Florida Department of Environmental Protection
FY 2006-07 INNOVATIVE GRANT APPLICATION FORM

Project Information (on applicant letterhead)

1) **Applicant Name:** **Sumter County**

2) **Primary Contact Person:** **Sandra Howell**
Assistant County Administrator

3) **Complete Address:** **209 N. Florida Street**
Bushnell, FL 33513

4) **Telephone Number(s) (including SunCom number): (352) 793-0200**

5) **E-mail Address:** **Sandra.Howell@sumtercountyfl.gov**

6) **Project Title:** **Shelter from the Storm: Preparing and Enhancing Markets for Future Disaster Debris Diversion**

7) **Grant Request Amount:** **$200,000**

8) **Length of Project (months):** **18 months**

_____
Authorizing Signature

_____
Title

PROJECT ABSTRACT

(No more than 20 lines. Every word over 20 lines will constitute a one point deduction.)
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Florida's 2004 and 2005 hurricane seasons left a nearly incomprehensible amount of disaster debris in its wake – both FEMA and the DEP estimate that more than 52 million cubic yards of debris had been removed by March 2005. Nearly 90% of it has been burned or landfilled – beneficial use (recycling, composting, mulching, etc.) was very limited. The Florida Senate Interim Report 2006-121 concluded that needless disposal of vegetative disaster debris is a major concern and recommended that the legislature address legal and statutory impediments. This project will complement state legislative efforts to address impediments to beneficial use of disaster debris, as well as DEP efforts to track disaster debris generation, diversion and disposal.

This project has two objectives: 1) expand existing markets and develop new ones for products manufactured from disaster debris by focusing on both bulk commodities and consumer retail product as well as innovative business models and 2) identify and evaluate new segregation and processing systems suitable to the challenges of disaster debris (e.g., high capacity, mobile, and able to handle diverse composition) that produce materials for beneficial use.

The project will rely on quantity and composition data already gathered by FEMA, DEP and local governments. In partnership with the Florida Organics Recycling Center for Excellence (FORCE), we will work to identify new processing and manufacturing technologies, assess new business models, and identify new markets and expand existing ones. We will assist local solid waste managers to be better prepared for beneficial use of disaster debris in the future. We will solicit feedback from solid waste managers in the field dealing with day-to-day issues of debris management; evaluate recycling and composting equipment and technologies appropriate for disaster debris processing; and work with product end-users to develop and expand markets.

PROJECT DESCRIPTION

(1 page)

In 2004 and 2005 eight hurricanes struck Florida generating massive amounts of disaster debris. Since we are likely entering a 10-20 year cycle of more frequent and intense storm activity,[1] it is incumbent upon us develop better systems for managing disaster debris.

The Florida Senate recently published a report concluding that hurricane-related disaster debris is a high priority and Florida needs to "…find innovative ways to remove such materials from the traditional waste stream."[2] A 2005 survey of Florida communities determined that only 11% of vegetative debris went to compost or mulch; the remainder went to biomass fuel, landfill cover and landfill.[3] Yet, local solid waste managers desire markets that divert disaster debris from the landfill.[4]

This project focuses on two questions: What innovative processing/manufacturing technologies and business models can be created to utilize disaster debris? What strategies and practices can be implemented by the public sector to develop new markets and expand existing ones? Project work will include:

Market Assessment: We will identify three specific products that may be manufactured from disaster debris (e.g., bagged mulch/compost, manufactured fireplace logs, and bulk mulch). We will include both retail consumer products and bulk commodities. We will estimate market capacity, market value, and product quality requirements. We will map the market structure and assess the potential to absorb Florida disaster debris.

Equipment and Technology Evaluation: Using information gathered in the market assessment, we will identify and evaluate innovative segregating and processing systems. We will utilize the FORCE equipment and technology database as well as interviews with recycling market development officials, equipment vendors, existing processors/manufacturers, and local solid waste management officials.

Market Development Research: In partnership with FORCE, we will evaluate existing market infrastructure, identify barriers (actual vs. perceptual, FEMA vs. state, product quality, market size, etc.), identify process and product specifications, and evaluate innovative market development strategies. We will seek to expand existing markets and identify new ones for both bulk commodities as well as retail consumer products. We will identify and assess two innovative manufacturing business models (e.g., 1) a for-benefit business that manufactures retail products and donates profits to hurricane relief projects; and 2) an inter-municipal agreement for mobile services to produce and market value-added products from a network of disaster debris management sites).

Outreach and Education: In order to disseminate results of our work, we will prepare the following resources:

- Sample disaster debris management contract language that encourages reuse, recycling and composting while adhering to federal, state and local requirements;
- Sample inter-governmental agreement language for mobile processing and segregation services;
- Technology assessments and best management practices for segregation/processing systems;
- Market profiles and assessments; and
- Sample business plan and financial pro-forma for innovative manufacturing and business models.

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[1] Jarrell, Jerry D., et al., The *Deadliest, Costliest, and Most Intense United States Hurricanes from 1900 to 2000*, National Oceanic and Atmospheric Administration, October 2001.

[2] The Florida Senate, *Interim Project Report 2006-121 – Review of the Solid Waste Management Act*, September 2005.

[3] Burgiel, Jonathan and Chuck McLendon, *Green sweep: Florida communities reel from hurricanes, learn valuable lessons*, MSW Management, September/October 2005.

[4] Personal communications with at least ten local solid waste managers, October 2004.

Criteria 1: TECHNOLOGIES

(1 page)
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(35 points) 0-15 points for meeting one of the following sub-criteria, up to10 more points for meeting two, and up to 10 more points for meeting all three. Note: applicant may adjust space used to address each sub-criteria.

Sub-criteria 1 – Not in common use in Florida

Most Florida communities have managed disaster debris based on FEMA directives and DEP Emergency Orders – develop a disaster preparedness plan, put a disaster debris contract in place, and if a hurricane hits mobilize collection and get rid of the debris as quickly as possible. The priority has been on getting rid of the debris, not on maximizing its reuse, recycling and composting. The vast majority of disaster debris has gone to landfill and boiler fuel – in a survey of several Florida communities affected by 2004 hurricanes only 11% of debris went to compost or mulch; the remainder went to biomass fuel, landfill cover and landfill.[5]

Through this project, we plan to initiate a paradigm shift to make re-use, recycling and composting an integral part of disaster debris management. We will investigate segregation/processing systems, market development strategies, and business models not in common use in Florida. Part of our research will focus on retail consumer products manufactured from disaster debris.

Sub-criteria 2 – Novel application of an existing technology or process.

We will interview recycling market development officials, equipment vendors, as well as existing operators to identify innovative segregation and processing technologies. We will investigate segregation and processing systems that could be used as part of regional, mobile infrastructure. We will seek novel applications of existing systems that may utilize disaster debris as a new feedstock (e.g., manufactured fireplace logs). We will also research small or non-traditional end-users, such as soil blenders, sawmills or local craftspeople to fully explore the range of potential debris outlets.

Sub-criteria 3 – Overcoming obstacles to recycling/waste reduction in new or innovative ways

Marketing: Large volumes of disaster debris are saturating known bulk commodity markets. This project aims at identifying new retail consumer markets (e.g., bagged horticultural products, fireplace logs); new bulk markets (e.g., soil blenders and sawmills); as well as expanded current markets.

Material Segregation: We will identify practical but innovative solutions for segregating disaster debris, in particular C&D debris, into recoverable material categories (e.g., mobile systems). Markets generally exist for segregated debris; the market development challenge is creating additional processing capacity for mixed debris. We will identify and assess innovative systems and novel applications of existing systems to this problem.

Mobilization: Managing the large amounts of disaster debris in a short period of time is a major obstacle. We will develop model contract language to help address this issue efficiently and cost-effectively. We will identify barriers (technical, perceptual, regulatory, and market) to re-use, recycling and composting.

[5] Burgiel, Jonathan and Chuck McLendon, *Green sweep: Florida communities reel from hurricanes, learn valuable lessons*, MSW Management, September/October 2005.

Criteria 2: TARGETS

(1 page)
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(10 Points) Demonstrate innovative processes to collect and recycle or reduce these targeted materials/sectors: Construction and Demolition Materials, Commercial/Institutional Sectors, Waste Tires. Note: if the proposed project also includes materials/sectors other than those targeted by this criteria, the project will receive less than the maximum 10 points allocated for the criteria.

This project targets disaster debris resulting from hurricanes and other catastrophes:

- Vegetative debris such as trees, stumps, brush, and leaf and yard waste, as well as wood waste from C&D debris.
- Construction and demolition (C&D) debris resulting from destruction of homes, commercial buildings and other structures.

The Florida Senate recently published a review of the Solid Waste Management Act in which storm debris is highlighted. The report notes that "Much of the construction and vegetative debris can be recycled or disposed in ways other than … landfill." The report concludes that hurricane debris is a high priority and that the state needs to "…find innovative ways to remove such materials from the traditional waste stream."[6]

Obviously, the quantity of disaster debris generated is dependent upon the severity of the hurricane and where it reaches landfall, with those areas most directly hit experiencing greater quantities of C&D debris. FEMA estimated that the four 2004 hurricanes and associated flooding left more than 52 million cubic yards of debris in their wake in Florida,[7] or an estimated 8 million tons.[8] Models used by DEP estimate that this figure could reach 75 million cubic yards if wastes from the rebuilding process are included,[9] or over 11 million tons.[10] In comparison, the *total* amounts of C&D debris and yard trash generated in Florida in 2002 were approximately 7 million and 3.6 million tons, respectively.[11]

The vast quantities of disaster debris overwhelm the existing sorting, processing, and marketing infrastructure. Market development is essential if Florida communities are to respond to the Senate's priority. This project addresses institutional, technological, and informational barriers to market development. One of the keys to reuse, recycling or composting disaster debris is segregation and processing. The City of Los Angeles successfully accomplished this following its January 1994 earthquake. The city developed contracts with existing businesses to recycle clean source-separated materials and worked with more than nine businesses to develop processing capacity for mixed debris. The city recycled over 86% of the 1.5 million tons of debris generated.[12] For this project, we will evaluate innovative sorting and processing systems with specific focus on mobile systems that can service multiple processing sites.

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[6] The Florida Senate, *Interim Project Report 2006-121 – Review of the Solid Waste Management Act*, September 2005.
[7] FEMA, "Storm Aid Exceeds $1.27 Billion," New Release, October 8, 2004.
[8] Using a conversion factor of 300 pounds per cubic yard.
[9] Johnson, Jim, "Fla. storm's impacts expected to linger for a year or more," *Waste News*, October 25, 2004.
[10] Using a conversion factor of 300 pounds per cubic yard.
[11] Florida Department of Environmental Protection, *Solid Waste Management in Florida, 2001*, page 19.
[12] US Environmental Protection Agency, *Planning for Disaster Debris* (EPA530-K-95-010), December 1995.

Criteria 3: BENEFITS

(1 page)
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(35 points) Demonstrate the potential economic, environmental, and cost-effectiveness of the program's approach. Note: applicant may adjust space used to address each sub-criteria.

Sub-criteria 1 – Environmental Benefits (15 points)

- Methodology

The goal of this project is to make reuse, recycling and composting an attractive solution. By focusing on developing both bulk and retail markets we address two issues: need for markets large enough to handle the vast amounts of disaster debris and high value-added markets that increase economic incentives for waste diversion thereby reusing, recycling, and diverting the material from disposal.

- Toxicity

We will rely on best practices recently identified by a SWANA working group and RFT organics committee to ensure that procedures are followed for identifying and removing hazardous or toxic materials (e.g., chemicals and propane tanks), as well as pressure-treated wood, from segregated materials.

Sub-criteria 2 – Economic Benefits (10 Points)

This is essentially a market development project addressing the various components of a comprehensive approach for a specific target material. The results of the project are intended to increase market capacity and create new market niches, including high value-added products. Identifying new and expanding existing markets can lead to numerous economic benefits, including significant savings in disposal costs, preservation of landfill capacity, expanded markets, and economic development in these markets.

Sub-criteria 3 – Cost Effectiveness (10 Points) Includes, but is not limited to, cost reduction, payback period, sustainability, and cost-effectiveness.

This project has the potential to reduce costs to FEMA, the State, and local governments of managing disaster debris. Based on FEMA's estimate of 52 million cubic yards of disaster debris in 2004 and assuming an average cost savings of $13/cy of disaster debris diverted from disposal,[13] this project would break even if only an additional 15,400 cubic yards, or 0.04% of the estimated disaster debris generated by the 2004 hurricanes, were recovered for reuse, recycling or composting. The payback period could be as short as the next hurricane or storm.

The sustainability of this project is best demonstrated by the desires of local solid waste managers to find better options for managing their disaster debris. Florida will undoubtedly experience more hurricanes, and improving the infrastructure and markets for diverting disaster debris from disposal will surely be welcomed and can only have positive results.

One of the main intended end results of this project is to increase the cost-effectiveness of managing future disaster debris by improving how it is handled and expanding markets. In addition, our partnership with FORCE and working with private sector vendors and end-users that have experience and resources related to this work will enhance the cost-effectiveness of this project.

[13] Based on the average of the following estimates: $6/cy to burn in an air curtain incinerator and manage the resulting ash, and $20/cy to dispose in an unlined landfill.

Criteria 4: TRANSFERABILITY

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(10 Points) Demonstrate transferability of technology and processes and specify how the project will promote transferability. Note: applicant may adjust space used to address each sub-criteria.

Sub-criteria 1 – Transferability of technology and processes (5 points)

The results of this project will be applicable to every city and county in the State. We will ensure that the results of the project will be disseminated specifically to solid waste managers and economic development agencies in those areas hardest hit by the 2004 & 2005 hurricanes.

We will strive to enhance the market infrastructure throughout the State by working with end-users in various locations. Other resources resulting from this project, including the technology assessments, best management practices, sample contract language, and equipment and technology evaluation, will also be useful to all communities.

Sub-criteria 2 – How project will promote transferability (5 points)

Several communities have already expressed an interest in this project, including Hillsborough, Pinellas, Seminole, and Alachua counties and the Cities of Tampa and Tallahassee. We will engage interested local solid waste managers in the dialog early on in the project during our market assessment and technology evaluation. This should promote a sense of ownership in the project and make them more interested and receptive to the resulting recommendations and resources.

The technology assessments, best management practices, sample contract language, market profiles, and sample business plans and pro-forma will be made available through DEP's and/or FORCE's websites. Hard copies of the materials will be made available upon request.

In addition, we will evaluate the level of interest in attending a workshop to present the project results. If this is not feasible because of travel concerns, we will look for opportunities to piggyback a workshop onto an existing SWANA Florida Sunshine chapter or RFT conference or through future RFT organics committee meetings.

FORCE will also prove to be a valuable partner in disseminating the equipment and vendor information and in helping to facilitate matches between disaster debris generators and product end-users. We will also communicate with agricultural extension agents to serve as a conduit of information regarding agricultural end-users. The transfer of market and end-user information to local governments will be useful in enhancing the recycling and composting infrastructure in Florida.

Criteria 5: LOCAL SUPPORT

(1 page)
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(10 Points) Demonstrate local support for the proposed project in commitment of cash or in-kind matching funds. Please provide the name, address and phone number of ALL contributors.

- **00 points 0% up to and including 1% of total project cost**
- **01 points Greater than 1% up to and including 10% of total project cost**
- **02 points Greater than 10% up to and including 20% of total project cost**
- **03 points Greater than 20% up to and including 30% of total project cost**
- **04 points Greater than 30% up to and including 40% of total project cost**
- **05 points Greater than 40% up to and including 50% of total project cost**
- **06 points Greater than 50% up to and including 60% of total project cost**
- **07 points Greater than 60% up to and including 70% of total project cost**
- **08 points Greater than 70% up to and including 80% of total project cost**
- **09 points Greater than 80% up to and including 90% of total project cost**
- **10 points Greater than 90% up to and including 100% of total project cost**

In-kind Contributors:

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Total Project Budget	$ 255,100
Grant Request	$ 200,000
Local Support	$ 55,100
% of Project Budget	21.60%

Local support includes the following:

In-kind match: County and FORCE staff time, travel and supplies.

Cash Match: FORCE's contribution toward contract services related to the product trials, including services for grinding, screening, transportation and materials analysis.

BUDGET

(1 page using Budget Table Template)
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Describe the project's budget allocated by task and budget categories per the Budget Table Template available from DEP's Innovative Grants web site in Microsoft Excel digital format (www.dep.state.fl.us/waste/categories/recycling/pages/InnovativeGrants2006-07.htm).