

Honorable Mention

CATEGORY

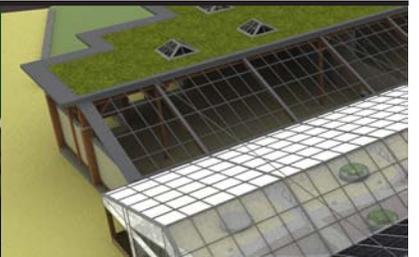
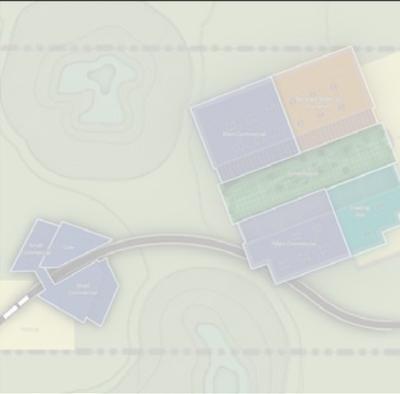
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Nature in Neighborhoods:  
Integrating Habitats Winners Series

Commercial development and lowland hardwood forest

# Re-Thinking the Big Box

Reducing our carbon footprint with sustainable behavior



Public transportation runs through it

Small Commercial  
Viewing areas and trip chaining

Greenhouse maintains store temperature

Small Commercial  
Recycled building materials exchange

Small Commercial  
Tri-level ecoroof cafe

Living Machine®

Small Commercial  
Low impact buildings



**Re-Thinking The Big Box**  
Reducing our Carbon Footprint with Sustainable Behavior

The biggest challenge in reducing a big box store's impact is the large parking lot footprint. The current Big Box model requires customers to drive to the store to get their purchases home. The solution is to change the way we build and change the behavior the building encourages. At this green building center, customers travel by public transit, bike paths or walking trails.

The location and foundation of this building is ideal for solar heat gain and natural ventilation. These active systems of the greenhouse can be used to efficiently moderate the temperature of the main store. On-site, solar panels power fans concealed in planters that displace warm air from the greenhouse to the building's commercial space.

A Living Machine is a form of biological wastewater treatment designed to mimic the cleansing functions of wetlands. These natural systems are odorless and attractive.

Material	Quantity	Source	Notes
Concrete	10,000 cu yd	Local	Recycled aggregate
Steel	1,000 tons	Local	Recycled steel
Wood	500,000 lbs	Local	Recycled wood
Insulation	10,000 cu yd	Local	Recycled denim
Roofing	10,000 sq ft	Local	Recycled rubber
Paint	10,000 gal	Local	Low VOC
Glazing	10,000 sq ft	Local	Low E
Lighting	10,000 ft	Local	LED
Plumbing	10,000 ft	Local	Low flow
Electrical	10,000 ft	Local	Low voltage
Mechanical	10,000 ft	Local	High efficiency
Interior	10,000 sq ft	Local	Recycled materials
Exterior	10,000 sq ft	Local	Recycled materials

# Snapshot of a winner

Re-Thinking the Big Box challenges commercial development norms, proposing that in addition to focusing on energy efficiency, material reuse and carbon neutral design, there are opportunities for practices beyond the building envelope that make commercial developments sustainable community amenities. This holistic approach to design will spur regional development that actually contributes to the health of the natural environment.



## ③ Viewing areas and trip chaining

Designed with large viewing windows in the main commercial space, the loading bay is visible to customers who observe the innovative delivery system. People appreciate and witness first-hand the time, resources and coordination required to deliver products to their door. Product deliveries are coordinated (or 'trip chained') to save time, money and resources and delivered directly to the buyer with a variety of biofuel delivery trucks.



## ⑤ Tri-level ecoroof cafe

A bus stop inside the building drops customers and day trippers at the ecoroof cafe, which features lovely views and indoor/outdoor access to ecoroof areas.

### Re-Thinking the Big Box:

Challenge today's building norms; help change unsustainable behavior past development has encouraged.

### Inhabitant profiles



Great blue heron, red-winged blackbird, common camas (Camassia quamash)



## ② Greenhouse maintains store temperature

This building is designed to utilize natural lighting, solar heat gain and natural ventilation. These active systems of the greenhouse can be used to efficiently moderate the temperature of the main store. On-site, solar panels power fans concealed in planters that displace warm air from the greenhouse to the building's commercial space.

"It's not just about fixing the box, but really, all the services that support another way of doing things." – Susan Szenasy, jurist

"Changing the fundamental business model is one of the brilliant ideas – reducing the parking lot so people get there by mass transit and have material delivered back home." – Tom Schueler, jurist



## ⑥ Living Machine®

These machines are a form of biological wastewater treatment designed to mimic the cleansing functions of wetlands. These natural systems are odorless and attractive.

## ① Public transportation runs through it

Large parking lot 'footprints,' or areas, are the biggest challenge in reducing a retail store's environmental impact. Current "big box" models require customers to drive to the store to transport purchases home. The solution is to change the way we build and change the behavior the building encourages. At this green building center, customers travel by public transit, bike paths or walking trails.



## ④ Recycled building materials exchange

In addition to selling new products, this sustainable big box also features a recycled building materials exchange. Salvaged, reused home improvement items are picked up during the course of daily deliveries, then returned to the green building center. To encourage changes in consumer habits, the exchange is one-third of the total commercial area and features a large inventory.



## ⑦ Low impact buildings

Gabion foundations and rammed earth are age-old, low impact building methods that use natural materials. The carbon footprint and cost of materials for both techniques is low, while the lifespan is high.

# Re-Thinking The Big Box

## Reducing our Carbon Footprint with Sustainable Behavior

### We deliver!

Customers arrive at this green building center via a safe, diverse transportation system with public transit routes, pedestrian trails and bicycle paths. Unique access to nature-friendly features like Living Machines®, bioswales, ecoroof cafes and wildlife watching areas make this retail development a day trip destination. By grouping delivery trips together, or trip chaining, the eco-fleet makes efficient, resource-saving shipments to and from multiple homeowners and contractors in a single trip. Customers can recycle reusable building materials through the same system – materials for resale are picked up and returned to the store by the same delivery trucks.

### Team members

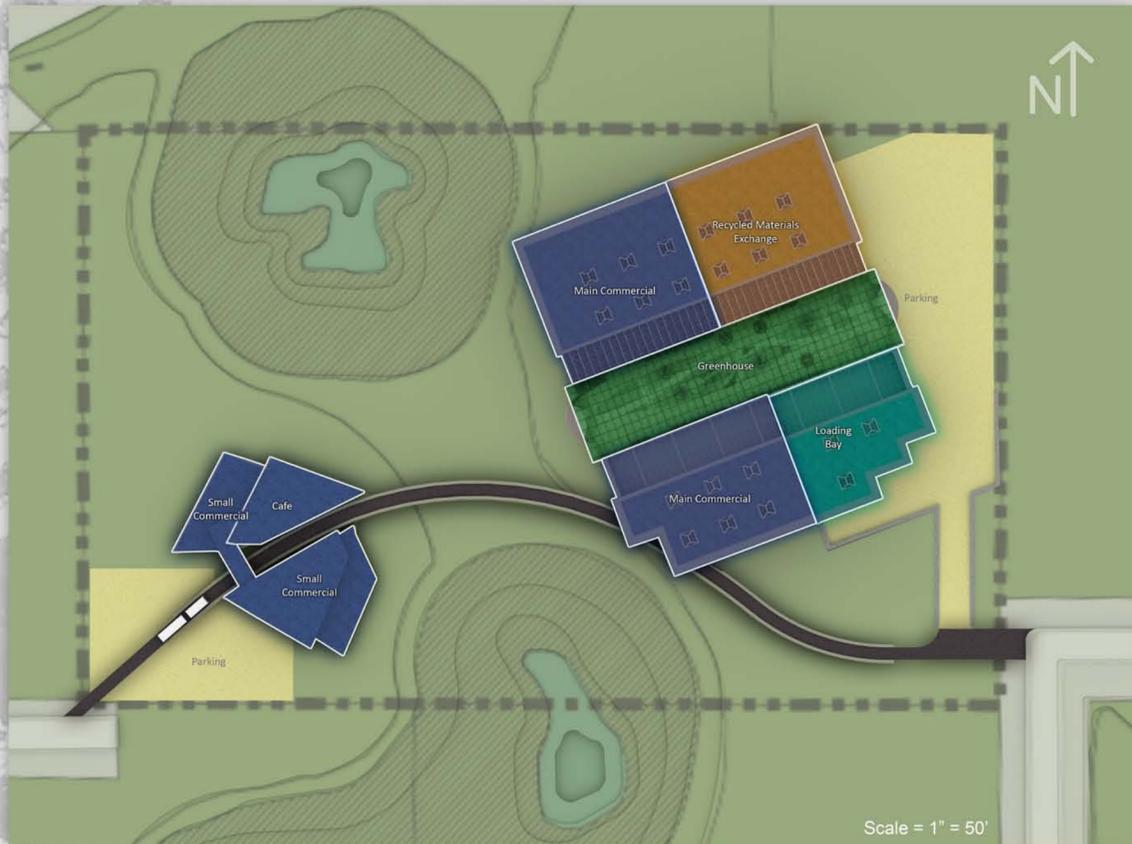
- University of Idaho**  
Moscow, Idaho
- Patrick Sullivan**  
e-mail: navillusp@gmail.com
- Jeff Brajcich**
- Bryan Ferguson**

“The most valuable contribution is thinking about a new business model for retailers – a system supported by mass transit, bike lanes, online ordering, and a delivery system based on renewable energy sources.”

– Susan Szenasy, jurist

### Jurists

- Stefan Behnisch**, principal  
Behnisch Architects  
Stuttgart, Germany and Venice, Calif.
- Joan Nassauer**, professor  
Landscape architecture  
University of Michigan  
Ann Arbor, Mich.
- Tom Schueler**, founder  
Center for Watershed Protection  
Ellicott City, Md.
- Susan Szenasy**, editor-in-chief  
Metropolis Magazine  
New York, N.Y.
- Jim Winkler**, president  
Winkler Development Corporation  
Portland, Ore.
- David Yocca**, director  
Conservation Design Forum  
Elmhurst, Ill.

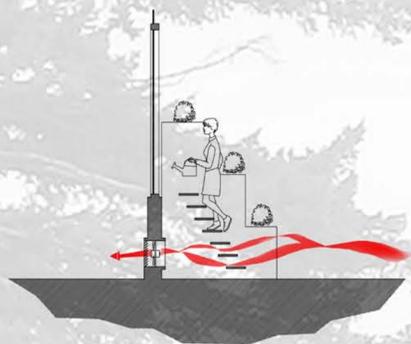


Bus Stop

The biggest challenge in reducing a large retail store's negative impact on its site is reducing the footprint of the parking. The current site has a nearby bus route, unfortunately the current 'Big Box' model requires customers to drive to the store so that they can transport their larger scale purchases home. The solution to this is not a change in the way we build, rather a **change in the behavior the building encourages**. This proposal incorporates a Delivery System so that customers who have traveled by bus can leave their products at the Loading Bay where they will be assembled into a pallet and delivered to their nearby address via the company's eco-friendly trucks. One of these trucks can accommodate multiple homeowners and small scale contractors with one trip. The nearby bus stop has been relocated to the corner of the store and the Loading Bay is designed with large viewing windows from the main commercial space so that shoppers are made aware of the innovative new system. A low impact 'buses only' bridge spans the LCA and allows the city to extend its route into the mixed use zone to the east of the site. Using this system **we believe that a 45% reduction of parking on the site is justifiable**.



Loading Bay/  
Storage



The orientation and fenestration of the building is designed to utilize natural lighting, solar heat gain, and natural ventilation. Additionally, the active systems of the greenhouse can be creatively used to efficiently moderate the temperature of the main store. A greenhouse maintains a stable climate by overheating with solar gain and actively ventilating with a monitored system. This planter detail shows how a concealed fan could displace warm air from the greenhouse to the commercial space in order to reduce the building's heating costs. The ventilation system is powered by a large south facing PV array.

A Living Machine is capable of purifying waste water using a series of ecological systems. The design and specifications of a Living Machine are site specific, the only requirement in temperate climates like Portland's is a large enough greenhouse. The Aerobic reactors are odorless and quite visually striking, making them an aesthetic addition to the 25,000 sq. ft. greenhouse.



Greenhouse with  
Living Machine



Green Roof &  
Photovoltaic Array

Materials List	Carbon Debt	Cost of Material	Lifespan
Gabion Foundation	Low	Low	High
Rammed Earth	Low	Low	High
Glulam Timber	Medium	High	High
Recycled Steel Trusses	Low	Low	High
Aluminum Window Frames	Medium	Medium	Medium
6mm Polycarbonate Glazing	Medium	High	Low
Steel	High	High	High
Rebar	High	Low	High
Concrete	Medium	Low	High



Cafe

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# Nature in Neighborhoods: Integrating Habitats Winners Series

## Blend. Balance. Integrate.

Collaborate to redefine the built environment and restore nature.

More than 100 teams from around the world submitted entries to the Integrating Habitats design competition, proving that every space in which we live, work, shop and play can create places for both people and nature. These designs redefine current standards of environmental sustainability. The award winners illustrate new types of nature-friendly designs that balance development, human needs and the health of natural systems we all depend upon.



[www.oregonmetro.gov/integratinghabitats](http://www.oregonmetro.gov/integratinghabitats)

“It is easy to do better insulation, compact fluorescent bulbs and Energy Star appliances. That stuff is easy. The real challenge is going to the next sustainable levels.”

—Brooke Muller, project advisor

## Metro regional government

serves 1.4 million people who live in the 25 cities and three counties of the Portland metropolitan area. Metro's Nature in Neighborhoods initiative brings the regional government and local jurisdictions together to help ensure that the region's wildlife and people thrive in a healthy urban ecosystem.

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