



Taking a Proactive Approach to Water Recycling in the Barnett Shale

Jay Ewing

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Outline

- Devon overview and current activity
- Overview of two waste waters in the Barnett
- Devon's proactive approach to water recycling
- Future activity in water recycling

Devon Energy Overview

Who We Are and
Current Activity

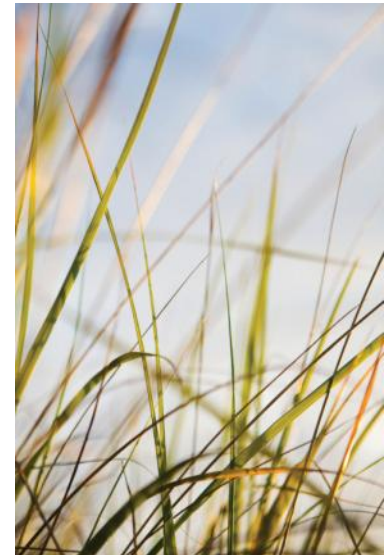
Who We Are

Oil and gas exploration and production company

Leading U.S.-based independent gas producer

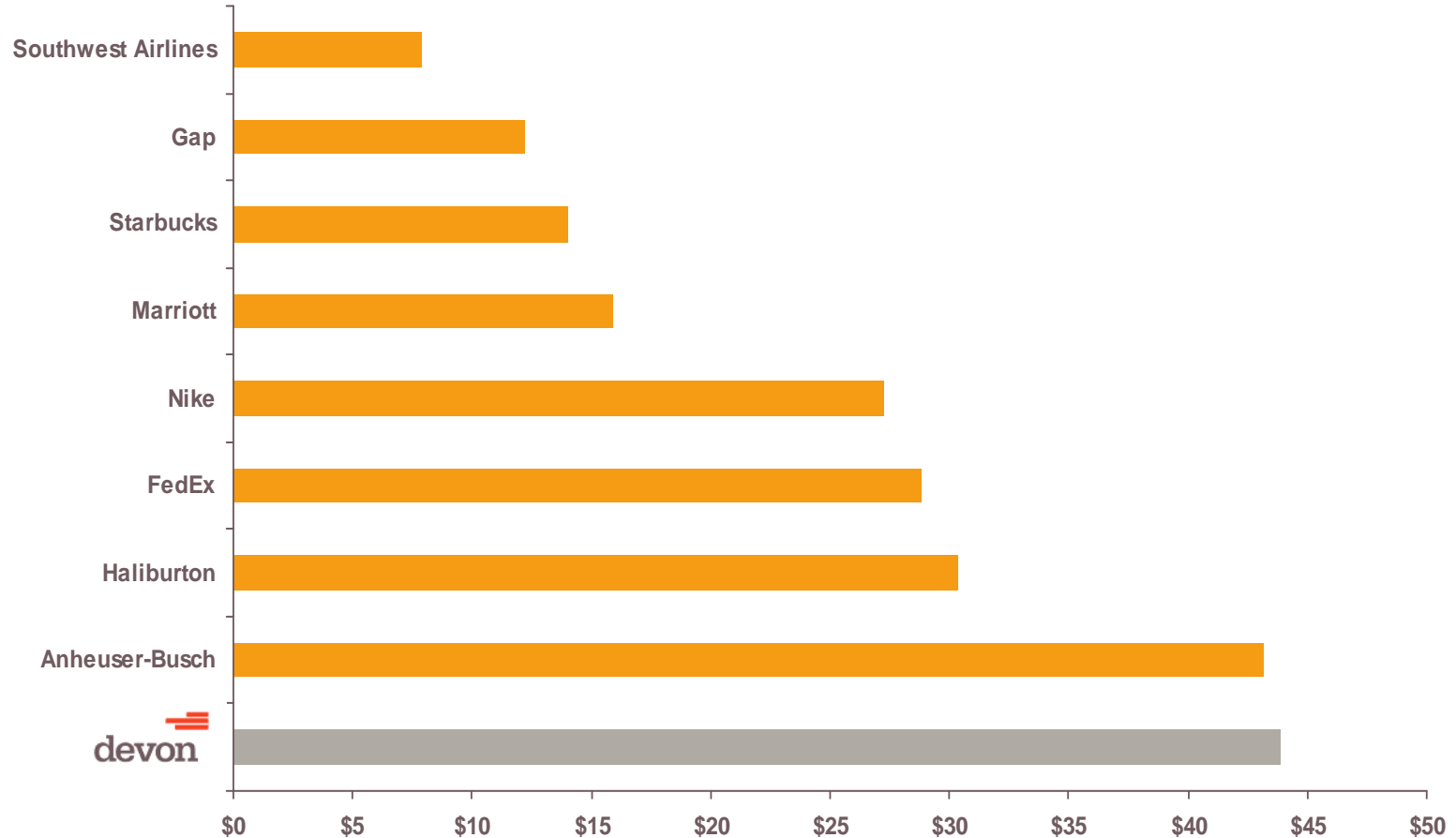
Among the largest natural gas processors

Actively involved in strategic acquisitions



Larger Than You Might Think... Enterprise Value

US\$, Billions

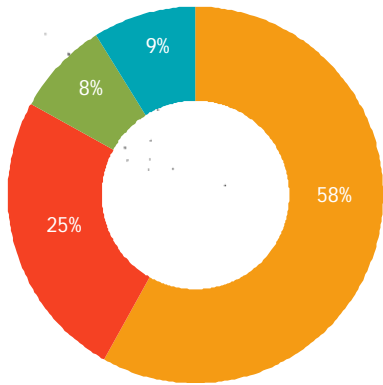


Source: Enterprise Value as stated on Yahoo! Key statistics on February 6, 2008.

Devon's Worldwide Operations

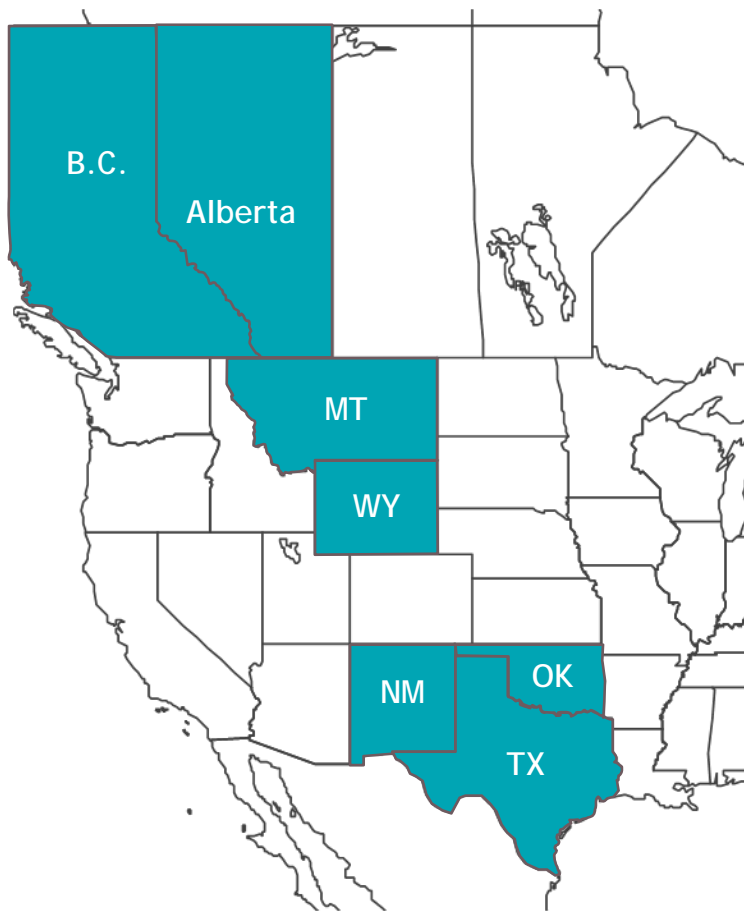


Q4 '07 Production



■ U.S. Onshore ■ Canada ■ International ■ Gulf

North America Onshore Position



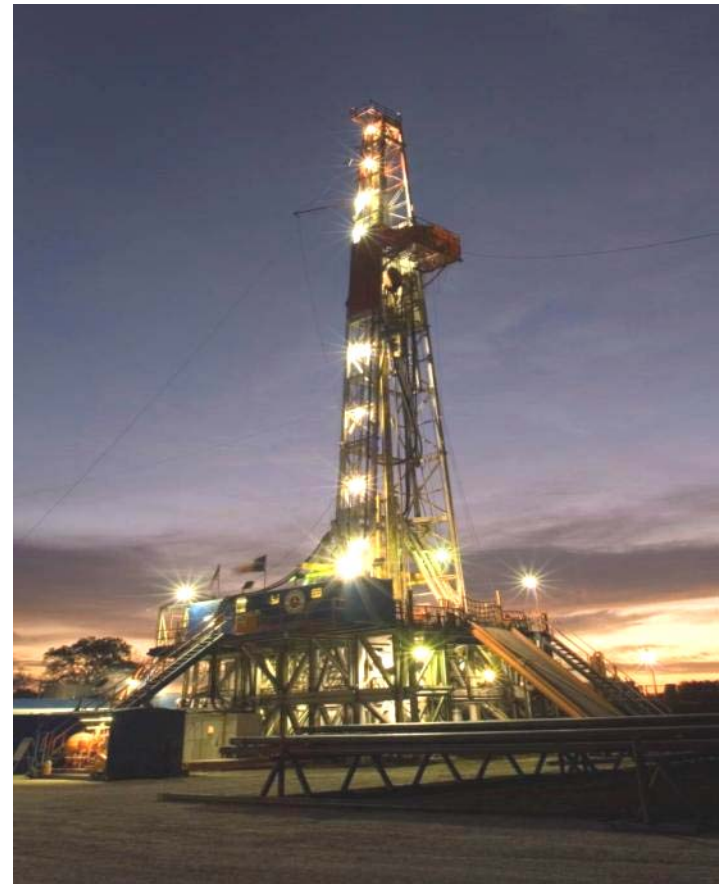
Alberta / B.C.	Largest U.S.-based independent producer Net acreage: $\approx 8,111,000$ 2008 plans: Drill ≈ 740 wells
Montana	2 nd Largest independent gas producer Net acreage: $\approx 1,145,000$ 2008 plans: Drill ≈ 50 wells
Wyoming	Net acreage: $\approx 623,000$ 2008 plans: Drill ≈ 230 wells
New Mexico	Largest independent gas producer 3 rd Largest independent oil producer Net acreage: $\approx 316,000$ 2008 plans: Drill ≈ 125 wells
Oklahoma	Net acreage: $\approx 295,000$ 2008 plans: Drill ≈ 175 wells
Texas	Largest independent gas producer Net acreage: $\approx 1,863,000$ 2008 plans: Drill ≈ 800 wells

Major player throughout western U.S. and Canada

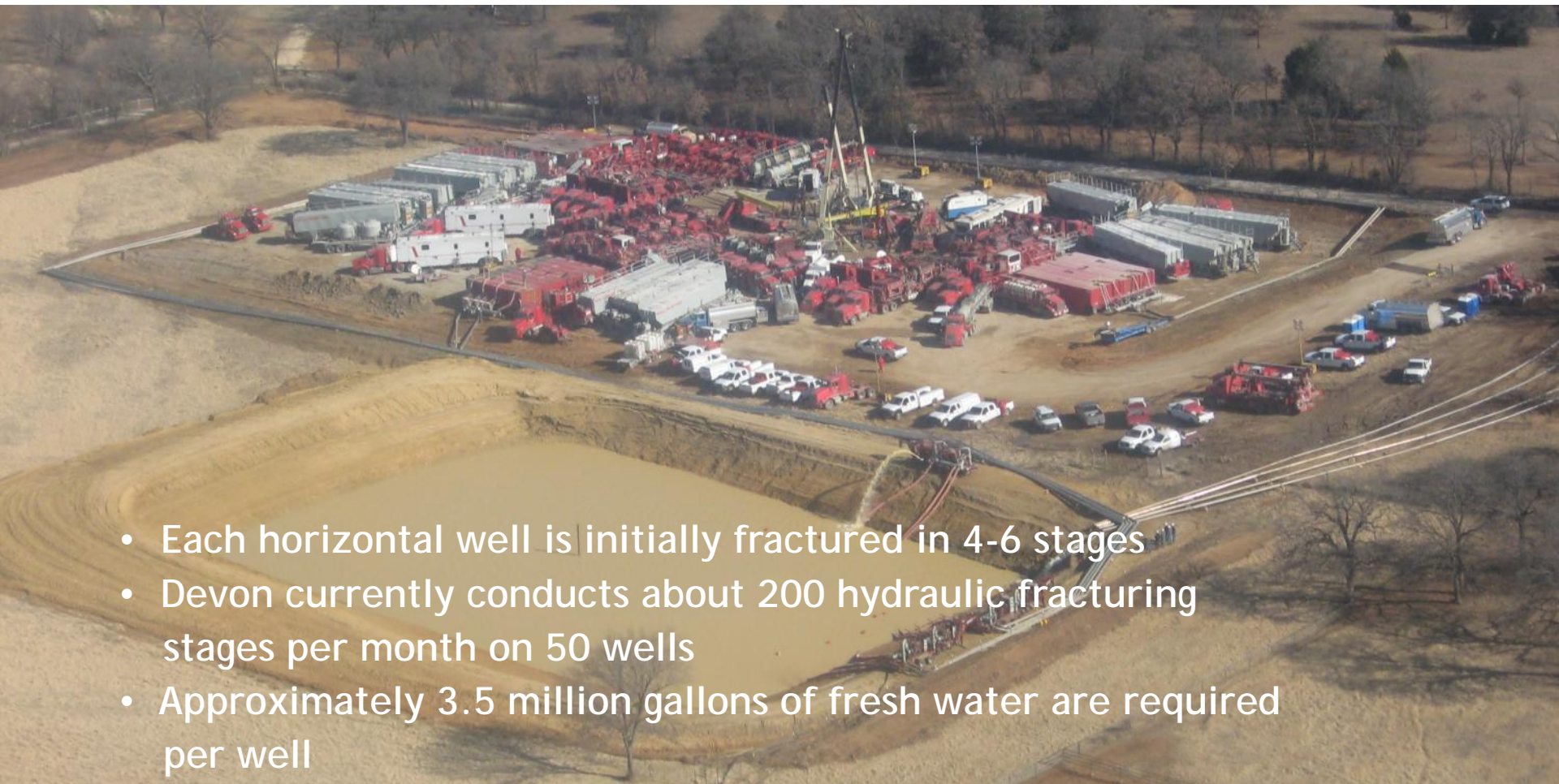
Current Activity in Fort Worth Basin Drilling

Producing wells:	≈ 3,200 wells
2005 activity:	Drilled 268 wells
2006 activity:	Drilled 383 wells
2007 activity:	Drilled 522 wells
2008 activity:	Project 600 wells

Devon's activity accounts for approximately 25% of the total drilling activity in the Barnett Shale.



Current Activity in Fort Worth Basin Fracturing

- 
- Each horizontal well is initially fractured in 4-6 stages
 - Devon currently conducts about 200 hydraulic fracturing stages per month on 50 wells
 - Approximately 3.5 million gallons of fresh water are required per well

Trifecta Frac

Johnson County



Two Different Waste Waters in the Barnett Shale

Overview

Flow-back vs. Produced Water

Flow-back Water

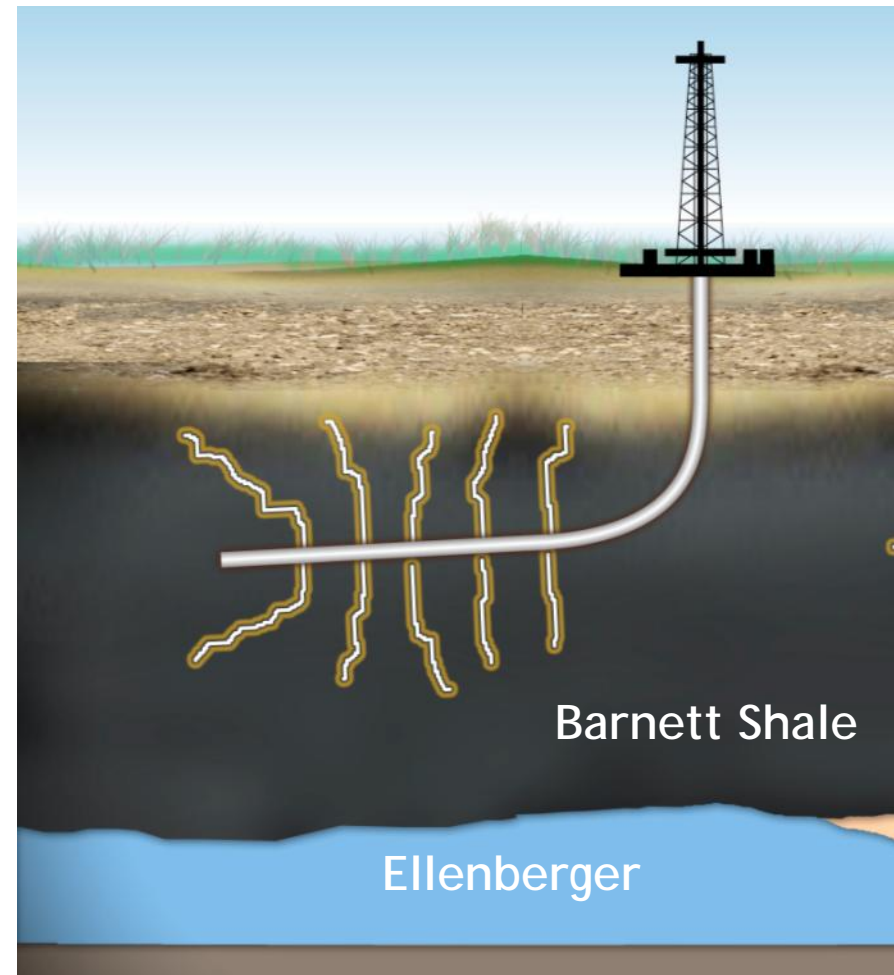
- Water recovered immediately following the fracture stimulation of the Barnett
- Chloride content begins near zero then rises to 40-50,000 ppm
- 20-30% of the volume pumped during frac is recovered in first 2-3 weeks following the frac
- Devon is recycling 90-100% of the flow-back water recovered



Flow-back vs. Produced Water

Produced Water

- Water pre-existing in the Barnett or the formation below, Ellenberger
- Chloride content 60,000 to 100,000 ppm
- Some amount of water is produced for life of the well
- Amount produced varies with each well from near zero to 400-500 bbls/day
- Disposed by re-injecting into the Ellenberger formation



The background features a series of overlapping rectangular blocks in shades of green and teal. A light green block is at the top left, partially overlapping a darker green block below it. A teal block is at the bottom left, overlapping the dark green block. The text is centered within the light green block.

Devon's Proactive Approach to Water Recycling

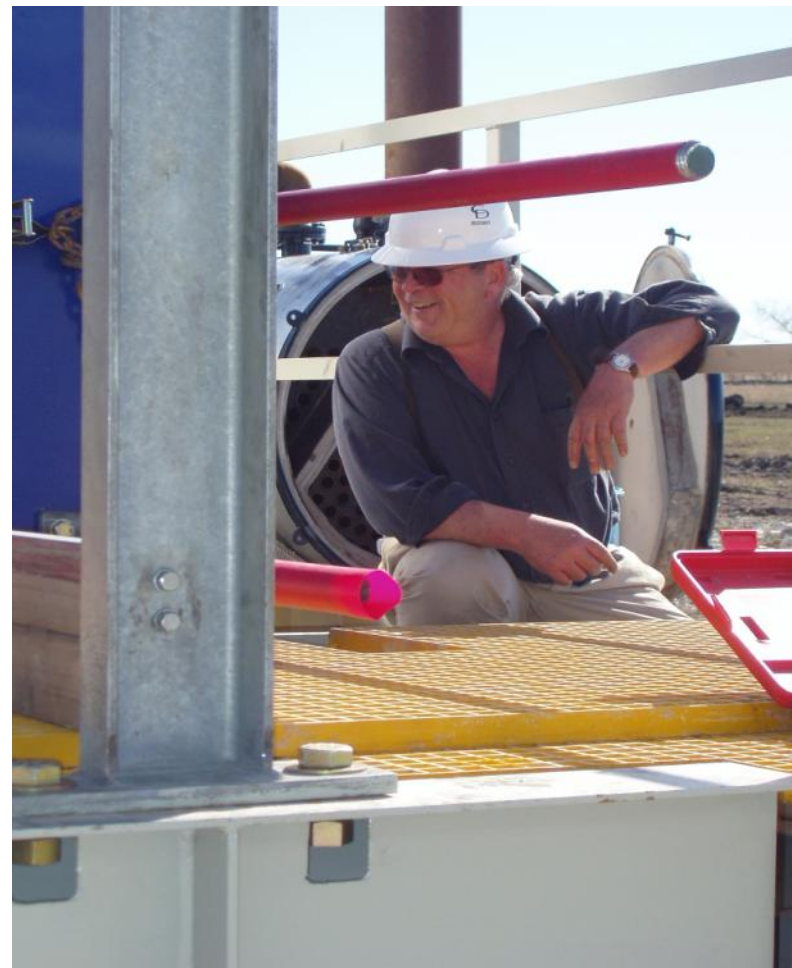
Devon: Proactive Approach to Water Recycling

- Piloted two technologies:
 - Mobile heated distillation system
 - Sequential filtration/ reverse osmosis
- Actively participates in a Barnett Shale industry group:
 - Barnett Shale Water Conservation and Management Committee

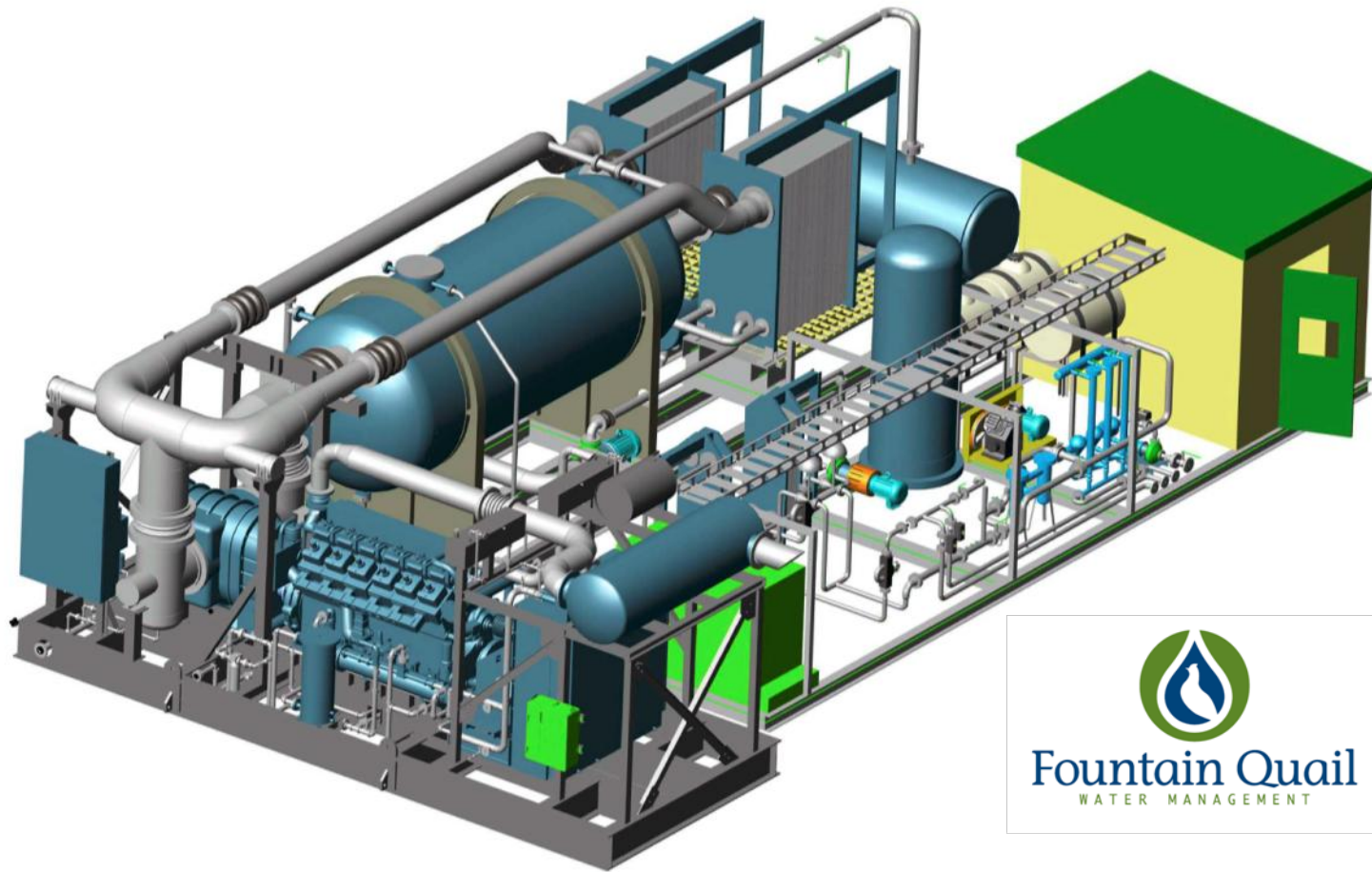


Mobile Heated Distillation System (NOMAD)

- Technology approved by the Railroad Commission of Texas in 2005
- Implemented in 2005 in partnership with Fountain Quail Water Management
- Vaporizes the frac flow-back wastewater and condenses it into clean, distilled water
- Remaining concentrated water removed for disposal or utilized for controlling pressures in another well completion as a “kill fluid”



NOMAD Water Distillation Unit



Johnson County Site



NOMAD Water Recycling Results

- 5 million barrels processed (210 million gallons) processed
- 4 million barrels of distilled water generated
- 50 wells fraced with recycled water

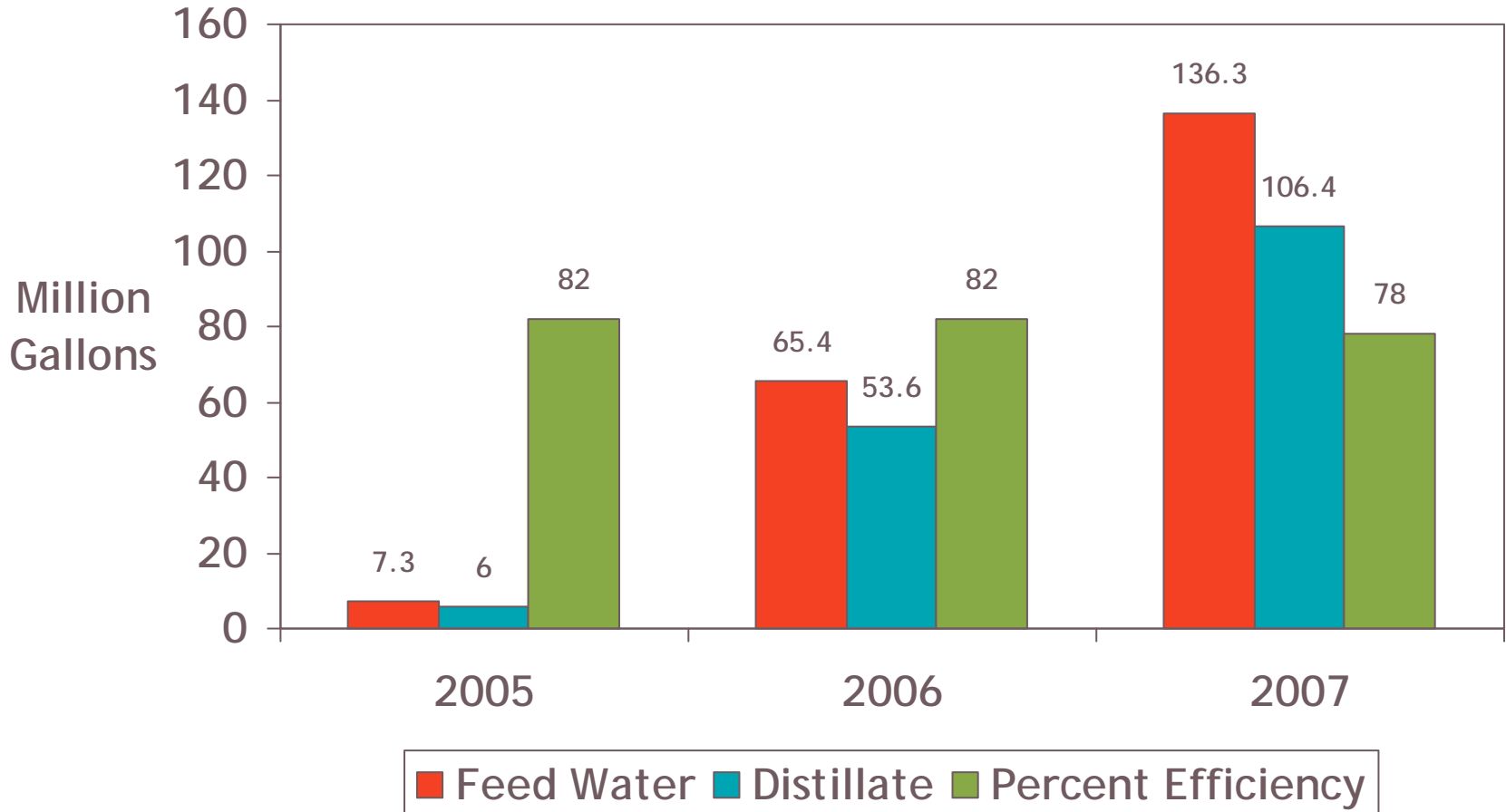


Sequential Filtration Reverse Osmosis

- Approved for pilot program by the Railroad Commission of Texas in 2006
- Tested two systems in 2007
- Limited capability at this time
- Low efficiency
- Further testing required



Water Processed by Year



January 2008 Cost & Production Report

Feed Water	338,974 Bbls
Fresh Water Produced	271,179 Bbls
Concentrate Produced	67,795 Bbls
Efficiency	80%
Total Cost of Processing	\$874,552
Trucking Cost	\$491,512
Concentrate Disposal	\$135,590
Cost per BBL	\$4.43/Bbl
Value of Fresh Water	\$366,091
Net Disposal Cost	\$3.35/Bbl

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Future Activity in Water Recycling

Barnett Shale Water Conservation and Management Committee (BSWCMC)

- Committee formed in 2006
- Facilitated by Dr. Tom Hayes, GTI
- Comprised of 14 operators in the Barnett Shale
- Meet monthly to discuss emerging technologies



BSWCMC Activities

- Reviewed presentations on six recycling technologies
- Reviewed presentations from Tarrant Regional Water District and Brazos River Authority on water availability
- Completed industry water use survey for submission to Texas Water Development Board for study completed in 2007
- Facilitated fracturing expert panel focused on water qualities required for completing a successful Barnett frac

BSWCMC Activities

- Submitting proposal to Research Partnership to Secure Energy for America (RPSEA) for assistance in future research involving the following participants:
 - University of Texas
 - Bureau of Economic Geology
 - Illinois Institute of Technology
 - Texerra
 - GeoPure/Texas A&M
 - Gas Technology Institute



Conclusions

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- Conservation, recycling and reuse of water continue to be top of mind in the Barnett Shale region
- The ability to recycle “flow-back” has increased dramatically in a very short time through a proactive approach by companies like Devon and Fountain Quail
- As current technologies advance and future technologies emerge, the opportunities are unlimited for gas producers to lead the way in effective stewardship of our region’s most valuable resources

Thank You.