Converting Yesterday’s Recycling MRF into Tomorrow’s Zero-Waste Park

Urban Ore Development Associates - UODA

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5 December 2014
Participatory Design Process

Developed by Anthroposophist Margaret Colquhoun and architect Christopher Day, this process can be used on any design project from small residential remodels to major campuses.

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- Fully explained in the book “Consensus Design” by Christopher Day.

![Consensus Design](image)
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- Group size can vary from 2 to +/- 25 participants.
- Typically takes 2-3 days to complete the full process.
- Fully explained in the book “Consensus Design” by Christopher Day.
- Ten steps to the process. All need to be done, and in order, for maximum efficacy.
- Everyone must participate in the entire process.
- Everyone must agree to the conclusions of each step; if not, the group must go back to the step where there was full consensus.
- Final product typically includes site plans, floor plans, building massing, and a well-developed plan for circulation and functional activities throughout.
- Process is very efficient, saves time and money, creates a better product, engages the community, and facilitates a complete understanding of the needs, desires, and decision-making process for all participants.
Participatory Design Process

Ten Steps of Process:

1. Silent Walkthrough and first impressions.
2. Site History.

Analysis (4 Steps)
3. Site Analysis of what is (physical).
Participatory Design Process

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2. Site History.

**Analysis (4 Steps)**
3. Site Analysis of what is (physical).
4. Site Analysis of abstract gestural qualities.
5. Site Analysis of human emotional qualities.

**Synthesis (4 Steps)**
7. Statement of desired *Genius Loci*, what we want the site to be.
8. Generation of the desired emotional qualities that reinforce #7.
9. Generation of desired abstract gestural qualities that reinforce #8.
10. Generation of physical elements that reinforce #9.

Note that 7-10 are the reverse of 3-6.
Site Conditions

Existing Site

MRF and Off-haul

Operations and Maintenance

Administration

Customer Service

Entrance and Scales
Site Conditions

Potential Expanded Site including CalTrans Land
Existing Site Conditions

UODA Site Analysis, 2011

5 December 2014
Burbank Recycling Center
Participatory Design Process

With our limited time, we have to shorten the process. Please accept our Analysis, so we can focus on Synthesis.

Analysis (from 2011 work)
1. Existing site is poorly organized, with difficult way-finding.
2. Signage is used to make up for faulty design.
3. Poor separation of public from operations.
4. Piles are unsightly.
5. Confusion reigns, with accompanying fear.

Synthesis

Note: photographs are from a site visit in August, 2011, and do not necessarily reflect conditions under the current operator. But they do offer a cautionary tale for all Recycling/Reuse Facilities.

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Synthesis
Statement of Intent: The Burbank Recycling Center should be user-friendly and:
• be readily navigable for all visitors;
• provide clear and obvious direction for services offered;
• separate customers from material sorting, processing, and off-hauling; and
• be safe and efficient in operations; and,
• offer incentives for customers to use the facilities.
Precedents

The Building “Type” is a circulation problem, with 3 major constituents: customers, processors, and buyers.

A relatively large number of customers bring discards to the site. They drive a range of mostly small vehicles including cars and pickup trucks, with some larger vehicles such as small dump trucks. A few have trailers. Some customers know what they are doing, many do not. Customers want to unload their goods efficiently, but their goods may be going to several different places, requiring sorting.

There are multiple material processors, specialized, who receive and handle the goods before sending them off on large vehicles to the next destination. Processing may be contracted out to different companies, who may maintain relatively autonomous operations.

Off Haul is usually done with large vehicles, driven by skilled professionals, who want to move quickly and efficiently without crossing paths with the customers.
Precedent – The Airport
Provide a clear and rational sequence for drop-off. Customers will learn to load their vehicles appropriately. Pharmaceuticals and Regulated Materials should be the first station to minimize damage during loading or unloading.
Precedent – The Airport
Precedent – The Airport
Precedent – The Airport
Option 1: Existing Land

Burbank Recycling Center

5 December 2014
Option 2: Acquire Part of CalTrans Land
WE WANT YOU TO RECYCLE

AVOIDING WASTE SPEEDS OUR RECOVERY

REDUCE • REUSE • RECYCLE
Existing Conditions

17 April 2011

Berkeley Zero Waste Transfer Station
Unclear demarcation of zones leads to confusion and potentially risky cross traffic between workers and the public.
Pulling materials from Transfer Station.
BZWTS Mission

The Berkeley Zero Waste Transfer Station should continue Berkeley’s solid record in recovering discarded resources with the ultimate goal of creating a Zero Waste City.

The Station should reflect the City’s values and should be a showcase of environmental responsibility.

The Station should make materials reuse and recycling easy, safe, and efficient for the public and the service providers.
BZWTS Goals

• **Safe**
  – Eliminate cross traffic between public and recycling professionals
  – Minimize traffic entrances on Gilman Street
  – Separate internal operations from public

• **Efficient and Convenient**
  – Create a structure that continues successful public-private partnerships
  – Minimize traffic queuing and simplify circulation
  – Provide effective traffic patterns for material collection and dispersal
  – Create a continuous space that allows internal cross-circulation for materials distribution and processing
  – Simplify and mechanize material flows

• **Flexible**
  – Create means for flexible operations
  – Provide opportunities for future change
BZWTS Goals

• **Pleasing and Sustainable**
  – Minimize visibility of debris piles
  – Separate processing functions from public and from office workers
  – Create structures of beauty, especially along public streets
  – Preserve existing watershed, and capture polluting run-off

• **Educational**
  – Create opportunities for education about the natural environment, recycling, and materials flows
  – Provide real examples of energy savings, recycling, water conservation, and pollution prevention

• **Financially Advantageous**
  – Eliminate expensive below-grade work
  – Minimize the quantities of foundations and exterior wall construction
  – Reduce operating costs with renewable energy
  – Create a structure that anticipates future needs

17 April 2011
Berkeley Zero Waste Transfer Station
Public Customer
• Drop off materials
• Sorting by Customer
• Multiple Drop-off points for different materials
• Clarity required
• Variable Materials
• Easy access and exit
• Extensive parking/drop-off area required
• Assistance and way-finding are critical

Professional Drop-off
• Includes COB, Ecology Center, possibly some regular large customers
• Easy circulation required
• Easy access and exit
• Easy access to sorting
• Separate from Public Customer
• Linear movement required
• Back tracking to be avoided
• Limited crossing with Materials Handling is acceptable

Materials Processing
• Sorting, separating, and baling
• Separate from Public Customer
• Must be flexible
• Multi-directional processes

Materials Pick-up
• Separate from Public Customer
• Easy access and exit
• Simple loading
• Can overlap with Professional Drop-off

Who does it serve?
Office Building Plans

Third Floor
Roof Garden, Biodynamic water processing.

Second Floor
Public City Offices

Ground Floor
Classrooms, Greenhouse, Vendor and Public City Offices

17 April 2011
Berkeley Zero Waste Transfer Station
Existing Conditions Analysis

- Separated and discontinuous functions make future adaptability difficult.
- Office Space in middle of Processing Areas – difficult to find for public, unpleasant for employees.
- Dangerous cross traffic between vehicles and hauling trucks.
- Inadequate recyclable drop-off for public; dangerous path crossing in processing area for scales and cash returns.
- Labor intensive transfer of separated materials.
- Unsightly debris pile.
- Significant queuing at scales.
- Dangerous cross traffic between vehicles and hauling trucks.

Protected creek area

- Office Space in middle of Processing Areas – difficult to find for public, unpleasant for employees.
- Separated and discontinuous functions make future adaptability difficult.
- Second Street Minor Circulation
- Recycling/Buyback

Multiple driveways on busy Gilman Street create dangerous traffic snarls.

17 April 2011
Traffic Circulation Is Simplified and Safer

Traffic and Materials movement

- Large Commercial/City/Recycling Access
- Materials removal
- Large- Truck Access
- Construction & Demolition
- Reuse
- Landscape
- Regulated materials
- Consumer Discards
- Buy Back
- Public Drop Off Access
- 2nd street

17 April 2011
Berkeley Zero Waste Transfer Station
Recycling Redesign Uses Same Footprint

- City vehicle parking and maintenance
- Bioswale pond
- Staff break room
- Protected creek area – create bioremediation, nature trails, and picnic areas
- Future Expansion
- Recycling Transfer Station 1 story, 85,000 sf
- Office/Education/Public 2 story, +/- 15,000 sf

Berkeley Zero Waste Transfer Station
Redesign Uses Space Intensively and Flexibly

Distinct areas provide separation for service providers, while the open structure allows flexibility as those services expand or contract.

Reclamation space is divided into the 12 categories, and leased to appropriate service providers.
Phase 1
- Relocate Container Sorting to Big Building
- Relocate City Offices, Ecology Center Trailers, and parking
- Deconstruct & Remove Airco, City Office, & Soule Building
- Construct south 2/3 of Zero Waste Transfer Station

Phase 2
- Move MRF and CCC offices into new ZWTS
- Move Truck Maintenance into (e) Big Building
- Deconstruct & Remove CCC Offices & Truck Maintenance
- Construct north 1/3 of Zero Waste Transfer Station

Phase 3
- Move Truck Maintenance
- ALTERNATE: Move Garbage Transfer Station into new ZWTS
- Deconstruct & Remove Big Building
- ALTERNATE: Deconstruct & Remove Garbage Transfer Station
- Construct New Office Building, New Garbage Transfer Station (or extend ZWTS, restore Creek)
- Move City and Vendors into new Office Building, Add Yard Debris in Transfer Station
- ALTERNATE: Move Garbage Transfer Station

Phasing Plan
The entire facility can be designed to be continuously functional without significant interruption.
Gilman Street and the Office Building are to the right, Second Street and the Transfer Circulation are to the bottom. Large arrays of Photovoltaic (PV) panels on the rooftops can supply most of the electricity needed for operations.

17 April 2011

Berkeley Zero Waste Transfer Station
Eastern Approach from Gilman Street
Eastern Approach from Gilman Street
Eastern Approach from Gilman Street
Western Approach from Gilman Street
Setting the building back from the street front provides much needed green space along the busy industrial corridor, will highlight the building’s importance as a Civic structure, and can act as a symbolic gateway to Berkeley.
View from Southwest

The Auditorium Space, with a Living Roof, dominates the view and brings nature onto the building while reducing energy use. A pond at the southwest corner will contain and pre-treat rainwater from the site.

Berkeley Zero Waste Transfer Station
**View from Second Street**

Visitor and employee parking can be almost completely screened. At the left is a small Community Structure for clothes, books and other items that can be exchanged. Adjoining that could be a staging area for recyclers arriving by foot.
Multiple Bays Provide Convenient, Specialized Unloading for More Customers

Recycling Transfer Station Approach

Signage can help direct the public to the appropriate Drop Off location. Artwork on the canopy roof will enhance both the form and function of the structure, and fulfills the public art requirement. Vegetation along Second Street will reduce wind impact in the building.
Airport-Style Unloading is Familiar and Fast

Drop Off Stations
A continuous canopy above protects users from rain and is a platform for locally-made Artwork from Recycled Materials. Offices at key locations will assist customers and collect fees.
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17 April 2011

Berkeley Zero Waste Transfer Station
Reuse and Exchange

High value items can be dropped off for free at the Reuse and Exchange Kiosk, the first stage to rescue materials before they become damaged at other Transfer Stations.

Berkeley Zero Waste Transfer Station
The open truss construction system is inexpensive and allows for a work area that is column-free for maximum flexibility. North facing clerestory windows provide natural light without glare and heat.
Elevated Picking Line Can Be Adapted to Changing Needs

17 April 2011

Berkeley Zero Waste Transfer Station
**Office Building from the Southeast**

The large Greenhouse is the dominant element, solar shades above the windows prevent overheating and reflect daylight into the office space.
A Rooftop Deck and Garden provides a place for workers to relax and socialize. A Living Machine, under the photovoltaic panels, reprocesses all drain water into clean water for landscaping.
## Preliminary Cost Estimate

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<tr>
<th>Item</th>
<th>Cost</th>
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<tr>
<td>Demolition/ Deconstruction</td>
<td>$600,000</td>
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<tr>
<td>Office Building</td>
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<td>Transfer Station</td>
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<td>(85,000 sf @ 190/ sf)</td>
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<tr>
<td>Miscellaneous Structures</td>
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<td>(1800 sf @ $300/ sf)</td>
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<td>Community Room, Staff Break Room, etc.</td>
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<tr>
<td>Site Development/ Civil/ Landscaping</td>
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<td>(217,000 sf $6 per square foot)</td>
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<tr>
<td>Total</td>
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## Exclusions
- Environmental Mitigation
- Photovoltaic System
- Equipment
- Development Costs (fees, professional services)
- City Management Costs
Can we make this out of this?