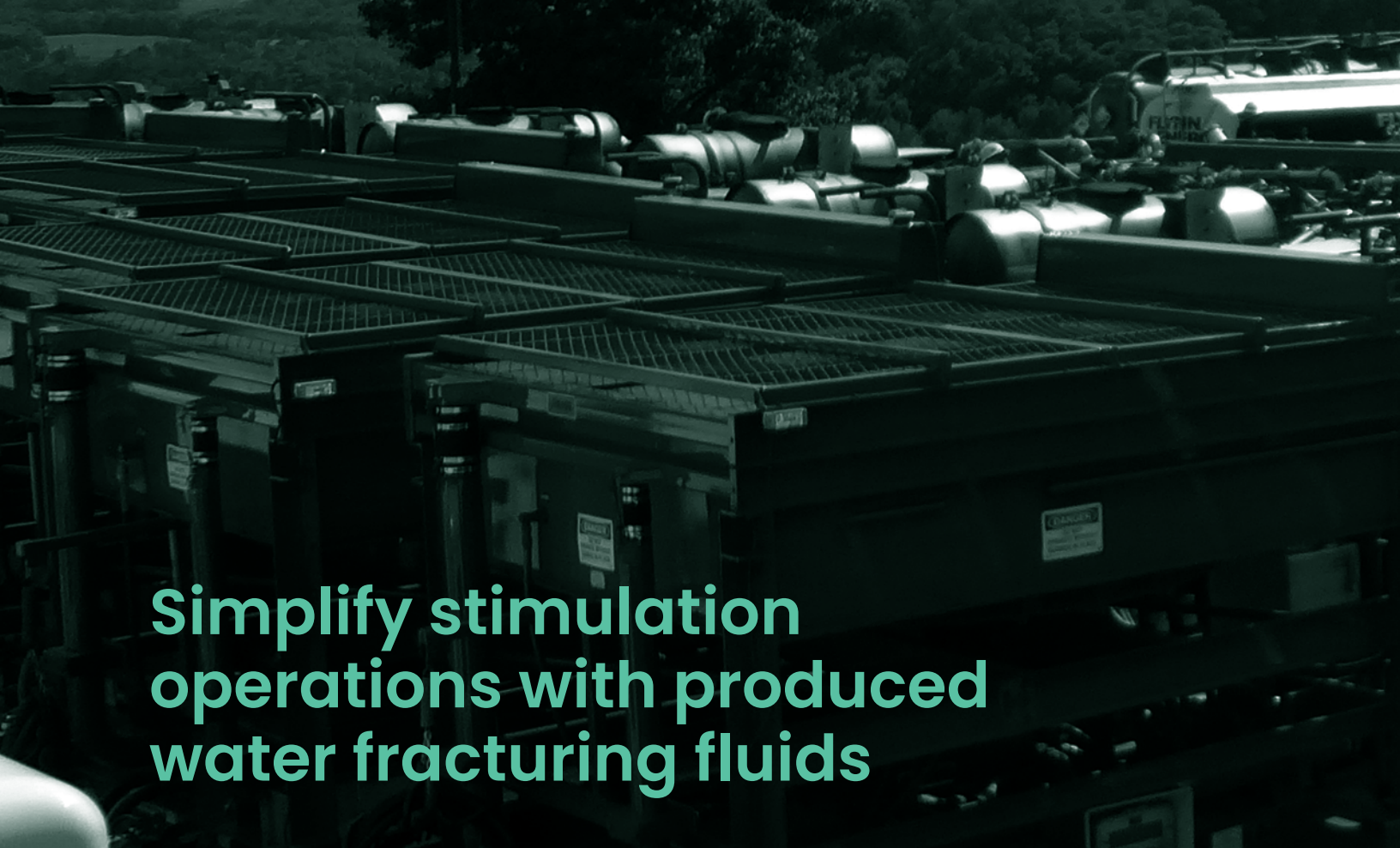
With these produced-water frac fluid solutions, you can minimize your HSE footprint, eliminate freshwater acquisition costs, lower your produced water treatment and disposal spend, and achieve superior frac fluid performance.



Identifying the proper frac fluid system is as simple as gathering a sample of the produced water.



Baker Hughes experts can quickly and efficiently determine the optimal BrineCare system.



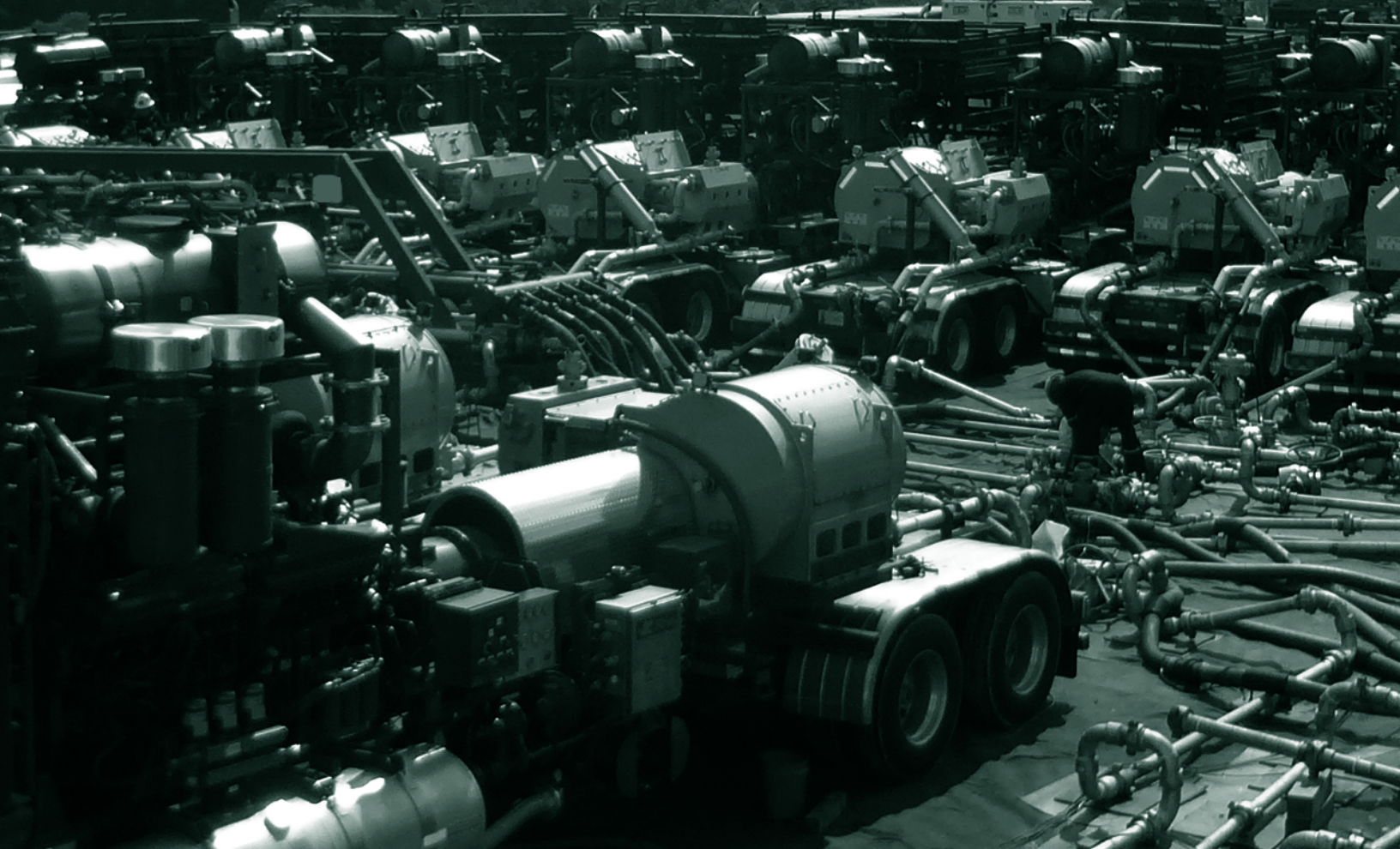
# Simplify stimulation operations with produced water fracturing fluids

The Baker Hughes **BrineCare™ service** draws from a suite of simple, easy-to-deploy fracturing fluids specifically engineered for fast, effective use in produced-water applications. Each of the four BrineCare frac fluid systems has been pre-engineered to ensure reliable performance with produced water across a specific range of total dissolved solids (TDS) and water temperatures.

BrineCare systems offer superior tolerance to mix waters, including brines, to help operators:

- Minimize produced-water treatment and disposal costs
- Eliminate freshwater acquisition and transportation costs
- Protect against delays due to freshwater shortages
- Ensure reliable stimulation performance
- Improve health, safety and environment (HSE) performance





TDS	75°F (24°C)	100°F (38°C)	125°F (52°C)	150°F (65°C)	175°F (79°C)	200°F (93°C)	225°F (107°C)	250°F (121°C)	275°F (135°C)	300°F (149°C)
300,000+	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines
250,000	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines
200,000	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines
150,000	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines
100,000	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines
50,000	Blue	Blue	Green	Blue diagonal lines	Green diagonal lines	Yellow diagonal lines	Orange diagonal lines	Orange	Red diagonal lines	Red diagonal lines

- BrineCare I & II application range
- BrineCare III application range
- BrineCare IV application range
- Dependent on divalent content
- Additional gel stabilizer required
- Additional testing required

Each BrineCare system is designed to be deployed within a specific temperature/TDS range—allowing Baker Hughes engineers a simple, reliable method for delivering the most effective frac fluid system for each application.

# Water Reuse in Fracturing:



# CHALLENGES

**3+**  
**Billion**

Barrels of water used by the oil and gas industry in fracturing operations



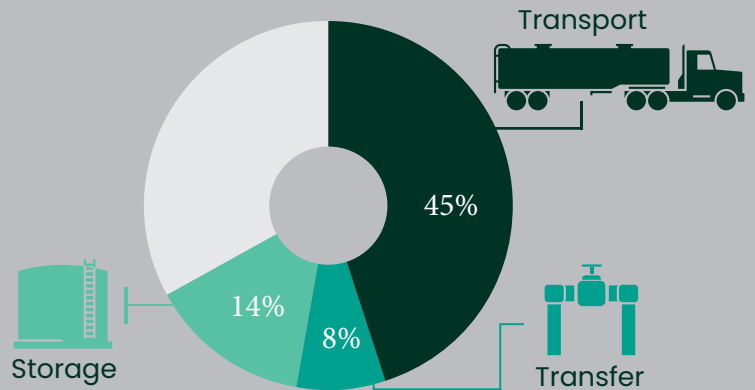
**25+**  
**Billion**

Barrels of water produced by the oil and gas industry

**23+**  
**Billion**

Amount in USD spent acquiring, storing, treating, and disposing of water

## Freshwater Costs



A significant portion of an operator's freshwater acquisition costs are related to transportation, transfer, and storage

**Less Than**

Amount of produced or flowback water reused in frac operations

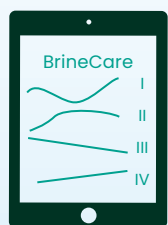
**2%**



# By the Numbers

# SOLUTIONS

**4**  Unique BrineCare fluid systems



**50K–300K+ mg/L**  
TDS range for BrineCare systems



**USD 800,000**  
saved on one project in freshwater acquisition costs



**300°F**  
Maximum BrineCare temperature



**40,000+ bbl**  
of fresh water eliminated on one job alone

