

WHO WE ARE

Gas Technology Institute

- > A Leading U.S. research, development, and training organization serving the natural gas industry and energy markets
 - An independent, 501c (3) not-for-profit



Serving the Energy Industry Since 1941

Facilities & Staff

- > Main Facility:
 - 18-Acre Campus Near Chicago
 - Over 200,000 ft² of laboratory space
 - 28 specialized laboratories and facilities
- > Staff of 240
 - 70% are scientists and engineers
 - 50 PhDs
 - 11 Professional Engineer licenses



**Flex-Fuel
Test Facility**

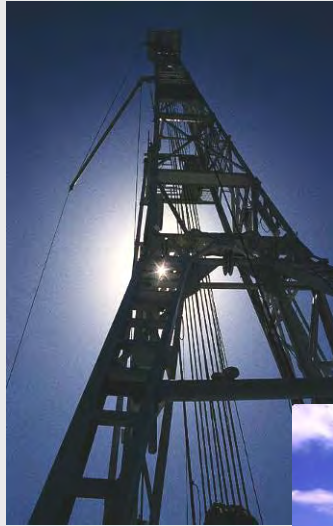


**Offices
& Labs**



Energy & Environmental Technology Center

GTI Serves the Energy Industry



Performing:

- > Contract Research
- > Program Management
- > Technical Services
- > Education and Training



- > Over 1000 patents
- > More than 500 products commercialized

GTI Alignment with Industry Value Chain



Needs

Provide a secure, stable, competitive domestic energy supply

Address strategic concerns of domestic energy T&D infrastructure

Maintain industrial competitiveness and improve affordability and applicability of gas

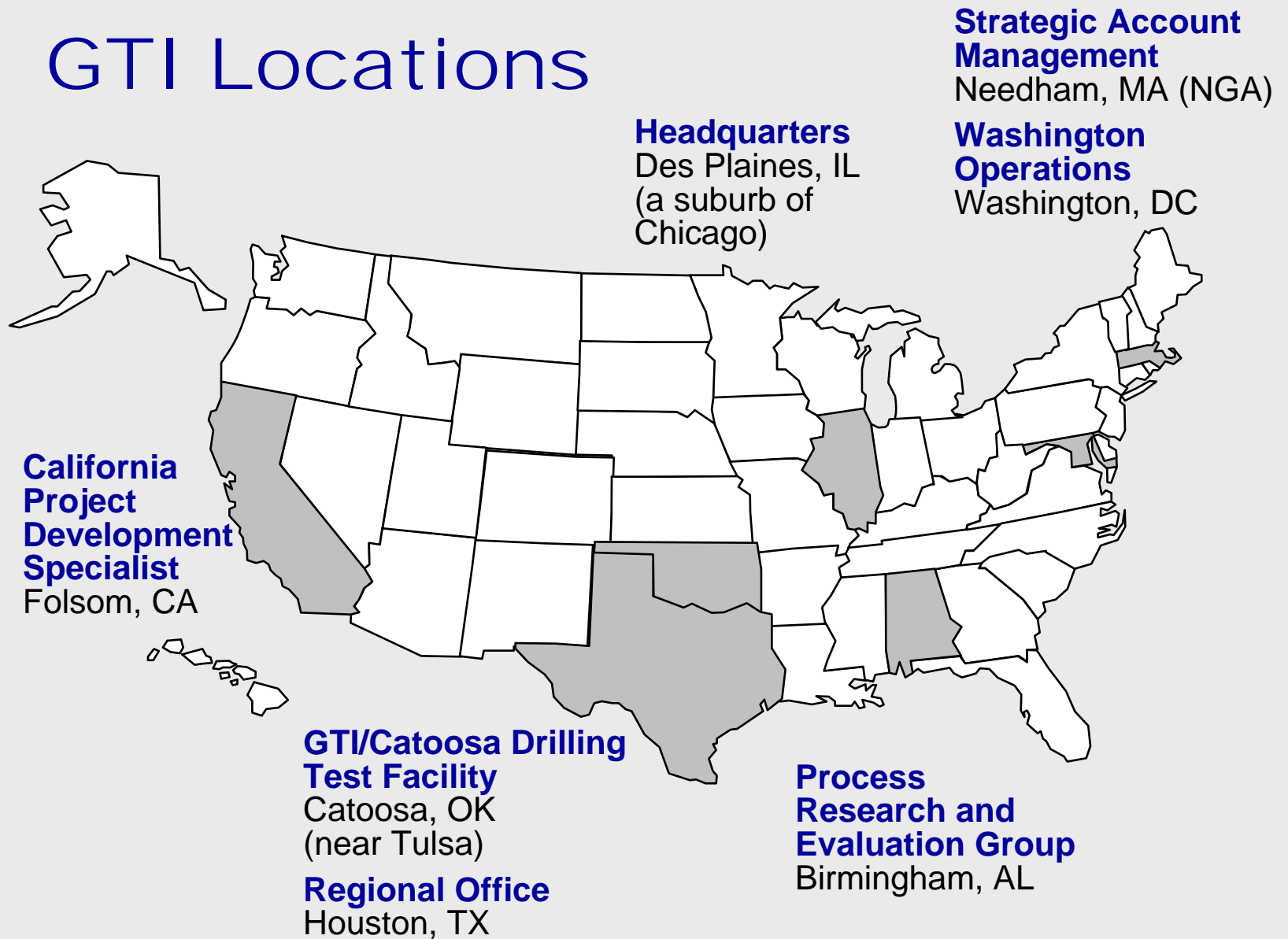
Focus

- Unconventional Natural Gas Resources
- Gasification of Coal and Biomass
- Carbon Capture and Sequestration

- Safety
- Pipeline Integrity
- Cost Reduction
- Efficiency

- Efficiency and environmental
- Product development and commercialization

GTI Locations



GTI R&D Market Units

Supply—Gasification

Vann Bush, Managing Director

- > Gasification process and feedstock evaluation
- > Syngas generation and processing for production of power, fuels, and chemicals
- > Syngas cleanup and separation technologies
- > Subquality gas upgrading

Supply—Unconventional Gas

Kent Perry, Executive Director

- > Unconventional gas resources
- > Field drilling and completion
- > Downhole laser energy applications
- > Carbon sequestration
- > Methane hydrate resources

Aligned with the Natural Gas Industry

Delivery

Eddie Johnston, Managing Director

- > Third party damage prevention and leak detection
- > Construction innovations
- > Operations innovations
- > Pipeline integrity/distribution integrity management
- > Materials testing and evaluation
- > Pipeline and storage solutions
- > Environmental and chemical research services

End Use Solutions

William Liss, Managing Director

- > Combustion
- > Industrial process heating
- > Power generation and combined heat and power
- > Residential/commercial appliances
- > Hydrogen and alternative fuel storage, fueling stations, and vehicle integration
- > High-temperature and low-temperature fuel cell components and systems
- > Energy conversion, fuel processors and catalysts
- > Codes and standards
- > LNG interchangeability

GTI

- > Develops cleaner and more cost effective energy technologies to increase supply, improve delivery and enhance utilization
- > Provides expert technical services in the areas of performance and analytical testing, technology validation, codes and standards development, and technology assessment
- > Delivers energy education through classroom, on-site and e-learning applications
- > Demonstrates and commercializes advanced energy technologies

ARPA-E Program

- > Authorized as part of the America COMPETES Act legislation signed by President Bush in August 2007.
- > Goals of program
 - Enhance the economic and energy security of the United States through the development of energy technologies that result in
 - > Reductions of imports of energy from foreign sources
 - > Reductions of energy-related emissions, including greenhouse gases: and
 - > Improvement in the energy efficiency of all economic sectors

Achieving ARPA-E Goals

- > ARPA-E shall achieve its goals by
 - Identifying and promoting revolutionary advances in fundamental sciences;
 - Translating scientific discoveries and cutting-edge inventions into technological innovations; and
 - Accelerating transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty

Director of ARPA-E

- > Within the Department of Energy there will be a director of ARPA-E that is appointed by and with the advice and consent of the Senate
- > The Director shall report directly to the Secretary of Energy
- > No other programs within the Department shall report to the Director

Responsibilities of the Director of ARPA-E

- > Approving all new programs within ARPA-E
- > Developing criteria and assessing success of programs through the establishment of technical milestones
- > Administering the Fund through awards to institutions of higher education, companies, research foundations, trade and industry research collaborations or consortia

Projects shall Focus on

- > Novel early-stage energy research with possible technology applications
- > Development of techniques, processes, and technologies, and related testing and evaluation
- > Research and development of manufacturing processes for novel energy technologies and
- > Coordination with non-governmental entities for demonstration of technologies and research applications to facilitate technology transfer

ARPA-E Employees

- > Director shall designate employees to serve as program managers
- > Program managers shall be responsible for
 - Establishing research and development goals
 - Building research collaboration
 - Selecting on the basis of merit each of the projects to be supported under the program
 - The term of a program manager shall be 3 years and may be renewed

Authorized ARPA-E Budget

- > \$300M for fiscal year 2008
- > Such sums as are necessary for each of fiscal years 2009 and 2010
- > The budget request for ARPA-E shall be separate from the rest of the budget of the Department of Energy
- > Appropriations to the Fund shall be separate and distinct from the rest of the budget for the Department of Energy

ITP program enhancement collaborative

- > Goal – fifty signers on support letter
- > Currently 25 supporters including gas utilities, trade organizations, research institutions,
 - Names you may know
 - > American Gas Association
 - > Energy Solutions Center
 - > New Mexico Tech
 - > Sempra
 - > Energy Industries of Ohio
 - > California Steel Industries
 - > Keyspan
 - > Consolidated Edison
- > Copies of 3 page synopsis explains program goals and elements – Full document about 40 pages