ENVIRONMENTAL OVERLAY ZONE MAP CORRECTION PROJECT

VOLUME 4:

Regulatory Compliance

PROPOSED DRAFT

June 2020

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

Limiting or *prohibiting* the conflicting uses could decrease development entitlement on some lots and could negatively impact the value of land for property owners. However, there are many factors that impact property value including access to improved streets and public transit, access to sewer and water, views, proximity to amenities (including tree canopy and natural areas), etc.

Further, due to state and federal rules that *prohibit* or *limit* development within rivers, streams, wetlands and flood areas, the impacts of local limitations on housing development within areas of significant riparian corridors is expected to have a small negative impact on the overall housing stock or value of land.

Property Values and Rent

Generally, as an area becomes more densely developed, property values and rents will rise as the concentration of businesses, residents, and customers make the area more attractive.

Homeownership rates in Portland generally have decreased in the last few years. This decrease varies by race and ethnicity. All but two communities—the Hispanic-Latino community and Native American community—experienced decreased homeownership rates from 2011-2016. In 2017, the median home sales price in Portland exceeded $400,000 in over two-thirds (68 percent) of the neighborhoods in the city.

Rentership continues to increase steadily in Portland as seen from the increase to 47 percent in 2016 from 46 percent in 2011. Portland appears to be heading toward an even split between renter and homeowner households. In 2015 the overall rent growth in Portland was an average of 8 to 9 percent—one of the highest in the nation. Rent growth slowed in 2016 to an average rate of 7 percent over the previous year. In 2017, after years of citywide rent increases, Portland saw a slight softening in rents with a smaller overall rent growth of 2 percent.

Although property values and rents are determined by a number of complex factors, *limiting* or *prohibiting* new housing development significant natural resource areas may affect the scale, location or type of housing allowed and that may impact property value or rents. However, allowing new housing development within significant natural resource areas can have negative impacts on adjacent properties including increased risk of landslide or flooding, removal of trees that provide shade and reduce heat island affects and reducing the visual amenities provided by trees and water. This could reduce property value.

The existence of trees, greenspaces and other natural resources have been positively correlated with residential property values in Portland (EcoNorthwest, 2009). A Portland-based study done by Donovan and Butry in 2010 found that trees within 100 feet of houses added approximately $8,870 to the price of a house, which represents 3.0% of sale price. Those trees also provide benefits such as cooling the air in the summer and attenuating rain in the winter. Natural resources contribute to the quality of neighborhood, local and regional recreation and trail systems, and also to the quality of views. Screening and buffering residential from industrial and commercial land uses can be provided by established trees and vegetation and can improve the economic value of both uses (e.g. noise reduction). Therefore, limiting new housing development in significant natural resource areas may maintain or increase property values.

Value of Wildlife

Economic research has shown that people place a considerable value on the continued survival of sensitive species, such as those listed as threatened or endangered. Such studies also suggest that the value associated with protecting threatened, endangered, and rare species similar to those found in Portland ranges from an annual payment of $11 per household to a one-time payment of nearly $400 per household (see Table 10).

Table 12: Willingness to Pay to Protect Threatened, Endangered, and Rare Species

Studies Reporting Annual Values		
	Average Value	**Range of Values**
Bald eagle	$43.51	$23.43-$50.21
Owl	$72.52	$43.51-$145.05
Salmon/Steelhead	$90.38	$11.16-$155.09
Whooping Crane	$62.48	$49.09-$76.99
Woodpecker	$17.85	$14.50-$22.32
Studies Reporting Lump Sum Values		
	Average Value	**Range of Values**
Arctic grayling	$25.66	$22.32-$29.01
Bald eagle	$331.38	$273.36-$390.52
Falcon	$35.70	-
Source: Richardson and Loomis, 2009		

It is important to note that willingness to pay is a different measure than estimating the economic value associated with maintaining individual species and biodiversity. For example, the courts have interpreted Congress to say that the value of threatened and endangered species is incalculable (TVA v. Hill).

Development-related threats to sensitive species in Portland, including ESA-listed salmonids, also may lead to higher future costs for governments, firms, and households engaging in activities that affect the species. Such costs might be associated with reduced, modified or prohibited activities including types of development, required or voluntary species monitoring, as well as measures to ensure their protection. If the population of these species continue to decline, they may be categorized as "endangered," which would increase the restrictions on development activities, increasing associated costs. Avoiding such costs could be supported by pre-emptive efforts to improve recovery of threatened species, protect sensitive species and prevent future threatened and endangered species listings.

In addition to the ecosystem services described above, existing natural resources in Portland provide other general services that are important considerations in this analysis.

Property Values

The existence of trees, greenspaces and other natural resources have been positively correlated with residential property values in Portland (EcoNorthwest, 2009). Natural resources contribute to the quality of neighborhoods, to local and regional recreation and trail systems, and also to the quality of

views. Screening and buffering between residential and industrial land uses can be provided by established trees and vegetation, and can improve the economic value of both uses (e.g. noise reduction). Other indirect "quality of life" values associated with natural resources include labor force retention, attraction of new employees, and reputation. Portland is generally known nationally and internationally as a *green* city and a desirable place to live, visit, work, and play, which has a positive impact on aspects of the local and regional economy.

A Portland-based study done by Donovan and Butry in 2010 found that trees within 100 feet of houses added approximately $8,870 to the price of a house, which represents 3.0% of sale price. Those trees also provide benefits such as cooling the air in the summer and attenuating rain in the winter.

As described above, limiting or prohibiting conflicting uses within significant natural resource area can have both a positive and negative economic impact.

Off-Site Benefits of Ecosystem Services

Natural resource benefits can occur beyond the immediate area. For example, maintaining soil stability can reduce the cost of landslide repair for properties and infrastructure down slope. Moderation of heat island impacts also affect properties surrounding forests and woodlands. When benefits occur off-site, the property cannot capture the value of these benefits directly. As a result, the market price for natural resources, whether it's floodplain habitat or a stand of trees, does not fully reflect a true exchange value relative to other goods. In fact, most natural resources are not priced because they are not bought and sold like other products. This makes establishment of value difficult and often underestimated or oversimplified given the complexity of ecosystems (Norgaard, Richard B. 2010. Ecosystem Services: From eye-opening metaphor to complexity blinder. Ecological Economics).

Temporal Considerations

Some of the benefits provided by natural resources take many years to be realized. For example, the full value of an immature stand of trees may not be realized for 25-50 years, when the trees have grown and matured and are providing maximum shade, carbon sequestration, rainwater interception, and evapotranspiration functions. Wetlands can recharge groundwater supplies for many years following high rain events. Another factor that complicates the determination of the economic value of natural resources is that many natural resources have "irreversibility" properties. If the resource is eliminated there may be little or no chance of regeneration in any meaningful timeframe. Therefore, the cost of losing natural resources must also include the opportunity costs, or the cost of future choices foregone

Scarcity

Another topic of consideration is *scarcity*. As an area develops and natural resources are removed or degraded, the functions those resources provide become scarce. This can increase the value of the remaining natural resources. One example is bottomland hardwood forests. Bottomland hardwood forest is identified by the Oregon Conservation Strategy (ODFW, 2016) as a conservation strategy habitat with a regional priority for preservation. Bottomland hardwood forest is an important habitat type for migrating birds, particularly neotropical birds, and bats. Another example is grassland habitat. In the Willamette Valley, grassland habitat has been reduced to less than 2% of its historic extent. This means that the wildlife species that depend on grassland habitat to complete their life cycle (e.g. ground nesters that need land sparsely vegetated with herbaceous vegetation) have significantly less habitat

D.5.b. Social Consequences

This portion of the analysis summarizes the social consequences of protecting significant wildlife habitat that is not a Title 13 Habitat Conservation Area. The social consequences are expressed as the qualitative and relative costs, benefits, and impacts of allowing, limiting, or prohibiting conflicting uses. The social analysis relies on current information related to:

- Human Health and Welfare
- Historic, Heritage, and Cultural Values
- Regulatory Compliance

D.5.b.1. Human Health and Welfare

Employment Opportunities

One of the most important factors in determining human health and welfare is household income, which is dependent on employment. The reason that income has such a strong influence on health is that it determines whether people are able to make healthy choices such as living in safe, healthy homes and neighborhoods, eating nutritious food, fully participating in family and community life, and obtaining timely and appropriate health care. Many studies have shown that people with health insurance are healthier than those without (Mult. Co. Health Department, 2012). In the United States the risk for mortality, morbidity, unhealthy behaviors, reduced access to health care, and poor quality of health care increases with decreasing socioeconomic circumstances (CDC, 2011). Research has linked unemployment to stress, depression, obesity, and increases in cardiovascular risk factors such as high blood pressure (Mult. Co. Health Department, 2012).

A 2012 informational piece published by the American Psychological Association states that "the current state of the economy continues to be an enormous stressor for Americans…Unemployed workers are twice as likely as their employed counterparts to experience psychological problems such as depression, anxiety, psychosomatic symptoms, low subjective well-being, and poor self-esteem. The piece continues, "Like unemployment, underemployment…is unequally distributed across the U.S. population, with women, younger workers, and African Americans reporting higher rates of involuntary part-time employment and low pay, as well as higher proportions of "discouraged" workers who have given up on searching for a job.

Average median household income for Portland in 2016 is $76,033. The City of Portland commonly uses an income at or above 80 percent Median Family Income as a proxy for the minimum income needed to pay living expenses. Based on the 2014 data, approximately 40 percent of households are at or below 80 percent MFI.

Generally speaking, *prohibiting* or *limiting* conflicting uses within areas of significant natural resources would have a negative impact on employment by limiting the size or extent of commercial, employment or industrial development. This could have a negative impact on the availability of living-wage jobs.

However, many of the significant natural resources addressed by this ESEE are also regulated by state or federal rules. For example, the federal government generally *prohibits* development, other than

transportation infrastructure and utilities, within river and stream floodways and *limits* development within river and stream flood areas. State and federal rules *strictly limit* development within waters of the state, including wetlands. Areas that are designated critical habitat for Endangered Species Act-listed species have limitations on development as well. The majority of these state and federal regulations are related to riparian corridors. Therefore, the local limits on development within significant riparian corridors have a negligible negative impact on overall employment throughout the city.

Access to Nature

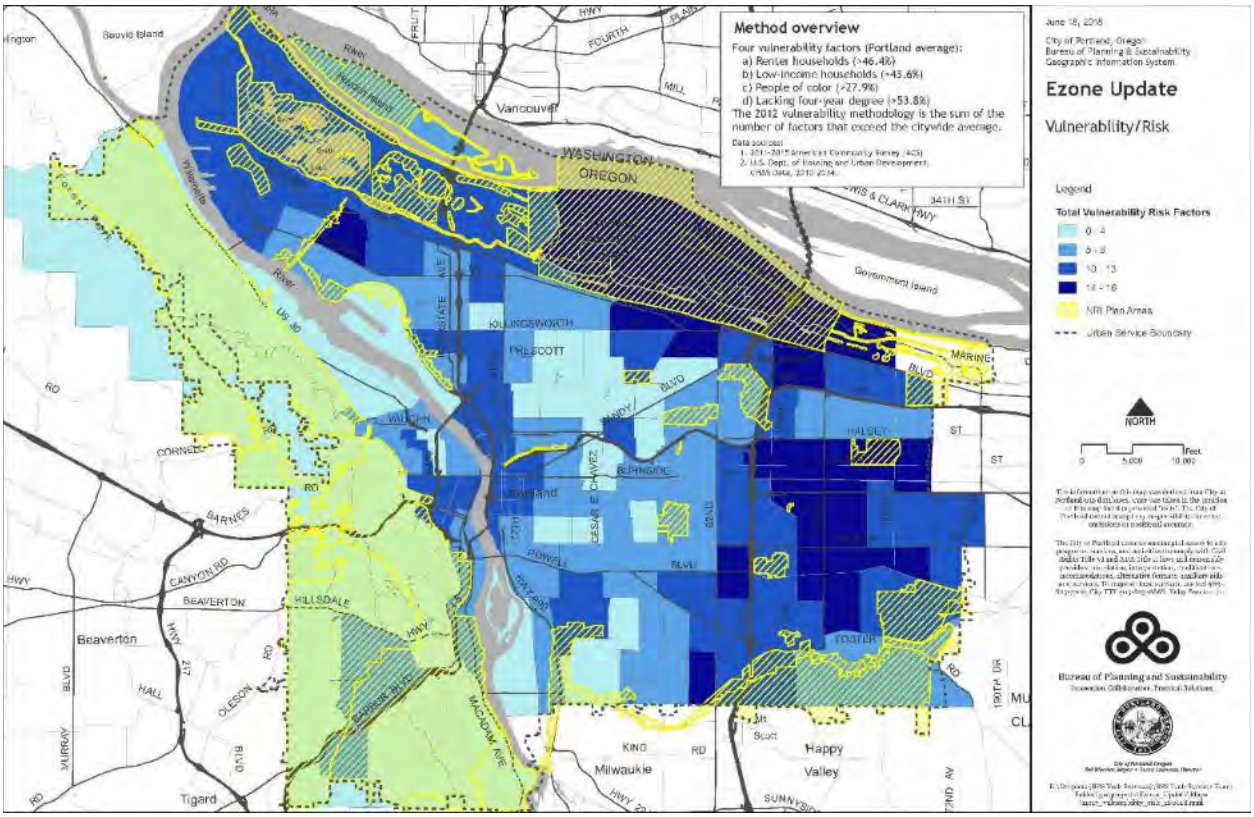
Access to natural areas and open spaces has an impact on human behavior and psyche. Access can mean a range of things from viewing vegetation to bird watching to hiking or boating. Dr. Roger Ulrich of Texas A&M's Center for Health Systems and Design found that passive scenic values, such as looking at trees, reduces stress, lowers blood pressure, and enhances medical recovery (Ulrich et al. 1991). The presence of trees and grass can lower the incidence of aggression and violent behavior (Kuo and Sullivan, 2001b). Common green areas in neighborhoods can also increase community ties and support social networks, which are determining factors in overall health.

Recreation has multiple health benefits. For people who are inactive, even small increases in physical activity can yield numerous health benefits (Mult. Co. Health Department, 2012). Exercise improves overall health, which reduces public and private health care costs, improves quality of life, and may help people live longer (Nieman, 1998). Activities such as walking in forested areas help boost the immune system (Sachs and Segal, 1994). In addition, the Centers for Disease Control and Prevention strongly recommends improving access to places for physical activities such as biking or hiking trails to reduce the risk of cardiovascular disease, diabetes, obesity, selected cancers, and musculoskeletal conditions.

Melody Goodman, an assistant professor at Washington University in St. Louis, conducted research that found "your zip code determines more of your health than your genetic code." (www.hsph.harvard.edu/news/features/zip-code-better-predictor-of-health-than-genetic-code/) This is because people with a higher vulnerability risk typically live in areas of the city that do not support good health – areas near highways/railroads with decreased air quality and increased air temperature, areas without green infrastructure like trees, streams, wetlands and parks, and areas without access to transit, bicycle lanes, or sidewalks. Map 13 shows areas in Portland with high vulnerability risks.

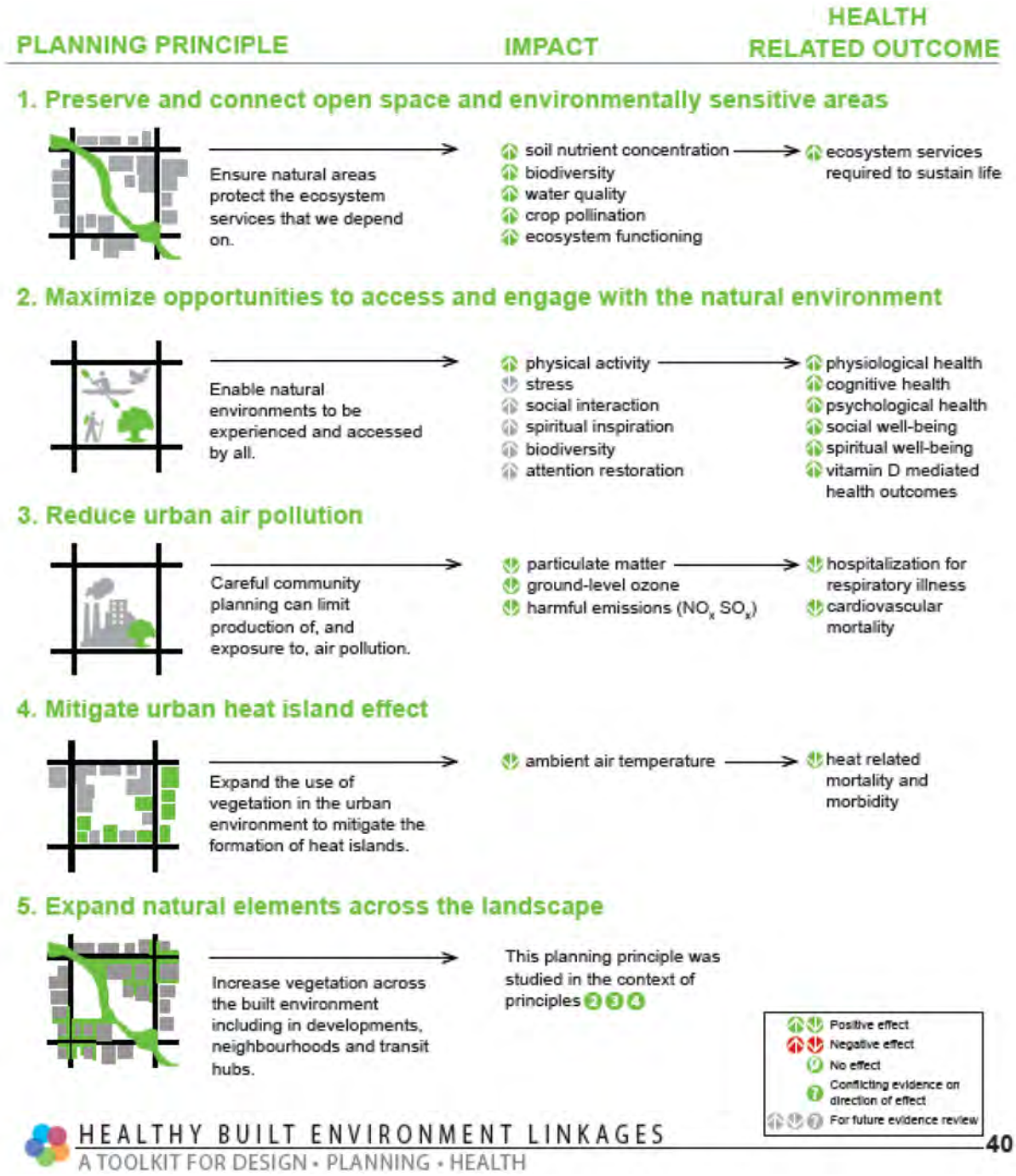
The British Columbia Center for Disease Control, developed a toolkit that makes links between planning, design, and health (Figure 3). The first planning principle is to preserve and connect open space and environmentally sensitive areas. Correcting the environmental overlay zones to better protect existing natural resources, coupled with actions that increase human access to the resources, will contribute towards improved public health for vulnerable communities in Portland.

Generally speaking, *limiting* or *prohibiting* conflicting uses in significant natural resource areas maintains nature and supports access to nature and the associated public health benefits.



Map 13: Vulnerability Risks in Portland

Figure 5: Relationship of Natural Resources to Public Health[3]



[3] BC Centre for Disease Control. (2018). Healthy Built Environment Linkages Toolkit: making the links between design, planning and health, Version 2.0. Vancouver, B.C. Provincial Health Services Authority. Retrieved from http://www.bccdc.ca/pop-public-health/Documents/HBE_linkages_toolkit_2018.pdf.

Climate Change and Public Health

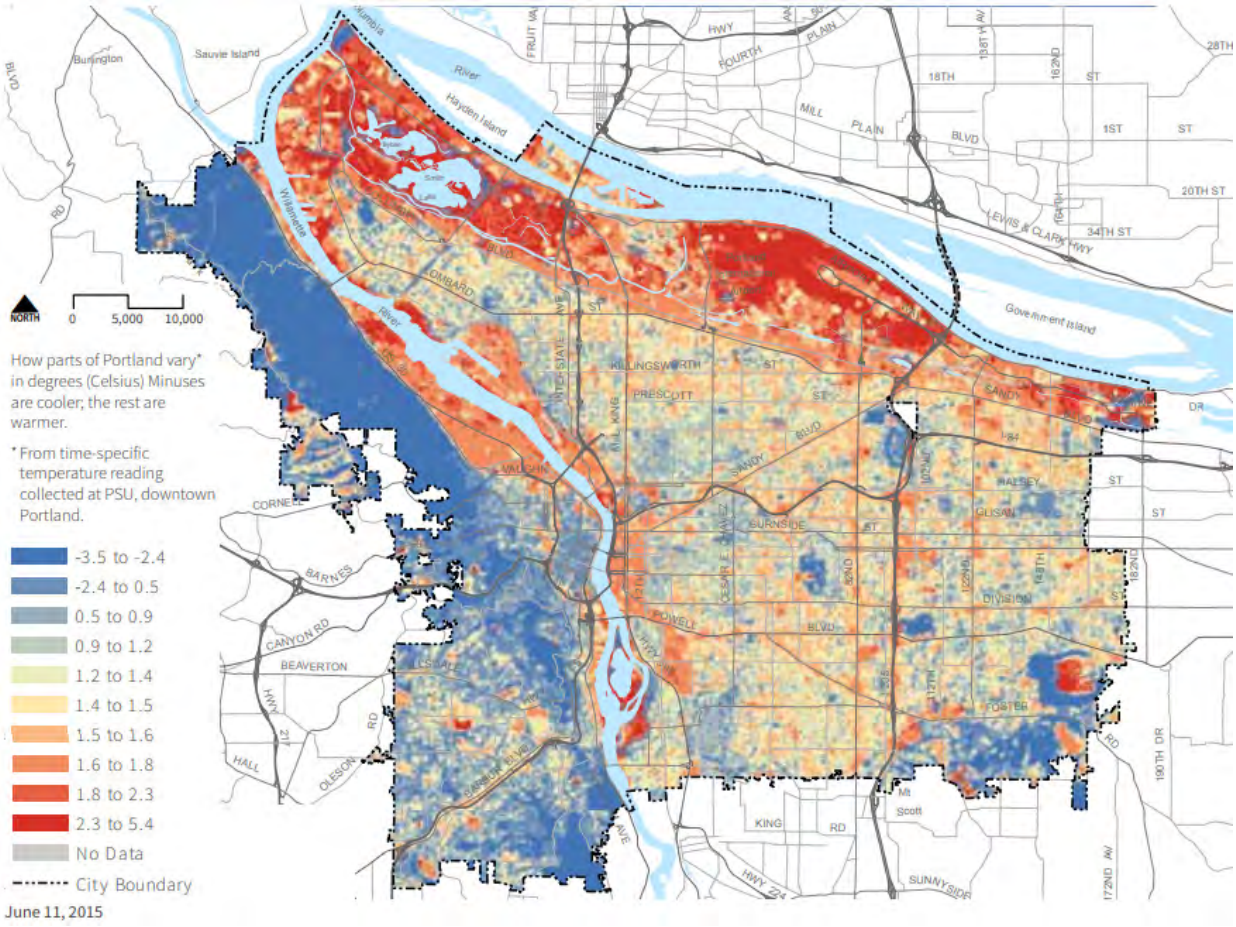
Climate change impacts are already evident, both globally and in Oregon, and more impacts are inevitable, if uncertain. Currently available model projections for the Pacific Northwest have a higher degree of certainty related to expected changes in precipitation patterns and temperature increases but are inconclusive about what should be expected for total annual precipitation or extreme weather events. It is fairly certain that the Portland region will experience the following changes:

- Increased temperatures overall, including average, maximum and minimum temperatures in the summer and winter months (projected 0.5 ºF increase per decade).
- Changes in precipitation patterns, with more precipitation falling in mid-winter and less precipitation in the summer. More precipitation falling as rain rather than as snow in lower elevation watersheds.
- Continued influence of ocean-driven weather patterns (e.g. La Niña/El Niño and the Pacific Decadal Oscillation) and swings between hot/dry and cold/wet (Oregon Climate Change Research Institute, 2010).

These changes will have a negative impact on public health through more frequent and longer heat waves, more air quality advisory days, more flooding, and potentially less access to nature if certain habitats cannot adjust to the changes in weather.

Extreme heat events are becoming more common in Portland. In the United States, extreme heat causes more deaths annually than all other weather events and natural hazards (Luber, 2008). Areas with more tree canopy experience less heat than areas with less tree canopy, as shown in Figure 6. Extreme heat events affect public health costs to the individual, hospital visits or equipment to address health issues, as well as to the community as a hole, such as opening cooling centers.

Limiting or *prohibiting* conflicting uses in significant natural resource area supports efforts to reduce climate change impacts.



Source: Sustaining Urban Places Research Lab (SURP), Portland State University, 2015

Figure 6: Urban Heat Islands in Portland

Noise and Light Pollution

Natural resource areas and open spaces create natural screens and buffers between incompatible land uses, separating them and reducing a broad array of impacts. For example, the US Department of Agriculture reports that a 100-foot wide and 45-foot tall patch of trees (approximately 1/10 an acre) can reduce noise levels by 50 percent (1998). Trees can also reduce the off-site impacts of lighting or visual impacts from intensive development.

Noise and light pollution are often a concern of neighborhood residents living in close proximity to industrial, employment and commercial development. Exposure to bright outdoor lighting, particularly light that is rich in blue wavelengths, can have negative impacts on human health and wellbeing. These impacts include the disruption of circadian rhythms and sleep cycles and possible increases in the incidence of a variety of diseases, including cancer and cardiovascular disease. Rivers, streams and wetlands, as well as vegetated riparian areas around waterbodies form natural screens between land uses and can mitigate for noise and light pollution.

Limiting or *prohibiting* conflicting uses in significant natural resource area reduces the impacts of noise and light pollution.

D.5.b.2. Historic, Heritage and Cultural Values

Portlanders place a high value on the environment and quality of life. The Oregon state symbols reflect this value. The Oregon state bird is the Western Meadowlark, which is currently a state-listed Species of Concern and has been nearly extirpated from the city due to loss of native grasslands. Portland's City Bird, the Great Blue Heron, is found along rivers, streams and wetlands. Fourteen runs of the state fish, the Chinook salmon, use the Columbia River and all fourteen are federally listed as Threatened or Endangered. The beaver is Oregon's state animal and still resides in many of Portland's waterways.

Portland's identification with nature and wildlife is reflected in many ways. The Audubon Society of Portland is over 100 years old and is the largest chapter of the national Audubon Society. Many Portlanders are avid bird-watchers. Local festivals, Wild Arts Festival, Raptor Road Trip, and annual migratory bird festival at Ridgefield Wildlife Refuge in Washington state are attended by thousands of residents.

Metro has recognized the importance of fish and wildlife and their habitats by adopting the regional Title 13, Nature in Neighborhoods, program in 2005. This program establishes regional baseline requirements to protect fish and wildlife habitat and water quality. The requirements focus on protecting, conserving and restoring natural resource functions and values in riparian corridors. Establishing this program reflects the importance of environmental quality to the residents of the Metro region, including Portlanders.

There is a long history of human inhabitance in the study area. A short summary of the history and current cultural values, focusing on natural resources, is provided below. It is intended to illustrate the history humans have had with the Willamette River, Columbia River and the valley; as well as some of the cultural values humans have placed on the natural resources.

Native American History and Cultural Values

The area now known as Portland has been populated with people from various tribes for thousands of years. In the Portland area, Native Americans lived primarily on the north and south shores of the Columbia River and near the mouth of the Willamette River, and other native peoples also traveled to and through the area. They camped, fished, hunted and gathered first foods such as salmon, lamprey, deer, camas, wapato, acorns and huckleberries. They also used the rivers to travel and trade among area tribes.

Today there are tribes throughout the northwest and beyond that retain an interest in the Portland area. Portland has a robust Native American community of roughly 40,000 people that represent over 300 tribes. These native peoples have an interest in ensuring the long-term protection and abundance of natural and culturally significant resources in order to continue their long-standing connection to the land and its waters. The rivers, streams, wetlands and natural areas have and continue to be important places for gathering food, conducting ceremonies and celebrations and maintaining lifeways practiced since time immemorial.

Post European Contact

European settlement occurred at the confluence of the Willamette and Columbia rivers due to the abundant natural resources and opportunities for trade. As more urban development occurred, the rivers played a key role in the economy. In the 1800's the Willamette River was used to move goods, particularly logs and agricultural products. In the mid-1900's shipbuilding was located in the Willamette River North Reach. The value Portlanders placed on the environment was reflected in city plans, including the 1903 Olmsted vision for a 40-mile loop trail that encompassed Portland and would provide its residents access to open spaces. The 40-mile loop trail is still being realized today through a system of trails throughout the city.

Today, Portlanders value the environment and quality of life. The Oregon state bird is the Western Meadowlark, which is currently a state-listed Species of Concern and has been nearly extirpated from the city due to loss of native grasslands. Five runs of the state fish, the Chinook salmon, use the Columbia and Willamette rivers and all five are federally listed as Threatened or Endangered. Many of Portland's waterways are still inhabited by beaver, the Oregon state animal.

Portland's identification with nature and wildlife is reflected in many ways. The Audubon Society of Portland is over 100 years old and is the largest chapter of the national Audubon Society. Many Portlanders are avid bird-watchers. Local festivals including the Wild Arts Festival and Salmon Festival are attended by thousands of residents. The City co-sponsors the Big Float annually to highlight Portlanders' connections to the Willamette River and to help promote active, water-based recreation.

Metro has recognized the importance of fish and wildlife and their habitats by adopting the regional "Nature in Neighborhoods" program in 2005. This program establishes regional baseline requirements to protect fish and wildlife habitat and water quality. The requirements focus on protecting, conserving, and restoring natural resource functions and values in riparian corridors. Establishing this program reflects the importance of environmental quality to the residents of the Metro region, including Portlanders.

D.5.b.3. Regulatory Compliance

Regulatory compliance is important for the City of Portland to protect infrastructure, avoid cost, liability, and maintain participation in state and federal programs such as the National Flood Insurance Program. There are multiple regulations described in Appendix A for which Portland must maintain compliance. Below are summaries of some regulations the existing Environmental Program complies with or contributes to the compliance with.

Endangered Species Act

After the 1998 listing of steelhead trout in the Lower Columbia River, the City of Portland began developing a comprehensive, coordinated citywide response to threated and endangered species for City Council adoption (Resolution No. 35715). The City Council established an intent to avoid "take" of a listed species (i.e., harming individuals or populations or their habitat), and to assist with recovery of listed species which now number eighteen species including birds and amphibians. The City has since taken actions such as identifying and prioritizing City programs that could affect listed species, providing technical support to bureaus, providing oversight for activities involving federal permitting or funding,