

The Benefits of Construction and Demolition Materials Recycling in the United States

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Executive Summary

Construction and demolition materials (C&D) are recognized as one of the largest components of the solid waste stream in the US. While much of this material is recycled for purely economic reasons, avoidance of landfill disposal of materials such as concrete, wood, gypsum drywall and asphalt shingles has benefits well beyond financial ones. C&D materials recycling results in a greater job creation and industrial activity relative to landfilling. Avoidance of landfilling also provides for a greater degree of environmental protection, a smarter use of natural resources, energy savings, and a net decrease in greenhouse gas emissions. This report summarizes an effort conducted to assess the benefits of the C&D recycling industry in the US. The numerical estimates presented herein were determined using available C&D industry data from the literature, additional information surveyed from the C&D recycling community, and the authors' professional experience.

C&D generation statistics are not rigorously tracked in the US, and predictions of the amount of C&D landfilled and recycled vary dramatically. For this analysis, the amount of C&D generated in the US in 2012 was estimated at approximately 480 million tons. The C&D consists of approximately 100 million tons of mixed C&D, 310 million tons of bulk aggregate (primarily concrete), and 70 million tons of reclaimed asphalt pavement (RAP). Over 70% of this waste stream was projected as being recovered and put to beneficial use by the C&D recycling industry (corresponding to a 35% recycling rate for mixed C&D, an 85% recycling rate for bulk aggregate, and an over 99% recycling rate for RAP). The area of landfill avoided by recycling this amount of C&D is equivalent to over 4,300 acres (at a waste depth of 50 ft).

The energy savings and greenhouse gas (GHG) emissions avoidance as a result of recycling C&D components instead of landfilling them was assessed using emission and energy factors developed by the US Environmental Protection Agency. In 2012, the estimated magnitude of GHG emissions offset corresponded to taking 4.7 million passenger cars off the road for an entire year. The energy savings resulting from C&D recycling was equivalent to over 85 million barrels of oil.

Using industry survey results and the waste recycling projections, the C&D recycling industry was projected to be responsible for the direct support of 19,000 jobs in the US in 2012. Facility owners have invested over \$4.5 billion in the development and construction of C&D recycling infrastructure. The direct annual output (revenue) of the C&D recycling industry was estimated to be approximately \$7.4 billion, and when considering indirect and induced economic output, the industry represented an over \$17 billion contribution.

