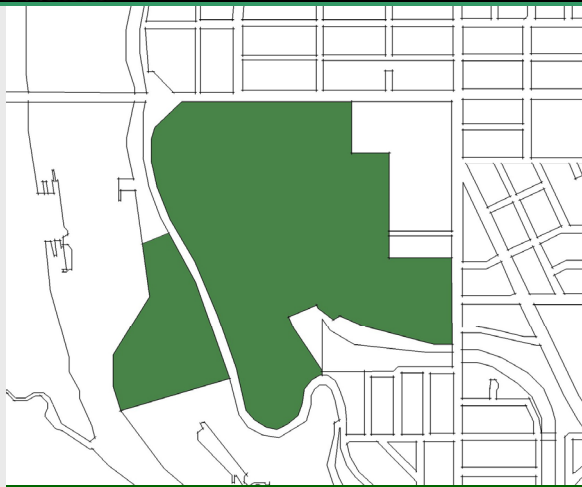




As published May 2, 2011 in the

Ford Site Sustainable Redevelopment Report: Summary of Sustainability Goals for the Ford Site



The ultimate goal of the Ford Site Sustainable Redevelopment Report is to establish performance thresholds for site redevelopment ...

... inspiring policy makers and developers to make this site a national model for sustainable brown-field redevelopment.

Sustainable redevelopment of the 135-acre Ford site is a high priority for the City, regional and state agencies, the Ford Site Planning citizen task force, and much of the public.

A redeveloped Ford site can demonstrate that residents, employers, workers, and visitors can enjoy all the amenities and comforts of modern living while using much less energy, producing clean energy on site, reducing waste, reducing and treating storm-water runoff, restoring a natural ecosystem, and providing an infrastructure system that reduces vehicle trips and encourages walking, biking, and transit.

The report identifies key components of sustainable redevelopment for the Ford site, outlining goals, strategies and performance thresholds for each.

The District Sustainability Standards have eleven components:

- 1.0 Building Energy
- 2.0 Transportation & Public Realm Network
- 3.0 Materials
- 4.0 Water & Wastewater
- 5.0 Solid Waste
- 6.0 Stormwater & Groundwater
- 7.0 Soil
- 8.0 Vegetation & Habitat
- 9.0 Recreation & Public Space
- 10.0 Night Sky Radiation
- 11.0 Urban Heat Island

1.0 Building Energy

Sustainability Goals

- To maximize the use of renewable energy for buildings and infrastructure.
- To reduce operating energy use in all buildings and infrastructure.
- To maximize energy self-sufficiency.

Minimum Performance Thresholds

1.1 Meet energy use and greenhouse gas (GHG) emission targets* specified in Minnesota 2030 program to be required for State buildings through Buildings, Benchmarks & Beyond (B3) Guidelines and consistent with Saint Paul's Green Building Policy:

- 60% reduction by 2010
- 70% reduction by 2015
- 80% reduction by 2020
- 90% reduction by 2025
- 100% reduction by 2030

Ultimate Condition

⇒ Zero net energy and zero greenhouse gas emissions*.

** Greenhouse gas (GHG) emissions can be calculated based on operating energy, as well as on many other contributing factors measured by the Minnesota Building Carbon Calculator, including water, wastewater, waste, embodied in materials, transportation, vegetation, and soil. Energy use can be measured per square foot, per person, per hour of operation, per product output relative to equivalent industrial process, or a combination of these.*

2.0 Transportation & Public Realm Network

Sustainability Goals

- To create a transportation infrastructure that balances modal choice between walking, biking, and vehicular movement.
- To reduce average vehicle miles driven by persons living, working and visiting the site.
- To increase average walking and biking miles per year for persons living or working on the site.
- To reduce energy use and Green House Gas (GHG) emissions related to high vehicle miles driven (VMD).
- To reduce adverse human health affects (such as asthma) related to air pollution.
- To maximize the diverse human benefits (such as childhood obesity reduction and lower family transportation costs) of safe and pleasurable pedestrian and multi-modal access to and from (on-site & off-site) transit stops, daily services, institutions, parks and public spaces.

Minimum Performance Thresholds

2.1 Provide mix of office, industrial, residential, and commercial uses on site that complement the existing mix of uses and services in the area.

2.2 Minimum residential density (du/acre) greater than 20 du/acre (*Density to be calculated using LEED-ND computational method outlined NPD Credit 2).*

2.3 Minimum Non-Residential floor area ratio (FAR) greater than 1.50 (*Non-Res. FAR to be calculated using LEED-ND computational method outlined NPD Credit 2).*

2.4 Internal street connectivity (intersections/square mile according to LEED-ND definition) equal to or greater than the highest connectivity found in adjacent neighborhoods, computed for adjoining area of same size and shape as site.

2.5 All streets and intersections to utilize design methodologies consistent with 2010 ITE Manual: Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, An ITE Recommended Practice and "Complete Streets" design principles.

2.6 Zero dead ends and zero cul-de-sacs except to serve the rear of buildings.

2.7 95% of streets lined on both sides with sidewalks minimum 54" wide. (Per ADA requirements)

2.8 Provide designated bike lanes on streets at least every ½ mile.

2.9 50% of all residential and non-residential building entries within ¼ mile of vehicle sharing site or transit services.

Ultimate Condition

⇒ Decrease average vehicle miles driven to 4,000 or less per driving resident per year, a 50% reduction in carbon per mile traveled.

3.0 Materials

Sustainability Goal

- To reduce embodied energy use, GHG emissions and other environmental impacts associated with building, infrastructure, and landscape materials.

Minimum Performance Threshold

3.1 Life-cycle performance of all buildings at least 10% better than the average building using Athena EcoCalculator in six of the eight output areas, or comply with State of Minnesota B3 Guidelines, Materials and Waste, section M.1 -- Life Cycle Assessment of Building Assemblies.

3.2 Comply with State of Minnesota B3 Guidelines, Materials and Waste, section M.2 -- Environmentally Preferable Materials.

3.3 At least 30 percent of the total value of materials used in site infrastructure are composed of pre- and post-consumer content.

Ultimate Condition

- ⇒ Life-cycle performance of all buildings at least 30% better than the average building using Athena EcoCalculator in seven of the eight output areas.
- ⇒ Exceed required performance criteria inof Minnesota B3 Guidelines, Materials and Waste, section M.2 -- Environmentally Preferable Materials, by 10 percent.
- ⇒ At least 50 percent of the total value of materials used in site infrastructure are composed of pre- and post-consumer content.

4.0 Water & Wastewater

Sustainability Goals

- To reduce potable water consumption in all buildings and landscapes.
- To reduce wastewater leaving the site to treatment plants from all buildings and landscapes by increasing onsite wastewater reuse.

Minimum Performance Thresholds

4.1 Predicted potable water use must be 30% below EPA Policy Act of 1992 (consistent with Saint Paul Green Building Policy).

4.2 Predicted water use for landscaping must be at least 50% less than a traditionally irrigated site (consistent with Saint Paul Green Building Policy).

4.3 Fifty percent (50%) less black and/or gray water leaving the site than an average or typical development, during design phase and long-term operations.

Ultimate Condition

- ⇒ No more than five percent (5%) of the total daily water requirement/person imported to site.
- ⇒ Zero gray water leaving the site, and ten percent (10%) or less black water leaving the site during design phase and long-term operations.



The Ford Site Sustainable Redevelopment Report was produced by the City of Saint Paul with the assistance of consultants on the "Ford Site Green Team" under a grant provided by the Minnesota Pollution Control Agency.

For updated report: <http://www.stpaul.gov/index.aspx?NID=1318>

5.0 Solid Waste

Sustainability Goals

- To reduce solid waste from construction in all buildings and landscapes.
- To reduce solid waste from operation of all buildings and landscapes.

Minimum Performance Thresholds

5.1 Seventy five percent (75%) of all construction waste must be recycled (consistent with Saint Paul Green Building Policy).

5.2 Fifty percent (50%) less household, commercial and industrial solid waste leaving the site than an average or typical development.

Ultimate Condition

- ⇒ Zero construction, residential, commercial and industry solid waste leaving the site.

6.0 Stormwater & Groundwater

Sustainability Goals

- To minimize surface and ground water pollution.
- To minimize negative impacts of development on the hydrological cycle by treating stormwater close to where it falls and recharging groundwater through infiltration as local soils and subsurface conditions allow.
- To not exceed natural erosion and sedimentation levels in streams and lakes.
- To protect plant, invertebrate, and animal life in lakes and streams.
- To utilize stormwater runoff as a resource rather than as a waste product.
- To pre-treat all water flowing to Hidden Falls and maintain a more constant flow volume.

Minimum Performance Thresholds

6.1 Comply with current local regulations for stormwater runoff volume and rate control (City of St. Paul, Minnesota Pollution Control Agency (MPCA), Capitol Region Watershed District (CRWD), State of Minnesota B3 guidelines).

6.2 Reduce runoff volume by at least 90% on an annual basis by infiltration (50%) and evaporation or re-use (40%) or provide a corresponding water quality benefit.

6.3 Reduce pollutants for which the water is impaired to 10% less than levels identified in Total Maximum Daily Load (TDML) study for that portion of the Mississippi River.

6.4 Maintain minimum cover (e.g. >3') above bedrock and follow Minnesota Pollution Control Agency (MPCA) Guidelines on infiltrating.

6.5 Produce and implement a Stormwater Pollution Protection Plan per MPCA guidelines for use pre, during and post construction.

Ultimate Condition

- ⇒ Zero discharge of untreated stormwater from site.
- ⇒ Re-direct low flows on adjacent properties away from untreated storm sewers and onto the Ford site for treatment in site's comprehensive stormwater management system.

7.0 Soil

Sustainability Goals

- To protect and restore soil structure, stability, and biological health to optimize plant health and species richness and optimize water infiltration and filtration.
- To reduce soil loss and minimize disturbance of existing quality soil.
- To maximize on-site reuse of existing soils.
- To address impacted soil conditions on site.

Minimum Performance Thresholds

7.1 Meet MPCA soil cleanup criteria with land use restrictions.

7.2 Meet State of Minnesota B3 Guidelines for soil management:

- **Organic matter** >1.5% by dry weight
- **Bulk density** < than 1.5 mg/m3
- **Aeration porosity** (% large pore volume) >2%
- **Infiltration rate** > 0.25 in/hr site wide, >1 in/hr

- in stormwater treatment areas
- **Soil pH** 6-8.5
- **Cation exchange capacity** > 5 meg/100g
- **Potassium** > than 124 lbs/acre
- **Phosphorus** > than 44 lbs/acre
- **Mycorrhizae** — Minimum 2 species in soil that are naturally found in Minnesota
- **Soluble salt content** < 600 ppm
- **Stormwater Pollution Prevention Plan** (SWPPP) - create and implement
- **Hydric and mesic soils profile** >10% of open space
- **Organic horizon** > 4 inches throughout

Ultimate Condition

- ⇒ Meet thresholds 7.1 & 7.2, and in addition;
- ⇒ Meet Minnesota Pollution Control Agency (MPCA) soil cleanup criteria with no land use restrictions.
- ⇒ Provide on-site composting location and provide composted material for on-site public and private gardening, landscaping and soil restoration.
- ⇒ Hydric and mesic soils—profile > 20% of proposed open space.
- ⇒ Organic horizon > 6 inches.
- ⇒ Minimum 4 species of mycorrhizae in soil that are naturally found in Minnesota.

8.0 Vegetation & Habitat

Sustainability Goals

- To maximize biodiversity of the site and provide maximum possible contribution to local landscape ecology.
- To reduce destruction and removal of existing vegetation.
- To increase vegetation on site with new plantings.
- To provide wildlife habitat.
- To maximize ecological services on site and for the surrounding area.

Minimum Performance Thresholds

8.1 Comply with applicable codes, regulations and standards, including B3 guidelines, St. Paul zoning and land use regulations, and City of St Paul River Corridor Overlay District.

8.2 Greater than fifty percent (50%) aerial tree cover over all impervious surfaces on-site except roofs.

8.3 Greater than fifty percent (30%) of buildings include vegetated roofs.

8.4 Greater than twenty percent (20%) of site open space covered with vegetation.

8.5 Greater than seventy five percent (75%) native species in new landscaping, including keystone species; (at minimum) Burr Oak, Hickory/Walnut & Big Blue Stem.

8.6 Minimum plant species diversity greater than eighty percent (80%) species of native vascular flora – herbaceous perennials. No invasive species on the site. Use ten percent (10%) or less species of native Deciduous Trees and > 3 species of native Coniferous Trees, but not greater than ten percent (10%) of any one tree genus, so as to avoid catastrophic tree loss e.g. Dutch Elm Disease, Emerald Ash Borer.

8.7 Do not disturb habitat or natural resources determined significant by Minnesota DNR Natural Heritage Program or by local, state or federal government; maintain or install appropriate buffer width around significant habitats that comprise part of a development.

Ultimate Condition

- ⇒ 70% aerial tree cover over non-roof impervious surfaces, and 50% of buildings include vegetated roofs.
- ⇒ 100% native tree, shrub, perennial and vine plantings compositions.
- ⇒ A species-rich, resilient, urban forest with ≥ 50% of tree population exceeding 20 inch Diameter Breast Height (DBH) and 20% exceeding 30 inch DBH.
- ⇒ Diverse ecosystem that supports at least the presence of key species as follows:
 - Amphibians (3 species); interior forest birds (10 species); interior grassland birds (3 species); bats (2 species); reptile (2 species).

9.0 Recreation & Public Space

Sustainability Goals

- To improve personal health through increased physical activity, by providing on site facilities for a variety of active and passive exercise and recreational choices such as recreational walking and biking, informal play, or participation in organized sport activities.
- To encourage the development of (and connections to) biking and walking trails within, to, from and through the site.
- To encourage provision of and/or access to a comprehensive set of public gathering spaces for a full range of civic and community events.
- To provide space for community gardens, local agriculture, and the sale of locally-grown food.

Minimum Performance Thresholds

9.1 Comprehensive network of ADA accessible off-road trails for walking and biking throughout the site, connecting the site's major uses and services and public spaces.

9.2 Four programmed sports fields on site.

9.3 One, large outdoor public gathering space for events, picnics, farm market, etc.

9.4 Twice weekly farmers' market on or within one half (1/2) mile of site.

9.5 Three or more indoor public spaces (or private spaces accessible to public use) for community meetings, clubs, parties, etc.

Ultimate Condition

- ⇒ Each resident shall have potential to receive 60% of their produce from on site food production facilities or gardens during the local growing season, and 20% during the winter months.
- ⇒ 1/2 acre civic or passive public space within ¼ mile of 90% of dwellings, and non-residential building entries.
- ⇒ Create community center for public gathering, civic events, and sports & recreational programming for all ages.

10.0 Night Sky Radiation

Sustainability Goals

- To reduce light emitted from site to the sky at night.
- To protect the environments of predator & prey.

Minimum Performance Threshold

10.1 The average phototropic lumens for the entire site shall be 40,000 lumens per net acre using full-cutoff (fco) lighting, with no one individual area of the site exceeding 70,000 lumens/net acre.

Ultimate Condition

- ⇒ The average phototropic lumens for the entire site shall be 10-20,000 lumens per net acre using full-cutoff (fco) lighting with no one individual area of the site exceeding 40,000 lumens/net acre.

11.0 Urban Heat Island

Sustainability Goals

- To reduce urban heat island effects on site by reducing the heat absorption of materials used in buildings, landscaping and infrastructure.
- To increase vegetative cover to help keep the site and buildings cool in the summer.
- To reduce the need for air conditioning and irrigation in the summer.

Minimum Performance Threshold

11.1 Average surface albedo for the entire site greater than 0.1.

Ultimate Condition

- ⇒ Average surface albedo for the entire site between 0.15-0.3.

Browse to the complete Ford Site Sustainable Redevelopment Report at the link below to see complete information about the categories, strategies for sustainable design, general findings, resources, and next steps to achieve this ambitious vision.

