

# **PORTLAND PLAN**

## **Comprehensive Plan Evaluation**

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*An introductory research paper to assist in the Portland Plan Work Program development*

### ***SUSTAINABILITY Technical Working Group***

**> DRAFT REPORT <**

March 25, 2008



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## Introduction

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Portland has a long and successful tradition of shaping its future through thoughtful planning. Much of what the community values about Portland is, at least in part, the legacy of the 1972 Downtown Plan, the 1980 Comprehensive Plan and the 1988 Central City Plan. However, these plans, which were intended to guide the city's growth over a 20-year period, are largely outdated. They no longer adequately prepare the community for the challenges and opportunities that lie ahead or provide guidance regarding how and where to make the next round of major investments in infrastructure and programs.

On November 13, 2007, the City received a letter from the state Department of Land Conservation and Development (DLCD) directing Portland to undertake Periodic Review of its Comprehensive Plan. The DLCD letter calls on Portland to evaluate the comprehensive plan provisions on economic development, housing, public facilities, transportation and urbanization to determine whether they are consistent with state law. The City will also evaluate supporting documents (e.g., forecasts, inventories, analyses and facilities plans) and implementing regulations (e.g., zoning). If the plan, supporting information or regulations are deficient, the City must prepare a Work Program to bring them into compliance with state law, and include a public outreach strategy that effectively involves the community in the planning effort.

Merely updating the comprehensive plan per state law will not provide the City with the coordinated, comprehensive guidance document needed to prepare for the opportunities and challenges that the community will likely face (e.g., global warming, a changing economy and projected population and job growth) or achieve the community's aspirations for the future.

Consequently, the City has launched a planning process to prepare a new over-arching plan for the City of Portland, the "Portland Plan." The Portland Plan will satisfy the state's Periodic Review requirements and address other issues and opportunities to prudently guide the City's physical, economic, social, and cultural development in a manner that meets community needs and aspirations.

To evaluate the current Comprehensive Plan and scope the Portland Plan, the City formed six Technical Working Groups (TWGs) to address the following topics: Economic Development, Environment, Housing, Infrastructure, Sustainability and Urban Form. Each topic had its own approach. Some existing committees, such as the Citywide Asset Managers Group that prepares the annual City Asset Report, were tapped to participate on the TWG. The groups began meeting in October 2007 and completed their discussions in February 2008. The number of meetings varied widely by topics. Generally, groups met at least monthly.

The TWGs were composed of staff from the Planning, Environmental Services, Housing and Community Development, Office of Sustainable Development and Transportation bureaus. In addition, staff from Parks and Recreation, Building and Development Services, Management and Finance, Water Bureau, Portland Development Commission, Port of Portland and the Housing Authority participated.

A transportation expert served on several TWGs because transportation concerns are woven into all the other topics. Transportation is also specifically addressed in the Comprehensive Plan Evaluation Report. This separate report summarizes the individual TWG reports.

Additional input was also considered from the Portland-Multnomah Food Policy Council, community health advocates, Portland Peak Oil Task Force, ReCode Portland, a project facilitated through Tryon Life Community Farm to promote regulations that support grassroots sustainability, and visionPDX. This input loop will be continued in future community meetings and at public hearings before the Planning Commission and City Council.

The TWGs were asked to examine at the Comprehensive Plan, other plans and regulations to help define the initial focus issues and identify the known goals, policies, needs, challenges and opportunities that the Portland Plan should address. Specifically, the TWGs were asked to do the following:

1. Summarize and assess the existing policy frameworks, including the Comprehensive Plan, 1988 Central City Plan, and other current policy statements to identify the following:
  - a. Which policies remain relevant,
  - b. Which do not, and
  - c. What is missing.
2. Prepare draft assessments of conditions and trends that they believe are most relevant and critical to understanding the issues to be addressed by the Portland Plan.
3. Identify additional research or analysis that should be undertaken to develop the policies for the Portland Plan and the Central Portland Plan.
4. Suggest particular planning projects for the Work Program, the complete list of planning projects/tasks that will need to be done, and set forward any specific staff or resources needed to accomplish those projects.

Some groups also responded to a draft "Suggested Approach" to the Portland Plan process that offered "5 Framing Ideas" that represent the big issues facing the community including: (1) Global Climate Change, (2) World Economy, (3) Affordable Living, (4) Investment in Green Infrastructure and (5) Character of Place. Over time, these five ideas evolved and included other ideas. Each TWG considered the ideas that seemed most relevant to their topic.

As the TWGs held discussions on the topics listed above, they were asked to always consider the community values expressed in visionPDX: community connectedness and distinctiveness; equity and accessibility; sustainability, accountability and leadership; inclusion and diversity; innovation and creativity; and safety.

This report is the TWGs summary of their group discussions. It is intended to help to start a citywide conversation on the issues, challenges and opportunities. It is hoped that individuals and groups will add to the conversation started by these reports.

This report, created by the Sustainability TWG, represents an assessment of several key sustainability-related issues, solutions and functional policy areas. The Sustainability TWG acknowledges that the topic of sustainability is broad and complex and that key sustainability issues and opportunities are interwoven throughout the work of the other TWGs.

The scope of the Sustainability TWG's assessment report is primarily focused on resource use in the built environment, and identifying the substantial social and economic impacts of

these resource issues. Functional policy areas that are addressed in this assessment report include:

- Energy efficiency and renewables
- Building performance, construction and site development
- Waste reduction, recycling and composting
- Water efficiency
- Transportation options
- Sustainable food systems
- 20-minute neighborhoods
- Green and healthy affordable housing
- Alternative transportation fuels
- Toxics reduction

Additional sustainability-related topics and issues, such as habitat, green space, ecosystem services, sustainable economic development, water quality, air quality, affordable housing, green streets and transit, among others, are being evaluated by the other TWGs or through complementary planning efforts.

## Part 1: Key Findings

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Global warming is a defining issue for the next generation of policymakers, and must play a significant role in the development of the Portland Plan. Coupled with the economic imperative of peak oil and rising energy prices, reducing the need for fossil fuels in our buildings, transportation system, and land-use decisions offers the potential to deliver substantial environmental, social and economic benefits. As a leading urban innovator, Portland has the potential to demonstrate how communities can thrive while minimizing carbon emissions.

Additionally, the Sustainability TWG found the following guiding principles to be key to the successful incorporation of sustainability when making decisions or taking actions:

- Problems should be approached from a systems perspective, defining mutually supportive economic, social and environmental goals and objectives.
- A long-term and global perspective of human activities and environmental conditions should be taken.
- Social and environmental costs and benefits should be fully accounted for, and the inherent value of the natural environment should be made explicit.
- The Precautionary Principle should be incorporated, meaning public policy should exercise caution when there are threats of serious or irreversible environmental or public health damage, even if there is scientific uncertainty.
- The incentive structure of regulations, prices and taxes should be aligned to encourage the widespread adoption of best practices.

## Part 2: Key Sustainability Issues

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The Sustainability TWG identified four key sustainability issues facing Portland both now and in the future. Those issues include **global warming, community health, constrained fossil fuel resources** and **social equity**. This portion of the assessment report provides an overview of these issues. Subsequent report sections discuss innovative approaches to mitigating these issues (see Section 3, Approaches to Sustainability Solutions), as well as specific recommendations in related policy areas (see Section 5, Topic Areas For Discussion).

### ***Global Warming***

Global climate change presents challenges to Portland's future that are both broad and deep and will likely have impacts that range from water supply to the cost of energy to urban forestry. Since 1900 the Pacific Northwest has warmed by 1.5° F. In the next century, warming is expected to accelerate and increase by about 1° F every 10 years. Scientists expect that the Northwest will experience more warming in summer than in winter, and nights will cool off less than they do today. In addition, increased urbanization, population growth, and related roads and rooftops will exacerbate the urban heat island, increasing temperatures even more.

Changes in the water cycle are equally important, with winters expected to be wetter and summers drier. This, coupled with higher temperatures, may mean higher stream flows in the spring, when water is already abundant, and lower flows in the summer, when water is

needed for irrigation, drinking water, hydropower and salmon. The trend will be toward increased use and reliance on groundwater sources.

Forests, a cornerstone of Portland's economy and environment, are particularly vulnerable to climate change. The greatest threats to forest health include drought, fire, pests, and disease, and climate change is expected to increase all of these. Oregon's beaches, too, are threatened by rising sea levels and stronger storms, and coastal flooding and erosion will increase.

Portland will also experience significant changes as a result of the response to global warming. Fortunately, many of the local solutions to climate change offer substantial community benefits and can provide jobs as well as improve personal health.

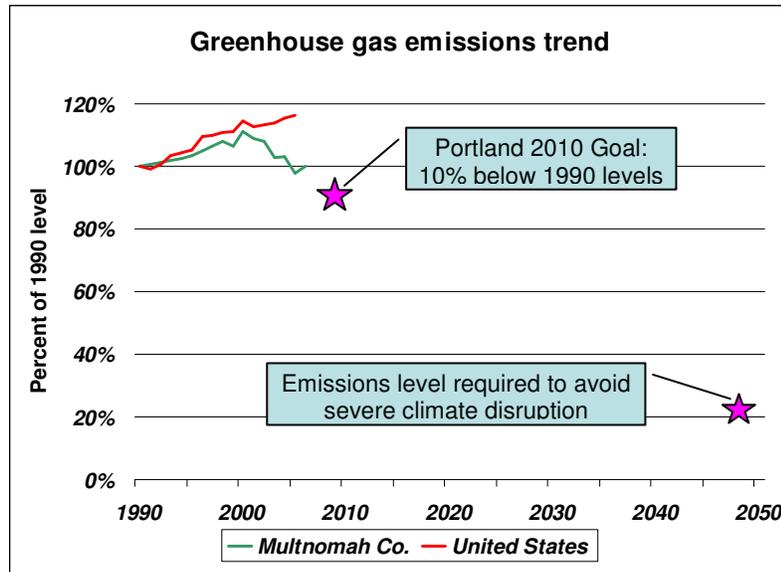
Reducing use of the fossil fuels that cause climate change – primarily gasoline, diesel, natural gas, and electricity from coal and natural gas – also reduces the economic drain of paying for these fuels and improves the bottom line for businesses and for household budgets. Renewable energy resources like wind and solar power offer tremendous economic development potential. Strategies like adding insulation, sealing air leaks and installing high efficiency furnaces in homes, as well as requiring advanced building designs, building commissioning and modern controls in commercial buildings simply make good economic sense. On the transportation front, increasing walking, bicycling and transit use has the added benefit of improving personal health and air quality, while keeping dollars in the local economy.

Portland first adopted a plan to address global warming in 1993. In 2001, Multnomah County joined the City in adopting a revised plan, the Local Action Plan on Global Warming. In November 2007, City Council directed City bureaus to develop a revised climate-protection plan that identifies actions to put Portland on a course to reduce emissions by 80% by 2050. As of early 2008, a revision process is underway, and the resulting plan is expected to be proposed to City Council in late 2008. This updated plan is expected to include an interim goal to reduce emissions by 40% by 2030 as well.

Key components of the climate-protection plan include land use, transportation, building energy use, renewable energy, solid waste management, and urban forestry. Each of these elements is addressed extensively in the Comprehensive Plan and generally in ways that are consistent with the intent of the global warming plan. All of these policies, however, will require significant strengthening if Portland is to contribute its share to the global response to climate change.

The need to address global warming is becoming increasingly urgent. The most recent reports from the Intergovernmental Panel on Climate Change suggest that global emissions of carbon dioxide and other greenhouse gases need to be reduced by 80% in the next 50 years if we are to decrease the likelihood of catastrophic climate disruptions.

Portland has made noteworthy progress in slowing the growth of emissions, but this also highlights the challenge of reducing carbon emissions. Even in Portland, with concerted efforts in land-use and transportation planning, energy efficiency, renewable energy, and recycling, emissions in 2006 were still at approximately 1990 levels. This is a significant improvement over the U.S. as a whole, which has seen emissions increase by about 16% over the same period, but nevertheless illustrates the scale of change needed to protect the global climate.



The good news is that reducing carbon emissions offers great economic promise. Portland residents and businesses spend about \$1.2 billion annually on oil, natural gas, and coal-fired electricity—essentially spending money to create carbon emissions. By increasing energy efficiency and renewable energy, hundreds of millions of dollars can be redirected into the local economy.

In the Portland Plan process, key questions related to global warming include:

- How can land-use and transportation system decisions take into consideration the impacts on greenhouse gas emissions?
- Will the changing climate affect natural hazards such as floods, mudslides, and erosion?
- How should land-use and other City policies anticipate these changes?
- How will climate change impact existing infrastructure and future infrastructure needs?
- How can the City maximize economic development opportunities by being a leader in reducing carbon emissions?
- Which emissions reduction actions and approaches should be the highest priority to help ensure that Portland’s adaptability and flexibility in the face of these challenges?

## **Community Health**

A healthy city is a place where residents can socialize with friends and neighbors, safely walk and bicycle, affordably purchase healthful food, breathe clean air and drink clean water, and help make decisions that improve their community. Community health has been among the traditional responsibilities of local government and has improved public health by preventing the spread of death and disease. Current efforts need to reconnect planning and public health to focus on how community design and the built environment impact chronic disease health outcomes such as obesity, heart disease and asthma for people of all ages, incomes and abilities.

The built environment created and managed by local policies and plans, impacts community health in a number of direct and indirect ways. Evidence is emerging that links built environment characteristics such as land use mix, transportation systems, housing patterns and natural areas to health behaviors such as physical activity and healthy eating, health impacts from poor air and water quality, and health determinants such as safety, social cohesion and mental health.

Policies, planning and the built environment can help citizens be physically active and eat nutritious foods. For example, land use, density and transportation systems determine where jobs, housing, stores, markets, schools and parks are in relation to each other, and how realistic it is for people to walk, bike and take transit to their destinations. Policies also determine the location of corner markets, grocery stores, restaurants, farmers' markets and urban agriculture. Land use and building policies, for example, impact how people can grow their own food, including home gardens, community and rooftop gardens and garden space integrated into multi-family housing. They also can influence how development occurs, lessening the "footprint" and preserving important natural system function and amenity. Access to parks and green spaces provides safe and convenient opportunities for both passive and active recreation, and transportation infrastructure influences whether people choose to be active and to walk, bike or take transit.

Portland's policies, planning and the built environment also determine air and water quality. For example, outdoor air quality is impacted by decisions on where we locate our transportation systems and pollution-producing industry and the degree to which we can introduce trees and vegetation into our urban setting. Indoor air quality is influenced by housing policies that set standards regarding mold, lead and vermin. Water quality is impacted by stormwater management and wetland protection practices.

For the Portland Plan, key questions related to community health include:

- How can Portland continue to be a model city for multiple modes of transportation, including pedestrian and bike paths, light rail, buses, trams, streetcars and car sharing?
- How can policies and plans effectively create thriving and vibrant neighborhoods throughout Portland, where goods and services are within walking distance from residences and workplaces?
- How can Portland encourage high density, while incorporating parks, environmentally protected areas, urban canopy, community and rooftop gardens, green spaces, waterways and pathways?
- How can the Portland Plan help ensure that all Portlanders have equal access to education, employment, health care, safety, healthful food, transportation options, housing and amenities?

(Note: With permission, portions of this section incorporate written materials submitted by the Portland-Multnomah Food Policy Council, Community Health Partnership and other stakeholders.)

## ***Constrained Fossil Fuel Resources***

The current global energy system was developed from a position of seemingly unlimited fossil fuel resources such as oil, coal and natural gas. Those resources are finite, however, and their production will inevitably peak. A growing body of evidence suggests that for oil

and natural gas this peak is likely to occur sooner than later.<sup>1</sup> Without careful preparation, the resulting steep increase in energy prices could be extremely disruptive, and individuals and businesses alike will be compelled to retool our economies and societies around new realities. Secure and sustainable energy supplies are vital to Portland's future prosperity.

City Council accepted a report from the citizen Peak Oil Task Force in March 2007. The report assesses Portland's vulnerability to increases in oil and natural gas prices and proposes ways the City should prepare to minimize future social and economic disruption. In a resolution adopted when the report was accepted, City Council established a goal of reducing local oil and natural gas use by 50% over the next 25 years.

Many of the Peak Oil Task Force recommendations call for expanding and strengthening the types of efforts that are included in the City's current global warming plan. The recommendations emphasize land-use and transportation planning to minimize fossil fuel use and stronger policies and programs to reduce energy use in buildings. Key recommendations include:

1. Engage business, government and community leaders to initiate planning and policy change.
2. Support land use patterns that reduce transportation needs, promote walkability and provide easy access to services and transportation options.
3. Design infrastructure to promote transportation options and facilitate efficient movement of freight, and prevent infrastructure investments that would not be prudent given fuel shortages and higher prices.
4. Encourage energy-efficient and renewable transportation choices.
5. Expand building energy-efficiency programs and incentives for all new and existing structures.
6. Preserve farmland and expand local food production and processing.
7. Identify and promote sustainable business opportunities.
8. Redesign the safety net and protect vulnerable and marginalized populations.
9. Prepare emergency plans for sudden and severe shortages.

Many of these prescriptions are consistent with the general direction of existing policy, but they ask the City to act sooner and more aggressively, pointing to severe economic and social risks in acting slowly or indecisively. The recommendations also highlight several areas that the City has addressed in only limited ways to date, most notably food and urban agriculture.

For the development of the Portland Plan key questions include:

- Can Portland accelerate its efforts to increase public understanding of the issue of "peak oil"? For example, in January 2008, oil prices hit over \$100 a barrel, a level considered unthinkable just a few years ago and are projected to rise even higher

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<sup>1</sup> Coal, which fuels about half of Portland's electricity generation, exists in vast quantities throughout the Rocky Mountain region and offers power producers hundreds of years of potential supply. But coal is also a significant contributor to air and water pollution and one of the largest contributors to CO<sub>2</sub> emissions in the US. There are also significant environmental impacts associated with the mining process and transportation to power plants.

over the coming year. Yet major infrastructure projects continue to be planned and built based upon assumptions that oil will remain inexpensive for the foreseeable future. Gasoline prices routinely reach over \$3.00 per gallon, but driving habits—and business plans—have altered little, if at all.

- Land use, transportation, and building infrastructure decisions that are made today will determine the energy required to run these systems for the next 50 to 100 years. Do policymakers have the information they need to take into consideration the impacts of the changing energy landscape? For example, how sensitive are the analyses of a runway addition at PDX, the Columbia Crossing project, or the streetcar project to oil prices? Are these analyses considering a range of prices?
- As a result of Oregon legislative action in 2007, Portland's two electric utilities will be sharply increasing the renewable energy portion of electricity supply. By 2025, 25% will be non-hydro renewables. What can the Portland Plan do to shift much of the remaining 75% to affordable, clean energy?
- Will the plan be friendly to on-site renewables such as photovoltaic, solar water heating, micro wind turbines and ground source energy products?

In many respects, constrained fossil fuel resources provide an economic imperative to undertake similar measures for which global warming provides an environmental imperative. Both issues offer urgent and powerful motivation to reduce use of fossil fuels, which, because of our extreme dependence on energy for virtually every facet of modern life, will require far-reaching changes in our communities.

Portland should make every reasonable effort to reduce use of fossil fuels, while at the same time prepare for significant economic and social impacts, since major changes are inevitable despite our efforts to mitigate the effects. Impacts on fossil fuel use, both in transportation and in buildings, should be considered in all major decisions affecting land-use, transportation, and building policy and programs.

## **Social Equity**

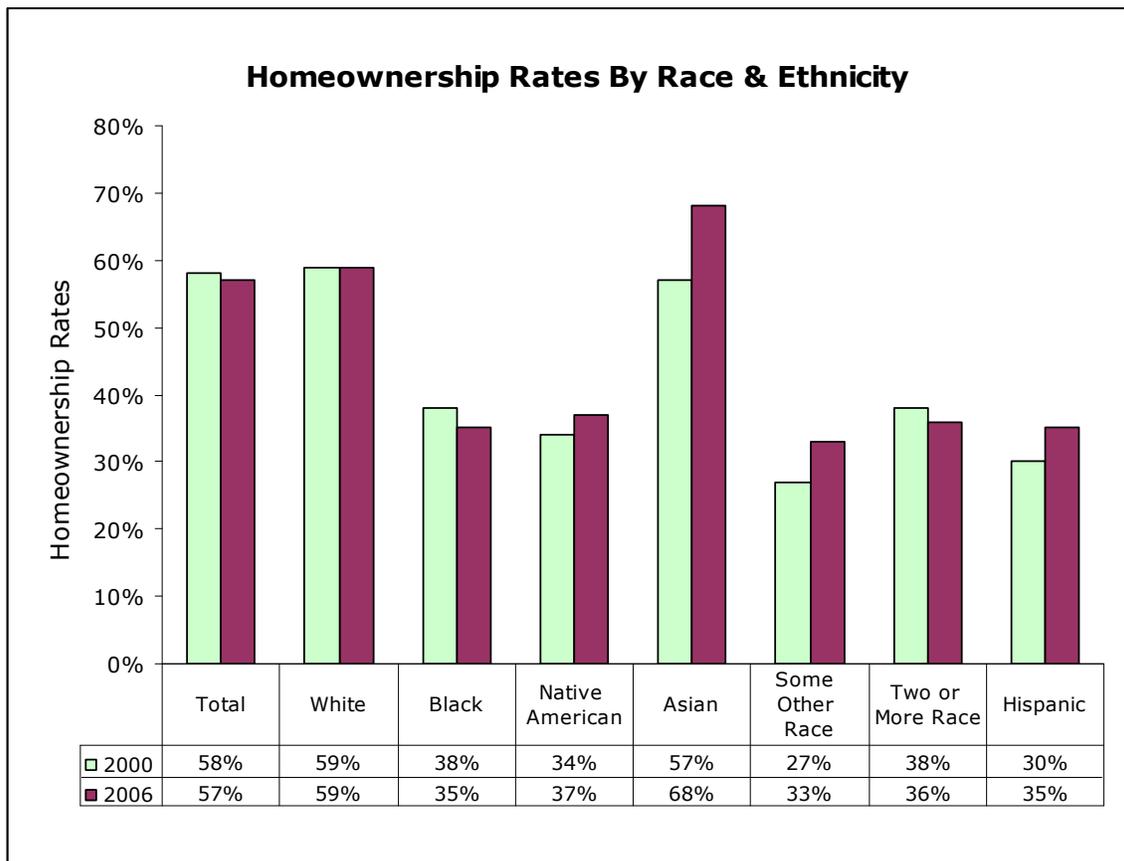
As used here, social equity is understood to include the equitable distribution of educational and job opportunities, access to quality health care and food, safe and stable housing and neighborhoods, healthy environmental surroundings, social services, transportation options, open spaces and parks. It is also a community in which the benefits and burdens of growth and change are equitably shared across our communities, and all residents are involved as full and equal partners in public decision-making.

Social equity is mentioned in the Oregon Benchmarks, Portland's sustainability goals and other documents, though with limited discussion of Oregon's application of the concept, how it should be measured, and what Portland's overarching policy is on the issue. Nonprofit organizations provide most of the available information on social equity impacts in terms of children's education, health, poverty, housing and access to community services.

One of the key social equity issue areas the City has explicitly focused on is homelessness. Portland's Auditor issued a report in August 2007, entitled *Ending Homelessness: Many Short-term Goals Met; Now Long-term Success Should be Defined*. The City Auditor reported significant progress on many of the goals in Portland's 2005, *10 Year Plan to End Homelessness*. The Report noted a 39% reduction in Portland's chronically homeless since 2005, and a 44% reduction in shelter "turn-aways" by Multnomah County. Additionally,

71% of the homeless released from jail were moved into stable housing, and 62% of the homeless who chronically use emergency health services were moved into stable housing.

Portland has several policies and plans in place, with others under development, that seek to address selected socially inequitable matters. For example, the Bureau of Housing and Community Development has a five-year goal to address Portland’s affordable housing needs and the largest gaps in the current affordable housing profile. If achieved, it will increase the stock of affordable housing available to households below 50% of median family income (MFI), and will include increases in the number of larger family units and units affordable to households at or below 30% MFI. The City's portfolio of subsidized affordable rental housing will be financially stable. The gap between the rate of minority homeownership and the average rate of homeownership for all races will be reduced. The chart below shows homeownership rates by race and ethnicity.



Source: Census 2000 & ACS 2006

The Portland Water Bureau’s Water Conservation Program provides education and outreach to assist low-income customers. Programs have included self-help workshops with the Community Energy Project, work with local community service providers to distribute devices to low income customers and, in partnership with OSD and other agencies, Fix-It Fairs for homeowners and tenants. Low-income customers responsible for paying a residential water and/or sewer bill are also be eligible for financial assistance and fixture repair assistance if their income is below 60% MFI, provided by the Bureau of Environmental Services and the Water Bureau.

Health and well-being are key indicators of social equity. Numerous studies have demonstrated the connection between access to healthy housing and adequate health care to poverty, unemployment and neighborhood location. For example, the recent study, "Understanding International Crime Trends: The Legacy of Preschool Lead Exposure" (National Center for Healthy Housing, February 2007), established a strong association between preschool blood lead levels and subsequent crime rate trends extending over several decades in the USA, Canada and other developed nations. The study showed a relationship between blood lead levels and the consequent neurobehavioral damage occurring either in the womb or during the first year of life, and the peak age of offenses for crime, burglary, and violent crime. Thus, by virtue of the age of neighborhood housing, children of low-income families can be predisposed to severe behavioral problems that can result in serious criminal acts.

The "New Look, the Regional Transportation Plan" background paper, *Environmental Justice in Metro's Transportation Planning Process* (Sept. 2006) provides guidance on ways to integrate federal environmental justice regulations into the planning processes of the 2035 Regional Transportation Plan (RTP) update, and the 2008-11 Metropolitan Transportation Improvement Program (MTIP).

In November 2006, Metro voters approved a \$227.4 million bond measure to purchase natural areas and protect water quality and wildlife habitat, including in low-income neighborhoods. The measure includes just over \$212 million for purchasing lands for habitat and water quality protection, and creates a \$15 million capital grants program to re-nature communities where access to nature is most limited.

One key opportunity for Portland is to focus additional attention and resources on the development of "green jobs," since creating new family-wage jobs will help reduce unemployment and underemployment, allowing more families to afford Portland's housing options. A training program for green-collar jobs which concentrates on developing skills, such as conducting building performance and monitoring and installing solar panels, will allow lower-income families to be in Portland's expanding market for sustainable products and services. For example, a synergy could be exploited between the need for family-wage jobs and Oregon's new 50% Business Energy Tax Credit for solar energy, which is already attracting new investments.

## **Part 3: Approaches to Sustainability Solutions**

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The Sustainability TWG has identified global warming, community health, constrained fossil fuel resources and social equity as four of the key sustainability issues facing Portland both now and in the future. This section highlights the approaches the Sustainability TWG believes will be most effective in mitigating those issues. These approaches include: localized, place-based solutions; avoiding the problem in the first place; equal access; and utilizing and supporting nature in the built environment.

### ***Localized, Place-based Solutions***

Localized, place-based solutions hold great promise for addressing some of the key sustainability issues Portland faces. One of the most effective ways to promote livable communities, vibrant economies and healthy landscapes is through a "place-based" model of multiple, small-scale systems and approaches for solving many sustainability problems directly in the places where people live, work and play.

One of the primary examples of this approach relates to addressing the energy needs of a neighborhood. Localized, small-scale solutions to this issue could include the widespread use of on-site renewable electricity generation (e.g., photovoltaic panels), as well as combined heat and power and district energy systems. Coupled with energy-efficiency measures, these place-based approaches can significantly reduce a community's reliance on large-scale power plants and the need for the costly and vulnerable infrastructure of connecting distant energy sources to local load. Buildings will use less and better sources of energy and if the scale is right, may do so for much the same cost as traditional energy systems.

This neighborhood and district approach should become a key organizing level for waste related issues like solid waste, stormwater, and wastewater management. For example, stormwater should be seen as a resource (e.g., used for watering landscape, water features or toilet flushing). Stormwater that cannot be used directly should be managed at the source (e.g., eeroofs and bioswales) and infiltrated if possible to replenish groundwater. Where there is a need for larger neighborhood scale systems these should be integrated with other land uses (e.g., designing community parks that integrate stormwater management features/systems for the surrounding blocks). Graywater—water from sinks and showers—could be treated and re-used onsite as well (e.g., flushing toilets, watering landscaping).

Neighborhood-scale food systems also hold great promise for helping to augment the availability of fresh food. The number of farmers markets in Portland has doubled over the past three years to 14. More people are growing their own food, discouraged only by the scarcity of available public space (i.e., over 500 Portlanders are on a waiting list for a community garden plot). Interest is high in projects like the Diggable City that seek to identify viable land for urban agriculture. Farmers markets, as well as community and rooftop gardens, offer a great complement to neighborhood restaurants, corner markets and grocery stores.

Many of the pieces needed to construct more sustainable communities are well known and technically feasible today, and we can identify working examples in Portland of more sustainable activities and practices. Unfortunately, the incentive structure of regulations, prices and taxes do not encourage the widespread adoption of these best practices. With the Portland Plan, the City has an opportunity to put into place policies that make it easier and more affordable for residents and businesses to make more sustainable decisions on an individual and localized/neighborhood/district level.

### ***Avoiding the Problem in the First Place***

One of the most effective ways for Portland to become more sustainable is to focus on solutions that avoid the problem in the first place. In designing and planning neighborhoods, infrastructure, services, industrial development and social programs, we should focus on designing out the environmental and social impacts to the maximum extent practical. For example, the greatest leverage point for reducing building materials and energy use is during the architectural design phase. Similarly, vehicle emissions can be reduced through the design of interconnected alternative transportation systems and networks. Pesticide and water use can be reduced through the careful design of drought and pest tolerant parks.

Another approach to avoiding the problem in the first place is by greening our consumption patterns. Every day Portlanders have an opportunity to make consumption choices that

support the realization of a more sustainable community. For example, many of today's consumer products contain toxic chemical additives that aren't necessary – from children's pajamas to cosmetics, and electronics to microwave popcorn. Through education and public policy, we can help consumers make choices that are healthier for our bodies and the environment. For example, San Francisco restricts the manufacture and sale of children's toys and bottles made from plastics that contain certain potentially toxic chemicals. In addition to toxics reduction, such an approach can also help Portland more effectively manage the waste stream. Portland currently has a policy forbidding local restaurants from using polystyrene foam "to go" containers because they are not biodegradable or recyclable.

By placing greater emphasis on how a site is developed we can help restore the natural hydrologic balance and realize some of the benefits of an integrated approach to stormwater management, such as cooler air and water temperatures, improved air and water quality, enhanced property values and a more livable community. For example, Portland's Stormwater Management Manual calls first for management of stormwater at the source through vegetated facilities (e.g., ecoroofs, bioswales, and green streets) which can retain, infiltrate and/or evapotranspire 60-80% of the rainfall that falls on them annually. By seeking opportunities to manage stormwater at the source, we can enhance our communities and avoid problems or minimize them further down the system. The Portland Plan should pursue solutions and policies such as these that seek to avoid problems in the first place.

### ***Equal Access***

For Portland to become more sustainable, social inequality issues need to be addressed more explicitly. The challenges and opportunities surrounding equity and accessibility are interwoven with the efforts of the other TWGs and should be a key focus area in the Portland Plan. Key related issues identified by the Sustainability TWG include, but are not limited to, green affordable housing, fresh and affordable food and transportation options.

The need for affordable housing has always outstripped the supply, and public policy has justifiably focused on getting individuals and families off the street and into housing that meets their basic needs. In recent years, scientific research has increasingly identified a connection between our homes and our health. For example, the availability of fresh air ventilation is strongly associated with the rate of childhood asthma attacks and other respiratory diseases. Affordable housing developers have started adding building features to their budgets to improve indoor air quality; however, due to the additional costs involved, these features are often cut. The end result is that air quality in affordable housing is often inadequate.

There are indications that areas of Portland have relatively poor access to full-service grocery stores, thereby limiting some citizens' access to healthy food. Choices for these residents are to patronize convenience food stores, which generally provide fewer healthy foods, or to travel considerable distances to full-service grocery stores. Travel options—walking, biking, transit—are unavailable, unsafe or very inconvenient. Rising oil prices will raise the cost of driving and, as a result, the cost of access to full-service grocery stores. Because the portions of the city poorly served by grocery stores correlate with lower-income households, impacts fall more heavily on vulnerable populations.

Promoting equity and accessibility is a key issue that needs to be addressed as Portland continues to focus on improving and promoting healthy, vibrant communities. Many neighborhoods in Portland have design features and amenities that help to realize these goals (neighborhood and street designs, transit access, etc.). However, these benefits do

not extend to all of our neighborhoods, especially those with higher %ages of low-income, ethnically diverse and aging residents. For example, residents of outer east and southwest Portland do not have the same levels of service for transit, walking, and biking as residents in inner northeast, south, north, and northwest Portland. In addition, studies have shown that these populations are disproportionately impacted by exposure to environmental hazards (e.g., diesel particulate emissions, mold, and lead paint).

Moving forward, the Portland Plan should seek to meaningfully address these physical, social, economic and health inequities. Preservation, renovation, redevelopment, transportation system, brownfield and infill efforts should seek to incorporate community-based social, economic and job creation programs. Doing so will help to foster neighborhood and business district revitalization. Seeking social equity through the Portland Plan will lead to the expansion of opportunities and the creation of more choices not only for those in need, but for the community as a whole as well.

### ***Utilizing & Supporting Nature in the Built Environment***

Portlanders have come to expect clean air, excellent drinking water, seamless transportation systems, reliable energy supplies and effective waste removal. Typically, these goods and services have relied heavily on traditional infrastructure such as roads, sewers, pipes and wires. Recently, however, “green infrastructure” (e.g., trees and greenspaces) has come to be regarded as a complementary living infrastructure system. Green infrastructure provides a variety of benefits, often termed “ecosystem services,” such as better air and water quality, flood control, outdoor recreation, carbon storage, crop pollination, forage production and water provision. Green infrastructure provides economic and social benefits as well. For example, recent research conducted in Portland identified that urban forests and canopy cover increases the market value of property. Experiencing nature in an urban environment is integral to human health, well-being and quality of life.

The Portland Plan should seek to integrate natural systems as a viable alternative to traditional infrastructure into the design of the city. Ecoroofs, watershed revegetation, urban tree planting and green streets are existing examples of such an approach. By using nature as a model, Portland should seek to design a city that mimics nature, where buildings and communities are powered from sunlight and where “waste,” whether solid waste, wastewater, or waste heat, is understood first as a potentially useful input, not as a disposal problem. A strong urban forest, for example, manages and cleans stormwater, cleans and cools the air and captures carbon. These benefits have immediate economic value to Portland businesses and residents, and they also are integral to the high quality of life that Portlanders value.

## **Part 4: Topic Areas for Discussion**

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### ***A. Energy Efficiency & Renewables***

#### ***Introduction***

Portland and much of the world entered into the 21<sup>st</sup> century at a historic pivot point for energy supply and demand. It is likely that demand for oil, natural gas and electricity will outpace supply causing sharp increases in cost and the need to make existing energy resources stretch further. Energy efficiency - getting the most from the energy we use to meet our needs in homes, businesses, and industry – can help mitigate the economic and social impacts of sharply rising costs and limited supplies. Whether heating, cooling or

lighting our buildings, or manufacturing and transporting goods and materials, energy use can be maximized through improving our energy efficiency.

Evidence shows that most businesses can significantly reduce energy consumption through equipment maintenance and upgrades, smarter building systems and materials and energy efficient technology. This is usually achieved using tried and tested technologies that are widely available from a range of suppliers. Energy efficient designs in new homes and business can be achieved through thoughtful design of the building shell, the heating/cooling system, lights, plug-in equipment and the use of energy management controls. Commissioning the building so the systems operate as designed is a necessary action to ensure savings are captured. Periodic building tune-ups or retro-commissioning helps energy savings to persist over longer periods of time.

Renewable energy resources – wind, solar, geothermal, biomass, biogas, and waves - offer ways to generate electricity (and some transportation fuels) with few or no greenhouse gas emissions. All renewable energy resources produce net reductions in pollution and reduce our dependence on traditional fossil fuels like coal, gasoline/diesel and natural gas. Since most renewables are produced locally or regionally our economy benefits and dependence on foreign energy supply is reduced.

By reducing energy consumption local businesses are better able to compete in the global economy, cost of living is lowered and dependence on fossil fuels is reduced. As a key target sector for Portland’s economic growth, energy efficiency and renewable energy technologies hold much promise for job growth.

### ***Policy Context & Background***

Portland has a history of working aggressively on energy efficiency and renewables, going all the way back to the late 1970’s. In the early 1990’s, energy related policies and programs also began focusing on addressing global warming issues by expanding energy related efforts into areas like land use planning, transportation, and energy supply. Portland’s City adopted policies include: 1979 Energy Policy, 1990 Energy Policy, 1993 CO2 Reduction Strategy and 2001 Local Action Plan on Global Warming. Goal Seven in Portland’s current Comprehensive Plan is Portland’s 1990 Energy Policy; Ordinance 162975 adopted April 27, 1990. City Council replaced this policy through the adoption of the Local Action Plan on Global Warming on April 25, 2001 (Resolution 35995) which is not included in the current Comprehensive Plan.

Many of the most recent energy related programs and policies are contained in the 2001 Local Action Plan on Global Warming, which specifically addresses energy efficiency in municipal facilities as well as for the community at large. One of the goals established by the Action Plan includes using 100% renewable electricity in all city government operations by 2010. Update reports on Portland’s progress toward implementing the Action Plan were issued in 2002 and 2005.

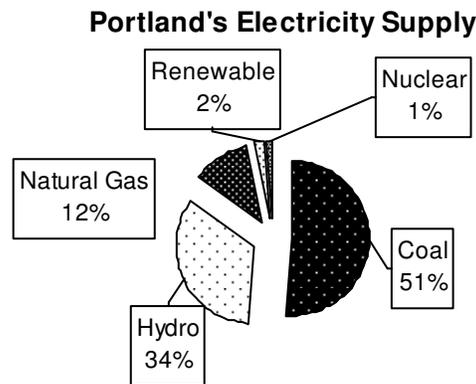
In 2007 Oregon’s Legislature adopted a Renewable Portfolio Standard which sets aggressive targets for Portland’s two electric utilities, Portland General Electric and Pacific Power to meet. The utilities are required to quickly increase the %age of renewable energy used – from roughly 2 % today to 10 % in 2012 and reaching 25 % in 2025.

### ***Current Conditions & Trends***

There are several key trends on both the supply and demand side related to energy. For example, prices for all sources of energy (natural gas, fuel oil, transportation fuels and

electricity) have continued to climb. From 2000 to 2007 gasoline prices are up 102%, natural gas 91% and electricity 75%. The US as a whole is also experiencing an increasing dependence on foreign supplies of oil and natural gas. For example, much of our natural gas is imported from Canada where supply is beginning to decline. Another key trend relates to the limited capacity of electricity transmission systems, and the need to expand that capacity in order to accommodate new power plants and renewable energy production.

The graph below depicts the current sources of Portland's electricity supply with Portland General Electric representing 72% and Pacific Power 28% of sales. Contrary to popular belief, only 34% of our electricity comes from hydro (e.g., dams on the Columbia River), while over half of our electricity comes from coal-fired power plants.



Many individual businesses and residents voluntarily choose renewable electricity through "green power" programs offered by the utilities. Oregonians lead the nation with one of the highest percentage participation levels by residential customers for both utilities. Our gas company, Northwest Natural, is the first gas utility in the US to offer carbon offsets to customers for their energy use.

Large scale wind farms are rapidly developing along the east end of the Columbia River Gorge and in eastern Oregon. Photovoltaic installations driven by generous federal, state and Energy Trust incentives are at record levels. Portland anticipates future development of sizable PV installations and a 1,700 KW biogas generator at the wastewater treatment plant, and is pursuing a goal for 100% renewable resources by 2010 through a long term wind power purchase.

Investment in energy efficiency is smart business and frequently returns 100% of the investment in just a few years through energy bill savings. It is common for energy improvements to have paybacks of one to three years at industrial facilities, three to ten years for businesses and five to 20 years in homes. Many new homes and commercial buildings are being built to "net zero energy standards", which means the buildings generate more electricity than they consume by way of onsite renewables and energy efficiency.

A number of programs and resources exist in Portland to help the community reduce energy use and greenhouse impacts, including energy audits and cash incentive programs through the Energy Trust of Oregon, the Oregon business and residential energy tax credit programs, and Federal energy tax credits.

### **Key Questions**

- 1) If an era of cheap foreign energy is coming to an end, how will high energy costs impact our local economy, standard of living, ability to purchase energy for basic living and transportation needs, impacts on choosing where we live and what transportation choices we make?
- 2) Will local sources of energy supply increase, particularly biofuels from Pacific Northwest farms? Will Portland be willing to host new businesses for refining biofuels supplying local and export markets? What economic development opportunities exist?
- 3) Will Portland's air travel be impacted by high fuel costs?
- 4) What mechanisms can Portland use to achieve higher levels of energy efficiency in both existing and new structures?
- 5) How can the Portland Plan achieve synergies between seemingly competing interests (e.g., increasing urban tree canopy while maintaining building day-lighting and good solar access)?
- 6) How can Portland capitalize on the economic development opportunities presented by the growing expertise in the local market among architects, developers and contractors for high performance and energy efficient buildings?
- 7) Can Portland help to inform and influence national renewable energy legislation efforts?
- 8) What mechanisms can Portland use to promote on-site renewable energy projects like photovoltaics, solar hot-water heating and micro-wind turbines?
- 9) How should Portland promote energy smart designs (e.g., passive solar, East-West roof orientation for solar access, ground-source heat pumps, etc.)?

### **Opportunities**

*Opportunities exist to:*

- 1) Make homes and businesses more efficient, using local designers, suppliers and installers.
- 2) Grow the renewable energy sectors for regional production of electricity, biodiesel and ethanol.
- 3) Improve the region's mass transit system.
- 4) Grow lower cost forms of transportation like rail, barge and ocean transport.
- 5) Explore district heating and cooling systems for business districts and neighborhoods.

## **B. Building Performance, Construction & Site Development**

### **Introduction**

Green building is an approach to construction and site development that links natural and built systems to achieve balanced environmental, social and economic outcomes. Green building prioritizes the health and well-being of communities, the restoration of natural ecosystems and short and long-term operational savings. Green building integrates the design and construction of a building with its surrounding site.

Our development practices can have a dramatic effect on natural systems and human well-being. The land and associated natural process provide essential benefits to humans and the

natural world. The land purifies water and air, it regulates temperatures, it provides food and raw materials, and it provides habitat for humans and other organisms. By using development practices that mimic natural processes, including using soils, hydrology, and vegetation, we minimize harm to natural resources and maximize benefits for humans.

Development practices, building and site maintenance and other ongoing activities affect natural resources. Poor construction practices can strip away vegetation, compact soil, and waste materials. Disturbed soils can release significant amounts of organic carbon into the atmosphere that were previously sequestered in the soil. But green building practices, particularly in an urban area, can improve the environment by amending and improving the soil, increasing vegetation, diverting materials from the landfill, utilizing stormwater onsite, and increasing energy and water efficiency. These practices will result in better air and water quality, reduced energy usage, increased property values, and greater human well-being.

### ***Policy Context & Background***

There are several policies that relate directly to building performance, construction and site development, including:

- City of Portland Green Building Policy: requires City-owned facilities to meet specific LEED standards and includes additional ecoroof, energy performance and water efficiency requirements
- PDC Green Building Policy: requires private projects that receive public investments to meet specific LEED standards
- Community-wide green building policy: currently under development, will address new and existing commercial/residential buildings, to be implemented in 2008-2009
- Portland Recycles! Plan: establishes construction and demolition material recycling benchmarks for projects valued over \$50,000. Recycling threshold may be updated in 2008
- Stormwater management manual: establishes a hierarchy for how to manage stormwater from new construction, including managing stormwater on the site as much as possible using vegetated surface infiltration
- Green Streets: A green street policy was adopted in April 2006 requiring the incorporation of green street facilities into all City of Portland funded development, redevelopment, or enhancement projects as required by the City's Stormwater Management Manual.

Other relevant policies include:

- Erosion Control: City code establishes requirements for development-related activities to prevent soil erosion and to reduce the amount of sediment and pollutants which harm watershed health.
- Source Control: City policies and regulations require pretreatment and/or management of stormwater runoff before it is discharged to the city's drainage system.

### ***Current Conditions & Trends***

In recent years, there has been growing interest in sustainable site and building development practices that maximize the benefits of ecosystem services. Ecosystem services are those goods and services that are derived from the natural world. Connecting the natural benefits of the site to the building and surrounding ecosystems has solid human

and environmental benefits. For example, using the soil to filter stormwater at the source and incorporating natural ventilation to reduce energy use are two ways that ecosystem services can benefit the built environment.

Over the past decade, the rising growth of the residential and commercial green building industry is reflected in the steadily increasing number of buildings certified by third-party rating systems. For example, as of November 2007 there are 33 LEED Certified Buildings and over 800 Earth Advantage Homes in Portland. In addition, a recent report sponsored by OSD and PDC indicates increasing local economic development opportunities to meet consumer demand for products that incorporate green materials and processes. The study highlights eleven potential products that could be manufactured locally including building materials made from regionally sourced agricultural waste, prefabricated structural components, and recycled content countertops.

According to the US Green Building Council, in the United States alone, buildings account for:

- 65% of electricity consumption,
- 36% of energy use,
- 30% of greenhouse gas emissions,
- 30% of raw materials use,
- 30% of waste output (136 million tons annually), and
- 12% of potable water consumption.

Source: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718>

More recently, other citywide efforts identified ways to reduce Portland's exposure to rising fuel prices and decrease the creation of carbon dioxide. According to a report drafted by the City Council-appointed citizen Peak Oil Task Force and the City/Multnomah County Local Action Plan on Global Warming, reducing energy use in buildings is a key factor for curbing greenhouse gas emissions and decreasing the use of fossil fuels.

The American Institute of Architects, the US Conference of Mayors and the US Green Building Council have all adopted the 2030 Challenge. The Challenge asks that all buildings' energy use and carbon emissions (new and existing) be reduced by 50% immediately, and to net zero by 2030. The 2030 Challenge has spurred design and construction of buildings that attempt to achieve net zero energy use and carbon emissions. Similarly, the many practitioners of green building in the Northwest, in association with Cascadia Chapter of the Green Building Council, developed The Living Building Challenge, which requires that a building not import any energy but manage with renewables generated on-site. Living Buildings are effectively net zero.

Greater emphasis is also being placed on how a site is developed. The City's Stormwater Management Manual calls first for management of stormwater at the source through vegetated facilities. Currently there are six acres of ecoroofs in the City and in the last five years over 500 green streets have been constructed. Ecoroofs can retain or evapotranspire 60% of the rainfall that falls on them annually. Green streets can infiltrate and evapotranspire 80% of the annual rainfall. Recognizing these approaches as an important part of our infrastructure system Commissioner Adams has set a goal for an additional 43 acres of ecoroofs and an additional 950 green streets in the next five years.

Newly developing areas in the City and especially in the Pearl and South Waterfront have recognized the value of "green." Their tenants are attracted to energy efficient buildings

and green landscaped features such as ecoroofs and swales. These features also make sense economically by increasing property values.

Stormwater runoff, whether from a rooftop or impervious area surrounding a site, can impact watershed health. Prior to development, the majority of stormwater percolated into the ground. Only about .3% was surface runoff. With development over the past 150 years, the amount of runoff has increased by 100 times. Now, 30% of rainfall results in runoff. In heavily urbanized settings this runoff factor can reach 64% or higher.

Portland receives approximately 37 inches of rain per year, and between 80 and 90% falls in small, frequent storms. Ecoroofs, swales and rain gardens are adept at managing runoff from these types of storms. The benefits are not limited to stormwater and water quality. These facilities provide wildlife habitat, areas for people, and air quality and temperature benefits.

At the national level, the Sustainable Sites Initiative released a draft of their standards and guidelines for site development. "The US Green Building Council has committed to incorporating the guidelines and standards into future evolution of the LEED rating system." (*Standards & Guidelines: Preliminary Report*, November 1, 2007) The report focuses on soils, hydrology, vegetation, materials and human well-being. It notes that in the United States, "carbon sequestration provided by urban trees is estimated to be about 25 million tons per year, which is equivalent to the carbon emitted by almost 18 million cars annually." Urban trees in Portland are credited with annually intercepting 1.3 billion gallons of stormwater and pulling nearly 53 million pounds of carbon from the air. In addition, Portland's urban canopy ultimately stores roughly 1.5 billion pounds of carbon.

### **Key Questions**

- 1) What codes, incentives, tools and education should Portland use to promote green building/sustainable site development?
- 2) What are the performance targets, goals and metrics for measurement?
- 3) How do we make green building and sustainable site development routine practice for all projects in Portland?
- 4) How do we maintain flexibility in our standards and goals to ensure continual performance improvement and responsiveness to changing environmental conditions caused by global warming?

### **Opportunities**

*Opportunities exist to:*

- 1) Focus on shifting building and site development practices to those that support "net zero" (energy, water, stormwater and waste), "carbon neutral" (transportation, localized renewable energy production, high efficiency) and "at the source" management (stormwater, water pollution).
- 2) Incorporate natural systems into the built environment as much as possible to conserve energy, enhance water and air quality enhancement, protect natural resources, cool temperatures, manage stormwater, and create healthy and vibrant urban communities. Examples include preserving or creating open/greenspaces, tree plantings, ecoroofs/rain gardens/green streets, natural ventilation, passive solar, daylighting and landscaping with native and drought tolerant plants.

## **C. Waste Reduction, Recycling & Composting**

### **Introduction**

The issues of waste reduction, recycling and composting touch all aspects of the way a city functions. From businesses to students to visitors to residents, young and old, trash is a part of our daily lives. Looking forward to Portland's future, it will be important to shift from thinking about solid waste management from handling of materials that are headed to the landfill, to the management of the resources that offset raw material use, enrich the soil or create jobs.

### **Policy Context & Background**

There are a variety of State, Regional and City policies that govern how waste and recycling are managed. For example, Metro is the "wasteshed coordinator" for the Portland metro area. Metro has authority over all waste upon collection, provides the two major local transfer stations and the landfill, and operates a centralized recycling and waste prevention information service by phone and website/email. Metro also holds the current contract with Cedar Grove composting to take commercial food waste and paper for processing in Maple Valley, WA.

The State of Oregon has several laws that impact solid waste and recycling practices, including requirements for curbside recycling programs (1983 Opportunity to Recycle Act). Oregon state law also mandates that a hauler cannot charge more for recycling than would be charged for the same quantity of garbage pick-up. Oregon also has the country's first Bottle Bill, passed in 1971 (requires a five cent deposit on carbonated beverages) which is the primary reason Oregon can achieve a recycling rate of over 80% of beer and soft-drink containers.

Portland primarily governs local waste and recycling management practices through Chapter 17.102 of the Portland City Code, as well as commercial and residential administrative rules, and a residential franchise agreement. In addition, Portland has a "Containers in the Right of Way" policy that was adopted by City Council on October 10, 2007, which requires new building codes to allow adequate space other than the sidewalk for solid waste and recycling containers.

Council directed OSD in 2006 to conduct a comprehensive review of programs and policies to improve the performance and sustainability of the waste collection system. The resulting Portland Recycles! Plan contained recommendations for changes in the commercial and residential sectors as well as city operations. The residential and city operations portions of the Plan were adopted on August 8, 2007 and a revision of the Commercial section will be presented to Council for approval in spring 2008. The Plan will guide programs through 2015 with goals to:

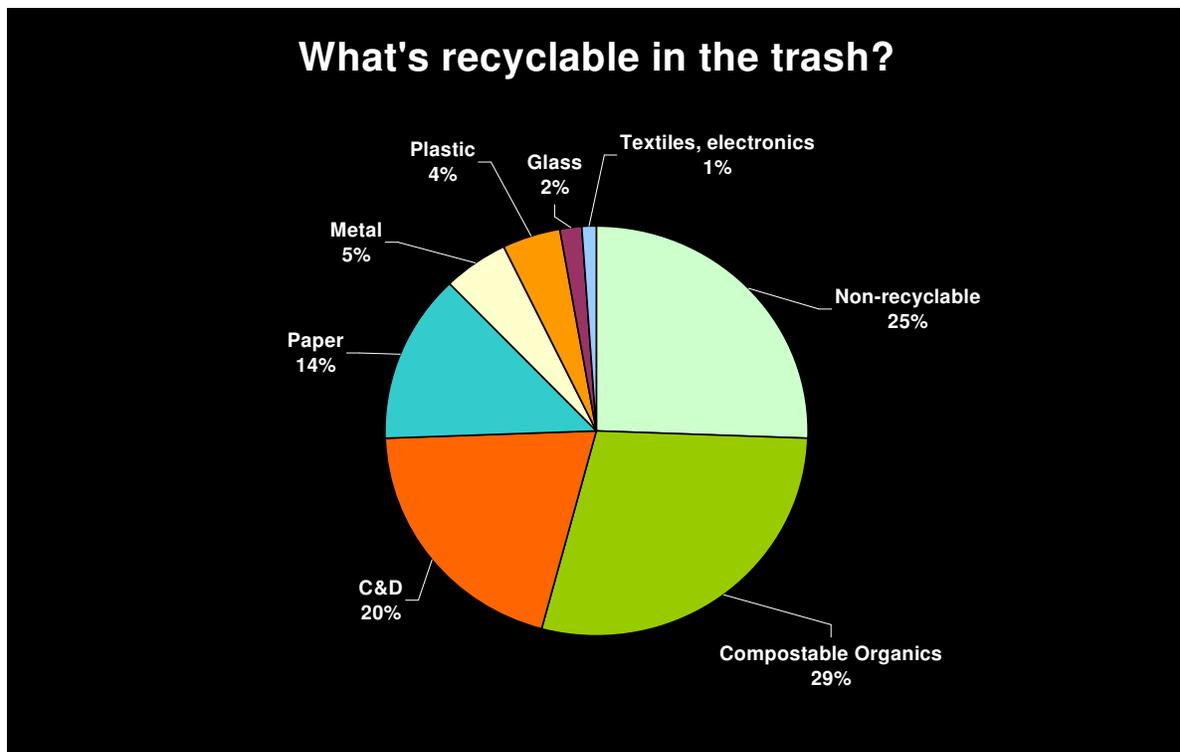
1. Promote sustainability of the solid waste and recycling system that includes maximum efficiency, equity and economic vitality, improved worker safety and reduced environmental and human health impacts over the entire life cycle of the materials,
2. Minimize the impact of harmful wastes by targeting toxicity and reducing greenhouse gas emissions,
3. Reduce per capita waste generation below 2005 levels by the year 2015, and
4. Maximize recovery of all waste with a target of 75% by the year 2015 and promote highest value use of the recovered materials.

According to current Portland City Code, all commercial businesses are required to recycle at least 50% of their waste. The Portland Recycles! Plan would increase this to 75%. Though it is stipulated in Portland’s Commercial Administrative Rules that failure to implement a recycling system is an infraction, subject to a penalty of up to \$500 for non-compliance, the City focuses primarily on education and outreach efforts. The City regulations do not provide for penalties unless a business has refused to comply by 30 days after being notified. Enforcement is primarily complaint-based. Penalties have rarely been levied because businesses respond within the 30 days. Under the Portland Recycles! Plan, OSD will implement additional education and enforcement activities.

Portland has a variety of other policies and plans that impact waste management and recycling practices. For example, the 2001 Local Action Plan on Global Warming has several action items related to waste reduction and recycling. Portland also requires that all residential haulers use a 20% blend of biodiesel, and over the next five years, Portland will consider proposing additional fleet requirements for both residential and commercial haulers (e.g., expanded use of biofuels, no engines older than 12 years, and emission control retrofits for trucks older than 2007).

**Current Conditions & Trends**

Recycling is increasing, but waste is too. The State estimates the total amount of waste we generate has increased 44% since 1996. In Portland, 75% of the waste comes from the commercial sector, while the remaining 25% comes from residents. Currently, 62% of Portland’s waste stream is recycled or composted, but an additional 28% could be readily recycled or composted. Of the waste Portland businesses and residents send to the landfill, the following pie chart describes the breakout. Note that only one-quarter of what is thrown away is non-recyclable:



While we have no way to determine how many businesses are actually participating in the mandatory program, it is estimated that 85-90% of the commercial sector participates in recycling to some extent. In Portland's residential sector, there is no requirement that residents participate in the recycling program; however, it is estimated that more than 80% of residential customers recycle. Even before the City began to regulate residential rates in 1992, Portland has always had a "pay-as-you-throw" rate system which provides a direct financial incentive for reducing a household's garbage.

### **Key Questions**

- 1) How can waste be minimized or eliminated without constraining quality of life and economic vitality?
  - a. What can the City do within its authority as a local government to reduce the waste associated with purchase and consumption patterns?
- 2) Is localized (e.g., neighborhood) collection and processing the future of waste and recycling management in a carbon-constrained economy?
  - a. Will house-to-house truck collection of waste and recyclables be a practical strategy?
  - b. What scale of waste processing is practical and efficient?
- 3) Beyond expanding opportunities to reduce, reuse and recycle, what more can be done to motivate residents and businesses?
  - a. How can residents and businesses share with haulers in the profits from waste prevention and recycling, as in the "resource management" approach to contracting or through incentive programs like Recycle Bank?
  - b. Must the City implement more punitive policies to reduce waste?
- 4) How can the management of waste and recycling from the city's own operations serve as a model for the rest of the community?

### **Opportunities**

*Opportunities exist to:*

- 1) Make building permits contingent on meeting construction waste recycling requirements.
- 2) Integrate waste prevention and recycling requirements in the City's upcoming proposed green building policy.
- 3) Implement emerging statewide waste prevention strategy in city policies and programs.
- 4) Eliminate space constraints in buildings as a barrier to expanded recycling.
- 5) Require the use of best management practices for business waste prevention and recycling, particularly for paper, food and construction waste.
- 6) Implement regulatory changes to the commercial collection system that provide incentives for waste prevention and recycling and minimize adverse impacts of collection.
- 7) Adopt goals, policies and programs to become a "Zero Waste City."
- 8) Develop carbon credits that assign value for recycling for use in emerging carbon trading systems
- 9) Ban the landfill of recyclables and compostables.
- 10) Work with local retailers on programs to reduce packaging waste from the products they sell.
- 11) Develop product design and take-back requirements for items the City buys.

- 12) Encourage product stewardship efforts, such as programs to collect electronic waste, deposit containers, and other materials.
- 13) Foster working examples of integrated industrial developments known as “eco-parks” where waste products from one manufacturer serve as inputs for another.

## **D. Water Conservation**

### ***Introduction***

We are very lucky to have the source of water we have in the Bull Run Watershed. This rain driven watershed provides water year-round to over 800,000 residents in both the City of Portland and surrounding areas. Even with all of the rain we have, and the water bodies that surround and flow through our city, we all need to find ways to conserve, especially during the peak summer months when landscape watering and outdoor recreation can cause water use to double compared to winter use. The Portland Water Bureau’s conservation program provides technical assistance and devices to both residents and businesses and continues to refine its programs to address different water using audiences and ever-changing technologies. Water is a precious resource that none of us can live without. Using it as efficiently as possible is the most responsible way we can ensure water to meet the various needs of Portland area residents and the environment.

### ***Policy Context & Background***

Oregon Water Resources Department Administrative Rule, Division 86 (OAR 690-086) requires preparation and submission of a water management, conservation, and curtailment plan (WMCP) to the state for approval as part of any new water use permit or to extend existing municipal permits. The bureau is currently working on an updated Division 86 plan now, and will submit it to the state by March 31, 2008, after internal and external review.

At a minimum, the Division 86 rule requires conservation programs to: a) conduct system water audits and, additionally, system leak detection if leakage exceeds 10%; b) meter all service connections; c) test and maintain all meters; d) develop a rate structure that is based, partly, on consumption of metered water; e) offer public education programs to encourage efficient use of water, both indoors and in the landscape, and communicate regularly with customers about the water conservation activities.

Additional activities are required, if feasible and appropriate, if the water supplier provides water to more than 7,500 people, including: a) technical and financial assistance programs to encourage and aid residential, commercial, and industrial customers in the implementation of conservation measures; b) supplier financed retrofitting or replacement of existing inefficient water using fixtures including distribution of residential conservation kits and rebates for customer investments in water conservation; c) adoption of rate structures, billing schedules, and other associated programs that support and encourage water conservation; and d) water reuse, recycling, and non-potable water opportunities. Five-year benchmarks need to be established for implementation and evaluation of activities. In addition, the Water Management and Conservation Plan (WMCP) has a curtailment element for dealing with emergencies. Approximately 40% of the water produced by the Portland water system (surface and groundwater) is provided to 19 wholesale contractors, which include other cities, water districts, and one PUD. The City of Portland has wholesaled water since the early 1920’s which has allowed the City to economize on their largely fixed costs of service to the benefit of City ratepayers. The City’s 2006 revised wholesale contracts require each water provider over 1,500 population to develop a conservation and curtailment plan. This means that even those entities that

would not have to prepare their own WMCP's will have to develop similar programs to meet their water sales contracts.

Portland's current Green Buildings Policy (2005) requires all new city-owned facilities and construction projects to include water saving devices saving an additional 30% beyond the 1992 Energy Policy Act baseline code requirements. In addition, the Local Action Plan on Global Warming also contains recommendations related to water conservation strategies.

### ***Current Conditions & Trends***

Per capita water use has declined since 1992. For example, the average single-family per capita use has gone from 85 gallons per day (1992) to 62 gallons per day (2006). Part of this decrease in demand is a result of the use of updated fixtures and appliances such as low-flush toilets and high-efficiency washing machines and dishwashers. Residents are encouraged to invest in these more efficient fixtures and appliances through various incentives and point-of-sale efficiency information. For example, the Energy Trust of Oregon provides rebates for washing machines, and the State of Oregon offers tax credits for washing machines and dishwashers.

Making similar observations about non-residential water demand is challenging due to the lack of normalizing data such as occupancy rates, number of widgets produced, employment and economic trends. Some general information about water use does exist however. For example, system-wide retail water use averaged 24.3 billion gallons in 1992 based on consumption of 415,000 customers within the City of Portland. This amount decreased to 21.1 billion gallons in 2006 despite the number of customers increasing to 539,200. There are a variety of reasons for downward trend in per capita use, including plumbing code changes in 1992, the transition to consumption-based sewer billing in 1994, loss of some larger customers and the economic recession in the early 2000s, further increases in density which result in less outdoor water use and conservation education/outreach and programs.

Significant improvements have been made to reduce water demand for landscaping applications, including higher efficiency irrigation equipment like weather-based controllers and more efficient sprinkler head designs. Portland has also seen increasing trends in the reduction or elimination of lawns by residents and businesses and replacement with native plants and/or low water use plants. There is also increased participation by landscape contractors to implement best management practices. For example, in 2007 the Oregon Landscape Contractors Association, with the support of water utilities state-wide, passed a law requiring continuing education for landscape contractors to retain licenses.

Lastly, there is ever-increasing residential and commercial sector interest in graywater reuse (i.e., using dish, shower, laundry and sink water in a variety of applications, including irrigation and/or onsite treatment and reuse). Currently, Oregon regulations and codes significantly limit the reuse of graywater.

Water demand forecast data developed by the Water Bureau for the WMCP indicates that in most years there will be adequate supplies available to meet demands for the next 20 years. However, the City is requesting access to existing undeveloped groundwater rights in the Columbia South Shore Well Field to meet annual average demands. This request is based primarily on vulnerability issues with the City's primary surface water supply being unfiltered, additional demands for fish flows in the Bull Run, and predicted growth patterns of both the City and wholesale service areas. The City conducted a climate change study with the University of Washington in 2002. This study indicated that surface water supplies would be reduced on average during the spring/summer/early fall by the year 2040, and

that demands would also increase during the peak season due to increased summer temperatures. The climate change study also indicated that these effects would increasingly grow over time between now and 2040. The 20 year demand forecasting used in the WMCP already considered increased demands during hotter weather years as well as the ability to use both sources conjunctively during weather fluctuations from year to year as dictated by the Water Bureau's Summer Supply planning process.

The City of Portland continues to conduct research on past climate variability and future climate change and will adjust future demand forecasts and supply reliability as indicated by this work. Newer Global Climate Models have been developed in 2007 and the Water Bureau intends to revise its climate change studies based on these once a specific downscaling methodology has been selected and integrated into our long range planning process and models. The Bureau is also participating in a climate tree ring reconstruction study with the University of Washington, as well as participating in American Waterworks Association Research Foundation projects on vegetation change and water quality impacts of climate change, and other projects and workshops on climate change research, adaptation, and mitigation. The City is participating with seven other large municipalities in the US on climate change research and how it will affect municipal water supplies and what strategies should be developed to adapt and mitigate these impacts.

### **Key Questions**

- 1) How should Portland most effectively encourage residents and businesses to use less water, while also maintaining the funding resources needed to manage, repair and upgrade the water distribution system?
- 2) Should Portland target more conservation and efficiency programs for businesses than for residential customers? Is there more water savings "bang for the buck" in the business sector?
- 3) How should City-owned and operated facilities model best practices by using fixtures, appliances, landscape equipment, etc. that exceeds the minimum plumbing code requirements?
- 4) Should Portland adopt water efficiency requirements for landscapes for all new residences and businesses as a part of the design review code?
- 5) Should Portland subsidize installation of water efficiency technologies? If yes, which technologies? Should the subsidies consider the owner's ability to pay for the technology without subsidy? Should the subsidies be targeted at certain customer classes (e.g., multifamily residential and commercial)?
- 6) Should Portland be actively involved in changing state regulations for use and treatment of graywater?

### **Opportunities**

*Opportunities exist to:*

- 1) Bill residents on a monthly basis to provide a stronger message to people when their water use is up, especially in the summer when outdoor water use rises. Also explore reinstating block pricing structures to send a more effective conservation signal to customers.
- 2) Explore technologies that would give customers real-time consumption data for resource use, including water.

- 3) Develop water efficiency requirements for residential and commercial landscaped areas. For example, performance standards and auditing for automatic systems, installation of weather-based controls and guidelines for the use of native and low-water use plantings.

## ***E. Transportation Options***

### ***Introduction***

Transportation will continue to play a key role in shaping Portland and will be instrumental in maintaining our quality of life, personal and freight mobility, the economy, and the environment. How we plan for and build the transportation network in the future will largely determine the success of other complementary efforts such as land use planning and other environmental or sustainability efforts by the City.

Building capacity and maintaining the transportation network is costly. As such, it is becoming increasingly important to expect a strong return on investments in transportation options. Complementing capital investments with market based demand management tools such as incentives, "feebates" or parking restrictions; along with education and outreach programs that inform people how to use the existing system will be essential to realizing the full potential of transportation investments.

### ***Policy Context & Background***

At present, transportation investments are guided by two key policy documents: The City of Portland Transportation System Plan (TSP) and The Regional Transportation Plan (RTP). Traditionally, TSP projects are submitted to Metro for inclusion in the RTP. Projects in the RTP are eligible for federal funding through the Metropolitan Transportation Improvement Program (MTIP) process which allocates approximately \$60 million every two years to jurisdictions in the Metro area. The MTIP funds a variety of transportation projects including regional transit, streetscape plans, Transportation Demand Management (TDM) programs, bicycle and pedestrian projects, and corridor improvements. The City uses the TSP to guide investments funded outside of the regional MTIP process.

With respect to sustainability and the transportation network, there are several other documents that outline both capital investment plans and strategic policies aimed at achieving mode split and development goals, for example. These plans aim to achieve the adopted goals by specifying, for example, parking ratios, development bonuses and requirements, street design standards, street classifications, and programmatic elements such as demand management. These documents include:

- The Bicycle Master Plan (currently being updated)
- The Pedestrian Master Plan
- The Streetcar Master Plan (currently being drafted)
- The PDOT Sustainability Plan (Internal procedures)
- The Local Action Plan on Global Warming
- The Central City Transportation Management Plan (currently being updated as part of the Portland Plan)
- The Portland Zoning Code
- PDOT Peak Oil Implementation Plan

In addition to these master plans, corridor plans and streetscape plans exist listing specific projects that are included in the TSP and RTP.

### ***Current Conditions & Trends***

City investments in transportation options in mixed use neighborhoods are achieving the intended result. Data trends show Portland residents travel 17% fewer miles in their cars (20.3 vehicle miles traveled (VMT) per capita) than the nation (23.8 VMT per capita). Portland is one of a handful of cities where VMT per capita is decreasing. Bicycle use is growing at an exponential rate in Portland. In 2006, Portland once again had the highest %age of commuters traveling by bicycle in the nation (4.4%). Over 14,000 cyclists cross the Willamette River every day in Portland, up 21% from 2006. Transit ridership numbers are on par with cities twice the size of Portland and TriMet continues to attract a large number of “choice” riders to the system during peak and non-peak hours.

Polling data suggests that the market for increasing non-single occupancy vehicle mode share is substantial and that it can be reached with additional investments in infrastructure demand management and education or incentive programs and strategic investments in safety related projects. For example, a huge latent demand exists for bicycling in Portland. Additional safety investments coupled with public outreach and education campaigns will help us realize this potential. In addition, visionPDX showed strong support for increasing the availability of transportation options for all residents in Portland.

The allocation and use of transportation options varies greatly across the city, however. Residents of outer east and southwest Portland do not have the same levels of service for transit, walking, and biking as residents in inner northeast, south, north, and northwest Portland. Consequently, a much higher %age of trips are made in automobiles in outer east and southwest Portland compared to closer in neighborhoods. Similarly, crash statistics show some of Portland’s most dangerous intersections are east of 82<sup>nd</sup> Ave. While carpooling is a viable option for those traveling longer distances; the %age of residents carpooling has remained constant at around 10% for over a decade. This is likely due to the lack of investment in carpooling infrastructure (lanes or queue jumps) and the relatively short trip distances realized by Portland commuters.

The cities most visible transportation demand management program is the award winning SmartTrips Portland program. SmartTrips is a comprehensive approach to reduce drive-alone trips and increase biking, walking and public transit in targeted geographic areas of the city. It incorporates an innovative and highly effective individualized marketing methodology, which hand-delivers packets of information to residents and commuters who wish to learn more about all their transportation options including transit, walking, bicycling, carpooling, car sharing and combining trips. Key components feature biking and walking maps and organized activities which get people out in their neighborhoods or places of employment to shop, work, and discover how many trips they can easily, conveniently and safely make without using a car. Success is tracked by evaluating qualitative and quantitative results from surveys and other performance measures. SmartTrips reduces drive alone trips between 8-12% each year and has reached over 185,000 Portland residents and workers since launching in 2003. However, the success of such demand management programs are wholly dependent on the provision of an adequate transportation system and land uses that allow people to reach destinations by using transit, bicycling, or walking.

### **Key Questions**

- 1) Are there more code-based incentives or regulations we can pursue to promote the provision and use of transportation options in all of Portland’s neighborhoods?
- 2) Is the public sufficiently educated and motivated about global warming and peak oil to understand the tradeoffs that are being proposed? How can we reach the public and educate them in a cost effective manner?

- 3) With restricted right of ways and overlapping, and sometimes polarizing goals; how do we balance the needs of transit, bicycles, freight, and others?
- 4) How do we fund further investments in transportation options? Are there federal or local funding opportunities tied to the goals adopted in the global warming and peak oil reports?
- 5) How can we incorporate external costs such as global warming and rising gasoline costs into our decision making tools such as the travel demand model used today? Specifically, can we reframe the planning metric from vehicle capacity to person capacity or carbon neutrality?
- 6) Are there other tools or policies we need to pursue or further fund that can complement investments in transportation infrastructure? For example, should all capital projects be required to include a TDM component to maximize return on investment?
- 7) With safety being the single most important barrier to increasing bicycle use in the city, how can we best educate motorists and cyclists about their rights and responsibilities and sharing the road.

### **Opportunities**

*Opportunities exist to:*

- 1) Develop on street parking management plans by district to achieve an 85% occupancy rate (optimal) in congested districts.
- 2) Develop and enforce stricter employee commute option requirements in concert with DEQ.
- 3) Incorporate stronger transportation requirements in LEED or green building certifications
- 4) Further enhance signal timing projects to reduce engine idling
- 5) Explore market based pricing strategies such as congestion pricing or metered parking coupled with increases in the provision of transportation options and demand management strategies in key corridors or congested neighborhoods
- 7) Implement the recommendations from the Peak Oil Task Force and PDOT's Peak Oil Implementation Plan (ongoing), and the Local Action Plan on Global Warming.
- 8) Explore requiring carbon neutrality on PDOT projects funded through the MTIP process...
- 9) Require capital investments to report carbon projections
- 10) Capitalize on enormous growth in bicycle ridership and increased political support for bicycles as a viable transportation option.
- 11) Create bicycle and pedestrian corridors with low vehicle volumes and speeds.
- 12) Explore opportunities to expand driver safety education such as requiring drivers education for all teenagers before licensing or a citywide campaign aimed at sharing the right of way.

## **F. Sustainable Food Systems**

### **Introduction**

Food is a sustaining and enduring necessity. Yet among the basic essentials for life—air, water, shelter, and food—only food has been absent over the years as a focus of serious professional planning interest. Planning affects the way food is produced, distributed, and consumed, which in turn can have major impacts on the health of consumers, communities, and the environment.

Over the last few years, interest in food system issues has clearly been on the rise in the planning community. The following are a few converging factors that explain the heightened awareness among planners that the food system is indeed significant:

- Understanding that the food system represents an important part of community and regional economies;
- Awareness that the food Americans eat takes a considerable amount of fossil fuel energy to produce, process, transport, and dispose of;
- Understanding that farmland in metropolitan areas, and therefore the capacity to produce food for local and regional markets, is being lost at a strong pace;
- Awareness that access to healthy foods in low-income areas is an increasing problem;
- Recognition that many benefits emerge from stronger community and regional food systems;
- Recognition that food system activities take up a significant amount of urban and regional land;
- Awareness that planners can play a role to help reduce the rising incidence of hunger on the one hand, and obesity on the other.

### ***Policy Context & Background***

While there are no formal policies governing sustainable food systems in Portland, there are several related reports, plans and programs. For example, the Peak Oil Task Force Report (March 2007) included several food and agriculture related recommendations, including education of the public about the connections between the food system and peak oil, as well as preserving farmland, expanding direct market opportunities for local farmers, strengthening hunger relief, increasing local food processing, increasing composting and educating citizens about growing, preserving and preparing food.

In 2002, the City of Portland and Multnomah County jointly made a commitment to:

- Support an economically viable and environmentally and socially sustainable local food system.
- Enhance the viability of regional farms by ensuring the stability of the agricultural land base and infrastructure and strengthening economic and social linkages between urban consumers and rural producers.
- Ensure ready access to quality grocery stores, food service operations and other food delivery systems.
- Promote the availability of a variety of foods at a reasonable cost.
- Promote and maintain legitimate confidence in the quality and safety of foods available.
- Promote easy access to understandable and accurate information about food and nutrition.

Additional reports and plans that relate to food systems include the Diggable City Reports (2005, 2006 and 2007), which includes inventorying and studying city-owned lands for the purpose of ascertaining their viability for urban agriculture. The 2007 Urban Forest Action Plan contains an action to support the planting of food-producing trees in appropriate

locations. visionPDX also contains several references to local food production and availability.

### ***Current Conditions & Trends***

Increasingly, food comes from more distant sources and the globalization of our food system, along with corporatization, commodification, and consolidation has wrought serious consequences on our personal and environmental health.

Seventeen percent of U.S. fossil fuel consumption goes to feeding ourselves. At roughly eight calories of energy to produce one typical food calorie, today's food system is both energy-intensive and inefficient. Growing, processing and delivering the food consumed by a family of four each year requires more than 930 gallons of gasoline or about the same amount used to fuel the family's cars.

One in three or 58 million American adults aged 20 through 74 are overweight. According to data from the Third National Health and Nutrition Examination Survey (NHANES III), the number of overweight Americans increased from 25 to 33% between 1980 and 1991. The survey also shows that minority populations, specifically minority women, are disproportionately affected: approximately 50% of African American and Mexican American women are overweight. Research suggests lower rates of obesity and overweight people in neighborhoods where supermarkets offering more healthful food choices are present (Morland et al, 2006). This access is not equal as low income and minority areas contain fewer supermarkets on average; these areas also tend to have a higher density of convenience stores offering fewer healthful choices and higher prices, and fast food outlets. Because these communities experience lower vehicle ownership rates, problems of access are exacerbated.

From salad mix to pot pies, salmonella, E.coli, pesticides, and mad cow disease are increasingly in the news as the safety of our food system is questioned from California to China. Chain of custody questions in our food supply chain are central to consumers who want to know more about the origins of their food.

It has been estimated that the city contains a four day supply of food. Dependency on distant food sources leaves a region vulnerable to supply disruptions and contamination. Buying local food supports a regional food production system, helping to create a reliable and plentiful food supply for the future.

In 1982, farmers got 33 cents of each dollar consumers spent on fresh fruit at the grocery store. By 2004, the farm share was down to 20 cents. Direct-market opportunities and buying locally grown food keeps money within the community. This strengthens all sectors of the local economy and increases the local quality of life. The farm share of retail food prices continues to shrink.

In the early 1930s, 25% of Americans lived on 6 million farms in the nation. Today, 2% of Americans live on 2 million farms. Globalization leads to greater consumer ignorance about the sources of food. As people know less and less of where their food comes from, how it is produced and how it impacts their communities and the environment, preservation of land and the natural and built resources upon which local agriculture depends becomes more difficult.

Recent studies indicate that portions of Portland are not equitably served by full-service grocery stores, thereby limiting some citizen's easy access to healthy food. Choices for

these residents are to patronize convenience food stores, which generally provide fewer healthy foods, or to drive considerable distances to full service grocery stores. Travel options – walking, biking, transit – are unavailable, unsafe or very inconvenient. Oil price uncertainty is very likely to raise the cost of fuel and, as a result, the cost of access to full-service grocery stores. Because the portions of the city poorly served by grocery stores correlate with lower-income households, impacts fall more heavily on vulnerable populations.

On the positive side, food consciousness and direct-market agriculture is on the rise. The number of farmers markets in Portland has doubled over the past three years to 14. Twenty-three Community Supported Agriculture farms service Portland and support is strong for a permanent public market.

More people are growing their own food, discouraged only by the scarcity of available public space (i.e., over 500 Portlanders are on a waiting list for a community garden plot). Interest is high for projects like the Diggable City that seek to identify viable land for urban agriculture.

A focus on local food is a hallmark of local restaurants that are celebrated all over the country. An October 11 story in *The Oregonian* noted that the city's growing reputation for dining and culture helped push travel spending in Portland to \$3.4 billion in 2006. According to a study conducted for the Portland Oregon Visitors Association, this was the third consecutive year that travel spending growth exceeded 7%.

### **Key Questions**

- 1) What parts of the city are underserved by full-service grocery stores? What are the obstacles to improved market conditions for full-service grocery stores? What can the city do to encourage the private sector to build grocery stores in these parts of the city? What can the city do to improve transportation choices in these parts of the city?
- 2) How will the city manage urban density to take pressure off of rural agricultural lands and still encourage urban agriculture?
- 3) How can the city support the growth of direct-market sales opportunities for agricultural producers (farmers markets, farm stands, public market), and take advantage of the economic development opportunities provided by our proximity to a rich agricultural bounty?
- 4) What are the obstacles to siting additional community gardens? How can the city encourage gardens on schools, churches, and private lands as well as changing regulations governing utilizing unused/not needed streets or right-of-way parcels?
- 5) How can the City influence consumers to purchase sustainably grown and processed food?

### **Opportunities**

*Opportunities exist to:*

- 1) Provide incentives for food production within the city on public and private land, including rooftop gardens.

- 2) Incorporate community gardens into the design of multi-family housing units and as central gathering places in neighborhoods. Establish community gardens with specific guidelines for gardens within walking distance of every 2,500 residents.
- 3) Encourage and promote the development of town centers that will include permanent sites for farmers markets incorporating necessary utilities, parking, and loading areas into their design without cost to the market.
- 4) Develop strategies that will encourage the private sector to build full-service stores in under-served neighborhoods.
- 5) Support the development of temporary farm stands, urban agriculture projects, and community vegetable gardens on school, park, and community center sites, and near public agency offices and nonprofit providers offering health, human and social services.
- 6) Promote regional food products by encouraging farm-direct sales, farmers markets, a terminal market, and year-round public market.
- 7) Retain and develop industrial land for local food processors, distributors, and other entrepreneurial uses.

## **G. 20-Minute Neighborhoods**

### ***Introduction***

The 20-minute neighborhood envisions people living in communities in which essential needs and services are located within a 20-minute walk from their residences. Such services would include: basic commercial retail needs (i.e., food suppliers, pharmacies), civic and institutional providers (e.g., schools, post offices); public transit; recreational parks/greenspaces; and potentially even workplaces. The compactness and accessibility that this type of urban design promotes sustainability in a variety of ways including: less energy used to get around communities; higher community density likely to promote less consumption and more efficient land and natural resource use; healthier human behaviors by way of higher exercise levels and lower levels of pollution (i.e., lower amounts of greenhouse gases and contaminants in stormwater runoff); improved ecosystems both inside and outside of communities; and higher amounts of equity and social interaction among community members.

### ***Policy Context & Background***

Numerous City policies are currently in place relevant to the 20-minute neighborhood. However, only a few policies directly relate to comprehensively achieving the concept in a detailed manner throughout the City. Most of the policies are focused instead on identifying and supporting the ideals upon which the 20-minute neighborhood strives to achieve. In addition, Metro's 2040 Growth Concept also may have some limited impacts on the City successfully achieving 20-minute neighborhoods in the future.

The City's Comprehensive Plan (2006) provides some of the strongest policy direction in terms of implementing the concept of 20-minute neighborhoods. In summary it calls for establishing:

- Major commercial centers served by transit and other supportive development like office, service, and dense residential;
- A mix of activities along major transit and transportation oriented routes and higher residential density within 1/4 mile and 1/2 mile of transit routes and centers;

- Greater residential densities (including affordable housing) near major employment centers;
- Transit-oriented development patterns at transit stations/centers to create easy access to transit;
- Infill and redevelopment, particularly in the Central City, at transit stations, along Main Streets, and other existing neighborhood areas.

The Local Action Plan on Global Warming encourages strategies consistent with the 20-minute neighborhood concept. For example, it sets the goal of changing the pattern of urban development to be more compact, more bicycle and pedestrian friendly, to provide for mixed uses, and to offer a range of mobility choices. Key highlights include actions to:

- Promote growth through redevelopment and infill that enhances existing neighborhood quality of life
- Continue implementing the Transportation System Plan, which includes policies to reduce vehicle miles traveled, increase non-motorized vehicle trips, and support the connection between land use and transportation;
- Partner with Metro and surrounding communities to implement the Regional Transportation Plan and the 2040 Growth Concept, (i.e., light rail lines, rapid bus, frequent bus service, high occupancy vehicle lanes, and adding new and improving existing intermodal connections);
- Implement new parking ratios in City Title 33 and support new development with a minimum number of parking spaces.

Other policies that contain elements related to the 20-minute neighborhood concept include the City Energy Policy (1990), the Sustainable City Principles (1994), the Green Building Policy (2001), the Central City Plan (1988), and Metro's 2040 Growth Concept and the Urban Growth Management Functional Plan.

### ***Current Conditions & Trends***

Strong support for the ideals underlying the 20-minute neighborhood concept and some limited details regarding implementation comes from Trend documents. Overall, the trends appear to support that more mixed use, transit-oriented neighborhoods with a mix of housing styles (rather than auto-oriented, single-family housing subdivisions) is likely to be the dominant urban form for Portland's future.

The Peak Oil Report provides some of the strongest support for and arguments that 20-minute neighborhoods are the wave of the future. The report finds that one likely effect of shrinking fuel supplies and higher fuel costs is population shifting to city centers as well as increases in both density and amounts of mixed-use buildings. Transportation and land use is one area that will likely see the biggest impacts of constrained fossil fuel supplies including desires for alternative transportation options located close to homes, and demand for homes that are also convenient to shopping, schools, work and other services. The report makes significant urban design recommendations supportive of land use patterns that reduce transportation needs, promote walkability, and provide easy access to services and transportation options.

Several aspects of the visionPDX findings focusing on how Portlanders envision our city for the future directly relate to the 20-minute neighborhood concept, including:

- Our city is compact, green, dynamic, and accessible to all Portlanders.

- Our distinctive neighborhoods are built around hubs and exist in relationship with a thriving downtown, which is the center of the metro region.
- People in all parts of Portland get around easily on foot, bikes, wheels and public transportation.
- Communities and transportation systems are designed to promote ease of access to work, services and play while ensuring carbon neutrality.
- Portland promotes dense development in neighborhood centers and along retail corridors and has encouraged well-designed infill development.
- Portlanders thrive in neighborhoods that provide goods and services within walking distance from residences and workplaces.
- Portland's distinctive neighborhood stores provide a diverse array of products and services for local residents, so that residents can obtain daily goods and services within walking or biking distance of their homes.
- Every Portland resident lives within a short distance of a park or greenspace.

Other relevant trend documents include the update to the Local Action Plan on Global Warming (currently under development), the Sustainable Development Commission's Sustainable Economic Development Report and the Grow Local Foundation for Innovation.

### **Key Questions**

- 1) Are 20-minute neighborhoods an idea we want to promote throughout the entire city or only in certain areas that are denser and more diverse like the Central City, Town Centers, and Community Corridors?
- 2) Is it time Portland create a written policy, regulations, etc. that supports in a comprehensive, detailed manner and seeks to directly achieve 20-minute neighborhoods rather than continue making indirect references within existing documents?
- 3) Should the 20-minute community be measured based on walkability or bikability?
- 4) Would striving to achieve 20-minute neighborhoods lead us to sacrifice other goals Portland may actively pursue (e.g., economic development, significant affordable & workforce housing gains, improvements to the automobile system)? How?
- 5) What types of objectives related to the larger goal of sustainability would pursuing the 20-minute neighborhoods achieve?

### **Opportunities**

*Opportunities exist to:*

- 1) Implement a formal 20-minute neighborhood policy for Portland that would officially set out the objectives to be achieved and the detailed regulations/procedures to be enforced to achieve them.
- 2) Institute a measurement system to determine how close locations throughout the City are to achieving the 20-minute neighborhood; what elements are missing, etc.

## **H. Green & Healthy Affordable Housing**

### **Introduction**

Healthy, energy efficient and sustainable affordable housing are components of social equity. In 2001, the City's Office of Sustainable Development and PDC developed the City's

Green Building Criteria for Affordable Housing. These criteria promote water and energy conservation and apply sustainable principles to site design, materials selection, indoor environmental quality and other criteria. Consistent with Portland's sustainable development goals at that time, the City Council determined that affordable housing should be built to achieve certain green criteria, though it was exempted from a third-party certification requirement and other standards

In addition to the environmental benefits of incorporating sustainable design and construction practices, there are also social and human health benefits. Energy efficient features can reduce a family's monthly energy bills by 15, 20, 30 % or more, depending on the energy system design, making it easier for low-income families to pay their bill and avoid losing their housing.

Building with safer construction materials reduces the total amount of toxic volatile organic compounds being emitted inside residential units. For families with children, standard floor finishes and carpets that contain toxic compounds can be especially hazardous. Small children spend more time on the floor than adults and are far more vulnerable to many toxic exposures. Tenants who smoke tobacco compound indoor air quality concerns, and some cooking and heating practices increase the likelihood of mold growing between and upon walls, ceilings and around windows.

In 2005, the toxic exposures of a minority, socioeconomically disadvantaged neighborhood in Minneapolis were studied. Researchers found that the bodies of children 3-6 years old were contaminated with toxic volatile organic compounds (VOCs) lead, mercury, 11 organochlorine pesticides and 30 polychlorinated biphenyls (PCBs). According to the study, "The results demonstrate that cumulative exposures to multiple environmental carcinogens and neurotoxins can be comparatively high for children from a poor inner-city neighborhood."<sup>2</sup> In large part, these exposures originate within the home.

Scores of related studies resulted in similar findings. According to Stephen Gilbert, "Childhood disabilities from chemical exposure during development are often not treatable and therefore *must be prevented*."<sup>3</sup>

### ***Policy Context & Background***

There are a few regional and local documents and policies that address social equity in the context of healthy, green affordable housing and neighborhoods. For example, green affordable housing policies are contained in the 2001 Green Building Policy, and its 2005 update. City Council delegated to PDC the responsibility for the green affordable housing requirements and the oversight of their implementation. In response, PDC and OSD developed the *Greening Portland's Affordable Housing* resource guide with threshold requirements and recommendations.

This policy should be updated for a number of reasons. On April 27, 2005, City Council passed a resolution to, among other things, "update City of Portland's Affordable housing green building threshold and voluntary guidelines." Since the green affordable housing guidance was developed in 2000, the market, resources, initial costs and available green

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<sup>2</sup> Sexton, Ken, et al, "Using Biological Markers in Blood to Assess Exposure to Multiple Environmental Chemicals for Inner-City Children 3 - 6 Years Old," *Environmental Health Perspectives*, Journal of the National of Health, Oct. 2005.

<sup>3</sup> "Ethical, Legal, and Social Issues: Our Children's Future," *Neurotoxicology and Neurological Disorders*, Jan. 2005.

development expertise have changed markedly to the point where today across the country building green is becoming a mainstream practice.

In coordination with OSD, the Portland Development Commission convened the Greening Affordable Housing Coalition Workgroup in Sept. 2007, to comply with the City Council's update requirement, learn the most pressing issues of green affordable housing developers, and identify how the city could assist its projects to become more sustainable.

The social, environmental, health and financing priorities identified by the Coalition Workgroup include:

- Higher energy efficiency and reduced the carbon footprint
- Healthier indoor air quality
- Third-party verification of green certification
- Reduce transaction costs
- Development of *new* financing incentives and mechanisms
- Promoting durability
- Developing cost/benefit data on green construction

Portland's existing policy has helped to alter the construction practices of many developers of affordable housing. However, given the mainstreaming of green building practices and the greater availability and lower relative cost of sustainable construction materials, Central City Concern, Community Partners for Affordable Housing, Enterprise Green Communities and other Community Development Corporations all report they believe the community can and should do more.

For example, since very few affordable housing units provide external kitchen exhaust or fresh air ventilation exchanges, air quality can quickly become a serious health threat to children and adults. EPA identifies indoor air quality as one of five of the more serious environmental/health concerns of our day. All four of the basic strategies for protecting indoor environmental quality—source control, ventilation, filtration and humidity control—are often quickly compromised on projects that run over budget.

Even when architects design strategies for addressing these issues, during construction they are "value engineered" out. Value engineering, or downgrading construction specifications, can occur due to budget shortfalls or because a subcontractor is not familiar with a particular construction technique, and avoids it assuming the costs will be higher than they actually are. As practiced today, value engineering provides neither *value* nor *engineering* and usually results in the elimination of project scope or downgrading of carefully planned project systems and finishes in order to cut cost. In affordable housing projects, the green or sustainable features and techniques are often the first to be cut by the general contractor or individual subcontractors.

These concerns are in part, attributable to lack of a compliance mechanism in the city's green building policy. Threshold requirements are based on an honor system in which there is no third-party certification, so the degree to which these requirements have been incorporated is largely due to the particular developer and general contractor involved.

### ***Current Conditions & Trends***

In 2007, City Council resolved that the Portland Development Commission (PDC) should allocate 30% of future tax increment (TIF) financing of each urban renewal area (URA) to the development of affordable housing. Some URAs were already allocating 30% of TIF funding to affordable housing and over time the other URAs will as well. This shift in

funding priorities lays the foundation for increased city investments in affordable housing in order to provide an accelerated rate of families and individuals with stable housing.

PDC has assessment management responsibilities for a portfolio of over 6000 units of affordable housing for which the agency provided a portion of the funding. In terms of the greening of affordable housing, for the new construction since 2003, 11 projects have achieved Earth Advantage certification, seven were G-Rated, and 17 were constructed using the city's Green Affordable Housing guidelines and at least three projects are on track to become LEED certified at the Silver and Gold levels.

The Office of Sustainable Development (OSD) is currently in the process of developing recommendations for new requirements to incent energy efficiency and carbon emissions reductions. These standards have been proposed for housing, commercial and retail construction and have financing and budgeting implications. The City Council is scheduled to review OSD's recommendations in early April 2008.

### **Key Questions**

- 1) What new funding mechanisms could be developed to help subsidize the shift of affordable housing development toward healthier, more energy efficient standards?
- 2) Should the City establish an indoor air quality ventilation code for affordable housing? Though indoor air quality is a significant health issue -- the US EPA identifies as one of the top five environmental health concerns in the nation -- fresh air ventilation is rarely installed by developers.
- 3) How can city bureaus and state programs consolidate and simplify current "green standard" requirements and funding processes to reduce the heavy paperwork burden on the development community?

### **Opportunities**

*Opportunities exist to:*

- 1) Subsidize the installation of clean, renewable solar energy on the roofs of affordable housing apartments to provide a reduction in the monthly energy bills of the apartment occupants.
- 2) Create job training programs targeted to lower-income brackets (and/or the unemployed) that offer training in service delivery in connection with home energy efficiency and renewables programs.

## **I. Alternative Transportation Fuels**

### **Introduction**

Alternative fuels, also known as non-conventional fuels, are any materials or substances that can be used as a fuel, other than conventional fossil-fuels. Some well-known alternative fuels include biodiesel, ethanol, butanol, chemically stored electricity (batteries and fuel cells), hydrogen, methane, natural gas, and vegetable oil. Ethanol, and to a lesser extent biodiesel, have recently seen a surge in production and demand. Similar trends have been for other alternative transportation fuels, such as gas-electric hybrids (e.g., Toyota Prius).

### **Policy Context & Background**

There are a few state and local policies affecting alternative transportation fuels in Portland, particularly related to biodiesel and ethanol. Most significantly, in July 2006 Portland's City Council established a citywide renewable fuels standard (RFS). With limited exceptions the

Standard requires a minimum 5% biodiesel blend (B5) in all diesel fuel and, effective November 1, 2007, a minimum 10% ethanol blend (E10) for all gasoline sold in Portland. The blend of biodiesel will increase to 10% in July of 2010. Additionally, Portland prohibits the use of biodiesel produced from palm oil for compliance with this RFS, and establishes desirable feedstock requirements once certain in-state production thresholds have been met (Resolution No. 180313, July 12, 2006; Resolution No. 180671, December 12, 2006). In 2007, Oregon's Legislature also adopted a RFS to be implemented statewide, which includes requirements for the sale of 2% biodiesel blends and 10% ethanol blends. Portland's RFS will remain in effect.

In an effort to maximize the City's own use of renewable fuels, City Council created a binding City Policy formally requiring that all City-owned (Resolution No. 180313, July 12, 2006):

- o Diesel vehicles use a minimum of 20% biodiesel (B20),
- o Gasoline vehicles use a minimum of 10% ethanol, and
- o "Flex Fuel Vehicles" in the fleet use fuel containing 85% ethanol (E85).

Portland also requires all residential garbage and recycling haulers to use a minimum blend of 20% biodiesel in their trucks that provide service inside the city's limits.

### ***Current Conditions & Trends***

The City's fleet has used biodiesel (B20) in nearly all City-owned diesel vehicles and equipment since 2004. The Water Bureau switched to using B50 to B99 in 2006 and the rest of the City's fleet is currently switching to B50. Each year the City uses more than 120,000 gallons of biodiesel in approximately 370 trucks, 160 pieces of construction equipment (backhoes, graders, excavators, etc.) and 60 towed units (compressors, generators, etc.). The City is currently using E10 for all gasoline powered vehicles and equipment, and Fleet is in the process of installing an E85 tank for the City's approximately 80 flex-fuel vehicles. Fleet now specifies flex-fueled vehicles in all new car purchases, when that option is available. Beyond biofuels, the City's fleet also contains over 30 gas-electric hybrids (Toyota Priuses), as well as electric cars and equipment, bikes, and Segways.

City Council has allocated financial resources to support economic development around clean energy, including biofuels. The City has offered a variety of grant and contracting opportunities to the private sector in an attempt to accelerate the development of the biofuels market as outlined in the priorities below:

- o Increasing the number of gallons produced and sold in Portland, and secondarily in Oregon.
- o Improving the ease, efficiency and cost effectiveness of storing, blending and distributing high blends of biofuels.
- o Furthering the development of Oregon-grown feedstock supply chains and supporting the growth of farmer or cooperatively owned facilities and partnerships that enable farmers to share ownership throughout the value chain of their feedstock.

Currently, there is no reliable data on how much biodiesel is sold in the State, or by city and/or county. This is primarily a result of how the State currently tracks diesel fuel sales. As a result, it is difficult to estimate the exact impact the Renewable Fuels Standard and other policy and promotion efforts have had, or will have, on the local and regional biodiesel market. There is reason to believe, however, that local trends mirror what we are seeing nationally. Data from the Department of Energy indicate that the number of ethanol and biodiesel production facilities and fueling stations has increased exponentially since 2003.

### **Key Questions**

- 1) How should the City strategically utilize/promote alternative fuels while also maintaining the priorities of fuel efficiency, mass transit and alternative transportation to reduce our reliance on fossil fuels?
- 2) How can land-use, transportation system and infrastructure development decisions take into consideration future alternative fuel infrastructure needs (e.g., plug-in electric hybrids, electric vehicles and hydrogen)?

### **Opportunities**

*Opportunities exist to:*

- 1) Use of alternatively fueled vehicles is prolific in Portland due to availability of refueling infrastructure (e.g., electric car charging stations in parking garages).
- 2) Create policies and incentives that promote the use of highly fuel efficient and alternatively fueled vehicles.
- 3) Position Portland as an alternative transportation fuel center through the use and promotion of new and innovative technologies.
- 4) Portland's City Fleet is a model green fleet, incorporating alternatively fueled and high fuel-efficiency vehicles that are right sized for the job. Older vehicles have been retrofitted with the best available emission control and anti-idle devices.

## **J. Toxics Reduction**

### **Introduction**

Certain environmental pollutants are well established as preventable risk factors in a number of chronic diseases, disabilities and premature deaths. Even here in our own community, low income and underserved populations are disproportionately exposed to toxic substances and pollution, and children bear greater risks of the potential resulting health affects. Further development and use of safer alternatives to hazardous substances and products in Oregon has the potential to spur business growth, create jobs, improve public health, lower the costs of health care and special education and protect the environment.

### **Policy Context & Background**

In May of 2006 Portland City Council and Multnomah County Board of Commissioners voted unanimously to adopt a Toxics Reduction Strategy (TRS) designed to use the Precautionary Principle as a framework for minimizing the use of toxic substances of concern in government operations. The TRS outlines actions that will help to minimize the procurement, use and release of toxic substances. To accomplish these improvements, the TRS creates a review and recommendation processes involving staff members who possess advanced topical expertise in each respective area the strategy covers.

**Long-Term Vision:** Promote a healthy community and environment by eliminating the governmental purchase, release and use of toxic substances that present potential negative health or environmental impacts. *Goal:* By using the Precautionary Principle as a framework, replace toxic substances, materials or products of concern with viable least-toxic alternatives by 2020.

**Guiding Principles:**

1. Use products and substances that do not contain or generate persistent bio-accumulative and toxic chemicals, heavy metals of concern, or known, probable or suspected carcinogens, mutagens, teratogens, endocrine disrupters, organ toxics or respiratory irritants.
2. Use effective and progressive integrated pest management strategies to minimize reliance on pesticides of concern and to ensure careful screening of products and their application to minimize adverse impacts.
3. Effectively utilize procurement tools that support toxics reduction in the purchase of all goods and services.
4. Implement best management practices that support toxics reduction and proper waste management in all operations.

**Current Conditions & Trends**

While not every chemical, whether naturally derived or synthetically manufactured, has been linked to specific health risks to people and the environment, some of these chemicals are known to be persistent and bio-accumulative, meaning they do not break down readily and tend to accumulate in living organisms. These substances may contaminate the air, the land, our food and our water. Unfortunately, toxicological data only exist for about 7% of 85,000 registered chemicals, and tens of thousand of chemicals are not even registered (Goldman & Koduru, 2000). These factors make it difficult for us to know definitively which products or toxic contaminants threaten our health and environment.

Through the emerging science of bio-monitoring, the Centers for Disease Control and Prevention (CDC) has recently measured levels of 148 different metals, chemicals and their metabolites in humans, including mercury, pesticides and phthalates. According to the CDC, more research is needed to determine whether exposure levels reported are cause for health concerns (CDC, 2005). However, the presence of some of these persistent and bio-accumulative substances may have negative effects of which we are unaware. Recent studies have shown that some of these substances can impact the earliest stages of life, exposing developing fetuses to a combination of chemicals whose impacts are just beginning to be understood (Schettler, 2001). There is also great concern that exposure-related health outcomes are distributed unevenly across various sectors of society. One pivotal report, sponsored by The United Church of Christ Commission for Racial Justice, found race to be the single most important factor, more important than income, in the location of abandoned toxic waste sites (UCCCRJ, 1987).

The Pacific Northwest, known for its pristine environment and high quality of life, has its share of toxic pollutants. Consider the following:

- Fourteen air pollutants in Multnomah County exceed health-based benchmarks. Six of those pollutants are more than 10 times national health standards (Multnomah County Health Department, 2003).
- The Oregon rate for asthma, which can be triggered by air toxics among other exposures, is higher than the national average (Oregon Asthma Network, 2005).
- The Willamette River is contaminated with industrial and agricultural toxics, including mercury, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), chlorinated pesticides and dioxin. The section of the river in the heart of our city, the Portland Harbor, is listed for clean-up under the national Superfund program (Oregon DEQ, 2000; EPA, 2000).

- Certain fish species in 16 waterways in Oregon, including the Portland Harbor section of the Willamette River, contain mercury, PCBs and wood treating chemicals at levels harmful to health if consumed (Oregon Department of Human Services, 2004).
- Increasing body burdens (the level of bioaccumulation in humans) of toxic chemicals widely used as fire retardants have been found in human tissue and breast milk, including in women in the Pacific Northwest, and pose a potential public health threat to future generations (California Environmental Protection Agency, 2006; Northwest Environment Watch, 2004).
- Oregon women ranked eighth in the US for cancer incidence and mortality rate in 2001 and 2002, and Multnomah County had the third highest incidence rate in the state (545.9 per 100,000 people) (National Cancer Institute, 2001; Oregon State Cancer Registry, 2002; North American Association of Central Cancer Registries, 2005). It is important to note, however, that exposure to environmental pollutants is only one of a number of complex factors affecting cancer incidence and death rates.

The Precautionary Principle is an emerging paradigm that suggests taking precautionary measures when an activity raises threats of serious or irreversible harm, even if some of the cause-and-effect relationships are not fully established (UN, 1992; Wingspread, 1998). Such a precautionary approach involves several key components: establishing goals, seeking out and evaluating alternatives, community right-to-know reporting, full cost accounting, and developing more participatory and transparent decision-making methods. The Precautionary Principle, a fundamental aspect of environmental agreements throughout the world, offers the City a common-sense approach to preventing public health and environmental impacts wherever practical. The City and Multnomah County Toxics Reduction Strategy is unique because it adopts the Precautionary Principle as the foundational framework. This perspective offers an approach to toxics reduction that can be used in conjunction with traditional risk assessment and risk management models.

### **Key Questions**

- 1) How can the City be more aggressive in pursuing toxics reduction efforts in our daily operations?
- 2) Should the City be more aggressive in pushing the private sector to implement toxics reduction strategies that include a Precautionary Principle approach?
- 3) How can the City influence the marketplace to discourage the use of consumer products that contain, create or release toxic substances of concern during their manufacture, use or disposal? (e.g., vinyl, Teflon, brominated flame retardants, etc.)
- 4) Should the City work with Metro and other neighboring jurisdictions to develop a waste pharmaceutical collection program/system, and prohibit the disposal of medications into the sanitary sewer system?

### **Opportunity**

*An opportunity exists to:*

- 1) More pro-actively incorporate the Precautionary Principle into broader policy decisions particularly as related to consumer products.