Economic Benefits of Oil & Gas Industry – U.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 STATISTICS – WORLD DAILY SUPPLY

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

ENERGY INDUSTRY STATISTICS – WORLD DAILY DEMAND

Daily Demand – World Oil Markets (2011)

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

Source: U.S. Energy Information Administration

2011 U.S. PRIMARY ENERGY USE BY SOURCE

2011 U.S. ENERGY CONSUMPTION BY SOURCE & SEC

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
-

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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TREATMENT & SALE OF FRAC WATER

MAP OF U.S. SHALE PLAYS – WHERE FRACKING IS REQUIRED

FRACKING IN SHALE FORMATIONS

ADVANTAGES OF REUSING 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 offloading their produced oilfield water to a water treatment company, gain four self-explanatory benefits:

- Reduces the E&P Company's out-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 SOUR

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

- Virtually emissionfree
  - Binary cycle plants are completely closed systemsand produce virtually no pollution
- BaseloadPower
  - Producescontinuously deliverable base load power with a capacity factor greaterthan 95%. Unlikewind and solar,which are intermittent with a capacity factor of only around 20-35%, ageothermal plant can run continuously, generatingbaseload power, makingit direct competitionfor coal
- Small EnvironmentalFootprint

GEOTHERMAL LIMITS OF MARKET LOCATIONS

PLEASANT BAYOU #2 WELL – DOE'S PILOT OPERATION

GEOTHERMAL RESOURCES IN TEXAS GULF COAST
SOURCE: STATE ENERGY CONSERVATION OFFICE (SECO

PART III – GROWTH INDUSTRY & FINANCIAL ANALYSI

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

- Fracking in shale fields, a process requiring millions of gallons of water per well, per frack-job, is revolutionizing the landscape of the American domestic energy sector.
- Used in over one million wells in the United States for more than 60 years, fracking has been successfully used to retrieve more than 7 billion barrels of oil and over 600 trillion cubic feet of natural gas.
- In 2010 alone, the consumer surplus from shale gas production was worth over $100 billion, in addition to creating a remarkable energy boom and hundreds of thousands of jobs in the U.S.

MONTHLY REVENUES – FRAC WATER SALES

Summary Financial Model: Monthly Gross Revenues from Treatment & Sale of Frack (Does NOT Deduct Costs or Expenses)		
Financial Inputs		
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 Off-taken		$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 Monthly Gross Revenues		$512,500
(NOTE: Blue inputs are sensitive)		

MONTHLY REVENUES – GEOTHERMAL ENERGY

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

Financial Inputs		
Daily production of Water (Barrels)		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 Gross Revenues		$42,000

(NOTE: Blue inputs are sensitive)

COST STRUCTURES – FRAC 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 non-treatable brine)
- Geothermal Energy Operation
  - Project Cost per Installed MW ($3M)
  - Royalty costs (2% - 5%)

SUMMARY: MAXIMIZE ENERGY OUTPUT FROM WATER

Financial Metrics

- Sales of Dry Natural Gas & Oil Production – Natural gas & oil production sales from existing reserves & production from acquired fields and wells.
- Geothermal Gas – Each barrel of water produced contains roughly 420 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 – Single-well 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 Revenues – E&P Operators pay to get rid of their unwanted brine
- Oil-Cut Revenues – Separation & sale of oil cut from Brine
- Federal Production Tax Credits – $22 per MWh of power generated.
- Exemption from 7.5% Texas Severance Tax for gas incidentally produced in association with geothermal.
- Reduction of Operating Costs – Reduce its operating costs by utilizing existing oil and gas wells and infrastructure. Rather than drilling new wells, enter existing wells via less expensive workover rigs (rather than more expensive full drilling rigs).
- Higher IRRs

PART IV APPENDIX SELECTED ENERGY INDUSTRY METR

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

TEXAS LEGAL DEFINITION OF “MINERALS”

Texas Geothermal Resources Act of 1975 Section 141.002

TEXAS LEGAL DEFINITION OF “GEOTHERMAL ENERG

INDUSTRY DEFINITION OF "RESERVES"

Since cash-flow source is subject to depletion,
analysis must include review of applicable Reserves

- Example – Typical Gulf Coast Gas depletion curves: 50% year 1; 30% year 2; 30% year 3. Oil depletion generally not as rapid.
- Proven (P1 – Is asset under GAAP if 90% certainty under present technical and economic conditions)
  - PDPs (Proven Developed Producing)
  - PDNPs (Proven Developed Non-Producing)
  - PUDs (Proven Undeveloped)
-

GOVERNMENT SEC DEFINITION OF "RESERVES"

To prevent over-booking of Proven Reserves, SEC regulates disclosures. New rules effective January 1, 2010.

Pricing

- Old Rules: Year-end 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 year-end price, or subsequent price if needed to avoid impairment
- New Rules: Compare ceiling to carrying value using 12-month historic average price. No revision for subsequent improvement in pricing (Still can use subsequently proved up reserves, however)

Disclosure of probable and possible reserves

- Old Rules: Prohibited
- New Rules: Permitted, but not required

5-year presumption of PUDs:

- New Rules: Must explain why material PUDs older than 5 years remain classified as proved reserves. NOTE: Plan must be to drill within 5 years unless "specific circumstances" justify a longer time.
- Erdahl Commentary: This rule may create uncertainty. What happens after 5 years? Are they converted to Probables? Will this reporting rule cause companies to change their underlying operational strategies? Accounting and SEC rules should simply report the operations, not be a driver of such operations?

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 Reserve Production Ratios (Proved Reserve Additions ÷ BOE Produced)
- Reserves; and

SEC VALUATION FORMULA OF RESERVES

SEC PV10 Value of Reserves

-

OIL & GAS INDUSTRY VALUATION MODEL

Two Main Valuation Approaches

- Income Method
  - Discounted cash flows
  -

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)

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Diverse Experience – Accounting, Tax, Law & Finance: Steven Erdahl is GreenTech'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 international bac