SUSTAINABLE FORD SITE REDEVELOPMENT
Recommendations for the Twin Cities Ford Assembly Plant Redevelopment: A 21st Century Community
Acknowledgements

*Sustainable Ford Site Redevelopment Report* was written by the Natural Resources Defense Council (NRDC). Thank you to Merritt Clapp-Smith and Mike Richardson from the City of Saint Paul, Planning and Economic Development Office for helping to ground these recommendations in local knowledge and expertise. This report was part of NRDC’s Urban Solutions and MZ Strategies engagement in the Twin Cities. Urban Solutions and MZ Strategies worked together to launch quarterly Twin Cities Green Development Forums in 2015. The findings in this report were presented in January 2016. The forums were made possible through generous grant support from the McKnight Foundation.

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Executive Summary

This report, *Twin Cities Ford Assembly Plant Redevelopment: A 21st Century City*, represents recommendations for implementing a comprehensive and sustainable redevelopment of the Ford Site in Saint Paul, Minnesota. These guidelines were generated through the synthesis of the current thinking and previous planning documents for the Site audited against our Green Neighborhood Assessment Tool. In addition, these recommendations are grounded in thoughtful and collaborative discussions with the City Planning Office.

The report takes into account nearly ten years of significant analysis around the potential for the site. These plans and ideas were ensured to achieve the highest standards for sustainability. The report is timely in that the site will soon be put on the market by Ford Motor Company in hopes of going under contract to a master developer. While not all recommendations will be novel, this is the first report to develop an inclusive, place-based approach to the redevelopment that also prioritizes city actions. It is critical that the most important goals, such as creating walkable and livable streets that connect to the rest of the surrounding neighborhoods as well as the prioritization of environmental sustainability, health, and social equity are reiterated so they retain importance over the course of the development process.

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*Table 1. Results of Green Neighborhood Assessment and Analysis*
The analysis of the Green Neighborhood assessment matrix identified and synthesized strengths, weaknesses and opportunities in the planning documents for the Ford Site. Table 1 shows the assessment results categorized by the topic areas utilized in the Green Neighborhood tool.

In order to make connections and eliminate inefficiencies, the approach taken for this project must involve thinking big, while acting incrementally. For example, a key recommendation is for the City to take a phased approach to the master planning process. The first phase will identify stormwater and green infrastructure opportunities. Following this phase, the street grid can be outlined with access to transit. Then, additional context can be added in the form of housing diversity and affordability. Incorporating equity issues and engaging with community leaders is critical in every step of this process. Finally, it is strongly believed that this is an opportunity for the City of St. Paul and Mayor Coleman to be national leaders in shepherding the values of sustainability, equity and livability on the redevelopment of such a significant site.

**Introduction**

When Ford Motor Company announced that the Twin Cities Assembly Plant would be closing in 2011, the City of Saint Paul and partners, including local leaders and residents, seized the opportunity to turn the site into “A 21st Century Community.” The 135-acre site is nestled between Saint Paul’s Highland Park neighborhood and the Mississippi River. Currently, the site is cleared and is being prepared for sale to a master developer by Ford. Since the announcement in 2007, the City of Saint Paul’s Ford Site Sustainable Redevelopment Team and Ford Site Task Force have completed several plans and studies about the future of the site. These studies, led by the City’s Office of Planning and Economic Development, include planning and visioning options for the site, infrastructure feasibility analysis, zoning framework analysis and input from stakeholders and residents. It is clear from these studies and plans that the sale and redevelopment of the property offers a significant opportunity to challenge the status quo for neighborhood planning and lay the foundation for a redevelopment project that embraces cutting-edge design, minimal energy use and an inclusive place for people to reside and commerce to thrive.

To further these goals, the Natural Resources Defense Council’s (NRDC) Green Neighborhoods team conducted a Green Neighborhood Assessment to support the efforts of the City’s Ford Site team. The goal of this assessment is to implement the most environmentally exemplary and sustainable approach for the large-scale site redevelopment opportunity at the Ford Site. Our team analyzed the existing plans through the lens of sustainability, equity and health, as well environmental and economic
resilience. The findings focus on achieving a cohesive vision that integrates sustainable land use, green infrastructure, clean energy, and walkability as well as equitable access to jobs, transportation and a diversity of housing. The outcomes and recommendations in this report represent the results of our analysis.

The recommendations for the Ford Site are part of NRDC's broader engagement in the Twin Cities. Ford is one of three large-scale sites, along with Rice Creek Commons and Prospect North, undergoing redevelopment in the region. Urban Solutions and MZ Strategies have worked together to launch quarterly Twin Cities Green Development Forums in 2015 to bring together key individuals and foster learning and exchange around the best strategies for approaching the redevelopment of these sites. Our work will add to the body of knowledge that exists on understanding site-specific and regional opportunities and barriers to innovation. These forums were made possible with generous grant support from the McKnight Foundation.

Background on the Ford Site

The history of Ford Motor Company's Twin Cities Assembly Plant in the Highland Park neighborhood can be translated into the vision for redevelopment of the site into a smart and efficient neighborhood. Henry Ford began assembling Model Ts in Minneapolis in 1912, but in the early 1920s, selected a new parcel of land in a more prime location along the Mississippi River. Here, he would have access to cheap hydroelectric power from Lock & Dam No. 1, constructed in 1917. The site became the Twin Cities Assembly Plant. In operation from 1925 until closing in 2011, the plant produced millions of vehicles, and Ford undertook the construction of a railroad line, now owned by Canadian Pacific Railway. Adjacency to the Upper Mississippi allowed barges carrying materials access to the site, in addition to access by rail. Ford also constructed a network of tunnels beneath the site itself for the mining of silica sandstone, used to create glass for vehicle windows, further emphasizing Ford's determination to efficiently utilize the geography of the site.

Despite decades of high productivity, Ford Motor Company announced the closing of the site in 2007, and the last automobile rolled off the line on December 16, 2011. Although Ford plans to sell the site for redevelopment, there is a great opportunity for it to become a legacy site, exhibiting both the efficient utilization of space as favored by Henry Ford, and the modern sustainable vision of his great-grandson,

Bill Ford posits that our freedom of mobility, so highly valued by his great-grandfather, is inevitably going to be threatened by population growth and subsequent environmental degradation. However, Bill Ford envisions a society where a modern mobility model, advanced with today’s technological ingenuity, can exist in harmony with preservation of the natural world. This “leap in thinking” is characterized by an integrated system of “smart roads, smart parking and smart transportation systems” that maintains and improves our ability to move around in a sustainable way, simultaneously curbing greenhouse gas emissions, reducing sprawl and providing economic benefits.

Green Neighborhoods and LEED-ND+

The Green Neighborhoods team was pleased to add some value to the effort to redevelop the Ford Site in Saint Paul. Green Neighborhoods is an initiative of NRDC’s Urban Solutions program, and has a growing portfolio of experience in neighborhood-scale sustainability assessment. This report provides recommendations that resulted from performing our Green Neighborhood Assessment process, and engaging in conversations with the City’s lead staff for the Ford Site. These recommendations were presented at the Green Development Forum in January of 2016.

The basis of our Green Neighborhood Assessment for the site was an analysis of existing community conditions, plans and studies performed using the metrics in our LEED-ND+ tool. LEED for Neighborhood

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3 Roadmap for Sustainability: Saint Paul Ford Site (2011)
Green Neighborhood Assessment
Ford Plant Site Redevelopment
February 2016

Development (LEED-ND) is an excellent platform for this effort, because it addresses sustainability at the neighborhood scale. Although LEED-ND was originally intended as a “green seal of approval” for new development projects, the power of LEED-ND in this context is that it serves as a compilation of state-of-the-art sustainability best practices for neighborhoods. The Green Neighborhood team developed an augmented version of the tool, which is referred to as LEED-ND+, based on technical experience working with neighborhoods. The “plus” refers to the inclusion of additional metrics that go beyond the scope of LEED-ND and focus on health, equity and resilience. Although a site that performs well under the LEED-ND metrics will likely be a healthy and equitable one, it is believed that explicit standards improve outcomes in these areas.

The following documents were addressed in the assessment:

- Current conditions: This is a compilation of calculations on adjacent neighborhood conditions, such as intersection density; current land use statistics, latest thinking on zoning concepts, and map data from Google Earth
- Meeting input: Includes presentations, minutes and discussion topics from public meetings in 2015
- Ford Site Zoning Framework Study (2012-2013)
- Roadmap for Sustainability: Saint Paul Ford Site (2011)
- Ford Site Open Space Guidelines (2011)
- Sustainable Stormwater Feasibility Report for the Ford Plant Site (2009)

The plans and documents were rated against the metrics in the document. The purpose was to synthesize this data, find areas of alignment among the documents and measure how they compare with the metrics in the tool. The documents were scored based on how well they achieved the measures, and gaps and areas of incomplete alignment between the documents and the metrics were noted. Through this method, strengths and weaknesses in the planning documents and a method for taking the vision for the Ford Site to the next level were identified.

LEED-ND+ is a tool and a guide for Saint Paul
The findings of the LEED-ND+ analysis can be found in detail in Appendix II, which provides extensive technical knowledge on the project area. Appendix I describes how to use the scorecard. The Technical Manual for Sustainable Neighborhoods is a great resource for implementing LEED-ND and we included
additional information on this in the “Resources” section. Using the scorecard as a living tool for ongoing use by the project team is encouraged. Some ways to apply the tool include:

1) To guide the sustainability standards for current and future neighborhood development in the Ford Site, as well as Rice Commons and Prospect North and future neighborhoods

2) To catalyze market transformation through encouraging and capturing innovation in design

3) As a marketing tool to encourages people to think holistically about neighborhood redevelopment and beyond the scale of the building

4) As talking points for articulating project goals to key decision-makers and

5) To demonstrate the City’s long term commitment to sustainability through the adoption of principles in its planning and regulatory frameworks

6) As a model of principles for other neighborhoods to adopt such as Rice Creek Commons, Prospect North and other communities in St. Paul

This report identifies strengths and areas of opportunities for the City of Saint Paul to consider. The recommendations focus specifically on points of intervention for the City as they implement redevelopment parameters with zoning, subdivision regulations, and a public realm master plan for the site in the coming months. Also, in anticipation of the sale, recommendations for marketing the site by the City that focuses on enticing developers that best fit with the vision for sustainability are included.
Assessment Results

To determine strengths and weaknesses, a comprehensive look at the assessment matrix was taken. Topics or components of the matrix that plans and documents achieved or exceeded were identified as strengths. Topics that the plans and documents did not meet, partially, incompletely or inconsistently met the metrics were potential weaknesses. These were then organized into topic areas and more detail on how to address these topic areas is below. The full assessment matrix explains how to bring the plans and documents into full alignment.

Assets and Strengths
The analysis identified several strengths and assets existing within the site and existing planning documents that performed notably well. Assets include the large size of the site, because it allows the opportunity to think holistically about the redevelopment. In addition, the proximity to the airport as well as to downtown Saint Paul and Minneapolis and existing neighborhoods is also an asset. The size and proximity of the site add to the potential to achieve triple bottom line objectives described in many of the planning and visioning documents.

The following elements as achieving high standards in the Green Neighborhood Assessment tool were identified:

- Plans demonstrate a strong understanding of LEED for Neighborhood Development
- Location on a previously developed site adjacent to well-connected existing neighborhood
- Desire for access to parks and open space

Gaps and Opportunities
The analysis also identified gaps, weaknesses and opportunities to improve the vision for the site, and there are also some inherent challenges. Specifically, the results of the Environmental Assessment have yet to be released. While Ford has agreed to clean up the site to developable standards, depending on the level of contamination, the level of remediation necessary for residential use may not be achieved; this would likely be more challenging than cleanup for commercial or industrial uses. In addition, there has been ongoing market uncertainty about the benefits of triple bottom line development; therefore, the need remains to continue to make the case for the market benefits for sustainable redevelopment specifically for this site.
In addition to these inherent challenges, the assessment identified the following areas that notably failed to meet the criteria of the Green Neighborhood LEED-ND+ tool:

- Inconsistency in recommending a strong mix of housing diversity
- Lack of support for housing affordability
- Weak or no mention of support for equity, health and resilience

**Recommendations and Priorities**

NRDC’s recommendations focus on priorities for action for the City. It is important to note that at the time of this report, the findings from the Environmental Assessment are still being assessed. These outcomes may affect the City’s priorities and actions. The recommendations center on the following topics:

- Green Infrastructure
- Land Use, Connectivity and Design
- Improving housing Diversity
- Increasing housing affordability
- Integrating equity
- Using the ND+ Tool to guide actions

In addition to action items described in detail below, the assessment scorecard covers a comprehensive inventory of all of NRDC’s recommendations.

Short case examples for each topic area are also provided. Not only is the creation of integrated and regenerative city spaces the future of urban planning, but it has also been done successfully worldwide, benefiting residents, economies and surrounding ecosystems alike. Examining the case studies of similar redevelopment projects shows the City of Saint Paul and the future developer of the Ford Site the variety of possibilities that are available and proven to work. NRDC hopes these examples of equitable and environmentally sustainable community development become policy and status quo in the future. The provided case studies include examples from:

- Vauban District, Freiburg, Germany
- South Waterfront Eco District, Portland, Oregon, United States
- Almere Port, Flevoland, Netherlands
- Boddington Zero Energy Development, South London, United Kingdom
- Mariposa, Denver, Colorado, United States
Equity, Health and Resilience

In order to develop a healthy, just and sustainable neighborhood, it is necessary to integrate specific goals for equity, health and resilience in the guiding documents. These elements were found to be the most lacking in the plans for the Ford Site. According to the National Equity Atlas, in 2012, the economy in the Twin Cities would have been $19.69 billion larger if there were no racial gaps in income. This is an opportunity for major growth and innovation.\(^4\) One way to address the gaps in equity is through establishing housing diversity and affordability, which are elaborated on further in the housing sections. In addition, the following is recommended:

**Recommendations for City Action:**
- Adopt a goal to reduce or eliminate income inequality in neighborhood plans
- Enable community leaders of all demographic groups to self-organize
- Engage directly with community groups and members on a regular basis
- Identify pre-existing community needs or vulnerabilities

**Case examples:**

*South Waterfront Eco District, Portland, Oregon*

The City of Portland extensively sought public input on the Concept Street Plan Map and plans for the South Waterfront District redevelopment. Feedback from open house attendees, four neighborhood associations, City advisory committees and City commissions was gathered and incorporated into the continued plan development.\(^5\) Public input is critical to the redevelopment process, as it allows the City and/or developer to incorporate residents’ and stakeholders’ needs, vulnerabilities and desires into the final concepts.

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Vauban, Freiburg

In redeveloping Quartier Vauban, the City of Freiburg aimed to create an environmentally sustainable district that embodied social, cultural and economic goals and public input. Project Group Vauban, Freiburg City Council and Forum Vauban, a citizen’s association, worked together to create a plan that was ultimately implemented to establish a vibrant, eco-friendly and welcoming neighborhood. Today, Vauban is a flourishing community of about 5,500 residents, providing 600 jobs as well as citizen-organized housing for students, low-income and single-parent households.

Mariposa, Denver, Colorado

Mariposa is a 15-acre transit oriented redevelopment site in the South Lincoln neighborhood of Denver. It is a model for how to revitalize sites, including public housing, in a way that is walkable, transit-oriented, green, healthy and equitable. As part of the planning for the site, there was extensive public outreach conducted by the Denver Housing Authority along with city and local partners. Community workshops and charrettes were held with a strong focus on health and equitable development. The community undertook a Health Impact Assessment, and implemented both a healthy development measurement tool (HDMT) and a Cultural Audit. The HDMT focused on using the master planning process for connecting the built environment to health outcomes. Data was gathered about physical activity, obesity and heart disease, air quality and asthma, nutrition, traffic safety, noise, and mental health were collected from surveys, meetings, public agency data, and interviews. The cultural audit was based on open-ended interviews with residents that produced community opinions. This information became the foundation for redevelopment with great sensitivity to community needs and concerns.6

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Dockside Green, Victoria, British Columbia

Dockside Green in Victoria, BC is one of the first neighborhoods to achieve a LEED for Neighborhood Development certification and Platinum rating. It is a mixed use community of 1.3 million square feet and over 2500 residents. Dockside green used “Place Speak” as a community engagement platform to engage with residents and provide a forum for dialogue and interactive feedback on plans and development visions.7

Green Infrastructure

The Ford Site Redevelopment team has identified ambitious goals for managing stormwater at the site. The ability to implement these goals depends in large part on the remediation needs that will be identified in the Environmental Assessment. Green stormwater infrastructure design must be fully integrated into the design process for the Site as a whole. The Stormwater Feasibility report advises the completion of groundwater, hydrology, hydraulics and water quality modeling for each phase of the development process, in order to understand the conditions and possibilities for implementing best management practices. Sustainable stormwater infrastructure, including soils, should be seen as the base layer of design for the site, around which other aspects of the master planning process will be formulated. Additional detail can incorporated once this layer is established.

If significant soil remediation is in fact needed, as suspected, this clean-up is an opportunity to include sustainable green infrastructure. Elements including green finger corridors and parcels of green space can be strategically located at optimal places within the site. Once the green infrastructure phase is established, a master plan and street grid can layer on top, meaning sustainable green infrastructure is an inherent feature of the neighborhood. Pervious pavers and plantings, including bios wales and rain gardens, will combine better water quality and reduced runoff with an improved pedestrian experience. The market value for these best management practices comes from improved water quality as well as the associated benefits for residents that they create.

Recommendations for City Action:

- Design the green infrastructure phase first, based on the soil and hydrology modeling
- Incorporate green infrastructure as part of the plan for soil remediation plan
- Comply with Clean Water Act requirements
- Implement the best management practices outlined in the Stormwater Feasibility Report in the master plans, zoning and subdivision regulations
- Aim for first inch of rainfall to remain on site
- Achieve a goal 90% Total Suspended Solids (TSS) removed during 2.5in rain event
- Promote the benefits of green infrastructure for social and economic value

Case example:

**Vauban, Freiburg**

The complete streets of Vauban are embedded with rain gardens, bioswales and other green stormwater infrastructure features that reduce runoff and pollutants from rain events. Green stormwater management techniques are comprehensively integrated into the street and transit network, with sustainable landscaping and rain gardens incorporated into tramlines and pedestrian bridges. Green fingers and corridors connect the neighborhood and its inhabitants to the adjacent Dorfbach River, farmland and the Black Forest, simultaneously providing connected habitat for native plant and animal species and additional cobenefits for residents.\(^8\)

*Connectivity and Land Use*

Once the ground and green infrastructure layer is established, the street grid is the next layer that should be considered. Land use and neighborhood design were strong attributes in the plans and visions for the Ford Site that can be implemented in the master plan and street grid for the site. *The Roadmap for Sustainability: Saint Paul Ford Site* document achieves or exceeds many of the metrics in the tool. The Roadmap demonstrates an impressive understanding of LEED for Neighborhood Development, and references the metrics in ND as specific and measurable goals that the Ford Site Task Force has set for the site. This is notable because, LEED-ND is not often explicitly taken into account. The City should ensure these goals become the basis for the master plan and zoning regulations for the Ford Site.

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\(^8\) See Appendix III for more information.
Recommendations for City Action:

Fully implement the following land use metrics in this phase. These are critical to the development of a walkable, livable, and well-connected community:

- Use the current statistics calling for 8 acres of Little League space and 8.5 acres of dedicated parkland; ensure that the majority of households and areas of employment are within ¼ to ½ mile walking distance from these planned green spaces.
  - Strategic spacing of little league fields and green and open space will ensure that additional congestion is not created, and residents and employees will enjoy adequate access to amenities.
- Ensure that the street grid layer achieves an equal or greater intersection density than neighboring Highland Park (565 intersections per square mile). 600+ intersections would be exemplary.
  - Specifically use the findings from the traffic study that is currently underway to ensure optimal internal and external connections to the site.
  - Connect Montreal Avenue and Mississippi River Boulevard to mitigate congestion.
- Achieve a residential density of 45 dwelling units-per-acre. This level will be in support of transit oriented development, transit investments and amenities for the site.
- Implement minimum density requirements as outlined in The Roadmap for Sustainability (20 DU/acre and minimum 0.5 FAR) in the zoning regulations for the site.
- Provide adequate bike access and engage the strong bicycling community.
- Set parking maximums in the zoning code and provide incentives for shared parking.

Case examples:

South Waterfront EcoDistrict, Portland, Oregon
Plans to redevelop Portland’s South Waterfront District, previously an industrial and partially vacant brownfield site, began in 1996 and the final plan was adopted in 2002 by City Council. The comprehensive plan established criteria and standards for streets and transportation, extending existing roadways into the development to ensure connectivity and designating options for pedestrians, bicyclists and public transit. The 86-acre South Waterfront EcoDistrict boasts connections to the Portland streetcar and tram, greenways, a pedestrian bridge and light rail, which opened recently in 2015. Residents and visitors are conveniently connected both internally and to adjacent neighborhoods.
and greater Portland. Not only does street design balance traffic and increase walkability, but it also features green infrastructure like trees and rain gardens to reduce stormwater runoff, capture pollutants and enhance enjoyment for the public in open green spaces.\(^9\)

**Vauban, Freiburg**

The Vauban district in Freiburg, Germany also exhibits exemplary connectivity and land use. The 640-acre neighborhood is connected to the City of Freiburg by multiple tram stops situated throughout the district. Cars are only permitted on arterial roads, with the remaining streets prioritizing pedestrians and cyclists.\(^{10}\)

**Stapleton, Denver, Colorado**

Neighborhood connectivity was a key component to the redevelopment of Stapleton, previously the Denver International Airport. At 4700 acres, the neighborhood is an example of one of the largest urban infill sites to be redeveloped using new urbanist principles. The vision for Stapleton focuses on access to open space, resources, walkability to amenities as well as integrating sustainability and diversity. Stapleton continues to develop and provides a case study of how the neighborhood is still working to tackle issues of housing diversity and transit service.\(^{11}\)

**Housing Diversity**

Housing diversity is a key component for consideration in redevelopment of the Ford Site. After determining the street grid and connectivity for the site, housing and buildings must be addressed. The surrounding area is primarily single family and fairly demographically homogeneous. As a result of our assessment, discrepancies in housing and building diversity were identified. Some of the plans, including the Roadmap and Zoning Framework, called for a higher level of housing diversity, as measured by the Simpson Diversity Index. Other plans focused primarily on single family dwellings or apartments. Some of this is dependent on the outcome of the pending Environmental Assessment, but development efficiency is often a reason for not pushing for housing diversity. However we strongly recommend incentives for boosting diverse housing and building types in order to achieve a mixed-use, cultural and sustainable neighborhood. Accessory dwelling units, smaller lot sizes and mix of housing type can increase density, provide a range of affordability (as well as an owner and renter mix) and accommodate

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\(^{10}\) See Appendix III for more information.

varying household sizes and ages. These typologies can include mixed-use buildings, live-work areas, single- and multi-family housing and typologies that are in between.

Recommendations for City Action:
- Be aggressive in promoting different building types
- Permit a wide range of uses and housing variety in the zoning code
- Allow accessory dwelling units
- Design smaller lot sizes
- Identify appropriate housing subsidies and resources to be deployed

Case Example:
South Waterfront Ecodistrict, Portland, Oregon
In addition to ensuring reduced traffic and connectivity for pedestrians, cyclists and transit, the new South Waterfront EcoDistrict in Portland, Oregon is also promoting mixed-use development, including diverse building types such as residential and commercial as well as academic buildings for the local university. Supported by new utility infrastructure, there will be over 2,000 residential units—over 200 of which will be affordable for low-income residents—and commercial buildings for businesses and retail space. The District will support over 1,000 jobs, simultaneously allowing for increased culture, walkability and sustainability in the area.\(^\text{12}\)

**Housing Affordability**

In addition to typology, housing affordability should garner greater importance in the planning for the Ford Site. While we understand that the need must be clearly defined, we urge the City and policy leaders to think creatively and strategically about increasing affordability, in particular energy efficient affordable housing. Improved housing diversity is one mechanism to address affordability. We recommend that a mix of affordability is included in the master plan and zoning processes. A recent report by MZ Strategies demonstrates that early commitment to affordability by local leaders greatly improves outcomes. Refer to the report for detailed findings on housing mix and affordability.

By including affordable housing goals in the master plan, the city is signifying that this is a priority.

Recommendations for City Action:

\(^\text{12}\) Development Webinar: Portland’s South Waterfront EcoDistrict
Green Neighborhood Assessment
Ford Plant Site Redevelopment
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- Use zoning regulations to ensure that attached and small lot housing is not inhibited
- Work collaboratively with State Housing Finance Authorities to incorporate energy-efficient affordable housing and achieve optimal tax credit allocations for the site
- Prioritize reduced emissions and for lower energy bills for households
- Explore a city-wide inclusionary zoning policy
- Identify a package for affordable housing finance tools
- Conduct an affordable housing workshop for the site with for-profit and non-profit housing developers

Case Examples:

*South Waterfront EcoDistrict, Portland, Oregon*
Portland, Oregon’s South Waterfront EcoDistrict will contain more than 200 residential affordable housing units in the mixed-use neighborhood. Through urban form and creative utilization of district energy and building energy reduction, the EcoDistrict also hopes to contribute to the reduction of greenhouse gas emissions up to 80% by 2050, to comply with the City’s Climate Action Plan (CAP). Reduced emissions and modern energy systems will reduce bills for residents.¹³

*Almere Poort, Netherlands*
Almere Poort, a housing project built on council-owned lands in the Netherlands, represents a creative and unique solution to providing affordable and diverse housing for low-income residents. Individuals or families can purchase a small plot, and select and customize a home to fit their personal needs. Although an economically- and environmentally-friendly scenario such as this is not likely to be possible on the Ford site, a creative solution permitting a wide range of housing and building types is both recommended and feasible.¹⁴

*Beddington Zero Energy Development, London, United Kingdom*

¹³ Development Webinar: Portland’s South Waterfront EcoDistrict
The Beddington Zero Energy Development (BedZED) in London, United Kingdom is a mixed-use sustainable urban village, located on a previous brownfield site that utilizes energy efficient and renewable technologies to minimize emissions and produce energy. Although some of the high-density residences in BedZED sell for slightly more than other homes in the area, the Housing Authority and private developer were mandated to ensure two-thirds of the provided housing was affordable.\textsuperscript{15,16}

\textit{Stapleton, Denver, Colorado}

Builders and community leaders are determined to provide a mix of affordability to housing in Stapleton. They are able to keep housing affordable through a mix of financial tools such as tax incentives, credits, grant support for energy efficient housing design and loan funds from the City.\textsuperscript{17}

\begin{footnotesize}
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\item Bioregional. BedZED. \url{http://www.bioregional.com/bedzed/}
\item “As rents rise rapidly, Stapleton's builders are determined to bring affordable new homes to Denver's most popular community.” June 5, 2015. \url{http://www.denverpost.com/ci_28258412/rents-rise-rapidly-stapletons-builders-are-determined-bring}
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LEED-ND+ Assessment Scorecard

The project team developed the assessment scorecard to be used as a reference by the City of Saint Paul. The scorecard is attached in Appendix II. The data represents an analysis of the existing conditions and current area plans against the metrics in LEED-ND+.

We envision that the scorecard will be used in conjunction with the narrative as a reference for technical information for integrating a high level of sustainability into the implementation of a Sustainable Ford Site Redevelopment.

Below is a link to the full LEED-ND guide:
LEED-ND version 4
Appendix II

LEED-ND+ Matrix

The LEED-ND+ Matrix begins on the next page.
LEED-ND Components

1.1 Prioritizing

1.1.1 Community assessment

- The redevelopment project plan, as currently developed, includes an assessment of the affected population that demonstrates a community needs assessment.
  - N/A

1.1.2 Public participation and feedback

- In order to engage and prioritize strategies, community participation is planned.
  - N/A

- In consultation with project teams, community feedback was sought.
  - N/A

- This project engages the public for opportunities for the plan to be refined as community feedback is provided.
  - N/A

- Capacity to engage community members to satisfy the public participation requirement.
  - N/A

- Are the following components included in neighborhood plans and policy to address community participation?
  - N/A

1.2 Redevelopment

- High connectivity (intermodal density)
  - N/A

- Adjacent and connected (contiguous development)
  - N/A

- Walkable diverse uses
  - N/A

1.3 Family

1.3.1 Land use

1.3.2 Connectivity

1.3.3 Public transportation

1.3.4 Economic competitiveness

1.3.5 Innovation

1.3.6 Resilience

1.3.7 Sustainability

1.3.8 Equity

1.3.9 Adaptability

1.3.10 Benefits

1.4 Technical

- Achievements of exemplary activity (e.g., LEED/energy).
  - N/A

- Incentives to achieve exemplary activity (e.g., LEED/energy).
  - N/A

1.5 Design

1.5.1 Phase 1

1.5.2 Phase 2

1.6 Outreach

- The development plan culminates in a series of public open house events.
  - Y

- The engagement plan includes various strategies that reduce the cost of living and working.
  - N/A

- Support for transfers that encourage sustainable investments, reduce the cost of living and working.
  - N/A

- Are the following components included in neighborhood plans and policy to address community participation?
  - N/A

2.1 Land use

2.2 Connectivity

2.3 Public transportation

2.4 Economic competitiveness

2.5 Innovation

2.6 Sustainability

2.7 Equity

2.8 Adaptability

2.9 Benefits

2.10 Technical

2.11 Outreach
### 3. Transportation

#### a. Traffic speed

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<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
</table>
| How much is in the build-out speed (in 2050) for the current road network? | Follow complete update guidelines. Check:.TBD, if the road network is completed. |}

#### b. Motor vehicle parking

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
</table>
| What is the ratio of non-residential to residential parking on the site? | Not specified |}

### 4. Planning

#### a. Impacted species

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are wildlife/wetland species present or likely in the community?</td>
<td>N/A</td>
</tr>
<tr>
<td>Is this species protected by a federal legislation, state or municipal?</td>
<td>N/A</td>
</tr>
<tr>
<td>Are there areas of critical habitat or sensitive natural areas in the community?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

#### b. Waterbodies & wetlands

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there wetlands or wetlands outside the project boundary that will be developed or are waterbodies?</td>
<td>N/A</td>
</tr>
<tr>
<td>Are there areas of critical habitat or sensitive natural areas in the community?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 5. Floodplains

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there areas of critical habitat or sensitive natural areas in the community?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 6. Brownfield soil remediation

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there areas of brownfield soils in the community?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 7. Impact assessment

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any significant differences between the two sides of the road?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 8. Signage

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any sign-related issues, such as safety, visibility, accessibility, and aesthetics?</td>
<td>N/A</td>
</tr>
</tbody>
</table>
In some cases, incentives or requirements for preservation or restoration of natural areas, sidewalks, and other elements that contribute to the overall aesthetic or ecological value of a development may be necessary or desirable. These incentives can include

- Preservation of existing trees or vegetation
- Setbacks from property lines or other natural boundaries
- Protection of wetlands, ponds, or other water bodies
- Protection of historical or cultural sites
- Protection of significant geological features
- Protection of significant animal or plant species

The specific incentives and requirements will depend on the context and the intended goals of the development. For example, in areas designated for open space or parkland, development may be prohibited or limited to certain types, and specific preservation requirements may be mandated. In other areas, preservation of existing vegetation or the protection of significant ecological features may be required.

In other cases, incentives or requirements may be designed to preserve or enhance specific natural or cultural features. These incentives may include

- Preservation of existing trees or vegetation
- Protection of wetlands, ponds, or other water bodies
- Protection of historical or cultural sites
- Protection of significant geological features
- Protection of significant animal or plant species
- Protection of significant cultural or historical features

The specific incentives and requirements will depend on the context and the intended goals of the development. For example, in areas designated for open space or parkland, development may be prohibited or limited to certain types, and specific preservation requirements may be mandated. In other areas, preservation of existing vegetation or the protection of significant ecological features may be required.

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- Protection of significant geological features
- Protection of significant animal or plant species
- Protection of significant cultural or historical features

The specific incentives and requirements will depend on the context and the intended goals of the development. For example, in areas designated for open space or parkland, development may be prohibited or limited to certain types, and specific preservation requirements may be mandated. In other areas, preservation of existing vegetation or the protection of significant ecological features may be required.
## 4.2 Water resource

### a. Rainwater management

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### b. Landscape irrigation efficiency

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## 13.4 Exterior lighting

### a. Setbacks

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum height setbacks required relative to street width for selected area</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## 7.2 Visibility & universal design

### a. Residential buildings

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>How high is the exterior wall that is closest to any street</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## 7.3 Green performance

### a. Green certification

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many buildings are LEED certified or other certification</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## 7.4 House & studio preservation

### a. Reuse

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### b. Historic preservation

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
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<th>N/A</th>
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</thead>
<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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</table>

### c. Water efficiency

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
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<th>N/A</th>
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<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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</table>

## 16. Economic development

### a. Local incentives

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
<th>Not specified</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
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</thead>
<tbody>
<tr>
<td>For regulations, or in incentives, sufficient, required or maximum amount</td>
<td>Required in Level 2 (exemplary: 40%)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>-----------------</td>
</tr>
<tr>
<td><strong>5.8 Workforce Development</strong></td>
<td><strong>5.8 Economic Development and Recovery</strong></td>
<td></td>
<td><strong>5.3 Emergency Response Services</strong></td>
<td><strong>5.2 Public Safety</strong></td>
<td><strong>5.1 Housing</strong></td>
<td><strong>5.1 Arts in the Community</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workforce development and training supported through the following measures:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>Highest education facility: 4-year college</td>
<td>Y/N</td>
<td>University of MN, Morris</td>
<td>N/A N/A N/A</td>
<td>Northstar Technical College</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>Distribution of land for low-income by 2030</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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<tr>
<td></td>
<td>Workforce development and training supported through the following measures:</td>
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<td></td>
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<tr>
<td></td>
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<td>N/A N/A N/A</td>
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</tr>
<tr>
<td></td>
<td>Economic Development and Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategies to target industry sectors/business development</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>Innovation fund for local government and businesses</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>Equal opportunity?</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>ACCESS TO HEALTH CARE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to quality healthcare services</td>
<td>N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
<tr>
<td></td>
<td>Affordable medical care for vulnerable populations</td>
<td>N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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</tr>
<tr>
<td></td>
<td>Health risk assessment</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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<tr>
<td></td>
<td>Safety assessment of low-income facilities</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
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<tr>
<td></td>
<td>Emergency preparedness</td>
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<tr>
<td></td>
<td>Public safety</td>
<td>Y/N</td>
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<td>N/A N/A N/A</td>
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<tr>
<td></td>
<td>Housing</td>
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<tr>
<td></td>
<td>Arts in the Community</td>
<td>Y/N</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
<td>N/A N/A N/A</td>
</tr>
</tbody>
</table>

Note: Y/N indicates Yes/No, N/A indicates Not Applicable.
In 2006, the City of Freiburg, Germany completed the redevelopment of “Quartier Vauban”, a former French military barrack site, which housed troops during the Second World War. Following the Chernobyl nuclear disaster and historic, large-scale protests in the nearby village of Why, the City of Freiburg, today dubbed Germany’s “Green City”, decided to adopt environmentally-sound policies including low-energy consumption housing standards. In redeveloping Quartier Vauban, the City hoped to create an environmentally sustainable district that embodied social, cultural and economic goals and public input. Project Group Vauban, Freiburg City Council and Forum Vauban, a citizen’s association, worked together to implement the following main objectives in the plan for the neighborhood:

- “Balance of working and living areas,
- balance of social groups,
- use and reuse of ecological building material,
- solar energy,
- rainwater infiltration,
- public green space and neighborhood center,
- building diversity,
- pedestrian, cyclist and public transportation prioritization, and
- Incentives for car-free living.”

Today, Vauban is a flourishing community of about 5,500 residents, providing 600 jobs as well as citizen-organized housing for students, low-income and single-parent households. The 640-acre neighborhood is connected to the City of Freiburg with multiple tram stops situated throughout the district. Cars are only permitted on arterial roads, with the remaining streets prioritizing pedestrians and cyclists; cars are effectively forbidden, as are parking spaces and garages, and 70% of Vauban families do not own a car. The complete streets of Vauban also feature rain gardens, bioswales and other green

stormwater infrastructure. Green fingers and corridors connect the neighborhood and its inhabitants to the adjacent Dorfbach River, farmland and the Black Forest.

In addition to smart land use, transportation and planning features in the district, Vauban has impressive energy attributes as well. At least one hundred houses in Vauban are passive, and up to two hundred homes, situated in Vauban’s “Solar Settlement”, are plus-energy, meaning they produce more energy than they consume. Retrofitted military barracks, housing students and low-income families, feature solar thermal collectors and photovoltaic panels. It is the first community in the world to produce four times more energy than it consumes.21

The inhabitants of Vauban exhibit the feeling of community, participating in various social groups and initiatives. The neighborhood has a district center, with a grocery store, offices and other amenities, including a farmer’s market, church and kindergarten.

The redevelopment of Quartier Vauban into an environmentally sustainable, inclusive and smart community was primarily implemented and paid for by the City of Freiburg, including other partners and investors. Although this sets Vauban apart from the Ford site, which will likely be purchased by a private developer, Vauban’s characteristics are highly replicable in Saint Paul. The Ford site features high connectivity, with multiple bus lines to Saint Paul and Minneapolis adjacent to the site; there is also an opportunity for additional transit lines to be constructed within the new development. Furthermore, the Ford site is bordered by the Mississippi River, and conservation of the riparian ecosystem can be connected to additional green space and natural areas within the site with green fingers and corridors. Potential environmental remediation at the Ford site also presents an opportunity for the implementation of green stormwater infrastructure, including infiltrating soils, rain gardens, bioswales and trees. Although many buildings within Quartier Vauban were rehabilitated, many new energy efficient, affordable and energy-plus buildings were constructed. Dependent on zoning, the same can be done at the Ford site in Saint Paul.

Appendix IV
Additional Resources