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# Sustainability to Resiliency





## Key Presentation Take-Aways

1. Understanding of resilient design trends
2. Awareness of how other transit agencies have balanced sustainability and resiliency.
3. A process for balancing the synergies and conflicts of both.

Context

Natural Disasters





Financial Crisis

Context

A photograph of a white, two-story house with a gabled roof and a small front porch. In the foreground, a white rectangular sign with the word 'FORECLOSURE' in large, bold, red capital letters is mounted on a metal post. The sign is slightly out of focus compared to the house behind it. The background shows a clear blue sky and some green foliage.

**FORECLOSURE**

Context

Terrorism



# Evolution







# Resilient Facilities

Shock resistant, healthy, adaptable and regenerative through a combination of diversity, foresight and the capacity for self-organization and learning.

Can withstand shocks and rebuild/recover when necessary.

Resiliency requires humans to embrace their capacity to anticipate, plan and adapt for the future.

**Resistant,**

**Healthy,**

**Adaptable**





# Site Selection

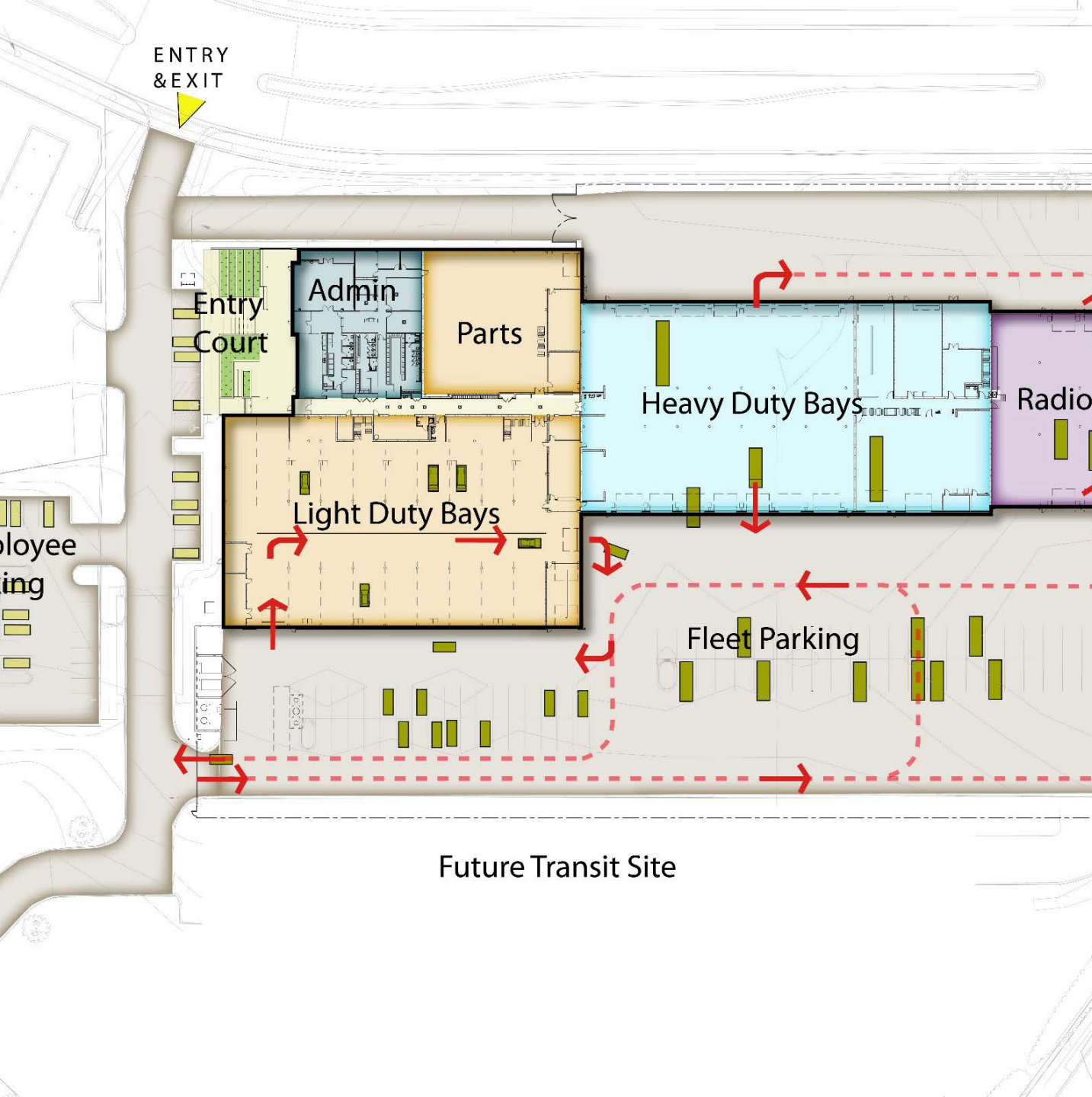
*was...*

Impact of the facility on the site  
Impact of the site on the facility

*now, includes...*

Floodplain (100-year)  
Employee Accessibility  
Route Adjacency  
Operational Efficiency





# Site Planning

*was...*

- Open Space Ratio's
- Accessible Green Space
- Operational Efficiency
- Vehicle Circulation
- Light pollution

*now, includes...*

- Temporary Relocation
- Emergency Evacuation / Lock Down /
- Active Shooter



# Building Planning

*was...*

Adjacencies

Shared Spaces / Communication

Efficiency and Access

The Natural Environment

*now, include...*

Category 5 - Emergency Preparedness

*Cot Storage / Overnighting / Food Prep*

Extreme Flexibility

*Multi-multi-multi-use spaces*





# Site Security

*was...*

Social Sustainability

*Welcoming,  
Inclusive Public Facility,  
Employee Amenities*

Shiftwork Safety Lighting  
Inventory

*Fares,  
Vehicles,  
Parts*

*now, includes...*

Anti-Terrorism





# Material Choice

*was...*

Recycled Content

Local, Regional Materials

Material Health & Ingredient Transparency

*now, include...*

Durability

Maintenance Free/Low

Local Availability for Replacement





# Building Energy Systems

*was...*

Energy Efficiency

Carbon Footprint

Location impact (heat/cold)

*now, include...*

Systems Reliability, Redundancy

*Micro-Grids,*

*On-Site Battery Storage*

*Protected Generators & Backup Systems*



# Wellbeing

*was...*

Mobility Options

Amenities

Inclusiveness / Special Spaces

*now, include...*

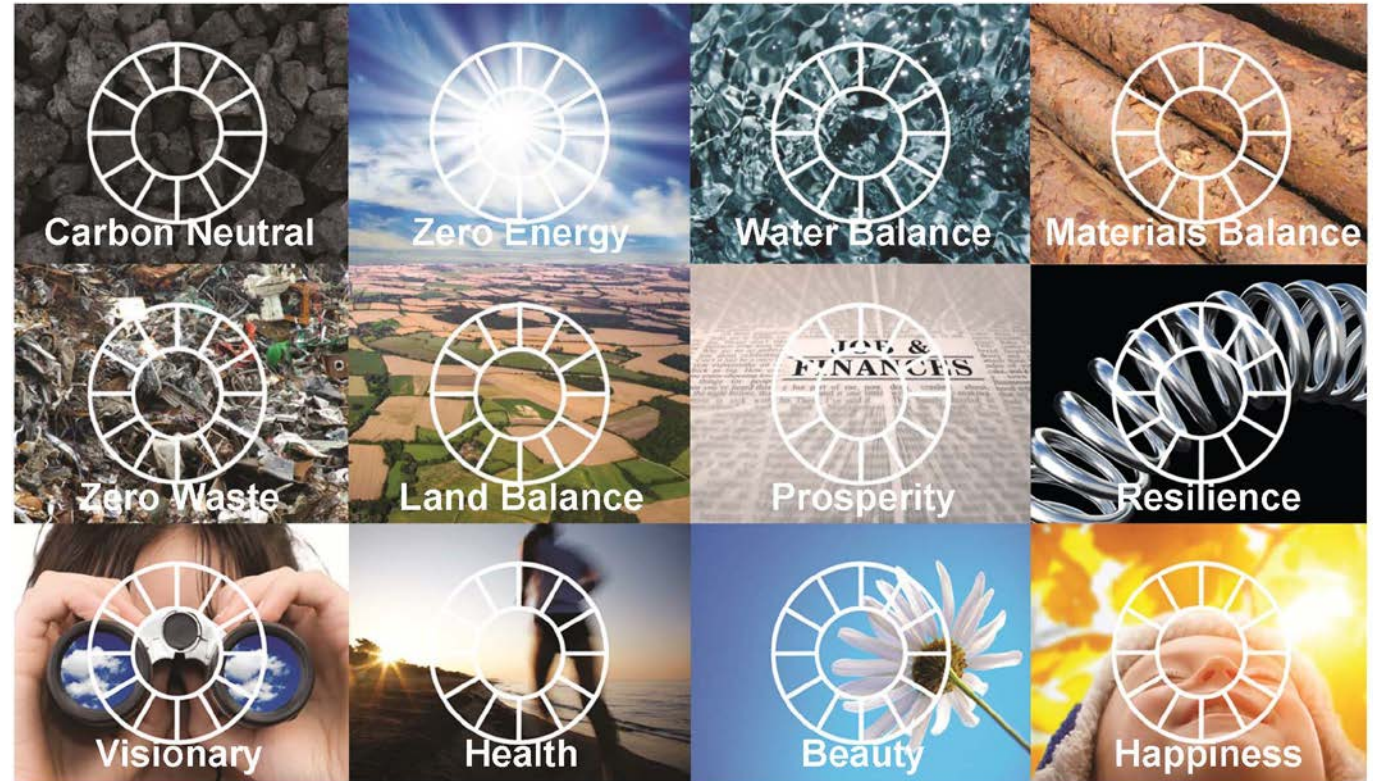
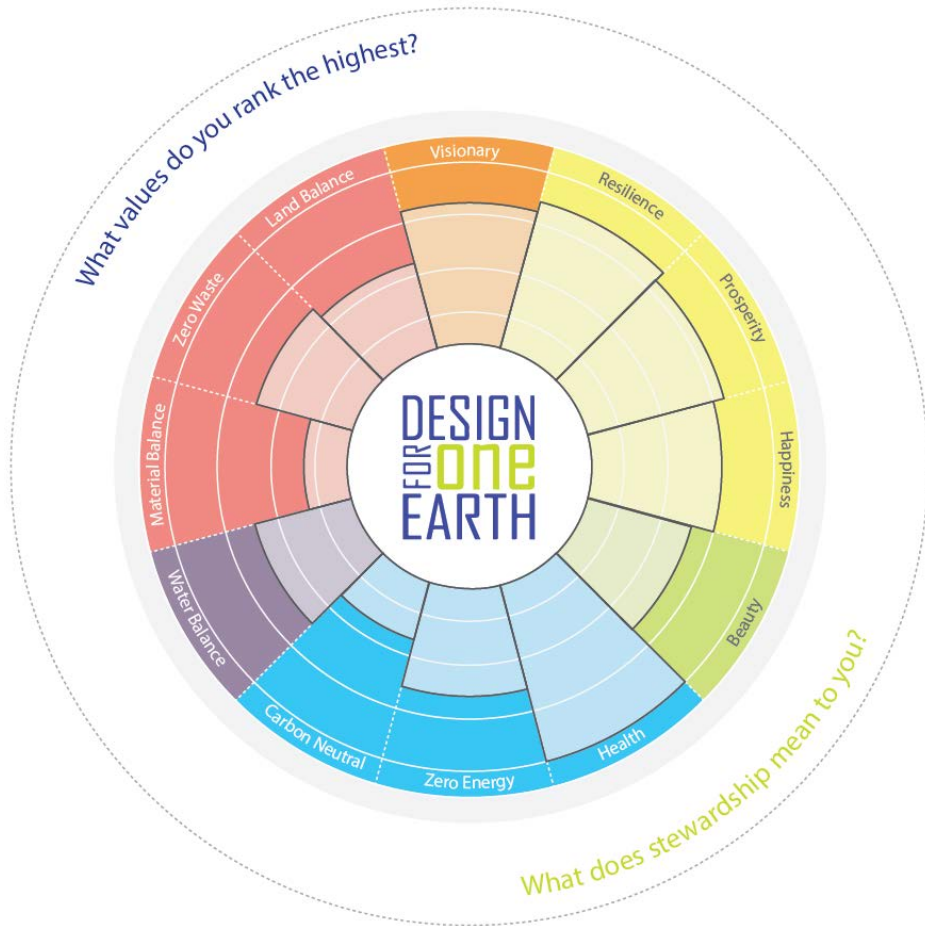
Resilient Workforce

Shelter-in-Place (employees/families)

Community Refuge



# Process



Design 2 Thrive



# Durham Mist Lake – Durham, NC

UNR

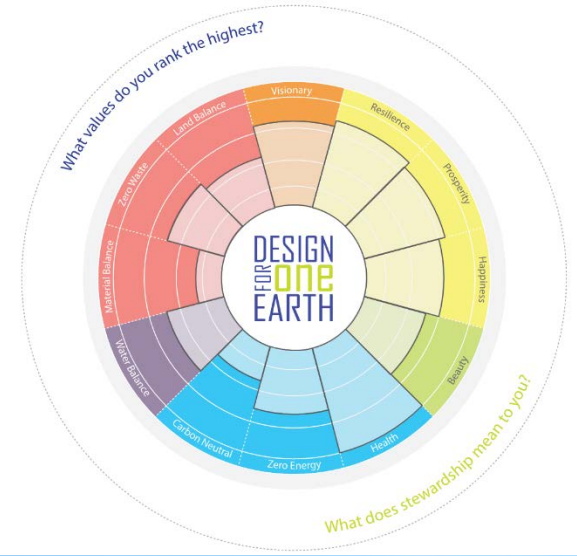


- Water Balance
- Energy
- Resilience
- (Structure)



# Heywood II – Minneapolis, MN

JNJ  
RNL



- Resilience (Continuity)
- Prosperity
- Health





# Nakoosa Trail Fleet/Fire/Radio – Madison, WI



- Energy
- Resilience  
(Flood Plain)
- Health





Without change there is no innovation, **creativity**, or incentive for improvement. Those who initiate change will have a better opportunity to **manage the change** that is inevitable.

***William Pollard***



thank you

