Green Energy in Mississippi

Opportunities for Green Energy Investment, Economic Development, and Employment Growth in Mississippi

Mississippi Energy & Industrial Construction Consortium
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This report identifies broad areas of opportunity for investment in Green Energy technologies which will create jobs, promote economic growth, and provide long-term benefits to the people of Mississippi.

This report was prepared by the Mississippi Energy & Industrial Construction Consortium (MEICC). The MEICC is a partnership between Mississippi's energy and construction industries, non-profit organizations, academic institutions, and government organizations whose goal is to collaborate and find solutions to Mississippi's energy workforce challenges. More information about the MEICC can be found at www.MEICC.org.

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I. What are "Green Energy" Technologies?

Green Energy Technologies are products, methods, and practices that reduce the environmental impact of energy generation, production, distribution, transportation, or consumption.

Examples of Green Energy Technologies include the following:

- Production, distribution, and use of transportation fuels from renewable sources.
- Electricity generation, using methods and sources that result in lower emissions of greenhouse gasses or other pollutants, when compared to burning fossil fuels using traditional methods.
- Conversion of biomass into usable energy products.
- Efficiency programs to reduce the amount of energy consumed by homes and businesses.
- Construction techniques that result in buildings that consume less energy or make use of passive and renewable energy sources.
- Products or services that enable the use of other green technologies such as "Smart Grid", flex fuel and hybrid-electric vehicles, and innovative construction techniques.

II. Green Energy Technologies in Mississippi

Industry in Mississippi uses many green energy technologies. Investment in these technologies has the potential to create new jobs to promote economic growth in the state.

Wind and Solar Energy

While **wind** and **solar** energy resources are not abundant in Mississippi, there are opportunities for individuals and businesses to take advantage of these growing energy sources. In addition, electrical grid upgrades are necessary to enable wide-scale integration of wind and solar power into the nation's electrical grid. Mississippi's skilled workforce and competitive business climate, position the state for growth in manufacturing of components for wind and solar energy installations and the nationwide **smart grid**. One example is Jackson, MS based SmartSync, the largest provider of smart grid metering devices in North America (reference 1).

Biofuels and Biomass Energy

There are approximately 50 biomass energy projects in Mississippi, and the industry is posed for additional growth. **Biomass** involves converting biological materials such as food crops, livestock and food processing waste into energy. **Biofuels**, primarily ethanol and biodiesel, are gasoline and diesel compatible fuels derived from food crops and animal by-products. The Mississippi Strategic Biomass Initiative is promoting investment and research into biomass projects that may someday reduce our nation's dependence on foreign oil while creating value-added opportunities for Mississippi farmers (reference 4).

Nuclear Energy

The largest producer of CO2-free energy is **nuclear** power. Nuclear energy provides 70% of the greenhouse gas emission-free energy in the United States. Grand Gulf Nuclear Station, Mississippi's single nuclear power plant produces about one-forth of the state's electricity. In 2008 the 9.6 million megawatt-hours of electricity generated by Grand Gulf Nuclear plant reduced Mississippi's CO2 emissions by more than 10 million tons when compared to equivalent generation by coal (reference 3).

Energy Efficiency

Additional investment in established **energy efficiency** programs have the potential to create jobs and accelerate cost savings to individuals and businesses. For example, the return on investment in heating air conditioning system duct wrapping and installation of florescent lighting occurs in less than three years (reference 2).

Green Construction

Green construction techniques make use of design features and materials which increase energy efficiency while reducing the impacts on human health and the environment during the building's lifecycle. Green buildings are designed to reduce the overall impact on human health and the environment by:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution, and environmental impact

Mississippi has taken initial steps in creating a green construction industry. For example, the Mississippi Associated Builders and Contractors established a Green Contractor Certification program in 2008 (reference 5).

III. Green Energy Jobs in Mississippi

Growing the green energy industry in Mississippi will mean new opportunities and a growing workforce to support new businesses and green projects. Many categories of green energy jobs do not involve new types of knowledge and skills, but rather adding new knowledge and skills to existing jobs. Examples of existing job categories that may require new kills include (reference 7):

- power plant operators
- process operators
- electricians
- instrumentation and controls technicians
- electrical, mechanical and civil engineers
- heating, ventilating and air conditioning (HVAC) mechanics and installers
- roofers and construction managers
- wind turbine engineers
- solar power plant operators
- wind turbine service technicians

IV. Examples of "Shovel Ready" Green Energy Projects

The following are examples of green energy projects that would provide immediate employment opportunities if funding were available:

Example #1: Mississippi Energy Education and Outreach Program

Executive Summary

The United States is facing a crisis in workforce readiness, and the State of Mississippi is no exception. Just as the demand for skilled workers is on the rise, the supply is declining. This is particularly true in the high technology field of green energy. The Mississippi Energy & Industrial Construction Consortium proposes establishing a new Energy Education and Outreach Program.

The goals of this program are to better inform students, parents, teachers, and school counselors about career opportunities in the exciting field of green energy, and to integrate energy themes into education at the middle school and high school level. This energy initiative would build on successes achieved by the Mississippi WIRED grant, and would leverage processes, programs, and tools developed under that impressive collaborative effort.

A second component of this program is to provide coaching for "energy entrepreneurs;" individuals who are developing new renewable energy and energy efficiency products and processes. There is a pressing need to help creative individuals understand how to translate their ideas into sustainable businesses. These actions will help ensure Mississippi's population is prepared for the challenges of these rewarding and high-paying careers and business opportunities.

Costs and Benefits of the Energy Education & Outreach Program

This request for funding is for $1,750,000 to implement the Energy Education and Outreach Program in Mississippi. The program will be designed and orchestrated by the Mississippi Energy & Industrial Construction Consortium. Funds will be administered by non-profit organizations and academic institutions who are members of the Mississippi Energy & Industrial Construction Consortium.

The Energy Education & Outreach (EEO) program will leverage existing education and outreach materials to the greatest extent possible. The following are examples of established programs from which materials, tools, and processes can be leveraged for greater results:

- The Mississippi Centers for Excellence in Advanced Metalworking developed under the WIRED grant (reference 9).
- Information, materials, and toolkits available through the Center for Energy Workforce Development (references 7 and 8).
- Educational materials made available through the Energy Solutions Foundation (reference 10).
- The US Department of Energy has developed energy themed classroom learning materials.

The EEO program will endeavor to reach the various stakeholders with information specifically targeted for their needs and designed with their preferences in mind. Some examples of activities planned include:

- Adapting existing materials to Mississippi's specific green energy industry and reproducing the materials for use in middle schools and high schools (to avoid costs incurred by local school districts).
- Developing web-based communications tools similar to those developed under the WIRED grant.
- Conducting educational events and activities such as Summer Energy Camps and Energy Fairs.
- Holding workshops and seminars for teachers, counselors, and parents.

Proven methodologies such as the Venture Capital Tools available through the Mississippi Technology Alliance will be adapted for providing business development coaching and mentoring for emerging green and clean technology companies.

The long term benefits for Mississippi would be substantial. Many of today's students are unprepared for careers in green energy. The Energy Education and Outreach Program would improve student's basic science and math skills, providing a foundation for further training and education for these high-paying and rewarding careers.

Example #2: Green Energy Systems Technology Training Laboratory

Executive Summary

Hinds Community College (Rankin Campus) is creating an Energy Systems Technology Associates Degree program to provide skilled workforce members for the growing energy industry in Mississippi. The curriculum will provide skilled technicians for existing and emerging green energy technologies with a focus on renewable and low-carbon energy. The new program requires the construction of a Green Energy Systems Technology Laboratory. The cost of materials and labor to build the laboratory is approximately $2,500,000.

Cost & Immediate Jobs Created

Hinds Community College has the space required but lacks the funding needed for materials and labor to construct the laboratory. The project would employ a number of technicians (carpenters, welders, pipe fitters, electricians, and other construction personnel) during construction which is expected to last for several months. In addition, one instructor would oversee the project and would remain on staff to operate the laboratory once construction is complete.

The laboratory will be modeled after similar training facilities in existence in other states. The Mississippi Energy & Industrial Construction Consortium (MEICC) and college instructors will work together to adapt existing laboratory designs for the Green Energy Systems Technology Laboratory. The laboratory will be a state-of-the-art instructional facility that will provide students with hands-on experience with energy systems, process controls, measuring devices, and safety equipment related to the latest renewable and low-carbon energy sources. Construction could begin almost immediately.

Long Term Benefits

The long term benefits to Mississippi would be substantial. The new Energy Systems Technology training program and laboratory would provide Mississippi residents with a

pathway to rewarding and high-paying careers in energy related fields. A well-educated and trained workforce is a key enabler for the growth of the green energy industry in Mississippi. The Green Energy Systems Technology Laboratory at Hinds Community College would provide a unique, hands-on learning environment to ensure that residents of Mississippi are ready to compete for high paying jobs in this exciting new industry.

The new program would provide opportunities for young people just entering the workforce, displaced workers from industries adversely affected by the current economic conditions, and under-employed residents of Mississippi.

V. About the MEICC

The MEICC is a partnership between Mississippi's energy and construction industries, non-profit organizations, academic institutions, and government organizations whose goal is to collaborate to find solutions to Mississippi's energy workforce challenges. The consortia's activities include the following strategic focus areas:

- **Career Awareness and Outreach:** Plan and implement effective communications strategies that create and raise awareness among key audiences of the critical need for skilled technical workers in the energy and industrial construction fields. Position the energy and industrial construction industries as preferred employers of choice.
- **Funding Strategies:** Identify resources and funding opportunities for initiatives aimed at addressing the shortage of skilled technical workers.
- **Policy and Education:** Develop and implement strategies to influence state policy to support and promote career pathways in schools. Promote initiatives designed to improve student knowledge, skills and readiness for careers in these rewarding fields.
- **Untapped Labor Sources:** Develop a recruiting pipeline from untapped labor sources to educate and train future skilled technicians and trades personnel for the industrial construction and energy workforce.

More information about the MEICC may be found at http://www.meicc.org .

VI. References:

1. SmartSync Technologies
   http://www.smartsynch.com/SmartSynch_about_us.htm

2. Return on Investment of Efficiency Improvements
   http://hes.lbl.gov/hes/profitable_dat.html

3. US Energy Information Administration
   http://www.eia.doe.gov/

4. MS Strategic Biomass Initiative
   http://www.technologyalliance.ms/strategic-biomass-initiative/index.php

5. Mississippi Associated Builders and Contractors
   http://www.msabc.net/

6. MS Energy & Industrial Construction Consortium
   http://www.meicc.org

7. Center for Energy Workforce Development
   http://www.cewd.org

8. Get Into Energy
   http://getintoenergy.com

9. Mississippi's Advanced Metal Working Centers for Excellence
   http://makethingshappenms.com

10. The Energy Solutions Foundation
    http://www.energysolutionsfoundation.org