

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

Project Information (on applicant letterhead)

- 1) **Applicant Name:** Clay County
- 2) **Primary contact person:** Alan Altman
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- 6) **Project Title:** An Analysis of Management Policies that Encourage C&D Debris Recycling
- 7) **Grant Request Amount:** \$66,200
- 8) **Length of project (months):** 16 months

Authorizing Signature

Solid Waste Deputy Director
Title

PROJECT ABSTRACT

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

Construction and demolition (C&D) debris is a waste stream of interest in Clay County and other counties in Florida. Growing construction activity has resulted in greater volumes of this material being produced. While much of this waste stream is recyclable, very little is recovered for beneficial reuse in Clay County and similar mid-size but growing counties in the state. Although previous innovative recycling efforts have demonstrated that markets do exist for many C&D debris materials, results clearly indicate that issues beyond simple identification of markets must be addressed. Economic, physical, political, and psychological barriers all present real concerns that must be overcome for recycling practices to be sustainably implemented.

Policy-makers have several options to encourage, promote and develop C&D debris recycling practices in their jurisdiction. The aims of this innovative recycling grant are to identify the range of innovative policy options for increasing rates of C&D debris recycling in Clay County, to clearly evaluate the feasibility and true economic costs of each option, and to prepare recommended action plans for implementing viable options. Policies to be evaluated range from actions such as contractor waste reduction requirements to simple education programs. In addition to economic impacts, factors to be considered in the feasibility analysis will include possible legal restrictions, ease of implementation, and ability to overcome the barriers identified above. Once all of the factors have been considered, a scoring mechanism will be developed to score each policy based on the conditions that exist in the region being considered. This project will promote transferability of the lessons learned by Clay County to other counties by developing a policy-option guide and resource website, and by holding a workshop to review policy options and feasibility analysis.

PROJECT DESCRIPTION

(1 page)

Construction and demolition (C&D) debris remains a main concern for solid waste managers because of its volume and largely untapped potential for recycling. In addition, environmental impacts from C&D debris landfills in the form of odors and possible groundwater impact have provided impetus to find alternative methods for managing C&D debris. While waste reduction is a preferable method of waste management, recycling is an obvious way of keeping C&D debris out of landfills. Previous innovative recycling efforts in Florida have demonstrated that markets do exist for many of these materials and have evaluated different processing techniques, but the results clearly indicate that other factors act as impediments to wide-scale recycling. Gypsum drywall, for example, has been demonstrated to be recyclable from a market and processing standpoint, yet no sustainable drywall recycling activities are currently underway. Additional barriers, most notably economic barriers, have continued to make C&D debris recycling difficult in much of the state.

Although these barriers do exist, it is important to acknowledge that recycling of these materials has been successfully implemented in some areas of the country. In some cases, recycling becomes feasible because of regional economic differences, but in other cases specific actions by government officials and policy-makers have tipped the scales to make C&D debris recycling more attractive. In some cases, these policy options are relatively extreme in nature. For example, some parts of Canada ban drywall from disposal in landfills; this has resulted in the development of a sustainable drywall recycling industry. In some parts of California, jurisdictions require waste deposits for construction and demolition permits. These measures may not be economically or politically viable in some regions, but other less extreme measures have also been utilized in some areas. The state of North Carolina has a website that links C&D debris recycling with markets. The state of Georgia has developed literature to promote the start of small businesses such as job-site cleanup services (that often incorporate recycling). Some jurisdictions encourage or require contractors to develop waste management plans as part of the application process; this promotes recognition of waste generation and options for recycling.

Clay County proposes to evaluate all demonstrated and innovative policy initiatives that might be employed to foster sustainable C&D debris recycling opportunities for its residents and businesses. C&D debris generation has been increasing in recent years in Clay County as construction activity has increased. Residential construction costs, an indicator of C&D activity, have increased 79% since 2000. Reports to FDEP have shown that C&D debris represented 20% of the county's waste stream in 2001. The policy options will be identified by reviewing innovative approaches employed throughout North America. The options will be analyzed by assessing county-specific information such as cost of program implementation, potential economic or environmental benefit, public sentiment, legal requirements, ease of implementation, size applicability, and other factors. A methodology will be developed to score the options; this methodology will be documented so that other regions can apply a similar approach. Action plans for feasible policies will be developed to assist in future implementation. This project will promote transferability of the lessons learned by Clay County to other counties by developing a policy-option guide and resource website, and by holding a workshop to review policy options and feasibility analysis.

Clay County has assembled a project team that includes members of its solid waste staff, the University of Florida (UF) Department of Environmental Engineering Sciences, and the engineering firm Jones, Edmunds, and Associates (JEA). Both UF and JEA have successfully participated in previous innovative recycling projects.

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-criteria.

Sub-criteria 1 – Not in common use in Florida

C&D debris is certainly recognized as a priority for waste management and recycling in Florida. While some recycling operations exist in South Florida, there is a great untapped potential for C&D debris recycling in this region as well as Central and North Florida. The types of policies to be evaluated are not currently in place in Florida.

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

C&D debris policy options described in the *Project Description* do exist in some areas of the country. These policy options are not common place in Florida. Their application in Florida would be new.

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

It is not easy to convert the current system of C&D debris management into one that incorporates a large amount of recycling. There are several reasons for this, including physical barriers, economical barriers, political barriers, and psychological barriers. They can be overcome, however, as evidenced by other regions in the U.S. and in the world.

Physical barriers to C&D debris recycling start with the way that it is often collected. C&D debris is most often collected in large 20 to 40 cubic yard containers. Debris is mixed in these containers, reducing the ability of the material to be efficiently separated at an alternate location. Contractors do not have many options for separating the material on site, even if they want to. Since the containers do not have divisions in which to put different types of material, the only way to separate the material would be to order multiple containers – a costly option.

Economic barriers to C&D debris recycling include the low tipping fees at C&D debris landfills. These tipping fees make it difficult to create a system in which recycling provides an economically competitive option to disposal. Additionally, these tipping fees do not reflect the costs to the environment that the C&D debris poses. Possible contamination to the groundwater and unknown future impacts will pose still unknown costs.

Political barriers are those that are put up by other government regulators and industry representatives that fear the impact of C&D debris policies. Counties have some understanding of the possible political objection that may occur as a result of proposing new policies and can overcome such opposition with the right plan. These barriers can be overcome by involving industry and government representatives throughout a county plan and slowly introducing new policies so as to not shock the current system.

Psychological barriers to C&D debris recycling persist as it is simply difficult to change the current mindset of disposal. People are comfortable with the current system and are resistant to change, especially when they perceive no reason to change.

These barriers may possibly be overcome by enacting new and innovative policies. It is important to understand what obstacles exist in a region and which policies may possibly be used to overcome them.

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

This project targets construction and demolition materials, including those materials that generally comprise C&D debris: concrete, wood, drywall, asphalt shingles, metal, and cardboard. These materials have the most potential for recycling are more likely to have established markets. The policies to be analyzed in this project that target these materials include the following various strategies, but this analysis is not limited to just these listed here.

Recycling requirements for all construction projects in the county would ensure that at least a portion of the construction activity would be recycled. This policy would likely have many political barriers and a high potential for fraud as people strive to find a way out of this requirement. A less harsh policy would be to require that all governmental construction projects recycle a percentage of their waste stream. This would allow for the development of recycling infrastructure in the county without infringing on the free will of private enterprises. Additionally, it would show leadership by the government in providing a better environment for the public. This policy could also have drawbacks, as a lack of interest in recycling by private businesses despite the government's efforts.

Another policy to be explored is that of an advanced disposal fee. In this scenario, contractors would pay the disposal fee in advance to the County when purchasing a building permit. If the material is recycled, a portion of that fee would be returned to the contractor. This policy could promote high recycling rates, but could require a high amount of organization and accounting within the county system and with any area recyclers.

Job site clean up crews are those that come onto a site to clean up the debris after the contractor and workers have left a job site for the day. They have the opportunity to separate materials at the job site in a clean fashion and also have an incentive to recycle the materials if it is in their economic interest. An assistance program to help facilitate the change from the current dumpster-haul system to a job-site clean up crew would likely facilitate increased recycling rates. This option could have political, physical, and economic barriers and should be explored to determine its feasibility.

An outright ban of C&D debris from being disposed in C&D debris landfills is one of the most extreme methods for encouraging C&D debris recycling. This would dramatically cut any problems originating from C&D debris landfills and result in a massive increase of C&D debris recycling. Many problems may result from such a policy, however, and it may have many political barriers. A requirement for liners on all future C&D debris landfills is another radical way of increasing recycling, while having the very large added benefit of keeping contaminants out of the groundwater even if they are disposed into the landfill. A liner requirement will likely increase the tipping fee for C&D debris because of the increased cost to the landfill operator. This option could have many political barriers, but could prove to be in the best interest of the public.

Educational efforts are one of the least extreme ways of encouraging C&D debris. This can include websites that promote and describe how C&D debris can be recycled with links to area recyclers. While this program would not have many economic or political obstacles, questions arise regarding its effectiveness.

These are just some of the varied actions that a state or local government can take to move their county into an era that includes C&D debris recycling. Each analysis will include the various economic, physical, political, and psychological barriers and if the policy can overcome them.

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-criteria.

Sub-criteria 1 - Environmental Benefits (15 points)

- Methodology

The policy options to be evaluated primarily focus on recycling. However, any policy options that involve waste reduction will also be explored. Such programs include green building education programs and workshops for contractors. Thus, the solutions to environmental problems posed by C&D debris that are described in this project are solved using the top two tiers of the waste management hierarchy.

- Toxicity

Under currently Florida rules, C&D debris can be disposed in unlined landfills. Many components of C&D debris do contain elements that are potentially toxic to human health and the environment. Although the impact of unlined C&D debris landfills is currently a subject of debate in the state, early indications suggest that C&D debris landfills do have the potential to adversely impact groundwater quality in some locations. The promotion of recycling and source reduction of C&D debris will certainly be positive with respect to potential environmental impacts posed by these facilities.

Sub-criteria 2 – Economic Benefits (10 Points)

Several of the policy options that will be investigated include those that involve job creation (e.g., promotion of job-site cleanup and recycling services). Increased C&D debris recycling in general should result in additional job creation. Movement of materials out of landfills could help reduce possible future costs due to environmental impact from C&D debris landfills.

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

The premise of this work is that technologies will be evaluated for the cost effectiveness. This criterion is thus evaluated as part of the proposed methodology. Action plans will only be developed for those policy options that are viewed as cost effective.

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-criteria.

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

C&D debris is generated in every county in Florida. This material has been a concern with many of these regions as the volume of material has increased due to growth. Therefore, every county should have an interest in determining the best method for dealing with this material. This project will analyze a great range of policies which can be applied to many different regions. This project results will be greatly transferable all counties in Florida.

This project will lead to increased understanding of the benefits and negatives of C&D debris policies as they apply to our state, which will result in a spread of information to other surrounding counties regarding how they should or should not regulate C&D debris. In addition, it will promote the idea that counties should have a plan of their own to deal with this debris. Counties are now finding that they must have a plan for disaster debris. This debris is generally placed in C&D debris landfills, rapidly decreasing their capacity. Similarly, counties should have a plan for C&D debris as they continue to grow. Choices for where new landfills can be placed should be optimized to encourage recycling.

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

This project will promote transferability by allowing counties to view the positives and negatives of C&D debris policies and plans. One final product will be that of a guide that will present all of the results of the analysis as well as a description of how to apply the analysis to other regions. It will contain a description of each policy, the requirements for implementation, and expected success levels. In addition, it will contain case studies of governments that have implemented these policies, their success, and the conditions that led to the success level. It will also detail how other counties can apply the analysis to their county, citing Clay County as an example. Using this guide, counties can then choose the optimum plan or policy for their region and implement it accordingly.

A website will also be created to further spread the information gathered during this project. The website will contain similar information to the guide, but in an electronic format. It will include links to local recyclers, case studies, and other websites with helpful information for anyone attempting to recycle C&D debris in Florida. This website will be hosted by the University of Florida. The DEP can then link to this site from their webpage in an effort to spread the knowledge gained.

Finally, the project team will host a workshop for interested counties. This workshop will explain the project in detail and walk them through application of the results to other areas. Attendees will get a copy of the guide. This workshop can be conducted in conjunction with a conference generally attended by government solid waste managers, such as Solid Waste Association of North America (SWANA) conference or a Recycle Florida Today (RFT) conference.

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**

This project will be carried out in collaboration with the Clay County, University of Florida, and Jones Edmunds and Associates (JEA). The combination of these three efforts will supply the project with the drive and expertise to produce a well-researched, polished end-product with real goals of encouraging C&D debris recycling.

Clay County is interested in methods that may encourage C&D debris recycling in their county. As demonstrated earlier in this proposal, Clay County has seen an increase in growth that has led to an increase in the generation of C&D debris. Clay County will provide time in ensuring that the project is completed as accurately as possible so that the analyses can help the county decide what plan it should take in the future. They will provide guidance as to the County's desires and needs and also furnish data. Finally, they will participate in the workshop as part of this project to convey their experiences with this analysis to other counties. Clay County will receive \$10,000 of the project grant funds for project administration, data gathering, participation in the workshop, and personnel time. They will also contribute \$1,000 in kind in the form of guidance.

The Department of Environmental Engineering Sciences at the University of Florida has an established record of C&D debris research. Dr. Tim Townsend and his graduate students have performed numerous studies on various issues that surround C&D debris that has impacted the C&D debris industry nationally and internationally. Approximately \$41,200 of the project grant will fund a subcontract with the University of Florida. The requested budget is principally support for a graduate student who is pursuing her PhD in environmental engineering with a focus on C&D debris recycling policy. Dr. Townsend will contribute his time as an in-kind contribution for an approximate contribution of \$4,000.

JEA is a well-respected consulting firm that conducts multiple types of solid waste services around the state of Florida. Their expertise in the wide range of issues that counties face will aid the project in ensuring the transferability of the final products. They also have the capability of producing a polished, easy-to-follow guide with their in-house document production staff. In addition to document production assistance, JEA will assist in administering the project; \$10,000 is budgeted to cover these functions. Several of the senior solid waste engineers at JEA have agree to provide in-kind services on the order of \$3,000 for time spent on the project.

The total amount contributed as an in-kind match is \$8,000, or 10.78% of the total project budget. While this may seem low, the unique nature of this project requires a great deal of research with little room for contribution. The end results, however, will be well worth the cost of the grant.

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).

Applicant: Clay County					Project Title: An Analysis of C&D Debris Management Policies and Their Applicability to Florida Counties						
(1) Tasks	Categories								Local Match		(12) Total Grant Request
	(2) Personnel	(3) Travel	(4) Equipment	(5) Supplies	(6) Contractual	(7) Construction	(8) Other	(9)* Total Budget	(10) In-Kind Match	(11) Cash Match	
Background literature search	\$5,000							\$5,000			\$5,000
Policy and program analysis	\$11,000							\$11,000	\$1,000		\$10,000
Local and state data collection	\$16,000	\$1,500						\$17,500	\$2,000		\$15,500
Final analysis using Clay County and Florida data	\$17,000							\$17,000	\$2,000		\$15,000
Development of guide and workshop	\$13,000	\$1,000		\$1,000				\$15,000	\$2,000		\$13,000
Conduct a workshop	\$7,000	\$700		\$1,000				\$8,700	\$1,000		\$7,700
TOTALS	\$69,000	\$3,200	\$0	\$2,000	\$0	\$0	\$0	\$74,200	\$8,000	\$0	\$66,200

* NOTE: Column 9 is the total of columns 2 through 8. It also should equal the total of columns 10-12.

Percentage Match 10.8%

Background literature search. Find examples of policies that have been proposed or implemented in the US and other countries.

Policy and program analysis. Determine requirements and impacts of various policies.

Local and state data collection. Collect data regarding impacts on solid waste management policies in Clay County and in Florida.

Final analysis using Clay County and Florida data. Determine how policies can be implemented in Florida regions. Create the scoring mechanism.

Development of guide and workshop. Create a guide and workshop that discusses the results of the analysis and how they can be used in other areas.

Conduct a workshop. Put on a workshop for other counties to inform other counties of the transferability of these results.

FUNDS ALLOCATION: Grant funds will be allocated among the project members as follows: \$41,200 to the University of Florida for graduate student time, travel and supplies, \$10,000 to JEA for project administration and guide development, and \$10,000 to Clay County for project administration and personnel time.