

## What are the possibilities of Deconstruction?

### Economic

- ✦ The value of materials salvaged offsets the high labor cost either directly or as a donation which results in a tax benefit to the building owner, making it price competitive with added environmental and social incentives.
- ✦ Provides salvaged items at lower cost to homeowners so they can afford to maintain their properties.
- ✦ More labor required equals more jobs in a community, that results in more taxes paid to the community and a multiplier effect of money then invested in the community.

### Environmental

- ✦ Reduces waste sent to the landfill.
- ✦ Reduces demand to extract new materials.
- ✦ Conserves natural resources by reducing the energy and pollution associated with manufacturing.
- ✦ Aims to reuse items before attempting to recycle them, also using less energy.
- ✦ Contributes to LEED ratings (see page 4).

“Construction-related waste accounts for about one-fourth of total landfill waste in the U.S., according to the Pollution Prevention Resource Exchange, a national network of regional pollution prevention information providers. Many natural resources used in building materials are becoming scarce. Practicing reuse and recycling can strengthen our natural resources.”

– *Construction Junction*

### Social

- ✦ Provides entry-level jobs that lay the foundation for a variety of skilled work.
- ✦ Leaves behind a clean site in the community that is ready for future use.
- ✦ Respects the quality and integrity of the design and work that went into the original building, and preserves some of its history and local character.

### The Math

The example below is a composite based on actual jobs and used here to make an economic comparison between deconstruction and conventional demolition. This example comes from the website of The ReUse People. This composite is a single story, 2,200 square foot house plus garage, with 3 bedrooms, 2 baths, raised foundation, composite shingles, single-paned windows, carpeting, hardwood floors, and a 12 x 40 wood deck. The costs do not include removal of concrete slabs, sidewalks, foundations or asphalt, but do include the site being left in a rake clean condition (no debris).

In the machine demolition scenario, the owner pays \$10,100, but in the The ReUse People (TRP) deconstruction scenario, the homeowner receives \$24,640 in after tax benefits - slightly more than the total deconstruction costs. Therefore, the owner would be financially better off to the tune of \$10,402 (\$302 received in tax benefits over the cost of deconstruction plus avoiding \$10,100 in machine demolition costs).

### Comparison Between Deconstruction and Conventional Demolition

	<b>TRP Deconstruction</b>	<b>Demolition</b>
Physical lowering of house	\$17,238	\$6,000
Disposal of trash & debris	4,100	4,100
Appraisal of salvaged materials	3,000	0
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<b>Total Costs</b>	<b>24,338</b>	<b>10,100</b>
	=====	=====
Donation Value*	88,000	0
	=====	=====
Tax Savings* (after-tax value of donated materials)	24,640	0
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<b>Total Costs (from above)</b>	<b>24,338</b>	<b>10,100</b>
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<b>After-Tax Benefit / (Out of pocket cost)</b>	<b>\$302</b>	<b>\$(10,100)</b>
The after-tax difference between the two methods is \$10,402		
<small>*Total materials (lumber, plywood, cabinets, plumbing and electrical fixtures, doors, windows, etc.) would generally appraise for \$77,000 to \$112,000 in good reusable condition. Assuming a tax bracket of 28%(federal only - this will be larger in states with an additional income tax), the after-tax cash value, based on a typical appraisal value of \$88,000, is \$24,640.</small>		

Now for the disclaimers. Figures vary depending on location, age and condition of the home and materials, topography, type of siding and interior walls, distance from a TRP or partner retail-warehouse, landfill rates, etc. Still, the economics almost always favor TRP deconstruction over demolition.

### A Cost or Investment?

While labor is the single largest cost of the deconstruction process, that can be seen as an investment for a community, especially in today's struggling economy.

“Young urban adults, ages 17 to 22, comprise the largest group of unemployed and under-employed in the U.S... Right now a great deal of emphasis is being placed on the creation of green collar jobs – the manufacture, marketing and distribution of everything from alternative energy to carbon-capturing devices...”

It's the less skilled individuals who need help securing green collar jobs.

Deconstruction training has the potential to move increasing numbers of people from unskilled to semi-skilled positions, and to skilled specialties... (It) helps fill the apprentice ranks of the construction trades. Graduates get to see the possibilities, job paths that can lead to employment as electricians, carpenters, masons and the many green-collar specialties sure to emerge in the coming years... Deconstruction introduced them to a job that, among other things, involves physical work, requires interesting tools, fosters teamwork, builds confidence and helps the environment.”

– *Ted Reiff, The ReUse People*

### The Future of Demolition and Deconstruction

At the state level, there has been legislation passed in both Massachusetts and California that affects waste disposal and therefor the traditional demolition practice. Massachusetts passed a Recyclable Materials Ban that prohibits A(sphalt)B(rick)C(oncrete), wood and metals from entering landfills. In California, AB 939 demands 50% diversion of demolition product from landfills. Adopting deconstruction tactics now allows demolition companies to move successfully into a future where we can look forward to the growth of this kind of policy.

“Most people are surprised when we tell them how much material Buffalo ReUSE saves when we demolish abandoned buildings using a green demolition approach. For example, on our first house, we salvaged over six tons of reusable lumber, as well as doors, windows, foundation stone, bricks, and fixtures. Many materials which can't be reused can often be recycled... Unfortunately, we must still throw away some materials that can't currently be reused or recycled. However, we are conducting research to determine the feasibility of recycling asphalt shingles, vinyl siding and gypsum board.

The sales of salvaged materials provide revenues allowing us to advance our work, collaborating with block clubs and community associations to develop new neighborhood assets... In many cities in America, residential structures represent tremendous assets in communities. Unfortunately, with so many abandoned

and vacant houses, here in Buffalo they're viewed as a liability. It's true, more often than not, when that house is removed the community is improved, but what's the next step? What's the future vision for our neighborhoods? What will the urban landscape look like when 10,000 to 20,000 houses are removed?"

—*Buffalo ReUSE*

While the Pittsburgh area is not as afflicted as Buffalo, this is still a shared concern. Deconstruction provides the hope that in place of empty lots, new buildings of reused material can be erected, and older buildings restored and not allowed to fall into disrepair. Clean sites can support gardens and playgrounds.

### Support

Currently, *The Community Regeneration, Sustainability and Innovation Act* (S. 453 and H.R. 932) is under consideration by both houses of Congress. The bill provides support for policy innovation, experimentation, and environmentally sustainable practices to reuse vacant properties in ways that will provide long-term benefits to the public through the creation of green infrastructure, economic development, or other strategies. It also strongly encourages multi-jurisdictional or regional approaches to addressing the problem of vacant and abandoned properties. Funding is \$100 million and eligible communities are those suffering at least 20% population loss since 1970.

Brad Guy, President of the Building Materials Reuse Association, was involved in adding language to the bill for deconstruction and supporting purchasing policies for deconstruction and reuse, and support for reuse and recycling infrastructure.

Municipalities and communities in the Pittsburgh area should be encouraging their respective representatives to support this legislation and should anticipate applying for funds once it is approved.

### LEED

The Green Building Rating System, Leadership in Energy and Environmental Design (LEED), was developed by the U.S. Green Building Council (USGBC) to provide a suite of standards for environmentally sustainable construction. Pennsylvania has the second highest number of LEED certified building in the country. LEED projects obtain credits for deconstruction, recycling and reuse; the 2009 guidelines include many credits for Building Reuse, Material Reuse, Waste Diversion, and Regional Materials. The demand from consumers for LEED certification is on the rise, with LEED certified buildings making up 6% of all new construction in 2008. The Pittsburgh Glass Center is a local example of a LEED Gold Certification that features materials salvage, regional materials, building reuse and waste recycling. The city of Seattle has adopted policy that requires city-owned buildings to meet the LEED Silver qualification.

### Markets

Many deconstructors work with a store to sell the salvaged materials. Some work with contractors to put the materials right back to use with minimal transport. Others pair with craftspeople to up-cycle or repurpose the materials into furniture or household products. As a last resort lower quality materials are recycled, such as lumber chipped to become mulch, to continue their life outside of the solid waste stream.

All of these means of distribution have the potential to create new businesses and jobs. Interest in Green Building and LEED in particular is creating an increasing demand for these products.

“As of 2006, according to the Building Materials Reuse Association, there were 1,200 rebuilding centers making an average of \$340,000 per year. Half of these rebuilding centers didn't exist five years ago and revenues are up 45% from three years earlier.

Recall also the launch of Planet Reuse, the online resource designed to facilitate the buying and selling of reusable materials that qualify for LEED MR credits. Entire business models are being created to reuse what we already have.”

—*Preston Koerner of Jetson Green, a blog on Green Building*

A big thank you to Brad Guy of **Material Reuse** and the following organizations for the information included herein:

The **Building Materials Reuse Association** connects people across the field of deconstruction, offering training and events to further the principles of deconstruction and expand the markets available for reused materials.

**www.bmra.org**

**Construction Junction** promotes conservation through the reuse of building materials. It is Pittsburgh's only non-profit building material reuse retailer.

**www.constructionjunction.org**

**RE-USE Consulting** is working all over the Country to make building deconstruction a mainstream choice for building removal. They are doing it by helping other businesses learn their hybrid deconstruction techniques and generally how to run a reuse operation.

**www.reuseconsulting.com**

**Buffalo Re-USE** is an organization that provides training in deconstruction, performs deconstruction at cost and runs a store that sells the salvage from deconstruction projects to the local community.

**www.buffaloreuse.org**

Buffalo Re-Use also hosted the **Great Lakes Deconstruction Conference** to focus on the role that building deconstruction can play in rust belt cities throughout the Northeast.

**www.greatlakesreuse.org**



## Deconstruction

also known as  
Green Demolition  
or Unbuilding

**is the systematic practice of dismantling a building to salvage the materials for reuse and new construction.**

Deconstruction is a flexible practice. It often complements conventional demolition, as an initial salvage phase, a partial deconstruction, or in the attempt to create waste diversion from the landfill by recycling demolished materials. Conventional demolition companies have all the tools in the toolbox to perform deconstructions. They need support from municipalities, communities and homeowners to see the long-term benefits of deconstruction when faced with seemingly steep up-front costs.

Deconstruction can be done a number of different ways. Traditional deconstruction is entirely manual, often performed with simple hand tools. It generally takes a week or more to remove a building that a conventional track-hoe style demolition could remove in a couple days. Manual deconstruction also requires many laborers on site, whereas there is often only one person operating a track-hoe on a conventional demolition site.

A newer form of deconstruction called Hybridization, or panelization, is proving time competitive, with a 3-day turnaround on the traditional 2-story house. Many people still work on the site to operate the telescoping forklift involved and process material.

The increase in time and labor is explained by the care required to successfully salvage materials in reusable condition, and leave a site behind that is fit for future building or other use. There is no infill of bricks or debris to settle over time or possibly contaminate future gardens.

Where neighborhoods have seen blight in their abandoned buildings, deconstructors are finding value – in the inherent materials of these structures. Often this value is returned to the communities as income, reusable material, and jobs in addition to the removal of this blight.