

The Coastal Index

Tracking development of the water management
cluster in Southeast Louisiana

— April 2015 —



THE DATA CENTER

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About The Coastal Index

“NEW ORLEANS AND COASTAL LOUISIANA ARE TIED AT THE HIP. IT IS IMPOSSIBLE TO UNDERSTAND NEW ORLEANS APART FROM THE COAST, AND THE FATE AND FUTURE OF EACH IS INEXTRICABLY TIED TO THAT OF THE OTHER.”

– Mark Davis, *Resilience and Opportunity: Lessons from the U.S. Gulf Coast after Katrina and Rita*

On April 20, 2010, the Deepwater Horizon oil platform blew up and sank 45 miles from the Louisiana coast — creating a massive oil spill that fouled the delicate marshes that are New Orleans’ first line of defense against hurricane storm surge.¹ But years before this catastrophe, Louisianans recognized the critical importance of their coast, in 2007 developing the country’s first Master Plan for Coastal Protection and Restoration.² Moreover, the U.S. Congress allocated \$15 billion to build coastal protection (e.g. levees) to protect much of the New Orleans metropolitan area, while the state of Louisiana allocated \$790 million in state surpluses in 2007, 2008, and 2009 to coastal protection and restoration activities.^{3,4}

With these investments and other funding streams ahead, including penalties from the oil spill itself, leaders project that \$50 billion will be spent on the coast over 50 years.⁵ Such a massive investment of funds has the potential not only to help stabilize Louisiana’s coast, but also to form a vibrant new economic cluster, driving prosperity and sustainability for the region well beyond this initial investment. *The Coastal Index 2015* builds off of *The Coastal Index 2014*, which identified the economic and environmental value of the working coast and quantified the economic spillovers of coastal restoration, protection, and urban water management. The purpose of *The Coastal Index 2015* is to begin to quantify the size of the water management sector in Southeast Louisiana and to assess the strength of key factors known to affect the formation of vibrant economic clusters.

In order to better direct policy and practices to support an emerging water management cluster, we have to understand the major demand drivers of water management, the agencies and actors that perform water management and are therefore the largest funding sources for water management contracts. The first section of this report describes and quantifies the economic and environmental footprints—i.e., the spending and environmental impact—of the demand drivers of water management.

But even with large and diverse demand drivers to support a water management cluster, Southeast Louisiana must be careful to ensure this emerging industry becomes a permanent specialization for the region, able to tap markets outside of Louisiana that can drive sustainable economic growth for the industry and the region. Its ability to do so hinges on cultivating the right environment for cluster growth. Hence, the second section of this report draws from a wide literature to identify the key economic, social, and political factors affecting the development of clusters and assesses how Southeast Louisiana is performing on these factors.

To be sure, this Index tracks water management in the Super Region with an aspirational lens—measuring it against indicators that have led to the success of biomedical research in the Research Triangle, logistics in Memphis, software in Austin, or computer technology in Silicon Valley. It treats water management as a cluster in order to discern whether it is or can become one. We provide baseline indicators to assess the region’s strengths and weaknesses on key economic, social, and political factors as we work toward supporting the growth of the water management cluster. In coming years, this report will provide updates to track the region’s performance on these critical factors, which can support the development of water management as a permanent specialization for the region.

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"THE BIRTH OF THE DIGITAL AGE... INCLUDED A RESEARCH ECOSYSTEM THAT WAS NURTURED BY GOVERNMENT SPENDING AND MANAGED BY MILITARY-INDUSTRIAL-ACADEMIC COLLABORATION. INTERSECTING WITH THAT WAS A LOOSE ALLIANCE OF COMMUNITY ORGANIZERS, COMMUNAL-MINDED HIPPIES, DO-IT-YOURSELF HOBBYISTS, AND HOMEBREW HACKERS."

– Walter Isaacson, *The Innovators*

Executive Summary

Five years after the Deepwater Horizon oil spill, Southeast Louisiana is situated to capture the economic opportunity of a lifetime—an opportunity that’s derived from a water management economy catalyzed by massive federal investment and augmented by state and local investments in coastal restoration, levees, and urban water innovations.

WATER MANAGEMENT IS WORK DONE TO MANIPULATE THE WATER-RELATED PHYSICAL ENVIRONMENT. IN LOUISIANA, THIS ECONOMY INCLUDES ALL WORK DESIGNING AND CONSTRUCTING COASTAL RESTORATION, COASTAL PROTECTION, AND URBAN WATER MANAGEMENT PROJECTS.

Water management has the potential to be to Southeast Louisiana what software is to Austin, what bio-tech is to Boston, or what e-commerce is to Seattle.¹ A water management cluster—one that contains local companies large and small that compete, innovate, collaborate, and ultimately export knowledge to other regions all the while investing and growing jobs within Southeast Louisiana—is within reach. However, in order to become a nationally-recognized cluster built upon regional expertise, certain economic, social, and political factors must be aligned to propel the water management economy from a mere concentration of jobs into a vibrant economic cluster.

To date, the federal government has committed billions of dollars to protect New Orleans from future flooding and coastal land loss, and billions more are anticipated via BP and Transocean Clean Water Act criminal and civil penalties. Infusions of federal funds have catalyzed clusters before, most recognizably Silicon Valley, which was set in motion by military investment in radio technology.² In fact, the largest employer in the Valley for decades was Lockheed Martin, a firm highly dependent on federal contracts.³ On the other hand, federal dollars have failed to turn southern Virginia, with its heavy military presence, into a self-sustaining cluster.⁴ The factors explaining these divergent paths were the presence or absence of supporting economic, social, and political forces. Academic, private, nonprofit, federal, and social facilitation for computer technology all had a role in turning Silicon Valley into the economic powerhouse it is today. Conversely, the absence of this support can stymie a sector’s ability to compete nationally.

The Coastal Index 2015 is truly a baseline report, providing metrics that can track changes in coming years to the Southeast Louisiana water management sector and its supports. The Index first identifies the drivers of water management, to quantify the public and private investment already at work in Southeast Louisiana’s water management industry. It then measures economic, social, and political factors, each of which have been shown in economic cluster research to have affected the formations of clusters within the United States, and it compares these factors in Southeast Louisiana against other metros competitive in the water management field. The findings are as follows:

SOUTHEAST LOUISIANA’S WATER MANAGEMENT DEMAND DRIVERS—REPRESENTING BILLIONS OF DOLLARS IN INVESTMENT—INCLUDE PUBLIC AND PRIVATE STAKEHOLDERS.

A major player in water management is the Louisiana Coastal Protection and Restoration Authority (CPRA). The CPRA plans coastal restoration and protection projects that align with state coastal master plans updated every five years. Through its coastal program, the CPRA allocates to partner agencies (such as the U.S. Army Corps of Engineers and local levee boards) money and authority to lead many projects, while also awarding contracts for many projects directly itself. More than \$6 billion were spent from 2007 to 2014 by CPRA and partner agencies on master plan projects, and much of the design and construction for these projects was contracted out to private companies. From 2010 to 2014, the CPRA awarded an annual average of \$53 million in regular services con-

tracts and from 2007 to 2013, an annual average of \$94 million in construction contracts. The Army Corps, in master plan-related and unrelated activities, awarded an annual average of \$453 million in construction contracts and \$24 million in services contracts between 2010 and 2014.

Looking ahead, nearly \$8 billion in 2012 Master Plan projects are planned. These are projects that have at least a portion of funding secured for construction or design in the near future, according to the CPRA's FY 2016 Implementation Plan. Not included in those figures are the billions of dollars that will come from RESTORE, NRDA, and NFWF⁵—federal funding streams from 2010 oil spill penalties.⁶

Mitigation banks are private companies that restore wetlands for credits to sell to companies and agencies that impact wetlands and are required to mitigate their impacts. Mitigation banks, which earned an estimated \$390 million from 2010 to 2014, are sizable players in water management and will continue to be, given that large industrial developments are planned along the river between Baton Rouge and New Orleans—developments that will invariably require wetland mitigation.⁷

Other significant demand drivers of water management, for which data is not readily available, include local parishes, levee boards, water authorities, and land management agencies. The Sewerage and Water Board of New Orleans, an example of an urban water management authority, reports it has secured almost \$1 billion from FEMA in financing for rebuilding projects, and anticipates spending \$3.3 billion for water and sewer line upgrades in the foreseeable future.⁸

THE WATER MANAGEMENT CLUSTER IS CURRENTLY A HYBRID OF HUB-AND-SPOKE AND SATELLITE PLATFORM STYLE DISTRICTS WITH A MIX OF LARGE LOCAL COMPANIES AND BRANCHES OF LARGE COMPANIES FROM OUTSIDE.

Because water management services and construction contracts tend to be upwards of a million dollars, prime contractors are often larger companies. And because of the interdisciplinary nature of water management work, these primes subcontract a substantial percentage of their work to mostly small, mostly local firms. Both multi-national companies, such as Arcadis, and established local firms, such as Royal Engineering win prime contracts from agencies, and they then subcontract out to an array of firms, many local.

From 2010 to 2014, Louisiana firms secured more than 80 percent of both construction and services prime contracts from the Army Corps. Louisiana firms that secured Army Corps construction contracts were more likely to be large (1,000 or more employees) while Louisiana firms that secured services contracts were more likely to be small (less than 100 employees). During the same time frame, nearly half of all CPRA construction and regular services contracts were also secured by Louisiana firms.

More detailed data gathered on these CPRA services contracts revealed that Louisiana firms were less likely to receive contracts for engineering, environmental sciences consulting, and geotechnical services, but more likely to win contracts for surveying and professional land services. Building the capacity and opportunities for the more technical engineering and scientific services firms in Louisiana could improve the innovative ability of the cluster locally.

LOUISIANA WATER MANAGEMENT FIRMS COMPETE WELL LOCALLY AND ARE STARTING TO COMPETE OUTSIDE THE STATE, RESULTING IN THOUSANDS OF NEW JOBS SINCE 2010.

Louisiana firms captured an average of nearly \$13 million per year in Army Corps contracts outside Louisiana from 2010 to 2014. In addition, between 2012 and 2014, they won at least \$225 million in federal and regional Hurricane Sandy contracts. Large local construction firms, including Cajun Constructors, Weeks Marine, and Mike Hooks, have been at the forefront of seeking out markets outside Louisiana. It is no surprise then that Southeast Louisiana has seen steady job growth in water management, with over 14,000 jobs added since 2010, exceeding that of many other metros competing in this field.

A HUB-AND-SPOKE DISTRICT FEATURES LARGE LOCALLY-HEADQUARTERED FIRMS CLOSELY CONNECTED TO RELATED PRODUCERS AND SUPPLIERS, SUCH AS SILICON VALLEY, WHERE GOOGLE, INTEL, AND APPLE (AMONG OTHERS) ARE THE HUBS OF THE COMPUTER UNIVERSE, SUPPORTING A HOST OF SPIN-OFFS AND SUPPORTIVE COMPANIES. A SATELLITE PLATFORM DISTRICT CONSISTS OF BRANCH PLANT OPERATIONS OF MAJOR COMPANIES HEADQUARTERED ELSEWHERE, SUCH AS THE RESEARCH TRIANGLE, WHERE R&D ARMS OF MANY INTERNATIONAL COMPANIES HAVE CLUSTERED IN NORTH CAROLINA.

LOUISIANA FIRMS HAVE ROOM FOR GROWTH IN TAPPING MARKETS OUTSIDE THE STATE, WITH BILLIONS OF DOLLARS AVAILABLE IN WATER MANAGEMENT CONTRACTS NATIONWIDE.

Louisiana firms win more total Army Corps contract dollars than firms in any other state because of the tremendous number of projects within Louisiana. However, a few other states win a higher share of out-of-state dollars, including Illinois, whose firms win nearly five times as many out-of-state Army Corps contract dollars as Louisiana firms. The market potential for Louisiana firms is substantial, given that Army Corps contracts alone reached nearly \$1 billion annually outside of Louisiana from 2010 to 2014. Other state and federal actors, from water management districts in Florida to the National Resource Conservation Service (NRCS) to the government of Bangladesh to storm water agencies in Denver are heavily involved in water management as well.⁹ The opportunity exists for Louisiana companies to build their expertise through local contracts while also increasingly looking for contracts outside the state.

WORKFORCE DEVELOPMENT INITIATIVES THAT PRODUCE MORE SKILLED LABOR MUST BE SCALED UP TO SUPPORT THE DEVELOPMENT OF SOUTHEAST LOUISIANA'S WATER MANAGEMENT CLUSTER.

Southeast Louisiana lags behind the United States and comparison metros in educational attainment, with only 26 percent of adults 25 and older holding a bachelor's degree or higher, and only 53 percent with at least some college by 2013. In contrast, metros competing in this sector had 32 percent of adults with a bachelor's degree or higher and 62 percent with at least some college. Since the onset of the Great Recession, Louisiana has cut higher education funding by 42 percent. Louisiana's cuts were the 4th highest of all states during this crucial time frame.¹⁰ Many experts assert that investments in human capital are far more important than any other investment for driving economic growth in today's economy.¹¹ Louisiana's ranking as 45th in graduating science and engineering majors in 2011 needs to improve to feed water management, an industry hungry for STEM workers.

PUBLIC AND PRIVATE PROGRAMS ARE NEEDED TO BUOY THE INVESTMENT AND RESEARCH & DEVELOPMENT ECOSYSTEMS IN SOUTHEAST LOUISIANA.

Private investment, especially venture capital, is a leading indicator of cluster growth, but in the Super Region, such capital has been limited. Out of the four stages of investment, — seed, angel, venture, post-venture — the Super Region ranked 7th out of 10 metros in seed investment and ranked lower in each other stage. From 2010 to 2014, while metros such as Portland, Denver, and Pittsburgh saw millions of dollars in private investment, the Super Region paled in comparison. Couple that with weak funding for research and development — Louisiana ranks below the nation and in the bottom 15 states in academic science & engineering, business-performed, federally-obligated, and state-sponsored research and development funding — and the region will struggle to stimulate the innovation needed to develop a cluster that will last.

GREATER PHILANTHROPIC SUPPORT FOR ENVIRONMENTAL ORGANIZATIONS AS WELL AS RECRUITING BOARD MEMBERS WITH INFLUENCE IN ECONOMIC DEVELOPMENT, EDUCATION, AND EMPLOYMENT ORGANIZATIONS CAN HELP TO INCREASE CIVIC CLOUT AND FOSTER IDEA EXCHANGE IN SUPPORT OF THE WATER MANAGEMENT CLUSTER.

Just 5 percent of regional foundation grant-giving went to environmental causes in 2012, compared to over 7 percent from national foundations. Meanwhile, environmental organizations in the Super Region shared under 1 percent board overlap with many key sectors in 2013 — indicating that additional work can be done in the social sphere to build momentum behind the water management cluster.

WHILE THERE IS SIGNIFICANT POLITICAL SUPPORT FOR WATER MANAGEMENT IN LOUISIANA, A DEFICIT IN SUSTAINABLE SOURCES OF STATE FUNDING FOR COASTAL RESTORATION AND PROTECTION AND A SUBSIDY/EXEMPTION SYSTEM THAT FAVORS OTHER INDUSTRIES ARE CONCERNING.

There is no doubt that Louisiana has taken immense steps in demonstrating its commitment to water management. The formation of the CPRA as a singular authority to oversee coastal restoration and protection in late 2005 was a bipartisan turning point post-Katrina.¹² The commitment of 2007, 2008, and 2009 state surplus dollars to the coastal fund — in total \$790 million — allowed the CPRA to deliver matching funds to federal and local projects and gave it the bandwidth to initiate its own projects.¹³ The very existence of the 2012 Coastal Master Plan is a testament to the political will to holistically and scientifically reverse coastal land loss. Finally, that voters decided to dedicate Louisiana's share of GOMESA dollars — gulf shelf federal mineral revenues — for coastal protection and restoration in 2006 indicated a commitment to water management.¹⁴

Going forward, however, coastal restoration and protection has little continuous budgeted revenue at the state level apart from possible future state surpluses. State mineral development royalties and taxes that go into the Coastal Protection and Restoration Fund have only reached roughly \$30 million annually.¹⁵ The lack of a substantial sustainable source of funding from the state is concerning. Indeed, as recently as February 2015, the Public Affairs Research Council of Louisiana warned against the possibility that the state might raid the Coastal Protection and Restoration Fund to balance the state's budget deficit.¹⁶ On other measures, state support for water management is dwarfed by support for other industries. Louisiana subsidies/exemptions data from 2010 to 2013 indicates a number of industries receiving hundreds of millions of dollars per year in subsidies/exemptions. In contrast, water management companies received on average \$6 million per year in subsidies/exemptions.

THE RESEARCH IS CLEAR: IT TAKES TIME AND SUSTAINED EFFORT TO CREATE A CLUSTER. A WATER MANAGEMENT CLUSTER WILL NOT EMERGE OVERNIGHT, BUT THE FUNDAMENTALS FOR ONE IN SOUTHEAST LOUISIANA ARE THERE.

Water management has all the raw ingredients to become an economic powerhouse in Southeast Louisiana—an existing strength, a competitive advantage, and many engaged stakeholders. But leaders must commit to long-term strategies to develop the supports for this cluster — supports that have proven critical in the formation of every cluster that is driving today's prosperous regional economies. In other regions, this has required overcoming short-term political obstacles to generate the commitment to essential, long-term strategies.¹⁷

To be sure, building a network of water management firms, institutions of knowledge creation, industry-specific managerial and technical talent, and ancillary legal and financial services will be an essential step in developing the ecosystem needed to grow the cluster. This network will also be useful for developing the political will needed to sustain the effort. Moreover, leaders will need to continuously learn and adapt. This will require trust, which is best fostered through transparency, accountability, and the use of data to inform decisionmaking.

Southeast Louisiana has the opportunity to add water management to gumbo, jazz, and Katrina, as one of the iconic images of our region in the national psyche. The opportunity is manifested in an influx of federal dollars, a state agency dedicated solely to the restoration of the coast, and a fierce momentum behind re-making our urban landscape so that we may live with and not despite water. *The Coastal Index 2015* aims to provide leaders with concrete data on the potential of this cluster as well as weaknesses that will need shoring up if water management is to become a permanent driver of prosperity for Southeast Louisiana. With long-term strategies to increase skilled workforce, build civic momentum, and accelerate private investment, water management can evolve from a mere concentration of jobs into a self-sustaining cluster.

Background Information

Defining the Water Management Cluster

THE COASTAL INDEX DEFINES THE WATER MANAGEMENT CLUSTER AS ACTIVITIES RELATED TO COASTAL RESTORATION, COASTAL PROTECTION, AND URBAN WATER MANAGEMENT.

To quantify this cluster, *The Coastal Index 2014* combined two clusters from Harvard's U.S. Cluster Mapping Project, "construction products & services" and "business services" that in concert signal the presence of water management. Construction products & services includes advanced construction industries imperative for moving earth and water, and business services contains important high-skill industries necessary for the design, engineering, and system integration of coastal and inland water management projects.

The Coastal Index 2015 further refines the definition of water management to exclude construction and services unrelated to coastal restoration and protection and urban water management. In 2014, the Cluster Mapping Project made modifications to both its business services cluster definition and its construction products & services cluster definition. In formulating a refined water management definition for *The Coastal Index 2015*, The Data Center closely examined changes in those definitions at the 6-digit NAICS code level. For NAICS codes that were present in both the old and new Cluster Mapping definitions, these codes continued to be included within the water management cluster definition for the *The Coastal Index 2015*. For the remaining NAICS codes (those that appeared in either the old definitions or the new definitions, but not in both), the following thresholds were set:

- * If a NAICS code was moved into another cluster in 2014 by the Cluster Mapping project, it was eliminated.
- * If there were no U.S. Army Corps of Engineers (Army Corps) contracts awarded between 2010 and 2014 to companies within a NAICS code, it was eliminated.

These thresholds served to incorporate the Cluster Mapping Project's 2014 refinements, while also removing administrative services that exist in most clusters and non-related construction activities from the definition of water management.

In future versions of *The Coastal Index*, The Data Center will revisit Army Corps and potentially Coastal Protection and Restoration Authority and Sewerage and Water Board contract companies to ensure that the water management definition accurately reflects the industries that participate in coastal restoration, coastal protection, and inland water management.

YEARS OF ANALYSIS

Most of the data included in this report covers 2010 to 2014, many of the indicators being annual averages over this time period. 2010 is a natural starting point for economic, social, and political indicators covered in this index as it was the first full year out of the Great Recession, as well as the year of the Deepwater Horizon oil spill. For indicators where changes are difficult to see over a short timeframe or for which annual averages are more accurate over a longer timeframe, additional years of historical data are provided.

Reference Maps

Geographies of Analysis



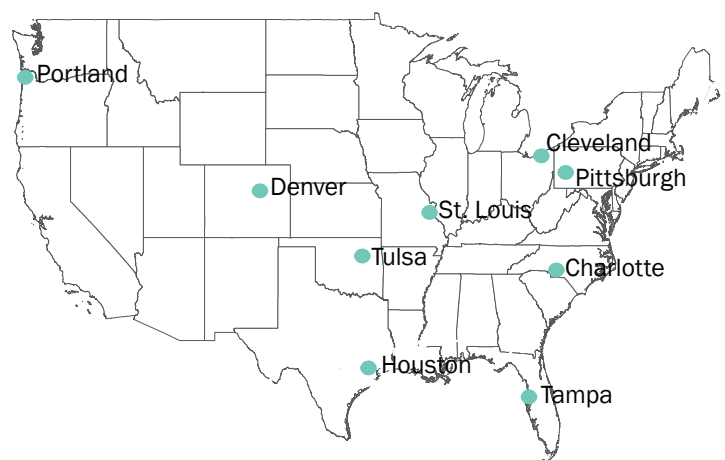
Comparison metros

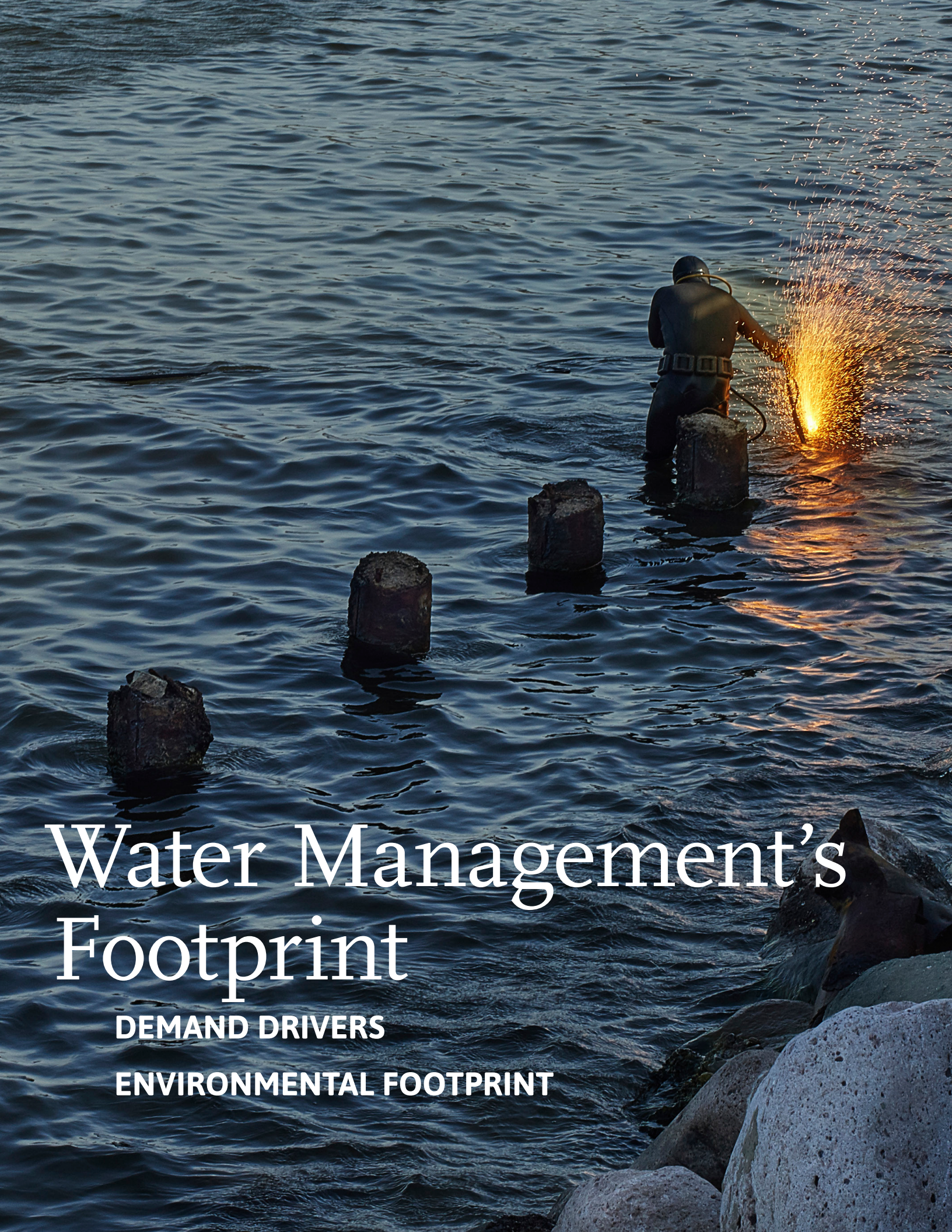
For some indicators, the Southeast Louisiana Super Region is compared to a group of nine metros that compete with the Super Region for regional specialization in water management. The nine metros were identified from among all metros within the U.S. based on surpassing specific location quotient thresholds for the water management and construction products & services clusters. The threshold for the water management cluster was 1.0 and the threshold for the construction products & services cluster was 0.75. While many metros contain business services, or even a heavy concentration of engineering firms, the presence of water management is contingent upon industry's ability to manipulate the physical environment. With just these two thresholds, the number of U.S. metros was reduced to 12 metros. Of the metros with construction products & services location quotients under 1.0, three were eliminated because their populations were below 2 million or above 3 million. Of the resulting 9 metros, only one, Houston, has a population difference of greater than 1 million with the Super Region.

The Southeast Louisiana Super Region

The Southeast Louisiana Super Region is composed of the three metropolitan statistical areas of Houma-Thibodaux, New Orleans, and Baton Rouge, and the three additional parishes of St. James, Tangipahoa, and Washington. Regional markets are made up of complex, place-based interactions that often result in economic interdependence across proximal metropolitan areas. Our previous research found that the parishes in the Super Region were highly synergistic and interconnected as evidenced by commuter patterns, industrial specializations, and freight flows.⁶ Economic development leaders have formed the "Southeast Super-Region Committee" to collaborate across this broader geography. The vast majority of economic, social, and political indicators included in The Coastal Index have the Super Region as a geographic scope.

In keeping with the 2012 Coastal Master Plan, coastal restoration and protection activities stretch across the Louisiana coast, outside the boundaries of the Super Region. Data on the economic and environmental footprint of the water management cluster, therefore, extends to the entire Louisiana coast, reflecting the geographic space in which agencies and major actors operate. Indicators for which policy implications are at the state level, such as research & development and public funding, have the entire state of Louisiana as the geographic scope.





Water Management's Footprint

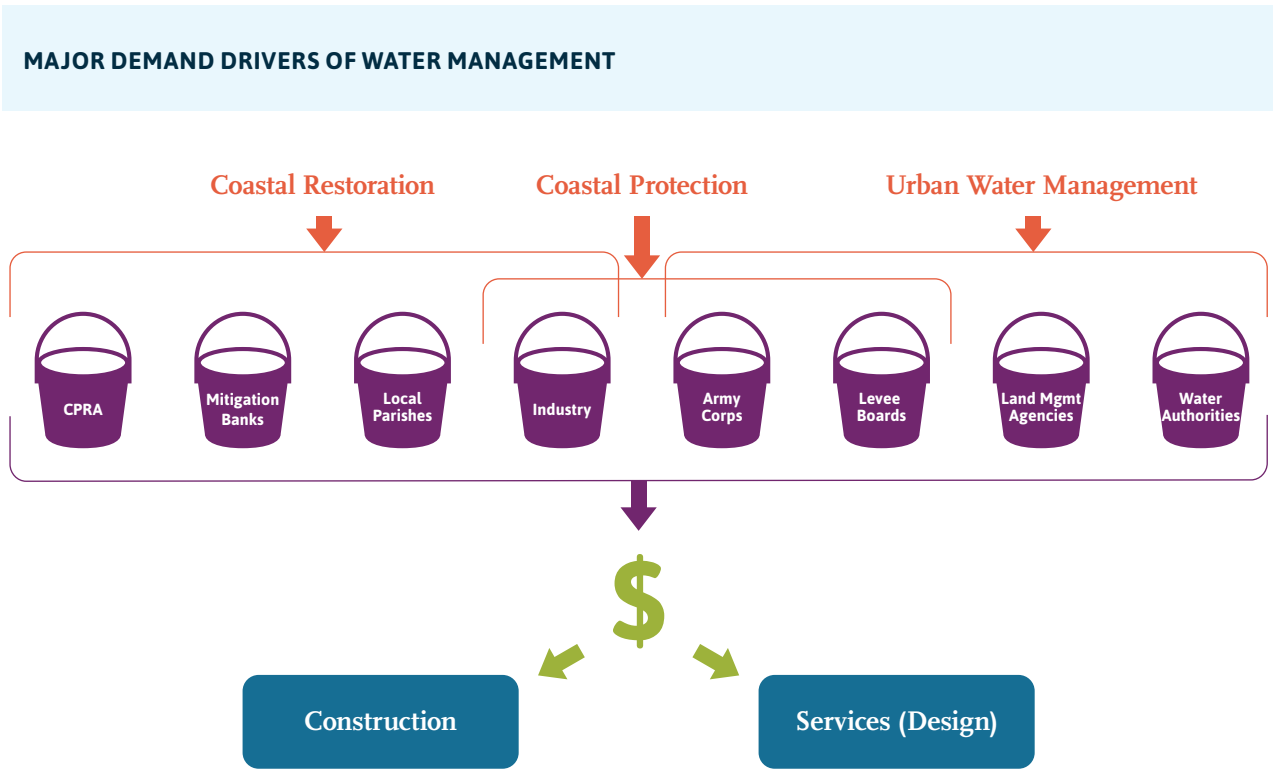
DEMAND DRIVERS

ENVIRONMENTAL FOOTPRINT

WATER MANAGEMENT’S FOOTPRINT

The water management cluster in Southeast Louisiana is driven by demand from both public and private sources. These demand drivers (shown in purple in the graphic below) perform work in the three major environmental categories of water management: coastal restoration, coastal protection, and urban water management. What ties them together—despite their diversity in budgets, location, and scope—is that the projects they implement manipulate the physical environment with regards to land and water. In implementing these projects, the demand drivers contract with heavy construction companies to implement the work, and with advanced services companies to plan, design, and monitor the work.

This section quantifies the major economic demand drivers of this emerging industry and their environmental footprints. In future years we hope to acquire data that will help to quantify the other demand drivers of the water management cluster, many of which are smaller in budgets, more fragmented (there are 26 levee boards across the state of Louisiana), and/or do not have easily accessible data on budgets or contracts.¹



Demand Drivers:

Coastal Protection and Restoration Authority (CPRA)

WHAT IS THE CPRA?

The Coastal Protection and Restoration Authority (CPRA) is a state agency that is tasked with implementing a comprehensive restoration and protection plan to protect the Louisiana coast.

WHAT TYPE OF WORK DOES IT DO?

The CPRA plans coastal restoration and protection projects that align with coastal master plans released every five years. Currently, the CPRA is administering projects within the 2012 Coastal Master Plan, but the CPRA does not lead every project it administers. The CPRA actually allocates to partner agencies (federal, state, and local) money and authority to lead most protection projects and a few restoration projects. The CPRA plans and designs portions of the partner-led projects, but implementation is left to the partners. Between 2007 and 2013, partner-led projects accounted for an average of \$209 million annually in total project costs. The rest of master plan projects are led fully by CPRA, with the contracts awarded to companies by CPRA.

CPRA PARTNER-LED PROJECT COSTS, 2007–2013 FOR WORK PERFORMED IN LOUISIANA

CPRA PARTNER	TOTAL PROJECTS COSTS
Federal	\$1,362,499,033
USACE	\$1,165,866,500
NRCS	\$101,475,268
NMFS	\$69,149,039
USFWS	\$26,008,226
Local	\$46,549,347
Bayou Lafourche Freshwater District	\$20,000,000
Plaquemines Parish	\$9,112,386
South Lafourche Levee District	\$5,353,156
Lake Borgne Levee District	\$5,000,000
Southeast Louisiana Flood Protection Authority-West	\$4,000,000
Iberia Parish	\$1,683,805
Lafourche Parish	\$1,000,000
Cameron Parish	\$400,000
State	\$51,000,000
DOTD	\$51,000,000
ANNUAL AVERAGE	\$208,578,340

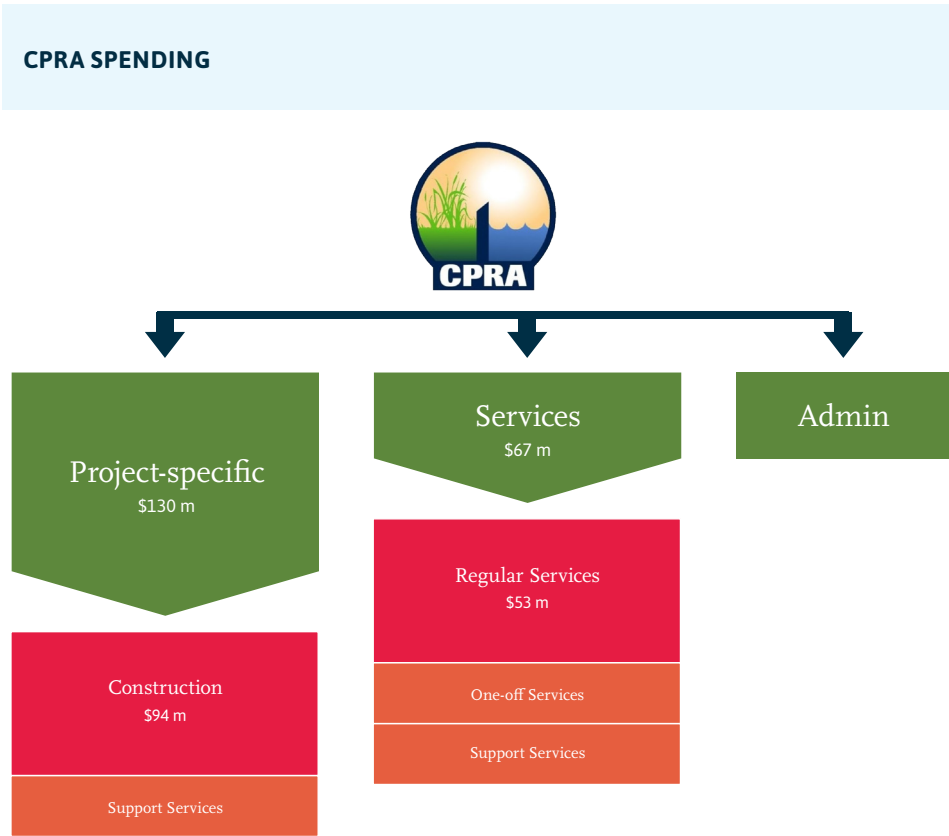
Source: The Data Center analysis of data gathered from CPRA completion reports, cash transfer data gathered by GNO Inc., and internal CPRA project data.

WHAT TYPES OF WATER MANAGEMENT CONTRACTS DOES IT AWARD?

The CPRA divides its contracting into two types. Construction contracts go through a state open-bid process and are associated with a particular master plan project. Companies that receive contracts directly from the CPRA are “primes.” These primes then in turn contract out some project components to subcontractors, or “subs.”

Services contracts are entirely different from construction contracts. They are not associated with any specific master plan project, and they are not guaranteed. CPRA puts out RFPs or RSIQs for certain regular services about every 12 to 18 months. These regular services are as follows: environmental science consulting, engineering, geotechnical, surveying, and professional land. For each RFP/RSIQ, upwards of five to ten companies often win what are three-year IDIQ contracts, which generally range from \$3 to \$5 million. IDIQ stands for “Indefinite Delivery, Indefinite Quantity,” which means that the full amount of the contract may not be realized. In fact, there is no guarantee upon winning a regular services contract that the CPRA will pay out any money to the company. CPRA issues to contract-winners relatively small task orders, and task orders vary in their application. A task order can apply to one masterplan project, multiple masterplan projects, or even non-masterplan projects. Over the course of a contract, a given professional land services company may receive ten \$200,000 task orders over a range of projects. Regular services are also a component of the planning process. Thus, some task orders may not be associated with a specific project at all or may be associated with partner-led master plan projects. Like construction contracts, a prime-sub hierarchy exists within services contracts.

Finally, the CPRA also awards one-off services contracts that are associated with a one-off disaster (and are therefore not representative of master plan activity) as well as support services contracts completely unrelated to water management, such as contracts for IT systems.



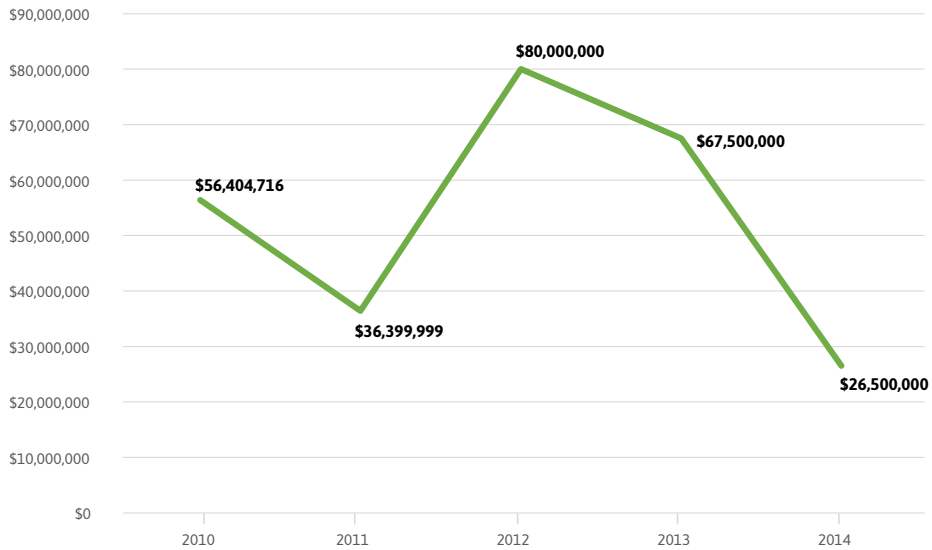
WHAT DOES THE DATA SHOW?

CPRA awarded approximately \$147 million on average in construction and regular services contracts each year from 2010 to 2014. Construction contracts were a substantially larger portion of CPRA contracts than regular services contracts—averaging \$94 million awarded each year. Furthermore, the \$53 million in average annual regular services contracts may not be fully realized because of the indefinite nature of IDIQ services contracts.

Annual Average
\$53,360,943

Source: The Data Center analysis of data gathered from CPRA IDIQ services contracts and LaTrac.

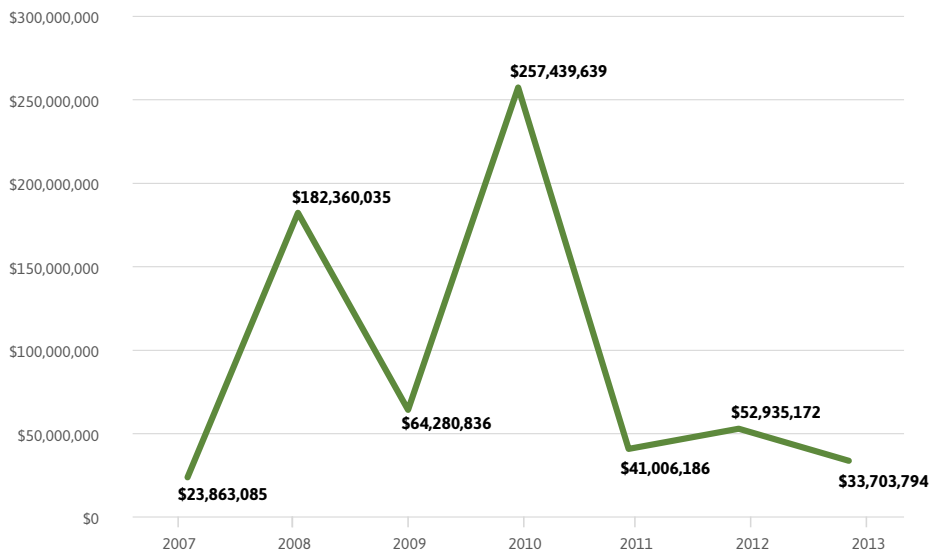
CPRA REGULAR SERVICES CONTRACTS, 2010–2014
FOR WORK PERFORMED IN LOUISIANA



Annual Average
\$93,655,535

Source: The Data Center analysis of data gathered from CPRA completion reports, cash transfer data gathered by GNO Inc., and internal CPRA project data.

CPRA-LED CONSTRUCTION CONTRACTS, 2007–2013
FOR WORK PERFORMED IN LOUISIANA



Demand Drivers:

Mitigation Banks

WHAT TYPE OF WORK DOES IT DO?

Mitigation banks perform more inland restoration than the CPRA, as the CPRA only works in coastal environments. Mitigation, on the other hand, occurs in such diverse wetland environments as the coast, cypress-tupelo swamps, and pine flats.

WHAT TYPES OF WATER MANAGEMENT CONTRACTS DOES IT AWARD?

A restoration plan must be planned thoroughly, approved by the Army Corps, and its implementation must start before any credits are “released” by the Army Corps to the mitigation bank for sale. The planning work is sometimes contracted out and comparable to the types of regular services that the CPRA contracts out. The implementation of the mitigation bank project (e.g., the restoration and monitoring work) is comparable to CPRA construction contract work. Some mitigation companies contract these services and construction out, while others have the capacity in-house. Regardless, mitigation banks involve private companies doing water management.

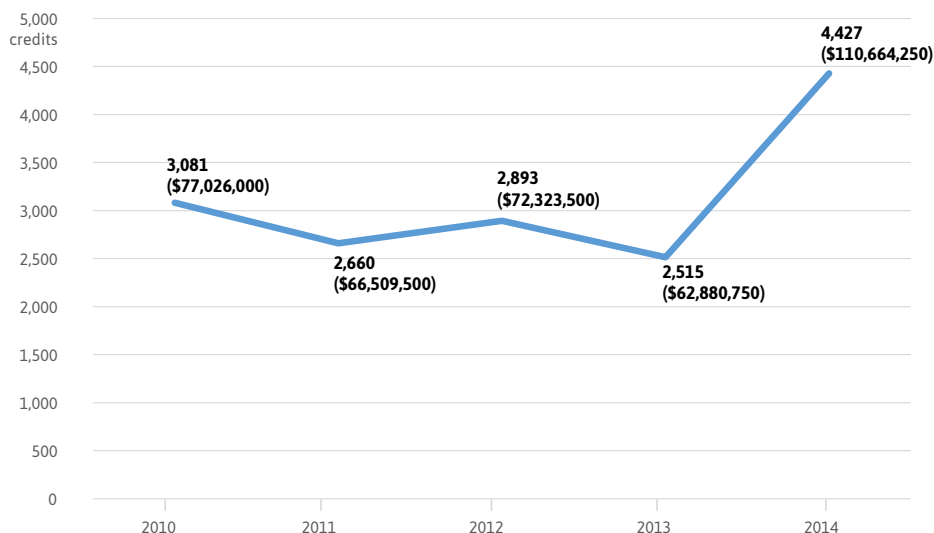
WHAT DOES THE DATA SHOW?

Since 2010, an average of 3,115 credits have been purchased annually from mitigation banks in Louisiana. There was a major uptick between 2013 and 2014, from 2,515 to 4,427 credits sold. One of the largest single purchasers of mitigation credits since 2010 has been the Louisiana Department of Transportation (LA DOTD). The rest of the large purchasers consist of energy companies, particularly pipeline companies, which tend to have unavoidable linear impacts, similar to those of roads. As of 2015, mitigation is permitted by the Army Corps, and restoration is not performed in alignment with goals and projects in the 2012 Master Plan.

WHAT ARE MITIGATION BANKS?

Mitigation banks are private companies (for-profit and nonprofit) that restore wetlands for the sale of future credits to companies and agencies that impact wetlands within the restoration watershed. Credits almost always come from sites located in close proximity (i.e., within a couple of parishes/counties) to the wetland impacts. Companies are required to mitigate wetland impacts before building under the Clean Water Act’s “no net loss” of water resources stipulation.⁷ Credits vary in price and acreage, depending on geography, demand, and the method that the local Army Corps district uses to calculate impacts.

WETLAND MITIGATION BANK CREDITS SOLD, 2010–2014 FOR WORK PERFORMED IN LOUISIANA



Annual Average
3,115 credits
(~ \$77,880,800)

Source: The Data Center analysis of data from RIBITS, an Army Corps database.

Notes: This data does not include any in-lieu fee program mitigation or permittee-responsible mitigation, which is mitigation done in an ad-hoc manner when sufficient or appropriate bank credits are not available in a given watershed.

Demand Drivers:

U.S. Army Corps of Engineers

WHAT IS THE ARMY CORPS?

The U.S. Army Corps of Engineers (Army Corps) is a division of the Department of the Army that implements large water infrastructure projects, and in the context of water management, conducts a large share of coastal protection work. There are two Army Corps districts in Louisiana, the New Orleans District and the Vicksburg District, with the New Orleans District doing the vast majority of coastal work.

WHAT TYPE OF WORK DOES IT DO?

The Army Corps' work includes coastal and urban water management. It leads some projects that fall under the 2012 Master Plan, including the Hurricane and Storm Damage Risk Reduction System (HSDRRS) surrounding New Orleans. The Army Corps awards contracts associated with these projects and does some planning (although much of the planning associated with these Army Corps projects is done by the CPRA in collaboration). Outside of CPRA programs, the Army Corps funds and administers some of its own programs in Louisiana. The Southeast Louisiana Urban Flood Control Project (SELA), for example is a program that supports Southeast Louisiana parishes' master drainage programs with Army Corps funded and implemented construction projects. In addition to its own and CPRA-originated programs, the Army Corps also maintains canals, pumps, spillways, floodwalls, and levees throughout South Louisiana.

WHAT TYPES OF WATER MANAGEMENT CONTRACTS DOES IT AWARD?

Because a substantial portion of Army Corps work is implementing work that is already planned (e.g. CPRA master plan projects), the water management contracts tend to mostly be in construction products and services.

WHAT DOES THE DATA SHOW?

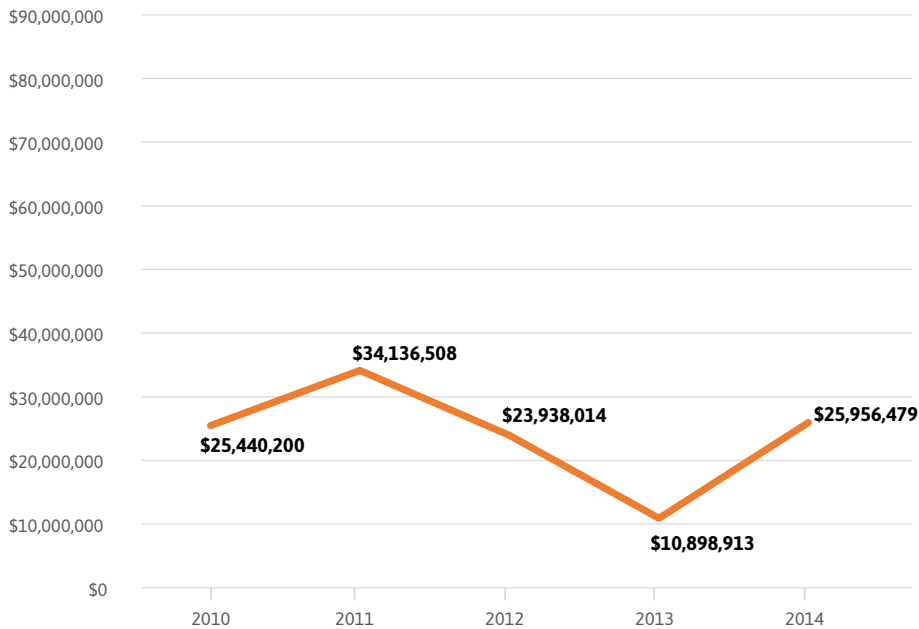
Since 2010, the Army Corps annually awarded approximately \$24 million in services contracts, and \$453 million in construction contracts. Construction is clearly the largest component of the Army Corps bucket.

Because of the size of Army Corps construction contracts, there is significant volatility in contract costs from year to year. In 2011 and 2012, Army Corps construction contracts to implement HSDRSS and SELA skyrocketed to nearly \$1 billion per year. Although contract costs have fallen substantially since then, continuing work on these projects will ensure that the Army Corps is an important driver of the water management cluster for the foreseeable future.^{8,9}

"SO IT MAY NOT BE TOO MUCH OF AN EXAGGERATION TO SAY THAT THE DEPARTMENT OF DEFENSE WAS THE ORIGINAL 'ANGEL' OF SILICON VALLEY."

— Stuart Leslie, *The Biggest Angel of Them All: The Military and the Making of Silicon Valley*

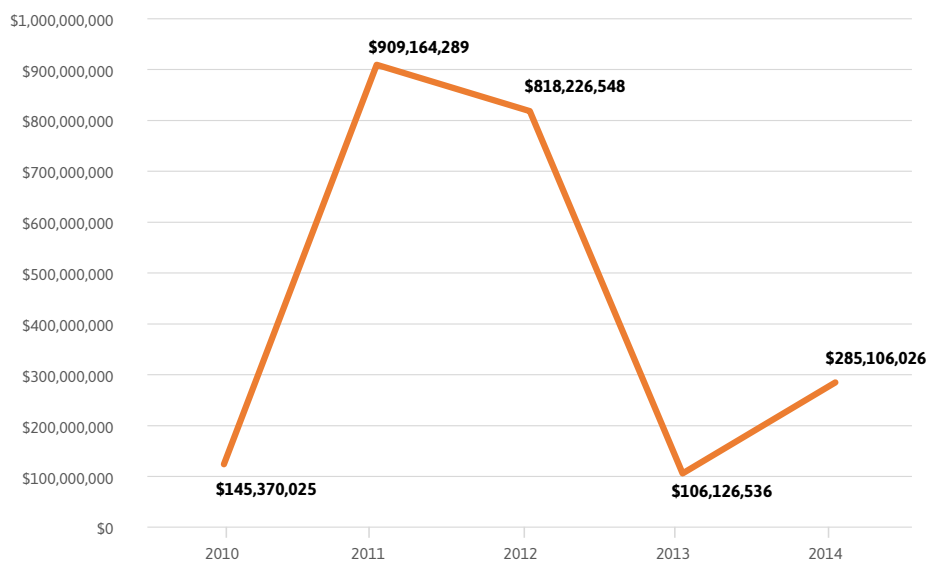
ARMY CORPS SERVICES CONTRACTS, 2010–2014 FOR WORK PERFORMED IN LOUISIANA



Annual Average
\$24,074,023

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

ARMY CORPS CONSTRUCTION CONTRACTS, 2010–2014 FOR WORK PERFORMED IN LOUISIANA



Annual Average
\$452,798,685

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

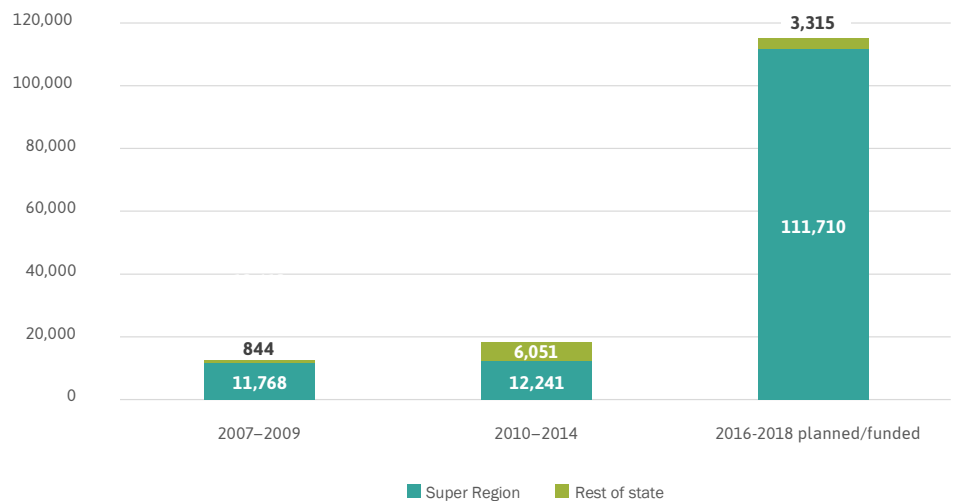
Environmental Footprint:

Coastal Protection and Restoration Authority

WHAT DOES THE DATA SHOW?

CPRA projects have benefitted over 18,000 coastal acres since 2010 and over 30,000 coastal acres since its inception in 2007. Over three-fourths of this beneficial environmental footprint has been within the Super Region. According to the Draft Fiscal Year 2016 CPRA Annual Plan, projects resulting in the restoration and creation of 115,025 acres are funded for at least a portion of design or construction between 2016 and 2018; over 95 percent of those potential acres benefitted are within the Super Region. Such a large number reflects what journalists have called a “moonshot,” referring to the large sediment diversions planned that would create thousands of acres of land.¹⁰ Because the science behind these diversions hasn’t been tested in the environment, the actual acres benefitted number will be important to monitor going forward.

ACTUAL & PLANNED NUMBER OF ACRES BENEFITED BY CPRA PROJECTS LOUISIANA



Source: The Data Center analysis of data from Appendix A of the Draft Fiscal Year 2016 CPRA Annual Plan.

Notes: Planned refers to projects funded for design or construction between 2016 and 2018 according to the CPRA Draft FY 2016 Implementation Plan.

Environmental Footprint: Mitigation Banks

WHAT DOES THE DATA SHOW?

Mitigation banks have a large environmental footprint. Over 20,000 acres of wetlands have been initiated to be restored by mitigation companies since 2010. Of note, coastal acreage is a small share of this total, but not insignificant, given the approximately 18,000 acre CPRA footprint over the same time frame. Lastly, the breakdown of acres by wetland type illuminates not only the relative expense of coastal restoration, but also the distinctions between water management projects of mitigation banks versus the CPRA.

MITIGATION PROJECTS INITIATED BY WETLAND TYPE, 2010–2014 LOUISIANA	
WETLAND TYPE	ACRES INITIATED
Coastal/Prairie Marsh	736
Emergent Wetlands/Swamp	3,194
Forested Wetlands	18,853
TOTAL	22,783

Source: The Data Center analysis of data from RIBITS, an Army Corps database.



Growing the Cluster

ECONOMIC FACTORS

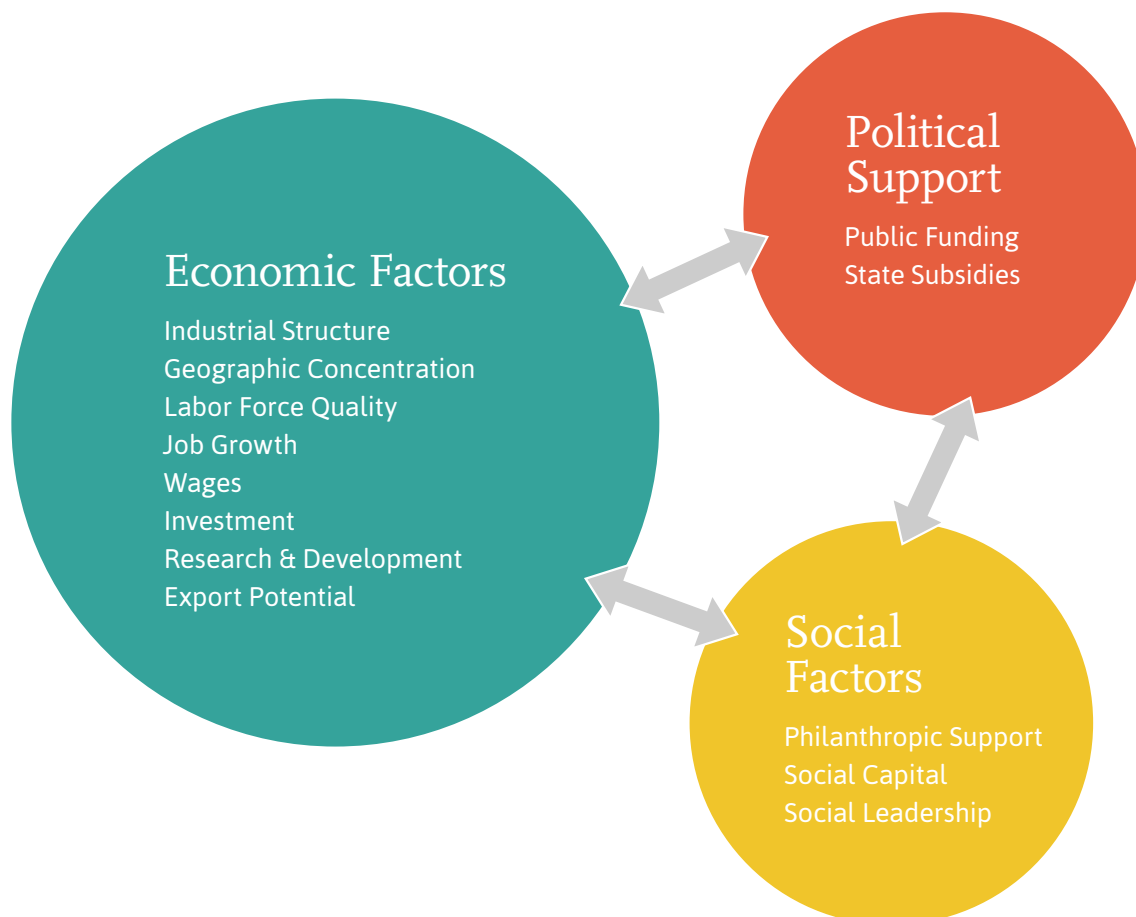
SOCIAL FACTORS

POLITICAL SUPPORT

GROWING THE CLUSTER

A cluster is more than just a group of successful regional businesses in the same industry. A cluster is a set of interconnected, innovative businesses—including verticals, horizontals, and suppliers—that grow in size and scope as they drive innovation in their field and tap into markets outside the region. More than anything, a cluster includes healthy competition within the region that stimulates productivity and innovation. Importantly, clusters include the involvement of government institutions in providing significant funding and establishing regulations, which in turn can spur innovation and competition.^{11,12}

SOUTHEAST LOUISIANA WATER MANAGEMENT CLUSTER



Economic Factors:

Industrial Structure

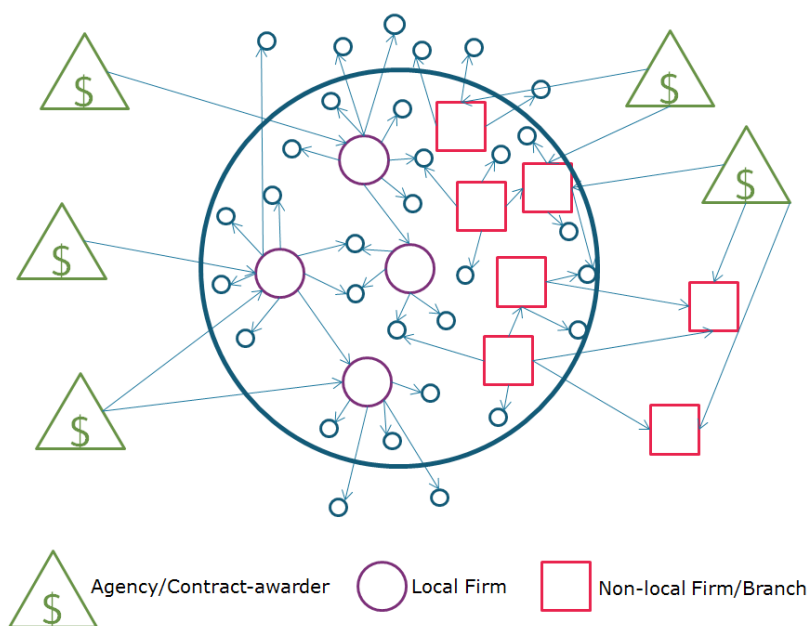
WHY IS THIS IMPORTANT?

The industrial structure of a cluster is defined by the types of businesses involved (suppliers, service providers, manufacturers, etc.), their size, their hometowns, and the relationships between them. Renowned University of Minnesota Economist Ann Markusen identified three types of industrial districts. A "Marshallian" industrial district consists of many small, local firms that are tightly connected, such as the fashion industry in New York or brewers in Portland, Oregon. A hub-and-spoke district features large locally-headquartered firms closely connected to related producers and suppliers, such as Silicon Valley, where HP and Sun Microsystems, and now Google, Intel, and Apple (among others) are the hubs of the computer universe, supporting a host of spin-offs and supportive companies. Lastly, a satellite platform district consists of branch plant operations of major companies headquartered elsewhere.¹³ A perfect example is the bio-pharmaceutical cluster in the Research Triangle. The Research Triangle consists of the R&D arms of many international companies that have little interaction with one another and that cluster in a wide geography in North Carolina. There is potential in each of the structures. The industrial district and hub-and-spoke offer the potential for a specialized local workforce and local growth, while the satellite platform offers the potential for in-migration of a specialized workforce and innovation spillovers that form new start-ups and industries.^{14,15}

WHAT DOES THE DATA SHOW?

The water management cluster is currently a hybrid between two types of industrial structures, the hub-and-spoke district and the satellite platform district. Because water management contracts tend to be upwards of \$3 million, winners of prime contracts tend to be large local companies or branches of large companies from outside. The large local firms are more likely to be construction firms, and when larger services firms are used, they tend to be companies headquartered outside of Louisiana. These primes, regardless of location, then usually subcontract out to an array of mostly small, mostly local firms.

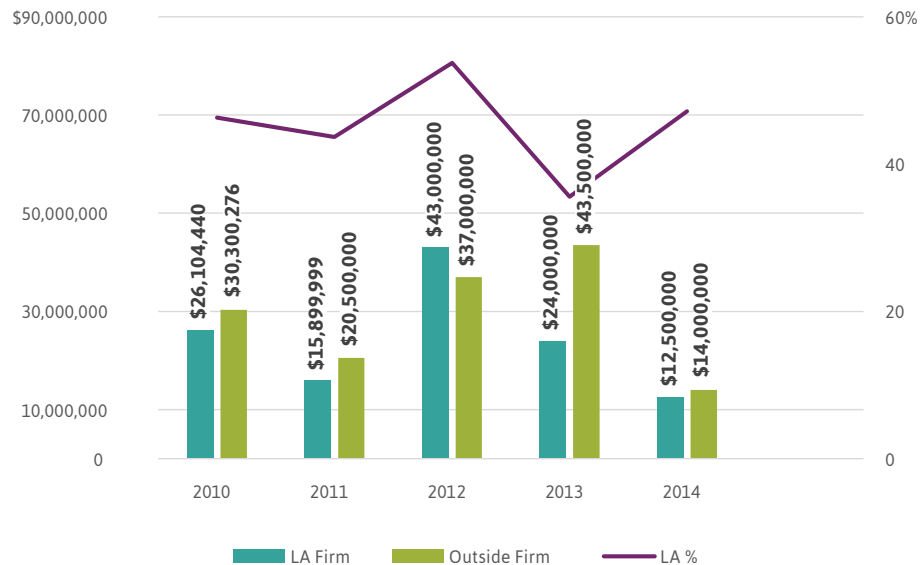
RENDERING OF SOUTHEAST LOUISIANA WATER MANAGEMENT CLUSTER INDUSTRIAL STRUCTURE



Among prime contractors, Louisiana firms were more likely to win Army Corps contracts than CPRA contracts. From 2010 to 2014, over 80 percent of both Army Corps services and construction contracts went to Louisiana firms. Less than 50 percent of CPRA regular services and construction contracts went to Louisiana firms. When factoring in the share of CPRA regular services contracts that went to Louisiana firms or those with a majority of employees on the project in Louisiana, the share rose to 55 percent.

CPRA-LED CONTRACT COSTS BY LOCATION OF PRIME CONTRACTORS FOR WORK PERFORMED IN LOUISIANA

REGULAR SERVICES

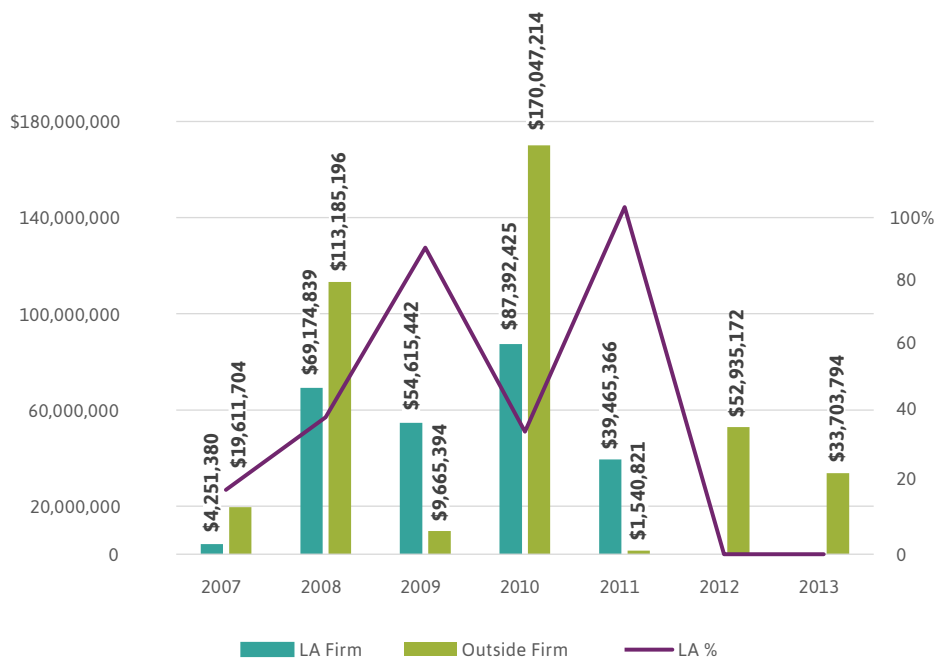


Annual Average
46% Louisiana

Source: the Data Center analysis of data gathered from CPRA IDIQ services contracts and LaTrac.

Notes: Location of firm was determined by corporate headquarters.

CONSTRUCTION



Annual Average
39% Louisiana

Source: The Data Center analysis of data gathered from CPRA completion reports, cash transfer data gathered by GNO Inc., and internal CPRA project data.

Notes: Location of firm was determined by corporate headquarters.

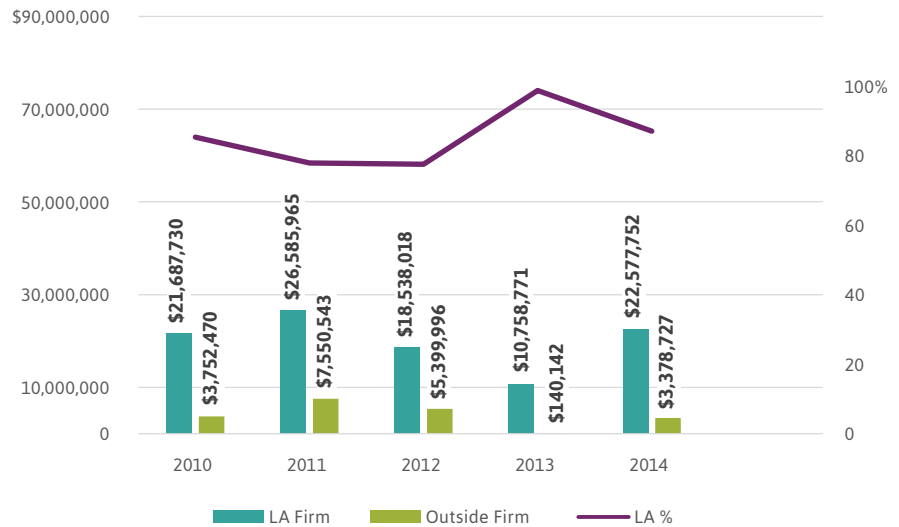
Annual Average
83% Louisiana

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Location of firm was specified in the USASPENDING.gov data.

ARMY CORPS CONTRACT COSTS BY LOCATION OF PRIME CONTRACTORS FOR WORK PERFORMED IN LOUISIANA

SERVICES



Annual Average
81% Louisiana

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Location of firm was specified in the USASPENDING.gov data.

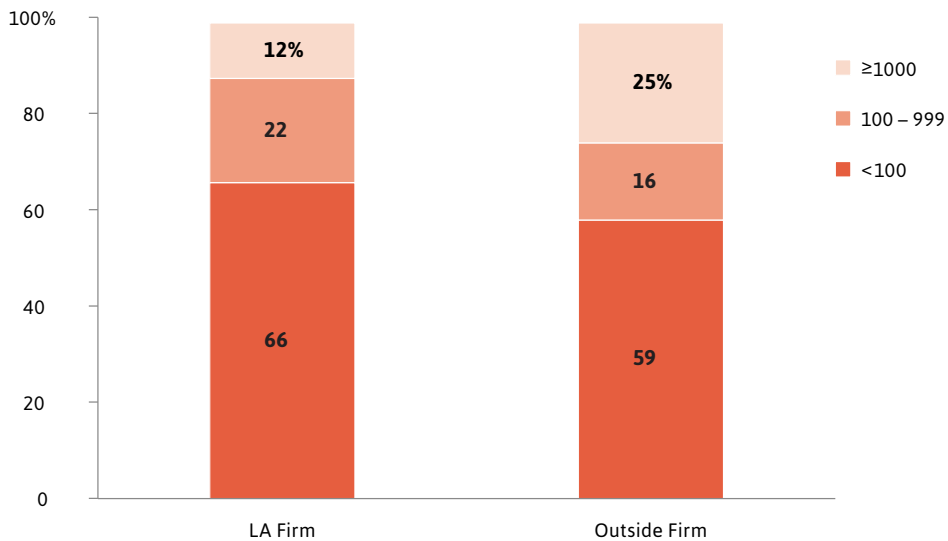
CONSTRUCTION



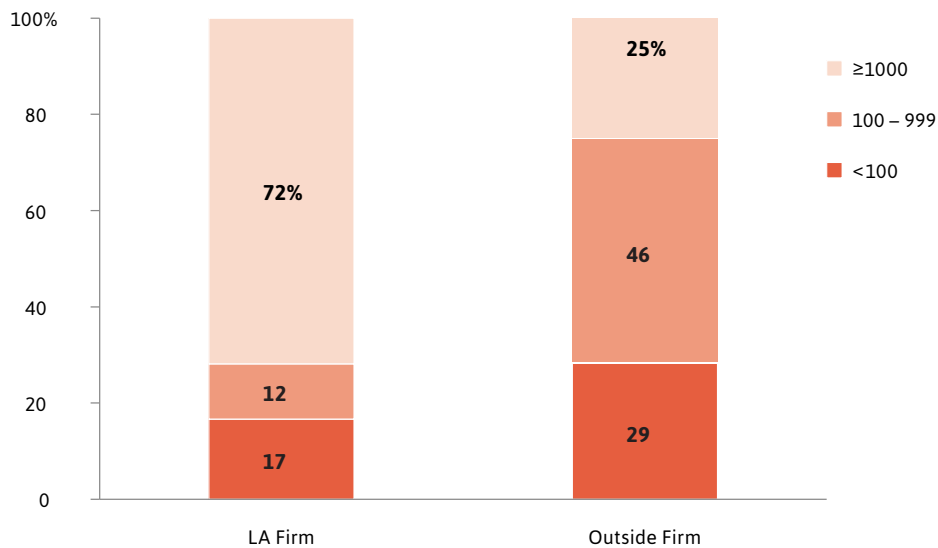
Louisiana firms that secured Army Corps construction contracts were more likely to be large (1000 or more employees) while Louisiana firms that secured services contracts were more likely to be small (less than 100 employees). This fact points to the smaller size of the service contracts as well as the immaturity of service firms in Louisiana.

SHARE OF ARMY CORPS CONTRACT DOLLARS BY FIRM LOCATION & NUMBER OF EMPLOYEES, 2010-2014 **FOR WORK PERFORMED IN LOUISIANA**

SERVICES



CONSTRUCTION



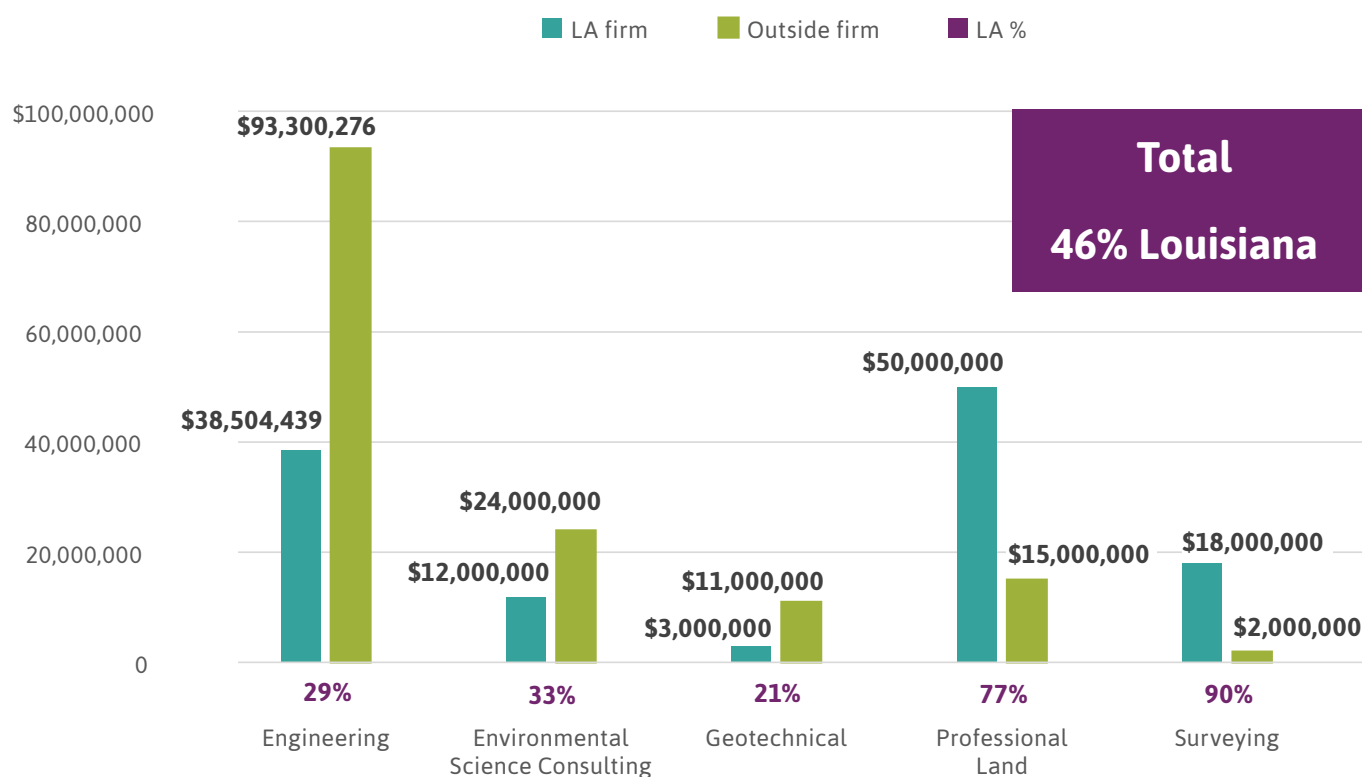
Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Size of firm was specified in the USASPENDING.gov data.

Notes: Percentages are based upon share of contract dollars as opposed to number of contracts.

A detailed analysis of CPRA regular services contracts reveals that Louisiana firms are less likely to receive contracts for engineering services, environmental science consulting, and geotechnical services, but they are more likely to win contracts for surveying and professional land services.

CPRA-LED CONTRACTS BY REGULAR SERVICE TYPE, 2010–2014 FOR WORK PERFORMED IN LOUISIANA



Source: The Data Center analysis of data gathered from CPRA IDIQ services contracts and LaTrac.

Notes: Location of firm was determined by corporate headquarters.

Data gathered on CPRA regular services prime and subcontractors revealed that on average each prime had six subs, which were mostly local—60 percent were either Louisiana firms or had a majority of employees on the project domiciled in Louisiana. All told, subs were anticipated to receive 45 percent of prime contract dollars.

**CPRA-LED REGULAR SERVICES SUBCONTRACTORS, 2010–2014
FOR WORK PERFORMED IN LOUISIANA**

SERVICE TYPE	SUBCONTRACTORS PER PRIME
Surveying	1.3
Geotechnical	3.4
Engineering	5.0
Environmental Science Consulting	6.3
Professional Land	10.9
AVERAGE	6.0

Source: The Data Center analysis of data from CPRA IDIQ services contracts.

There is little overlap between subs and primes, with only 11 percent of subs also having won prime contracts. The data indicates a gap between subs and primes, and the potential need for a path up the ladder for subs. Given the largely local nature of subs, providing that path would help grow local firms’ share of contracts.

Economic Factors:

Geographic Concentration

WHY IS THIS IMPORTANT?

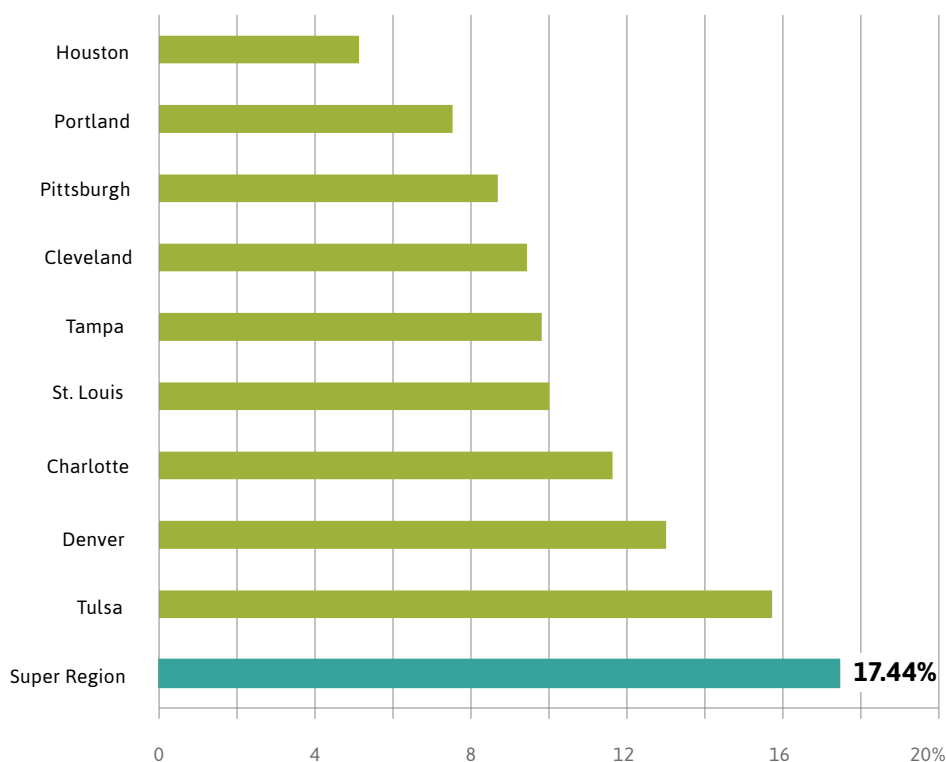
There are economic advantages to tight geographic clustering of related businesses. Proximity reduces transportation costs for moving goods, people, and ideas. The resulting advantages include speed, efficiency, flexibility, trust, and innovation. Geographic concentration not only saves on transport costs, but it also increases the ability to solve problems and promotes healthy competition and collaboration, which in turn spur innovation.^{16,17}

WHAT DOES THE DATA SHOW?

The Super Region has a high concentration of water management jobs within its top ZIP code relative to comparison metros. A full 17 percent of water management jobs are located within just the top ZIP code, and 33 percent of water management jobs in the Super Region are within the top five ZIP codes. The top five ZIP codes have also grown over 4,000 jobs since 2000, with the majority of that growth in the top two ZIP codes, indicating a further clustering.

With this level of concentration, there is opportunity for collaboration and interconnect- edness. However, the top two ZIP codes are in Baton Rouge and New Orleans, cities 80 miles apart. Thus, easy transportation is imperative to preventing fragmentation. The Water Campus—a soon-to-be constructed collaborative campus and research and office space along the Mississippi River in Baton Rouge, developed in partnership with the CPRA—is a nice step toward creating an environment in which different verticals, suppli- ers, startups, institutions, and governmental bodies can support a growing and innovat- ing cluster, particularly if the headquarters or branch plant operations of environmental, engineering, and construction firms decide to invest there.

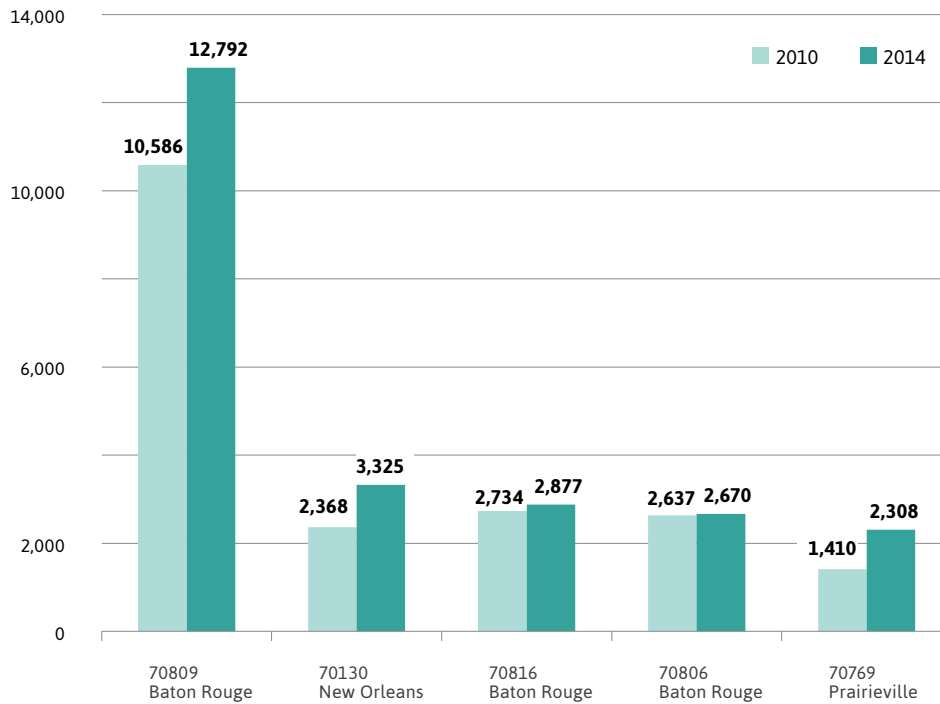
PERCENT OF WATER MANAGEMENT JOBS IN TOP ZIP CODE, 2014 SOUTHEAST LOUISIANA SUPER REGION AND COMPARISON METROS



Source: The Data Center analysis of data from EMSI.

Notes: Data based on EMSI pull of LED and BLS data from Q4, 2014.

CONCENTRATION OF WATER MANAGEMENT JOBS IN TOP ZIP CODES, 2010–2014 SOUTHEAST LOUISIANA SUPER REGION



**“KNOWLEDGE CROSSES CORRIDORS
AND STREETS MORE EASILY THAN
OCEANS AND CONTINENTS.”**

—Maryann P. Feldman, *Geographies of
Innovation*

Source: The Data Center analysis of
data from EMSI.

Notes: Data based on EMSI pull of
LED and BLS data from Q4, 2014.

Economic Factors:

Labor Force Quality

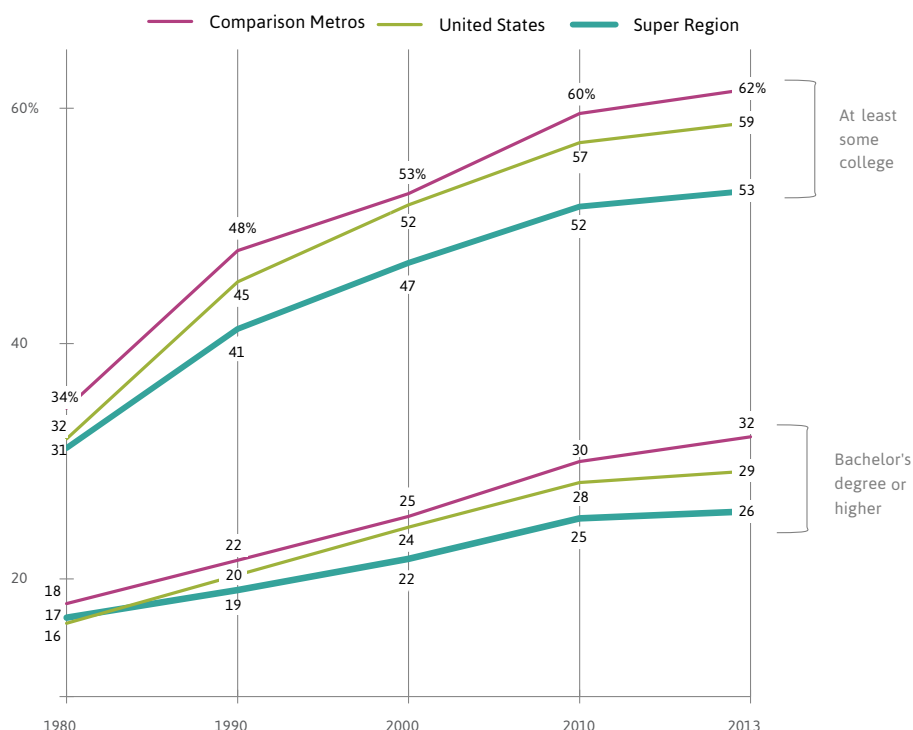
WHY IS THIS IMPORTANT?

Human capital is now the best predictor of regional economic growth. Research has shown that educated cities are growing faster, oftentimes despite lack of amenities.¹⁸ In addition, labor is more mobile than ever, and high quality labor flockes to places that have high quality labor.¹⁹ The prevalence of adults with a college degree is the most meaningful indicator of an educated workforce. In addition, the share of the population 18 – 24 years old with a bachelor's degree in science and engineering is a tidy in-time snapshot that measures the upcoming workforce. It is particularly relevant to water management, given that the majority of jobs requiring a bachelor's degree are within science and engineering fields.^{20,21}

WHAT DOES THE DATA SHOW?

The Super Region is behind the nation and comparison metros on two important measures of educational attainment. In the Super Region, only 53 percent of adults 25 years and older have at least some college education compared to 62 percent in comparison metros. In addition, just 26 percent of Super Region adults have a bachelor's degree or higher, compared to 32 percent in comparison metros. Furthermore, trends indicate a widening gap. In 2000, the Super Region was only three percentage points lower than comparison metros in the percent of adults with a bachelor's degree. That gap doubled in the span of 13 years. Since 2000, the Super Region has experienced a virtual flattening of educational attainment relative to comparison metros.

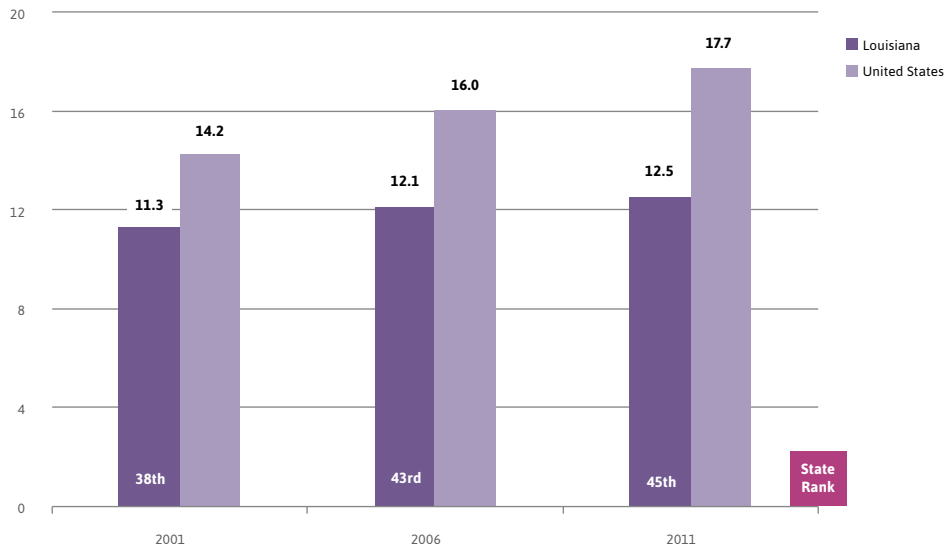
EDUCATIONAL ATTAINMENT FOR POPULATION 25 YEARS & OLDER, 1980-2013 SUPER REGION, COMPARISON METROS, UNITED STATES



Source: U.S. Census Bureau,
Decennial Census & 2013 American
Community Survey.

Another important measure of educational attainment shows Louisiana losing ground to national peers. Although Louisiana's share of science and engineering graduates increased from 11.3 per 1,000 young adults in 2001 to 12.5 in 2011, nationwide science and engineering graduates grew much more rapidly. Indeed, Louisiana dropped from 38th in the nation in science and engineering graduates to 45th. The Super Region will need to reverse this trend if it wants to compete in the U.S. economy of the 21st century.

SCIENCE & ENGINEERING BACHELOR'S PER 1,000 INDIVIDUALS 18-24 YRS OLD



**"HUMAN CAPITAL PREDICTS
POPULATION AND PRODUCTIVITY
GROWTH AT THE CITY AND
METROPOLITAN AREA LEVEL AS
SURELY AS IT PREDICTS INCOME
GROWTH AT THE COUNTRY LEVEL."**

– Edward Glaeser and Albert Saiz, *"The rise of the skilled city."* National Bureau of Economic Research.

Source: National Science Foundation
analysis of data from IPEDS.

Notes: State ranking is out of the 50 states
and the District of Columbia.

Economic Factors:

Job Growth

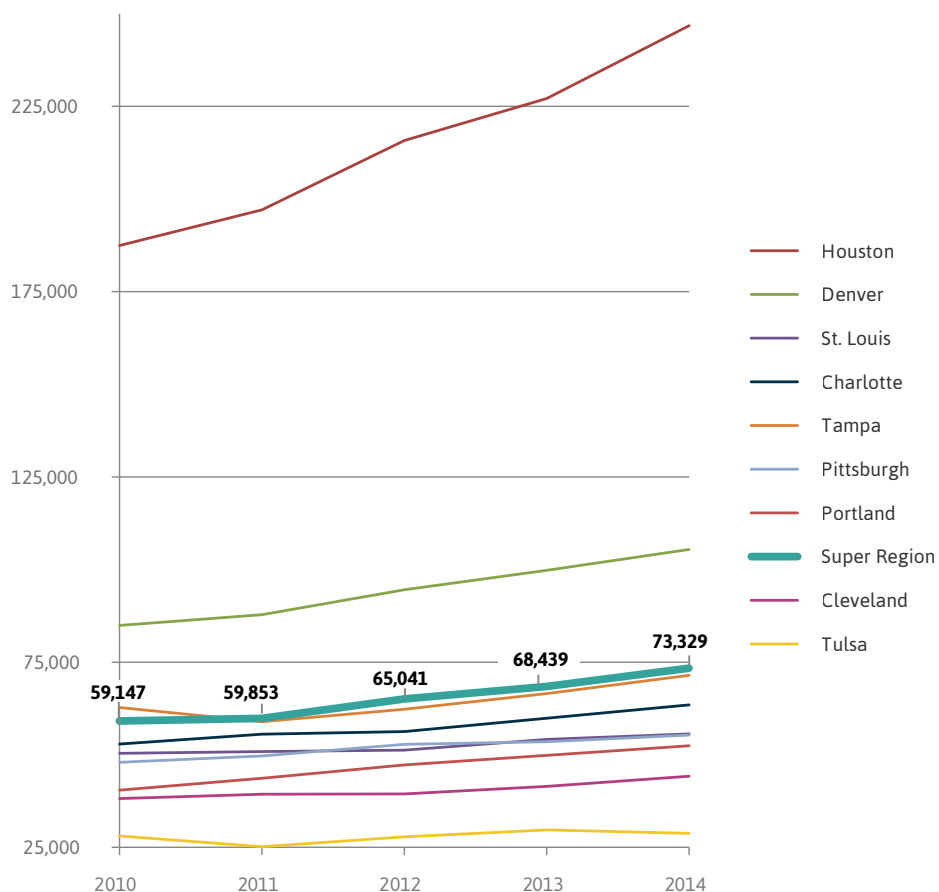
WHY IS THIS IMPORTANT?

Job growth is an indicator commonly used to assess the pace of economic growth in a metro or region. When examined by sector, it can reveal resiliency, stagnation, or growth. Job growth in water management in comparison to other metros helps parse out whether job growth is driven by national trends or by regional specialization. It also gauges Southeast Louisiana's water management cluster against possible competitors.

WHAT DOES THE DATA SHOW?

The Super Region has grown nearly 14,000 jobs in water management since 2010. While most comparison metros have seen similar growth, the Super Region is keeping pace with the pack and behind only Houston and Denver in total number of water management jobs.

WATER MANAGEMENT EMPLOYMENT, 2010-2014



Source: The Data Center analysis of data from EMSI and U.S. Cluster Mapping Project.

Economic Factors:

Wages

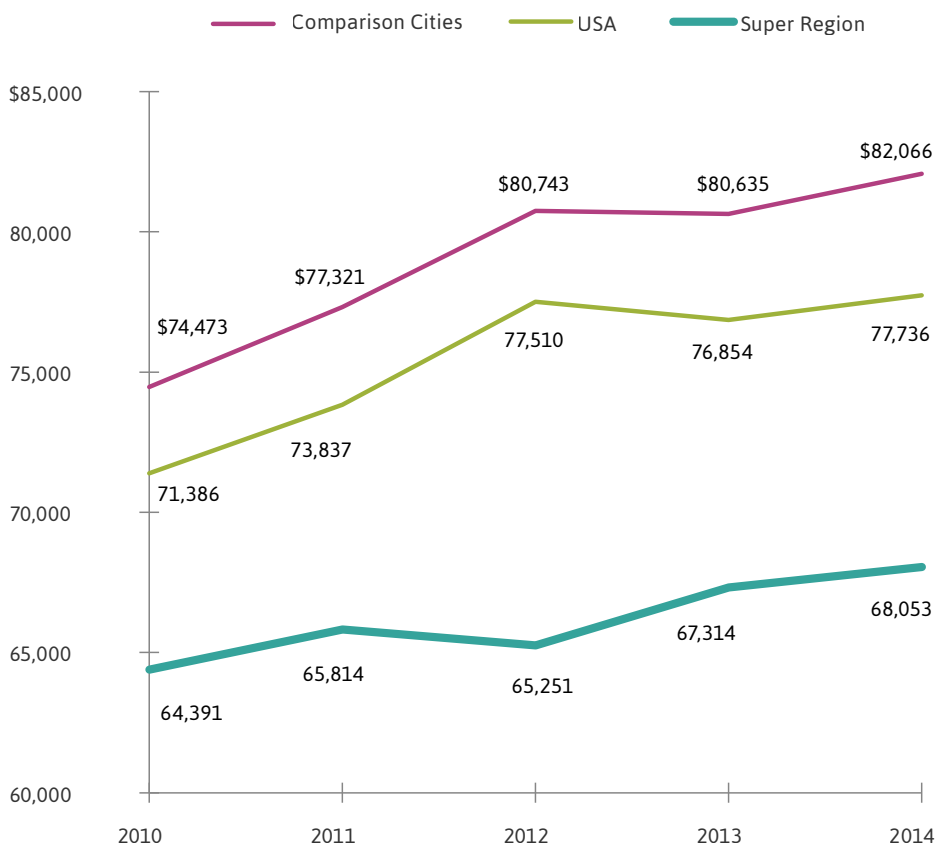
WHAT DOES THE DATA SHOW?

Super Region jobs in the water management cluster pay \$14,000 less in 2014 than in comparison metros. Furthermore, this gap has risen since 2010 despite job and population growth within the Super Region. An engineer in Houston, Pittsburgh, or Portland may earn more money for the same job to an engineer in Southeast Louisiana. Such wage gaps present a challenge for keeping and attracting needed workers to further develop the cluster.²²

WHY IS THIS IMPORTANT?

Wages are important for growing clusters in the same way that educational attainment is important. Good wages, especially within a sector, are necessary for attracting and keeping a quality workforce. In fact, healthy clusters, and the competition and innovation they foster, are often catalysts for higher wages within that cluster. Increasing wages, therefore, are often an indicator of a thriving cluster.

WATER MANAGEMENT WAGES, 2010-2014



Source: The Data Center analysis of data from EMSI and U.S. Cluster Mapping Project.

Notes: Wages refer to average wages, salaries, and proprietor earnings. They do not include benefits, supplements, or similar non-salary additions.

Economic Factors:

Investment

WHY IS THIS IMPORTANT?

Research has shown that venture capital co-locates with the formation of new industries. Many metros believe they have the potential to become major commercial hubs just based on the presence of a large research institution or corporate presence. But investment dollars are a necessary piece of the puzzle. Venture capital works in conjunction with these place-based assets—and often with a culture of risk—to produce an ecosystem where new technologies and spin-offs emerge from local companies and satellite offices alike. Places with low stocks of venture capital are unlikely to be sites of new innovation and healthy cluster development.^{23,24} And it has been empirically shown that venture capital, especially newer venture capital, is more likely to invest regionally, even if venture capital firms are national in scope.²⁵

WHAT DOES THE DATA SHOW?

The Super Region is lacking in investment across all stages of investment: seed, angel, venture, and post-venture. The only stage for which the Super Region ranked 7th or higher among comparison metros was seed funding, with a little less than a million being invested each year. Of particular concern is angel funding. This stepping stone to national relevance is anemic within the region when compared to other metros. Lack of investment across all stages makes it that much harder for new firms to emerge, innovate, and create competition, and it hinders growing firms from making the leap to become gazelles.

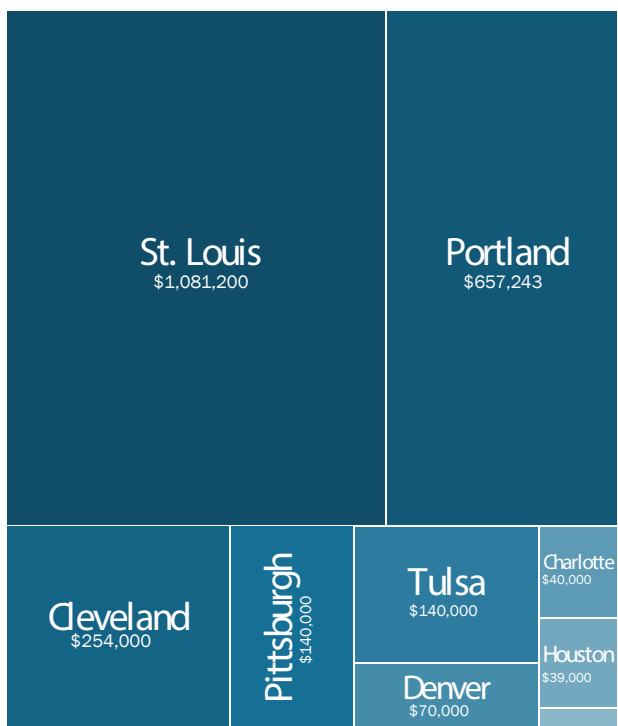
SEED FUNDING, 2010–2014, ANNUAL AVERAGE SE LOUISIANA SUPER REGION & COMPARISON METROS



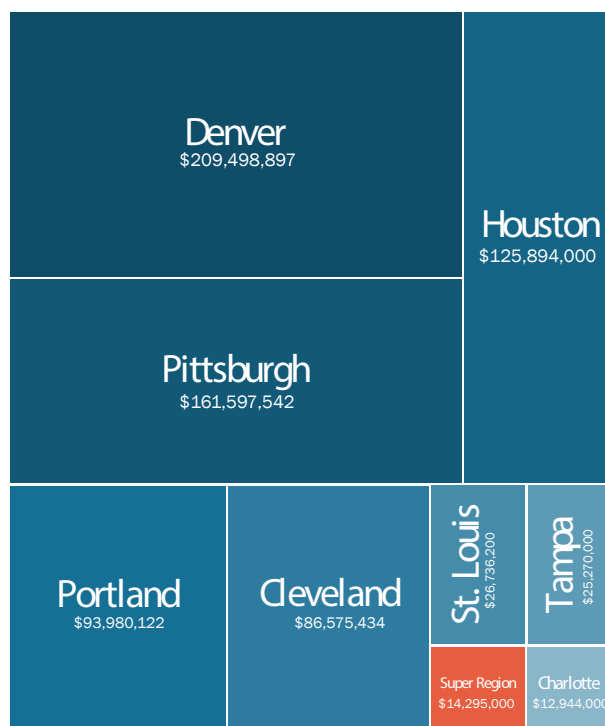
Source: The Data Center analysis of data from Mattermark.

Notes: Location refers to the location of the company receiving investment, not the location of the investor

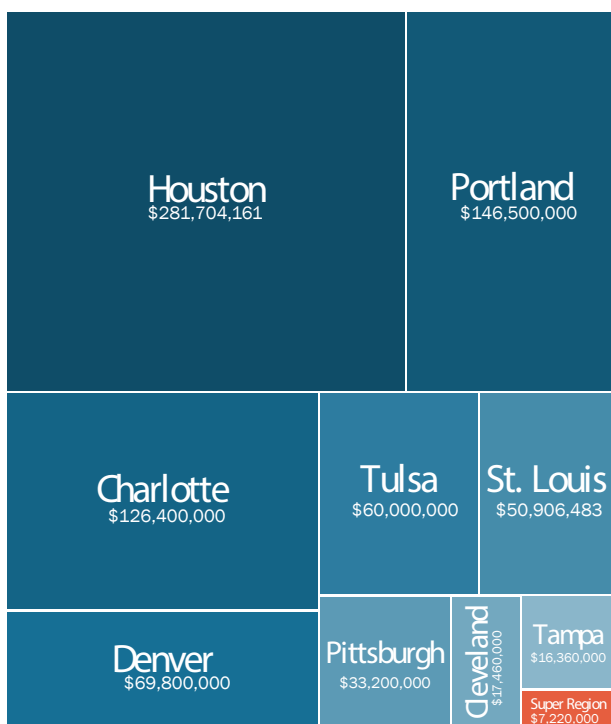
**ANGEL FUNDING, 2010–2014, ANNUAL AVERAGE
SE LOUISIANA SUPER REGION & COMPARISON METROS**



**VENTURE FUNDING, 2010–2014, ANNUAL AVERAGE
SE LOUISIANA SUPER REGION & COMPARISON METROS**



**POST-VENTURE FUNDING, 2010–2014, ANNUAL AVERAGE
SE LOUISIANA SUPER REGION & COMPARISON METROS**



**“A CULTURE OF RISK TAKING,
WHERE FAILURE WAS
COMMONPLACE—EVEN
SEVERE—MADE SILICON VALLEY
A NETWORK-BASED INDUSTRIAL
ECONOMY, ORGANIZED TO
ADAPT CONTINUOUSLY TO FAST-
CHANGING MARKETS AND NEW
TECHNOLOGIES.”**

—Annalee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*

Source: The Data Center analysis of data from Mattermark.

Notes: Venture funding is comprised of venture and series A-G funding.

Notes: Post-venture funding is comprised of funding given out by debt-financing organizations and private equity organizations.

Economic Factors:

Research and Development

WHY IS THIS IMPORTANT?

Research and Development (R&D) is a primary mechanism through which innovation is transferred from legacy industries to phoenix industries.²⁶ Spillover from R&D, whether it be in business, academia, or government, has spawned many famous clusters, not the least of which was Silicon Valley, which emerged from military investments and industries in northern California after World War II.²⁷ A more current example is the optics cluster in Rochester, which hatched from the leftover R&D operations of Kodak, Xerox, and Bausch & Lomb.²⁸ You need specialized knowledge, raw materials, and key inputs to be a foundation for novel future industrial arrangements. Hence, for a water management cluster to appear, it is important to identify the potential for a predecessor, the places from which innovation may spillover.

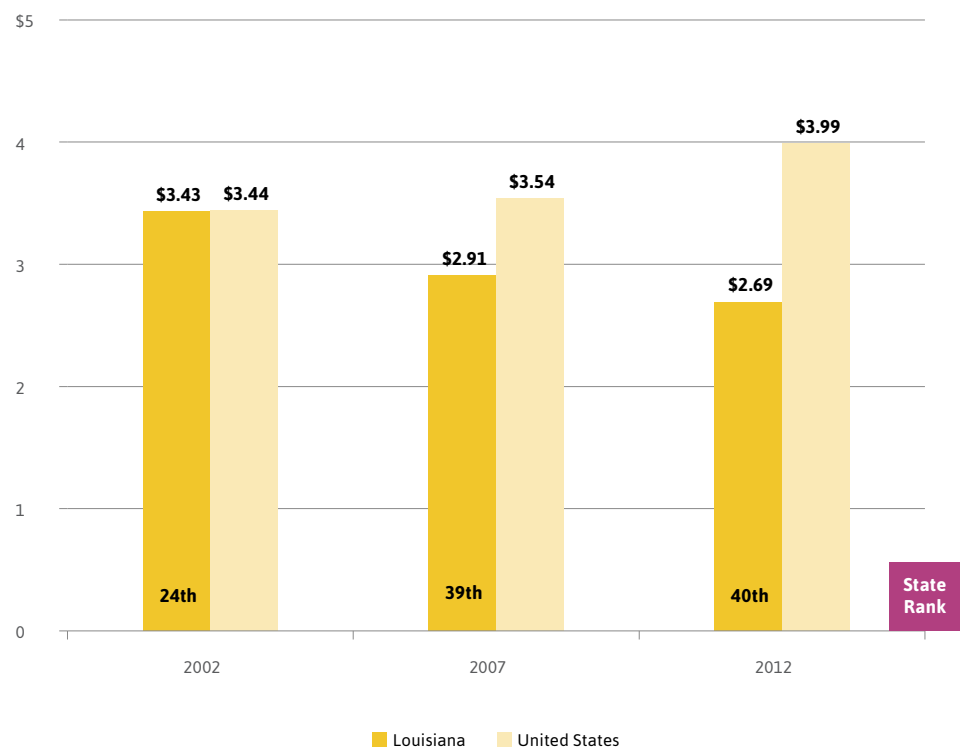
Source: The National Science Foundation analysis of data from NCSES and the BEA.

Notes: Academic R&D is reported for institutions with over \$150,000 in R&D.

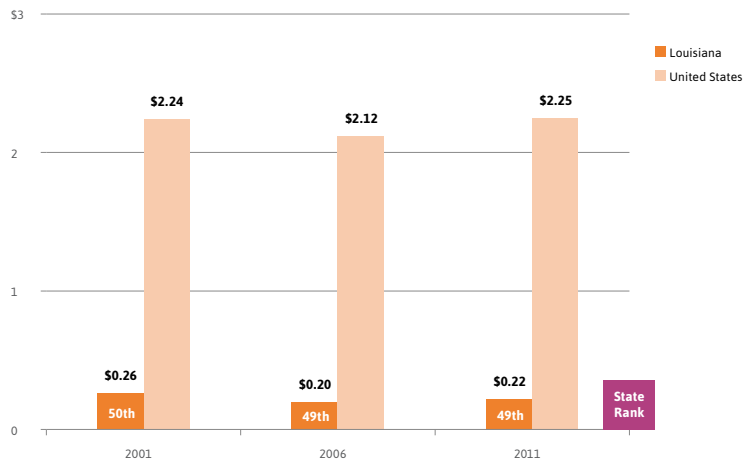
WHAT DOES THE DATA SHOW?

Louisiana has less R&D than the nation across four major categories: academic science and engineering R&D, business-performed R&D, state agency funded R&D, and federally obliged R&D. State agency funded R&D and academic science and engineering R&D, both tied to state funding, have decreased over the last decade while other states across the U.S. have seen an overall increase. Louisiana has plummeted in the state rankings of both of these indicators. In terms of private R&D investments, Louisiana businesses have consistently invested in a paltry level of R&D compared to businesses nationwide. Last, federal R&D is obliged to Louisiana at a low rate compared to the nation, but Hurricane Katrina and the oil spill have increased Louisiana's intake of federal R&D dollars, and the state's ranking has improved albeit to only 38th in the nation.

ACADEMIC SCIENCE AND ENGINEERING R&D PER \$1,000 GDP

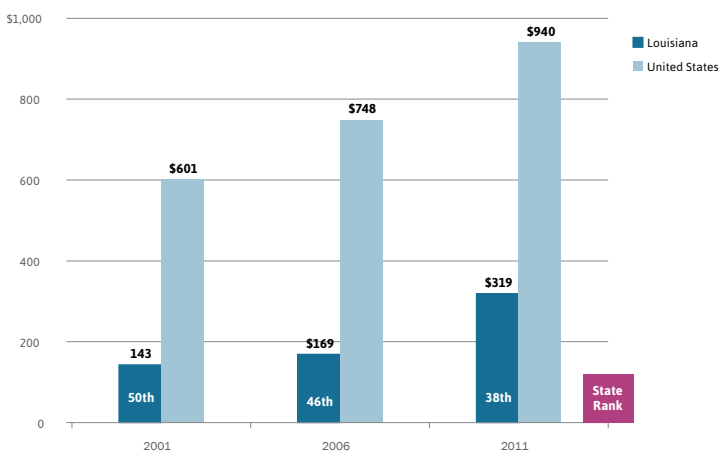


BUSINESS-PERFORMED R&D PER \$100 PRIVATE-INDUSTRY OUTPUT



Source: The National Science Foundation analysis of data from the Census Bureau Business R&D and Innovation Survey and BEA.

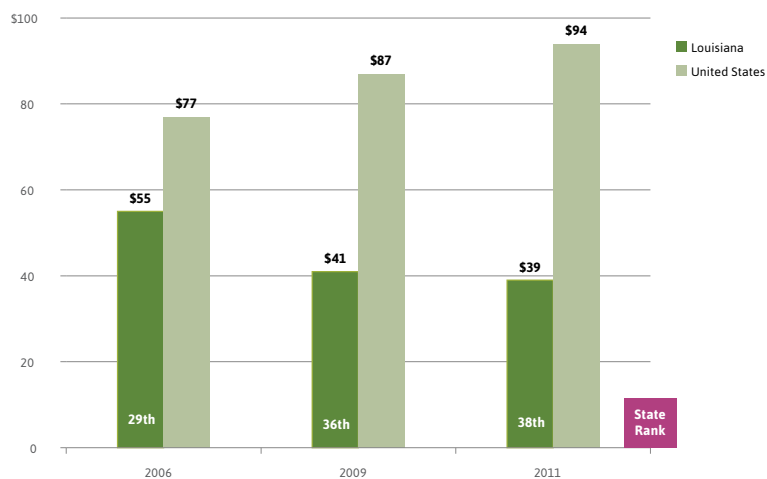
FEDERAL R&D OBLIGATIONS PER EMPLOYED WORKER



Source: The National Science Foundation analysis of data from NCSES and BLS.

Notes: Only 11 institutions are required to report Federal R&D obligations, which represent over 98% of Federal R&D.

STATE AGENCY R&D PER \$1 MILLION GDP



Source: The National Science Foundation analysis of data from NCSES Survey of State Research and Development Expenditures and BEA.

Economic Factors:

Export Potential

WHY IS THIS IMPORTANT?

All regional economies generate wealth from the production and sale of goods and services. Products are either sold to the local population or “exported” for sale to customers outside the region. It is the “export” of products and services to other regions that chiefly drives regional growth and development. The sale of goods and services for local consumption is, on the other hand, more a consequence of the region’s overall development than a driver of it. “Export” industries generate income from outside the region, supporting additional jobs (and the associated incomes) in supplier industries as well as industries that serve local consumption needs.²⁹

The ultimate goal for the water management cluster is that out of it are borne local hub companies that become national players, bringing jobs and tax revenue back to the Super Region along the way. This section includes an analysis of Army Corps contracts nationally, to tease out whether Louisiana companies are winning contracts elsewhere, as well as an analysis of federal and regional Hurricane Sandy contracts won by Louisiana firms.

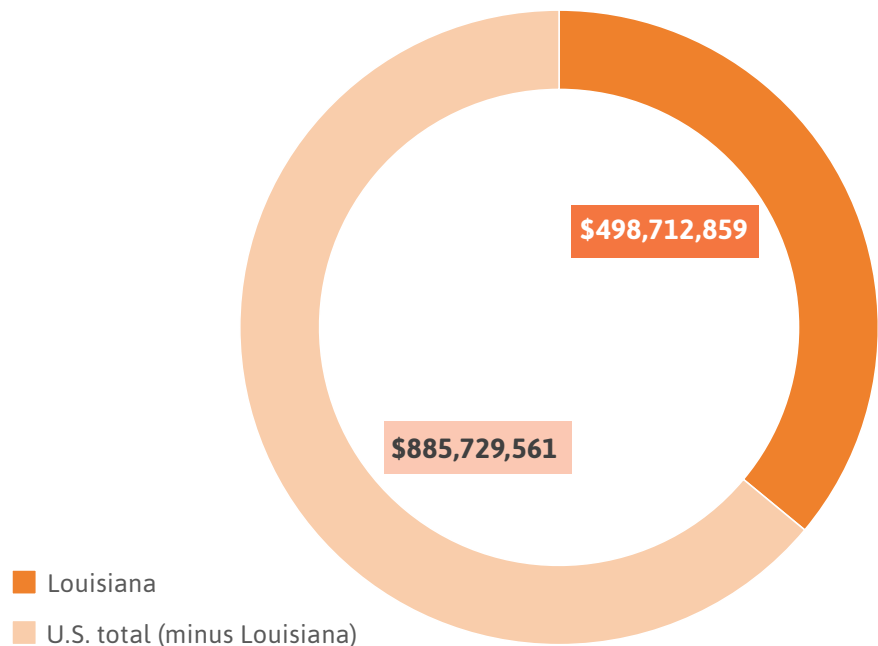
Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

WHAT DOES THE DATA SHOW?

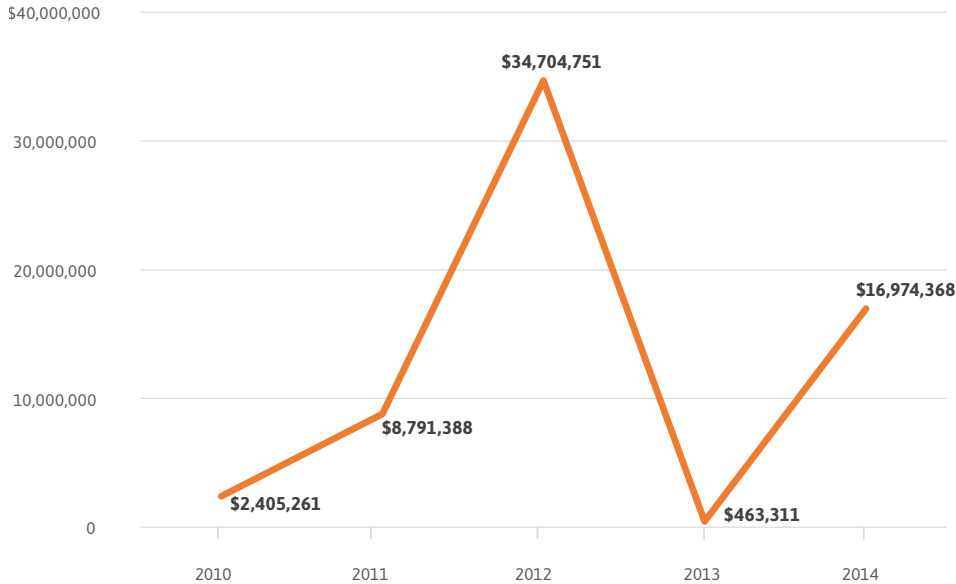
Since 2010, the Army Corps has given out an average of \$499 million in contracts annually for projects within the state of Louisiana. All total, the Army Corps spent one-third of all its project dollars in Louisiana. The Army Corps data also reveals that there is a sizable market outside Louisiana in addition to the substantial local opportunities. Army Corps contracts for projects outside of Louisiana have reached an average of nearly \$1 billion annually since 2010.

Louisiana companies are starting to win Army Corps contracts for work outside Louisiana, averaging \$12,667,816 in outside contracts per year since 2010. The states where Louisiana companies average more than a million dollars in Army Corps contracts per year are Florida, New Jersey, Texas, and Missouri (three coastal states, in addition to Missouri with its confluences). Large local construction firms, including Cajun Constructors, Weeks Marine, and Mike Hooks, have been at the forefront of seeking markets outside Louisiana.

AVERAGE ANNUAL ARMY CORPS CONTRACTS, 2010–2014 LOUISIANA AND THE REST OF THE UNITED STATES



DOLLAR VALUE OF LOUISIANA VENDOR CONTRACTS PERFORMED OUTSIDE OF LOUISIANA, 2010–2014, BY YEAR



Annual Average

\$12,667,816

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: This data represents contracts funded by the Army Corps and includes exclusively civil program financing.

DOLLAR VALUE OF LOUISIANA VENDOR CONTRACTS PERFORMED OUTSIDE OF LOUISIANA, 2010-2014, BY STATE OF PERFORMANCE

PERFORMANCE STATE	CONTRACTS TOTAL
Florida	\$19,251,455
New Jersey	\$7,398,450
Texas	\$7,225,129
Missouri	\$5,877,100
Virginia	\$3,763,934
Alabama	\$3,732,683
Mississippi	\$2,827,305
Pennsylvania	\$1,639,798
Delaware	\$1,425,312
South Carolina	\$1,300,000
TOTAL	\$63,339,080

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Total includes states not in the top ten.

LARGEST LOUISIANA CONTRACTORS WINNING OUT-OF-STATE CONTRACTS 2010–2014, TOP CONTRACTORS BY DOLLAR VALUE

VENDOR NAME	CONTRACTS TOTAL
Cajun Constructors, Inc.	\$18,663,500
Weeks Marine, Inc.	\$14,601,787
Mike Hooks, Inc.	\$8,895,636
CB&I Federal Services LLC	\$3,870,448
Quaternary Resources Investigations, LLC	\$2,293,426
Wilco Marsh Buggies and Draglines, Inc.	\$1,617,264
ARS International, Inc.	\$1,425,228
New Orleans Small Business Engineering JV	\$1,231,725
Delta Fuel Company, Inc.	\$990,000
Bioengineering Arcadis Limited Liability Company	\$975,886
Gulf South Research Corporation	\$896,436
Hesco Bastion Usa, Inc.	\$724,384
Lapac Manufacturing, Inc.	\$708,463
Ecology And Environment Incorporated	\$642,238
Abmb Engineers, Incorporated	\$579,921
Gulf Shore Construction Services, LLC	\$549,223
Ecm Consultants Incorporated	\$481,699
Julien Engineering & Consulting, Inc.	\$401,353
Ingram Barge Company	\$375,802
G.E.C., Inc.	\$344,385

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Some highlighted Louisiana firms have since been purchased by firms headquartered elsewhere (e.g. CB&I).

Louisiana's firms win more total Army Corps contract dollars than firms in any other state because of the tremendous size of projects within Louisiana. However, a few other states win a higher share of out-of-state contract dollars, including Illinois, which wins nearly five times as many out-of-state contract dollars as Louisiana. Louisiana still wins a much higher rate of its own in-state contract dollars (80 percent) than the median state (47 percent), and a higher percentage of available out-of-state contracts (1.43 percent) than the median state (0.58 percent). Nevertheless, there are eight states that win more out-of-state contract dollars than does Louisiana. These are numbers that Super Region companies can aspire to change.

SHARE OF IN-STATE AND OUT-OF-STATE ARMY CORPS CONTRACTS WON BY FIRMS IN EACH STATE, 2010-2014

STATE	IN-STATE TOTAL	IN-STATE SHARE	OUT OF STATE TOTAL	OUT-OF-STATE SHARE
Illinois	\$300,905,743	64%	\$356,753,469	5.53%
Virginia	\$72,137,596	66%	\$198,817,020	2.92%
Florida	\$156,242,147	50%	\$169,454,539	2.56%
Washington	\$101,517,040	63%	\$173,031,897	2.56%
Texas	\$164,107,209	56%	\$150,044,332	2.26%
New Jersey	\$49,022,863	42%	\$141,203,206	2.07%
New York	\$56,386,970	34%	\$105,705,430	1.56%
Missouri	\$122,358,678	54%	\$102,868,128	1.54%
Louisiana	\$1,991,771,276	80%	\$63,339,080	1.43%
Pennsylvania	\$51,149,357	62%	\$96,059,726	1.40%
Median	\$19,855,447	47%	\$39,575,053	0.58%

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Out-of-state contract total pot is total available contract dollars outside of the relevant state's pot.

Hurricane Sandy contracts indicate whether Louisiana water management firms were being consulted on disaster management and for construction and services associated with Sandy's aftermath. At the federal level, Louisiana companies won contracts in multiple Atlantic seaboard states, totaling approximately \$158 million across federal agencies (from the U.S. Fish and Wild Life Service to FEMA) from 2012 to 2014. Louisiana firms also secured approximately \$78 million in Sandy contracts from the State of New York, State of New Jersey, and New York City. Data was not gathered for agencies outside of these regional scopes.

LOUISIANA VENDORS FOR FEDERAL SANDY CONTRACTS, 2012-2014 BY STATES WHERE WORK WAS PERFORMED

PERFORMANCE STATE - VENDOR NAME	CONTRACTS TOTAL
New York	\$67,809,720
Weeks Marine, Inc.	\$49,215,996
Perez, A Professional Corporation	\$8,333,546
Macro Oil Company, Inc.	\$8,070,927
The Building Performance Center, LLC	\$218,925
New Jersey	\$29,328,232
Weeks Marine, Inc.	\$29,176,050
D&A Services Group, LLC	\$131,551
H&E Equipment Services, Inc.	\$20,631
North Carolina	\$26,256,300
Weeks Marine, Inc.	\$26,256,300
Multiple States	\$17,316,235
Weeks Marine, Inc.	\$9,728,102
CB&I Federal Services LLC	\$4,999,999
C & C Technologies, Inc.	\$2,293,914
G.E.C., Inc.	\$207,882
Rusca, Erin	\$20,550
Louisiana State University System	\$20,100
Atkinson Environmental Inc.	\$20,000
Lewis, Greg	\$12,182
Guidry, Zachary E.	\$7,710
Maass, Audrey	\$5,795

- CONTINUED FROM PREVIOUS PAGE -

PERFORMANCE STATE - VENDOR NAME	CONTRACTS TOTAL
Maryland	\$14,303,125
Weeks Marine, Inc.	\$14,295,950
D&A Trucking LLC	\$7,175
Virginia	\$2,961,783
Weeks Marine, Inc.	\$2,926,583
D&A Services Group, LLC	\$35,200
Washington	\$270,387
Strategic Alliance Enterprises JV, LLC	\$270,387
District of Columbia	\$92,207
Novaces LLC	\$92,207
Delaware	\$19,480
D&A Services Group, LLC	\$19,480
Grand Total	158,357,468

Source: The Data Center analysis of data from USASPENDING.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and managed by the Office of Management and Budget (OMB).

Notes: Some highlighted Louisiana firms have since been purchased by firms headquartered elsewhere (e.g. CB&I).

**LOUISIANA VENDORS FOR REGIONAL SANDY CONTRACTS, 2012–2014
BY GOVERNMENT AGENCY THAT AWARDED THE CONTRACT**

DATE	GOVERNMENT	AMOUNT	VENDOR	CITY, STATE
5/21/2014	New York	\$50,000	Hunt Guillot & Associates, LLC	Ruston, LA
10/23/2014	New York	\$5,000,000	Hunt Guillot & Associates, LLC	Ruston, LA
5/8/2013	New Jersey	\$67,739,909	Hammerman & Gainer, Inc	New Orleans, LA
6/27/2013	New York City	\$1,084,283	Ferrara Fire Apparatus Inc	Holden, LA
6/27/2013	New York City	\$4,337,132	Ferrara Fire Apparatus Inc	Holden, LA
Total		\$78,211,324		

Source: The Data Center analysis of data from from the New York Office of the State Comptroller, New York Rising, New Jersey Hurricane Sandy Office of Transparency, and the New York City Sandy Funding Tracker.

Social Factors:

Philanthropic Support

WHY IS THIS IMPORTANT?

Philanthropic support is an indicator of corporate and economic commitment to the community. It identifies what the leaders within a community find valuable and how they dedicate their resources. The extent to which Super Region foundations contribute to environmental causes is an indicator of the footprint of corporate social responsibility. Philanthropy also has an impact on crucial inputs for economic development, such as workforce development and information sharing.³⁰

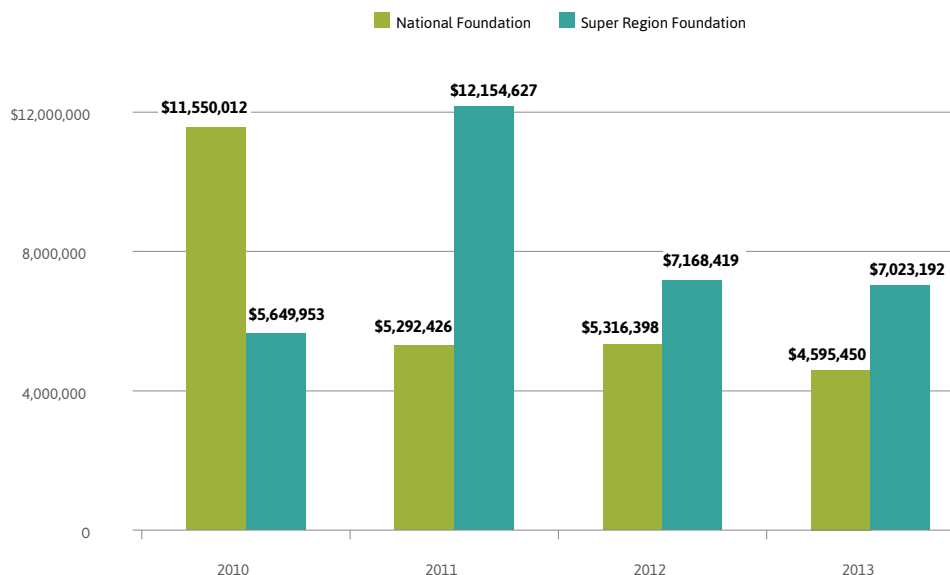
Source: The Data Center analysis of data from the Foundation Center.

Notes: Environmental is defined as all grants that fall under the subject group "environment". Grant subjects are determined by self-reported subjects in most cases and Foundation Center assigned subjects in some cases.

WHAT DOES THE DATA SHOW?

There was a decline in national foundation giving to environmental causes within the Super Region from 2010 to 2013. Regional foundations more than doubled their giving to environmental causes within the Super Region in 2011, but that giving fell substantially in 2012 and 2013. Because national foundations give regional foundations grants to then re-grant to local nonprofits, the rise in Super Region grant-giving in 2011 may be largely accounted for by the transference of grants from national foundations in 2010.

DOLLAR VALUE OF ENVIRONMENTAL GRANT-GIVING TO THE SUPER REGION, 2010-2013 BY NATIONAL AND REGIONAL FOUNDATIONS



Data readily available from the Foundation Center on grant-giving by category for 2012 provides some helpful perspective on the emphasis that philanthropic foundations have placed on environmental giving. Just 5.3 percent of total grant-giving by Super Region foundations in 2012 was for environmental causes. In contrast, national foundations gave 7.2 percent of their Super Region grants (and 7.1 percent of their nationwide grants) to environmental causes.

SHARE OF GRANT-GIVING IN THE SUPER REGION AND IN THE NATION FOR ENVIRONMENTAL CAUSES, 2012, BY NATIONAL AND REGIONAL FOUNDATIONS

TO THE SUPER REGION	SUPER REGION FOUNDATIONS	NATIONAL FOUNDATIONS
Total Giving	\$134,292,209	\$73,568,972
Environmental Giving	\$7,168,419	\$5,316,398
% Environment	5.3%	7.2%
TO THE NATION	NATIONAL FOUNDATIONS	
Total Giving	\$20,482,554,373	
Environmental Giving	\$1,454,261,360	
% Environment	7.1%	

Source: The Data Center analysis of data from the Foundation Center.

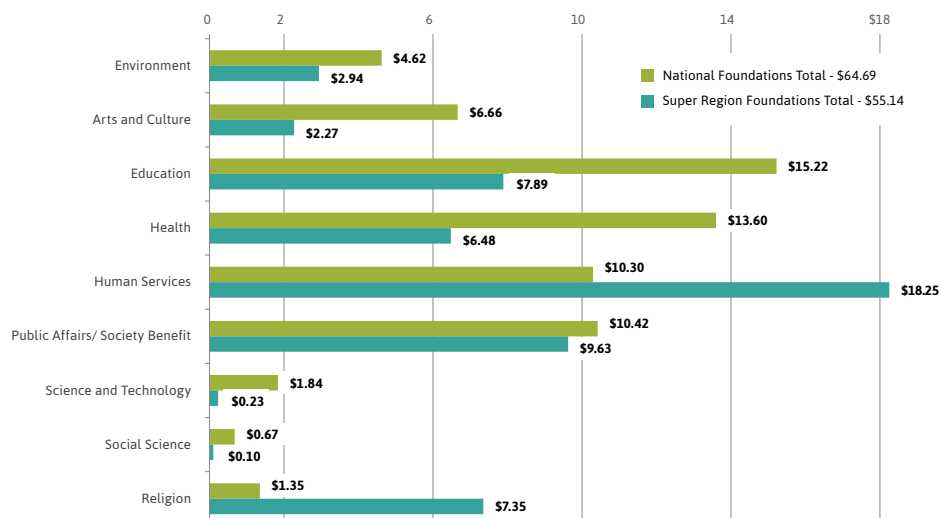
Notes: National Foundations are foundations located outside Louisiana.

Overall, philanthropic resources in the Super Region are relatively thin. Per-capita giving in the Super Region, at \$55 in 2012, was 15 percent lower than national per-capita giving of \$65 that same year. Environmental giving in the Super Region is particularly anemic, at 36 percent less than at the national level. In contrast, Super Region foundation per-capita giving to human services is 77 percent greater than nationally, and Super Region giving to religion is 444 percent greater than at the national level.

In the Super Region, environmental grant-giving is \$2.94 per capita, compared to \$4.62 nationally. Yet across Louisiana, environmental grant-receiving is just \$1.79 per capita. Grants received include those given by regional and national foundations to organizations within the state. Looking at 17 states with highly vulnerable coastlines, we see that Louisiana has the most per-capita miles of highly vulnerable coast line, but it ranks 8th from the bottom in per-capita grant-receiving to environmental causes.

Despite weak philanthropic support, the environmental sector in Louisiana has exhibited significant clout. The existence of the CPRA itself and its Coastal Master Plan is an indicator of the sophistication of Louisiana's environmental civic sector. To be sure, many states have significant coastal vulnerability, yet no other state has developed a master plan for protecting its coastline.

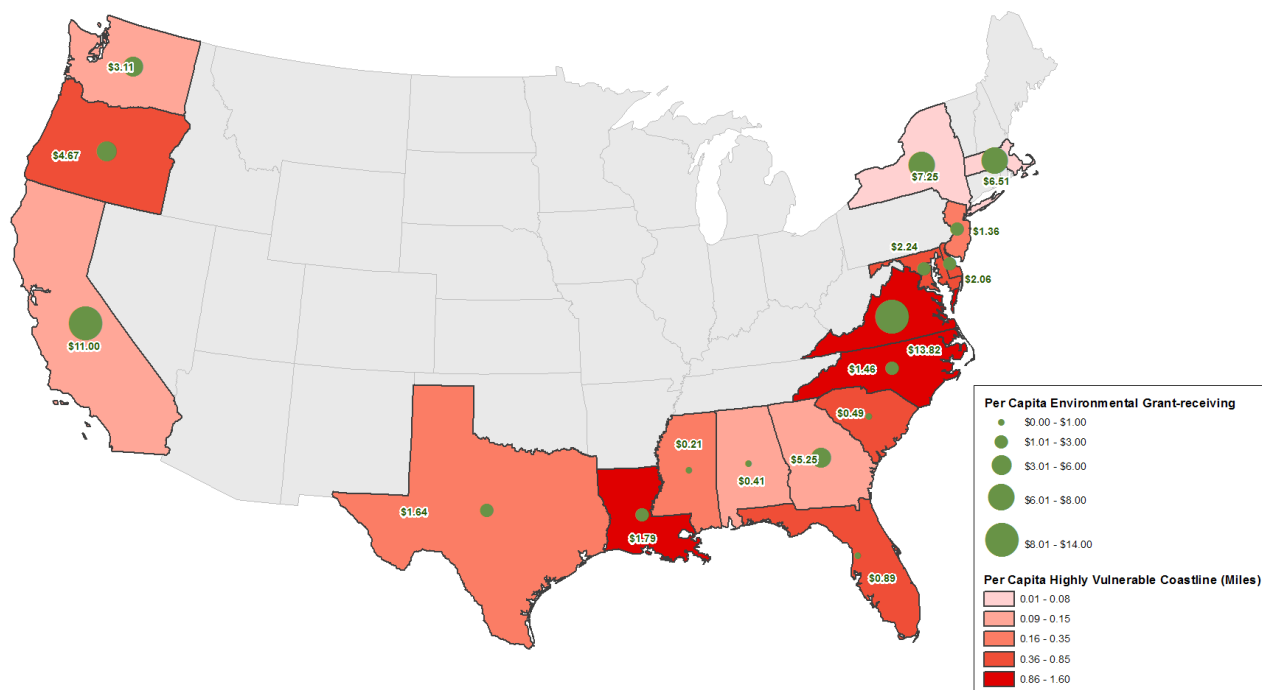
PER-CAPITA GRANT-GIVING BY PHILANTHROPIC CAUSE, 2012



Source: The Data Center analysis of data from the Foundation Center and the 2013 American Community Survey.

Notes: Philanthropic causes correspond to Foundation Center subject groups. Giving that does not fall into these groups not shown.

ENVIRONMENTAL GRANT-RECEIVING BY STATES WITH MOST VULNERABLE COASTLINE, 2012



Source: The Data Center analysis of data from the Foundation Center, the 2013 American Community Survey, and NOAA.

Notes: Highly vulnerable coastline includes coastline that NOAA has designated as having "high" and "very high" vulnerability. Coastline that has "moderate" vulnerability is not included.

Notes: Coastline is measured in miles.

Social Factors:

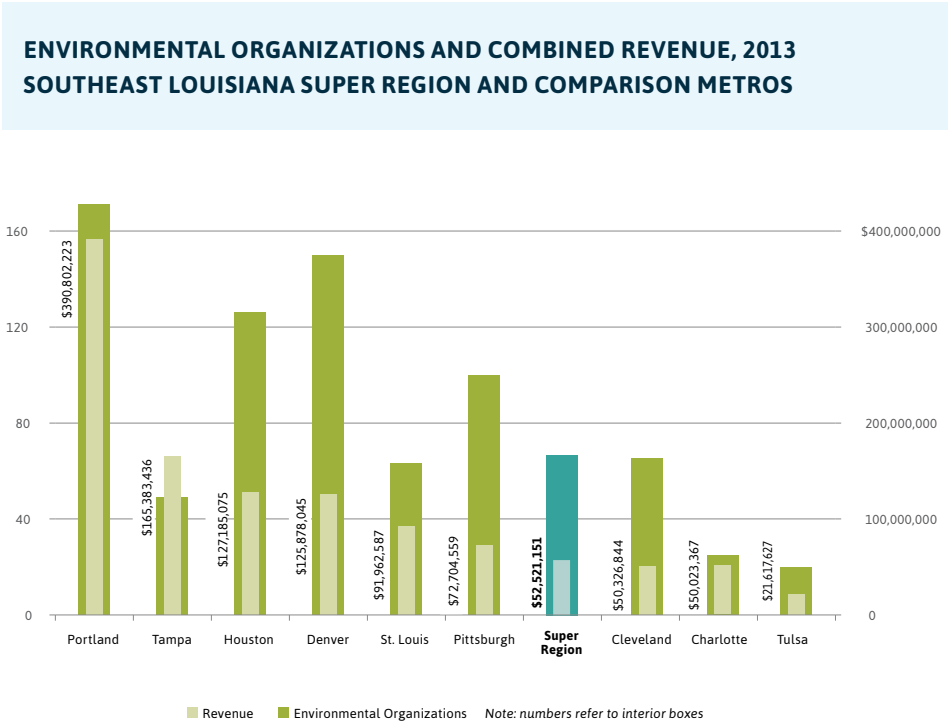
Social Capital

WHAT DOES THE DATA SHOW?

There are 74 formal environmental organizations within the Super Region, which places it 5th among the ten comparison metros. However, combined annual revenues for these organizations (at approximately \$53 million) are low, dropping the region's ranking to 7th place. At the top end, environmental organizations in Portland have combined revenues of approximately \$391 million a year. The Super Region's lack of capital for environmental organizations likely means less exchange of ideas and homebrew-style innovation, as well as weaker political and civic clout for environmental causes and economies than in comparison metros.

WHY IS THIS IMPORTANT?

Social organizations have historically played a powerful role in the formation and growth of clusters. A classic case is Silicon Valley, where formal and informal networks between businesses and workers in the computer industry fueled information exchange, idea sharing, skills development, productivity, and competition. In order for environmental industries and issues to have a voice, there also needs to be a strong civic infrastructure. That infrastructure comes from social organizations and their budgets.



Source: The Data Center analysis of data from NCCS, an Urban Institute database of IRS 990 forms and metadata.

Social Factors:

Social Leadership

WHAT DOES THE DATA SHOW?

This data shows that environmental organizations have only 4.2 percent board overlap with each other. Insufficient overlap among environmental boards risks turf wars for funding and power. In addition, environmental organizations have no substantial overlap with other areas of the nonprofit sphere. Connecting environmental organizations more closely to economic development organizations, philanthropic organizations, educational institutions, and employment organizations can lead to broader influence and support for the water management cluster.

BOARD OVERLAP BETWEEN ENVIRONMENTAL ORGANIZATIONS AND OTHER SOCIAL SECTORS, 2013, SOUTHEAST LOUISIANA SUPER REGION

Social Sector	% Board Overlap with Environmental Sector
Education	0.1%
Environment	4.2%
Employment	0.0%
Disaster preparedness	0.0%
Capacity building	0.3%
Philanthropy	0.1%
Science and technology	0.0%
Social science	0.0%
Advocacy	0.0%

WHY IS THIS IMPORTANT?

How organizations are connected matters for economic development. For example, the “homebrew” clubs of Silicon Valley brought together multiple organizations and had heterogeneous membership. This meant that they had new ideas entering into the organizational space. In contrast, when membership is homogenous, the same benefits are not accrued. And in the inverse scenario, when organizations have no overlap with each other, non-collaborative silos form. Organizations that create bridging networks (i.e., networks that put people in contact who would not otherwise be in contact) lead to a healthier mix of ideas and resources that can be deployed for planning and economic development. A heterogeneous board of directors (with some board members “overlapping” with other organizations within the same sector and in different sectors) is important for environmental organizations to ensure a healthy mix of ideas. Minimal board overlap indicates fragmented ties between sectors, while excessive overlap indicates homogeneity.³¹

Source: The Data Center analysis of 990s pulled from NCCS, an Urban Institute database of IRS 990 forms and metadata.

Notes: Sectors are defined by NTEE subject codes.

Notes: Latest 990 forms were pulled in January 2015. Most were from 2013, some 2012 and 2014.



“Southeast Louisiana is situated to capture the economic opportunity of a lifetime—an opportunity that’s derived from a water management economy catalyzed by massive federal investment and augmented by state and local investments in coastal restoration, levees, and urban water innovations.”

—Nihal Shrinath and Allison Plyer

Political Support:

Public Funding

WHY IS THIS IMPORTANT?

Large infusions of public money have been key catalysts of some of the most well known clusters nationwide. The Midwest manufacturing belt was spurred by WWII spending and Silicon Valley is what it is today because of military support for radio technology. In addition, Boston's biotech cluster certainly depended and continues to depend on NIH grants, and the success of the Research Triangle, as a technology and now bio-pharmaceutical cluster, was heavily influenced by state funding and policies.³² In the 1950s, the state of North Carolina built the Research Triangle Park, aggressively attracting federal research institutions, universities, and R&D divisions of large companies, such as IBM.³³

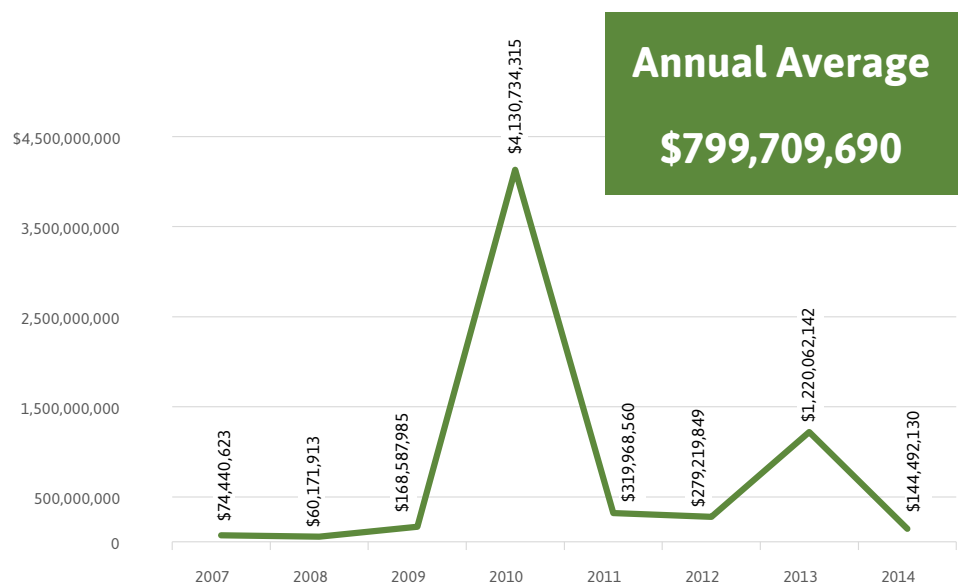
Source: Coastal Protection and Restoration Authority, "Fiscal Year 2016 Annual Plan, Appendix A"

Notes: This spending includes contracts as well as administrative and operating expenses.

WHAT DOES THE DATA SHOW?

CPRA official publications tout that \$50 billion will be spent on coastal protection and restoration over the next 50 years. To be sure, over \$6 billion was spent from 2007 to 2014 by the CPRA and partner agencies such as the Army Corps and local levee boards. This represents some \$800 million of collaborative coastal program spending on average each year.

CPRA SPENDING, 2007-2014 FOR WORK PERFORMED IN LOUISIANA



A breakdown by program and sponsor reveals fully 96 percent of the reported spending from 2007 to 2014 was sponsored by various federal programs. Indeed over 80 percent of CPRA spending from 2007 to 2014 was for the New Orleans Hurricane Protection System (HSDRRS), primarily funded by the Army Corps.³⁴ A small 4 percent came from state coffers, although it is worth noting that unaccounted for dollars were spent in matching funds for CIAP and CDBG program projects. Moreover, Louisiana is on the hook for a 15 percent cost-share for the HSDRRS system, required to be paid over 30 years.

Looking ahead, nearly \$8 billion in planned projects are funded for construction or design between 2016 and 2018. This is a sizable sum, 84 percent of which is sponsored by the Army Corps. In the Draft Fiscal Year 2016 Annual Plan, the CPRA predicts 2016 total expenditures to be \$773 million, with \$503 million going towards "construction" and \$73.7 million going towards "engineering and design." If actualized, these would be substantial upticks from the 2007-2014 annual construction and services contract totals shown in the Demand Drivers section of this index.

**CPRA SPENDING BY PROGRAM AND SPONSOR, 2007 TO 2014
FOR WORK PERFORMED IN LOUISIANA**

CPRA PROGRAM - FEDERAL SPONSOR	2007-2014 SPENDING	AVERAGE ANNUAL SPENDING
HSDRRS	\$5,143,156,414	\$642,894,552
USACE	\$5,143,156,414	\$642,894,552
CWPPRA	\$542,519,822	\$67,814,978
NMFS	\$158,081,659	\$19,760,207
NRCS	\$114,728,606	\$14,341,076
USFWS	\$99,299,732	\$12,412,466
EPA	\$89,031,852	\$11,128,981
State	\$81,377,973	\$10,172,247
BERM	\$359,519,064	\$44,939,883
Oil Spill Liability Trust Fund	\$359,519,064	\$44,939,883
State	\$186,312,613	\$23,289,077
State	\$186,312,613	\$23,289,077
CIAP	\$151,026,624	\$18,878,328
USFWS	\$151,026,624	\$18,878,328
FEMA	\$10,390,600	\$1,298,825
FEMA	\$10,390,600	\$1,298,825
CDBG	\$4,591,380	\$573,923
HUD	\$4,591,380	\$573,923
Federal	\$161,000	\$20,125
USFWS	\$161,000	\$20,125
GRAND TOTAL	\$6,397,677,517	\$799,709,690

Source: Coastal Protection and Restoration Authority, "Fiscal Year 2016 Annual Plan, Appendix A"

Notes: This spending includes contracts as well as administrative and operating expenses.

“NORTH CAROLINA’S PER CAPITA INCOME HAD LONG BEEN ONE OF THE LOWEST IN THE NATION, AND THE DECLINE IN ITS TRADITIONAL INDUSTRIES MADE IT EVEN MORE DIFFICULT FOR THE STATE TO EMPLOY ITS OWN COLLEGE GRADUATES. DURING THE EARLY 1950S, THE ACADEMIC COMMUNITY WAS BECOMING INCREASINGLY CONCERNED ABOUT THE OUT MIGRATION OF ITS BETTER COLLEGE GRADUATES AND BEGAN A DIALOGUE WITH THE STATE’S ECONOMIC DEVELOPMENT LEADERS...THE IDEA OF USING THE THREE TRIANGLE UNIVERSITIES TO ATTRACT RESEARCH COMPANIES INTO A PARK AREA CENTRAL TO THE UNIVERSITIES QUICKLY EMERGED FROM THE DIALOGUE.”

– Albert Link and John Scott, “The growth of research triangle park.”
Small Business Economics.

Source: Coastal Protection and Restoration Authority, “Draft Fiscal Year 2016 Annual Plan, FY 2016 Implementation Plan.”

Notes: Planned refers to projects funded for design or construction between 2016 and 2018 according to the CPRA Draft FY 2016 Implementation Plan.

CPRA PLANNED PROJECTS BUDGET BY PROGRAM AND SPONSOR FOR WORK PERFORMED IN LOUISIANA

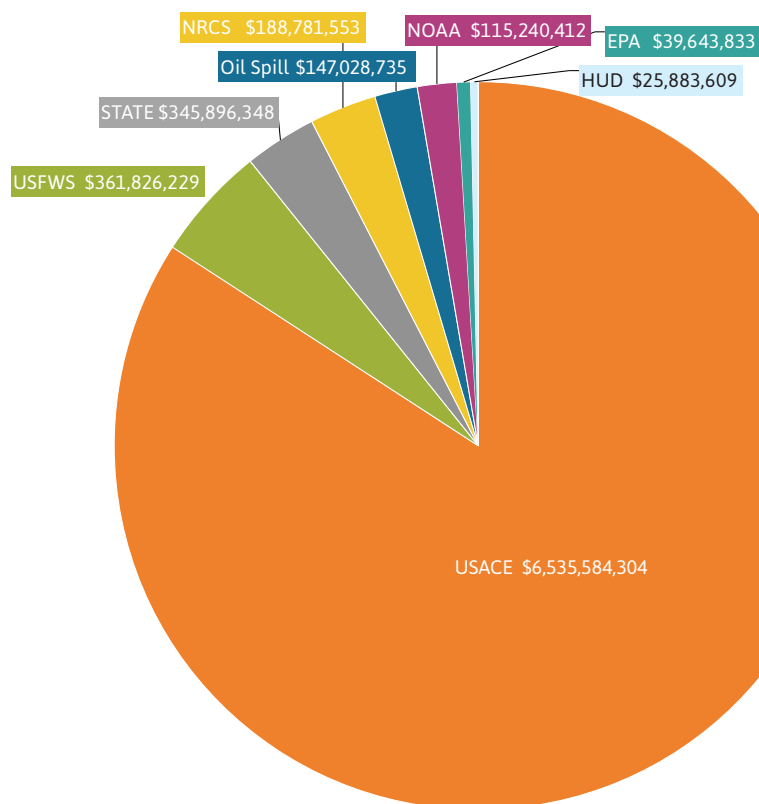
CPRA PROGRAM - FEDERAL SPONSOR	PLANNED PROJECT TOTAL BUDGETS
HSDRRS	\$6,526,784,304
USACE	\$6,526,784,304
CWPPRA	\$652,517,857
NRCS	\$210,974,379
USFWS	\$188,781,553
NOAA	\$115,240,413
State	\$97,877,679
EPA	\$39,643,833
CIAP	\$173,044,676
USFWS	\$173,044,676
State	\$168,115,935
State	\$168,115,935
RESTORE	\$147,028,735
Oil Spill	\$147,028,735
State Surplus	\$62,540,000
State	\$62,540,000
CDBG	\$25,883,609
HUD	\$25,883,609
Louisiana Coastal Area	\$8,800,000
USACE	\$8,800,000
NRDA	???
Oil Spill	???
NFWF	???
Oil Spill	???
GRAND TOTAL	\$7,764,715,116

Of concern is the fact that the taxpayers of Louisiana pay comparatively little towards coastal protection and restoration—contributing only \$329 million over the foreseeable future. This small contribution from the state indicates a lack of sustainable sources of state funding. The Coastal Protection and Restoration Fund receives roughly \$30 million per year in state mineral revenues, but there are few other state sources.³⁵ The dedication of \$790 million in 2007, 2008, and 2009 state surplus dollars to coastal protection and restoration was of course a major post-Katrina commitment by the state. However, in years without surpluses, the state picture for funding remains bleak. That lack of commitment may translate into public funding currently designated for coastal restoration being redirected elsewhere. Indeed, as recently as February 2015, the Public Affairs Research Council of Louisiana warned against the possibility that the state might raid the Coastal Protection and Restoration Fund to balance the state's budget deficit.³⁶

Notably, the \$6 billion spent from 2007 to 2014 plus the nearly \$8 billion in planned projects do not amount to \$50 billion. Louisiana's complete \$50 billion Master Plan depends on many significant, some uncertain, funding sources, including:

- * GOMESA—the federal provision that would send 37.5 percent of Gulf oil revenues to the four Gulf states starting in 2017, proposed to be eliminated in President Obama's 2016 budget.³⁷
- * NFWF—a program funded by Clean Water Act criminal penalties from the oil spill. These penalties have been determined, and \$1.272 billion will be allocated to Louisiana for barrier island and diversion projects.³⁸
- * NRDA—the National Resources Damage Assessment, a NOAA assessment that determines long-term environmental damages from the oil spill. BP has placed a \$1 billion downpayment on NRDA damages, of which Louisiana gets \$100 million and can apply for an addition \$500 million.³⁹
- * RESTORE—a program that receives 80 percent of Clean Water Act civil penalties from the oil spill. CPRA has estimated that Louisiana will get \$1 to 4.9 billion dollars of the RESTORE total, dependent on (1) Act Phase III penalty, which is dependent on the number of barrels spilled into the ocean that U.S. Eastern District Judge Barbier determines were due to BP's gross negligence and (2) the number of RESTORE council projects that are awarded to Louisiana.⁴⁰ Thus far, RESTORE has \$800 million from the Transocean civil settlement.
- * Capital outlay projects approved in the state budget session, which are at risk as long as the state continues to face severe budget deficits.

CPRA PLANNED PROJECTS BUDGET BY SPONSOR FOR WORK PERFORMED IN LOUISIANA



Source: Coastal Protection and Restoration Authority, "Fiscal Year 2016 Annual Plan, FY 2016 Implementation Plan."

Notes: Planned refers to projects funded for design or construction between 2016 and 2018 according to the CPRA Draft FY 2016 Implementation Plan.

Political Support:

State Subsidies

WHY IS THIS IMPORTANT?

There are different ways to pursue economic development, and there are different methods that states use to intervene into markets. For example, government can give grants for certain activities, give tax exemptions to encourage developments, build facilities to lure companies, or fund training programs. In a more indirect manner, government can spend money on a certain infrastructure or product that is tied to a certain cluster. Subsidies and exemptions represent an old form of economic development and, to be sure, experts widely agree that this approach to intervening in markets is not conducive to new cluster development.^{41,42}

Source: The Data Center analysis of data from Good Jobs First and U.S. Cluster Mapping Project.

Notes: 6-digit NAICS codes were matched to cluster definitions from the U.S. Cluster Mapping Project to calculate cluster totals.

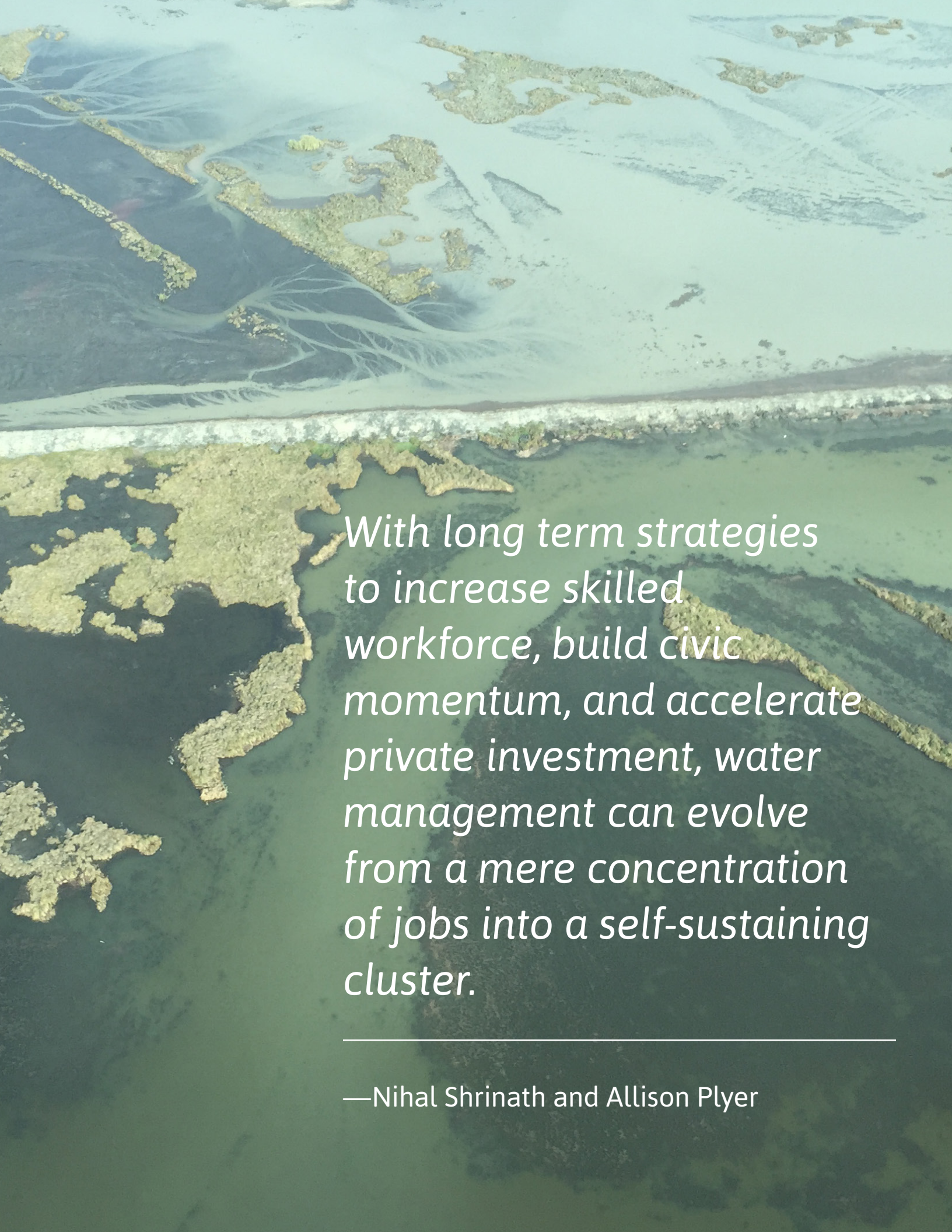
Notes: Subsidies/exemptions include those under the following programs: Industrial Tax Exemption, Quality Jobs Program, Enterprise Zone Program, Motion Picture Investor Tax Credit, and Megadeals (deals over \$75,000,000).

WHAT DOES THE DATA SHOW?

Tallying Louisiana's Industrial Tax Exemptions, Quality Jobs Program, Enterprise Zone Program, Motion Picture Investor Tax Credit, and Megadeals (deals over \$75,000,000), it is clear the Louisiana uses subsidies and exemptions generously, but water management as a cluster receives a minimal share. Many industries outside of water management received hundreds of millions annually in subsidies and tax exemptions from 2010–2013. Water management companies on the other hand received an average \$6 million annually in subsidies during that time frame.

LOUISIANA SUBSIDIES BY CLUSTER, 2010-2013

CLUSTER	SUBSIDIES/EXEMPTIONS	ANNUAL AVERAGES
Upstream Chemical Products	\$4,849,046,045	\$1,212,261,511
Oil and Gas Production and Transportation	\$830,063,708	\$207,515,927
Video Production and Distribution	\$712,362,648	\$178,090,662
Electric Power Generation and Transmission	\$483,375,419	\$120,843,855
Agricultural Inputs and Services	\$441,285,810	\$110,321,453
Upstream Metal Manufacturing	\$395,301,009	w\$98,825,252
Plastics	\$359,650,795	\$89,912,699
Water Transportation	\$282,338,668	\$70,584,667
Downstream Chemical Products	\$252,154,148	\$63,038,537
Paper and Packaging	\$177,129,796	\$44,282,449
Food Processing and Manufacturing	\$116,606,675	\$29,151,669
Wood Products	\$96,639,133	\$24,159,783
Information Technology and Analytical Instruments	\$78,399,696	\$19,599,924
Local Health Services	\$37,352,672	\$9,338,168
Production Technology and Heavy Machinery	\$32,861,998	\$8,215,500
Water Management	\$24,001,464	\$6,000,366
Vulcanized and Fired Materials	\$20,338,089	\$5,084,522
Aerospace Vehicles and Defense	\$20,305,209	\$5,076,302
Local Commercial Services	\$19,829,662	\$4,957,416
Metalworking Technology	\$19,189,534	\$4,797,384
Local Real Estate, Construction, and Development	\$18,031,766	\$4,507,942

An aerial photograph of a river delta, likely the Ganges-Brahmaputra delta. The image shows a complex network of channels and distributaries. The water is a deep blue, while the land, covered in dense vegetation, appears as a vibrant green. The pattern of the waterways creates a web-like structure across the landscape.

With long term strategies to increase skilled workforce, build civic momentum, and accelerate private investment, water management can evolve from a mere concentration of jobs into a self-sustaining cluster.

—Nihal Shrinath and Allison Plyer

Glossary

BERM	Berm to Barrier. A project led by the CPRA whose purpose is to build a more sustainable barrier island chain which might serve as a “first line of defense” against storm surge and environmental degradation. It takes advantage of emergency berms created after the Deepwater Horizon Oil Spill.
CDBG	Community Development Block Grant. A program funded by the U.S. Department of Housing and Urban Development. Funds were allocated to Louisiana after Hurricanes Gustav and Ike for coastal protection and restoration.
CIAP	Coastal Impact Assistance Program. It provides federal grant funds derived from federal offshore lease revenues to states that have been affected by oil and gas exploration, so that they may engage in activities aimed the conservation, protection or restoration of coastal areas.
CPRA	Coastal Protection and Restoration Authority. A Louisiana state agency whose mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration Master Plan.
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act. Federal legislation enacted in 1990 designed to identify, prepare, and fund coastal wetland restoration projects.
EPA	Environmental Protection Agency. Its overarching objective is to protect human health and the environment.
FEDERAL	Restoration and protection projects planned and funded entirely by the federal government.
FEMA	Federal Emergency Management Agency. It supports people and first responders to help build and improve protection against future emergencies.
HSDRRS	Hurricane and Storm Damage Risk Reduction System. It is an overhaul of the federal levees, floodwalls, and other protective measures in the wake of Hurricane Katrina.
HUD	U.S. Department of Housing and Urban Development. Its mission is to develop and execute policies on housing in metro areas.
LOCATION QUOTIENT	A ratio comparing a particular region to a larger reference region according to one industry or characteristic. For example, a particular industry’s share of jobs in the Super Region is compared to that industry’s share of jobs in the U.S. This quotient represents the degree of concentration of a given industry within a region as compared to the national average.
LOUISIANA COASTAL AREA	Louisiana Coastal Area Program. Authorized by the 2007 Water Resources Development Act, its objective is to implement restoration and protection projects in order to slow coastal wetland loss.
MASTER PLAN	A plan published every five years by the CPRA to guide future coastal protection and restoration in the State of Louisiana.
MITIGATION	According to the U.S. Council on Environmental Quality, mitigation is the process of avoiding impact by not taking an action, minimizing the impact, rectifying the impact by repairing or restoring the affected environment, reducing the impact over time by preservation, or compensating for the impact by replacing or substituting resources or environments. For example, when a company plans to engage in activity that will damage the environment, such as building a pipe line, it should mitigate the environmental degradation created this project by restoring the environment elsewhere in the region.
NAICS	North American Industry Classification System. It is used by federal statistical agencies to classify businesses.
NFWF	National Fish and Wildlife Foundation. It awards funds from the Gulf Environmental Benefit Fund to projects in Louisiana.

NMFS	National Marine Fisheries Service, also known as NOAA Fisheries. It is responsible for promoting sustainability and conservation within the living marine resources and habitats of the U.S.
NOAA	National Oceanic and Atmospheric Administration. It conducts research and provides services aimed at protecting the environment.
NRCS	Natural Resource Conservation Service. It provides technical and financial assistance to producers who implement conservation strategies.
NRDA	National Resource Damage Assessment. It is the process through which claims for natural resource damages caused by the Deepwater Horizon Oil spill are executed. This process will continue until the full extent of the damages is determined, and restoration plans have been executed.
OIL SPILL	Projects that will receive oil spill funds once the environmental damages have been determined.
RESTORE ACT	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act. An act established after the Deepwater Horizon Oil Spill to create the Gulf Coast Restoration Trust Fund. Eighty percent of all civil penalties for the oil spill will be used for restoration and protection in the Gulf Coast region.
RFP/RSIQ	Request for Proposal / Request for Statement of Interest and Qualifications. A solicitation made by the CPRA for business proposals by service companies to determine the company's plans, qualifications, and bid.
STATE	Restoration projects funded primarily by the State of Louisiana.
STATE SURPLUS	Projects funded by the 2007-2009 state budget surplus.
STEM	Science, Technology, Engineering, and Mathematics.
USACE	United States Army Corps of Engineers. Its objective is to strengthen infrastructure while striving for environmental sustainability.
USFWS	United States Fish and Wildlife Services. It assists in the conservation and development of U.S. fish and wildlife resources.

Technical Notes on Data Sources

Demand Drivers

The Coastal Protection and Restoration Authority

CPRA REGULAR SERVICES CONTRACTS

Data reflects records gathered manually from paper IDIQ services contracts awarded since 2010 under the following RFP/RSIQ types: “Environmental Sciences Consulting, Engineering, Surveying, Geotechnical, and Professional Land.” Contract amounts come from LaTrac, a database maintained by the Louisiana Department of Administration that keeps record of all given contracts. These contracts are “Indefinite Delivery, Indefinite Quantity,” which means that final contract work may total to less than the full amount. Not included are one-off service contracts, often associated with a specific disaster or project, and support service contracts, usually administrative contracts. Two environmental science consulting contracts that were given in 2014 are not included in the data because contract amounts haven’t been finalized as of April, 2015. Services contracts data reflect only CPRA-led projects where indicated.

CPRA-LED CONSTRUCTION CONTRACTS

Data reflects a combination of internal CPRA data on costs for projects completed between 2007 and 2013, cash transfer data gathered by GNO Inc. in collaboration with CPRA, and CPRA construction completion reports. Cash transfers reflect cash transfers between CPRA and vendors associated with specific projects completed between 2007 and 2013. Prime construction contract amounts are a combination of those taken from completion reports and additional construction contracts greater than \$2,000,000 from cash transfer data. Other cash transfers reflect support services, one-off services, oversight, and regular services task orders along with administrative costs. Construction contracts data reflect only CPRA-led projects where indicated.

The full value of a construction contract is reported in the year the contract was awarded. However, there are uncompleted construction contracts awarded between 2007 and 2013 not included in this data. Likewise, there are construction contracts completed between 2007 and 2013 awarded before 2007 not included in this data.

PARTNER-LED PROJECTS

Federal, state, and local partners in CPRA partner-led projects give out their own construction and services contracts. In addition, CPRA may give out contracts associated with planning and designing partner-led projects. Partner-led project data reflects total project costs, encompassing all associated contracts (construction, services, miscellaneous, admin) and admin/other costs.

LOCATION OF FIRM

For services and construction contracts, a Louisiana firm was defined as a firm headquartered in the state of Louisiana as specified by Manta, an online directory of businesses.

For regular services contracts, successful proposers also listed the number of employees domiciled in Louisiana as well as the number of employees working on the project outside the state. Thus, this additional data was gathered and used to calculate the contracts that had a majority of Louisiana employees working on the project, despite the firm headquarters being located outside.

REGULAR SERVICES SUBCONTRACTORS

Data for subcontractors comes from data gathered from regular services IDIQ contracts. In successful proposals, subcontractors were listed by primes, along with extensive information on each sub’s qualifications. For many environmental science consulting, professional land, and surveying prime contracts, the anticipated percentage of contract going to each sub was listed. The CPRA has no accounting for whether these subs were actually used and for what percent of the contract they were actually used for.

The percentage of subcontractors who were also primes reflects the universe of subcontractors in all regular services contracts that also showed up as primes for regular services contracts.

Mitigation banks

Mitigation banks data comes from RIBITS, the Regulatory In-Lieu Fee and Bank Information Tracking System, which was developed by the Army Corps to provide information on mitigation and conservation banking in the United States. In it, individual corps districts record every action taken by a mitigation bank sponsor with regards to a mitigation property. When a property is approved, the details are recorded, when credits are released, the details are recorded, and when credits are withdrawn (i.e. purchased), they are also recorded. Acre estimates are included as well for each transaction. Credits are released once a portion of mitigation work has been completed, so when credits are purchased, much of the restoration work has already been done.

MARKET CAP

Wetland credits vary in price depending on wetland type, location, supply, and numerous other factors. The \$25,000 estimated price per credit comes from a GNO Inc. report on the mitigation banking market that identified \$20,000 as the average credit price in SE Louisiana in 2012. Prices have likely increased since 2010, hence the higher estimate. Coastal wetland credit prices can get as high as \$100,000 while inland forested wetland prices can dip as low as \$5,000.

This data does not include any in-lieu fee program mitigation or permittee-responsible mitigation, which is mitigation done in an ad-hoc manner when sufficient or appropriate bank credits are not available in a given watershed. These two not-included types of mitigation were calculated by an Army Corps report in 2006 to be 28% and 6% of total mitigation in the Mississippi Valley, collectively 34%. As a result, the market cap value of wetland mitigation bank credits included in this report may underestimate the full value of mitigation work in Louisiana.

U.S. Army Corps of Engineers (Army Corps)

The source of all Army Corps contracts is USASpending.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006, managed by the Office of Management and Budget (OMB), and operated by the General Services Administration. The contracts data found in this database are from the Federal Procurement Data System-Next Generation. Army Corps contracts were all contracts that fell under "96CE: army corps of engineers – civil program financing only" for "fundingsrequestingofficeid" in the USASpending.gov database (i.e., contracts that were funded by Army Corps of Engineers civil program financing).

CONSTRUCTION AND SERVICES CONTRACTS

Companies that fall under services are those for which the NAICS code description includes the word "services." Those under construction are those for which the NAICS code description includes the word "construction." Companies with a NAICS code that did not include the words "services" or "construction" fell into the miscellaneous category. All data collected were on prime contractors only. All negative entries were excluded.

In order to collect data exclusively on contracts performed in Louisiana between 2010 and 2014, The Data Center restricted the data from USASpending.gov to only contracts where Louisiana was the principal place where work was performed between the years 2010 and 2014. Yearly contracts represent awards between 2010, but not necessarily completed contracts.

LOCATION OF FIRMS

When collecting data on Louisiana-based firms and outside firms, The Data Center used vendor locations specified in the USASpending.gov data. The location of performance state was defined as the state where the majority of the work was performed.

SIZE OF FIRMS

In order to collect data on Army Corps contracts by number of employees, The Data Center examined the size of the firm as specified on USASpending.gov. This data was usually collected from the Central Contractor Registry, a vendor registration repository. Firms were then grouped into three categories: fewer than 100 employees, between 100 and 999 employees, and 1,000 or more employees. Percentages were based upon share of contract dollars as opposed to number of contracts, and contracts for which the vendor size was not specified were not included.

Technical Notes on Data Sources, continued

Environmental Footprint

CPRA

2007-2014 data on acres benefitted reflects projects in Appendix A of the Fiscal Year 2016 CPRA Annual Plan that were completed between 2007 and 2014.

Planned/ funded acres benefitted data reflect funded projects specified in the 2016 CPRA Annual Plan, FY 2016 Implementation Plan. Not all projects included in the Annual Plan are included, and as follows, not all projects in Appendix A, as well as in the 2012 Master Plan, are included. Only projects that had funding for design, planning, construction, implementation, or monitoring (the vast majority construction) allocated between 2016 and 2018 were included in this data. They are generalized in the text as “funded for design and construction between 2016 and 2018.”

MITIGATION BANKS

Acres initiated are acres approved for restoration by the Army Corps under the framework of selling mitigation credits. Although unlikely, it is possible that a portion of or all acres initiated may never actually get restored. Some credits may be released for sale upon approval of the mitigation bank. Additional credits are only released for sale when the mitigation bank meets certain environmental performance standards.

Coastal Prairie/Marsh includes the following wetland types from RIBITS: “Coastal Prairie,” “Fresh Marsh,” and “Intermediate Marsh.” Emergent Wetlands/Swamp includes “Cypress/Tupelo Gum Swamp” and “Wetlands.” “Forested Wetlands” includes “Bottomland Hardwood” and “Pine Flatwoods/Savanna.”

Economic Factors

Geographic concentration

The data used for the geographic density indicator come from Economic Modeling Specialists Intl. (EMSI). EMSI is a private data provider that compiles high quality employment data by removing the suppressions that are characteristic of publicly available county-level datasets. In addition to relying on federal datasets, EMSI uses data from the Louisiana Workforce Commission to improve their measurement of local industries, occupations, wages, skills, education, and training. Data for geographic density were based on an EMSI pull of LED and BLS data from Q4, 2014. The 6-digit NAICS codes that comprise The Data Center economic definition of water management can be found in the downloadable data tables.

The percent of water management jobs in the top ZIP code for 2014 was based on EMSI data, and calculated as the ZIP code of each metro with the highest number of water management jobs, divided by the total number of water management jobs within the metro.

The five top ZIP codes in the Super Region were also identified based on EMSI data for the five ZIP codes with the highest number of water management jobs during the 2010-2014 period.

Labor force quality

EDUCATIONAL ATTAINMENT

Data reflect the U.S. Office of Management and Budget definition of comparison metros at the time of each survey and thus vary slightly over time. For the Southeast Louisiana Super Region, the data reflect the current definition of the region, which includes the New Orleans, Baton Rouge, and Houma-Thibodeaux Metropolitan Statistical Areas, in addition to Tangipahoa and Washington Parishes. For the 2013 and 2010 data, Washington Parish is not included because the population of the parish was <65,000 at the time and therefore, educational attainment numbers could not be obtained due to American Community Survey population cutoffs. Populations that had at least some college include those who have no degree, an Associate’s degree, Bachelor’s degree, and/or a graduate or professional degree. Populations that had a Bachelor’s degree or higher have either a Bachelor’s degree, and/or a graduate or professional degree.

SCIENCE & ENGINEERING BACHELOR'S

Data are from the National Science Foundation publication of Science and Engineering Indicators 2014. The SEI is prepared by the National Center for Science and Engineering (NCSES), a part of NSF. The SEI is a record of indicators that provide information on the science and engineering sector of the economy. This data come from chapter 8, the section on state indicators created to assess trends of Science and Engineering activity within states.

The Science and Engineering Bachelor's per 1000 individuals, 18-24 years old data reflect NSF analysis of data from the Integrated Postsecondary Education Data System (IPEDS), as well as Census Bureau population data. 18 to 24 year olds were chosen to represent the age of the majority of people pursuing a Bachelor's degree. Science and Engineering was defined by NCSES as physical, life, earth, ocean, atmospheric, computer, and social science; mathematics; engineering; and psychology. The state rankings shown are out of all 50 states and the District of Columbia.

Water management wages and job growth

The data used for the water management average annual wage and job growth indicators come from Economic Modeling Specialists Intl. (EMSI). EMSI is a private data provider that compiles high quality employment data by removing the suppressions that are characteristic of publicly available county-level datasets. In addition to relying on federal datasets, EMSI uses data from the Louisiana Workforce Commission to improve their measurement of local industries, occupations, wages, skills, education, and training. Data were based on an EMSI pull of LED and BLS data from Q4, 2014. The 6-digit NAICS codes that comprise the Data Center economic definition of water management can be found in the downloadable data tables.

Wages refer to average wages, salaries, and proprietor earnings. They do not include benefits, supplements, or similar non-salary additions.

Investment

The source for the investment data is Mattermark. Mattermark is a data provider mainly used by venture capitalists as a tool to analyze businesses and track funding in order to determine future investment. The data from Mattermark come from a number of third-party data providers including CrunchBase, Indiegogo, Techcrunch, Alexa Rank, and AngelList, as well as many more media sources. Additionally, Mattermark has access to customer reported data from Google Analytics accounts of their clients. Information is also taken from regulatory filings.

In order to categorize the data into funding rounds, Mattermark uses a combination of cross-referencing with press releases, and logical analysis. If there is an initial round of funding, this will either be categorized as Seed or Angel, depending on what it has been noted as in the press. Any second round after Seed or Angel will be categorized as Series A funding and subsequent rounds will be tagged as Series B,C,D,E,F,G. Funding is categorized as Debt or Private Equity if it has been mentioned as such in a public document.

In The Data Center analysis, investment was categorized into 4 groups: Seed, Angel, Venture, and Post-Venture. Venture comprised all of the Series A through G rounds and any round with the label venture. Post-Venture comprised both Debt and Private Equity funding. Other round categories, as well as any undisclosed rounds, were omitted from this analysis.

This data does not represent an all-encompassing picture of private investment in Southeast Louisiana. Of course, some private deals were not captured by Mattermark's wide net of sources, and so the investment numbers are necessarily underestimates. Nevertheless, there is no regional bias in the underestimates, allowing for regional comparison. More comprehensive studies have been done on Louisiana private investment, ones that paint a picture of a larger investment economy. However, they do not extend to comparison metros and therefore do not provide a lens into the comparative strength of the Louisiana private investment economy. For a thorough analysis of the Louisiana investment climate, including its growth year to year, see the Louisiana Venture and Angel Capital Report, released by Graffagnini Law.

Research & development

Data are from the National Science Foundation publication of Science and Engineering Indicators 2014 (SEI). The SEI is prepared by the National Center for Science and Engineering Statistics (NCSES), a part of NSF. The SEI is a record of indicators that provide information on the Science and Engineering sector of the economy. This data come from chapter 8, the section on state indicators created to assess trends of Science and Engineering activity within states.

Technical Notes on Data Sources, continued

ACADEMIC SCIENCE & ENGINEERING

The academic Science & Engineering R&D per \$1,000 GDP data reflect the ratio of Science and Engineering R&D expenditures at colleges and universities within a state to the size of the state's economy. Data reflect the NSF definition of Science and Engineering as the fields of: physical, life, earth, ocean, atmospheric, computer, and social science; mathematics; engineering; and psychology. Academic research accounts for about 10 percent of the all research and development done in the United States and more than half of basic research. Academic R&D can serve as an important indicator for future knowledge and economic progress. R&D data after 2009 comes from the NCSES Higher Education Research and Development Survey, while data before 2009 comes from the NCSES Survey of Research and Development Expenditures at Universities and Colleges, where data on expenditures by field are collected. Academic R&D is only reported for institutions with more than \$150,000 in R&D.

BUSINESS-PERFORMED

The business-performed R&D per \$100 private industry output data reflect the share of R&D in the business activity of a state. Private industry output is a BEA-designated subset of GDP that is the part of GDP that is added by businesses. For business-performed R&D data, the NSF used two surveys. The Survey of Industrial Research Development, an annual survey completed by companies to create industry performed R&D information, was used by the NSF until 2007. Subsequently, the Business R&D and Innovation Survey, led by the Census Bureau, was launched. The new survey is better designed to capture R&D as it is currently conducted. These two surveys have consistent findings.

FEDERAL OBLIGATIONS

The federal R&D obligations per employed worker data reflect geographical disbursement of federal R&D obligations relative to the size of the employed workforce in a state. The dollar amount is accredited to the state of residence of the recipients. The data on federal R&D obligations were collected from the NCSES which requires 11 federal agencies to submit reports annually. These 11 agencies - Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security, Interior, and Transportation; EPA; NASA; and NSF - represent over 98% of federal R&D. The data on state workforce were taken from the BLS.

STATE AGENCY

The state agency R&D per \$1 Million GDP data reflect the ratio of R&D funded by state agencies to the size of the state's economy. Data reflect the NSF definition of state R&D funding, excluding state-run universities and colleges or college-controlled laboratories. The data also excludes any appropriations to non-state agencies that come directly from the state legislature. The state R&D data were collected through NCSES's Survey of State Research and Development Expenditures, a biennial survey to determine expenditures by performer, source funding, and type of R&D. The BEA's data for GDP was used for output.

Export Potential

Army Corps and federal Sandy data reflect data from USASpending.gov, a federal contracts database mandated by the Federal Funding Accountability and Transparency Act (FFATA) of 2006, managed by the Office of Management and Budget (OMB), and operated by the General Services Administration. The contracts data found in the database are from the Federal Procurement Data System – Next Generation.

LOUISIANA CONTRACTORS PERFORMING WORK OUTSIDE OF LOUISIANA

Data reflects highest total obligated amount (in dollars) by the Army Corps to companies with headquarters within Louisiana for contracts performed outside Louisiana between 2010 and 2014. Totals may reflect multiple contracts across multiple states and multiple years. Company names reflect vendor names reported at the time and may include companies no longer headquartered in Louisiana, or vendors that have since been purchased by outside firms.

COMPETITION BETWEEN STATES FOR ARMY CORPS CONTRACTS

In-state total reflects the total obligated amount (in dollars) by the Army Corps to companies with headquarters within that state for

contracts performed within that state. In-state share is that total divided by the total obligated amount for contracts performed within that state. Out-of-state total reflects the total obligated amount to companies with headquarters within that state for contracts performed outside the state. Out-of-state share is that total divided by the total obligated amount for contracts performed outside of that state. States are ranked by out-of-state share.

FEDERAL SANDY CONTRACTS

The data for federal sandy contracts were last updated in January of 2015. They reflect contracts across all federal agencies to do with Hurricane Sandy relief between 2012 and 2014. A Louisiana firm was defined as such in the database under vendor location. Firms may have since been purchased by firms headquartered elsewhere. The state where the contract work was performed was defined as the performance state. All amounts are totals of all contracts, not individual contract amounts. All negative contract amounts were not included in compiling this analysis.

REGIONAL SANDY CONTRACTS

The data on Louisiana firms winning regional Sandy contracts come from three separate sources. The New Jersey state data come from the New Jersey Sandy Transparency website (nj.gov/comptroller/sandytransparency), created by Executive Order No. 125 from Governor Chris Christie to promote transparent distribution of funds. The site is regularly updated with solicitation, proposal, and final documents from each contract.

The New York state data come from a Superstorm Sandy Updates page on the website for the Office of the State Comptroller (osc.state.ny.us/hurricane/contracts). This site lists the date, vendor, agency, amount, and description of each contract. Additional New York data comes from the NY Rising website, which is maintained by the Office of Storm Recovery (stormrecovery.ny.gov/contracts). This website was created by Governor Cuomo after Sandy to address communities' needs. This site lists the vendor, contract type, date, description, as well as links to contract documents.

The New York City data come from the NYC Sandy Funding Tracker (<http://www1.nyc.gov/sandytracker>), a website created by the New York City government in the wake of Hurricane Sandy. The website provides information on the winners of contracts with NYC to deliver federally funded recovery services. This website provides the contractor name, contract amount, and date.

For all contracts, a Louisiana firm was defined as a firm headquartered in the state of Louisiana as specified by Manta, an online directory of businesses.

Social Factors

Philanthropic support

The data used for the philanthropic support indicators come from the Foundation Center. Foundation Center is the leading source of philanthropic information with the most comprehensive database on United States grantmakers and grants. The Foundation Center compiles their data from IRS information returns, grantmaker websites, annual reports, printed application guidelines, the philanthropic press, and more than 30 other sources. All grants are at least \$1,000. Philanthropic cause refers to the grant subject, not the subject type of the grant recipient. The Foundation Center only has data on foundation grants, not individual donations.

ENVIRONMENTAL GRANT-GIVING BY YEAR AND FOUNDATION LOCATION

When looking at environmental grant-giving to the Super Region, national foundations were defined by The Data Center as any foundation located outside of Louisiana.

The Foundation Center grants are categorized into 28 broad fields of interest. These fields were then further categorized into 10 subject groups: Environment, Arts and Culture, Education, Health, Human Services, Public Affairs/Society Benefit, Science and Technology, Social Science, Religion, and Other. Grant subjects are determined by self-reported subjects in most cases and Foundation Center-assigned subjects in some cases. Environmental is defined as all grants that fall under the subjects group "Environment."

ENVIRONMENTAL SHARE OF LOCAL AND NATIONAL GRANT-GIVING

Total local grant giving was calculated by summing "total grant-giving" for all local foundations for the year 2012. There may be some

Technical Notes on Data Sources, continued

giving by Super Region foundations outside the Super Region included within this amount.

PER CAPITA GRANT-GIVING BY CAUSE

The per capita grant-giving by philanthropic cause data come from the Foundation Center and population data from the 2013 American Community Survey. The Super Region data refer to Super Region grantmakers giving to the Super Region. The U.S. data refer to all grantmakers nationally giving to the nation. Philanthropic causes correspond to Foundation Center subject groups. Giving that fell into the “Other” group was not shown.

ENVIRONMENTAL GRANT-RECEIVING BY MOST VULNERABLE COASTLINE

The data for environmental grant-receiving by states with most vulnerable coastlines comes from the Foundation Center data on state grant-receiving by subject, along with population data from the 2013 American Community Survey and vulnerability data from NOAA. Highly vulnerable coastline was determined by combining all coastlines designated by NOAA to have “high” or “very high” vulnerability to sea level rise. Coastlines with “moderate” vulnerability were not included. The coastline was measured in miles.

Social capital

Data reflect number of organizations and combined revenue of 990-filing organizations in the Super Region and comparison metros which were listed under the National Taxonomy of Exempt Entities NTEE subject code C (Environment) and under the NTEE code D (Animals). Organization information was pulled from the National Center for Charitable Statistics (NCCS) database for organizations that had filed annual information reports (990 forms). Tax-exempt organizations with more than \$5,000 in annual gross receipts must register with the IRS, but they do not have to file the annual information report (990 form) until they reach annual gross receipts of \$25,000. Religious congregations, denominations, and organizations controlled by religious denominations have automatic Section 501(c)(3) status and are not required to register or file. 2013 American Community Survey definitions of counties within each metro were used to pull data from NCCS.

Social leadership

Data reflect the percentage of board members of active tax exempt environmental organizations in the Super Region with at least one overlap across other tax exempt organizations. Board member information was pulled from the National Center for Charitable Statistics (NCCS) database for organizations in the Super Region that had filed annual information reports (990 forms). Tax-exempt organizations with more than \$5,000 in annual gross receipts must register with the IRS, but they do not have to file the annual information report until they reach annual gross receipts of \$25,000. Religious congregations, denominations, and organizations controlled by religious denominations have automatic Section 501(c)(3) status and are not required to register or file. Data reflect 990s filed for 2013, and only organizations with 2013 revenue greater than \$500,000 were included.

Environmental organizations are 990-filing organizations listed under the National Taxonomy of Exempt Entities (NTEE) major group code C (Environment) and the NTEE code D (Animals). The NTEE system is used by the IRS and NCCS to classify nonprofit organizations. It is also used by the Foundation Center to classify both grants and grant recipients (typically nonprofits or governments). Only organizations that were classified under the following NTEE codes were included in the comparison: Education (B), Environment (C), Animal-Related (D), Employment (J), Disaster Preparedness (M), Capacity Building (S), Philanthropy (T), Science & Technology (U), Social Science (V), and Advocacy (W). The following major NTEE groups were refined (unrelated NTEE common codes were removed) by The Data Center as follows: Education (B) to reflect higher and professional education, Animal-related (D) to reflect wildlife organizations, Employment (J) to reflect training and vocational placement, Disaster Preparedness (M) to reflect disaster preparedness exclusively, and Capacity Building (S) to reflect economic and community development. Definitions can be found in the downloadable data tables.

Political Support

Public funding

Data reflect all costs associated with coastal restoration and protection projects, including planning, design, construction, monitoring, operating costs, admin costs, and funds channeled to other agencies for implementation.

For a complete description of CPRA programs and federal sponsors, please refer to the report glossary.

CPRA HISTORICAL SPENDING

2007-2014 data reflects projects in Appendix A of the Draft Fiscal Year 2016 CPRA Annual Plan that were completed between 2007 and 2014.

CPRA PLANNED AND FUNDED SPENDING

Data reflect funded projects specified in the Draft Fiscal Year 2016 CPRA Annual Plan, FY 2016 Implementation Plan. Not all projects included in the Annual Plan are included, and as follows, not all projects in Appendix A, as well as in the 2012 Master Plan, are included. Only projects that had funding for design, planning, construction, implementation, or monitoring (the vast majority construction) allocated between 2016 and 2018 were included in this data. They are generalized in the text as “funded for design and construction between 2016 and 2018.”

Public subsidies

Data reflect subsidies and tax exemptions that were given out by Louisiana Economic Development (LED) and the Board of Commerce and Industry to individual companies between 2010 and 2013. Data include subsidies under the following programs: Industrial Tax Exemption, Quality Jobs Program, Enterprise Zone Program, Motion Picture Investor Tax Credit, and Megadeals (deals over \$75,000,000). GoodJobsFirst compiles data directly from the LED website, which records the approval of all subsidies except the megadeals. Megadeals were compiled by GoodJobsFirst using online news sources such as Nexis, Factiva, and NewsLibrary among many others. Megadeal overlaps with LED programs (many megadeals are subsidies for individual developments that qualify for multiple exemption programs) were accounted for and the dollar overlaps were removed to negate double-counting. For more information on megadeal methodology, go here: http://www.goodjobsfirst.org/sites/default/files/docs/pdf/megadeals_report.pdf.

The Data Center used cluster definitions from the U.S. Cluster Mapping Project, a collaborative effort between Michael Porter of Harvard Business School and the United States Department of Commerce, to identify clusters by 6-digit NAICS code and to calculate subsidies by cluster. When the source data did not contain a NAICS code, Manta, an online directory of businesses, was searched to find a NAICS code for the subsidy recipient. All motion picture investor tax credit dollars were put under the Video Production and Distribution cluster.

Endnotes

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The Data Center is the most trusted resource for data about greater New Orleans and Southeast Louisiana. Since 1997, The Data Center has been an objective partner in bringing reliable, thoroughly researched data to conversations about building a more prosperous, inclusive, and sustainable region.

The Data Center (formerly known as the Greater New Orleans Community Data Center) became the local authority for tracking post-Katrina recovery with *The New Orleans Index*, developed in partnership with the Brookings Institution.

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