The Greening of Louisiana’s Economy:
the Professional, Scientific and Technical Services Sector

Louisiana Workforce Commission
www.LMI.LaWorks.net/Green
September 2011
In 2009, Louisiana and Mississippi partnered to research economic development opportunities and workforce needs associated with the region’s green economy. Through a $2.3 million grant from the U.S. Department of Labor, a consortium of the Louisiana Workforce Commission, Louisiana State University, Mississippi Department of Employment Security, and Mississippi State University conducted an extensive study of economic activity that is beneficial to the environment. This and other research products were developed as part of that effort.
## Description of Sector

The Professional, Scientific and Technical Services Sector

## Introduction to Green Activities in the Professional, Scientific and Technical Services Sector

- **Green Goods and Services**
  - Renewable Energy
  - Energy Efficiency
  - Greenhouse Gas Reduction
  - Pollution Prevention and Cleanup
  - Recycling and Waste Reduction
  - Sustainable Agriculture, Natural Resource Conservation and Coastal Restoration
  - Education, Compliance, Public Awareness and Training

## Green Business Practices

- Economic Factors
- Public Policy
- Technology
- Job Growth and Workforce Development
- Key Players
- Notes

---

*On the cover: CH2M Hill employees oversee a restoration project on Bayou LaFourche. Photo © CH2M Hill*
The Greening of Louisiana's Economy

The North American Industry Classification System (NAICS) describes the Professional, Scientific and Technical Services sector, NAICS 54, as one providing specific services for clients in other businesses and occasionally households. Examples of businesses providing these types of services are law, accounting, architectural, advertising or engineering firms. Most of the occupations within these businesses require specialized education or training in order to carry out highly specific tasks. In Louisiana, this sector employs 82,950 people representing 4.5 percent of total nonfarm employment. In 2009, private entities in the sector were responsible for $9.73 billion, or 4.7 percent of Louisiana's gross state product.

The Louisiana Green Jobs Survey was conducted during the fourth quarter of 2010 as part of this research effort to quantify and characterize the green economy in Louisiana. The survey provides a baseline measure of green employment. The survey results show an estimated 30,205 primary green jobs in Louisiana across all sectors, which represent 1.6 percent of Louisiana's nonfarm employment. An estimated 67,591 support green jobs raises the total number of jobs involved in green activity categories to 97,796 jobs or 5.3 percent of nonfarm employment. The survey found that Louisiana's Professional, Scientific and Technical Services sector accounted for 2,362 primary green jobs and 2,501 support green jobs. These survey results reveal that 5.9 percent of jobs in the Professional, Scientific and Technical Services sector are green with 2.8 percent primary green jobs and 3 percent support green jobs.

---

Description of Sector

The Greening of Louisiana's Economy

A primary green job is defined as one where more than 50 percent of an employee's time is devoted to one of the seven green activity categories: renewable energy; energy efficiency; greenhouse gas reduction; pollution reduction and clean-up; recycling and waste reduction; sustainable agriculture, natural resource conservation and coastal restoration; and education, compliance, public awareness and training supporting the other categories.

Support green jobs are defined as those essential to an organization's involvement in one of the activity categories, but not requiring more than 50 percent of an employee's effort.
Introduction to the Green Activities in the Professional, Scientific and Technical Services Sector

The Professional, Scientific and Technical Services sector comprises a wide variety of highly trained professionals whose expertise can be called upon to assist firms in a number of industries to design, develop or produce products or to provide services that have a positive impact on the environment. Professionals in this sector are also summoned by businesses in other industries to help improve their production processes and reduce their environmental footprint. Firms in this sector can provide a range of services to help their clients achieve their environmental goals. They can offer legal counsel for compliance with environmental regulations or to assist with policy making; they can provide architectural, engineering or design services for planning, building or redesign projects that might seek to consider environmental performance or green certifications; they can assist clients with the advertising and marketing of environmental services; and they can provide the scientific assistance to investigate new green technologies.

Large portions of the businesses in the Professional, Scientific and Technical Services sector employ specialists who are members of professional organizations that have adopted environmental awareness and sustainability as some of their defining tenets. Through these proclamations, whole categories of professionals working in this sector are being encouraged to recognize their role in producing environmental improvements. Among those professional organizations highlighting their environmental commitments are the American Institute of Architects (AIA), The American Society of Landscape Architects (ASLA) and the American Society of Civil Engineers (ASCE).

The American Institute of Architects has introduced a number of environmentally focused initiatives including the “Walk the Walk” campaign to highlight the impact that the built environment has on climate change and energy consumption, listings of green design resources for architects and promotions for the international green construction codes. The AIA has also introduced its “2030 Commitment Program” for member firms to meet the goal of carbon neutral buildings by 2030. The American Society of Landscape Architects proudly proclaims that they have been “Green Since 1899” on their website and includes environmental considerations in its mission statement: “to lead, to educate, and to participate in the careful stewardship, wise planning, and artful design of our cultural and natural environments.” ASLA also offers links to information on green roofs, sustainable landscapes and the sustainable sites initiative on their website and hosts “The Dirt,” a blog about design and policy related to urban design, transportation, water use and climate change. The American Society of Civil Engineers has built sustainability into their organization as well. Their vision statement names its professionals “stewards of the natural environment and its resources;” and “leaders in discussions and decisions shaping public environmental and infrastructure policy.” The ASCE code of ethics links the integrity of the profession in part to “using their knowledge and skill for the enhancement of human welfare and the environment.”
While professionals in this sector provide key services assisting with the development of new environmentally beneficial designs, protections or efficiencies, the potential to benefit the environment is highly determined by the needs of their clients. Firms and professionals within those firms may find that they are spending 100 percent of their efforts on environmental services with some projects and 0 percent of their time improving the environment on others. Within Louisiana, firms in the Professional, Scientific and Technical Services sector will see the most opportunity to provide environmentally beneficial expertise and services when they can support, improve or re-imagine existing state industry strengths. Louisiana has a large chemical manufacturing presence, an active oil and gas extraction industry and agricultural strengths that have specific needs for professional, scientific and technical services firms that are able to assist with environmental compliance issues, permitting or other green initiatives.

This report will focus on the environmentally beneficial activities of the Professional, Scientific and Technical Services sector in Louisiana in two major areas: goods and services, and business practices. Discussions of this sector’s involvement in environmentally beneficial activities will be provided where significant involvement by the industry is found. As with other components of this project, green was defined based on seven green activity categories:

1. Renewable Energy
2. Energy Efficiency
3. Greenhouse Gas Reduction
4. Pollution Reduction and Cleanup
5. Recycling and Waste Reduction
6. Sustainable Agriculture, Natural Resource Conservation and Coastal Restoration
7. Education, Compliance, Public Awareness and Training Supporting the Other Categories

Each activity category includes: the research, development, production and distribution of a final good or service; the supply of unique parts or inputs to a final good or service; and production processes and business practices regardless of the final good or service produced. The table below indicates which environmentally beneficial categories will be featured in this report.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods &amp; Services</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Business Practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Green Goods and Services:

Because they are highly trained experts with the skills to navigate and contribute in a variety of ways to the emerging green economy, workers in the Professional, Scientific and Technical Services sector are providing services across the full range of green activities. The majority of this report will focus on green activity categories separately, but individual firms or a single group of professionals within this sector can also offer services that reach across multiple green activity categories.

Some firms in the Professional, Scientific and Technical Services sector are equipped to offer multiple green goods and services that emphasize thoughtful planning and environmental compliance by utilizing the skills of in-house architects, environmental scientists, planners, engineers and public affairs professionals. Interdisciplinary firms such as these can provide services that include permitting, design, engineering, and construction oversight; public affairs assistance; environmental compliance; surveying; geographical information services; security; air, water and risk assessment training workshops; and disaster response. Professional services firms can also help other businesses maintain environmental compliance, redevelop brownfields and conduct energy audits. In addition to these green services, some firms of this type also sell products designed to provide environmental benefits by monitoring air quality, particulate matter and leak detection.

Information technology specialty firms also fall into the Professional, Scientific and Technical Services sector and can bring their services to address a variety of different green objectives. Computer hardware and software systems and other information technology are being developed and employed by specialty firms and as components of multi-service businesses. These skills are being applied across a variety of industries to address a multitude of issues that can have a positive environmental impact including energy usage, emissions control, efficiency targets, data collection and monitoring, shipping logistics, continuous appliance-level energy monitoring and smart irrigation. Information technology firms are designing and maintaining these systems that are helping businesses and government make efficiency and compliance improvements that benefit the environment and streamline business practices.

Renewable Energy

Louisiana is becoming an important contributor to renewable energy projects and the Professional, Scientific and Technical Services sector is playing an important role in that development. The state is currently developing manufacturing capabilities and new deployments for renewable energy systems that may require the services of this sector. Blade Dynamics will be bringing 600 wind turbine blade manufacturing jobs to the Michoud site in New Orleans. Louisiana firm Wind Energy Systems Technologies is exploring offshore wind power by collecting data on turbine placement and severe weather durability, and a third venture, Louisiana Geothermal, is pursuing geothermal electricity production. Additionally, three other companies are attempting to tap into Louisiana’s rivers to create power from flowing water. The potential in Louisiana for the development of hydrokinetic power and its impact on the Professional, Scientific and Technical Services sector is being investigated at “RiverSphere,” an industry-neutral testing, development,
The Greening of Louisiana’s Economy


research, demonstration and business incubation site on the Mississippi River. RiverSphere is being jointly run by Tulane and Xavier Universities and hopes to engage academic, industry, public agencies and nonprofits in the growth and development of Louisiana’s river resources as a source of renewable energy and economic development. The growth of the renewable energy sector in Louisiana will also bring added opportunities for professional, scientific and technical services consultants. Additionally, many of the projects currently under development will require legal services from this sector for permitting, regulatory compliance or commercialization.

One less traditional source of renewable energy that Louisiana is poised to take advantage of, should the technology develop, is biofuels from algae. Algae are simple, plant-like organisms that show promise as a biofuel because they can produce more biomass per unit of growing area than other biofuel sources while also capturing carbon dioxide. Louisiana has an excellent climate to grow algae — good sunlight, relatively affordable and available land and a wide range of carbon dioxide sources. Before the algae can become fuel, and before the process can become commercialized, methods of extracting the lipids (oil) from the organisms must be perfected and new types of algae with higher lipid levels must be genetically engineered. Despite the current technical barriers, Louisiana is investigating this technology. During 2008-2009, Louisiana Economic Development partnered with KEMA, an energy consulting, testing and certification firm, to evaluate algae-to-energy potentials in Louisiana. This study found that the state’s capacity for algae-to-energy production could be up to 1.5 billion gallons of fuel per year, which would mean 25 facilities capable of producing 60 million gallons of fuel a year and $4.5 billion in added revenue.
Engineering firms are also providing clients with assistance in developing renewable energy implementations with computer modeling that can allow for the re-sizing and re-orienting of buildings to make better use of solar or wind resources.18

**Energy Efficiency**

Skilled workers in the Professional, Scientific and Technical Services sector are providing services to help municipalities, industries, individual businesses and neighborhoods make energy efficiency improvements through the intelligent development, selection and implementation of technology and through specialized designs.

The company Utiliworks, headquartered in Baton Rouge, is a professional consulting firm that helps clients manage the costs of electricity, water and natural gas, redesign business processes for financial savings and customer service purposes and implement smart grid technology. With the help of Utiliworks, consultants and an American Reinvestment and Recovery Act (ARRA) Smart Grid Investment Grant Award of $4.3 million, the city of Ruston is moving to an advanced metering infrastructure. Advanced meters or “smart meters” are electricity usage monitors that provide additional information about consumers’ power usage to help them make energy and cost saving choices, such as operating appliances during “off-peak” hours when power rates are lower.19 With a population of 20,500, Ruston has already seen a 4 percent reduction in the amount of energy lost in the distribution grid and a 5 percent reduction in energy usage by the customer base. Interruptions in service have gone down by half, and community cost savings of more than $5.2 million achieved.20

Architects, landscape designers and civil engineers are also helping to create new property developments that are designed with the environment and energy efficiency in mind. Design firms across the state are engaged in these activities, but the two most high profile and highly concentrated efforts to build for energy efficiency are the Make it Right Foundation and Global Green’s work in New Orleans’ Lower 9th Ward. Make it Right has relied on prominent architectural talent from New Orleans21 and around the world to develop its environmental designs.22 These architects in the Professional, Scientific and Technical Services sector have dedicated themselves to helping New Orleanians who lost their homes in Katrina rebuild in ways that will have a positive impact on the environment and help the residents lower their energy bills through energy saving design and technology.23

**Greenhouse Gas Reduction**

A number of engineering and consulting firms around Louisiana can provide services to help reduce the carbon impact of other prominent state industries. COMM Engineering in Lafayette for example, assists the oil and gas extraction industry in the reduction, recovery or conversion of greenhouse gases that help to improve the environment and improve profitability.24 With proprietary software, COMM Engineering stores, tracks, calculates and reports greenhouse gas emissions and helps monitor emissions sources.25

Jacobs Engineering Group, with offices in Baton Rouge and Metairie, offers a carbon calculation tool originally developed for the United Kingdom’s Environment Agency to its clients capable of measuring and comparing the embodied carbon dioxide of materials as well as the carbon used in material transportation, personal travel, site energy use and waste management for different building designs.26
The first independent consulting firm focused on climate change in the southeast also maintains a Louisiana presence. Carbon Solutions America offers three services to clients with an environmental benefit: project development (including the commercialization of carbon and renewable energy credits), asset management for renewable energy and emissions reduction projects and advisory services for clients concerned about their climate impact.

Pollution Prevention and Cleanup

As a state with a large amount of chemical manufacturing and oil refining activity, pollution prevention and compliance provide many opportunities for legal firms within the Professional, Scientific and Technical Services sector. Meeting reporting standards, obtaining air and water permits and maintaining compliance with environmental regulation is a major undertaking for the refining, petrochemical and utilities industries that requires legal services under normal operating conditions. When problems arise or when industrial pollutants are released into the environment, considerable additional legal services are required to address any possible personal or environmental injury as well as responses to the violation of state and federal law. To meet the needs of industry and Louisiana’s residents, many of the law firms around the state offer environmental services. Legal professionals have also been highly involved in the response to the BP Oil Spill in the Gulf of Mexico. Legal firms are
assisting with the claims process, the hundreds of civil lawsuits and the potential criminal investigation.

Professional, scientific and technical services businesses are employing a number of specialized technologies to clean up pollutants. One such technology is phytoremediation, the use of plants and their root systems to absorb soil and water contaminants. Baton Rouge-based TEA Inc. is an environmental consulting firm offering bioremediation, phytoremediation, health and ecological risk assessment, coastal restoration and expert witness assistance for companies dealing with environmental contamination challenges. Their patented TreeWell system uses phytoremediation techniques to absorb contaminated soil and groundwater pollutants, slow the migration of contaminants through groundwater and treat dense non-aqueous phase liquids and other hazardous materials by actively promoting root development into the target area.28

A second group of technologies being used to clean up pollutants is bioremediation. Bioremediation relies on microbes, naturally occurring or laboratory-engineered, to consume environmental contaminants like oil. Companies across the Gulf Coast offer bioremediation services for soil, groundwater and oil spill applications.

Landscape architecture firms are also helping cities, schools, businesses and residents design with the environment in mind. Firms across Louisiana are using specialized knowledge of the topography and hydrology of sites, local plants and natural systems to create landscapes that collect and purify storm water before it can enter storm drains. Brown+Danos, a Baton Rouge firm, is but one example of many that have employed green design principles to help clients manage storm water, revitalize brownfields and create vibrant public spaces. The firm has recently completed projects at Dillard University and for the new campus of Baton Rouge's Woman's Hospital. Two of the landscaping tools firms use to slow and filter storm waters are bioswales and constructed wetlands, which use local plants to limit flooding during intense downpours and filter and retain storm water. These tools are employed in residential, business and municipal landscapes across Louisiana.

Another large-scale water management plan by an architecture firm was announced on March 22, 2011, World Water Day. New Orleans firm Waggonner & Ball Architects will be developing a comprehensive, sustainable integrated water management strategy for St. Bernard Parish and the east banks of Orleans and Jefferson Parishes. This plan will solve problems regarding storm water, waste water, ground water, flood control, water infrastructure and public rights of way. Currently, many areas within the targeted parishes are affected by failures in the pumping system even during normal rainfall that produces floods. Other goals of the water management plan include using storm water as a resource; increasing flexibility and capacity in water management; enabling better ground water management and minimizing subsidence; lower costs, energy use and emissions throughout the water infrastructure; improving quality of life; and protecting and improving environmental quality and sustainability.29

Recycling and Waste Reduction

Professional, scientific and technical services professionals contribute innovative solutions to waste production for use in a variety of industries. Consulting firms can assist companies in
all industries with waste reduction audits, assessments of opportunities for waste reduction, reporting requirements, source separation and collection systems for recycling.

**Sustainable Agriculture, Natural Resource Conservation and Coastal Restoration**

The “Dutch Dialogues” is an excellent example of how the services provided by firms in the Professional, Scientific and Technical Services sector are being used to enhance Louisiana’s environment. This interdisciplinary collaboration between New Orleans architects, city planners, designers and water experts and their counterparts from the Netherlands grew out of the post-Katrina realization that New Orleans’ relationship with water, its threat, its utility, and its amenity, should be a defining and central organizing principle for the city. Drawing on the wealth of experience from different disciplines and firms from Louisiana and the Netherlands, this working group is rethinking how New Orleans can and should protect itself from the water around it by incorporating it more fully into city life. Reinventing the city’s water management infrastructure in new, sustainable ways will improve quality of life, offer economic advantages, and help to manage water resources more effectively.30

As Louisiana and other states along the Gulf Coast continue to recover from the largest oil spill in United States history, the Natural Resource Damage Assessment and Restoration Program (NRDA) will draw heavily on expertise from the Professional, Scientific and Technical Services sector. When oil spills or other accidental releases of contaminants into the environment occur, the United States Department of the Interior’s NRDA process is activated to help restore the natural resources harmed by the event. The NRDA process is guided by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, the Oil Pollution Act of 1990, the Clean Water Act, and in Louisiana, the Louisiana Oil Spill Prevention and Response Act of 1991. The process consists of an assessment of the damages to the natural resources injured by the hazardous release, estimates of the losses to the public that the injury entailed, the development of a plan for how the resources can be restored and an assessment of the type and amount of restoration that is appropriate.31 Legal firms and other consulting operations within the Professional, Scientific and Technical Services sector are sure to be key players in the lengthy damage assessment and restoration process. Under the Oil Pollution Act, all responsible parties will be invited to participate in the NRDA process as damages are sought.32 Outside of the NRDA process, firms with law, economic and scientific expertise will also find opportunities representing municipalities, businesses and residents who are seeking assistance in recovering from the oil spill.

In addition to challenges resulting from hurricanes and oil spills, Louisiana is also facing a rapidly disappearing coastline. Responding to 80 years of coastal erosion spread across the entire lower half of the state requires the attention and expertise of the Professional, Scientific and Technical Services sector. This crisis of land loss encompasses threats to major river systems, an enormous storm protection system, one of the country’s defining cities, agricultural, aquacultural, and fishing concerns, and oil and gas infrastructure. Due to the complexity of the problem, a wide variety of firms across the Professional, Scientific and Technical Services sector are providing assistance. Law firms, lobbying groups and lawmakers are working to find funding and obtain land rights and are pursuing other legal means to pave the way for restoration projects. Engineering and environmental consulting groups are designing restoration projects to channel river sediment back into the starved marshes in strategic ways while still maintaining storm protection systems. Firms are also
Responding to 80 years of coastal erosion spread across the entire lower half of the state requires the attention and expertise of the Professional, Scientific and Technical Services sector. Engineering and environmental consulting groups are designing restoration projects to channel river sediment back into the starved marshes in strategic ways, and construction professionals are building the infrastructure to move river sediment, fortify barrier islands, and rebuild land.

Photo © Chris Macaluso.

coordinating with construction professionals to build the infrastructure for moving river sediment, fortify barrier islands, rebuild land, plan for development projects that pose no new threats to coastal wetlands and accommodate environmental needs into their roadway and bridge projects. Recovery funding resulting from the BP Oil Spill, new legislation governing mineral royalties beyond the Continental Shelf and renewed emphasis on coastal restoration as a part of New Orleans’ storm protection plan are helping to raise the profile of Louisiana’s wetland loss and potentially provide much needed injections of funding and emphasis in the near future.

Some firms, like the Shaw Group, also assist companies with the implementation of environmental management systems, corporate responsibility programs or other projects aimed at environmental restoration. Some of the services provided by Shaw and other firms in this industry include wetland delineation and mitigation, federal and state coastal permitting, watershed management, habitat and wildlife evaluations, biological monitoring, fisheries management, ecosystem modeling, risk assessment and brownfields development.
Another important green contribution of the Professional, Scientific and Technical Services sector of particular importance to Louisiana’s economic landscape is compliance with environmental regulations. Louisiana’s extensive petrochemical manufacturing industry depends on technological solutions and other assistance from firms in this sector to keep up with the changing regulatory environment and market demands. Businesses such as Jacobs Engineering Group, with an office in Baton Rouge, offer a variety of services in support of environmental compliance that can include chemical and mechanical engineering, air quality management, environmental permitting and compliance, environmental engineering and analysis, waste management, water quality management and a variety of technology services. The Shaw Group, headquartered in Baton Rouge, also assists utilities and petrochemical manufacturers with engineering, design, construction, refurbishment, modification and retrofit projects for fossil fuel plants and nuclear power facilities to reduce emissions and greenhouse gases. Many technical services firms in the state have entire wings dedicated to compliance with environmental laws for the planning of projects, permit applications and mitigation solutions for environmental impacts that are unavoidable.

Legal advice and guidance is another service vital for the successful navigation of a business environment in which regulatory frameworks change, there are often disputes between federal and state mandates, and industry must constantly adapt to emerging environmental issues. Many consulting firms are offering legal services and some dedicated law firms are specifically marketing their services to businesses to help them thrive in this era of environmental awareness. Louisiana firm Jones Walker has created a multidisciplinary “Green Law and Sustainability” team to help businesses address these regulatory issues, develop and market sustainable products and business practices and seek out competitive advantages through environmental accomplishments. Jones Walker provides legal advice not only for industries seeking to maintain compliance, but also for green certifications during construction projects. The firm drafts sustainability documents for businesses, assists in the avoidance of claims of greenwashing and defends against lawsuits alleging environmental damage. Jones Walker also helps clients patent new technologies with environmental benefits, secure the best tax rates and credits available for improvements to sustainability and advocates for and drafts legislation for environmental issues. As businesses and industries seek to enhance their environmental credentials and cope with rapidly changing regulations, opportunities for law firms with experience with environmental issues will likely increase.

Advertising and public relations firms within the Professional, Scientific and Technical Services sector are also providing services to their clients that help to improve the environment through public awareness. These firms can promote environmentally beneficial programs, products or legislation, publicize threats to the environment or raise awareness of an under-noticed environmental asset. Recently, the BP Oil Spill has highlighted Louisiana’s need for advertising and public relations firms to help the state recover economically from the environmental disaster. Advertising and public relations firms can assist in reviving the state’s positive environmental brand that includes vibrant natural resources like wetlands, abundant seafood fisheries and outdoor activities. In conjunction with the attention from the BP Oil Spill, public relations firms are also assisting in raising awareness about Louisiana’s delicate marshes and coastal land loss. Companies seeking
to publicize new green product offerings or to highlight their green business decisions are also turning to advertising and public relations firms to help them market themselves to environmentally concerned consumers.

Green Business Practices

The businesses and firms in the professional, scientific and technical services field vary widely in size and expertise. Like other office environments, these companies are addressing the environmental footprint of their operations according to their own needs and abilities. Changes to office policies that benefit the environment can include energy efficient lighting and appliances and water saving fixtures, increased recycling efforts within the office or encouraging employees to reduce their fossil fuel use in their commute. Changes to computer and printer use such as printer sharing and automated shutdown software can also help reduce paper use and energy use. Environmentally aware purchasing of commonly used office supplies can also help to reduce these companies’ environmental impact. Architectural and engineering firms specializing in environmentally efficient projects are also moving their own offices into green buildings when possible.

Economic Factors

A significant portion of the Professional, Scientific and Technical Services sector is made up of service providers for other industries as consultants or project specialists. Like other service providers, this sector must ensure that the services offered meet the needs of their clients. As the green economy develops, more firms in other industries will require expert assistance in order to stay abreast of new technology, scientific developments and evolving policy and reporting requirements. Some environmentally beneficial services provided by the sector, particularly in environmental compliance and permitting, are necessary services helping manufacturing facilities maintain day-to-day operations. Scientific and technical professionals who can help clients cut operational costs by improving efficiency, design and smart planning offer valuable services to a wide range of firms across every industry. To the degree that professional, scientific and technical services firms can demonstrate their services to be cost-saving measures (e.g., improvements to energy efficiency) and tools for economic development (e.g., green improvements that increase the value of a business or property), they are finding valuable opportunities. A growing interest in environmental and sustainable design is helping to increase the number of environmental projects being undertaken. This growing environmental awareness among the public and business community is creating opportunities for architectural, design and planning firms that can help municipalities and corporations implement ecologically sound projects and developments. The services are often available to highly conscientious individuals as well as firms aiming to cut costs or generate a green branding.
Consultants in the Professional, Scientific and Technical Services industry play an important role in designing coastal restoration projects in Louisiana, like the one pictured above.

Photo © Chris Macaluso.
Public Policy

Several policy actions of the past few years by the federal government have directed funds toward energy efficiency, renewable energy and biofuel technology. The Energy Policy Act of 2005, the Energy Independence and Security Act of 2007 and the American Recovery and Reinvestment Act of 2009 all increase funding or priority for environmentally beneficial technologies or products which may lead to increases in demand for professional, scientific and technical services firms. The Energy Policy Act of 2005 has specific grants for biomass-based fuels, pollution control methods for coal power plants and tax breaks for renewable energy producers and nuclear power plants which could open doors for engineering, pollution control and scientific firms in this sector. In 2007, the Energy Independence and Security Act heavily promoted energy efficiency improvements in government buildings and the development of smart grid technology, which could also spawn business for consulting firms, technical firms and design firms able to assist in the implementation of these technologies.

The federal Oil Pollution Act of 1990 and Louisiana Oil Spill Prevention Act have created a formal process that guides the response and recovery in the event of an oil spill. In Louisiana, the recent BP Oil Spill in the Gulf of Mexico has created space for large amounts of activity, interest and financial support for professional, scientific and technical services relating to environmental cleanup, restoration and the compensation of impacted individuals and entities. Assessing the ecological damages, planning for effective remediation and pursuing claims will most likely impact this sector for a drawn out period of time. This likely also presents opportunities in the Professional, Scientific and Technical Services sector for engineering and planning coastal restoration projects and other related wildlife and environmental improvement projects.

Technology

The Professional, Scientific and Technical Services sector is a human capital-intensive field that often specializes in the implementation of technology. In many cases, the technologies employed by firms in this sector are helping other businesses to achieve a variety of process improvements that are environmentally beneficial. Some firms use specialized carbon calculation software with their clients to help them reduce their greenhouse gas footprint and others use computer modeling to modify building designs and site placement to better benefit from solar panels. The development of new techniques and microbes for bioremediation is also helping to create ecologically safe methods for treating environmental contamination. Firms in this sector are also assisting Louisiana’s large petrochemical manufacturing sector to monitor plant operations and emissions and to help them keep up with evolving regulations through the implementation of technology.
Job Growth and Workforce Development

Considering primary and support jobs, green employment in the Professional, Scientific and Technical Services sector is projected to increase 16.4 percent over the 10-year period from 2010 to 2020. That growth in green employment is not expected to occur gradually over the projection horizon as much of it is a result of large undertakings, including several funded by ARRA, which will make significant contributions to green employment. While the 2010 baseline measure already includes some green jobs created by the federal stimulus, the number of jobs in this sector created by the stimulus is expected to grow in 2011, with a large increase in ARRA funded projects increasing green employment in the sector from 4,863 to 5,068. The next year is likely to see a slightly smaller increase with green employment totaling 5,202 in 2012. The growth in green employment is expected to continue throughout the projection horizon, albeit at a slower rate with green employment reaching 5,402 in 2015 and 5,659 in 2020.

Despite solid growth in total employment projected for the Professional, Scientific and Technical Services sector, the projected increase in green employment in this sector is expected to outpace growth in total employment within the sector. The most recent industry employment projections for the state of Louisiana imply that total employment will increase 13.3 percent over the 10-year period from 2008 to 2018. Those 2018 projections were revised in 2011 to reflect new information available since the initial projections release, including new developments identified through the Green Jobs Consortium research effort.

The increasing emphasis on the environment is creating opportunities in the labor market. The Pew Charitable Trust’s study of the clean energy economy found that employment opportunities in renewable energy, energy efficiency, greenhouse gas and pollution reduction and conservation have been growing at a faster rate than overall jobs in the United States. Louisiana is ranked as a “small and fast growing” state in the Pew study, meaning that by their estimation methodology a relatively small number of jobs are represented in green categories compared to the national average, but that the growth expected is higher than the national average. Implementing new technologies, improving business operations to meet new environmental guidelines and transitioning to more efficient or renewable energy systems will present opportunities for consultants and specialized firms within this sector.

One example of an industry adapting to environmental and technological changes and relying in part on professional, scientific and technical services firms is the Utilities sector. The National Commission on Energy Policy Task Force on America’s Future Energy Jobs predicts steady growth in jobs associated with electricity generation reflecting new designs and improved infrastructure aimed at meeting green goals. Of the 15 percent increase expected by 2030, the forecast indicates that by 2010, there will be an additional 700 to 1,200 professional employees. This includes 300-500 engineers and up to 100 consultants and designers.
Professional, scientific, and technical services professionals must be highly trained for their positions. In nearly all cases, a four-year degree is the minimum requirement for jobs in this sector and many require master’s level or professional degrees. These rigorous education requirements depend on a functioning educational system that can prepare students for success at colleges and universities. A solid foundation in science, technology, engineering and mathematics is especially important for portions of the Professional, Scientific and Technical Services sector as well. Seventy percent of Louisiana’s high school students demonstrated basic or below basic proficiency in mathematics on the graduation exit exam in 2010 and 82 percent of Louisiana’s students ranked basic or below in science that year.

In addition to academic training, most professionals in this sector are also accredited or licensed by bodies specific to their field after completing examinations: the bar exam, the Fundamentals of Engineering and Principles and Practice in Engineering exams or the Architect Registration Examination. Involvement in the green activities within each profession in this sector often requires specialized coursework, certification or concentrations obtained at academic institutions or through professional associations. In many cases, universities now incorporate these specializations into their core curriculum. Professionals already in practice must often specialize in green activities through continuing education courses.

For lawyers wishing to specialize in environmental law, the training available varies from program to program with most law schools offering training in environmental law as a certificate of specialization. Tulane University Law School in New Orleans, however, offers a certificate of specialization, an environmental law journal, a dedicated environmental law clinic (where students gain practical experience in environmental law cases) and joint degree programs that are interdisciplinary and environmentally focused.

Architects, designers, landscape architects and developers can obtain certification from the United States Green Building Council for the Leadership in Energy and Environmental Design (LEED) system. Three levels of certification are available beginning with the LEED GA for basic knowledge of green design and construction and extending to the LEED AP + Specialty, which is more advanced and focused on one particular LEED rating system. There are eligibility requirements to take the exams required for these certifications. One must show documentation of work on a LEED project, have employment in a “sustainable field of work” or complete an education program that features principles of green building.

Louisiana residents have only one choice for an accredited school for urban planning, the University of New Orleans Department of Planning and Urban Studies. The undergraduate degree offers a concentration in the environment; within the planning department, the master of urban and regional planning program offers a concentration in land use/environment.
The Greening of Louisiana’s Economy

Key Players

**American Institute of Architects:** www.aia.org
Professional organization of architects sponsoring sustainable design initiatives.

**American Society of Civil Engineers:** www.asce.org
Organization representing 140,000 civil engineers worldwide. Includes advocacy for infrastructure and environmental stewardship and maintains sustainability as a strategic priority.

**American Society of Landscape Architects:** www.asla.org
Professional organization for landscape architects leading, educating and participating in stewardship, planning and design of natural environments.

**Louisiana Research Institutions and Universities**

**United States Green Building Council:** www.usgbc.org
Organization that developed the LEED rating system that recognizes sustainable design.


9 Major, Heaton, and Jeff Major. “Questions for Industry Experts.” E-mail interview. 24 June 2010.


18 Oard, Svetlana. “Questions for Scientists.” E-mail interview. 19 May 2010.


The Greening of Louisiana's Economy


