DRAFT LLOYD GREEN DISTRICT VISION, PRINCIPLES, GOALS, BASELINE and METRICS

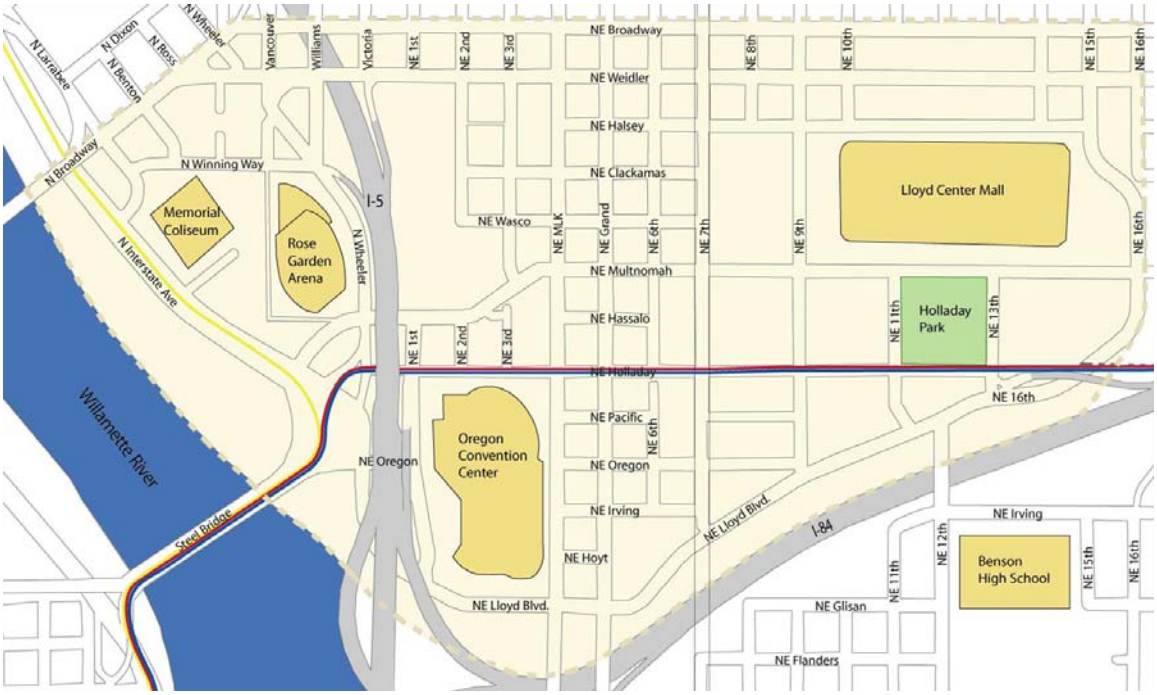
Based on direction from the Lloyd Green District Projects Work Group the draft Vision, Principles, Goals, Baseline and Metrics were prepared by Vinh Mason/City of Portland Bureau of Planning and Sustainability (Baseline and Metrics), Owen Ronchelli (Lloyd TMA), Naomi Cole (POSI), Julia Babcock (Oregon Solutions), Jim Johnson (Oregon Solutions), Lang Marsh (Oregon Solutions) and Peter Murchie (Oregon Solutions)

In May 2009, the City of Portland Bureau of Planning and Sustainability (BPS) provided staff (Vinh Mason) resources to the Lloyd Green District (District) Projects Work Group (Work Group) to assist with the development of a performance baseline for sustainable practices within the District. This baseline was designed to inform the Work Group of potential opportunities and project ideas to improve the environmental performance within the District.

Potential measures were identified based on the availability of 2008 data and confirmed with consideration of Work Group recommendations, the July 1, 2004 Lloyd Crossing report, and the August 13, 2009 Portland + Oregon Sustainability Institute Draft EcoDistricts Framework Concept for Metro Portland. The baseline data was obtained for seven participating property owners (Core Property Owners) who manage 20 properties in the District as listed below:

- Ashforth Pacific (7 properties)
- Doubletree Hotel
- Metro Regional Government
- Oregon Convention Center
- Portland State Building
- Portland Development Commission (8 properties)
- Rose Quarter

The geographical boundary of the District is shaded in the map below.



Inclusion of additional property owners is encouraged for future baseline and performance analyses. Major property owners who did not participate in this baseline include 1201 Lloyd, Bonneville Power Administration, Calaroga Terrace, Left Bank, Lloyd Center Mall, Lloyd Cinemas and Kaiser Permanente and Safeway.

The baseline establishes a benchmark for tracking progress toward eight sustainable performance categories: Energy, Transportation, Stormwater, Water, Habitat, Waste, Economy, and Social. A summary of the baseline measures and 2008 metrics are included below.

Lloyd Green District Vision

"Become the premier model of district-scale sustainability in North America"

Carbon – Energy and Transportation

Shared District Principle

Achieve District Carbon Neutrality

Long Term Goal

Lead effort to reduce local carbon emissions according to Portland's Climate Action Plan goals (40% reduction by 2030, 80% reduction by 2050) and eventually becoming carbon neutral

Implementation Objectives and Strategies

A. 3% reduction of fossil fuels (building energy and transportation energy) per year. Determine existing use of fossil fuels in district to find large contributors and to set annual targets of reduction
    a. Reduce VMT (vehicle miles traveled) for work and non-work related trips 5% annually to reduce by 30% by 2015
        i. Reduce VMT traveled by employees of Lloyd District businesses. Use transportation metrics to determine baseline of VMT traveled per employee at onset of project.
        ii. Purchase public transit passes for employees to provide incentives for less VMT per employee
    b. Add EV hookups at large parking garages (codify requirement of 1 per 50 spaces of parking). Also, businesses could adopt policies to purchase electric vehicles as their company fleet
B. Produce 10% of energy demand through on-site renewables or clean district energy systems by 2030
    a. By 2011 have completed a district energy feasibility study/strategy for the Lloyd Green District (Determine energy use within district to power down demand and build renewable energy sources within the district that meet energy needs)
    b. Incorporate Smart Grid meters into buildings that need to reduce energy use. Also, incorporate smart appliances when possible

Baseline/Metrics

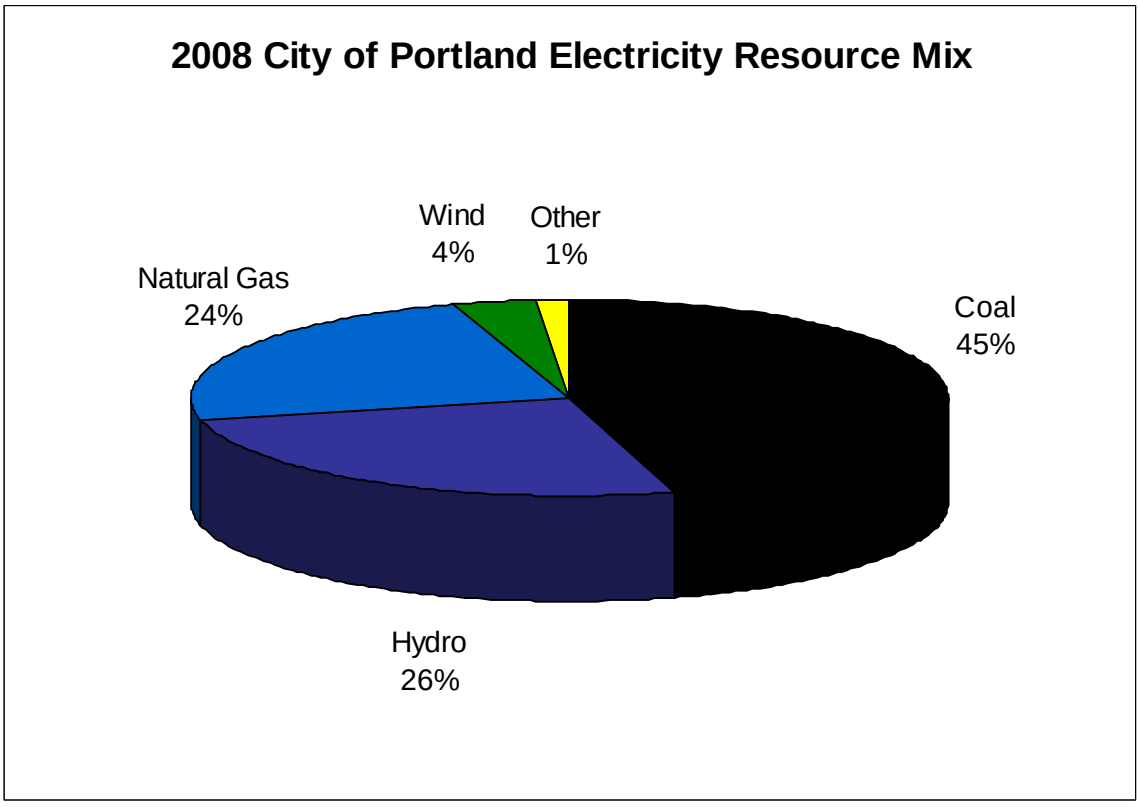
ENERGY

Benchmarking and tracking building energy costs and consumption informs the potential for onsite renewable and district energy generation as well as progress toward achieving fossil-free, carbon-neutral goals in the District. Energy baseline measures and 2008 metrics are listed on Table 1.

Category	Baseline Measure	Baseline Metric
Energy	Electricity Consumption	59.1 million kWh
		$3,374,642.14
	Natural Gas Consumption	1,348,622 Therms
		$874,837.86
	Renewable Capacity	0 kW
	Carbon Dioxide Emissions	68.7 million lbs CO_2
	Fossil Fuel Energy Consumption	274,000 MMBtu

Table 1. Building Energy Baseline Measures and 2008 Metrics.

Updates to the building energy baseline are recommended annually. For 2008, aggregated electricity and natural gas costs and consumption for buildings operated by the Core Property Owners was obtained from PacifiCorp and NW Natural, respectively. Permission to access utility data was coordinated using a utility authorization form prepared by BPS and completed for each Core Property Owner. Based on discussions with the Work Group, onsite renewable energy systems have not been installed at locations managed by the Core Property Owners. Future renewable energy installations can be monitored through an annual Core Property Owner Survey. BPS estimated building carbon dioxide (CO2) emissions by combining utility data with emission factors for the combustion of natural gas (11.3 lbs of CO2 per therm as reported by the United States Energy Information Administration (US EIA)) and consumption of electricity (0.905 lbs of CO2 per kWh based on the 2008 Northwest Power Pool electricity generation mix for the region). Similarly, building fossil fuel consumption in millions of British Thermal Units (MMBtus) was estimated by BPS using these same references.



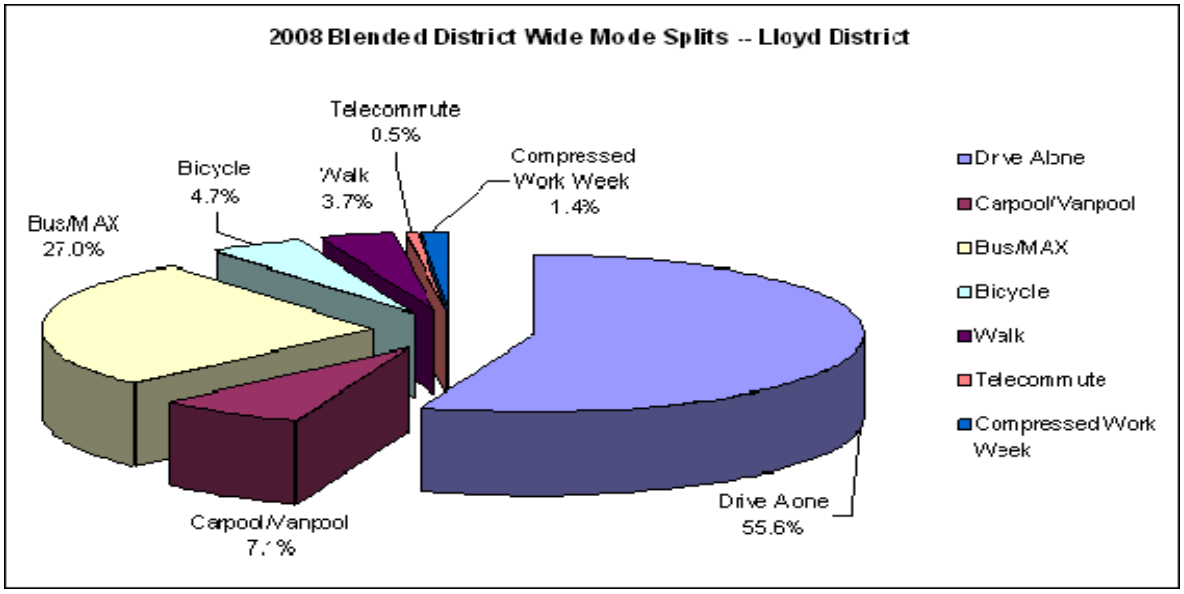
TRANSPORTATION

Transportation metrics for work commutes are currently tracked by the Lloyd Transportation Management Association (Lloyd TMA) with annual surveys of Lloyd TMA members and recurring district-wide estimates that blend Lloyd TMA member survey results with a district-wide commute survey. Transportation baseline measures and 2008 district-wide metrics are listed on Table 2.

Category	Baseline Measure	Baseline Metric
Transportation	Average Length of Commute Round Trip	15.4 miles per trip
	Total Commuter Travel	4,941,350 trips
	Commuter Transit Travel	1,334,165 trips
	Commuter Bicycle Travel	232,243 trips
	Commuter Pedestrian Travel	182,830 trips
	Telecommute (Trips Not Taken)	24,707 trips
	Compressed Work Week (Trips Not Taken)	69,179 trips
	Commuter Carpool Travel	351,800 trips
		2,456,000 VMT
	Commuter SOV Travel	2,748,750 trips
		42.331,000 VMT
	Vehicle Carbon Dioxide Emissions	45.3 million lbs CO_2
	Fossil Fuel Energy Consumption	310,000 MMBtu
	Vehicle Parking	Spaces
	Shared Car Parking	Spaces
	Bicycle Parking	Spaces
	Electric Vehicle Charging Capacity	0 smart metered stations

*Trip volumes listed in the table above are shown as annual trips
Table 2. Transportation Baseline Measures and 2008 Metrics (whole district).

Updates to the transportation baseline are recommended every three years. For 2008, the Lloyd TMA's blended district-wide survey results are reported for commuter trips and vehicle miles traveled (VMT) as displayed below. The Lloyd TMA also estimates CO2 emissions based on a US Environmental Protection Agency (EPA) emission factor (1.01 lbs CO2 per VMT). Similarly, BPS estimated transportation commute fossil fuel consumption using this EPA reference (0.0554 gallons gasoline per VMT) combined with a gasoline Btu content reported by US EIA (0.125 MMBtu per gallon gasoline). Vehicle, shared car and bicycle parking along with electric vehicle charging stations can be monitored through a triennial Core Property Owner Survey.



Transportation measures that are inclusive of non-commute trips could provide a broader view in the future. For instance, the City of Portland Bureau of Transportation conducts occasional vehicle traffic counts at major intersections, and this measure could also be a proxy for traffic congestion. However, intersections in the Lloyd District have not been monitored since 1998.

Water

Shared District Principle

Achieve District Hydrologic Equity (add definition)

Long Term Goal(s)

Create systems including conservation, green streets, in district treatment and grey water use that achieve complete diversion from the municipal storm water system by 2050

Implementation Objectives and Strategies

A. Develop District conservation and management plan for potable and non-potable water by 2011 *(overlaps with habitat goals)*
    a. Decrease potable and non-potable water consumption and use by replacing non-potable water source with grey water, rainwater and storm water
B. Create target areas for green street demonstration projects and also determine suitable buildings and facilities where grey water use can be integrated into daily practices

Baseline/Metrics

STORMWATER

Onsite stormwater management has the potential to meet the District's water consumption demand while decreasing the volume of offsite sewage treatment and balancing hydrological equity with natural resources. Stormwater baseline measures and 2008 metrics are listed on Table 3.

Category	Baseline Measure	Baseline Metric
Stormwater	Impervious Area	1,670,100 square feet
	Pervious Area	543,140 square feet
	Stormwater Runoff	million gallons
	Groundwater Recharge	million gallons
	Stormwater Related Charges	$228,309

Table 3. Onsite Stormwater Baseline Measures and 2008 Metrics.

Updates to the baseline are recommended annually to develop stormwater management strategies. Based on the average precipitation rate and water flow assumptions reported in the July 1, 2004 Lloyd Crossing report, BPS estimates that approximately 45 million gallons of stormwater runoff annually flows off the sites managed by Core Property Owners with a negligible amount of groundwater recharge. Given property addresses, the City of Portland Bureau of Environmental Services can calculate the actual annual stormwater runoff and ground water recharge rates based on their estimations of impervious and pervious area for the Core Property Owner sites.

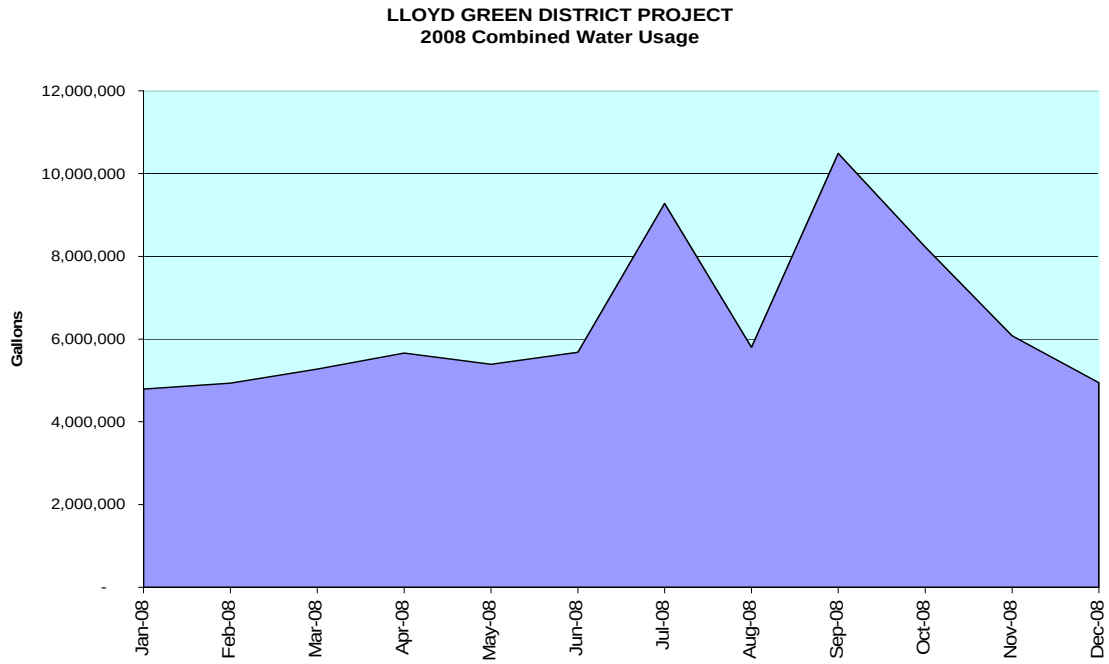
WATER

Benchmarking and tracking building water costs and consumption informs the potential for harvesting stormwater runoff to serve the onsite potable and non-potable water demand in the District. Water baseline measures and 2008 metrics are listed on Table 4.

Category	Baseline Measure	Baseline Metric
Water	Potable Water Consumption	64.2 million gallons
	Non-Potable Water Consumption	12.4 million gallons
	Water Volume Charges	$201,000
	Sewer Volume Charges	$533,000

Table 4. Water Baseline Measures and 2008 Metrics.

Updates to the water baseline are recommended annually. For 2008, water costs and consumption rates for buildings operated by the Core Property Owners was obtained from the City of Portland Water Bureau. BPS estimated potable and non-potable water consumption based on the seasonal variation shown below:



From July through November, the increase in base average water consumption from December to June was assumed to be equal to the non-potable water demand for onsite irrigation. Water consumption trends can inform the potential for managing stormwater and grey water to achieve district-wide water independence.

Habitat

Shared District Principle

Restore habitat through robust ecosystem services

Long Term Goal

Increase overall vegetative surface area to 75% of pre-development levels by 2050 that includes habitat corridors

Implementation Objectives and Strategies

A. Create 25% vegetated pervious surface area through eco roofs, planters and ground vegetation and two habitat corridors by 2020
    a. Within three years create a habitat plan in conjunction with the 'green streets' plan that identifies habitat corridors and a strategy to achieve the vegetative surface area goal
        i. protects native plants and wildlife
        ii. identifies eco roof sites for existing buildings and set code standards for future development

Baseline/Metrics

Tracking vegetated spaces can provide a proxy for strategies to enhance biodiversity, and restore native habitat and wildlife connectivity in the District. Habitat baseline measures and 2008 metrics are listed on Table 5.

Category	Baseline Measure	Baseline Metric
Habitat	Tree Cover	35 acres
	Vegetated Pervious Area	18.8% of District
	Ecoroof Area	0 square feet

Table 5. Habitat Baseline Measures and 2008 Metrics.

Updates to the habitat baseline are recommended biennially. In 2007, Metro estimated region-wide land cover classes extracted from the Metro Photo Consortiums color infrared orthophotos. This data was collected to support monitoring the Portland metro region's key natural areas watershed health. Three land cover classes were identified in the Lloyd District: woodland canopy, shrub/grasslands, and built surfaces. The Lloyd District Tree Cover is assumed to be identical to the woodland canopy acreage reported by Metro while the % of vegetated pervious area is the portion of woodland canopy and grasslands within the district. Metro hopes to collect this data again in 2009 and 2011. Based on discussions with the Work Group, ecoroofs have not been installed at locations managed by the Core Property Owners. Future ecoroof installations can be monitored through an annual Core Property Owner Survey.

Waste

Shared District Principle

Achieve Zero Waste: District manages the treatment of at least as much waste as it produces.

Long Term Goal

By 2050 reduce solid waste disposal by 95% through aggressive reduction target setting, reuse and recycling strategies

Compost all district food waste by 2020

Implementation/Strategy Objectives

A. Within one year in partnership with the PSU EcoDistrict perform a food waste/composting feasibility study

B. Increase the diversion of food waste from the overall solid waste system

C. Contribute food waste from businesses to district-wide compost project with potential to eventually create a biomass district heating and cooling plant
D. Implement District waste reduction strategy through campaign using SMA (Sustainable Management Association) sustainability coordinators

Baseline/Metrics

Waste management activities and disposal costs identify the potential for reducing solid waste as well as utilizing food waste for onsite resources, such as compost or district energy generation. Waste baseline measures and 2008 metrics are listed on Table 6.

Category	Baseline Measure	Baseline Metric
Waste	Solid Waste	947 tons
		$
	Recycled Material	738 tons
	Food Waste	252 tons

Table 6. Waste Baseline Measures and 2008 Metrics

Updates to the waste baseline are recommended annually. For 2008, four properties were identified that currently sort food waste from solid waste and recycled material:

- Metro Regional Government
- Oregon Convention Center

- Portland State Building
- Rose Quarter

The solid waste and recycled material tonnages are only reported for these four properties. Tracking waste and disposal costs is recommended for all the Core Property Owners and can be coordinated through an annual survey.

Economic

Shared District Principle

Achieve robust economic development through individual and shared business models that model sustainability

Long Term Goal(s)

Promote and incorporate business practices and services that attract green jobs and create a healthy urban atmosphere for visitors and residents

Implementation Objectives and Strategies

A. Increase the number of green jobs related to sustainability, including jobs that maintain the goals and objectives of the district

B. Increase the value and occupancy rates of commercial and residential space.

Baseline/Metrics

Economic indicators can inform whether the implementation of sustainable projects and practices result in market benefits for businesses and property owners located in the District. Economic baseline measures and 2008 metrics are listed on Table 7.

Category	Baseline Measure	Baseline Metric
Economy	Employment	13,498 employees
	Green Jobs	262 jobs
	Commercial Lease Rate (NNN)	$17 to 24/sf
	Commercial Vacancy Rate	4.1 %

Table 7. Economic Baseline Measures and 2008 Metrics

Monitoring economic indicators is recommended annually. In their 2009 Mid Year Report, GVA Kidder Matthews estimates 210 office buildings totaling 5.0 million square feet in the District. From 2008 to 2009, the vacancy rate increased in this market from 4.1% to 5.2% while lease rates remained stable and are expected to continue to range between $17 to 24 per square foot. In 2008, BPS reports 13,498 employees working in the District based on the ESRI geographical information systems database. This total includes 262 green jobs as defined by NAICS codes referenced by the Portland Development Commission (PDC) for focusing its recruitment, retention and expansion efforts on environmental and clean technology companies (NAICS 221119, 333611, 541620, 541330, 56211 and 562910). Tracking of these economic indicators is also recommended for the Core Property Owners through an annual survey.

Social

Shared District Principle

The District is a vibrant and diverse place to live, work and play

Long Term Goal(s)

A. Build capacity between community members to work in a collaborative atmosphere to achieve the goals of sustainability for the district

B. Improve land use and zoning policies to improve Lloyd's ability to accommodate the characteristics of "20 minute neighborhoods" to provide access to grocery stores and other essential services for residential and commercial uses (overlaps with transportation goals – develop and use a Lloyd walkability score)

Implementation Objectives and Strategies

A. Increase the District employee, resident and visitor awareness of sustainability efforts that leads to individual and organizational behavior and use changes
    a. Implement sustainability coordinator program within 1 year (based on Transportation Coordinator program already in place)

B. Create formal materials that outline the District's goals and commitment towards sustainability. Community should share best practices and setbacks to success in order to maintain an innovative and updated source of information to track and foster progress

C. Establish Community Garden Program (overlaps with water and habitat)
    a. Initiate first community garden within one year

Baseline/Metrics

Measuring social progress can be challenging as metrics may or may not reflect the success of creating a socially vibrant community with environmental values. Still, several social baseline measures were identified with the Work Group as listed on Table 8 along with 2008 baseline metrics.

Category	Baseline Measure	Baseline Metric
Social	Housing	1165 units
	Community Garden	0 square feet
	20-Minute Neighborhood Score	76

Table 8. Social Baseline Measures and 2008 Metrics

A collaborative qualitative assessment is recommended annually to evaluate the success of social sustainability programs as well as identify potential projects and measures. A new Sustainability Coordinator Program could facilitate this social sustainability assessment every year with District community members. In discussions with the Work Group, two initial ideas were proposed to enhance the social character of the District: increase residential housing and establish a community garden. In 2008, the annual PDC Central City Housing Inventory reports 1,165 housing units within the District. An increase in housing could also create opportunities for balancing district energy needs between commercial and residential buildings in the District. As part of the 2010 Portland Plan process, BPS is developing a 20-minute neighborhood concept to identify the characteristics of walkable neighborhoods in the City. Currently on a scale of 1 to 100, BPS rates the District at a score of 76 based on the proximity of its residences to essential and desirable services, such as grocery stores and retail businesses. A draft, color-coded map highlighting areas of the City with 20-minute neighborhood characteristics is shown below.