

Creating and carrying out a waste management reduction plan requires early planning and a commitment to follow through. “Waste management reduction” involves many steps, including dimensional planning, resource efficient construction techniques, writing waste management specifications, determining the economic feasibility of recycling, and monitoring progress.

There are two distinct phases to implementing the waste management reduction plan. The first phase will take place during the design of your project. It will usually include discussions around dimensional planning and resource efficient building techniques between you, the architect and the structural engineer. The second phase will be planning and managing the waste generated from the building of your project.

These protocols provide suggestions and considerations for implementing a successful program. The order and applicability of these steps may vary according to the conditions of the job and jurisdiction.

To be awarded points for this effort, 8 of the 12 Action points must be performed or implemented, and signed off by responsible party.

Plan the Effort

Each construction project and job site presents a different set of challenges; therefore you will most likely need to develop a waste management reduction plan for each project.

Design and Material Selection

To minimize the amount of waste generated at a construction site, planning is necessary on the front end of the project. When evaluating a structure with the intent of minimizing the amount of waste generated during the construction process, maximum efforts can be focused in dimensional planning, use of modular/preconstruction elements, and other resource efficient building techniques.

Action #1	Meet with your architect/designer and structural engineer to plan on ways to reduce the waste generated by the design and look into ways to reduce that waste through dimensional planning, preconstruction elements, and resource efficient construction techniques.	
	Signature:	Date:

Dimensional Planning - Working with your Architect/Designer and Structural Engineer

The first area in which waste prevention techniques can be incorporated into the construction process is through dimensional planning. This requires forethought on the part of designers to ensure a building that creates less construction waste solely on its dimensions and structural design. Specifically, rooms can be designed in 4-foot multiples, since wallboard and plywood sheets come in 4- and 8-foot lengths. Furthermore, one dimension of a room can be designed in 6- or 12-foot multiples to correspond with the length of carpet and linoleum rolls. There will always be some exceptions what will prohibit a designer from adhering to standard sizes. At the very least, rooms should be designed whenever possible with 2-foot incremental dimensions.

Preconstruction Elements

Traditional residential construction still performs the majority of framing and finish operations on site in phases. The preconstruction of some elements of the frame, such as trusses, shear panels, have become more commonplace in larger developments. As acceptance of this practice becomes more widespread, along with more manufacturers preconstructing elements, greater portions of a residential construction project will occur off-site and be delivered to the job-site for assembly. The waste generated during the preconstruction process is reduced dramatically or eliminated at both the factory and the job site.

Resource Efficient Construction Techniques

The elements involved in building a structure include such items as interior and exterior treatment, trim, flooring, roofing, coatings, utilities, and finishes. Alternative construction methods and materials, such as structural insulated panels instead of wood studs and moveable interior walls, are often innovated in model or demonstration homes and are later incorporated into mainstream construction. Other techniques, such as advanced framing, are starting to be used by major builders around the country.

Managing the Waste Generation Process

An effective plan outlines job site waste reduction goals, identifies targeted materials, describes specific waste reduction actions to be implemented on a project, and identifies reuse, recycling, or disposal facilities to which materials will be taken. All of these steps are important to your project's overall material management plan.

Estimate the Amount of Waste Expected

To address the amount of waste being generated at a construction site, thereby reducing material and disposal costs, a basic understanding of the types and amounts of waste material being generated is needed. Because there are so many different types of structures, varieties of climates in which they are being built, and methods used to construct them, it would be impossible to quote definitive values for the types and amounts of waste generated during the construction of a house. However it is estimated that about 80-90 percent of construction waste is recyclable.

Recyclable waste estimation begins by identifying what materials will go into your project's "waste stream", i.e. those materials you would ordinarily haul to the landfill from your project site. In most cases your waste stream will be quite similar to your materials list because it is extremely rare for all of a particular material to be totally consumed by the building process.

Action #2	Make a copy of your materials list, then eliminate any materials that will be totally consumed at the job site and add any materials not specifically identified on your materials list.	
	Signature:	Date:

In most cases, the work you have done in assembling your materials list and your experience with previous projects will enable you to forecast the amount of any specific materials that will be left after that material is used for your project. Identifying that amount will enable you to provide specific information necessary for your trash hauler to service your project.

**Action
#3**

Add the projected amounts of waste materials to be generated to your copy of the materials list.

Signature:

Date:

Coordinate Recycling by Project Phase

As the project progresses, the focus of the activities will change. Different materials are generated at different phases of the project. Some phases will produce more waste, some less. Use your construction schedule or timeline to coordinate recycling by project phase and be trade. This will enable you to accurately predict what materials will be generated, and when. Knowing your schedule will help you and your haulers plan for efficient hauling of both recyclable and non-recyclable materials.

**Action
#4**

Copy or create a project timeline and add dates when waste will be generated.

Signature:

Date:

Determine What is Cost-effective to Recycle

Determine the cost-effectiveness of recycling, by calculating each material's cost per ton for recycling versus land filling by estimating labor costs, transportation costs, hauler's fees, tipping fees and possible revenue from valuable waste materials.

**Action
#5**

Calculate each material's cost per ton for recycling versus land filling. Look at labor costs, transportation costs, hauler's fees, tipping fees and possible revenue from valuable waste materials.

Signature:

Date:

Work with the Hauler to Plan Collection

Develop a plan to stage the job site for the most effective method for storing and collecting both recyclables and waste, positioning recyclables bins at the most convenient location for the various trades to use. Identifying the physical locations that will produce certain materials will enable you to plan your recyclable materials recovery operations for optimum efficiency. Determine which containers may be needed at different phases of the project in coordination with the various trades.

**Action
#6**

Copy or create a site plan and mark with areas where materials will be generated.

Signature:

Date:

Prepare the Site

Proper and prominent signs on recyclable and trash bins are a vital component in any on-site program. Small bins should be labeled by spray painting, signage, or by color-coding. Larger roll-offs should also be properly identified.

Action #7

Coordinate with your hauler(s) to develop a single “signs” plan and determine how and where bins and roll-offs are to be labeled; coordinate trades and subcontractors to assure that all personnel are aware of how, when and where to separate their “wastes” into appropriate categories.

Signature:

Date:

Contact Commercial Haulers

In order for an on-site recycling program to be effective, the project’s hauler should be involved from the beginning. Working with the hauler(s) to determine types and numbers of containers, pickup frequency, and materials to be collected is vital.

The most effective way to facilitate this process is to prepare a “Request for Bids” and distribute copies to all commercial haulers, including recyclable-only haulers. This will alert the haulers to the fact that you plan to implement an on-site recycling program. Be sure to crosscheck with your materials list and timeline to determine amounts of material and timing for different materials.

Action #8

Prepare and mail “Requests for Bids” to all prospective haulers.

Signature:

Date:

Get Buy-in up Front

For your effort to be successful, it’s important to establish a high level of commitment from everyone involved in the process – the contractor, subcontractor, cleanup personnel, and waste haulers – up front. Hold your subcontractors accountable for implementing the waste management plan outlined in the bid package. Provide a package of information on the recycling program to each new subcontractor when they come on board. Understanding how, and why, to avoid contamination, how to recognize and utilize single material containers, and the need to plan for and manage changes in standard operations, must be impressed on all project personnel.

Contamination is one of the major destroyers of recycling programs. Contamination occurs when a different material is introduced into a single material collection site.

Action #9

Provide all trades and subcontractors with written information of the scope and operations involved in your onsite program. Include site plans with receptacle locations, instructions on which materials go in special bins and which go in the trash bins, and information on how to facilitate timely pickups. Present the program and materials at all project meetings.

Signature:

Date:

Support, Report and Modify

Once your project is underway it will still require some degree of promotion and support. The onsite-recycling program will, of necessity, involve many different

individuals and organizations. Active and continuing support by management will be among the most important elements determining the project's success.

Reporting on the performance of the project, particularly as that performance relates to the project goals and projections, can help keep all involved up-to-date and motivated.

Action #10	Prepare and distribute regular reports; solicit verbal and written comments from all involved individuals and organizations; modify procedures and policies as feedback and data suggest.	
	Signature:	Date:

Monitor and Track for Quality Control

One contaminated box can really add costs to a successful recycling program. It is helpful to track on a regular basis, probably monthly, the type, amount and costs of all materials being recycled or land filled from the job site. A simple tracking form can be used to develop a spreadsheet that gives you an up-to-date report that will identify how many clean dumpsters went off site for reuse and recycling and how many contaminated and costly dumpsters were taken to the landfill.

Action #11	Create and use a simple tracking form that gives up-to-date reporting of clean recycling dumpsters versus contaminated dumpsters.	
	Signature:	Date:

Promote Your Success

Put out a press releases on the success of your project. Clearly identify the job site with signs that tell the public know you are committed to being resource-efficient.

Action #12	Put out a press release on your success. Identify job site with signs that tell the public you are recycling.	
	Signature:	Date:

With thanks to the California Waste Management Board's Builder Assistance Recycling Protocols