north carolina
Green Business Fund

FISCAL YEAR 2009 REPORT

As Required by §143B-437.8
of the North Carolina General Statutes
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Introduction:
Established by the North Carolina General Assembly during the 2007-2008 legislative session and currently entering its third year of operation, the North Carolina Green Business Fund awards competitive grants to North Carolina small for-profit businesses, non-profit organizations, State and local governments to encourage the development and commercialization of promising green technologies in the following three designated priority areas:

1. The development of the biofuels industry in North Carolina;
2. The development of the green building industry in North Carolina;
3. Attracting and leveraging private sector investment and entrepreneurial growth in environmentally conscious clean technologies and renewable energy products and businesses.

Consistent with the reporting requirements set forth in §143B-437.8 of the North Carolina General Statutes, this report details the commitment, disbursement and use of funds allocated from the NC Green Business Fund during the period June 30, 2008 – June 30 2009 ("Fiscal Year 2009" or "FY2009").

This report is filed with:

1. The Joint Legislative Commission on Governmental Operations.
2. The chairs of the House of Representatives and Senate Finance Committees.
3. The chairs of the House of Representatives and Senate Appropriations Committees.
4. The Fiscal Research Division of the General Assembly.

Eligibility requirements and review process:
The North Carolina Board of Science and Technology, a division of the North Carolina Department of Commerce, administers the Fund. An applicant must satisfy four conditions in order to be eligible to apply for the program:

1. The applicant must be an eligible to apply during the Solicitation period and have its principal place of business in North Carolina.
2. An applicant cannot apply for a second award for activity for which the applicant has already received an award.
3. Any applicant that, in the judgment of the Board, has failed to correct a material breach of an award agreement or of any grant agreement under any program administered by the Board or the State of North Carolina is ineligible to submit an application.
4. Applicants are required to satisfy any other eligibility requirements established by the Board and published in a Solicitation.

To be eligible for funding, applicants must demonstrate that:

- The proposed project is technically sound and to be undertaken by an applicant with the necessary technical, financial and management capacity;
- The proposed project is undertaken in a collaborative and innovative manner as appropriate*;*

- Any new technologies and any related intellectual property developed during the performance period will be commercialized in a timely manner in relevant market sectors; and
- The funding is necessary to ensure that the project proceeds in a manner to ensure broad benefits to North Carolinians.

Solicitations are issued by the Board, inviting eligible applicants to submit an application and written proposal for an award. Under the Fund, awards can be made to eligible organizations for up to the maximum amount of $100,000. An Advisory Committee, composed of scientists, engineers, and qualified experts (including industry, academia, and other Government agencies) drawn from across the state from both inside and outside of the Board, evaluates the merit of proposals. To avoid any potential conflicts of interest between the applicant and the prospective reviewer; reviewers are required to sign a Conflict of Interest and Nondisclosure Agreement with the Board, and to recuse themselves from review of any proposals that may pose a conflict of interest.

Commitment and Disbursement of funds

In Fiscal Year 2008, the NC General Assembly appropriated $1 million to the Green Business Fund, of which $50,000 was allocated to a grant administrator position. The remaining $950,000 was awarded to 13 North Carolina small businesses as described below. Funds for these awards were encumbered and paid in Fiscal Year 2009 as listed below:

Organization Name	Organization City	Total Encumbered	Total Paid
3F, LLC	Raleigh	$100,000.00	$75,000.00
Alganomics, LLC	Southport	$60,000.00	$45,000.00
Blue Ridge Biofuels, LLC	Asheville	$77,737.00	$58,302.75
EcoCurrent, Inc.	Raleigh	$100,000.00	$50,000.00
Evans Environmental Energies,Inc	Wilson	$75,000.00	$56,250.00
Kyma Technologies, Inc.	Raleigh	$60,000.00	$45,000.00
NanoTechLabs Inc.	Yadkinville	$70,000.00	$35,000.00
Nextreme Thermal Solutions, Inc.	Durham	$57,319.00	$57,319.00
OrganoFuels Incorporated	Asheville	$81,944.00	$81,797.00
PhazeTek Corporation	Greensboro	$75,000.00	$56,250.00
Piedmont Biofuels	Pittsboro	$75,000.00	$56,000.00
Rain Water Solutions	Raleigh	$18,000.00	$9,000.00
Sencera International Corporation	Charlotte	$100,000.00	$50,000.00
Total Budgeted		***$950,000.00***	***$950,000.00***
Total Encumbered/Paid		***$950,000.00***	***$674,918.75***
Balance		***-0-***	***$275,081.25***

Funds are disbursed in three installments: an initial payment of 50% when the award is made, a second payment of 25% upon acceptance of a six-month progress report, and a payment of the remaining 25% upon acceptance of a final report. The balance of $275,081.25 in unpaid funds reflects the amount encumbered for payment to grant recipients who have yet to submit a final report.

Use of Funds in FY 2009:

Funds were awarded to the small businesses listed above for the following purposes:

- **3F, LLC**: to develop a new natural fiber reinforced concrete formulation. The resulting lighter weight and yet stronger and tougher concrete will directly enhance the merits of precast concrete. Less weight for the same structural efficiency will reduce material use and dead load, and save transportation cost.
- **Alganomics**: to produce reliable, environmentally responsible, natural and renewable bioproducts from algal sources, and promote the use of renewable energy alternatives. The primary bioproduct is extracted oil/fatty acids for use as a biodiesel fuel feedstock.
- **Blue Ridge Biofuels**: to develop and commercialize the conversion of low quality fatty acids into biofuel through an innovative purification method.
- **Ecocurrent**: for a novel technological process that will divert hog manure from lagoons and convert it to electric power in an economically viable manner and valuable byproducts such as fertilizer and building materials.
- **Evans Environmental**: to remove residual water in the final stage of biodiesel production. The innovative process will facilitate production of commercial grade biodiesel by 300%.
- **Kyma Technologies**: to work with researchers at North Carolina State University to develop a normally-off power switch using novel process enabled by high quality substrates developed by Kyma.
- **Nanotech Labs**: to develop and commercialize an ultra-capacitor as an energy storage device that has extremely high volumetric capacitance but small overall dimensions.
- **Nextreme Thermal**: to manufacture a novel thermoelectric power generator capable of converting waste heat into usable electrical power.
- **Organofuels**: to manufacture an algae-based fuel for gasoline engines. The project offers the promise of making algae oil products completive with gasoline.
- **Phasetek**: to develop a new class of thermal transfer and storage building material for wallboards in order to facilitate thermal efficiency in buildings.
- **Piedmont Biofuels**: to implement a cavitational reactor to produce biodiesel fuel. The process uses less energy, has a much smaller physical footprint, and causes a more complete reaction with higher fuel yields.
- **Rain Water Solutions**: to develop the foundation for a new rain barrel manufacturing process that allows mass production capabilities to 1) meet increasing demand in a timely manner and 2) provide an inexpensive, appealing option to consumers desiring to collect rainwater.
- **Sencera**: to implement a Photovoltaic Solar Cell production facility in North Carolina based on a new thin-film manufacturing technology.

In Fiscal Year 2008-2009, the North Carolina General Assembly appropriated $1 million for the North Carolina Green Business Fund, $50,000 of which was allocated to a grant administrator position. The remaining $950,000 in funds was awarded to 14 North Carolina organizations as listed below. Funds for these awardees have been encumbered and will be paid in Fiscal Year 2009-2010.

Organization Name	Organization City	Total Encumbered	Total Paid
Aerofab Manufacturing Corporation	Apex	$45,435	-0-
Caldwell Community College and Technical Institute	Lenoir	$81,000	-0-
Centralina Council of Governments	Charlotte	$85,000	-0-
Clean Marine Solutions	Wilmington	$84,602	-0-
CPS Biofuels, Inc.	Raleigh	$50,000	-0-
EnSolve Biosystems, Inc.	Raleigh	$50,000	-0-
FLS Energy Finance, LLC	Black Mountain	$60,000	-0-
Innova Homes, LLC	Asheville	$51,160	-0-
InnovaTech, Inc.	Morrisville	$53,317	-0-
Microcell Corporation	Raleigh	$80,000	-0-
NCSU Solar Center	Raleigh	$95,000	-0-
PlotWatt (formerly VisibleEnergy, Inc.)	Durham	$40,000	-0-
Semprius, Inc.	Durham	$99,486	-0-
Vesture Corporation	Asheboro	$75,000	-0-
	Total Budgeted	***$950,000.00***	***$0***
	Total Encumbered/Paid	***$950,000.00***	***$0***
	Balance	***$950,000.00***	***$950,000.00***

Use of Funds in FY 2010:

Funds were awarded to the small businesses listed above for the following purposes:

- **Aerofab Manufacturing Corporation**: to increase the efficiency of mist eliminators in metalworking facilities while decreasing the associated waste stream. Energy and water consumption are decreased.
- **Caldwell Community College and Technical Institute**: to build a mobile vehicle for green project demonstrations to educate residents and students on the green economy and how it can impact their business.
- **Centralina Council of Governments**: to integrate existing Charlotte-Mecklenburg Utilities (CMU) facilities and services with new biodiesel and create a market for brown grease (waste oil from food preparation found in the wastewater stream) as an input to biofuel production.
- **Clean Marine Solutions**: to fund a wastewater treatment system prototype that cleans water used in high-pressure boat cleaning that is currently polluting the water at marinas all over the country.

- **CPS Biofuels:** to develop a fuel additive made from glycerol (a waste product of biodiesel production). The additive improves fuel economy in gasoline and diesel engines by increasing octane.
- **EnSolve Biosystems**: to develop an oil water separator technology for small boats that uses bacteria to reduce/remove oil contamination from effluent that flows back into the waterways.
- **FLS Energy Finance:** to develop a solar hot water installation and financing system, which reduces the upfront cost of solar power and allows more consumers access to this green technology.
- **Innova Homes**: to develop a hybrid green modular product that merges the energy and material efficiencies of structural polyurethane-insulated floor, wall and roof panels with the factory construction cost and quality efficiencies of modular home construction.
- **InnovaTech:** to develop a novel method to harvest algae for use in biofuel production. This project will increase the efficiency of algae-to-biofuels conversion.
- **Microcell Corporation:** to produce environmentally-friendly fuel cells for emergency generator substations as an alternative to existing expensive and hazardous acid cell batteries with a shorter life span.
- **N.C. State University Solar Center**: funds will be used towards becoming an accreditation agency for solar thermal manufacturers. Currently Florida is the only U.S. state providing certifications, resulting in a 2-year backlog limiting companies from expanding their business and creating jobs.
- **PlotWatt (formerly VisibleEnergy):** to implement a home energy monitoring system that monitors specific appliances and behaviors that directly impact energy consumption. The technology calculates exactly how much energy can be saved.
- **Semprius**: to develop a Concentrated Photovoltaic system to concentrate solar energy through a lens, reducing the amount of expensive silicone cell needed and improving the overall efficiency of the system while reducing costs.
- **Vesture Corporation:** to ramp up production of a new home insulation product that uses phase change materials, reducing consumers' energy costs.