

GE Power & Water Water & Process Technologies

GE Water in Unconventional Gas



imagination at work



GE Energy businesses

ecomagination[™]

82,000 employees - 140 countries

25% world's electricity from GE technology



Power & Water

- Thermal power gen
- Renewables
- Gas Engines
- Nuclear
- Gasification
- **Water treatment**
- **Process chemicals**

Energy Services

- Maintenance agreements
- Smart Grid
- Field services
- Parts and repairs
- Optimization technologies
- Plant management

Oil & Gas

- Drilling/production for ... land, offshore, subsea
- LNG and pipelines
- Refining/petrochemical
- Industrial power gen
- Complete lifecycle services

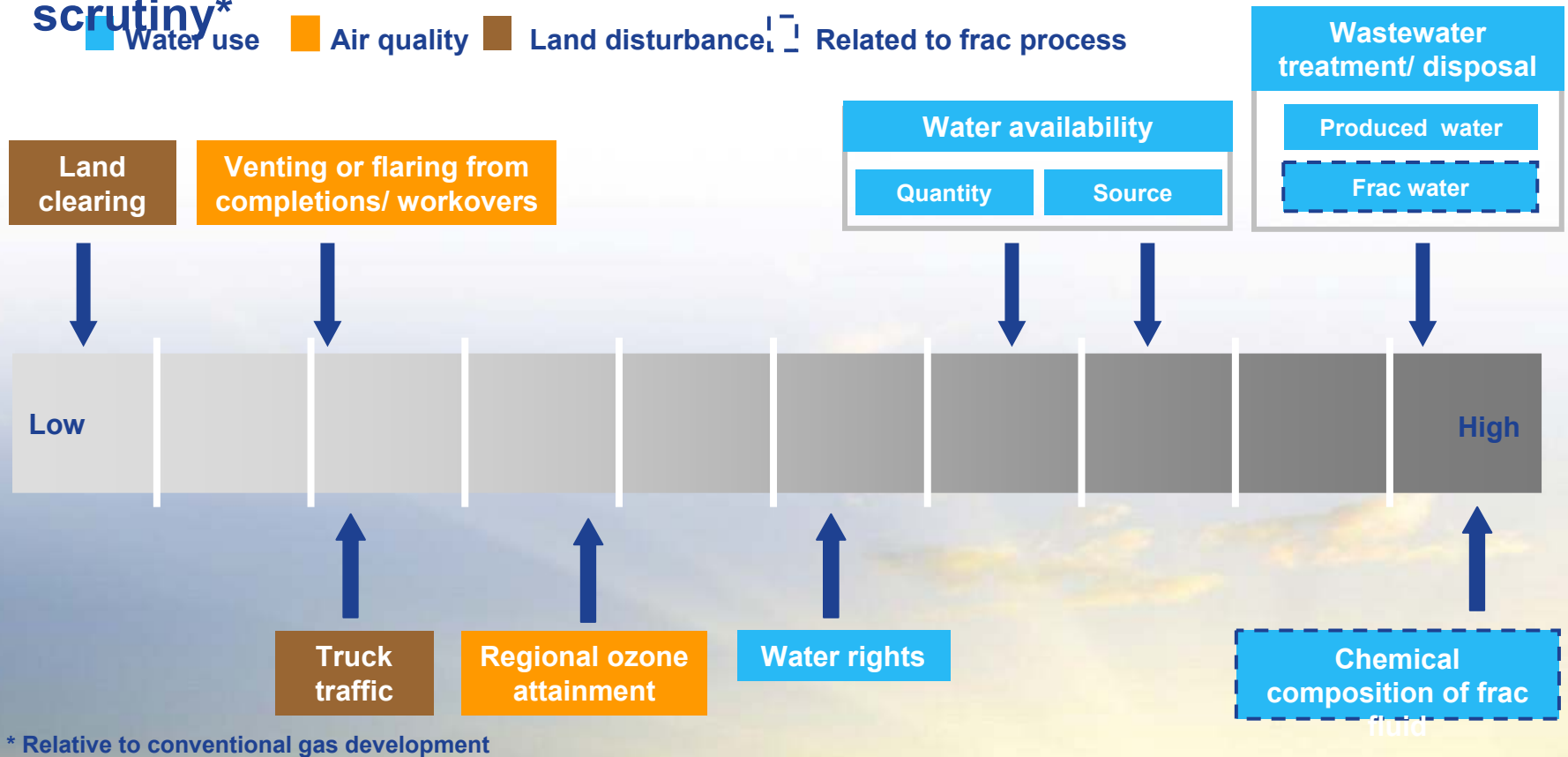


Imagination at work

Public concern over environmental issues

Degree of public scrutiny*

Water use Air quality Land disturbance Related to frac process



Water issues take forefront of national debate

Water risk factors



Regulatory risks

Water
rights

Tariffs

Stringent
regulations

Permitting

Emerging
pollutants

Discharge
options

Waste
disposal

Ash ponds



Physical/Operational risks

Availability

Demand

Quality

Knowledge
gaps

Access/
Allocations

Outage
impacts

Shift from
air to water

Efficiency



Reputational/Social risks

Brand
impact

Media
sensitivity

Compliance
violations

Water Risk Could Sink Investors

Department of Justice to Water
Polluter: Frack You!

WANTED

by the
U.S. Environmental Protection Agency
CRIMINAL INVESTIGATION DIVISION

Subject: William A. Zap

Aliases:

Sex: Male
Race: White
Date of Birth: 11/11/1958
Place of Birth: Canada
Height: 5'6"
Weight: 210 lbs
Eyes: Hazel
Hair: Gray
Scars/Tattoos: None
DOB: 11/11/1958
Last Known Address: Illinois, Canada



ZapRoot: Environmental Bad Boys and
Corporate Greenwashing

Oil company personnel falsifying environmental
pollution reports submitted to E.P.A.

October 26th, 2010 9:46 am ET

Supply
chain

Long-term
fate

Employee
impact

Financial risks

Direct
costs

Indirect
costs

Water
pricing

“Next best”
alternative

Incentives

Energy
costs

Waste
treatment

Bond
rating



Frac-water ... broad range of issues

Regulatory oversight expanding in key areas

Fresh water requirements

- Water price increases doubtful ... water scarcity not a concern for most shale gas plays
- Desire to push producers toward use of non-potable source water

Injected water issues

- Emerging issue, but injected water depth is far below base of groundwater
- Liability on contamination of surface aquifers

Produced water

- Increasing exposure to new state and federal legislation
- Heightened scrutiny from local stakeholders
- Limited capacity at municipal water treatment
- Long trucking distance for disposal

<1 % of total U.S. water withdrawal coming from oil and gas industry in 2005

Source: IMF 2008, USGS 2009

"It does not take an imaginative leap to envision a future of fracing-related law suits"

Source: S.Dvorkin, O&G Journal May 24, '10

ExxonMobil Shareholders Strongly Support Disclosure of Natural Gas 'Fracing' Risks

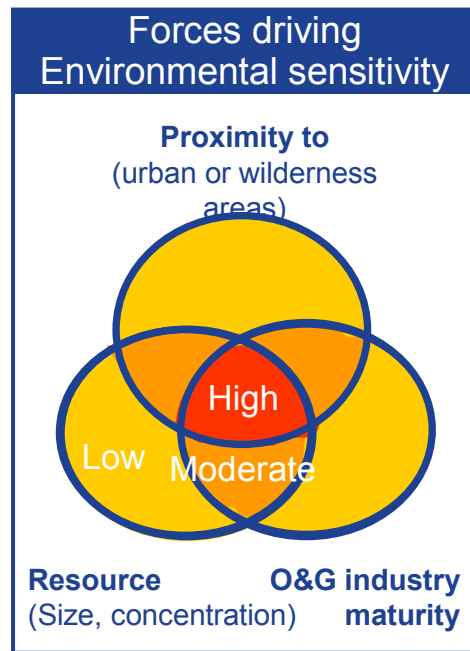
Source: PRNewswire-USNewswire/May 26 '10

EPA foresees being given authority to put stricter regulations on fracing

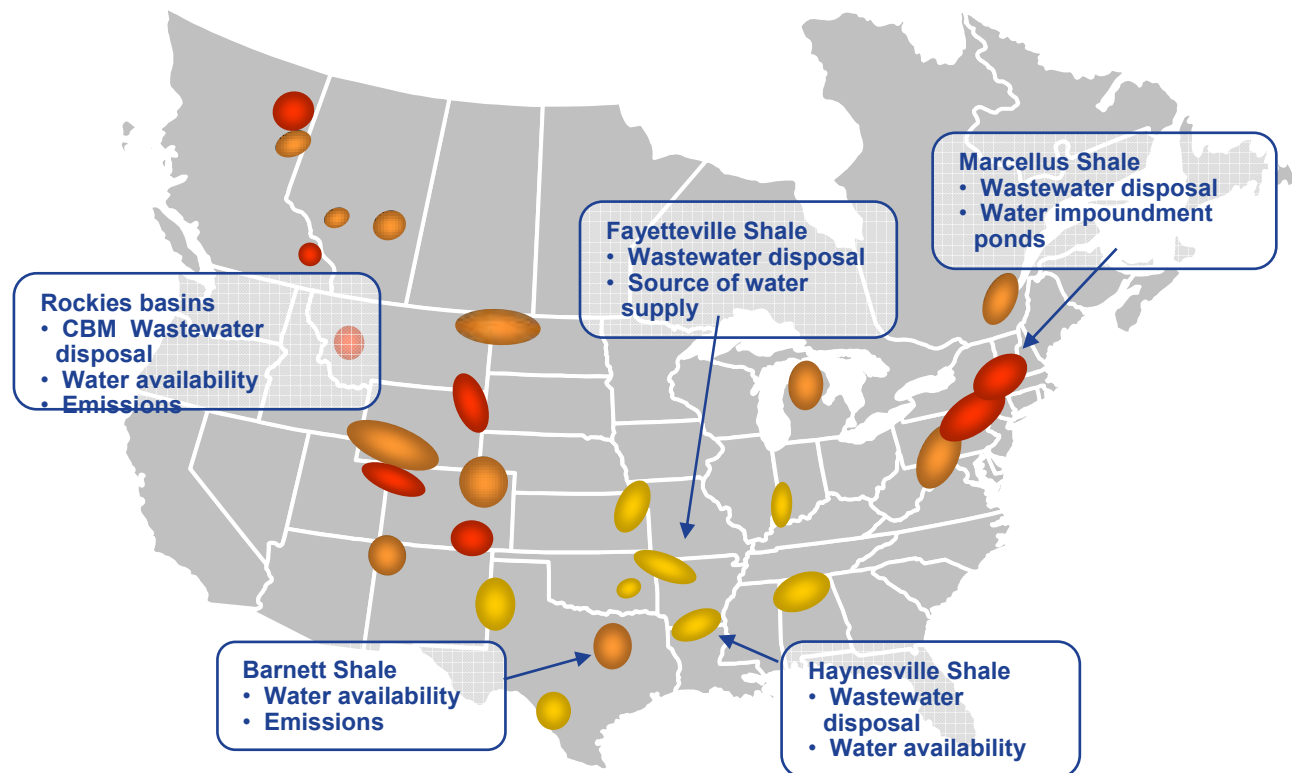
Source: P.Silva, EPA Office of Water, personal communication

Environmental focus stronger in some regions

Large gas plays, in close proximity to urban or pristine areas with little local familiarity to the O&G industry are likely to draw the most intense scrutiny



Source: GE Energy, Global Strategy & Planning



GE Solutions

Offerings

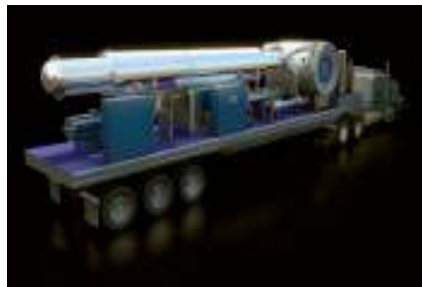
Pretreatment

Solution - Mobile Ultra Filtration systems



Water Reuse

Solution - Mobile and fixed thermal evaporators with service contract



Disposal Well Treatment

Solution - One Pass filtration and chemicals



Flexible Business Model

Customers

- ✓ Producers
- ✓ Service Providers
- ✓ Independent Project Developers (Central Plants)

Delivery Model

- ✓ CAPEX sale with service contract
- ✓ BOO & Mobile contracts
- ✓ Select open consortium turnkey



imagination at work

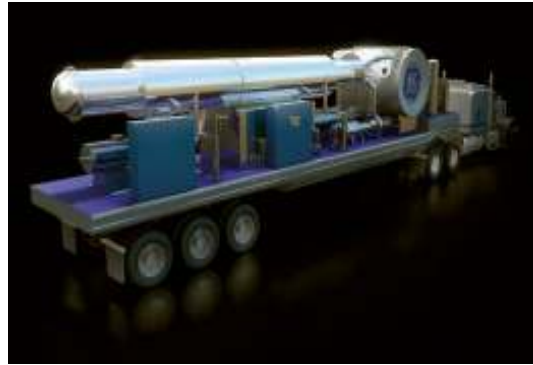
Converting waste into value

Enabling tough to treat solutions...



Solution components

Unique GE portfolio
solutions



Mobile solutions

Produced
water



Beneficial
reuse

Agricultural
Utility
General irrigation

Permanent solutions

We never know the worth of
water till the well is dry.

~Thomas Fuller



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