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• **Research**
• **Partnership to**
• **Secure Energy**
• **for America**
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**Offshore Technology
Conference 2009**

**C. Michael Ming
Houston, TX
May 6, 2009**

SECURE ENERGY FOR AMERICA

The Energy Policy Act of 2005 And Section 999:

A Industry led 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.

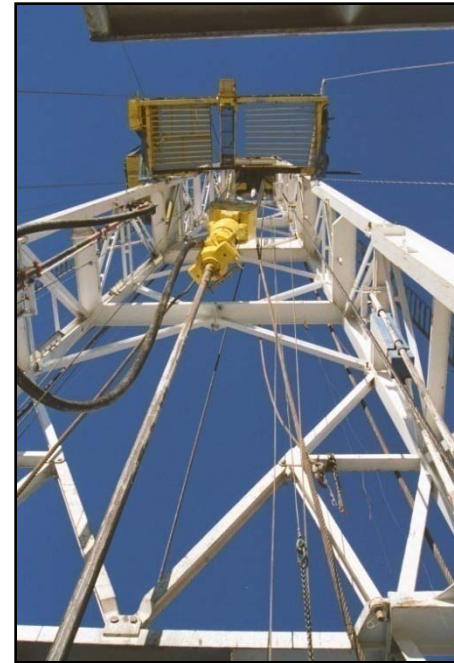


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What is Section 999?

Specifically, the law directs --

- Research, development, demonstration, and commercial application of technologies for ultra-deepwater and unconventional natural gas and other petroleum resource
- Maximize the U.S resource value by:
 - Increasing supply
 - Reducing the cost
 - Increasing E&P efficiency
 - Improving safety and minimizing environmental impacts



RPSEA Members

Centre for Marine CNG
- Newfoundland, Canada



Current Members



Pending Members



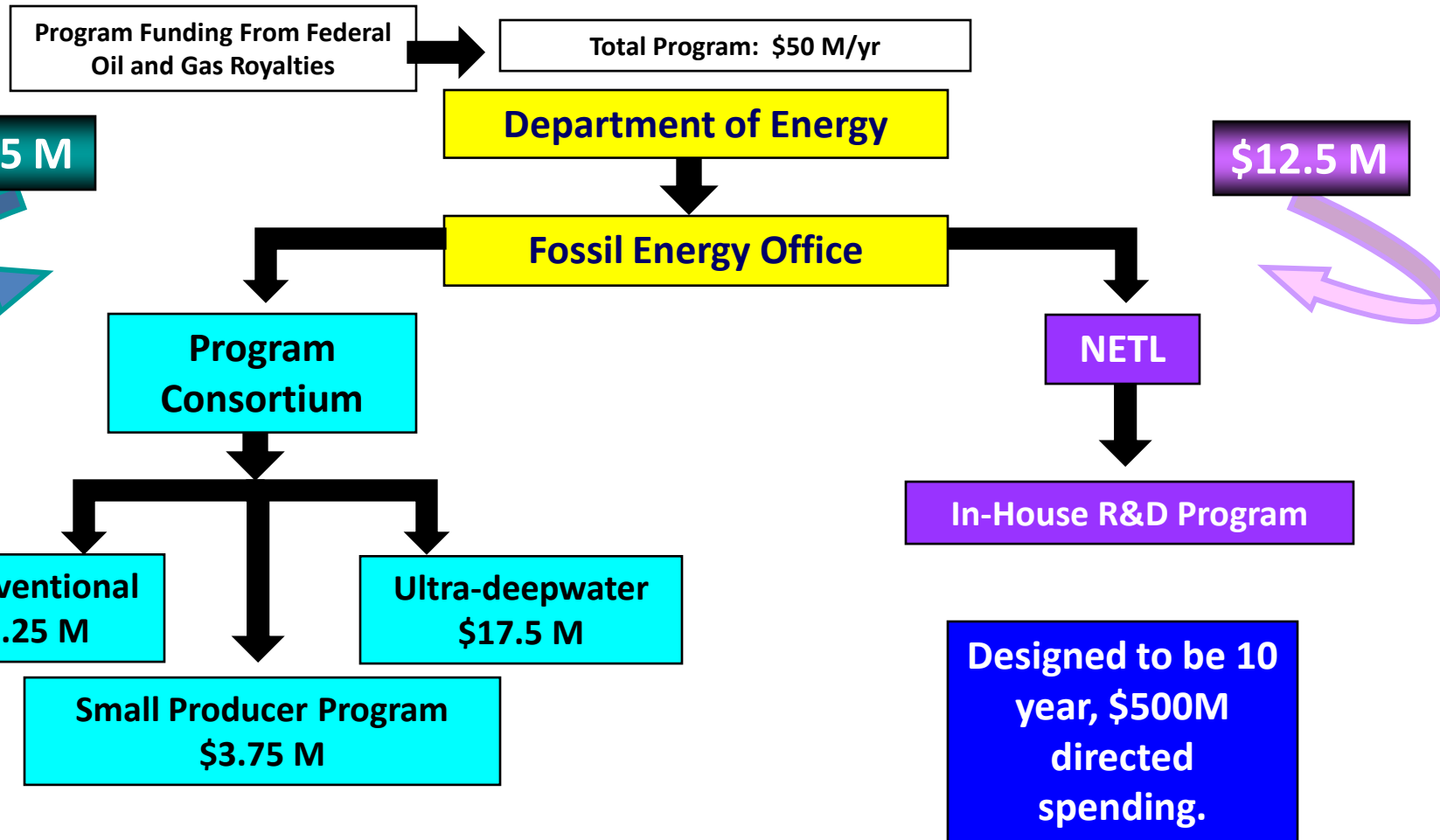
Acergy US
Acute Technology Services
Anadarko
Apache
Apex Spectral
B P America
Baker Hughes
BJ Services
Cameron/Curtiss-Wright EMD
Capstone Turbine
Carbo Ceramics
City of Sugar Land
ConocoPhillips
CSI Technologies
Deepwater Structures
Det Norske Veritas (USA)

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

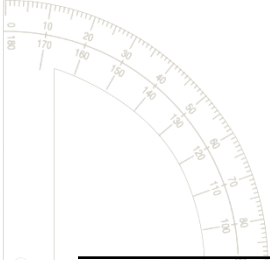
Nalco
NanoRidge Materials
Nautilus International
Noble Energy
OTM Consulting
Oxane Materials
Petris Technology
Petrobras America
Quanelle
Rice University
Rock Solid Images
RTI Energy Systems
Schlumberger
Shell Exploration & Production
Simmons and Co.
StatoilHydro

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

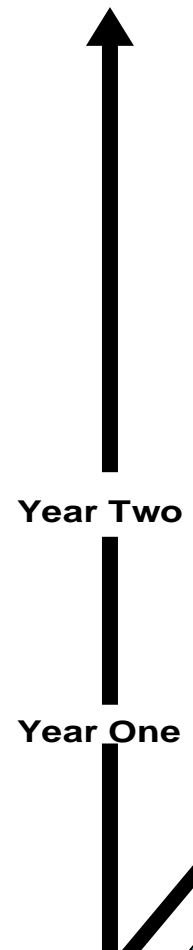
Current Program Structure/Funding



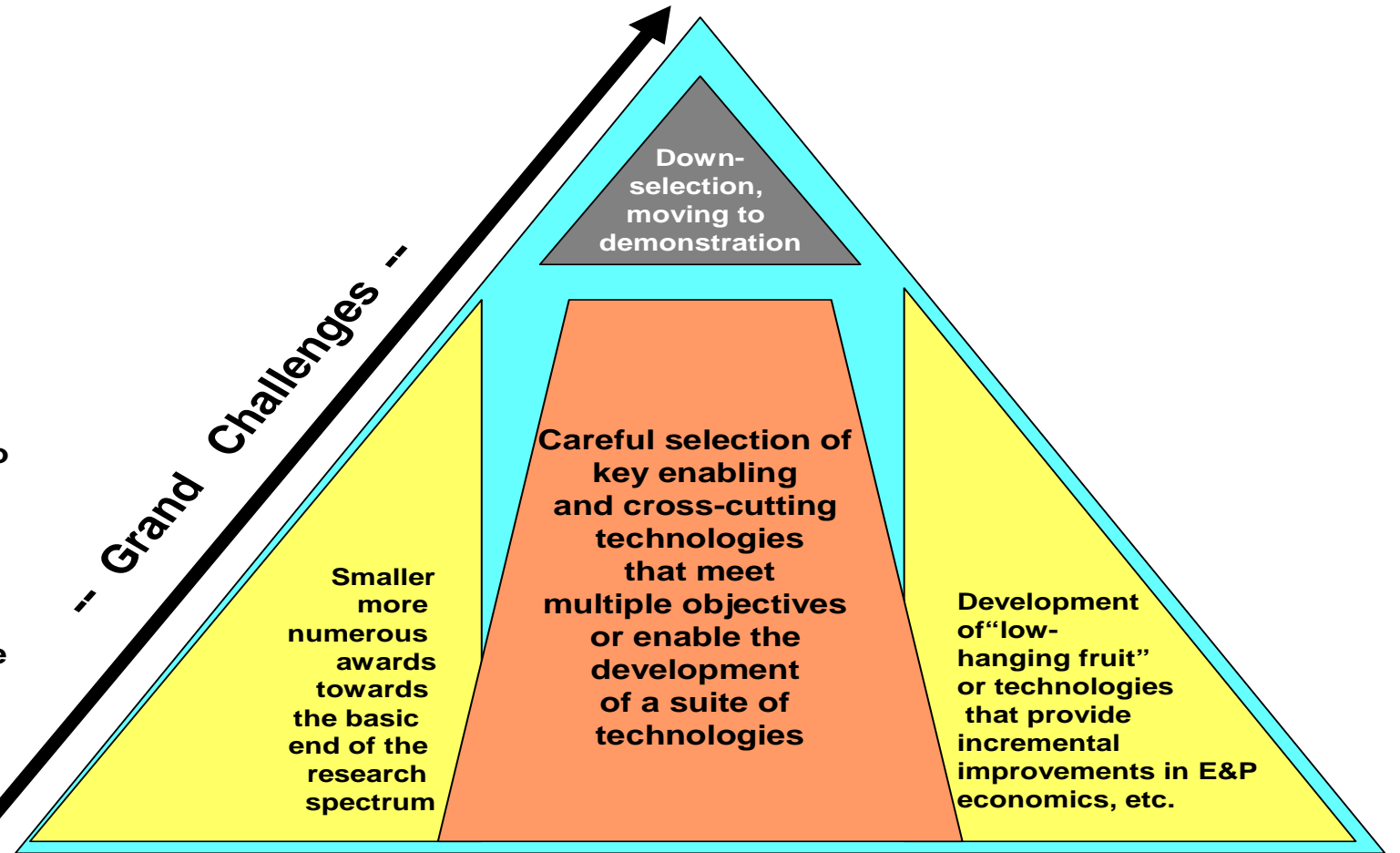
Building a Relevant Portfolio



Years Five
thru Ten



-- Grand Challenges --



Smaller
more
numerous
awards
towards
the basic
end of the
research
spectrum

Careful selection of
key enabling
and cross-cutting
technologies
that meet
multiple objectives
or enable the
development
of a suite of
technologies

Development
of "low-
hanging fruit"
or technologies
that provide
incremental
improvements in E&P
economics, etc.

Science Themes

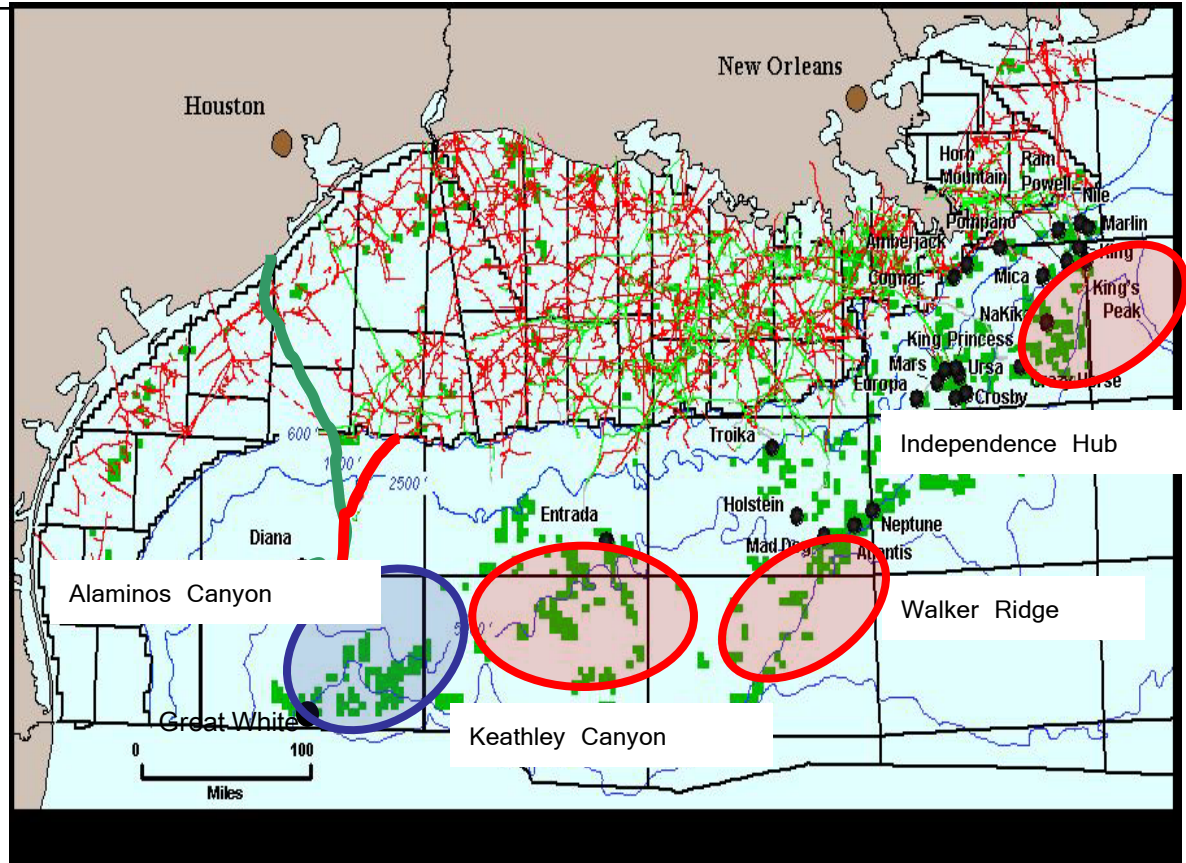
Enabling/Cross-cutting Themes

Enhancing Themes



GOM Ultra-deepwater Activity

- **Walker Ridge /Keathley Canyon**
 - Sub-salt
 - Deeper wells
 - Tight formations
 - **Alaminos Canyon**
 - Viscous crude
 - Lacking infrastructure
 - **Eastern Gulf – Gas Independence Hub**
 - Higher pressure
 - Higher Temperature
 - CO₂ / H₂S
- Higher Drilling Costs**
Challenging Economics





RPSEA UDW Structure PAC and TACs

Resource of >700 SMEs from industry, academia and government!

Program Advisory Committee
“The PAC”

Regulatory TAC (X100)
51 Active Members

Flow Assurance TAC (X200)
100 Active Members

Subsea Systems TAC (X300)
138 Active Members

Floating Systems TAC (X400)
150 Active Members

Drilling & Completions TAC (X500)
66 Active Members

Reservoir Engineering TAC (X700)
44 Active Members

Met Ocean TAC (X800)
55 Active Members

Systems Engineering TAC (X900)
76 Active Members

Geoscience TAC (X000)
15 Active Members



2007 & 2008 UDW Selection Process

April, 2007

120+ Project Ideas
\$300 MM

June, 2007

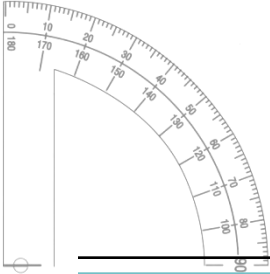
70 Project Ideas
\$175 MM

July, 2007

26 Project Ideas
\$30 MM

RPSEA 2007 & 2008 Projects

2007 UDW projects



Project	Project Title	Number of bids	Selected	Award (RPSEA max)
DW1201	Wax Control	3	University of Utah	\$400,000
DW1301	Improvements to Deepwater subsea measurements	2	Letton Hall Group	\$3,564,000
DW1302	High Conductivity Umbilicals	2	Technip	\$448,000
DW1401	Composite Riser for UDW High Pressure Wells	3	Lincoln Composites	\$1,680,000
DW1402	Deepwater dry tree system for drilling production	4	FloTec / Houston Offshore	\$936,000
DW1403	Fatigue Performance of High Strength Riser Materials	2	SwRI	\$800,000
DW1501	Extreme Reach Development	2	Tejas	\$200,000
DW1603	Design investigation xHPHT, SSSV	6	Rice Univ.	\$120,000
DW1603	Robotic MFL Sensor; monitoring & inspecting risers		Rice Univ.	\$120,000
DW1603	Hydrate Plugging Risk		Tulsa Univ.	\$120,000
DW1603	Hydrate Characterization & Dissociation Strategies		Tulsa Univ.	\$120,000
DW1701	Improved Recovery	2	Knowledge Reservoir	\$1,600,000
DW1801	Effect of Global Warming on Hurricane Activity	1	NCAR	\$560,000
DW1901	Subsea processing System Integration	2	GE Research	\$1,200,000
DW1902	Deep Sea Hybrid Power Systems:	1	HARC	\$480,000
DW2001	Geophysical Modeling Methods	2	SEG	\$2,000,000

summary


32



2008 UDW projects

TAC Number	Impact	2008 RPSEA Max Share
DW 2101	New Safety Barrier Testing Methods	\$ 128,000
DW 1202	EOS improvement for xHPHT	\$1,600,000
DW 2201	Viscous Oil PVT	\$460,000
DW 2301	Deepwater Riserless Light Well Intervention	\$3,411,500
DW 1502	Coil Tubing Drilling & Intervention	\$820,000
DW 2501	Early Reservoir Appraisal, Utilizing a Low Cost Well Testing System - Phase 1	\$880,000
DW 2502	Modeling and Simulation; MPD	\$384,000
DW 2701	Resources to Reserves Development and Acceleration through Appraisal	\$400,000
DW 2801	Gulf 3-D Operational Current Model Pilot	\$1,248,000
DW 2901	power distribution & components (Component Qualification)	\$4,811,000
10 Projects	Totals	\$14,142,500

Ultra Deepwater Needs

- Drilling, completion and intervention breakthroughs
 - Appraisal & development geoscience and reservoir engineering
 - Significantly extend subsea tieback distances & surface host elimination
 - Dry trees/direct well intervention and risers in 10,000' wd
 - Continuous improvement / optimize field development
 - Per wellbore recovery
 - Cost reduction
 - Reliability improvements
 - Efficiency improvements
 - Associated safety and environmental trade-offs
- 

Unconventional Onshore Themes

■ 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**





The Technology Challenges of Small Producers

Focus Area – Advancing Technology for Mature Fields

■ Target – Existing/Mature Oil & Gas Accumulations

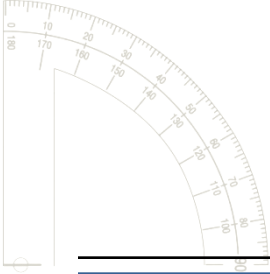
- Maximize the value of small producers' existing asset base
- Leverage existing infrastructure
- Return to production of older assets
- Minimal additional surface impact
- Minimize and reduce the existing environmental impact
- Lower cost and maximize production





Award Composition - 2007 Program

	Small Producer	On Shore	Ultra Deepwater	Total
Universities	6	13	5	24
For Profits	0	1	8	9
Non-Profits	0	1	4	5
National Labs	1	2	0	3
State Agencies	0	2	0	2
Total Selected	7	19	17	43



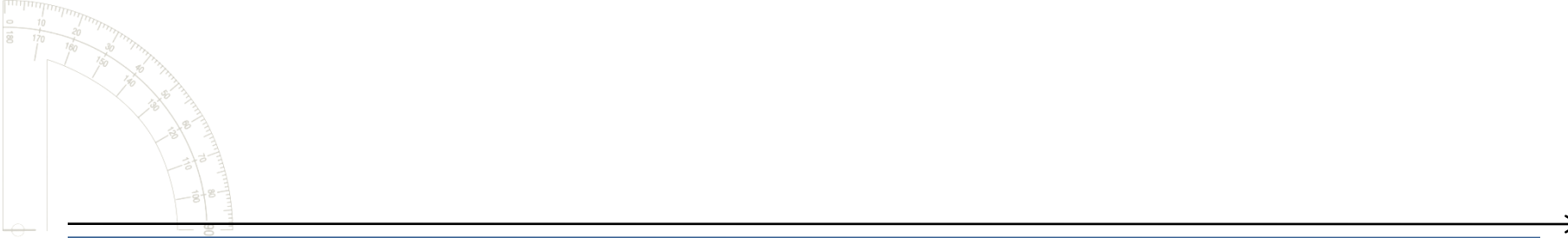
Award Value – 2007 Program

	Total Value (000)	RPSEA Share (000)	Cost Share (000)	Cost Share %
Small Producer	\$ 5,334	\$ 2,981	\$ 2,353	44
On Shore	\$33,620	\$17,938	\$15,682	47
Ultra Deepwater	\$20,311	\$15,317	\$ 4,994	25
Total Program	\$59,265	\$36,236	\$23,029	39

2008 Awards

	Small Producer	On Shore	Total
Universities	4	5	9
For Profits	2	1	3
Non-Profits		2	2
National Labs		1	1
State Agencies			
Total Selected	6	9	15

	Total Value (000)	RPSEA share (000)	Cost Share (000)	Cost Share %
Small Producer	\$6,836	\$3,140	\$3,695	54
On Shore	\$17,182	\$13,746	\$6,836	40
Total Program	\$24,019	\$16,886	\$10,532	44



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

Wayne Gretzky

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