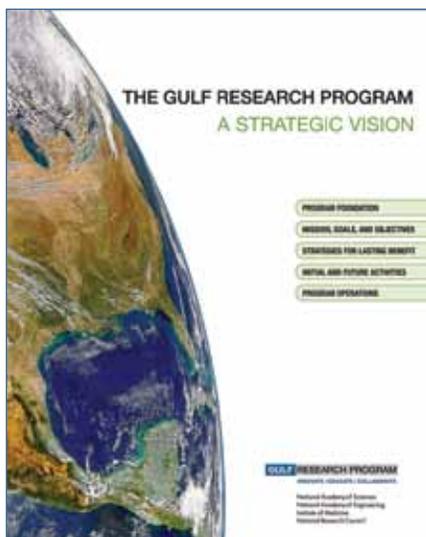


### The Gulf Research Program: A Strategic Vision

**IN 2010, THE DEEPWATER HORIZON EXPLOSION AND FIRE** caused the largest offshore oil spill in U.S. history, which had significant impacts on the Gulf environment and people. As part of legal settlements with the companies involved, the National Academy of Sciences (NAS) has established the Gulf Research Program with a mission to enhance oil system safety and the protection of human health and the environment in the Gulf of Mexico and other U.S. outer continental shelf areas. After gathering input from people and organizations in the Gulf region, the program's Advisory Group has developed a strategic vision that identifies program goals, objectives, and strategies, and lays out initial and future activities.

**The Gulf of Mexico region is home** to diverse and vibrant communities, productive ecosystems, and thriving economies. Today, 40 million residents live in the region's coastal communities, which also house 7 of the 10 busiest ports in the United States. Wetlands along the Gulf states' 3,500 miles of coastline provide essential habitat for fisheries and 70% of the Nation's migrating birds. Abundant natural resources drive economies, including billion-dollar fishing and tourism industries, and a trillion dollar gas and oil industry. Nearly half the Nation's natural gas and 23 percent of its oil are produced in the Gulf of Mexico.

The 2010 Macondo Well *Deepwater Horizon (DWH)* oil spill placed a spotlight on the importance of the region. As part of agreements settling criminal charges against the companies held responsible for the spill—BP Exploration & Production Inc. (BP) and Transocean Deepwater Inc. (Transocean)—the Department of Justice asked the National Academy of Sciences (NAS) to establish a new research program to be supported by \$500 million paid by BP and Transocean between 2013 and 2018, with the funds to be expended over the 30 years, until 2043.



With its \$500 million endowment and 30-year duration, the Gulf Research Program presents an extraordinary opportunity to tackle large, complex issues at a regional scale and from a long-term perspective. Beginning in summer 2013, NAS appointed an Advisory Group to develop a strategic vision to guide the Program. The group worked for one year to gather input from the Gulf region, learn from other organizations with similar missions, and identify needs that align with the Program's specified mandate. This document describes the Gulf Research

Program's initial focus to guide its work over its first 5 years (2015-2020), with the recognition that the Program will evolve over time.

#### PROGRAM MISSION AND GOALS

The agreements provide broad guidance on how the funds are to be used. The Program is expected to engage the nation's scientific, engineering, and health communities with the overarching objectives of "enhancing the safety of offshore oil drilling and hydrocarbon production" and protecting "human health and environmental resources in the Gulf of Mexico and United States outer continental

shelf.” The Program is expected to consist of studies, projects, and other activities using three approaches—research and development, education and training, and environmental monitoring.

The Gulf Research Program’s most valuable contributions are likely to come at the intersections of its areas of responsibility—oil system safety, human health, and environmental resources. Given this context, the Program will address three interconnected goals:

**Goal 1: Foster innovative improvements to safety technologies, safety culture, and environmental protection systems associated with offshore oil and gas development.**

The Gulf Research Program’s contributions to this effort are likely to involve partnerships with industry, with relevant federal agencies, with educational institutions, and with existing safety-oriented centers and institutes. The Program will emphasize systemic approaches, the prevention of harm and reduction of risk, organizational science behind safety, protection of worker health, and the connectivity and interdependence of the industry, people, and communities.

**Goal 2: Improve understanding of the connections between human health and the environment to support the development of healthy and resilient Gulf communities.**

The Gulf Research Program will include efforts to improve capacity to detect, assess, and communicate about environmental health risks in ways that support the development of healthy and resilient communities. The Program could contribute to national, state, and local efforts to improve community resilience by identifying baseline information needed to track the effects of future disasters and other environmental disturbances; identifying variables and mechanisms that can help address public concerns about health, air and water quality, or the long-term safety of seafood; and improving capacity to prepare for and respond and adapt to future adverse events.

**Goal 3: Advance understanding of the Gulf of Mexico region as a dynamic system with complex, interconnecting human and environmental systems, functions, and processes to inform the protection and restoration of ecosystem services.**

Because other parts of the United States also grapple with the interplay of health, environment, and energy

**Mission of the Gulf Research Program**

Over its 30-year duration, the Gulf Research Program will work to enhance oil system safety and the protection of human health and the environment in the Gulf of Mexico and other U.S. outer continental shelf areas by seeking to improve understanding of the region’s interconnecting human, environmental, and energy systems and fostering application of these insights to benefit Gulf communities, ecosystems, and the Nation.

production, the Program offers an opportunity for research of national significance and relevance and for transfer of knowledge among U.S. regions and other nations addressing similar issues. A critical tool to assist in advancing understanding of the Gulf system will be environmental monitoring, including observations, measurements, analysis, modeling, and interpretation. The Gulf Program will seek opportunities to advance coordinated planning, technological innovation, and integration of data, especially in ways that advance a regional and ecosystem-oriented approach.

**PROGRAM OBJECTIVES**

To support these goals in the first five years (2015–2020), the Program will pursue the following broad objectives through a variety of activities and approaches:

- Partner with industry, government, and academia to identify key opportunities for enhancing the safety of offshore energy development.
- Explore models of decision support systems for safe and environmentally sustainable offshore oil and gas development, disaster response, and remediation options.
- Provide research opportunities that improve understanding of how social, economic, and environmental factors influence community vulnerability, recovery, and resilience.
- Support research, long-term observations and monitoring, and information development to advance understanding of environmental conditions, ecosystem services, and community health and well-being in the Gulf of Mexico.
- Support the development of future professionals and leaders—in science, industry, health, policy,

and education—who apply cross-boundary approaches to critical issues that span oil system safety, human health, and environmental resources.

- Identify opportunities for knowledge transfer between the Gulf of Mexico and other U.S. outer continental shelf regions.
- Support activities to improve understanding and use of scientific information by the public and policy makers in decisions related to environmental stewardship, human health improvement, and responsible oil and gas production.



*A lone oystercatcher spreads its wings in shallow water off the Florida coast.*

Source: ©iStock.

## **STRATEGIES TO ACHIEVE LASTING BENEFIT**

The planning process identified six overarching strategies that can steer the Program toward producing lasting benefit. These are key opportunities where the mission of the Gulf Research Program aligns with the strengths of the National Academies and where the 30-year duration and long-term perspective hold special potential for cumulative impacts.

**1. Long-Term, Cross-Boundary Focus.** Two distinctive features of the Program are the 30-year duration and the geographic focus that extends beyond the Gulf of Mexico to also include other U.S. outer continental shelf regions. The Program will attempt to select areas of work that take advantage of a long-term perspective and result in the transfer of knowledge between the Gulf of Mexico and other offshore energy-producing regions. The Program will also encourage work across state, disciplinary, and sectoral boundaries.

**2. Science to Advance Understanding.** A fundamental purpose of the Program is to bring the best expertise in science, engineering, technology, and health to advance understanding of the Gulf region in the context of linkages among people, ecosystems, and energy development. The Program aims to encourage innovative thinking and approaches and potentially transformative science and technology.

**3. Science to Serve Community Needs.** The Program seeks to foster science that serves the needs of the region's numerous and diverse communities, including translational research that is focused on the ways in which new knowledge can be used by

the public, resource managers, program managers, community planners, and other decision makers.

**4. Synthesis and Integration.** Given the amount of data and information already available about the Gulf of Mexico, the Program envisions significant opportunities in the synthesis and integration of data and information, especially across disciplines, to produce novel insights and accelerate the translation of new understanding into action.

**5. Coordination and Partnerships.** Being one program among many operating in the Gulf region, the Program recognizes the importance of coordination to avoid duplication and leverage resources. The 150-year history of the NAS as an independent nonprofit organization devoted to consensus building positions the Program to provide leadership and participate in efforts to facilitate coordination and build partnerships among the many groups and organizations operating in the Gulf region.

**6. Leadership and Capacity Building.** By investing in leadership and capacity building, the Program hopes to provide opportunities for academic and community leaders, state and regional decision makers, students, and institutions to develop skills, competencies, and capabilities that are needed to solve problems, spark innovation, and establish sustainable systems, economies, and communities.

## **INITIAL AND FUTURE ACTIVITIES**

A suite of initial, short-term activities will be funded in 2015, even while planning for larger and longer term activities continues. The first calls for applications will be in three areas: exploratory grants, research

fellowships, and science policy fellowships. A fourth opportunity related to synthesis and integration of environmental monitoring data will be offered in early 2015. The Program also expects to support expert consensus studies of value to the Gulf region, planning meetings to inform the Program's future activities, and workshops and other mission-relevant activities.

As these initial activities get under way, an Advisory Board will lead continued Program development and will identify larger and more far-reaching

themes and activities to achieve the Program's goals and objectives. In 2015 the Gulf Research Program will use the results of three opportunity analysis workshops to begin additional activities in the areas of training middle-skilled workers, community resilience and health, and environmental monitoring. The incoming Advisory Board will work to determine future potential activities that address the program's mission and objectives, align with the strengths of the NAS, and increase the Program's impact.

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### Initial Activities

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#### **Exploratory Grants**

##### **2015 Topics:**

- Exploring approaches for effective education and training of workers in the offshore oil and gas industry and health professions
- Linking ecosystem services related to and influenced by oil and gas production to human health and well-being

##### **Expected 2016 Topics:**

- Innovative approaches to developing scenario planning and decision-support systems to cope with crises
  - Connecting data about environmental conditions with individual and population health data to foster transdisciplinary research
  - Building resilience in human and environmental systems of the Gulf of Mexico and other offshore energy-producing regions
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#### **Fellowships**

**Early-Career Research Fellowships:** Two-year fellowships for pretenure faculty, recognizing exceptional leadership, past performance, and potential for future contributions to improving oil system safety, the environment, or human health

**Science Policy Fellowships:** One-year fellowships that will contribute to leadership development and capacity building by providing recipients with a valuable educational experience at the science-policy interface.

**Christine Mirzayan Science and Technology Policy Graduate Fellowship:** An existing National Academies fellowship that introduces early-career professionals to the role of science in the federal government. One fellow will be hosted each year by the Gulf Research Program for this 12-week opportunity in Washington, D.C.

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#### **Environmental Monitoring**

**Integration and Synthesis of Monitoring Data Opportunity:** Applicants will be challenged to propose hypothesis-driven projects that identify and synthesize existing data related to either the deep Gulf or ecosystem services for restoration and management themes.

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Copies of *The Gulf Research Program: A Strategic Vision* may be purchased from the National Academies Press, 500 Fifth Street, NW, Washington, D.C. 20001 or downloaded free at [www.nap.edu](http://www.nap.edu).

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