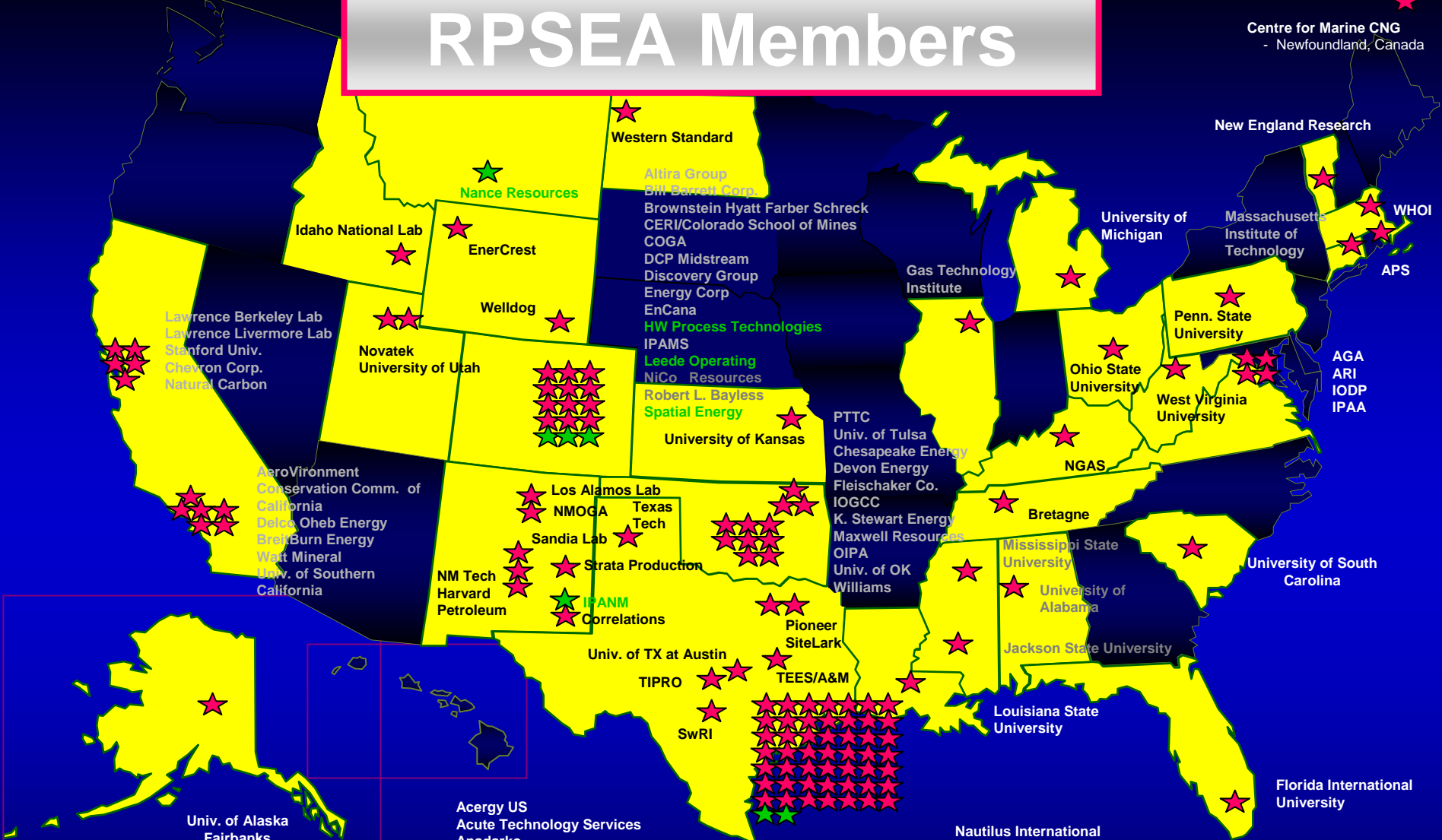






# RPSEA Members

Centre for Marine CNG  
- Newfoundland, Canada



Current Members   
Pending Members 

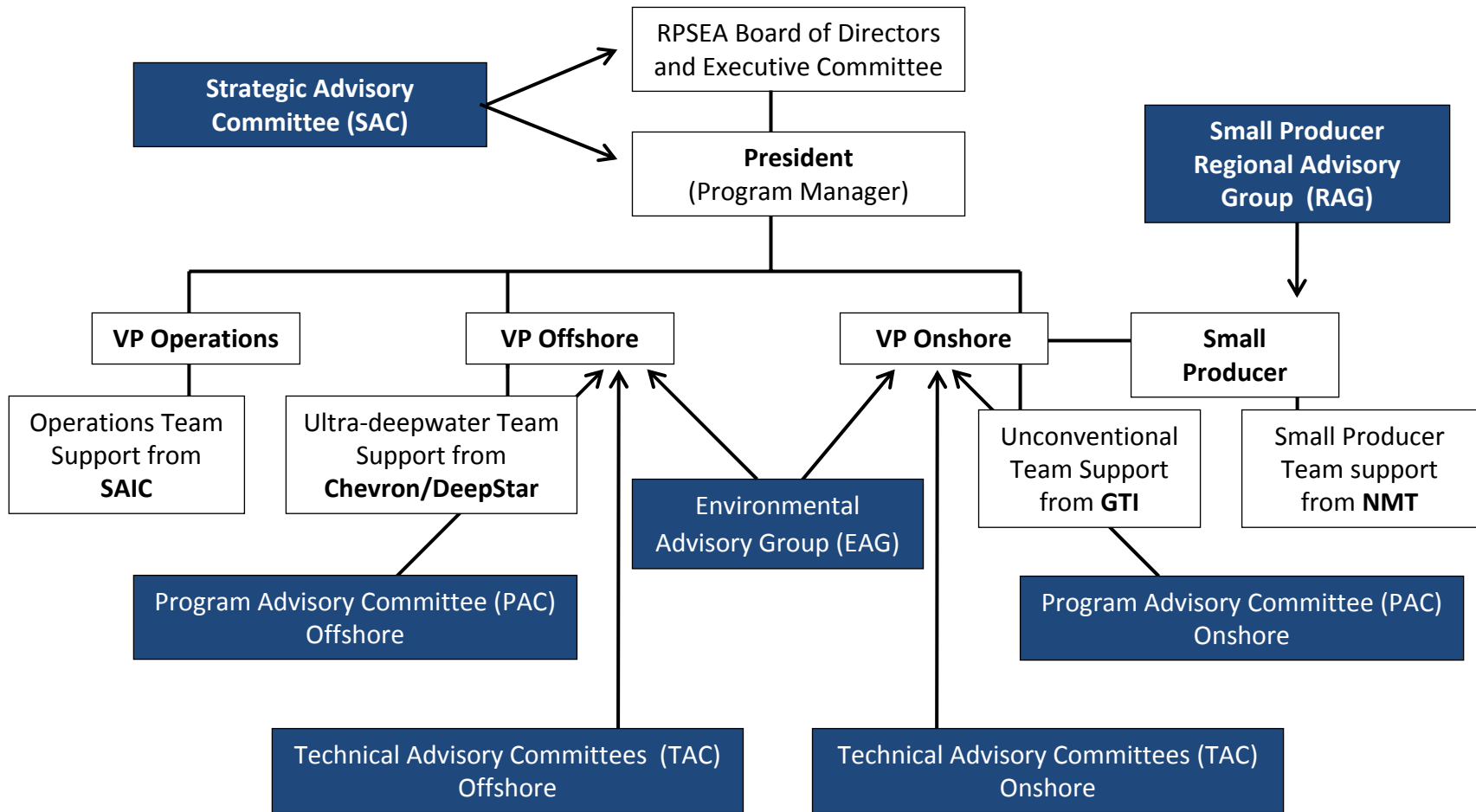
Acergy US  
Acute Technology Services  
Anadarko  
Apache  
Apex Spectral  
B P America  
Baker Hughes  
BJ Services  
Cameron/Curtiss-Wright EMD  
Carbo Ceramics  
City of Sugar Land  
ConocoPhillips  
CSI Technologies  
Det Norske Veritas (USA)  
Energy Valley

GE/Vetco  
Greater Fort Bend Cnty EDC  
Groundwater Services  
Halliburton  
HARC  
Houston Offshore Engineering  
Houston Technology Center  
Knowledge Reservoir  
Marathon  
Merrick Systems  
Nalco  
NanoRidge Materials

Nautilus International  
Noble Energy  
Oxane Materials  
Petris Technology  
**Petrobras America**  
Quanelle  
Rice University  
Rock Solid Images  
RTI Energy Systems  
Schlumberger  
Shell Exploration & Production  
Simmons and Co.  
StatoilHydro

Stress Engineering  
Technip  
Technology Intl.  
Tejas Research  
Tenaris  
Texas Energy Center  
**Titanium Engineers**  
Total USA  
University of Houston  
VersaMarine Engineering  
Weatherford

# A Small Organization, A Large Network



Well over 1,000 experts have participated in this process!



# 2009 Planning Process – Unconventional Onshore Program

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- **Build on 2007, 2008 Plans**
  - Workshop and Forum input, 2003-2007
  - Unconventional Resources Technology Advisory Committee (URTAC)
    - Input to 2007, 2008 plans
- **RPSEA Forums**
  - Eight held by RPSEA members
  - Late 2007 – May 2008
  - Various basins and resources
- **Industry Events**
  - Technical conferences, topical meetings
  - RPSEA staff participation
- **PAC, TAC Members**
  - Engagement in developing 2007 portfolio



# 2009 Draft Annual Plan – Unconventional Onshore Program

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- **Mission & Goal**

- Unchanged from 2007, 2008
- Economically viable technologies to allow environmentally acceptable development of unconventional gas resources
  - Gas Shales
  - Tight Sands
  - Coalbed Methane

- **Objectives**

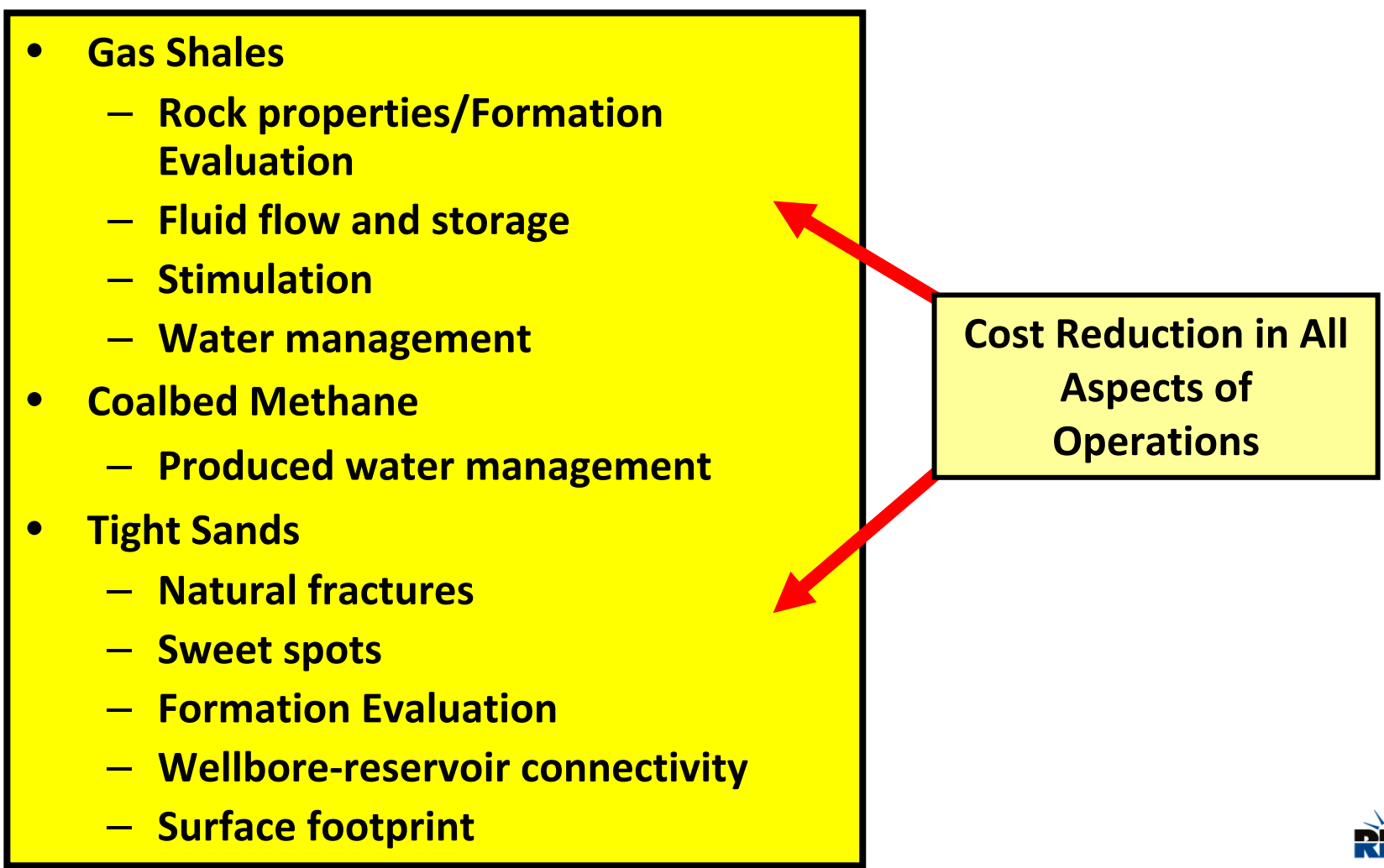
- **Near Term**
  - Increase production & recovery from established unconventional gas resources, accelerate development of existing & emerging plays
  - Decrease environmental impact of unconventional gas development
  - Integrate project results & deliverables and engage in technology transfer to ensure application of program results
- **Longer Term**
  - Technologies for high-priority emerging & frontier resources



# Unconventional Onshore Themes

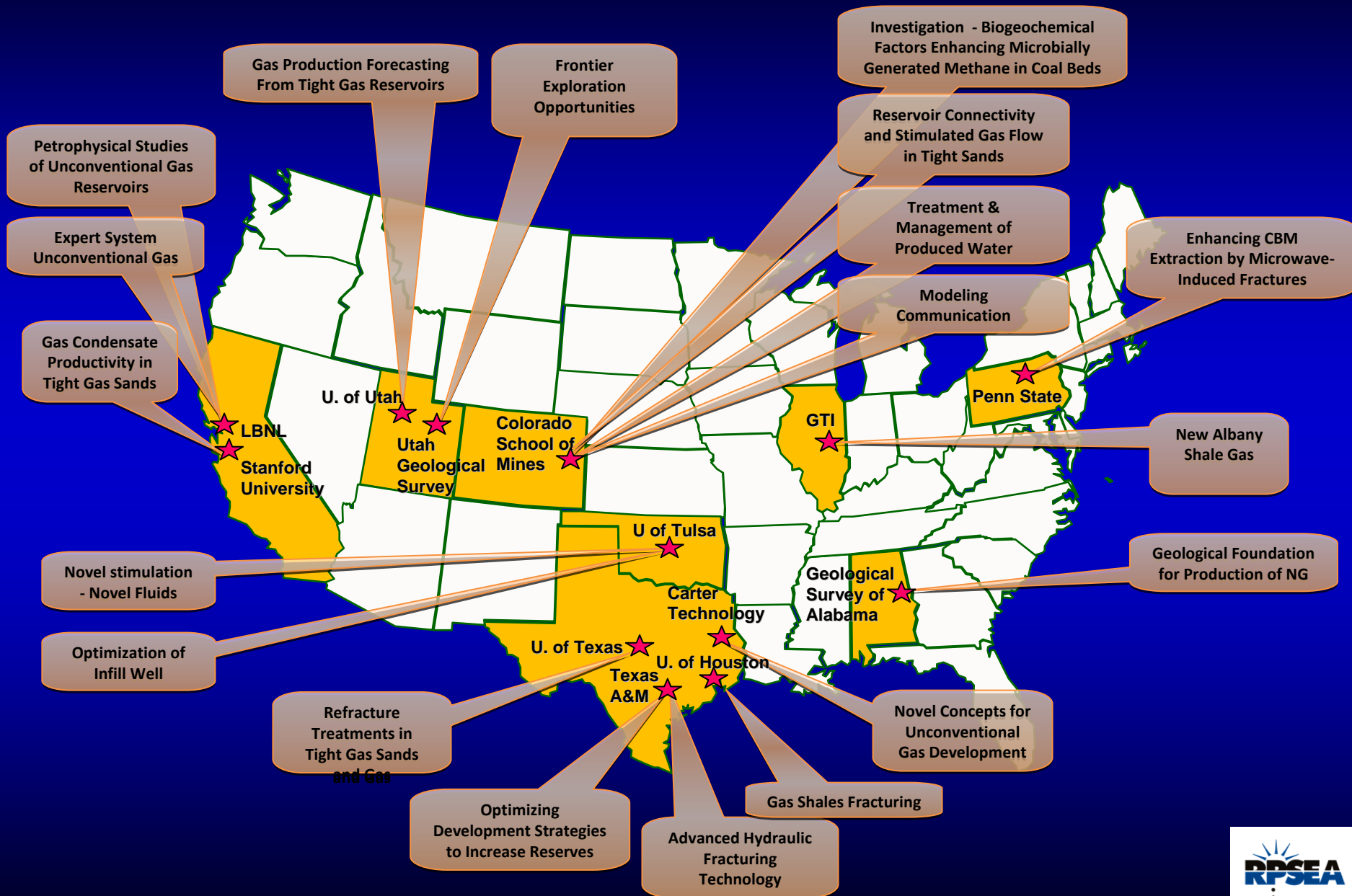
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- **Gas Shales**
  - Rock properties/Formation Evaluation
  - Fluid flow and storage
  - Stimulation
  - Water management
- **Coalbed Methane**
  - Produced water management
- **Tight Sands**
  - Natural fractures
  - Sweet spots
  - Formation Evaluation
  - Wellbore-reservoir connectivity
  - Surface footprint



**Cost Reduction in All  
Aspects of  
Operations**

# 2007 Unconventional Onshore Project Selections





# Unconventional Onshore Program 2007 Projects

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- **Several specific resources targeted**
  - **New Albany Shale**
  - **Rockies Tight Sands**
  - **Potential Shale Resources in Alabama, Utah**
- **Projects addressing unconventional gas fundamentals**
- **Vision – Use targeted resources as field laboratories for work leading to fundamental understanding of factors controlling unconventional gas production**



# 2007 Selected Proposals

Categories	UDW	Unconventional	Small Producers	Total
Universities	5	13	6	24
National Laboratories	-	2	1	3
Nonprofit Corporation	4	1	-	5
For Profit Corporation	8	1	-	9
Geological Surveys	-	2	-	2
	17	19	7	43

# 2008 Draft Annual Plan – Onshore Program

- **Unconventional Program**

- Emphasize role of technology transfer
- Highlight importance of environmental signature
- Emphasize role of individual contractors as contributors to a cooperative, integrated program
- Focus solicitation(s) to fill portfolio gaps
  - Appalachian region
  - Water management
  - Drilling footprint in tight sands
  - Technology integration & transfer

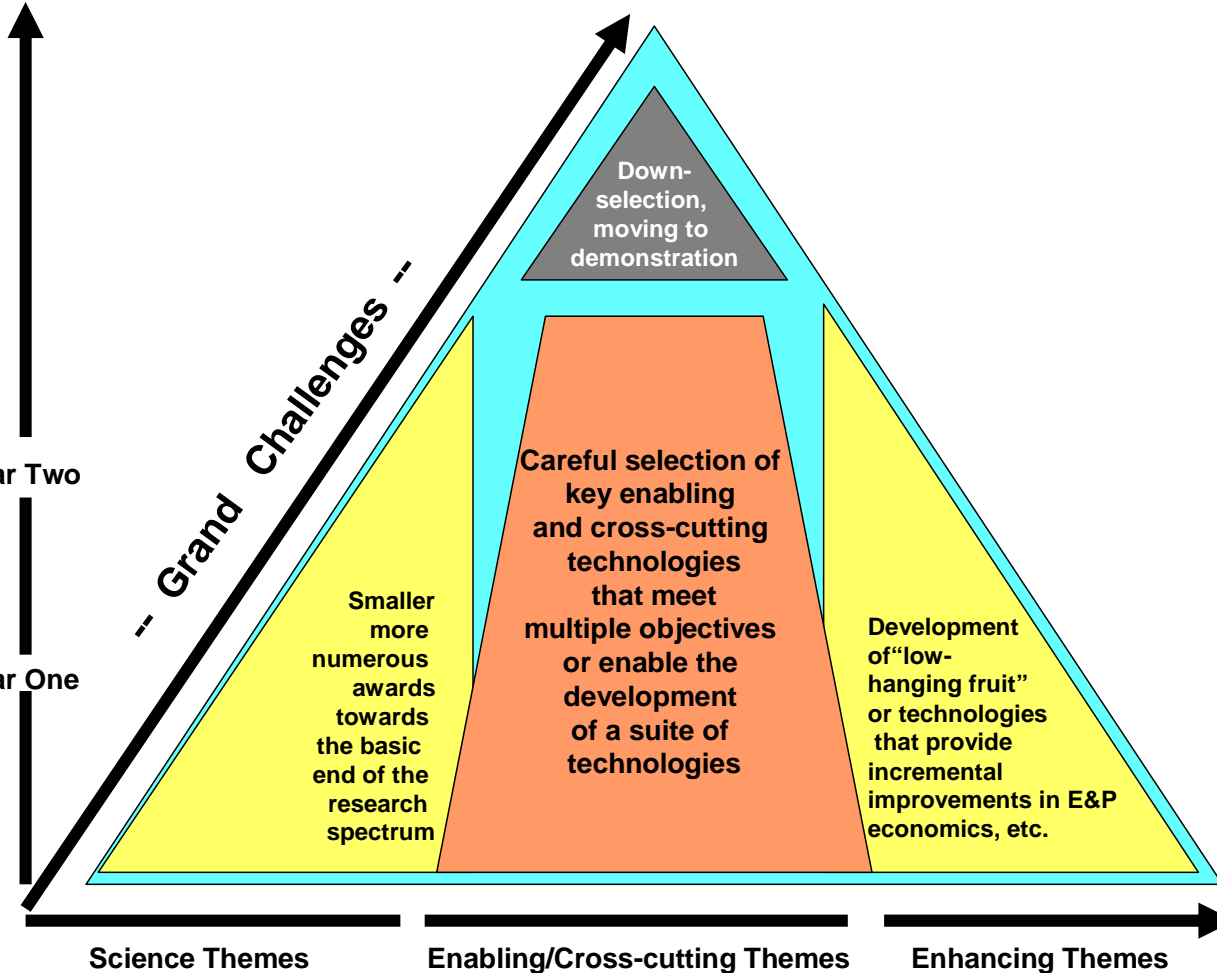


# 2008 Draft Annual Plan – Program Balance

Years Five  
thru Ten

Year Two

Year One



# 2009 Draft Annual Plan – Onshore Program

- **Solicitation Flexibility to Build an Integrated Program**
  - Tailor 2009 solicitations to fill gaps in 2007/2008 portfolio
  - Current areas needing additional emphasis
    - Appalachian region
    - Decreasing environmental footprint
    - Water management
    - Complex, multi-zone completions
- **2009 Annual Plan Solicitations**
  - Included in “menu” form
  - Issued solicitations will include topics chosen from those specified in the plan, directed toward one of the three targeted resources
  - Choices will be driven by portfolio and results of 2007, 2008 programs.





# 2009 Draft Annual Plan – Onshore Program Solicitation “Menu”

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- **Integrated Program Targeting a Specific Resource**
  - Build on existing projects
  - May be comprehensive or directed toward specific technology area
  - Topic areas
    - Resource Assessment
    - Exploration Geosciences
    - Basin Analysis and Resource Exploitation
    - Drilling
    - Stimulation and Completion
    - Water Management
    - Reservoir Description and Management
    - Reservoir Engineering
    - Environmental
  
- **Early-Stage Research on Novel Concepts for Unconventional Gas Development**

# Field Based Approach

Highly Integrated

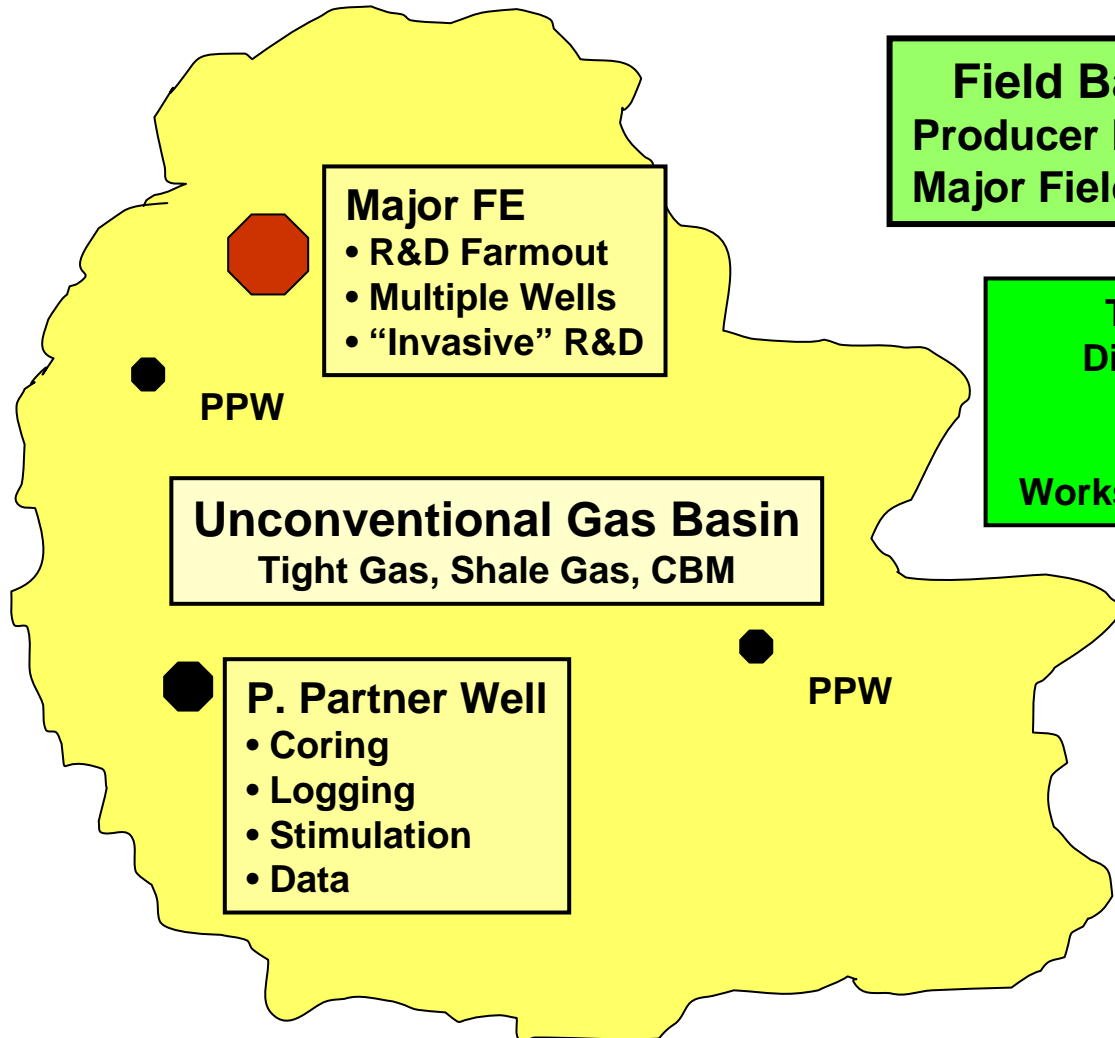
## R&D

G&G  
Drilling  
Rock Properties  
Stimulation  
Reservoir  
Produced Water  
Surface Footprint

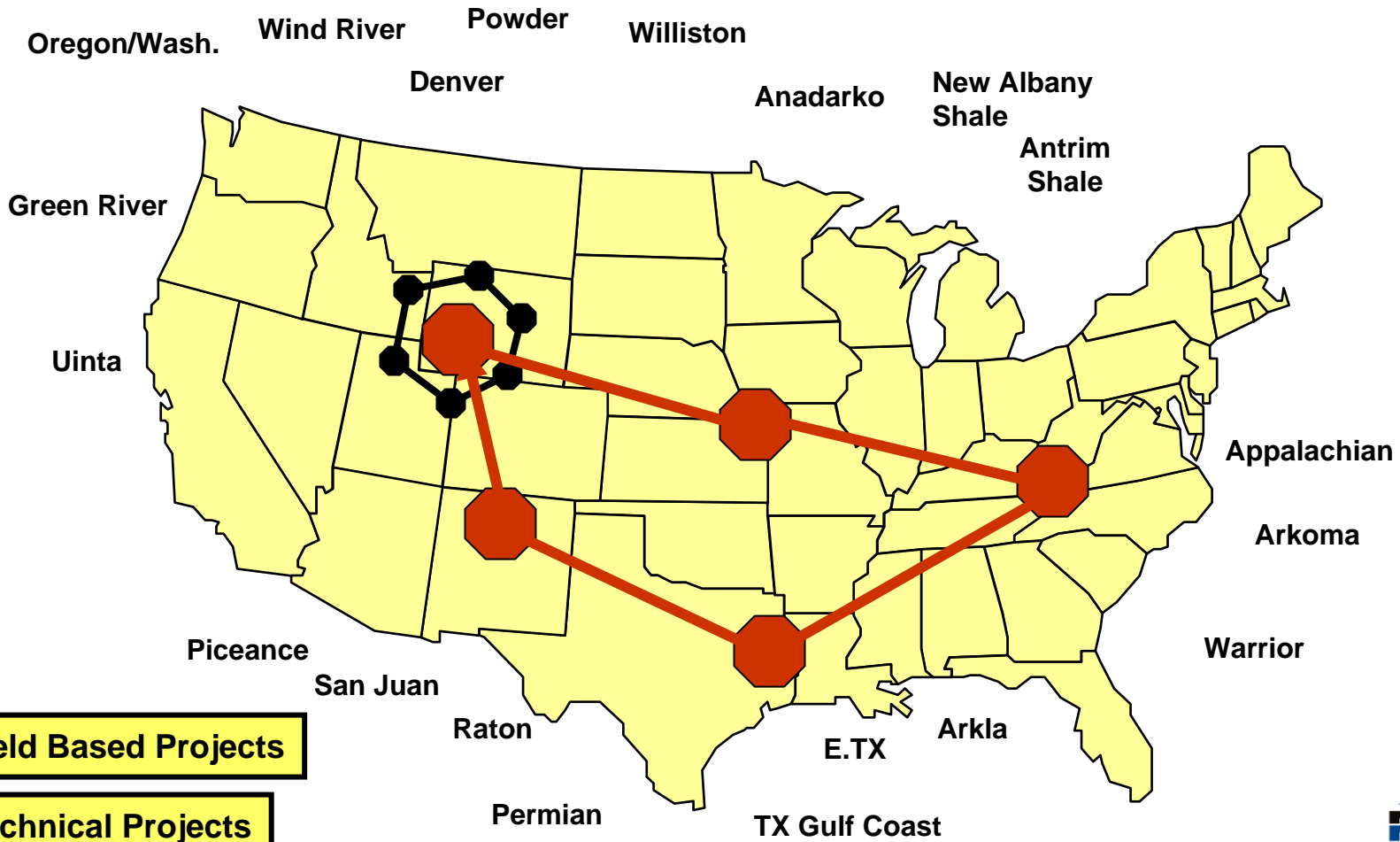
Goals to be  
Developed with  
Deliverables


Field Based R&D  
Producer Partner Wells  
Major Field Experiments

Technology  
Dissemination  
Sequenced  
Workshops/Seminars



# Integrated Program





# 2009 Draft Annual Plan – Small Producer Program

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- **Mission & Goals**

- Unchanged from 2007, 2008
- Increase supply from mature resources
  - Reduce cost
  - Increase efficiency
  - Improve safety
  - Minimize environmental impact

- **Objectives**

- Near Term
  - Improve water management & optimize water use
  - Improve oil & gas recovery in mature fields, extending economic life
  - Reduce field operating costs
- Longer Term
  - Apply developed technologies to new basins/areas and develop new technologies to address the same objectives





# Small Producer Program - 2007 Projects

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- **Seven projects addressing concerns of small producers operating mature assets**
  - **Produced water treatment**
  - **Enhanced oil recovery (3)**
  - **Environmental impact (2)**
  - **Improve recovery and sweep efficiency**
- **Projects each involve a consortium of researchers and small producers**
- **Small Producer Research Advisory Group (RAG) actively involved**

# 2007 Small Producer Project Selections



# 2008 Draft Annual Plan – Onshore Small Producer Program


- Slight Revisions to 2007 Plan
- Small Producer Program
  - Emphasize role of technology transfer
  - Clarify technology transfer aspects of program
  - Maintain advancing technology for mature fields focus



# 2009 Draft Annual Plan – Small Producer Program

- **Awards to be made to Consortia**
  - Small producers or organized for the benefit of small producers
  - Small producer:  $\leq 1000$  BOEPD
- **2009 Annual Plan Solicitations**
  - Theme: Advancing Technology for Mature Fields
  - Path to initial application is critical
  - Complement 2007, 2008 project selections





# 2009 Draft Annual Plan – Small Producer Program

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- **Technology Challenges**

- Water management
- Improve recovery/extend economic life of reservoirs
- Reduce field operating costs and decrease environmental impact
- Well monitoring and reservoir modeling to allow efficient field operations
- Improved methods for well completions and recompletions
- Field tests of emerging technology
- Well and field data management
- Capture and reuse of waste products to reduce costs or increase recovery
- Leverage existing wellbores and surface footprint to maximize recovery

- **Other topics addressing the program theme of Advancing Technology for Mature Fields are welcome**



# 2009 Draft Annual Plan – Onshore Program

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- **Small Producer Program**
  - Evolutionary changes anticipated
  - Learn from experience
- **Unconventional Program**
  - Begin to form integrated program from individual projects
  - Identify and target program gaps
  - Move toward larger-scale coordination of projects to focus on specific resources



# Technology Transfer Plans

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## **2.5% Set-aside for Tech Transfer in each subcontract**

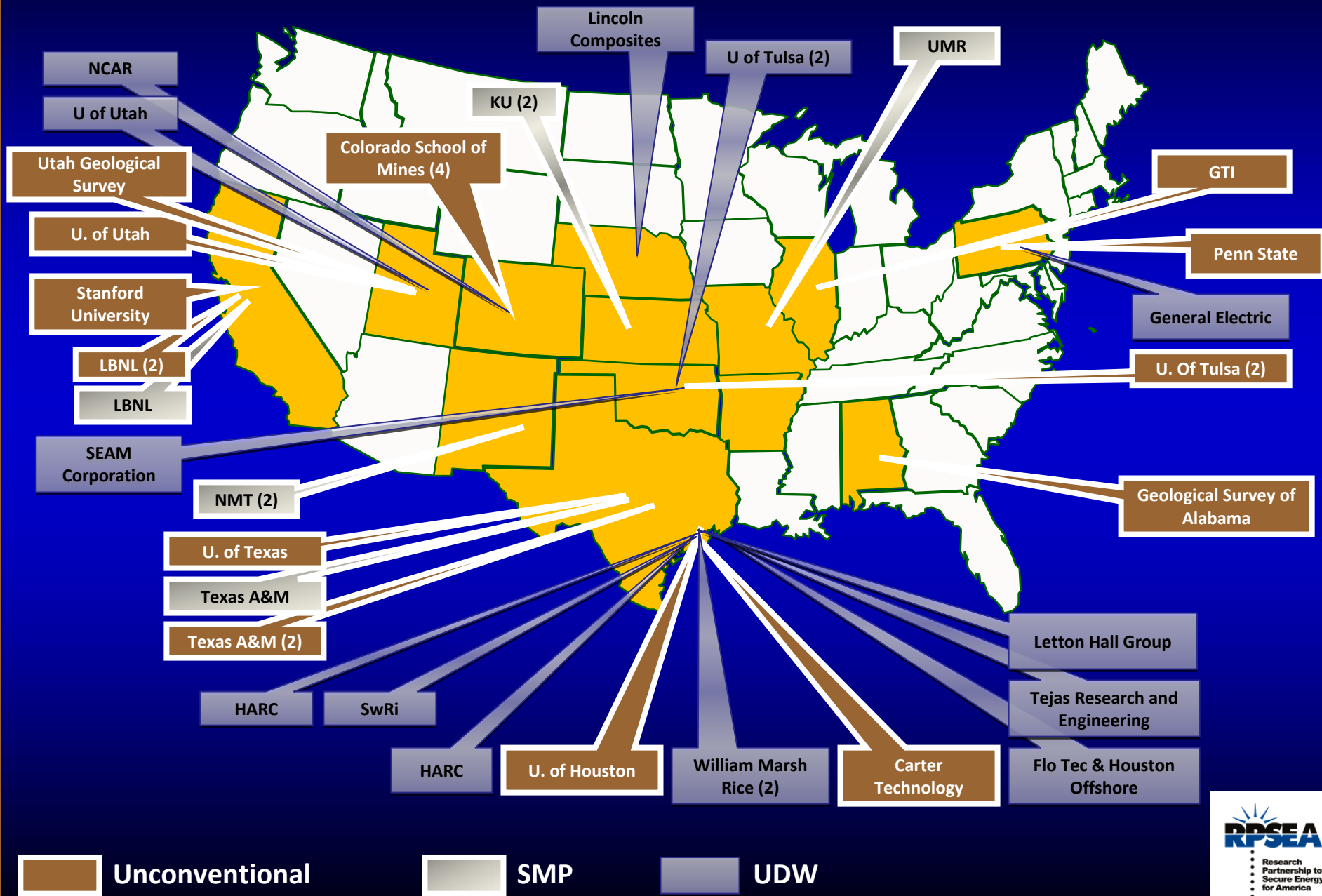
### **– 1.5% Project Level**

- Preparing publications
- Participating in conferences & workshops

### **– 1% Program Level**

- Support activities that impact multiple projects
- Regional workshops, conferences
- Topical conference
- Directed publications
- Newsletter
- Website/Database creation & maintenance (Knowledge Database)
- Technical support
- Other novel approaches?

# 2007 Pre-award Selection





# Questions?

