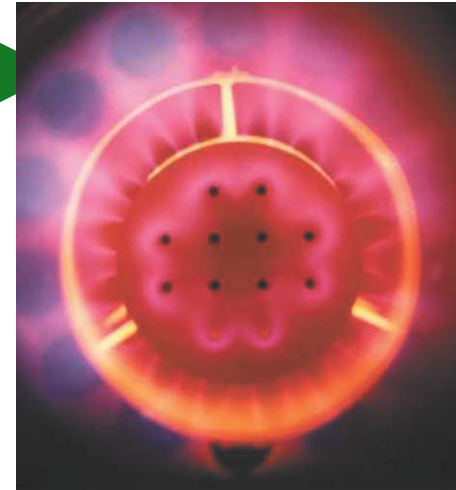
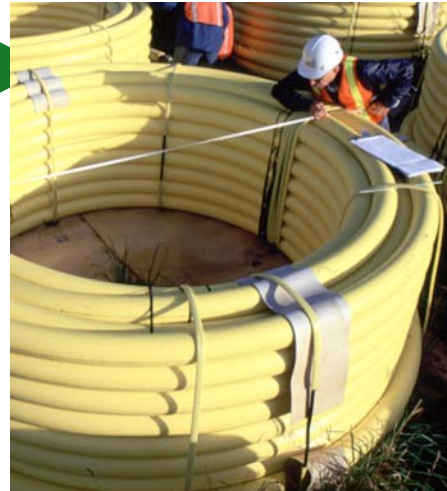
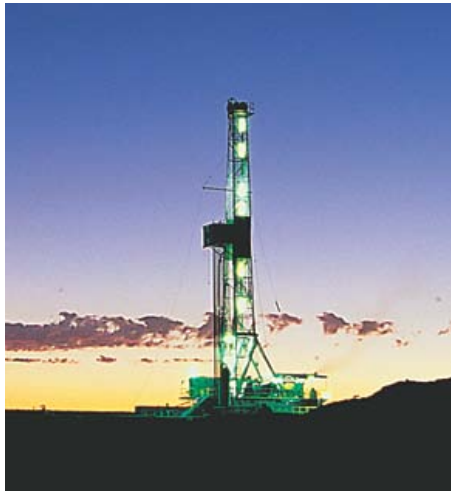

“...turning raw technology into practical solutions...”

- > David C. Carroll
President and CEO, GTI
Clean Technology 2009
May 5, 2009

Working Across the Value Chain



Reducing carbon emissions to the environment

Company Overview

- > Not-for-profit research, with 65+ year history
- > Facilities
 - 18 acre site near Chicago
 - 200,000 ft², 28 specialized labs
 - Other sites in Oklahoma and Alabama
- > Staff of 250
- > Business is growing
- > 1000 patents; 500 products



Offices
& Labs

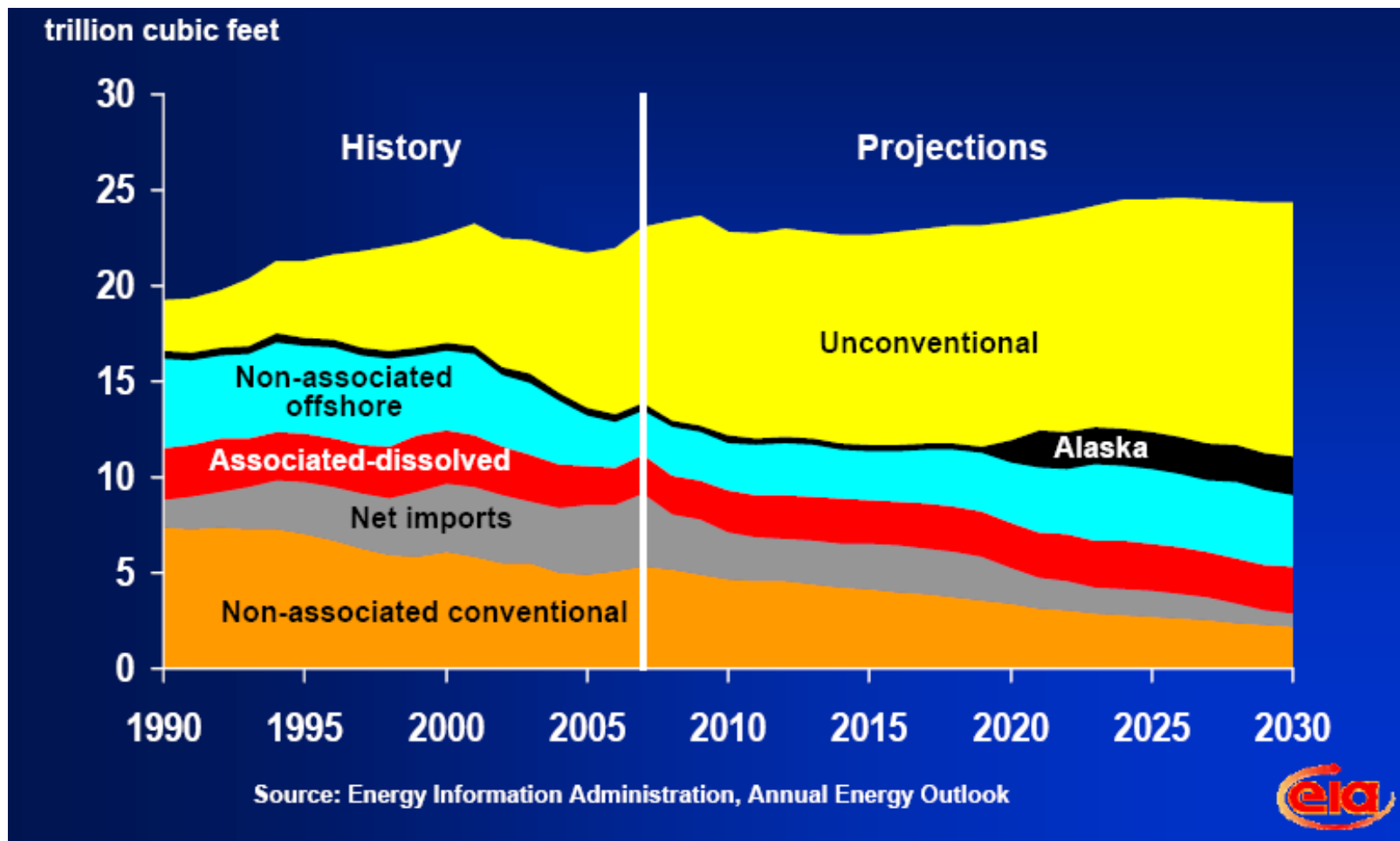


Flex-Fuel
Test
Facility



Energy & Environmental Technology Center

Unconventional Production Growth Offsets Declines in Other Sources



Coiled Tubing Drilling



Rig Features

- > Reduced surface footprint
- > Safer operations
- > Zero discharge mud system
- > Reduced fuel use
- > Lighter loads during transport
- > Less noise

- > Rig can drill +220 wells per year
- > Drills 3000' wells at rate of one/day
- > Reduces drilling cost up to 30%

Barnett Shale Water Management

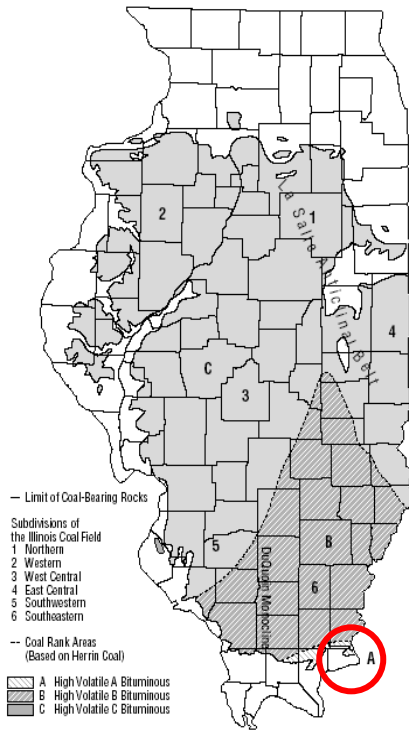
- > Reduce freshwater use
- > Identify produced water reuse and treatment options



Barnett Shale JIP

- > Chesapeake Energy
- > ConocoPhillips
- > Denbury Resources
- > Derrick Resources
- > Devon Energy
- > DTE Gas Resources
- > Encana Oil and Gas
- > Harding Co.
- > Pitts Oil Co.
- > Quicksilver
- > Range Resources
- > Sauder Land Co.
- > Shell Oil
- > Sundance Resources
- > Williams Production
- > XTO Energy

CO₂ Injection Aids Coalbed Methane Production



Illinois Clean Coal Project: CBM Production and CO₂ Sequestration

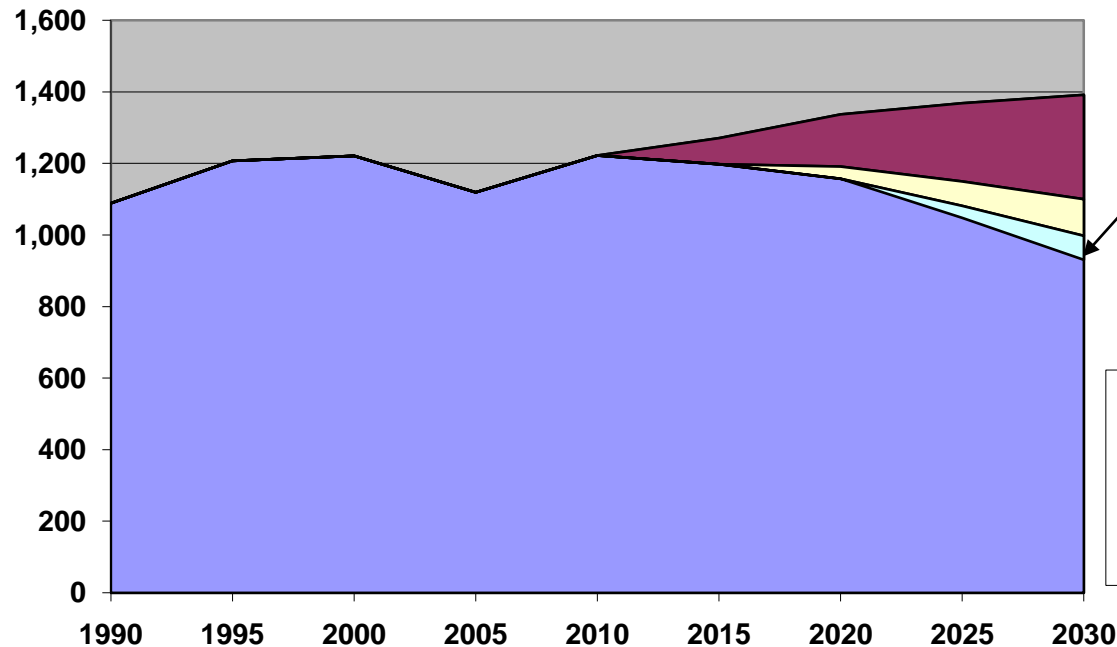
Carbon Reduction Strategies for the Natural Gas Industry

- > **Near-term:** Efficiency programs and direct use of natural gas in selected applications
- > **Mid-term:** Increase penetration of NGV's, reduce methane infrastructure leakage
- > **Long-term:** Convert renewable materials into pipeline quality gas



Cumulative Impact of Proposed Strategies on GHG Emissions

Natural Gas GHG Emissions Reduction Strategy (MM metric tons CO₂e)

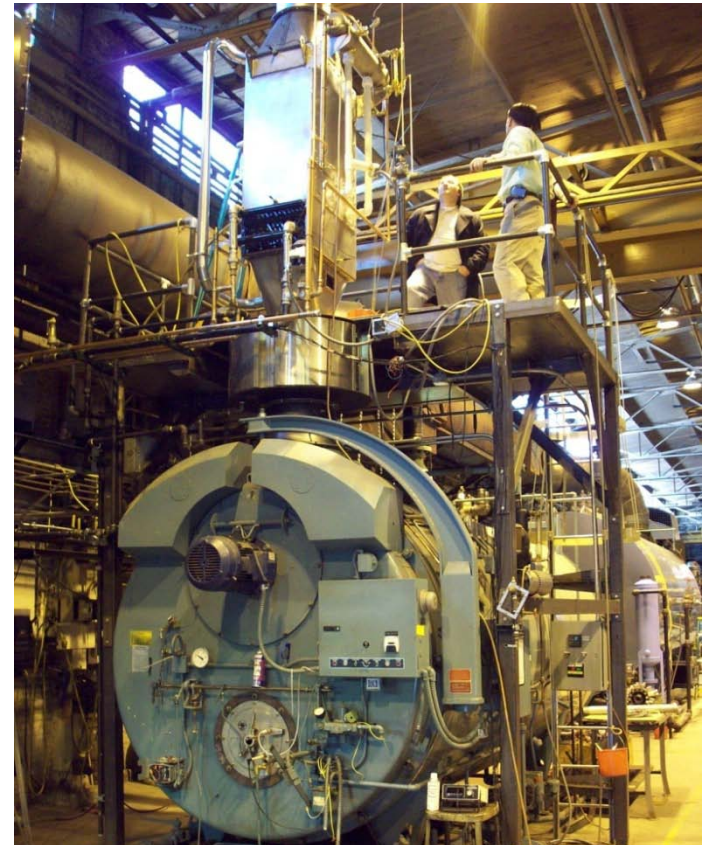


15% CO₂e
emission
reduction below
1990 levels

- Long Term Strategy
- Mid Term Strategy
- Near Term Strategy
- Net CO₂ Emissions

Advanced Boiler Technology

- > Maximizing steam generation efficiency for commercial and industrial boilers
 - 94% fuel to steam efficiency with novel heat recovery device
 - 15% carbon emission reduction
 - Ultra low NO_x (sub 9 ppmv)
 - Target: < 2 year payback
 - Multiple field tests underway



Advanced Industrial Melter

- > Submerged combustion melter yields major improvement in capital cost, productivity, flexibility, footprint, and efficiency
- > Produce various glass products, sodium silicate, and waste material recycling (waste fiberglass, electric arc furnace dust vitrification)



Commercial Food Service Equipment

- > Saving energy
- > Improving product quality
- > Raising productivity rates



**High-Efficiency
Pizza Ovens
and Combi-Ovens**

**First
Boilerless
Gas-Fired
Steamer**



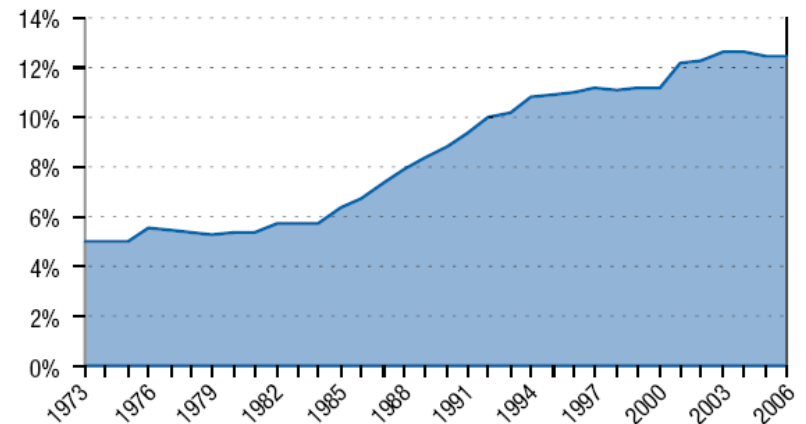
**Low-Oil Volume
Fryers Using
Trans-Fat -Free
Oils**

Combined Heat and Power (CHP) Systems

- > Drive CHP to the next level of market acceptance
- > Engine, microturbine, turbine, and fuel cell systems
 - Micro to large commercial and industrial (<5 MW)
- > System integration for effective heat recovery
 - Hot water, steam, thermal-driven cooling
- > Grid interconnection and peak power support



CHP as a Percentage of U.S. Annual Electricity Generation



Solar Thermal/Natural Gas Hybrid Energy Systems

- > Push natural gas equipment above 100% efficiency using hybrid solar thermal/natural gas energy solutions
- > Reduced-cost domestic hot water and hydronic heating systems for residential and commercial buildings
- > Higher-temperature concentrated solar thermal for steam generation, absorption cooling, process heating
 - Commercial buildings
 - Industrial plants



Renewable Natural Gas

- > Bio-methane (bio-gas)
 - Landfill gas, wastewater treatment
 - Digestion of agricultural waste and other biomass waste
- > Produce pipeline quality methane, CNG, LNG, clean fuel cell power
- > Addressing gas quality and compatibility with existing pipeline network



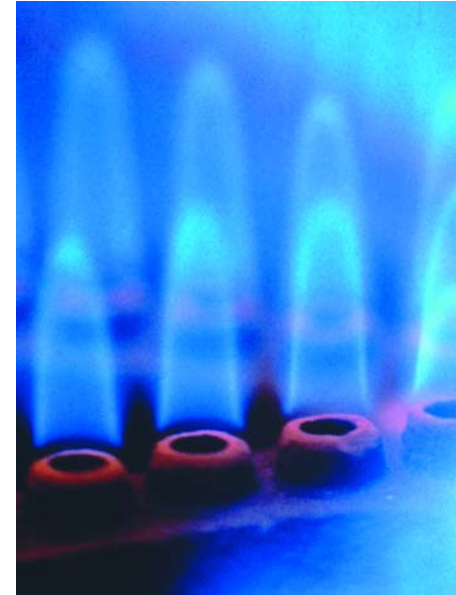
Gills Onions –
Digester to Fuel Cell
Quality Methane



Linde – Waste Management
Landfill Gas-to-LNG for
Vehicles

Summary

- > Natural gas is a critical part of global energy portfolio
- > A broad range of technologies are in development
- > Significant advances expected in unconventional gas production, renewable gas generation, industrial efficiency and energy grid optimization



Thank you for your kind attention