



## PART 1: MACRO MARKET TRENDS & ANALYSIS

# Economic Benefits of Oil & Gas Industry J.S. Statistics

- Total Jobs
  - Oil and natural gas industry supports 9.2 million American jobs
  - = 5.2% of the total employment
- Labor Income
  - Oil & gas labor income is estimated to be \$558 billion
  - = 6.3% of the national labor income total.
- Percentage of GDP
  - Oil & gas total value added contribution to the national economy was over \$1 trillion
  - = 7.5% of U.S. GDP in 2007.

Source Colorado Oil & Gas Association

# ENERGY INDUSTRY STATISTWOSTLD DAILY SUPPLY

Daily Supply World Oil Markets (2011)		
	Total Oil Production	
Country- Producer	MMbpd	% of Total
1Saudi Arabia	11.2	12.86%
2Russia	10.2	11.71%
3United States	10.1	11.60%

4China

# ENERGY INDUSTRY STATISTWOSTLD DAILY DEMAND

Daily Demand World	Oil Markets	(2011)
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	Total Oil Consumption	
Country- Consumer	MMbpd	% of Total
1United States	18.9	21.43%
2China	9.8	11.11%
3Japan	4.5	5.10%
4India	3.4	3.85%
5Russia	3.1	3.51%
6Brazil	2.6	2.95%
7Saudi Arabia	2.6	2.95%
8Germany	2.4	2.72%
9Canada	2.3	2.61%
10South Korea	2.2	2.49%
Total	88.2	=

Source U.S. Energy Information Administration







## HUGE MARKET OF PRODUCED OILFIELD WATER

In 2007, Total Volume in U.S. of Produced Oilfield Water was 21 Billion Barrels

Equates to 57.4 million barrels per day

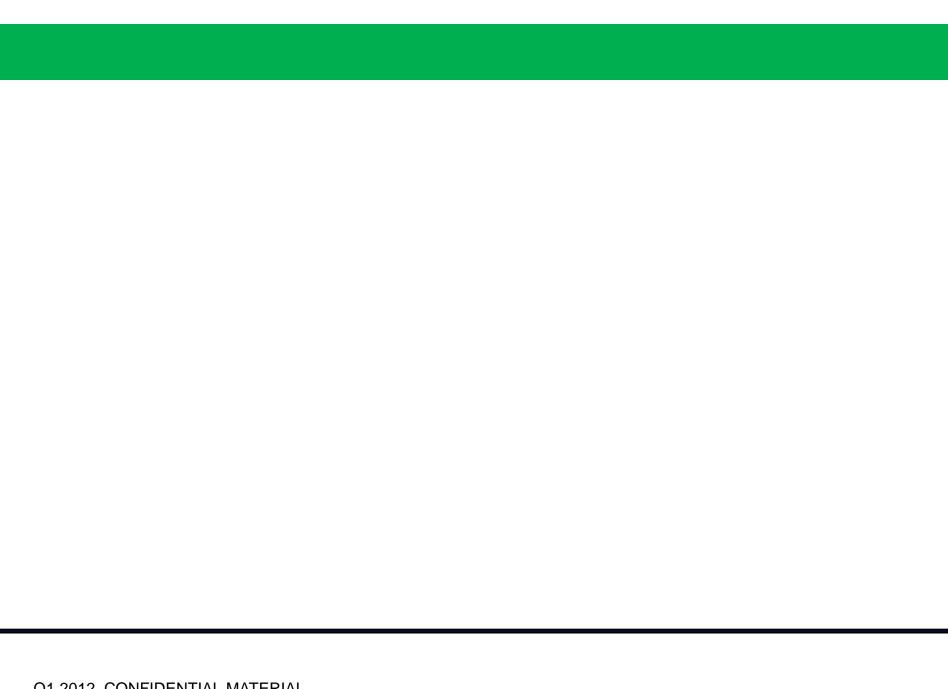
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## HYDRAULIC FRACTURING REQUIRES MILLIONS GALLONS WAT

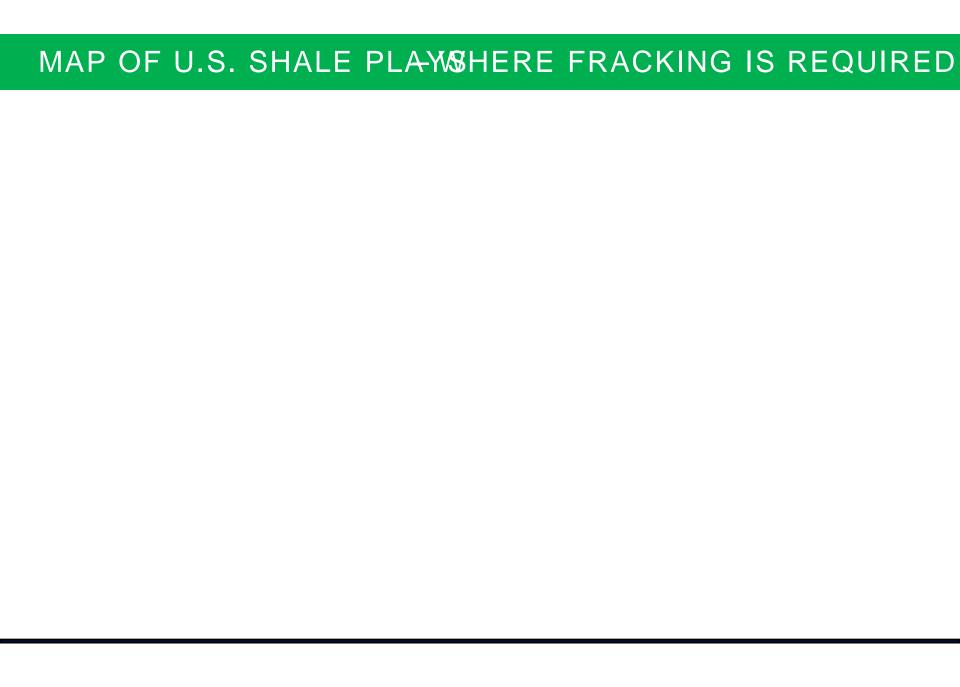
Hydraulic fracturing is a proven technological advancement, allowing natural gas and oil producers to safely recover natural gas and oil from deep shale formations

- Stimulation to unlock the oil & gas that is in the rock itself
- Been used safely for more than 60 years (since 1947) in more than a million wells.
- Involves using water pressure to create fissures, or fractures, in deep underground shale formations to allow natural gas and oil to flow.
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#### ADVANTAGES OF-RISING PRODUCED OILFIELD WATER

## The Problem?

E&P companies currently face management problems in not only getting rid of their produced oilfield water but also meeting their heavy demand for suitable water for fracking operations.

## The Solution?

Oil and gas companies, by **b** b to the ir produced oilfield water to a water treatment company, gain four set planatory benefits:

Reduces the E&P Company's-of-pocket cash cost of getting rid of their brine (upwards of \$3.50/Barrel)

Avoids management problems (and time delays) in seeking permits for and costly drilling of saltwater disposal wells

Provides a new source of water suitable for frac fluids

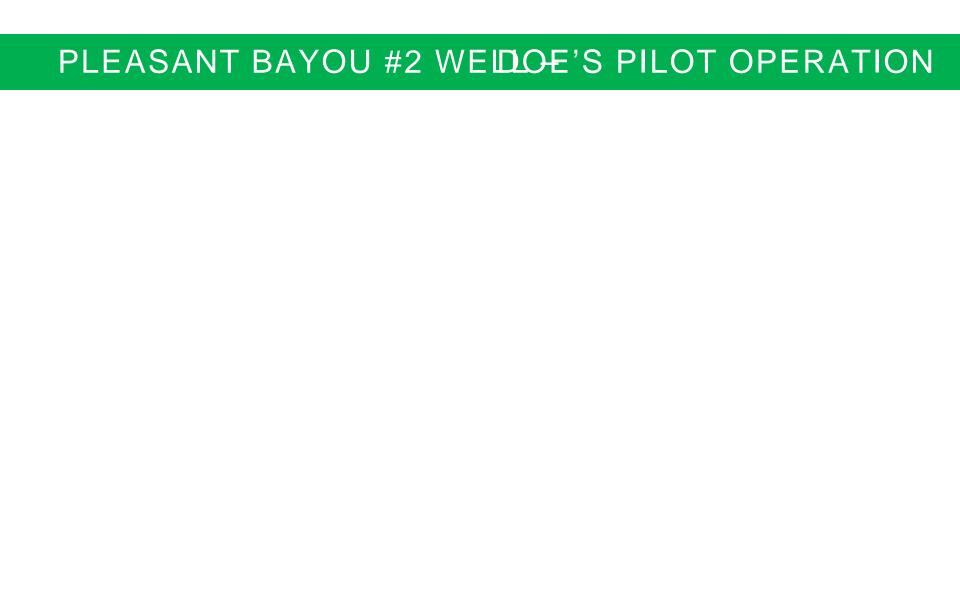
Political benefits of reusing produced oilfield water

#### GEOTHERMAL ADVANTAGES AS RENEWABLE ENERGY SOUF

# As an alternative energy source, geothermal energy has many advantages and benefits

- Virtually emissionfree
  - Binary cycle plants are completely closed systems and produce virtually no pollution
- BaseloadPower
  - Produces continuously deliverable base load power with a capacity factor greater than 95%. Unlikewind and solar, which are intermittent with a capacity factor of only around 20-35%, ageothermal plant can run continuously, generating baseload power, making it direct competition for coal
- Small Environmenta Footprint









## PART III GROWTH INDUSTRY & FINANCIAL ANALYSI

Water is becomingever more valuable in the oil & gas industry, marked by explosive demand from horizontal drilling and hydraulic fracturing to increase oil &gasproduction

- Frackingin shalefields, a <u>processrequiring millions of gallons of water per well, per frack-job</u>, is revolutionizing the landscape of the Americandomestic energysector
- Usedin over one million wells in the United Statesfor more than 60 years, fracking hasbeen successfully used to retrieve more than 7 billion barrels of oil andover 600 trillion cubicfeet of naturalgas
- In 2010 alone, the consumers urplus from shale gas production was worth over \$100 billion, in addition to creating a remarkable energy boom and hundreds of thousand of jobs in the U.S.

# MONTHLY REVENUESRAC WATER SALES

Summary Financial Model: Monthly Gross Revenues from Treatment & Sale of Frack (Does NOT Deduct Costs or Expenses)

Financial Inputs
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Daily production of Water (Barrels)	10,000
Injection Percentage	40.0%
Water Sale Percentage	60.0%
Production Days in Month	25
Barrels Treated per month	250,000
Oil-Cut Percentage (% per Barrel of Water)	1.0%
Price of Oil (per barrel)	\$85
Revenue per barrel of Brine Offaken	\$0.25
Sale Price per barrel of Treated Frack Water	\$1.50

#### Monthly Gross Revenues

Inbound Brine Revenue	(Total Barrels X off-take price) \$75,000
Oil-Cut Sales	(Barrels treated X oil-cut % X oil price) \$212,500
Treated Frac Water Sales	(Barrels treated X sales % X frac price) \$225,000
Total MonthlyGrossRevenues	<u>\$512,500</u>

(NOTE: Blue inputs are sensitive)

## MONTHLY REVENUESEOTHERMAL ENERGY

Summary Financial Model: Monthly Gross Revenues from Geothermal Energy (Does NOT Deduct Costs or Expenses)

#### Financial Inputs

Daily production of Water (Barrel	s)	25,000
Production Days in Month		28
Production Hours in Month		672
Power Generated (in MWh)	(Based on Pleasant Bayou #2)	1.25
Power Sale Price (per MWh)		\$50

#### Monthly Gross Revenues

Geothermal Energy Sales (Production Hours x MWh x pric \$42,000 Total Monthly Gros Revenues \$42,000

(NOTE: Blue inputs are sensitive)

## COST STRUCTURESRAC WATER & GEOTHERMAL

## Main Categories of Costs

- Frac Water Operation
  - Saltwater Disposal Well Permitting, Drilling, Tanks & Land (\$3.5M)
  - Trucking/Transportation of Water (depends on proximity and location)
  - Water treatment costs (per barrel)
  - Injection costs per barrel (for notmeatable brine)
- Geothermal Energy Operation
  - Project Cost per Installed MW (\$3M)
  - Royalty costs (2\%%)

#### SUMMARY: MAXIMIZE ENERGY OUTPUT FROM WATER

#### **Financial Metrics**

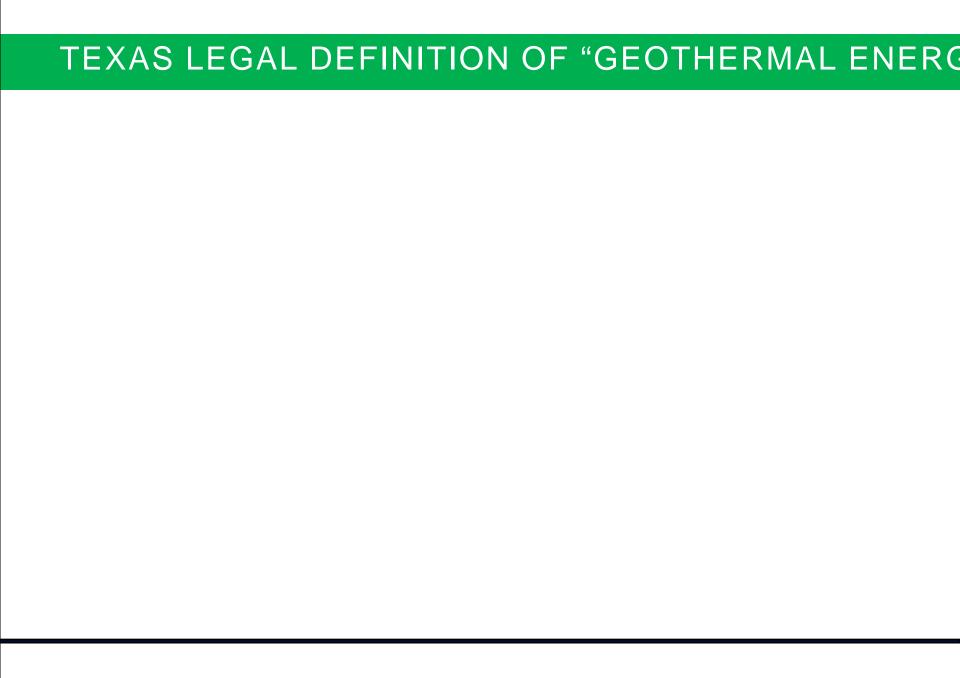
- Sales of Dry Natural Gas & Oil Productie Natural gas & oil production sales from existing reserves & production from acquired fields and wells.
- Geothermal Gas-Each barrel of water produced contains roughly 4200 scf of natural gas, from which electricity will be generated.
- Geothermal Energy Baseload Electricity generated from hot water produced in wells (upwards of 2 MWs per well).
- Sales of Frac Water Singlewell hydraulic fracturing jobs in Eagle Ford field require about 10 million gallons of water, creating heavy demand, amounting to market prices of -\$1.00 \$2.00 per barrel of frac water. Each well can produce material barrels of water per day.
- Off-Take Inbound Brine RevenuesE&P Operators pay to get rid of their unwanted brine
- Oil-Cut Revenues-Separation & sale of edut from Brine
- Federal Production Tax Credit\$22 per MWh of power generated.
- Exemption from 7.5% Texas Severance + Exor gas incidentally produced in association with geothermal.
- Reduction of Operating CostsReduce its operating costs by lizing existing oil and gas wells and infrastructure. Rather than drilling new wellsender existing wells via less expensive workover rigs (rather than more expensive full drilling rigs).
- Higher IRRs

## PART IV APPEND+XSELECTED ENERGY INDUSTRY METR

The following slides focus on selected metrics analyzed in oil & gas indust{y € à (]c`]cš]}`]

## TEXAS LEGAL DEFINITION OF "MINERALS"

Texas Geothermal Resources Act of 1975 Section 141.002



## INDUSTRY DEFINITION OF "RESERVES"

Since castilow source is subject to depletion, analysis must include review of applicable Reserves

Example

## GOVERNMENT SEC DEFINITION OF "RESERVES"

# To prevent overbooking of Proven Reserves, SEC regulates disclosures. New rules effective January 1, 2010.

#### **Pricing**

•Old Rules: Yearend price

•New Rules: First day of month for each of last 12 months, simple mathematic average

#### **Definition of Proved**

•Old Rules: Direct contact with a reservoir via flowing well test

•New Rules: May use new technology if such technology has been demonstrated empirically to result in

reliable conclusions

#### Full-Cost Ceiling Test

•Old Rules: Compare ceiling to carrying value using yead price, or subsequent price if needed to avoid

impairment

•New Rules: Compare ceiling to carrying value using manth historic average price No revision for

## PETROLEUM ENGINEERING RESERVE REPORTS

Petroleum Engineering Reserve Reports (often referred to as "Summary of Reserves & Revenue") provide :

- Production quantities and volumes from wells
  - Considers depletion curves
  - Considers technical & engineering analyses of properties
  - •Considers Reserteroduction Ratios (Proved Reserve Additions ÷ BOE Produced)
- Reserves; and

# SEC VALUATION FORMULA OF RESERVES

SEC P-1/10 Value of Reserves

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# OIL & GAS INDUSTRY VALUATION MODEL

Two Main Valuation Approaches

- Income Method
  - Discounted cash flows

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## U.S. GAAP ACCOUNTING OF F&D COSTS

Under GAAP, oil companies can choose from two methods to account for Finding & Development Costs (F&D)

- Successful Efforts
  - •Permits writeoff of F&D expenses against profits until Reserves become Proven. Dry Hole costs are expensed. Once Reserves are Proven, associated F&D Costs can be capitalized.
- Full Cost
  - Capitalize all exploration spending, whether dry hole or successful
  - •Is less conservative method (because can defer some costs)

## **CONTACT INFORMATION**

## For Further Information, Contact

StevenD. Erdahl

Founder& CEO

GreenTechPetroleum,LLC

Denver, Colorado

Phone 303/3247152

Email <u>stevenerdahl@gtrenewablescom</u>

Website <u>www.greentechpetroleumcom</u>

## **ERDAHL BIO**

#### Steven D. Erdahl

CPA, J.D., LL.M. (Tax), M.B.A., CVA Board Certified Tax Law Texas Board of Legal Specialization

Diverse Experience - Accounting, Tax, Law & Finance: Steven Erdahlis Green Tech's Founder and CEO responsible for implementing and giving direction and leadership toward achieving the Company's strategic goals and objectives. He is an attorney (Texas), CPA(Texas), CVA(National Association of Certified Valuation Analysts) and entrepreneur with over 20 years of experience in accounting, tax, law and finance. He is also Board Certified in Tax Law by the Texas Board of Legal Specialization. Mr. Erdahl's experience includes public accounting and private law practice, as well as legal and corporate finance executive positions in Dallas with Oryx Energy Company (now Anadarko Petroleum). He has a heavy interestional bacf2(m)-6()) TJ @nto(e) V20(45) (120)