



# GULF RESEARCH PROGRAM



## 2020-2024 STRATEGIC PLAN

*The National  
Academies of*

SCIENCES  
ENGINEERING  
MEDICINE

GULF RESEARCH PROGRAM

## PREFACE

What will the Gulf of Mexico region be like 25 years from now? It is impossible to predict, of course, but this is the challenge presented to the Strategic Planning Committee for the Gulf Research Program (GRP): to lay out a strategic plan for the next five years that positions the GRP to effect positive change over the next few decades, no matter what the future holds.

The GRP intends to make strategic and tailored investments that create a more safe, resilient and sustainable future for the Gulf and all those who call the region home. For the next 25 years, the overarching goals of the GRP are: to reduce the likelihood of a catastrophic accident and lessen the severity of consequences associated with offshore energy operations; protect and enhance the socio-ecological systems of the Gulf region; and enhance health and well-being for all in the Gulf region. The GRP will leverage cross-cutting research, improve accessibility of data and the best available scientific information to decision-makers, and empower the people of the Gulf region through education and capacity building programs.

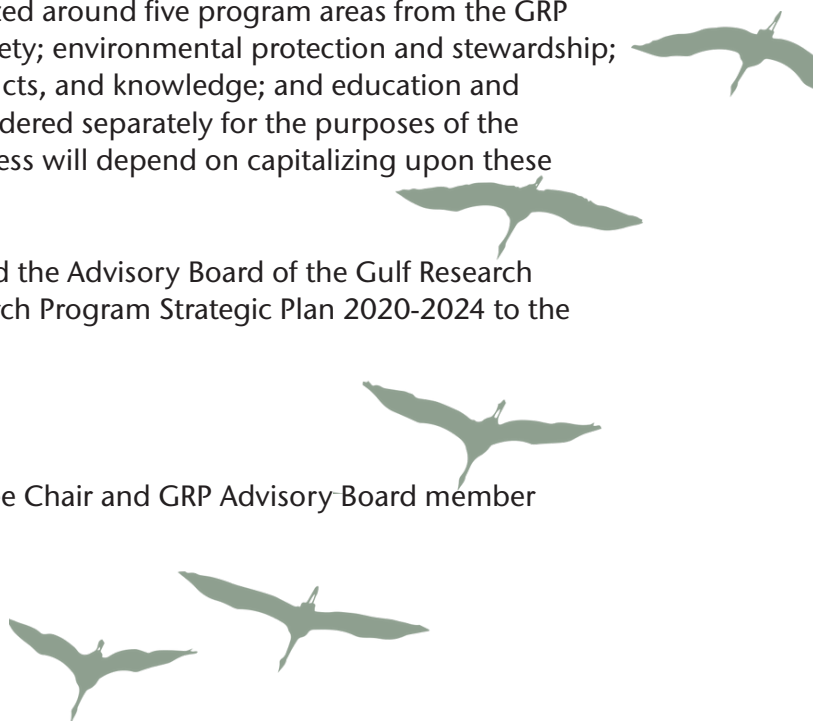
The Gulf region faces complex and interacting multiple stressors related to its economy, environment, and people. The GRP seeks to address these challenges by developing, translating, and using science, engineering, and medical knowledge in new ways. Fostering partnerships is central to the GRP's work, and partnerships lie at the core of this strategic plan, as well. These include new and enhanced partnerships between and among scientists and policy-makers; scientists, engineers, and other subject matter experts; and scientists and educators from all levels of education. The GRP will inspire innovative science, guide data design and monitoring, and transform results to action.

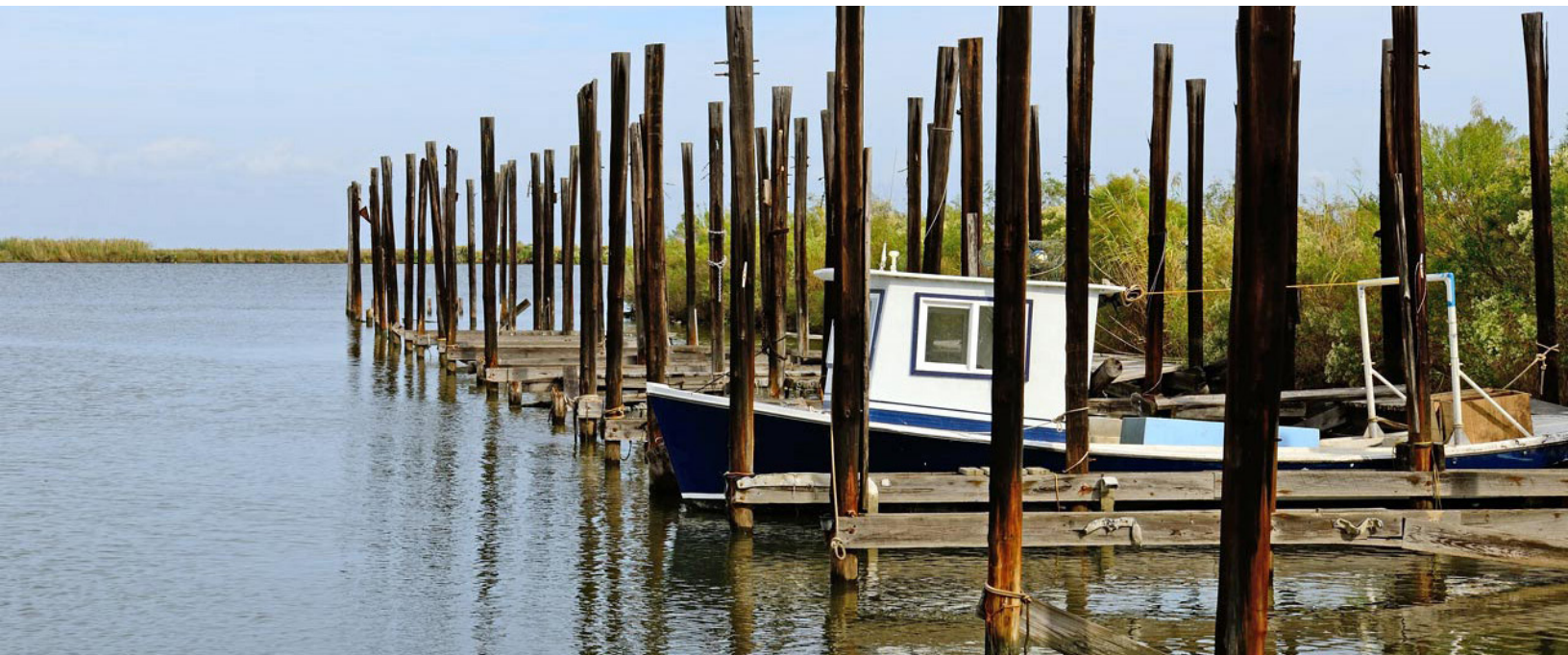
With an expanded vision of the role that the GRP can play over time, and with the benefit of what has been learned from the Program's early years, the Strategic Planning Committee developed a plan for 2020-2024. It identifies specific goals, objectives, and activities that are results-based and measurable, and they enable the GRP to continue to learn and adapt in the face of changing opportunities and constraints. This plan is organized around five program areas from the GRP settlement mandate language: offshore energy safety; environmental protection and stewardship; health and community resilience; data, data products, and knowledge; and education and engagement. Although the program areas are rendered separately for the purposes of the plan, they relate to each other, and the plan's success will depend on capitalizing upon these interdependencies for maximal effect.

On behalf of the Strategic Planning Committee and the Advisory Board of the Gulf Research Program, we are pleased to submit the Gulf Research Program Strategic Plan 2020-2024 to the leadership of the GRP.

Sincerely,

Barbara Entwisle GRP Strategic Planning Committee Chair and GRP Advisory Board member  
Jerry Melillo, GRP Advisory Board Chair





## ORIGIN OF THE GULF RESEARCH PROGRAM

The *Deepwater Horizon* explosion and oil spill made for a dark span of 87 days in 2010 (see Box 1). The spill ultimately led to the establishment of the Gulf Research Program (GRP) in 2013 with \$500 million in criminal settlement funds entrusted to the National Academies of Sciences, Engineering, and Medicine (the National Academies) as an endowment to be fully expended by 2043. The settlement language challenges the GRP to work towards making the *Deepwater Horizon* a “never again” event. In response, the GRP is committed to advancing and applying science, engineering and, public health knowledge to reduce the risk of such an event happening and enabling the communities of the Gulf to better anticipate, mitigate, and recover from future events that may occur.

The National Academies engage top talent from the United States and abroad to address real-world problems—like the ones seen every day in the Gulf region. Those experts interpret data and make predictions about the frequency, amplitude and diversity of problems yet to come.

The GRP’s role differs from the basic research focus of the National Science Foundation and the mission-specific research of other federal entities like NOAA, USGS, or NASA. Much like its parent organization, the GRP has an evidence-based policy focus, and puts a strong emphasis on using information to effect real change in the Gulf. The GRP’s license to conduct “studies, projects, and other activities” in the Gulf of Mexico region and on the outer continental shelf of the United States and within the areas of offshore energy production, environmental protection, and human health and community resilience enables it to strengthen the evidence-base by piloting solutions to problems, evaluating outcomes, and adapting its approaches, as needed, to ensure that the science has continued impact. The GRP is given the rare gift of time and resources to apply the knowledge of today and emerging innovations to meet this charge.



## WHERE WE WORK: THE DYNAMIC GULF OF MEXICO REGION

The GRP mandate specifies “the Gulf of Mexico and the outer continental shelf of the United States” as the geography for this endowment (Box 1). The richness and complexity of the five states of the Gulf of Mexico—Alabama, Florida, Louisiana, Mississippi, and Texas—are both strengths and challenges for the GRP’s work. While the GRP will honor the full geography stipulated in this mandate, it will focus most of its efforts in the Gulf of Mexico region over these next five years. The region is the heart of the US energy industry; it produces nearly \$1 billion in fisheries revenue annually; and its ports are critical to economic trade in the United States. Tourists flock to the Gulf coast region, and increasingly, people are moving there and calling the region home. Eight of the 15 fastest growing cities in the US are in the Gulf States, but growth, like many demographic markers, is uneven in the region. These five states contribute more than \$3.3 trillion to the US GDP. The oil, gas, and energy industry has been and continues to be a strong economic engine, with diverse energy enterprises in this resource-rich area.

The environment of the Gulf is comprised of people interacting with multiple freshwater, terrestrial, and marine systems. The coastal zone boasts productive fisheries, wildlife refuges, and places where

### BOX 1: THE DEEPWATER HORIZON OIL SPILL AND THE GRP MANDATE

On April 20, 2010, an explosion on the *Deepwater Horizon* rig killed 11 people, injured 17 others, and for 87 days the well spilled more than 3 million barrels of oil into the Gulf of Mexico. It is the largest offshore oil spill in US history. It led to a massive response that involved nearly 48,000 personnel at its peak. Despite efforts, observers found oil slicks over 43,300 square miles. Through civil and criminal penalties, BP and TransOcean paid out approximately \$20 billion. In 2013, \$500 million of the criminal penalty funds were entrusted in a 30-year endowment to the National Academy of Sciences to create the Gulf Research Program. The GRP is to use the funds to enhance offshore energy safety, environmental protection and stewardship, and human health and community resilience in the Gulf of Mexico region and other US regions that support offshore energy production. The GRP must “carry out studies, projects, and other activities that utilize the scientific, technical, engineering, medical, and health expertise of the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, the National Research Council, and the nation’s scientific, engineering, and health-care communities.” The GRP must also conduct its work via research and development, education and training, and environmental monitoring.

people live, work, and recreate. Intense, costly hurricanes occur in the Gulf of Mexico. Extreme weather, sea level rise, coastal storms, hypoxia, rapidly disappearing wetlands and mangrove swamps, and flooding preview how climate change and other stresses affect and will continue to affect the people and environment of this area.

The people of the Gulf—some 40 million of them—navigate the tension between the pulls of the 21st century’s weather, energy, and economy and the systemic challenges of daily life. Historical inequities, deep pockets of poverty, and poor educational and health outcomes continue to stymie well-being in many areas of the Gulf while rich culture and close ties to the natural environment inspire pride in many across the region. And it is against this backdrop that the GRP will do its work.

## **VISION, MISSION, AND ORIENTATION TO THE STRATEGIC PLAN FOR 2020-2024**

The GRP is charged to conduct “studies, projects, and other activities” in the areas of offshore energy production, environmental protection, and human health and community resilience (Box 1). The Program has an unprecedented opportunity to develop, translate, and apply science, engineering, and medical knowledge to benefit the environment, economy, and people of the Gulf region in ways that empower local communities. This strategic plan lays out the goals, objectives, and approaches for the GRP over the next five years to make the most of this opportunity, including an updated vision and mission for the GRP (Box 2).

### **BOX 2: GRP VISION AND MISSION**

**The GRP Vision for the Gulf:** A more safe, resilient, and sustainable future for the Gulf and all those who call the region home.

**The GRP Mission:** Develop, translate, and apply science, engineering, and medical knowledge to enhance offshore energy safety, environmental protection and stewardship, and human health and community resilience in the Gulf region in ways that empower its citizens.

## **THE GRP’S STRATEGIC APPROACHES**

The GRP has until 2043 to use science to address the region’s many challenges of today and improve capability to predict and adapt in a rapidly evolving region over the coming decades. To do so will require building on the GRP’s and others’ work, long-term thinking, flexibility, and a willingness to take some calculated risks. Four strategic approaches underpin the GRP’s work and should position the GRP to apply the considerable resources of the National Academies to catalyze, implement, and track positive impact in the Gulf of Mexico and beyond. The four strategic approaches are as follows:

## ADVANCE SCIENCE AND UNDERSTANDING

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**The GRP will foster the development of science, engineering approaches, and medical knowledge based on the needs of the Gulf region** in order to generate a new and integrated scientific understanding of the socioeconomic, biological, and physical systems that interact within Gulf region.

## BUILD PARTNERSHIPS AND ENGAGE NETWORKS

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**The GRP will build partnerships and strengthen networks to elevate its work, engage and reach the people it seeks to serve, and achieve the full promise of the program.** Partnerships are essential to program impact as the scope of the issues and scale of assets at stake exceed the capacity of any single entity, including the GRP. The investments and efforts of each individual organization are amplified when leveraged through partnerships within the scientific community, and even more importantly with people and organizations active in the region. Moreover, the GRP seeks to build and enhance these connections over time and for their longevity so as to yield benefits well beyond the duration of the GRP itself.

## BRIDGE KNOWLEDGE TO ACTION

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**The GRP seeks to foster science for solutions through implementing and evaluating existing approaches and pilot projects.** In keeping with its funding, timeline, and mandate, the GRP aspires to use the next few decades to change the trajectory of some of the current trends the region experiences. This will require translating, communicating, and applying current understanding, as well supporting new research, about the region's social and environmental systems to inform decision-making across different jurisdictional levels.

## MONITOR FOR PROGRESS AND CHANGE

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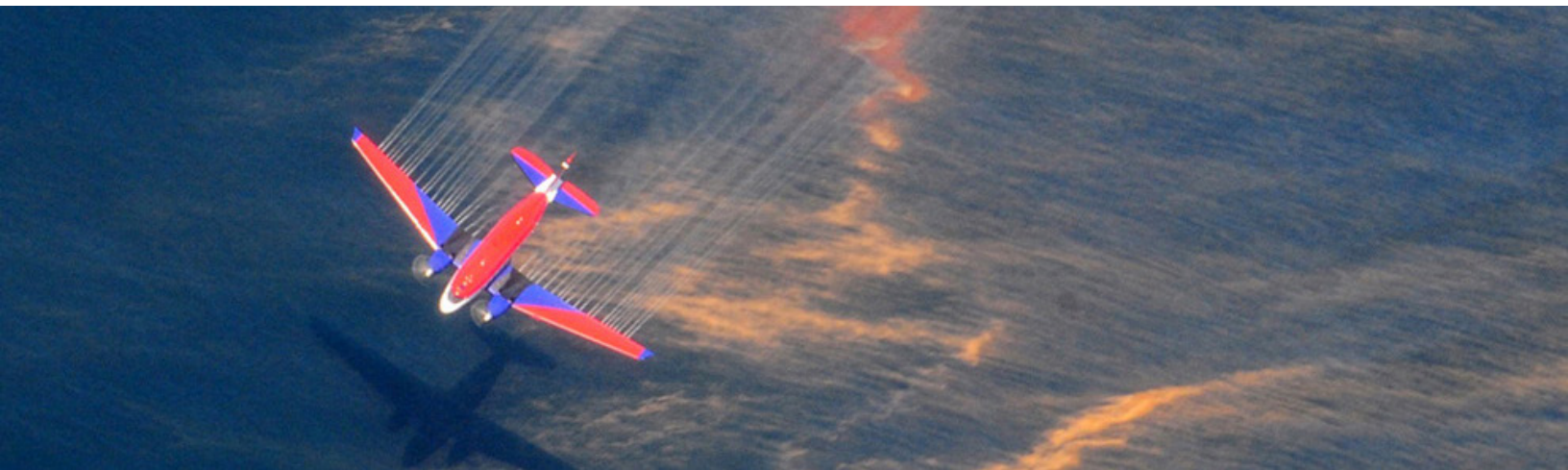
**The GRP will identify trends and data to document how the Gulf region evolves over time.** The GRP mandate includes provision for monitoring, which will be addressed through tracking progress and change across the region in areas closely related to the GRP's mission. Included are collective results from the work of other *Deepwater Horizon* settlement funds over time. In total, these efforts will help the GRP effect positive change and assess its programming consequences.



## GRP PROGRAM AREAS AND GOALS FOR 2020-2024

In the settlement language, the purpose (Section 4) of the endowment specifies offshore oil safety, environmental protection, and human health as three broad topics that the GRP’s “studies, projects, and other activities” must address<sup>1</sup>. The objectives of the work in these areas (Section 5) include elements of education, research, and monitoring (see Box 1)<sup>2</sup>. The GRP will make available research findings, data products, and access to scientific research data generated using its funds<sup>3</sup>. The three “purpose” areas, along with the education objective, and the data mandate are shaped into five primary **program areas** of the GRP. Research and monitoring serve as a critical foundation for much of the GRP’s work and cannot be extracted as stand-alone activities; thus, they are integrated across the elements of the plan.

Under each program area is a goal, a corresponding set of objectives, and a set of potential activities for the next five years. These activities are illustrative—not exhaustive—of the types of activities that the GRP may undertake, collaborate on, or support. Some of these example activities are already underway; others will be developed over the coming years (See Appendix).



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1 “NAS shall use the Endowment to establish a program focused on human health and environmental protection including issues relating to offshore oil drilling and hydrocarbon production and transportation in the Gulf of Mexico and on the United States’ outer continental shelf (the “Program”).” (Agreement Between BP Exploration and Production, Inc. and The National Academy of Sciences).

2 “To address the purpose described in paragraph 4, the Program shall fund and carry out studies, projects, and other activities in three basic categories: (a) research and development, (b) education and training, and (c) environmental monitoring.” (Agreement Between BP Exploration and Production, Inc. and The National Academy of Sciences).

3 “With respect to research data, which shall include the recorded factual material commonly accepted in the scientific community as necessary to validate research findings . . . NAS shall have the right to (1) obtain, reproduce, publish, or otherwise use the research data first produced under any grant funded by the Endowment, and (2) authorize others to receive, reproduce, publish, or otherwise use such data for Government or NAS purposes.” (Agreement Between BP Exploration and Production, Inc. and The National Academy of Sciences).

## PROGRAM AREA 1: OFFSHORE ENERGY SAFETY

The overarching goal for the GRP's Offshore Energy Safety program area is to **reduce the likelihood of a catastrophic accident and lessen the severity of consequences associated with offshore energy operations overall**. Understanding, managing, and reducing the risks of catastrophic oil spills in the offshore energy environment requires collaboration, best practices, and trust across industry, regulators, researchers, and communities. More frequent and richer communication and coordination among these groups is needed to document lessons learned from past emergencies and near-misses, to share current best practices, and to identify shared solutions to minimize impact and reduce the probability of a catastrophic event. The GRP will work closely with industry partners and others in this program area to fulfill Goal 1.0.

During the five-year period, 2020 through 2024, the GRP's Offshore Energy Safety program area focuses on systemic risk as summarized below in Goal 1.0.

### **Goal 1.0: Increase the effectiveness of oil spill prevention and response through improved understanding, measurement, and communication of systemic risk.**

*Objective 1.1: Capture and share lessons learned from past emergencies, accidents, and near-misses to apply and facilitate data-sharing on these incidents.*

*Objective 1.2: Develop and communicate measures that characterize offshore safety risks and improve offshore safety culture.*

*Objective 1.3: Identify, anticipate, and track risks and potential impacts on human health and the environment in a changing energy industry.*

The GRP may support these types of activities to address the objectives:

ACTIVITY STATUS	ACTIVITY	STRATEGIC APPROACH
In Progress	<b>Activity 1.A</b> Convene vested stakeholders in the offshore energy community with regularity to build opportunities to enhance safety culture, develop collaborative research, and prioritize data needs.	<ul style="list-style-type: none"><li>• Build Partnerships and Engage Networks</li><li>• Advance Science and Understanding</li></ul>
In Progress	<b>Activity 1.B</b> Produce quality reports that document progress towards decreasing risk of offshore oil and gas operations and identify key challenges or knowledge gaps, particularly those at the intersection of environmental stewardship and protection and human health and community resilience.	<ul style="list-style-type: none"><li>• Monitor for Progress and Change</li><li>• Advance Science and Understanding</li></ul>



ACTIVITY STATUS	ACTIVITY	STRATEGIC APPROACH
In Progress	<b>Activity 1.C</b> Use simulated catastrophic offshore events to engage a diverse set of stakeholders from industry, government, non-governmental organizations, researchers, and community groups to improve response and recovery efforts of offshore events.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> <li>• Build Partnerships and Engage Networks</li> <li>• Advance Science and Understanding</li> </ul>

## PROGRAM AREA 2: ENVIRONMENTAL PROTECTION AND STEWARDSHIP

The environment of the Gulf includes terrestrial, freshwater, coastal, and marine systems coupled with social systems that define the daily lives of millions of residents. These systems act and interact across different scales of time and geography, and relate to many of the most urgent problems the region faces. Improved and informed decision-making will be needed to adapt to a changing climate, manage land use, and incorporate social and economic benefits while protecting the environmental resources of the Gulf. The overarching goal for this program area is to **protect and enhance the socio-ecological systems of the Gulf region by connecting science and management of Gulf watersheds, coastal zones, and deep marine systems.**

During the five-year period, 2020 through 2024, the GRP's Environmental Protection and Stewardship program area focuses on science for decision-making, as summarized below in Goal 2.0.

### **Goal 2.0: Strengthen connections between science and decision-making to better protect the environment in the Gulf region.**

*Objective 2.1: Prioritize needs for scientific information to inform decision-making about human interaction with the upland, terrestrial, marine, or coastal environments in the Gulf region.*

*Objective 2.2: Lead the development of new, integrative frameworks for decision-making to connect the physical, biological, and social systems and identify ways to address multiple stresses across the Gulf region.*

*Objective 2.3: Foster improvements in ecosystem restoration efforts by bringing stakeholders together to define common goals and outcomes, identify data and monitoring gaps, and synthesize and assess what has been learned thus far.*

*Objective 2.4: Build an understanding of long-term environmental change to predict the effects on the socio-ecological systems of the Gulf region.*

The GRP may support these types of activities to fulfill these objectives:

ACTIVITY STATUS	ACTIVITY	STRATEGIC APPROACH
In Progress	<b>Activity 2.A</b> Produce quality reports that document trends in environmental stewardship and protection and identify key challenges or knowledge gaps, particularly those at the intersection of offshore energy system safety and human health and community resilience.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> <li>• Build Partnerships and Engage Networks</li> </ul>
In Development	<b>Activity 2.B</b> Convene ecosystem restoration managers, practitioners, and funders to: foster exchange of restoration best practices and lessons learned and develop strategic approaches for future restoration activities.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> <li>• Build Partnerships and Engage Networks</li> </ul>
In Exploration	<b>Activity 2.C</b> Support pilot projects, scenario planning, demonstration sites, predictive models, and decision-support tools that address identified needs or answer identified questions, and that help the GRP scale and replicate solutions across the Gulf.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> <li>• Build Partnerships and Engage Networks</li> </ul>

### PROGRAM AREA 3: HEALTH AND COMMUNITY RESILIENCE

The dynamic socioeconomic and environmental context of the Gulf presents challenges to the well-being of communities, including both acute stressors from oil spills and natural disasters and chronic stressors stemming from persistent environmental degradation or high levels of disease, and inequity across the region. The capacity to adapt and thrive in the face of such stressors is one essential ingredient in achieving positive human health and well-being outcomes. The overarching goal for this program area is to **enhance health and well-being by working with local communities to put science into action to benefit all in the Gulf region.**

During the five-year period, 2020 through 2024, the GRP's Health and Community Resilience program area focuses on building community resilience and advancing our understanding of how resilience may increase health and well-being, as summarized below in Goal 3.0.

#### **Goal 3.0. Improve health and well-being by strengthening community resilience and measuring outcomes in the Gulf of Mexico region.**

*Objective 3.1: Identify community health and resilience goals and indicators for Gulf communities through partnership and provision of technical support.*

*Objective 3.2: Work with communities to measure and track their resilience and health progress and outcomes.*

*Objective 3.3: Generate new understanding of long-term trends around Gulf community health and community resilience.*

The GRP may support these types of activities to fulfill one or more of the objectives:

ACTIVITY STATUS	ACTIVITY	STRATEGIC APPROACH
In Progress	<b>Activity 3.A</b> Produce quality reports that document trends in health, well-being, and community resilience in the Gulf region.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> </ul>
In Development	<b>Activity 3.B</b> Work at the community level to provide technical and scientific support as communities identify and work towards their health and resilience goals.	<ul style="list-style-type: none"> <li>• Build Partnerships and Engage Networks</li> <li>• Bridge Knowledge to Action</li> </ul>
In Exploration	<b>Activity 3.C</b> Work with communities to synthesize existing or collect new data and information to assess their progress towards health and resilience goals.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> <li>• Build Partnerships and Engage Networks</li> </ul>
In Exploration	<b>Activity 3.D</b> Identify key questions about health and community resilience in the Gulf region that require longitudinal data to be addressed.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> </ul>

#### PROGRAM AREA 4: DATA, DATA PRODUCTS, AND KNOWLEDGE

Although a large quantity of data has already been collected across Gulf of Mexico systems, much of it is not readily available and accessible to those who need it or wish to use it. **The GRP strives to make data and the best available scientific information accessible to decision-makers and others for use in the Gulf of Mexico region.**

During the five-year period, 2020 through 2024, the GRP's Data, Data Products, and Knowledge program area focuses on meeting data needs for decision-making in the Gulf of Mexico region, as summarized below in Goal 4.0.

#### **Goal 4.0: Inform decision-making by identifying and meeting needs for data, data products, and knowledge in the Gulf of Mexico region.**

*Objective 4.1: Identify critical data needs and useable resources through collaboration with Gulf partners.*

*Objective 4.2: Support data discovery, integration, and synthesis activities within and across GRP program areas.*

*Objective 4.3: Generate useful, available data products and modeling and prediction tools that enhance decision-making related to GRP program areas through collaboration with partners.*



*Objective 4.4: Ensure data produced through the GRP’s activities and investments are made publicly available and adhere to findable, accessible, interoperable, and reproducible data principles to the fullest extent possible.*

The GRP may support these types of activities to fulfill these objectives:

ACTIVITY STATUS	ACTIVITY	STRATEGIC APPROACH
In Progress	<b>Activity 4.A</b> Establish a partnership with the Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC) to house and document scientific research data produced by GRP grantees and fellows.	<ul style="list-style-type: none"> <li>Monitor for Progress and Change</li> </ul>
In Development	<b>Activity 4.B</b> Create state-of-the-art data visualization and presentation tools for use by communities and decision-makers.	<ul style="list-style-type: none"> <li>Bridge Knowledge to Action</li> </ul>
In Exploration	<b>Activity 4.C</b> Use data to develop integrative modeling frameworks across GRP’s program areas as a tool to monitor progress and change in the Gulf.	<ul style="list-style-type: none"> <li>Advance Science and Understanding</li> </ul>
In Exploration	<b>Activity 4.D</b> Pilot approaches to build capacities in local communities to find, interpret, and use data, data products, and knowledge to inform decision-making.	<ul style="list-style-type: none"> <li>Advance Science and Understanding</li> <li>Bridge Knowledge to Action</li> <li>Build Partnerships and Engage Networks</li> </ul>

## PROGRAM AREA 5: EDUCATION AND CAPACITY BUILDING

The Gulf Research Program will develop and deploy education and capacity building programs to facilitate learning inside and outside of formal educational settings. These programs will require intentional focus on the diversity of the Gulf region population and dedicated inclusion of Historically Black Colleges and Universities, Minority-Serving Institutions, and Hispanic-Serving Institutions, as well as community colleges and vocational schools in GRP program area work. The GRP seeks to **create a workforce and citizenry of environmentally and scientifically literate people who will become the skilled professionals of tomorrow.**

During the five-year period, 2020 through 2024, the GRP’s Education and Capacity Building program area focuses on developing and refining educational programs that build necessary skills and advance progress towards the GRP’s other program areas, as summarized below in Goal 5.0.

**Goal 5.0: Support the development of education and capacity building programs relevant to the GRP’s program areas.**

*Objective 5.1: Explore ways to enhance existing or build new educational opportunities and programs for K-20, including K-12 formal and informal education, to prepare members of Gulf communities to be resilient to the changes they face now or will face in the next 25 years.*

*Objective 5.2: Develop and promote opportunities, including internships and apprenticeships, for undergraduate students to understand and engage in research and experiences related to GRP program areas through a robust partnership program.*

*Objective 5.3: Continue, strengthen, and develop fellowship programs for graduate and early-career professionals.*

The GRP may support these types of activities to fulfill these objectives:

<b>ACTIVITY STATUS</b>	<b>ACTIVITY</b>	<b>STRATEGIC APPROACH</b>
In Progress	<b>Activity 5.A</b> Produce quality reports that document the trends, gaps, and emerging needs in educating for environmental literacy in K-20 to be responsive to workforce needs and a changing population in the region.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> </ul>
In Progress	<b>Activity 5.B</b> Develop a pilot program, inspired by the NAE Grand Challenges Scholars Program, at Gulf engineering institutions to engage diverse undergraduate engineering students in topics of human health and community resilience, environmental protection and stewardship, and offshore energy system safety while providing the skills needed to address complex problems across the region.	<ul style="list-style-type: none"> <li>• Build Partnerships and Engage Networks</li> </ul>
In Progress	<b>Activity 5.C</b> Continue supporting the Science Policy Fellowship program to facilitate pathways for early-career scientists to build policy-relevant skills and to use them to address issues in human health and community resilience, environmental protection and stewardship, and offshore energy safety.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> </ul>
In Development	<b>Activity 5.D</b> Develop a Data Fellowship to train early-career scientists in open-science and big data principles and to apply those skills to critical questions that span the GRP's programmatic areas.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> </ul>
In Exploration	<b>Activity 5.E</b> Build capacity of communities and decision-makers to interpret, translate, and use state-of-the-art data visualization and presentation tools.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> </ul>

## GULF RESEARCH PROGRAM 2020-2024 STRATEGIC PLAN OVERVIEW

**THE GRP VISION FOR THE Gulf:** A more safe, resilient and sustainable future for the Gulf and all those who call the region home.

**THE GRP MISSION:** Develop, translate, and apply science, engineering, and medical knowledge to enhance offshore energy safety, environmental protection and stewardship, and human health and community resilience in the Gulf region in ways that empower its citizens.

### PROGRAM AREAS

The GRP has until 2043 to use science to address the region's many challenges of today and improve capability to predict and adapt in a rapidly evolving region over the coming decades. The GRP is charged to conduct "studies, projects, and other activities" in five program areas.

#### OFFSHORE ENERGY SAFETY

Increase the effectiveness of oil spill prevention and response through improved understanding, measurement, and communication of systemic risk.

#### ENVIRONMENTAL PROTECTION AND STEWARDSHIP

Work with decision-makers to use science to better protect the environment in the Gulf region.

#### HEALTH AND COMMUNITY RESILIENCE

Improve health and well-being by strengthening community resilience and measuring outcomes in the Gulf of Mexico region.

#### DATA, DATA PRODUCTS, AND KNOWLEDGE

Inform decision-making by identifying and meeting needs for data, data products, and knowledge in the Gulf of Mexico region.

#### EDUCATION AND CAPACITY BUILDING

Support the development of education and capacity building programs relevant to GRP program areas.

### STRATEGIC APPROACHES



Advance science and understanding



Build partnerships and engage networks



Bridge knowledge to action



Monitor for progress and change



## NEXT STEPS AND LOOKING AHEAD

Given the urgency of issues pressing the Gulf's people and environment, it is vital that the GRP move quickly to realize its vision of a more safe, resilient, and sustainable future for the Gulf and all those who call the region home. Many of the potential activities outlined above are already underway or will soon be launched. As the GRP implements activities and fulfills the objectives laid out in this plan, it will continue supporting research grants and fellowships in what will be an expanded portfolio of activities. See Box 3, for highlights of the 2020-2021 activities, and the Appendix for a complete list of planned activities.

### BOX 3: 2020-2021 GRP ACTIVITY HIGHLIGHTS

#### OFFSHORE SITUATION ROOM: ENHANCING RESILIENCE TO OIL SPILLS IN THE GULF OF MEXICO

A three-day event to be held March 24-26, 2020 will convene experts from government, academia, industry, NGOs, and communities to explore how a major offshore oil disaster may unfold today, and how to work together to avoid the event, mitigate its effects, or ensure complete recovery and restoration in the aftermath. [Offshore Situation Room](#) will use game-play and other interactive methods to generate key issues and questions related to preventing or planning for an offshore disaster and the time and resources needed to address those questions and find much needed answers.

#### GULF SCHOLARS PROGRAM

A pilot program, inspired by the NAE Grand Challenge Scholars Program, will be launched at Gulf institutions to engage undergraduate engineering students in topics of human health and community resilience, environmental protection and stewardship, and offshore energy system safety while providing the skills needed to address complex problems across the region.

#### MONITORING PROGRESS AND CHANGE IN THE GULF: A CONSENSUS STUDY SERIES

A new consensus study series will document the progress of the safety of offshore oil production, environmental protection, and the health and resilience of Gulf coast communities. The Academies will produce this series every three to four years, beginning in 2021, and will produce a lasting volume of change in the Gulf region over the life of the GRP.

#### EARLY-CAREER RESEARCH AND SCIENCE POLICY FELLOWSHIP PROGRAMS

The GRP will continue to support and develop its [fellowship programs](#) which provide mentorship, skill-building, research and networking opportunities to emerging scientific leaders as they address challenges in offshore energy safety, environmental protection, and human health and community resilience in the Gulf region.

#### GULF OF MEXICO RESEARCH INITIATIVE INFORMATION AND DATA COOPERATIVE (GRIIDC) PARTNERSHIP

The GRP will partner with GRIIDC, a Gulf-based data repository, to make GRP funded data readily available to the public. The cooperative will assist the GRP with training researchers on best management practices and data submission protocols.

The 2020-2024 strategic plan is focused primarily on the Gulf of Mexico region. This is a deliberate choice to ensure those who reside in the five Gulf states are the primary beneficiaries of the GRP's work. However, the GRP's settlement mandate includes the outer continental shelf (OCS) of the U.S. that support offshore energy production. Therefore, as the GRP carries out its work over the next five years, it will do so with an eye towards opportunities to apply what is learned in the Gulf of Mexico to other OCS regions where they may bring value.

Ultimately this strategic plan will serve as a roadmap for the Gulf Research Program over the near-term to ensure that it is positioned to grow, evolve, learn from its own work and the work of others, and persist towards its vision of a more safe, resilient, and sustainable future for the Gulf and all those who call the region home. The GRP is committed to making an impact in the Gulf region in the near-term and also leaving a legacy that lasts beyond the 2043 end of the Program itself.

The Strategic Planning Committee acknowledges all of those who participated in the strategic planning process - members of the Gulf Research Program's Advisory Board, the Program's staff, the workshop facilitators, and importantly, the many stakeholders from the Gulf region and beyond who provided input to the plan through surveys, interviews, expert meetings, workshops, and other engagements. Special thanks to those who contributed much time and energy to this process:

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#### STRATEGIC PLANNING COMMITTEE MEMBERS:

**Barbara Entwisle** (Chair) Strategic Planning Committee, UNC Chapel Hill; **Jerry Melillo** (NAS), Chair of the Gulf Research Program Advisory Board, Marine Biology Laboratory; **David Daniel** (NAE), Vice-Chair of the Gulf Research Program Advisory Board, University of Texas Dallas; **Jonathan G. Kramer** National Socio-Environmental Synthesis Center (SESYNC); **Alonzo Plough** Robert Wood Johnson Foundation; **Erin Coryell** Margaret A. Cargill Philanthropies; **Robert Bullard** Texas Southern University.

## APPENDIX A: SUMMARY OF PROSPECTIVE ACTIVITIES

PROGRAM AREA 1: OFFSHORE ENERGY SAFETY		
ACTIVITY STATUS	DESCRIPTION	STRATEGIC APPROACH
In Progress	Activity 1.A: Convene vested stakeholders in the offshore energy community with regularity to build opportunities to enhance safety culture, develop collaborative research, and prioritize data needs.	<ul style="list-style-type: none"> <li>Build Partnerships and Engage Networks</li> <li>Advance Science and Understanding</li> </ul>
In Progress	Activity 1.B: Produce quality reports that document progress towards decreasing risk of offshore oil and gas operations and identify key challenges or knowledge gaps, particularly those at the intersection of environmental stewardship and protection and human health and community resilience	<ul style="list-style-type: none"> <li>Monitor for Progress and Change</li> <li>Advance Science and Understanding</li> </ul>
In Progress	Activity 1.C: Use simulated catastrophic offshore events to engage a diverse set of stakeholders from industry, government, non-governmental organizations, researchers, and community groups to improve response and recovery efforts of offshore events	<ul style="list-style-type: none"> <li>Bridge Knowledge to Action</li> <li>Build Partnerships and Engage Networks</li> <li>Advance Science and Understanding</li> </ul>
PROGRAM AREA 2: ENVIRONMENTAL PROTECTION AND STEWARDSHIP		
ACTIVITY STATUS	DESCRIPTION	STRATEGIC APPROACH
In Progress	Activity 2.A: Produce quality reports that document trends in environmental stewardship and protection and identify key challenges or knowledge gaps, particularly those at the intersection of offshore energy system safety and human health and community resilience	<ul style="list-style-type: none"> <li>Monitor for Progress and Change</li> <li>Build Partnerships and Engage Networks</li> </ul>
In Development	Activity 2.B: Convene ecosystem restoration managers, practitioners, and funders to: foster exchange of restoration best practices and lessons learned and develop strategic approaches for future restoration activities.	<ul style="list-style-type: none"> <li>Bridge Knowledge to Action</li> <li>Build Partnerships and Engage Networks</li> </ul>



In Exploration	Activity 2.C: Support pilot projects, scenario planning, demonstration sites, predictive models, and decision-support tools that address identified needs or answer identified questions and to help the GRP scale and replicate solutions across the Gulf.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> <li>• Bridge Knowledge to Action</li> </ul>
<b>PROGRAM AREA 3: HEALTH AND COMMUNITY RESILIENCE</b>		
ACTIVITY STATUS	DESCRIPTION	STRATEGIC APPROACH
In Progress	Activity 3.A: Produce quality reports that document trends in health, well-being, and community resilience in the Gulf region.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> </ul>
In Development	Activity 3.B: Work at the community level to provide technical and scientific support as communities identify and work towards their health and resilience goals.	<ul style="list-style-type: none"> <li>• Build Partnerships and Engage Networks</li> <li>• Bridge Knowledge to Action</li> </ul>
In Exploration	Activity 3.C: Work with communities to synthesize existing or collect new data and information to assess their progress towards health and resilience goals.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> <li>• Build Partnerships and Engage Networks</li> </ul>
In Exploration	Activity 3.D: Identify key questions about health and community resilience in the Gulf region that require longitudinal data to be addressed.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> </ul>
<b>PROGRAM AREA 4: DATA, DATA PRODUCTS, AND KNOWLEDGE</b>		
ACTIVITY STATUS	DESCRIPTION	STRATEGIC APPROACH
In Progress	Activity 4.A: Establish a partnership with the Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC) to house and document scientific research data produced by GRP grantees and fellows.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> </ul>
In Development	Activity 4.B: Create state-of-the-art data visualization and presentation tools for use by communities and decision-makers.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> </ul>
In Exploration	Activity 4.C: Use data to develop integrative modeling frameworks across GRP's program areas as a tool to monitor progress and change in the Gulf.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> </ul>
In Exploration	Activity 4.D: Pilot approaches to build capacities in local communities to find, interpret, and use data, data products, and knowledge to inform decision-making.	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> <li>• Bridge Knowledge to Action</li> <li>• Build Partnerships and Engage Networks</li> </ul>

<b>PROGRAM AREA 5: EDUCATION AND CAPACITY BUILDING</b>		
ACTIVITY STATUS	DESCRIPTION	STRATEGIC APPROACH
In Progress	Activity 5.A: Produce quality reports that document the trends, gaps, and emerging needs in educating for environmental literacy in the K-20 to the workforce pipeline in order to be responsive to workforce needs and a changing population in the region.	<ul style="list-style-type: none"> <li>• Monitor for Progress and Change</li> </ul>
In Progress	Develop a pilot program, inspired by the NAE Grand Challenges Scholars Program, at Gulf engineering institutions to engage diverse undergraduate engineering students in topics of human health and resilience, environmental protection, and offshore energy system safety while providing the skills needed to address complex problems across the region.	<ul style="list-style-type: none"> <li>• Build Partnerships and Engage Networks</li> </ul>
In Progress	Activity 5.C: Continue supporting the Science Policy Fellowship program to facilitate pathways for early-career scientists to build policy-relevant skills and address issues in human health and community resilience, environmental protection and stewardship, and offshore energy safety.	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> </ul>
In Development	Activity 5.D: Develop a Data Fellowship to train early-career scientists in open science and big data principles and apply those skills to critical questions that span the GRP's programmatic areas	<ul style="list-style-type: none"> <li>• Advance Science and Understanding</li> </ul>
In Exploration	Activity 5.E: Build capacity of communities and decision-makers to interpret, translate, and use state-of-the-art data visualization and presentation tools (see data section)	<ul style="list-style-type: none"> <li>• Bridge Knowledge to Action</li> </ul>

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