

**Florida Department of Environmental Protection
FY 2005-06 INNOVATIVE GRANT APPLICATION FORM**

Project Information (on applicant letterhead)

- 1) **Applicant Name: City of Gainesville Public Works Department - Solid Waste Division**
- 2) **Primary Contact Person: Gina Hawkins**
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- 5) **E-mail Address: hawkinsrm@ci.gainesville.fl.us**
- 6) **Project Title: The Green House**
- 7) **Grant Request Amount: \$175,968.08**
- 8) **Length of Project (months): 12 months for initial re-building of center. The center is expected to operate at least for 60 months and, if possible, indefinitely.**

Authorizing Signature

Solid Waste Manager
Title

PROJECT ABSTRACT

(No more than 20 lines. Every word over 20 lines will result in a one-point deduction by grant application reviewers.)

The City of Gainesville Solid Waste Recycling Division is applying for innovative grant funding in order to initiate the remodeling of an existing structure for the purposes of recycling education. The primary goal of the center is to increase the awareness of the public about the importance of recycling, waste reduction, and environmental conservation in general. By expanding the public's knowledge base, those individuals are better prepared to evaluate their current practices and the impact of those decisions on waste management and the ecological landscape. Also, participants will be given a sense of future circumstances if changes in attitudes and behavior are not adopted. The program is grounded in community involvement as well as hands-on activities and field trips to recycling facilities. Through the use of innovative technologies, it is possible to attain LEED-EB accreditation for the building, making it a working example of the sustainable society. The center will house a waste reduction education and sustainability studies center. Dubbed "The Green House," this center will offer both children and adults a dynamic environment to interact with each other, educators, and the world via the Internet on conservation, recycling and other waste reduction issues. By expanding the public's knowledge on these issues, individuals will retain a deeper understanding of the impact we have on our environment and the future availability of natural resources.

PROJECT DESCRIPTION

(1 page)

The City of Gainesville Solid Waste Division will renovate a pre-existing structure dubbed “The Green House” next to its main offices near downtown Gainesville, FL. The building is currently under lease by the city for one-year and is being evaluated on whether it is to be purchased outright as a long-term operations center. The renovated structure will be converted for educational use to teach the general public about recycling, waste management and conservation. Private organizations have already committed financial support and in-kind aid. The City of Gainesville will cover the utilities and salaries of Division staff working on the center and its projects.

This project is designed around the concept of creating a successful learning environment within a facility that espouses the principles it is supporting. By renovating an existing structure to be green, not only will a building be less consumptive of resources and energy dependent, but it will have been built in one of the most sustainable ways, reuse. Reusing standing structures drastically reduces the amount of material needed to establish a new use for the building. By adopting this approach, each facet of the remodeling may be used to describe the value of renovation, the [LEED-EB](#) accreditation, and how it helps to reduce construction materials and demolition waste. In addition, this process carries intrinsic value by strengthening community integrity through preserving local identity and under the right set of circumstances can cost significantly less to achieve a greater value.

This project is envisioned under the right circumstances. Located near Gainesville’s urban core, The Green House is conveniently positioned within the community near mass transit and bike routes. Residential areas are within walking distance as-well-as cultural landmarks. All this contributes to the center being well positioned as a strong part of the Gainesville community and to receiving program participants.

There are already 11 different initiatives the center has prepared for community education. The interior partition walls are to be designed to have plexi-glass, see-through panels evenly spaced to display different recyclable material alternatives used in the construction of the walls such as: metal studs, plastic lumber, cellulose insulation, ground rubber insulation, etc. The underscoring principle of this working example is to showcase construction material alternatives that are either renewable or recyclable to reduce construction material production and demolition waste. These various educational devices in conjunction with work areas dedicated to topics like commercial/institutional recycling and waste tires, will firmly communicate sustainable principles and methodology to center participants.

A major contributor to the low level of recycling in Gainesville is the constantly migrating population of students and faculty from the University of Florida. The Green House will offer programs to educate and engage both migrating and permanent residents in the City’s local waste and energy conservation efforts. Many residents, businesses and institutions do not know what to do with unwanted items. This causes them to ignore the services offered and alternatives available. The center will centralize and make information available to the public regarding waste management and energy conservation concerns and interests. This service will help reduce the amount of solid waste going to the landfills.

A large part of the center’s mission will be the education of children. Programs and activities will be designed for school groups, after school programs, vacation series, weekly/monthly series, one-day workshops and special events. The City of Gainesville Solid Waste Division will design and deliver the programs in collaboration with: a) Alachua County Environmental Protection Department; b) faculty members and graduate students of the University of Florida’s School of Forest Resources and Conservation, Environmental Engineering Sciences, the Institute for Food and Agricultural Sciences, and the School of Natural Resources and the Environment; c) Alachua County Offices of Waste Alternatives and Cooperative Extension staff; e) the Florida Center for Solid and Hazardous Waste Management; and f) other public and private agencies.

Criteria 1: TECHNOLOGIES

(1 page)

(35 points) 0-15 points for meeting one of the following sub-criteria, up to 10 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-criterion.

Sub-criteria 1 – Not in common use in Florida

The Florida House in Sarasota, FL, is the only remotely similar project in the state. The Green House will go beyond what is offered at the Florida House by offering continuous programs and function as a full-time resource for education about waste reduction and solid and hazardous waste management. No other buildings in Florida have been built or rebuilt with the exclusive purpose of showcasing waste reduction technology. LEED-EB (Leadership in Energy and Environmental Design – Existing Building) Standard has just been reevaluated and put forth as sustainable policy by the United States Green Building Council (USGBC). This would be one of the first structures to apply for the new Existing Building Standards in the state, and would be useful as a benchmark for future sustainable development. Also, no other program besides The Green House has brought together this number and variety of organizations that the City of Gainesville seeks to include in this project.

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

Many buildings have been deconstructed for the recovery of materials for reuse, or have been constructed out of reused material. However, no building has been ‘reconstructed’ to demonstrate the technologies and materials available to reduce waste. The public education specialist for the City of Gainesville performed an exhaustive survey of municipalities throughout the state of Florida and North America and found only ten centers even remotely similar to the proposed center. Those centers are: Montgomery County, MD; The Florida House in Sarasota County, FL; Rockland County, NY; Scott Area Recycling Center in Davenport, IA; The Solid and Hazardous Waste Education Center in WI; The Garbage Garage in Larimer County, CO; Recycling Education Center in Broomfield, CO; Ocean County (NJ) Recycling Education Center; and the Mobile Environmental Education Center; Environmental Education Center (IA).

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

Each element of the center will be achieved in a way that allows the minimum disposal of materials and the maximum efficiency in energy use, water use and reduction in emissions and toxicity. This includes:

- Adding windows for natural lighting to reduce dependence on electricity drawing fixtures
- Gerber 21-015 Aqua Saver – 1.6 gallons/flush toilet (lowered water usage by approximately 3.4 gallons/flush)
- Falcon Waterfree Technologies – Waterless urinal (minimal upkeep, 40,000 gallons/water/year/fixture saved)
- Armstrong Acoustical Ceiling Tile with grid (Improved IAQ, HVAC loading)
- Ceramic Tile Flooring – (carries acoustical properties while remaining the most sustainable flooring product)
- Ultimate Air RecoupAtoR– whole house energy recovery ventilator (improves ventilation by minimizing moisture levels, improving IAQ and reducing HVAC cooling load)
- Green Depot Power-Pipe - (drain water heat recovery system made of recyclable materials – reducing water heater energy consumption)
- Carrier Centurion Premium Constant Volume Rooftops 5-ton unit (SEER Rating: 14.2; EER 12.7 – very high energy efficient rating)
- Low E Glass Windows – double pain glass with advanced thermal properties
- Hydro-Tech Garden Roof Assembly – unique urban design that provides aesthetic value and R-value insulation

A primary obstacle to recycling/waste reduction is that citizens do not have the opportunity to see how the materials they sort for recycling are actually used. The center will expose citizens to innovative products.

Criteria 2: TARGETS

(1 page)

(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 these criteria, the project will receive less than the maximum 10 points allocated for the criteria.

The Green House will demonstrate techniques for Green Building and serve as a showpiece in the state of Florida for recycling buildings. Faculty from the Center for Construction and the Environment will provide workshops to builders and developers to raise their awareness and knowledge of the tenets of Green Building. Fundamental concepts of the L.E.E.D.S. and Energy Star programs will be explained and demonstrated. Examples of innovative materials will be on display at the center to give workers an opportunity to explore the mechanical aspects of working with new recycled-content or improved-efficiency products. This will serve to launch innovative waste reduction/recycling projects in new building and renovation projects and improve the collection and processing for recycling of Construction and Demolition (C&D) debris. Workers who are experienced in the use of these products will be matched with those people who are interested in using these materials for the first time. Graduate students in architecture, building construction and material sciences will be invited to have poster sessions to display their projects to the larger community beyond the university.

Commercial and institutional sector waste will be reduced by providing activities and workshops for businesses and other agencies, including universities, community colleges, hospitals, municipalities, and prisons. The center will enhance building and renovation projects by these sectors and provide expertise to assist businesses and institutions in implementing source reduction and resource conservation programs. Some of the materials to be used in the building include:

- Shredded tire driveway and rubber tire mulch for landscaping beds;
- Recycled-content rebar for interior walls;
- Recycled-content masonry facades for exterior walls;
- Natural light tubes;
- A solar water heater;
- PETE or other recycled carpet material;
- Recycled-content glass tiles for walls and flooring in restrooms;
- Motion on/off sensors for light switches;
- Programmed climate control;
- Yard trash mulch for yard paths; and
- Sustainable wood resources for trim.

Demonstrating the savings realized by utilizing these alternative materials and techniques will help develop new markets for recycled C&D debris. A primary obstacle to recycling/waste reduction is that citizens do not have the opportunity to see how the materials they sort for recycling are actually used. By exposing citizens to innovative products that they can actually put their hands on, recycling/waste reduction will become more concrete to them. Exhibits such as the energy bicycle will allow students to feel how much of their energy must be expended to match the energy figures that are used to describe recycling/waste reduction. Putting their hands on recycled carpet or tile and seeing the lighting effects of energy tubes will familiarize them with these items and make the products a more plausible choice when they furnish their own homes and businesses. It will allow recycling/waste reduction concepts to become real to them.

Waste tire processes include the recovery of rubber and steel belts. First, the steel from radial belts may be reprocessed and used for numerous metal products for building application. Second, the rubber recovered may be directly used by grinding and used for carpet underlayment. Additionally, rubber may be reprocessed and used for mulch and as a driveway paving material.

Criteria 3: BENEFITS

(1 page)

(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-criterion.

Sub-criteria 1 - Environmental Benefits (15 points)

- Methodology - The center's focus on source reduction and resource conservation over recycling and composting will serve to shift the community's emphasis toward the top of the waste reduction hierarchy. The following methods will be used:
 - a. Decreased fossil fuel consumption for energy, by using more energy efficient methods & materials
 - b. Improved IAQ (Indoor Air Quality) by occupant control
 - c. Improved physical and mental effects of healthy structure
 - d. Decreased fossil fuel consumption for water, by using more water efficient fixtures & systems
 - e. Use of recycled materials, thereby decreasing extraction costs on environment
 - f. Renovation of pre-existing structure, thereby severely reducing amount of materials needed to go into project
 - g. Recycled & recyclable materials, decreased land filling & construction waste after building life
- Toxicity
 - h. Green products have lower toxicity ratings, thereby reducing negative health affects
 - i. Explaining the need for proper disposal of products, i.e. tires, to reduce ecological impacts such as contamination of underground aquifers.

Sub-criteria 2 – Economic Benefits (10 Points)

- a. Lower electricity bills by utilizing energy efficient materials & practices (high SEER rated HVAC, natural lighting, and energy-efficient light fixtures).
- b. Lower water bills by utilizing water efficient fixtures and reduced piping
- c. Significantly reduced material need and cost by renovating pre-existing structure
- d. Reduced construction waste through renovation, limiting landfill impact
- e. Enhanced recycling understanding and increased emphasis for the need to recycle, saving future time, money, energy and resources
- f. Improved worker productivity (Research shows a conservative estimate of at least 1-2% increase in productivity for workers in green buildings)

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

- c. Reduced life-cycle costs (energy consumption, water, maintenance)
- d. Superior performance and sustainability justify potentially increased costs
- e. Comparable initial costs in product alternatives
- f. Able to achieve more goals with less money by renovating pre-existing structure
- g. Give further credence to LEED accreditation by adding to the list of LEED certified structures
- h. Promoting reduced energy costs by further legitimizing sustainable practices

Criteria 4: TRANSFERABILITY

(1 page)

(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-criterion.

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

The principles used in the recycling of the center's infrastructure are completely transferable. The concepts used for reducing construction and demolition debris, improving energy efficiency, and reducing water consumption can be used in almost any residential or commercial building application. The techniques proposed have all been tested. However, most of these concepts are not in widespread use yet. The Green House will be a proto-type for future renovation construction and will be very transferable. As it will be a pilot LEED-EB project under the new standards in the state of Florida, each of the processes will be well documented and be made available to other municipalities, non-profit organizations and private businesses upon request.

Each of the outstanding technologies and processes used in this building are broadly transferable and are not confined to any one geographic region. The structural elements utilize recycled wood, concrete, and steel and are useful in any variety of climates. Wood, concrete, and steel are already used universally. Also unhindered by locale, the unique finishes are highly transferable: recycled wood for moldings, recycled glass for countertops, and recycled plastics for carpet. With mechanical systems, the mini split HVAC systems can be utilized in warmer and cooler environments. Grey water recycling is broadly useful for irrigation. Rainwater harvesting is the one process with somewhat limited transferability because it is not useful in regions with low rainfall rates.

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

The center will serve as a showcase for these concepts and increase the acceptance of these techniques. By partnering with University of Florida extension agents and the University of Florida School of Building Construction, these practices can make it into the mainstream of construction.

The Green House will promote transferability through the process of how things will be built. Since the processes of establishing a green building require extensive documentation, the specifications can be used as a helpful guide to other green building endeavors as a starting point to understanding the concepts intertwined in the sustainable construction approach.

The intent in design of this project is to provide the construction industry with a model for efficient use of waste products and sustainable design. Transferability will be more of a result or consequence of the effective implementation of this type of design rather than a task. While the ideas themselves are somewhat revolutionary, the processes and products are quite simple, and can easily be obtained throughout the built environment.

Criteria 5: LOCAL SUPPORT

(1 page)

(10 Points) Demonstrate local support for the proposed project in commitment of cash or in-kind matching funds.

- **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**

Currently, regional Gainesville private enterprises have already offered to donate over \$7,000 of in-kind donations such as mulch, plants, and recycled-content products, and \$3,000 in cash donations for computers. In addition, the City of Gainesville has committed to paying the center's utility bills, landscaping, maintenance, educational exhibits, as well as providing the salary for the City of Gainesville staff operating the facility, an aggregate value of \$79,416.24. The local matching contribution level for the City alone is 31% – 4 points.

BUDGET

(1 page using Budget Table Template)

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/InnovativeGrants2005-06.htm).