

# MUNICIPAL SOLID WASTE REDUCTION AND REUSE MEASUREMENT GUIDE

## SECTION 1

### PROJECT OVERVIEW

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<b>Requested Amount</b>	\$228,000	<b>Project Timeframe</b>	June 2001 – November 2002

**Project Abstract:** In the early 1990's, the U. S. EPA established a Municipal Solid Waste (MSW) hierarchy for the proper management of U.S. generated MSW. This waste management “pyramid” highlights the 3R's – reduce, reuse, and recycle – as the most environmentally beneficial methods for managing MSW.

Despite a strong focus on recycling to date, no emphasis has been placed on MSW reduction and reuse in the State of Florida. The reasons for this are twofold. First, due to State requirements, most counties have been told to focus their waste reduction efforts on curbside and drop-off recycling to recover a majority of the “Minimum 5” within their county. Secondly, the State has emphasized measurement of recycling occurring in the State, but has offered no guidance or standards on how to measure waste reduction and reuse efforts or obtain credit for doing so. The State's silence on MSW reduction and reuse has resulted in local governments overlooking the potentially significant waste reduction that could be achieved if communities focused on implementing such “pre-recycling” initiatives. Based on estimates from other parts of the country, properly implemented MSW reduction and reuse programs can add 3 to 7 percentage points to a typical county's waste reduction rate. This is particularly important to many Florida counties that have to achieve a mandated 30 percent waste reduction goal.

Polk County is proposing a groundbreaking project that would provide all Florida counties with the tools necessary to successfully implement MSW reduction and reuse programs, measure the results, and improve their waste reduction rates.

**Project Summary:** Waste reduction includes activities in both the residential and business sectors. For instance, residents can reduce wastes by taking their names off junk mailing lists and using longer lasting hardwood or tile flooring as opposed to carpeting. Businesses can reduce waste by using reusable plastic containers (for shipping fruits and vegetables, for example) instead of non-recyclable waxed corrugated containers or using air hand dryers as opposed to disposable paper hand towels. All of these activities could help counties meet the State waste reduction goals. However, the lack of methodology to use in measuring and taking credit for such waste reduction and reuse activities has resulted in no active promotion of such “pre-recycling” initiatives. The purpose of this project will be to identify the latest in national waste reducing strategies and develop a methodology for measuring these MSW reduction and reuse activities -- thereby providing counties with the incentive to promote such environmentally preferable waste diversion and reuse activities and programs.

**Phase 1 – Development of Programs and Methodologies:** The first step in the project will be to identify the latest in MSW reduction and reuse activities and develop measurement protocols targeted at major sources of MSW generated in Florida, such as C&D, carpeting, yard waste, office paper, and other commercial and residential materials. A committee of national waste reduction experts from the public and private sectors (e.g., California Integrated Waste Board, NRC source reduction award winning communities, American Plastics Council) will be convened to identify the latest MSW reduction and reuse options for use in the State. The committee will then assist in developing a draft set of measurement approaches applicable to Florida, identify their benefits and drawbacks, and propose a final set of hybrid measurement approaches that could be easily implemented throughout the State of Florida.

**Phase 2 - Pilot Testing of Waste Reduction/Reuse Programs:** Once the programs have been identified and implementation plans developed, the programs will be field-tested through a series of pilot programs in various communities across the State. Several cities and counties including Volusia County have already expressed interest in serving as test pilot sites. Polk County intends to use the services of consultant R.W. Beck, Inc., to implement the field testing of the pilot programs and to facilitate committee sessions. The pilots will include program promotions and public education to increase program participation. Data collection will occur prior to program implementation to provide a baseline, and upon completion of the pilots in order to measure the impact of the field-tested MSW waste reduction and reuse programs. This data will then be used to identify which programs present the greatest potential for increased waste diversion in the State.

**Phase 3 – Measurement Guide and White Paper:** The findings will be used to develop a draft MSW reduction and reuse measurement guide. A white paper describing the proposed MSW reduction and reuse methodology and its benefits will then be prepared and submitted to FDEP for consideration as a change in the way the FDEP measures waste reduction in Florida. Workshops will be developed and held in conjunction with RecycleFlorida Today or other waste reduction training venue such as the TREEO training recycling coordinators.

## SECTION 2

# INNOVATIVE TECHNOLOGIES AND PROCESSES

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To date, Florida's efforts have focused on recycling as the primary means to achieving waste reduction. This focus is understandable, for the primary reason that post-consumer recyclable material can be easily quantified. Consider an example: XYZ County has found through several studies that a significant quantity of carpet is being disposed in the county. The county has sufficient population density and funding to justify a pilot carpet collection and recycling program, and fortunately has identified a market for carpet that is reasonably local. Because of these fortuitous factors, the county subsidizes the construction of a collection center and implements a program to encourage general contractors to deliver used carpet to the center for recycling. Such a program change will almost certainly have "positive" effects, and will clearly demonstrate an effort to improve waste reduction. The increased tons collected in the program can be easily measured and touted to elected officials and the public at large as a successful improvement to the recycling program. Additionally, the tons will show up at one of the certified recovered materials dealer facilities tracked by FDEP, assuring that the county gets "credit" for the increased tons.

No such clarity of measurement and reporting exists with many forms of waste reduction. Consider the same example of XYZ County as described above. As an alternative solution, the county could have implemented a program to encourage residents to install hardwood or tile floors to minimize the quantity of carpet that is generated. Such action, even if followed by only a small fraction of the county's residents, would clearly reduce the quantity of carpet being disposed by eliminating carpeting from ever being installed in the first place. (Additionally, it would also reduce the energy and resources required to manufacture, advertise, and transport the carpet to households or businesses). Such an alternative waste reduction effort would benefit any county, regardless of whether a collection program exists or a market for carpeting can be found. Unfortunately, this alternative waste reduction program does not provide a clear means to measure and track the success of the program. To date, relatively few resources and almost no legislative or governmental incentives have been put in place to encourage this type of program.

This proposal suggests that a more aggressive effort to develop true pre-generation waste reduction programs—not post-generation recycling programs—will ultimately work towards the state's goal of 30 percent waste reduction. Specific technologies, processes and concepts—for both businesses and residents—are discussed below.

### NOT IN COMMON USE IN FLORIDA

This project is not in common use in Florida on both the macro (statewide) and micro (county- or program-specific) levels. On the macro level, the recently released 2000 edition of *Solid Waste Management in Florida* only highlights the fact that pre-generation waste reduction technologies and processes are not in common use in the state. This FDEP document specifically indicates that the language in the Florida Statutes establishing a goal for waste reduction is "commonly interpreted by the legislature, state agencies, local governments, and the general public as a recycling rate." This interpretation is manifested clearly by the statewide focus on recycling, with no focus on waste reduction. This project would clearly establish a new perspective on valid waste reduction processes that have heretofore been ignored by the State.

On the micro level, there exists a wide variety of waste reduction technologies and processes that would be evaluated by this project, but are not in common use. Ideally, these programs should target industrial and business generators to achieve the most bang for the buck, but examples can be found in both the business and residential sectors:

#### ***For businesses...***

- Use of reusable packaging and distribution systems for shipping (e.g., plastic crates instead of wax corrugated boxes for shipping produce);
- Increase in bulk delivery for small unit products (e.g., restaurants installing soda fountain machines and reusable glasses instead of selling cans or bottles); and
- Transfer from disposable to non-disposable products (e.g., replacement of paper towels in public restrooms with electric air dryers).

#### ***For residents...***

- Residential junk mail reduction programs;
- Encouragement of longer lasting hardwood or tile floor installation to reduce carpet replacement waste; and
- Promotion of garage sales, flea markets and swap meets as alternative methods of material disposition.

Phase I of this project provides an opportunity to draw from nationally recognized programs such as the U.S. Environmental Protection Agency's *WasteWise* Program, as well as industry experts, to develop a more comprehensive list of these waste

reduction technologies and processes. Although some input is expected from representatives of Florida counties, it is clear that the examples to be developed will not be in common use in the State.

## NOVEL APPLICATION OF EXISTING TECHNOLOGY

As described above, one of the biggest obstacles to implementing effective waste reduction programs is that they are not easily quantifiable. We believe that this project will allow significant exploration into procedural methods for implementing, measuring, and tracking waste reduction programs. The primary area where this program represents a novel application of existing data is in identifying standards of measurement and steps to implementation that will establish waste reduction as a viable management technique within the State. Such a program would truly represent a novel application of waste reduction procedures.

## OVERCOME OBSTACLES IN NEW/INNOVATIVE WAYS

This project addresses numerous obstacles and issues currently faced by Florida counties in implementing waste reduction.

**Obstacle—Limited Opportunities for Expansion of Traditional Recycling:** One overriding factor that strongly supports the implementation of a waste reduction program in Florida is that traditional residential curbside and business recycling programs have already been expanded to reach as wide of a target population as is economically feasible. For example, over 70 percent of the single-family households in the state have access to curbside recycling. Many of these programs have added materials above the Minimum 5, and only minor diversion improvements are possible. The very existence of the Innovative Recycling Grant program demonstrates that most of the low-hanging recycling fruit has been picked. This project opens new avenues for increasing waste reduction beyond traditional recycling programs.

**Obstacle—Lack of Clear Methodology for Waste Reduction:** Few communities across the country have actively attempted to implement waste reduction or reuse programs, primarily due to the difficulty in measuring the impact of such activities. The proposed project would provide all Florida counties with the tools necessary to successfully implement waste reduction and reuse programs and significantly improve their waste diversion rates in the process.

**Obstacle—Cost of New Recycling Programs:** With all counties feeling the pinch of governmental budget tightening, the dollars available for recycling are becoming harder for many counties to come by. Waste reduction programs represent a way to reduce the waste stream with minimal cost borne directly by the county. In some cases, this cost is distributed and borne in small pieces by each participant in the waste reduction program (e.g., residents who install hardwood or tile floors instead of carpeting). In other cases, the waste reduction program may actually improve the economics of doing business (e.g., electric air dryers replacing paper towels). In either case, there are a variety of waste reduction programs that can be publicized and implemented for a relatively low cost.

**Obstacle—Limited Coordination Between State-Mandated Waste Management Programs:** Traditionally, FDEP focus has been on the measurement of recycling as a proxy for waste reduction. Although not typically associated with recycling and other traditional waste management practices, the State has also implemented the Pollution Prevention (P2) program, which involves a process to reuse or conserve materials that represent sources of pollution. The P2 program audits businesses across the state to identify these prevention opportunities. Currently, there is little incentive for P2 program staff to coordinate with other solid waste management and recycling staff. By establishing more defined waste reduction procedures, it is expected that this program can help increase coordination between these two solid waste management functions that have historically been treated as totally separate programs.

## ENVIRONMENTAL BENEFITS

### METHODOLOGY

FDEP has stated that grant proposals *with methodologies that focus on waste reduction and resource conservation will be given the highest rating* in terms of their environmental benefits. This proposal focuses specifically on waste reduction and resource conservation and, therefore, aligns with the FDEP's emphasis on these areas.

As mentioned previously in this proposal, the focus of this project will be to identify waste reduction activities that can significantly reduce waste generated in the State and conserve resources. The project will focus on identifying and measuring waste reduction opportunities such as:

- Reducing disposal of typically non-recyclable materials, such as wax-coated corrugated containers (by replacing these with reusable plastic containers).
- Reducing the disposal of carpeting (through the use of hardwood or tile flooring which are known to have a longer lifespan than carpeting. Moreover carpeting contains certain very toxic substances such as formaldehyde); and
- Eliminating junk mail (which continue to grow at a rate in excess of 10 percent annually);

By focusing on waste reduction, the project will maximize resource conservation by limiting the use of certain non-renewable resources such as petrochemicals (for example, used in the manufacture of carpeting).

### TOXICITY

FDEP scoring criteria states proposals that reduce exposure to release of toxic chemicals will rate higher than projects that deal with inert materials. This project will include a focus on reducing or replacing the consumption of products that contain and can release toxic chemicals with products that have less of an impact on the Florida environment.

By developing new MSW waste reduction practices, the proposed project will reduce the consumption of a wide assortment of products that contain toxic materials, thereby eliminating them from the waste stream and their potential harmful effects on the Florida environment. The project will focus on identifying products that can be source-reduced or replaced with other products that are inert and generally less harmful to the environment.

For example, tile floors are known to last many years longer than carpeting. Moreover, tile is manufactured from inert materials such as various forms of crushed stone or granite. Carpeting, alternatively, is manufactured using processes that require the use of various toxic chemicals including formaldehyde. Moreover, tile can be ground at the end of its useful life and subsequently used for building materials and road base aggregate, while more than 65% of carpeting is currently not recyclable. Promoting source reduction through the use of such alternative products will greatly reduce the amount of toxic chemicals entering the Florida waste stream.

The development of the methodology to measure source reduction as part of this project will allow communities to measure the amount of source reduction they are able to accomplish and, as a result, reduce the generation and subsequent release of these toxic substances into the Florida environment.

## ECONOMIC BENEFITS

One of the most attractive elements of this project is the low cost associated with implementing such MSW reduction and reuse programs and the ongoing economic savings to residents and commercial businesses utilizing these techniques. Unlike recycling programs that, in many cases, require significant capital investment for collection and processing equipment, the MSW reduction and reuse programs that will be evaluated require little in the way of capital.

Most programs are based on common sense techniques accompanied by innovative advertising and outreach – skill sets held by most recycling coordinators across the State. As a result, successful implementation of this project could have a significant beneficial impact on waste reduction in the State with little in the way of capital investment on the part of the State or local governments.

More importantly, it is estimated that approximately half of the State's counties could potentially dedicate a full- or part-time staff person to promote source reduction efforts in their respective communities once they recognize the significant waste diversion potential as demonstrated by the proposed waste reduction strategies. Many communities in California, with its

progressive waste reduction programs, have dedicated full- and part-time staff to MSW reduction and reuse efforts. As a result, we believe a total of up to 20 to 30 new staff positions could be added in the State over the 24 months following completion of the project, particularly if the methodology is eventually adopted by the State.

## **COST EFFECTIVENESS**

The FDEP has stated in its grant review criteria that proposals that:

- Demonstrate a substantial improvement in the cost of recycling/waste reduction;
- Are sustainable and will continue on after the grant dollars are no longer available; and
- Have a relatively short payback period;

will be given greater consideration for funding approval. We have addressed each of these issues below.

### **SUBSTANTIAL IMPROVEMENT IN COST OF RECYCLING/WASTE REDUCTION**

We strongly believe this project will result in a significant reduction in the cost of waste reduction in the State. As mentioned in the section above, implementing waste reduction activities typically requires little in the way of capital as opposed to traditional recycling programs that require significant capital for collection and processing equipment. In addition, traditional recycling programs require:

- Ongoing operating costs for transport and processing of collected materials;
- Special material handling and training by residents and employees (for business-based recycling programs); and
- Ongoing participation by program participants.

Waste reduction activities, alternatively, require little in the way of capital and ongoing operating costs. As a result, the cost of these programs (both in terms of initial capital outlays and ongoing operating costs) is substantially less than traditional recycling programs – clearly meeting one of FDEP’s criteria. Moreover, the average cost per ton of waste diverted is significantly less than traditional recycling programs.

### **SUSTAINABLE AND WILL CONTINUE ON AFTER GRANT DOLLARS NO LONGER AVAILABLE**

FDEP also prefers programs that are sustainable and likely to continue long after the grant dollars have been spent.

This project will be sustainable due to the ongoing nature of the MSW reduction programs it will promote that require little ongoing participation by program users. More specifically, these programs, once implemented, require little additional training of staff or program maintenance.

As we all know, the best designed recycling programs can have very high economic benefits, but to achieve these economic benefits, the program must be used continuously by residents and businesses. It has been shown that many of the recycling programs in the State of Florida are underutilized due to lack of ongoing program promotion or ongoing public interest/apathy. MSW reduction programs, alternatively, once implemented, continue on without the need for ongoing investment or active participation. For example, once a business has decided to switch to air hand dryers from paper towels, nothing more is required to be done. The waste reduction benefit of the switch will continue long into the future without any need for ongoing commitment of capital or operating costs. Moreover, participation in the program is 100 percent. Similarly, a business that switched from wax-coated corrugated containers to reusable plastic containers must only make the initial decision to switch. After that, the waste reduction benefit will continue long into the future.

This project will help communities identify these “low hanging fruit” – MSW reduction and reuse opportunities our national panel of experts will bring to the project that will have long term, sustainable waste reduction benefits in Florida. The project, by identifying these options and providing counties with strategies that can be used to measure the overall waste reduction benefit (in terms of tons diverted) of these waste reduction efforts, will be usable long after the grant dollars for this project have been spent.

### **SHORT PAYBACK PERIOD**

As mentioned above, we will be looking to our group of national waste reduction experts to come up with programs that not only divert waste, but also produce quantifiable savings to the resident and businesses targeted. In many cases, these waste reduction activities have very short payback periods. For example, it has been shown by the plastic crate industry that use of

plastic containers for transport of food products such as fruit has a significant cost advantage over the more traditional, but typically non-recyclable wax-coated corrugated containers. This project will focus on working with our team of national MSW reduction and reuse experts to identify these short payback period waste reduction options and developing a measurement guide that will allow counties to measure and take credit for their impact.

FDEP defines transferability in terms of the usefulness of a program in areas with different demographics, and also in terms of how much effort is designated to publicize and transfer the results or findings of the project. These criteria are addressed below.

Polk County will assemble a team of national technical advisors who have agreed to assist with transferring information on the project. Additionally, the project incorporates private sector partners. Therefore technology transfer will be immediate to the private sector.

The success of this project could result in the development and implementation of a new methodology for calculating waste reduction and reuse efforts in Florida that could be utilized not only by other counties in Florida, but also by counties across the nation. Florida could potentially spark new standards for calculating waste reduction across the country.

### TRANSFERABILITY OF TECHNOLOGY AND PROCESSES

This project focuses on waste reduction and waste prevention. As such, it is almost perfectly transferable to any and all local governments across the entire state. This high level of transferability is the result of waste reduction strategies being easily implementable in almost any municipality, regardless of geographic region, available funding, or demographic characteristics.

Many Innovative Grant proposals involve county or region-specific facilities. For example, development of an innovative regional recycling facility may at best serve a multi-county region, and it may be possible in the future to build more such facilities to reach additional regions of the state. However, waste prevention and reduction strategies can be implemented by any county or city, at any time upon conclusion of this project. Certainly, standardizing a waste reduction reporting form will take some additional time, but the actual processes and technologies for waste reduction are highly transferable.

To summarize, the project is transferable because:

- Waste reduction strategies can be publicized and implemented at relatively low cost throughout the State;
- Residential waste reduction strategies are feasible in urban, suburban and rural areas; and
- Many business waste reduction strategies can be applied to businesses in all areas such as industrial, agricultural and office/retail.

### HOW WILL THE PROGRAM PROMOTE TRANSFERABILITY

To assure a high level of transferability of program findings and strategies, Polk County proposes a significant effort aimed at publicizing and distributing the results. To that end, an entire task has been built into the project to provide extensive publicizing of the project findings. Specific project promotion includes

- Hosting of two planned Technical Advisory Committee meetings during development of waste reduction and reuse strategies;
- Development of a Florida MSW Reduction and Reuse Measurement Guide for publication in both hard copy and for inclusion in Adobe Acrobat format on FDEP's web site;
- Development of a white paper describing the proposed MSW reduction and reuse methodology and its benefits for submission to FDEP for consideration as a change in the way the FDEP measures waste reduction in Florida;
- Submission for presentation of the Guide and white paper at industry conferences including RecycleFlorida Today and the National Recycling Coalition (NRC);
- Development of presentation materials for the sponsor counties to present project findings to industry conferences after the conclusion of the project; and
- High-level guidance on developing education curricula to be incorporated into a training course for recycling coordinators (TREEO or FDEP county recyclers certification workshop).

## SECTION 5

### LOCAL SUPPORT

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This project will be sponsored and managed by Polk County and it is expected that two to three additional counties will join the project once the set of waste reduction and reuse protocol and field tests have been identified. Ultimately, it will demonstrate, document, and implement waste reduction and reuse programs that could be implemented by all 67 Florida counties. Because the guide will be developed for and distributed to all Florida counties, it constitutes a statewide waste reduction and reuse program that will decrease the State's volume of tonnage being disposed in landfills and increase the State's waste reduction rates.

Local support has been garnered from a variety of state and national interest groups for this project. Polk County will host the project and will have lead responsibility for coordinating project activities. Counties will participate by serving as a test pilot site and providing staff support. When pilot testing begins, the project also represents a cooperative effort between the private and public sectors to develop reduction and reuse measurement protocols targeted at major sources of MSW generated in Florida.

The following industry stakeholders have committed to contribute to covering project costs, in the form of donated time, meeting space, and other resources:

- Time and equipment donated by Polk County along with additional Counties, and the cities of Winter Haven and Lakeland;
- Time donated by the national advisory group being convened for this project, including representatives from
  - U.S. EPA's *Waste Wise* program;
  - California Integrated Waste Management Board (CIWMB);
  - Florida's SWIX and FCSHWM programs;
  - Five to ten other waste reduction and reuse specialists to be identified and contacted upon award of the project;
- Time donated by interested cities and counties for attendance at Technical Advisory Committee (TAC) meetings;
- Time and resources donated by the County's subconsultant to arrange and host TAC meetings;
- Time donated by Polk County private sector firms Waste Management, Inc., Florida Refuse Services, and Florida Recycling Services to contribute to and guide waste reduction program development, and
- Time and resources donated by local businesses in the sponsor counties to test selected waste reduction programs.

It is estimated that the total costs of the items above will be donated to the success of the project. The total donated costs of the items listed above, including two national advisory group meetings, TAC meetings, private sector attendance and participation, subconsultant arrangements, and other items is \$30,000. This match funding represents 11.6 percent of the total project cost.

## SECTION 6 BUDGET AND TIMELINE

Polk County is requesting an innovative recycling grant in the amount of \$228,000 to implement the project as described above. The table below details the proposed costs associated with this project.

**Breakdown of Requested Innovative Grant Funding**

Task	General & Administrative Expenses	Promotion and other Program Related Expenses	Sub-consultant Labor	Matching Funds (Pub and Pvt. Sector)	Project Total
Develop Advisory Committee	\$5,000		\$10,000		\$15,000
Convene Brainstorming Sessions of National Experts and County/Business Leaders	\$10,000		\$15,000	\$10,000	\$35,000
Develop programs and measurement techniques/ implementation plans	\$3,000		\$15,000	\$5,000	\$23,000
Field Test Programs	\$10,000	\$25,000	\$65,000	\$10,000	\$110,000
Summarize program results	\$5,000		\$15,000		\$20,000
Measurement Guide/White Paper	\$5,000		\$20,000		\$25,000
Program Outreach	\$5,000	\$5,000	\$15,000	\$5,000	\$30,000
<b>Total</b>	<b>\$43,000</b>	<b>\$30,000</b>	<b>\$155,000</b>	<b>\$30,000 or</b>	<b>\$258,000</b>
<b>Matching Percent</b>				<b>11.6 %</b>	

Full funding of this project will allow the project to successfully identify the greatest number of waste reduction programs to be evaluated. Such a comprehensive effort will confirm FDEP's commitment to waste reduction initiatives as beneficial and viable for the State of Florida.

We anticipate that this project will require approximately 18 months to complete. Included below is the proposed project timeline.

	Calendar Year 2001								Calendar Year 2002										
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
<b>Develop Advisory</b>																			
<b>Advisory Sessions</b>																			
<b>Develop Protocol</b>																			
<b>Field Test Programs</b>																			
<b>Summarize Results</b>																			
<b>Project Guide/WP</b>																			
<b>Workshops/ Training</b>																			
<b>Program Outreach</b>																			