

The Energy Policy Act of 2005 and Section 999:

A Public/Private Partnership for R&D in the
Ultra-Deepwater in the Gulf of Mexico and in
Unconventional Onshore Natural Gas and Other
Petroleum Resources of the United States



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Chevron/MIT Vortex Induced Vibration

RPSEA Member Forum

January 11, 2007

What is Section 999?

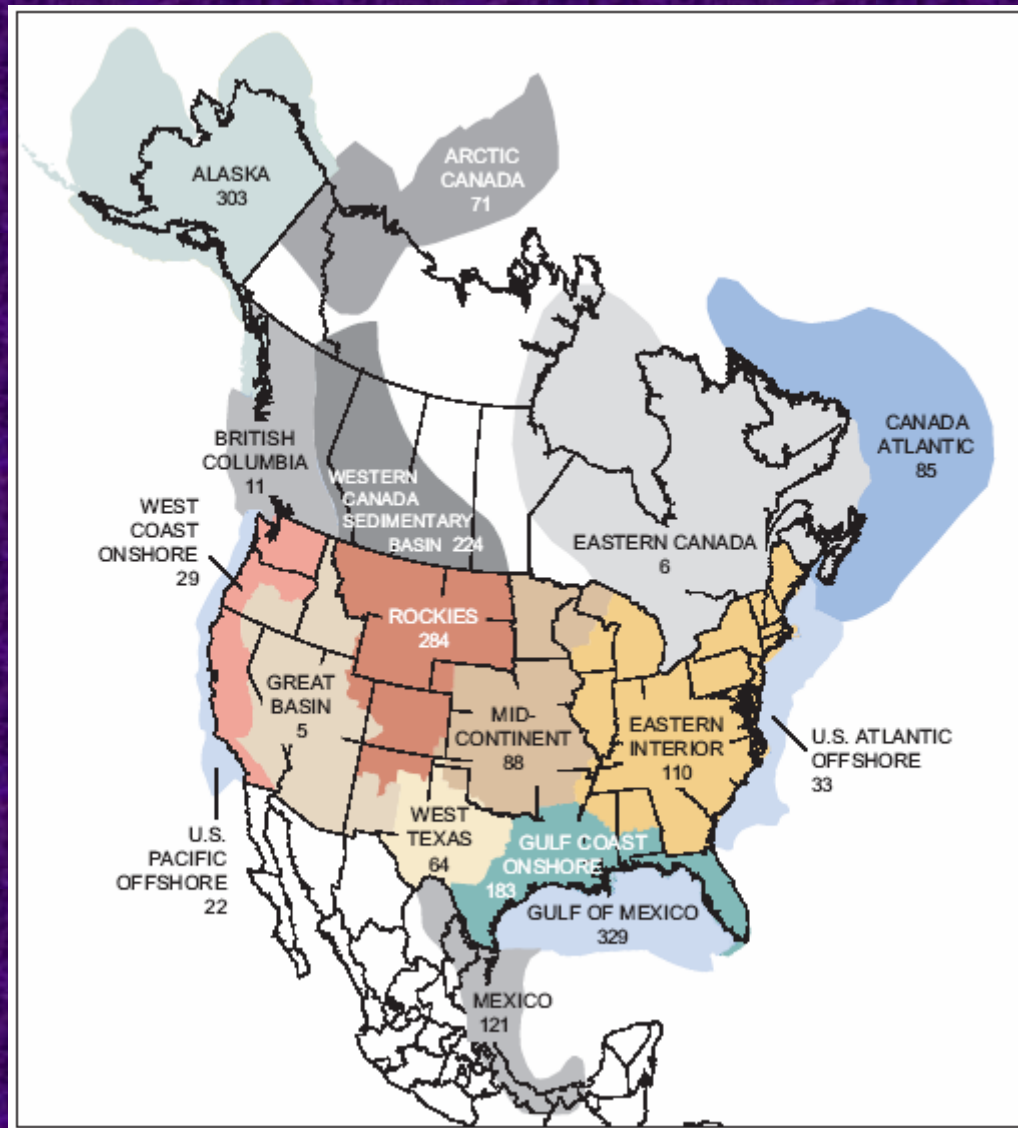
A new federal collaborative R&D public/private partnership, **managed by industry and academia**, engaging all stakeholders in the value chain to benefit consumers and enhance domestic productivity and competitiveness



1999 NPC Gas Supply Study

- **Two regions—deepwater Gulf of Mexico and the Rockies – will contribute most significantly to new supply.”**
- **“Deeper wells, deeper water, and nonconventional sources will be the key to future supply.”**
- **“Technology improvements are particularly important given the difficult conditions accompanying new resources.”**
- **“This study assumes that technology improvements will continue at an aggressive pace. However, recent industry trends in research and development have raised concerns regarding this assumption.”**
- **“The government should continue investing in research and development through collaborations with industry, state organizations, national laboratories and universities.”**





NPC 2003 Technical Resources (TCF)



What is Section 999?

Specifically, the law directs --

- ... research, development, demonstration, and commercial application of technologies for ultra-deepwater and unconventional natural gas and other petroleum resource exploration and production. (Sec.999A.a)
- ... to maximize the value of natural gas and other petroleum resources of the United States, by increasing the supply..., ...reducing the cost ... increasing the efficiency of exploration for and production of..., while improving safety and minimizing environmental impacts. (Sec.999B.a)

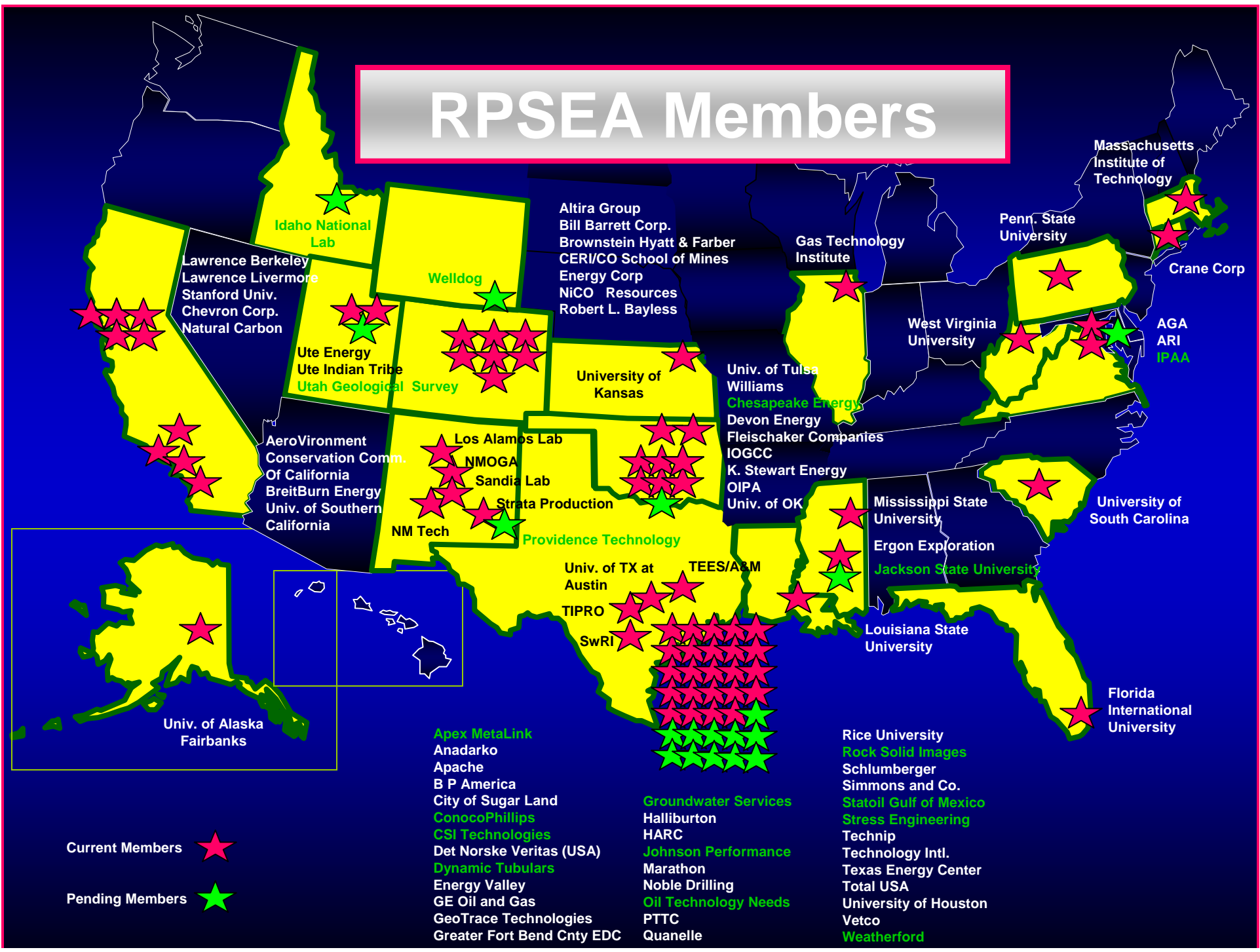


Who is RPSEA and What are its Statutory Features?

- A 501c3 not for profit
- Competitively selected by DOE as the Program Consortium Manager
 - Comprised of you



RPSEA Members



Lawrence Berkeley
Lawrence Livermore
Stanford Univ.
Chevron Corp.
Natural Carbon

Idaho National Lab

Welldog

Ute Energy
Ute Indian Tribe
Utah Geological Survey

Altira Group
Bill Barrett Corp.
Brownstein Hyatt & Farber
CERI/CO School of Mines
Energy Corp
NiCO Resources
Robert L. Bayless

Gas Technology Institute

Penn. State University

Massachusetts Institute of Technology

Crane Corp

AGA
ARI
IPAA

West Virginia University

University of Kansas

Univ. of Tulsa
Williams

Chesapeake Energy
Devon Energy
Fleischaker Companies

IOGCC
K. Stewart Energy

OIPA
Univ. of OK

Mississippi State University

University of South Carolina

AeroVironment
Conservation Comm.
Of California
BreitBurn Energy
Univ. of Southern California

Los Alamos Lab
NMOGA
Sandia Lab

Strata Production

Providence Technology

Univ. of TX at Austin

TEES/A&M

TIPRO

SwRI

Louisiana State University

Jackson State University

Ergon Exploration

Univ. of Alaska
Fairbanks

Florida International University

What is the Program's focus?

The Program has three program elements:

- **Ultra-deepwater 35%**

(> 1500 Meters)

- **Unconventional Onshore 32.5%**

(Economic accessibility)

- **Small Producers 7.5%**

(< 1000 BOPD)



Statutory Description of Program Elements

- Ultra-deepwater program focus

Technologies and architectures

- Unconventional onshore focus

Resource perspective

- Small producer focus

Consortia addressing unique needs of small producers



Responsibilities of the Program Consortium?

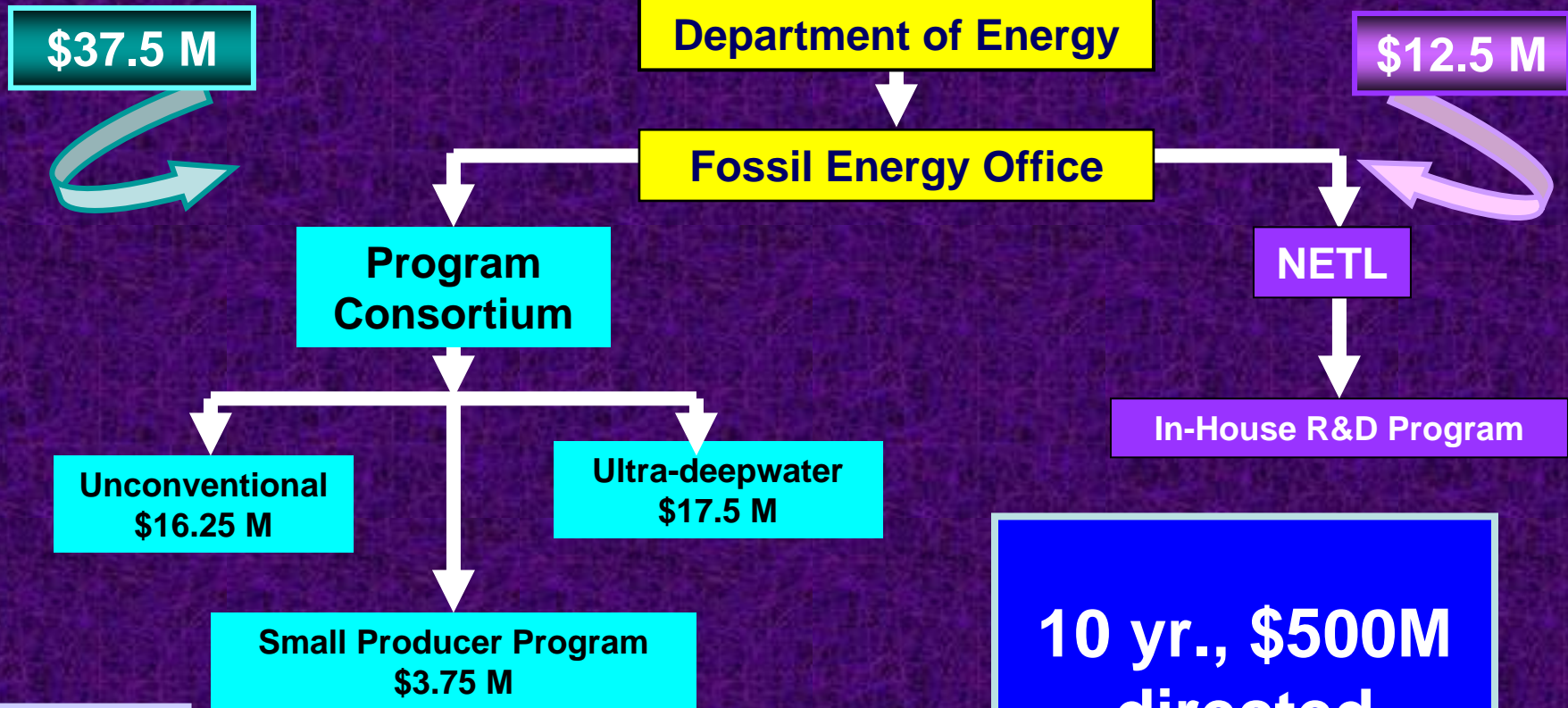
- Prepare draft annual plan for the SOE
 - Recommend award recipients
 - Develop project specifications
- Oversee implementation of awards, including monitoring activities to ensure compliance with conditions of awards
 - Disburse funds to awardees
 - Manage technology transfer



Current Program Structure/Funding

Program Funding From Federal Oil and Gas Royalties

Total Program: \$50 M/yr for 10yrs.



10 yr., \$500M directed spending

Coalbed Methane: Small Investment, Large Return

Return on R&D
investment:

34 to 1

\$5 M
DOE
Start up

\$70 Million GRI Cash
\$70 Million Industry In-kind

2003 Annual Value of
Coal Bed Methane Industry in US:

\$5 billion

Potential for Program Funding

Program Funding From Federal
Oil and Gas Royalties

→ Total Program:
\$150 M/yr for 10yrs.

Department of Energy

Fossil Energy Office

\$112.5 M

\$37.5 M

Program
Consortium

NETL
Lab

Unconventional
\$48.75M

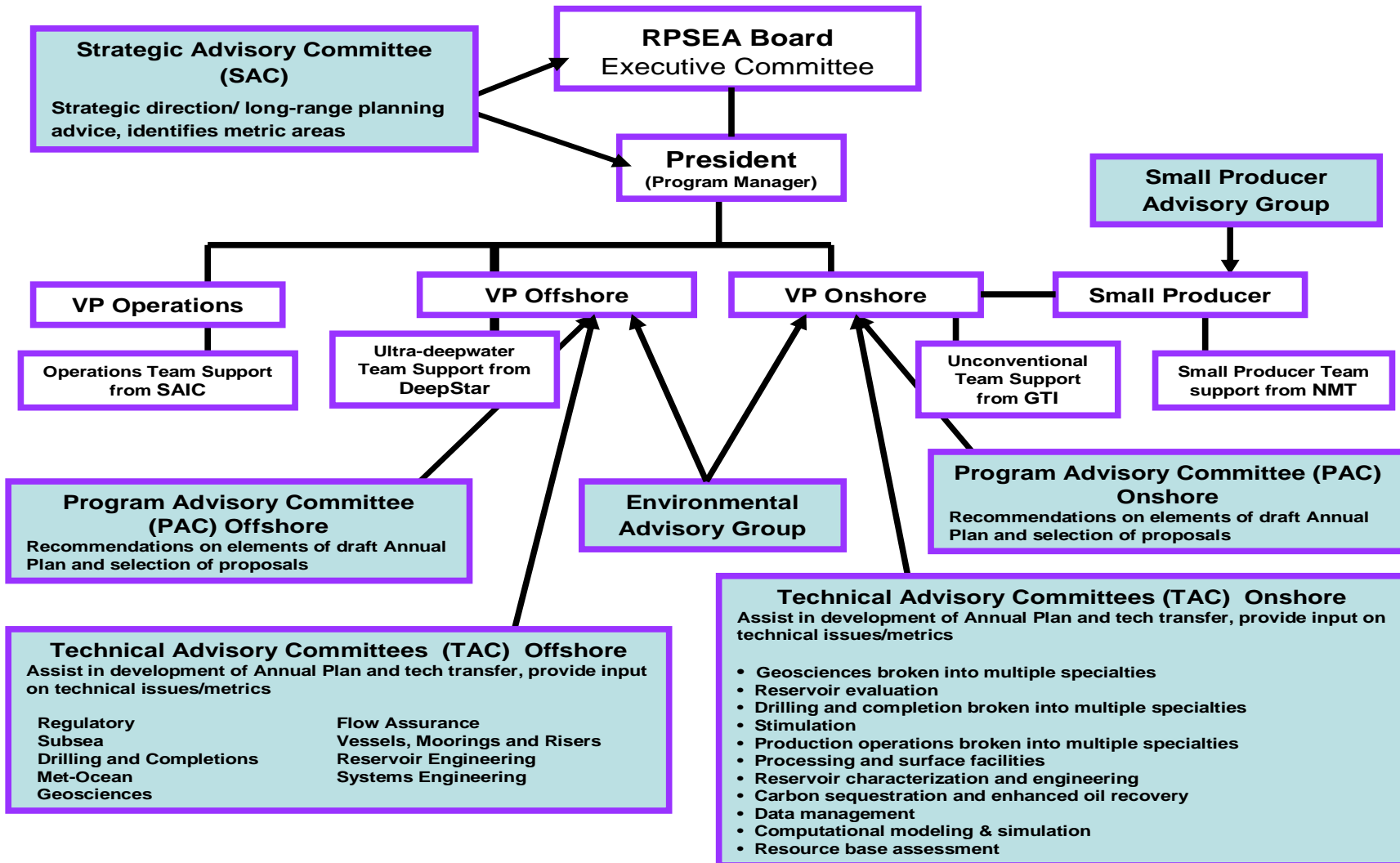
Ultra-deepwater
\$52.5M

Complimentary R&D Program
\$37.5M

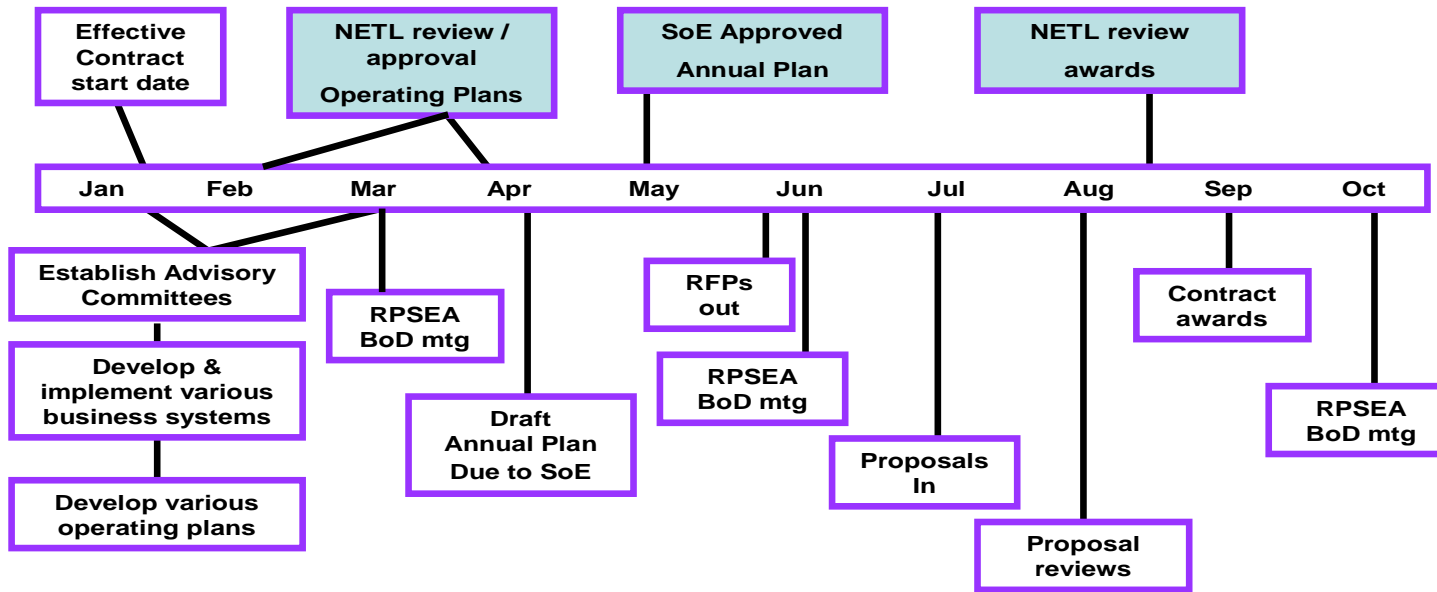
Small Producer Program
\$11.25M

10 yr., \$1.5B
directed and
authorized
spending





RPSEA - estimated program timeline



• Research
 • Partnership to
 • Secure Energy
 • for America

Why Does Industry Need This?

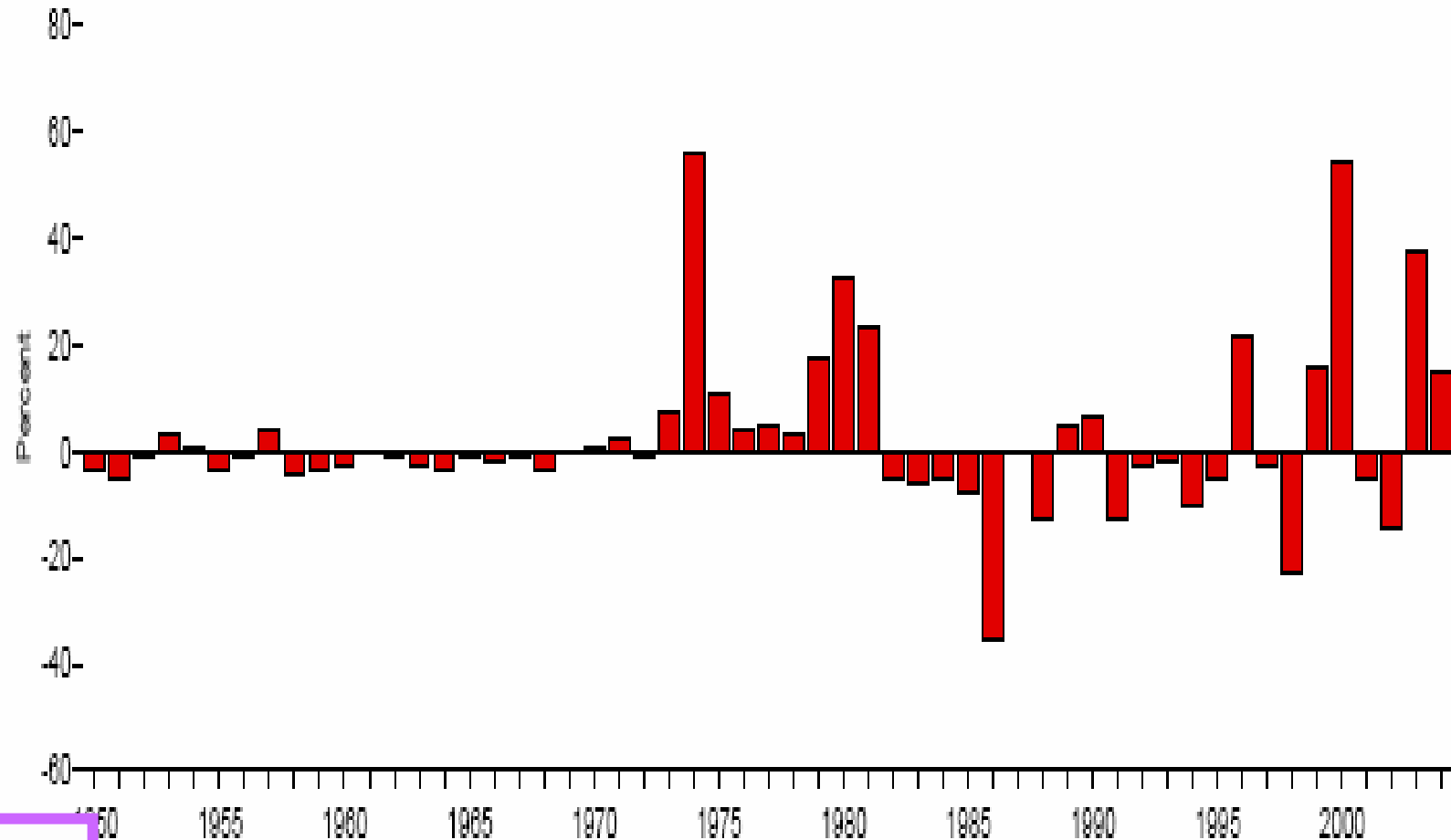
- Significantly increased E&P costs
- Continued price volatility
- Increasing personnel constraints
- Rig & service availability
- Environmental opposition & scrutiny
- Lack of research infrastructure
- Broad need for technology transfer

It's a very challenging business environment and it's getting even more so.



EIA Annual Energy Review 2004

Fossil Fuel Composite Price, Change From Previous Year, 1950-2004



Rigs & Equipment

- Has your rig(s) been short handed lately? (And more new rigs are being built or reassembled)
- Technology and improved understanding of processes must generate leverage on the existing fleet by extracting more footage and productive wells per rig
- Improved reservoir characterization leverages the rig fleet by optimizing the value of every well bore

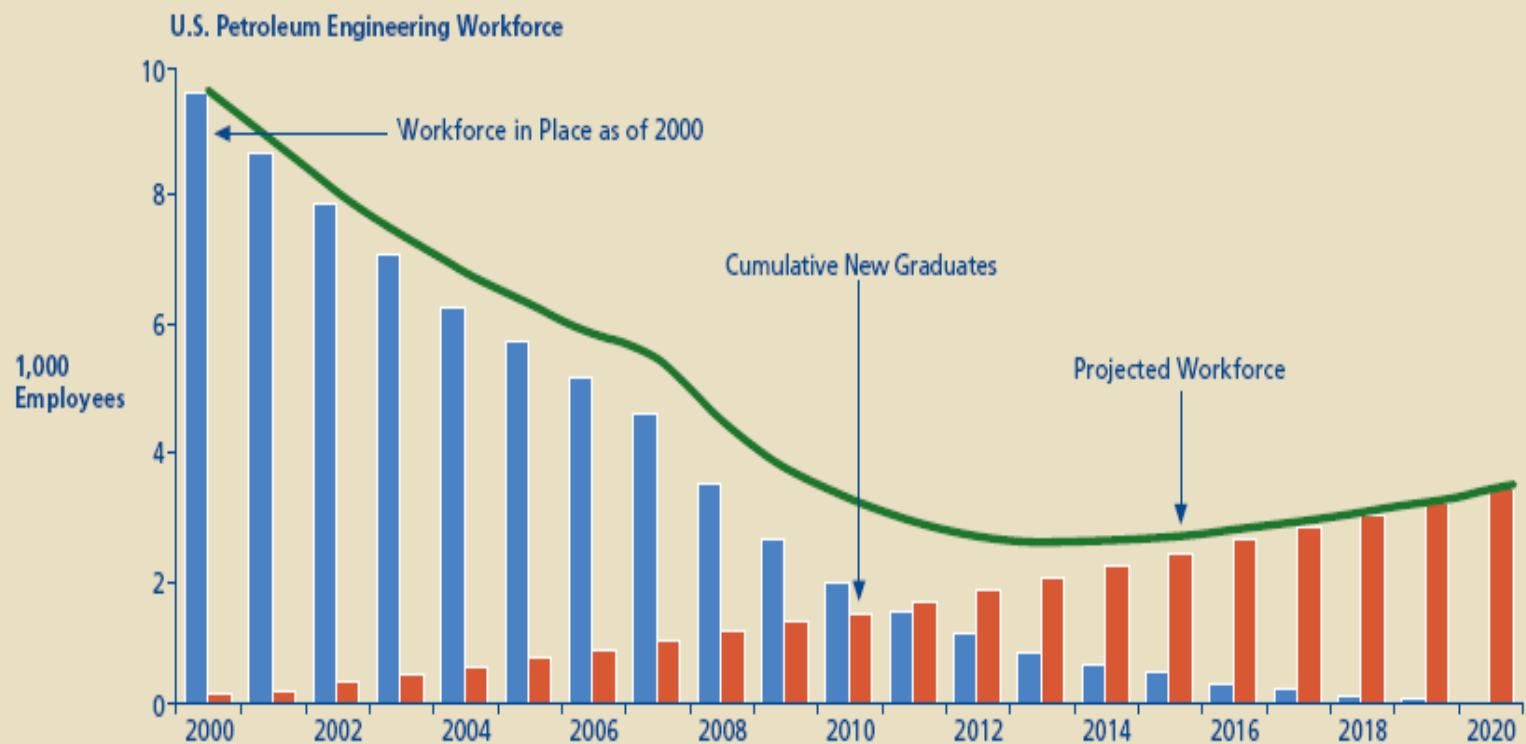


Environmental Constraints

- A mandate - lessen the footprint and overall impact of all operations
- Technology and improved processes allow the development of more reserves per unit of activity
- Technology to address public policy concerns

Workforce Constraints

Exhibit 2. Oil & Gas Workforce Projections



Source: PetroStrategies Inc.



From "Deloitte Research – The Talent Crisis in Upstream Oil & Gas"

Solutions, not Rhetoric

- It starts with commitment - \$50M per year in stable directed spending with potentially an additional \$100M per year plus industry matching funds.
- Unique publicly funded opportunity to determine industry's needs and then utilize industry's leadership in partnership with universities, researchers, and technologists to develop solutions for the American consumer.
- Generate multiples by forging new partnerships and leveraging the value of new supplies with, for example, end use efficiency.



■ **The time for action is now!**

**“You miss 100% of the shots
you don’t take.”**

Wayne Gretzky

