Metro Brownfields Scoping Project

November 12, 2012

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MAUL FOSTER ALONGI

REGIONAL BROWNFIELD SCOPING PROJECT

FINAL REPORT

Prepared for

METRO

November 12, 2012

Project No. 0075.04.01

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The goal of the Regional Brownfield Scoping Project is to understand the scale and impacts of contaminated, underutilized properties in the Portland metropolitan area and assess a range of policy solutions to promote cleanup and redevelopment of these sites. The Metro Regional Council (Metro) established a Technical Review Team of public- and private-sector representatives with experience in brownfields to bring a range of perspectives to this effort. The project included five major elements:

- Brownfield Data Gap Analysis—estimation of the extent of potential brownfield properties in the Metro region, based on research on targeted study areas
- Case Study Analysis—qualitative and quantitative research regarding real-world example brownfield projects to understand their characteristics, challenges, and keys to success
- Impact Assessment—estimate of the economic opportunity costs, environmental threats, and social impacts of brownfields in the region
- Policy Review—review of national best practices to promote brownfield cleanup and redevelopment as a foundation for assessment of tools that could be applied specifically to Oregon and the Metro region
- Public Benefit Forecast—estimation of the public benefits of implementing different policy tools and increasing the rate of brownfield cleanup and redevelopment

This final report summarizes the findings of each of these tasks. More detailed information on the analysis methods and results are provided in appendices.

About Metro

Metro is the directly elected regional government that serves more than 1.5 million residents in Clackamas, Multnomah, and Washington counties, and the 25 cities in the Portland metropolitan area. The Metro Council includes a council president elected regionwide and six councilors elected by district. Metro also has an auditor who is elected regionwide.

Metro's responsibilities include Urban Growth Boundary (UGB) management, long-range land use and transportation planning, waste and recycling planning and management, and operation of the Oregon Zoo, Oregon Convention Center, Portland Metropolitan Exposition Center and Portland Center for the Performing Arts.

This Regional Brownfield Scoping Project builds on previous brownfield studies in the Portland metropolitan region and aligns with broader land use and community development plans, including the 2040 Growth Concept. Previous planning and research efforts led by Metro, the cities and counties within its jurisdiction, the Port of Portland, and the Portland Development Commission have been utilized in this current effort to efficiently and effectively conduct analysis of brownfield impacts and opportunities.

Previous Portland Brownfield Studies

1988—Portland Brownfield Initiative

2004—Brownfield/Greenfield Development Cost Comparison Study

2007—National Brownfield Association Study

2009-2010—Portland Plan Economic Opportunities Analysis

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Purpose

The goal of the Regional Brownfield Scoping Project is to understand the scale and impacts of contaminated, underutilized properties in the Portland Metropolitan region and assess a range of policy solutions to promote cleanup and redevelopment of these sites. A Technical Review Team of public- and private-sector representatives, with experience in brownfields and community development, brought a range of perspectives enhancing the analysis and conclusions of the project. This final report summarizes the key findings, with more detailed information on the analysis, methodology, and additional results provided in the attached appendices.

Key Findings

Scale of the Brownfield Problem

- It is estimated that there may be as many as 2,300 brownfield properties in the Metro region covering approximately 6,300 acres of land (defined as potentially contaminated and vacant/underutilized). This represents approximately 7 percent of all commercial, mixed-use, and industrial-zoned land within the Urban Growth Boundary.

- Approximately 50 percent of the total reported and potential brownfields are in, or within 1,000 feet of, Title 3 or Title 13 sensitive environmental areas, such as wetlands and streams. Brownfields are also three times as likely to be located in a community designated by Metro's Equity Composite as underserved.

- The study identified four common types of brownfields defined by characteristics relating to location, historical use, and redevelopment potential.

Economic Impact of Brownfields

- Brownfields represent a lost opportunity for economic development as well as an environmental and public health concern.

- Under current land use regulations, redevelopment of the entire inventory of documented and suspected, potential brownfield properties could yield an upper bound limit of almost 71 million square feet of new

development, which would generate approximately $324 million to $427 million in new property tax revenue.

- Full build-out of all the brownfields has the potential to produce up to approximately 138,000 new dwelling units and work space for approximately 69,000 more jobs, generating approximately $1.4 billion in additional wages.

- Redevelopment of brownfields is financially challenging. The cost of contamination can be a major barrier, but it is often overshadowed by real estate market challenges.

Policy Tools

- Selected policy tools were prioritized from national best practices, based on local challenges and potential effectiveness, to spur brownfield cleanup and redevelopment. These have been categorized into three bundles: Create Tax Incentives, Build Capacity, and Streamline Regulatory Framework.

- Although each policy tool considered in this study showed a potential positive impact on the development feasibility of brownfield properties, catalyzing the redevelopment of a significant number of the brownfields will require multiple synergistic incentives.

- All policies can be designed through eligibility requirements to focus on specific areas or types of development that policymakers may wish to promote.

- Policy tools that leverage private resources, such as a Remediation Tax Credit and Property Tax Abatement, potentially have a high financial return on investment.

- The Public Land Bank and Dedicated Brownfield Cleanup Fund can be powerful tools to target and support cleanup and redevelopment of key properties with significant potential regional impact.

ACRONYMS AND ABBREVIATIONS

CO^2	carbon dioxide
DEQ	Oregon Department of Environmental Quality
Metro	Regional government serving the Portland area metropolitan service district
MUR	Mixed Use Residential
ROI	return on investment
PPA	Prospective Purchaser Agreement
TIF	Tax-Increment Financing
TRT	Technical Review Team
UGB	Urban Growth Boundary
USEPA	U.S. Environmental Protection Agency
VMT	Vehicle miles traveled

1 INTRODUCTION

1.1 What is the Purpose of the Regional Brownfield Scoping Study?

Increasing the rate of redevelopment of underutilized and contaminated properties, known as "brownfields," is critical to achieving the Portland metropolitan region's growth management and sustainable development vision. Growth management laws and market trends are both directing growth in the Portland metropolitan region into cities and older communities, where legacy contamination of soil and groundwater from historical activities creates barriers to successful redevelopment. The costs and risks associated with environmental cleanup often deter potential developers and create a significant barrier to community revitalization and economic development. Remediation and redevelopment of our region's brownfield properties create an opportunity to eliminate an environmental threat and, at the same time, create diverse housing options and job opportunities, promote infill development, increase walkability and accessibility, and improve quality of life.

The region has worked for years to develop the optimal policy framework that balances and synthesizes the legal liability to clean up contamination and incentives to promote redevelopment of brownfields. The policy framework represents both regulatory programs, such as Prospective Purchaser Agreements (PPAs) to manage risk and uncertainty for potential developers of contaminated lands, and development incentives such as the Transit-Oriented Development Tax Exemption program.

This study points to the next generation of brownfield policy tools that can be implemented to move the region forward.

Study Question: How can brownfield redevelopment support sustainable development and growth management in the Metro region?

1.2 What are Brownfields?

According to the USEPA, the term "brownfield" means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Brownfield properties are characterized both by the potential presence of contamination and by their vacant or underutilized land use condition. Brownfield properties are found across the metropolitan region and include former gas stations and dry cleaners as well as larger industrial sites. To local communities, these properties are often blighted areas that detract from the quality of neighborhoods and pose potential threats to human and environmental health.

1.3 What Role Do Brownfields Play in Growth Management?

The Metro Regional Council (Metro) has established a vision for the future of the region in the 2040 Growth Concept. That vision establishes a framework for growth and development that:

- Encourages more efficient use of land in cities, main streets, and major transit corridors
- Protects natural areas and farmland
- Promotes access to transportation options
- Supports diverse housing opportunities

The 2040 Growth Concept is supported by six desired outcomes for communities throughout the region. The desired outcomes were developed by regional leaders and adopted by the Metro Council in 2010 with the goal of continuing to make the region a great place for its residents to live, work, and play (see Figure 1). Cleanup and redevelopment of brownfields align with each of these principles. The presence of vacant, environmentally contaminated sites limits the ability of the region to achieve these desired outcomes (see Table 1).

Figure 1. Metro Planning Principles

Table 1. Regional Desired Outcomes and Brownfield Redevelopment

REGIONAL VALUES	ROLE OF BROWNFIELD REDEVELOPMENT
Vibrant communities—People live, work, and play in vibrant communities where services addressing their everyday needs are easily accessible.	Revitalizes blighted properties, providing amenities on previously vacant sites and transforming neighborhoods.
Economic prosperity—Current and future residents benefit from the region's sustained economic competitiveness and prosperity.	Creates opportunities for business development and job creation, especially in historically industrial areas, commercial hubs, and main street areas.
Safe and reliable transportation—People have safe and reliable transportation choices that enhance their quality of life.	Brownfield properties are often located in centers and corridors, which can provide multiple transportation options for new residents and workers at transit-oriented sites.
Leadership on climate change—The region is a leader in minimizing contributions to global warming.	Brownfields are typically infill development in urbanized areas, so adaptive reuse contributes to reduction of vehicle miles travelled and related greenhouse gas emissions.
Clean air and water—Current and future generations enjoy clean air, clean water, and healthy ecosystems.	Cleanup addresses legacy environmental contamination, and redevelopment of these sites reduces pressure for development in natural areas.
Equity—The benefits and burdens of growth and change are distributed equitably.	Brownfields are often located in underserved communities, so their cleanup and redevelopment increase social equity.

City of Portland and Metro Brownfield Studies

The City of Portland and Metro have undertaken complementary studies of brownfield economic impacts and policy. Both of these studies incorporate financial feasibility analysis of brownfield projects and review of potential policy changes to promote cleanup and redevelopment of these properties. The two studies have presented opportunities for synergy through capacity for detailed analysis and review by a number of stakeholders and policymakers. There are several important distinctions between the studies:

Geographic Scale: The Metro study incorporates the three-county area, while the Portland study focuses on the city proper, enabling more detailed typologies and analyses of conditions unique to the city.

Focus of Economic Analysis: The broader scale of the Metro study requires a broader categorization of market areas and conditions.

Policy Objectives: Because Metro is a regional growth management entity, the Metro study is concerned with a number of land use and community development goals, while the Portland study is more focused on economic development.

Ava Roasteria in Beaverton (left), and Oregon Museum of Science and Industry in Portland (right) both are developed on former brownfield properties.

2 SCALE OF THE BROWNFIELD PROBLEM

2.1 How Many Brownfields are in the Metro Region?

In order to understand the impact that brownfields have on the region, it is important to understand how many there are and where they are located. The Oregon Department of Environmental Quality (DEQ) maintains databases of known or potentially contaminated properties. While these databases provide a baseline of information, it is recognized that there are many contaminated properties that have not been reported as contaminated. Because there are real legal liability and financial concerns related to owning a property with known contamination, owners are often very reluctant to report potential concerns.

Methods

This project included an effort to estimate this "shadow inventory" of suspected, unreported brownfields. The methodology of the study is summarized below and described in detail in Appendix A.

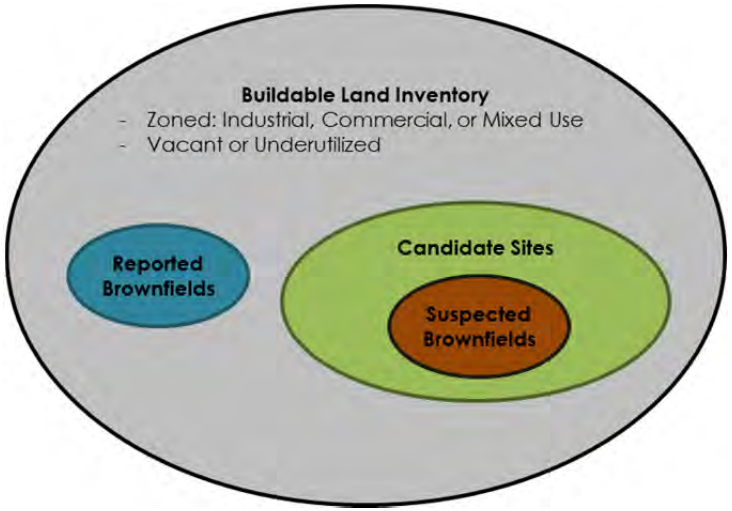


Figure. 2. Estimate of Potential Brownfields (Circles not to scale)

1. Identify Candidate Sites across the Region—Narrowed total population of parcels by removing properties on the DEQ database (already known or suspected to be contaminated), zoning (removed residential), and development status (focused on parcels identified in Buildable Lands Inventory as vacant or underutilized).

2. Define Study Areas—Seven study areas were selected to represent a range of land use types, design forms, and eras of development found in the region.

3. Conduct Historical Research—Reviewed historical business directories and aerial photographs to identify previous uses associated with hazardous materials.

4. Verify in the Field—Windshield surveys of properties to confirm conditions.

5. Extrapolation—Quantify percentage of candidate sites in the study areas that are suspected to be brownfields and apply those rates by development type and age throughout the region.

6. Estimate Total Potential Brownfields: Add suspected brownfields to the number of reported sites in the DEQ database that are identified as vacant or underutilized.

Figure. 3. Comparison of Reported and Suspected Brownfields

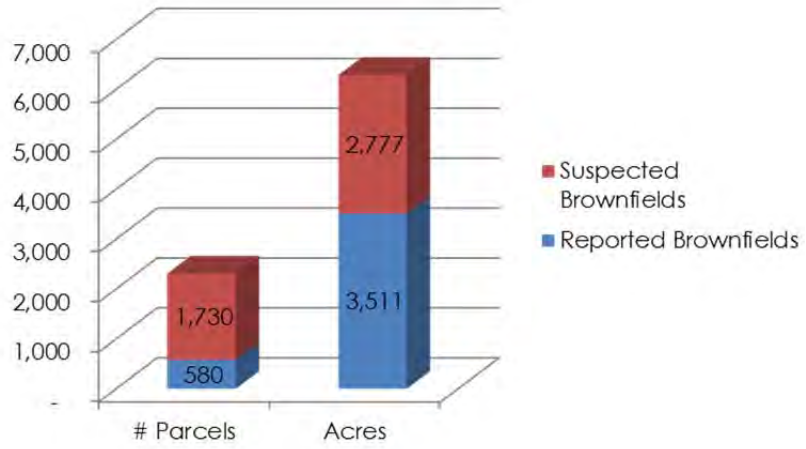
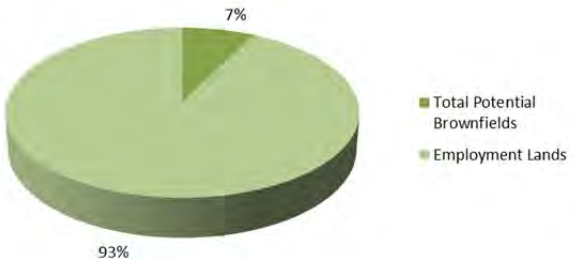


Figure. 4. Brownfields as Percentage of Commercial, Mixed Use, and Industrial Lands in UGB



Findings

It is estimated that there may be as many as 2,300 brownfield properties in the Metro region, covering approximately 6,300 acres of land. Based on the DEQ database, there are approximately 580 reported brownfields in the Metro region, representing 3,500 acres of land. These properties are listed by DEQ and have been identified in Metro's Buildable Lands Inventory as vacant or underutilized. Additionally, there are potentially another 1,730 suspected, potential brownfield properties, representing approximately 2,777 acres of land.

Taken together this represents approximately 7 percent of all the acreage of commercial, mixed-use, and industrial-zoned land within the Urban Growth Boundary (UGB).

It is noteworthy that the DEQ database already includes most of the brownfield land acreage, indicating that the large sites are known and that it is the smaller sites, such as former gas stations and dry cleaners, that are typically not already in the regulatory system. There is an important distinction between number of brownfield properties and total acreage. The large majority of brownfields are small properties (less than 2 acres), but these collectively represent only a small percentage of the total acreage. The larger sites dominate the acreage.

2.2 Where Are the Brownfields?

Brownfield properties are typically located in older neighborhoods with a longer history of industrial and commercial uses. It is interesting to note that the reported sites in the DEQ database tend to be concentrated in the older parts of the metropolitan area, near the Willamette River and Columbia Slough (see Figure 5). Many of the candidate sites that are suspected brownfields are located in the more recently developed areas of the metropolitan region, typically along transportation corridors and in industrial and agricultural hubs (see Figure 6). Approximately 50 percent of the DEQ sites are in, or within 1,000 feet of, sensitive environmental areas, such as wetlands and streams, as designated by Title 3 and Title 13 of the region's Urban Growth Management Functional Plan. Over 200 brownfields are within a quarter mile of a community garden, and 50 are within 200 meters.

Brownfields are also highly likely to be located in a community designated by Metro's Equity Composite (conducted originally for the Regional Flexible Funding Allocation) as underserved, an analysis that highlights areas that simultaneously have a high underserved population (nonwhite, elderly, low-income, non-English speaking, youth), a low density of essential services (food, essential retail, health, civic, financial/legal), and low proximity to non-auto transportation (see Figure 7). Nineteen percent of all DEQ sites are in underserved communities, but these properties represent a much smaller proportion of all land in the region. When normalizing by acreage, every brownfield in a non-underserved area represents 1.7 brownfields in an underserved community. Sixty percent of the brownfields in underserved communities are also located in the region's designated centers and corridors.

Figure 5. Density of Sites in DEQ Databases

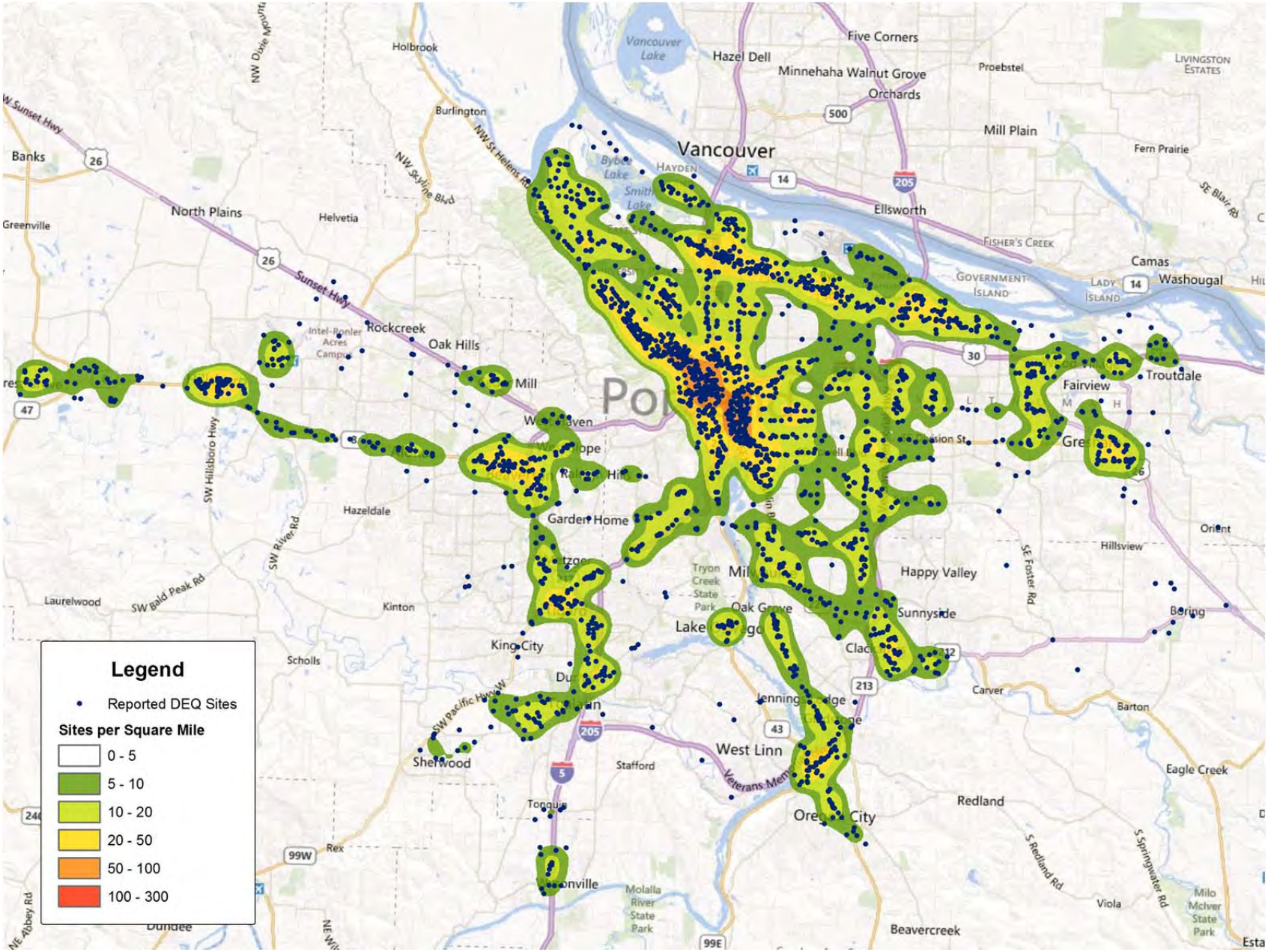


Figure 6. Density of Candidate Sites

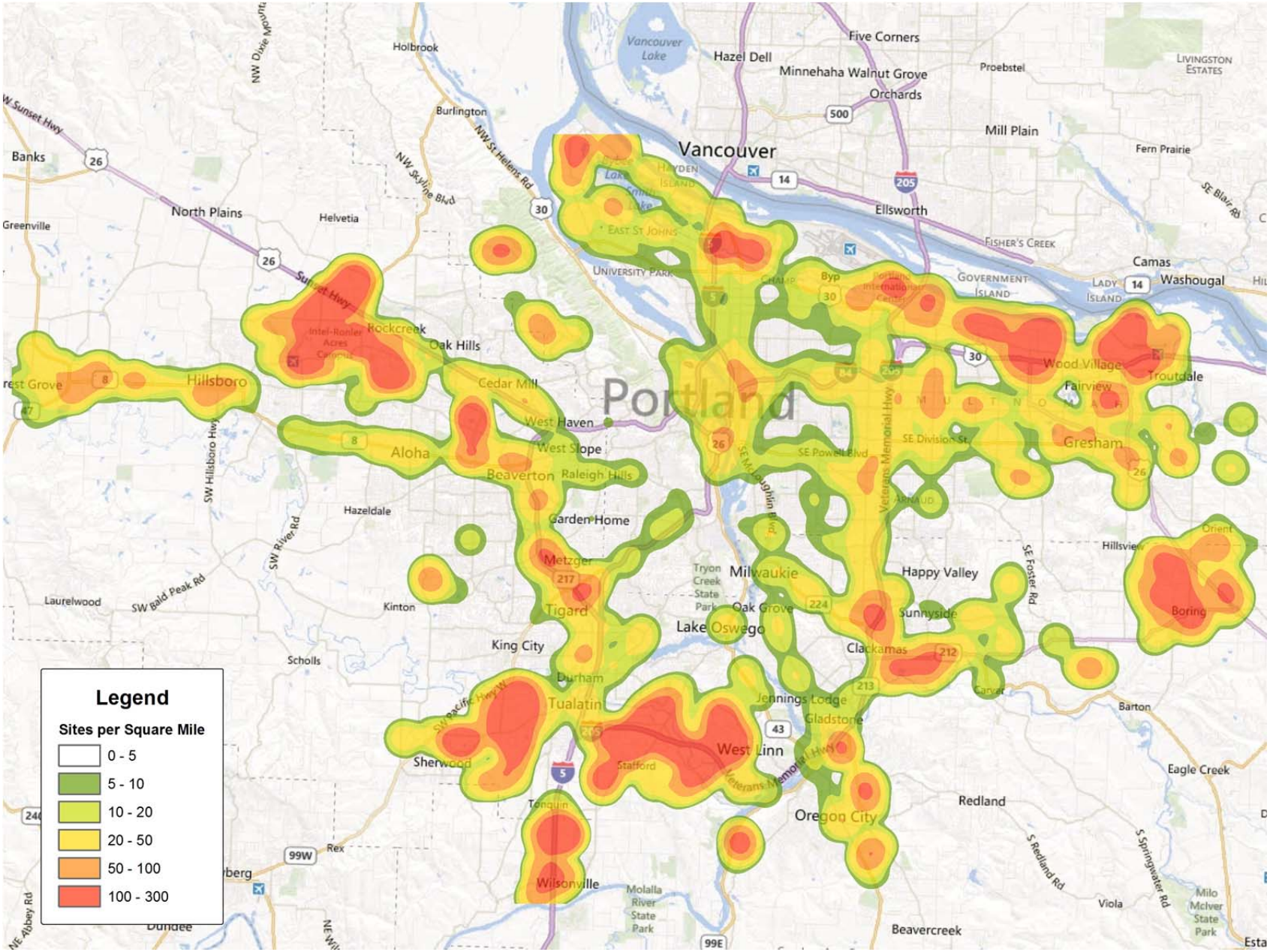


Figure 7. DEQ Reported Brownfield Sites and Communities with Higher Than Average Indices of Underserved Populations

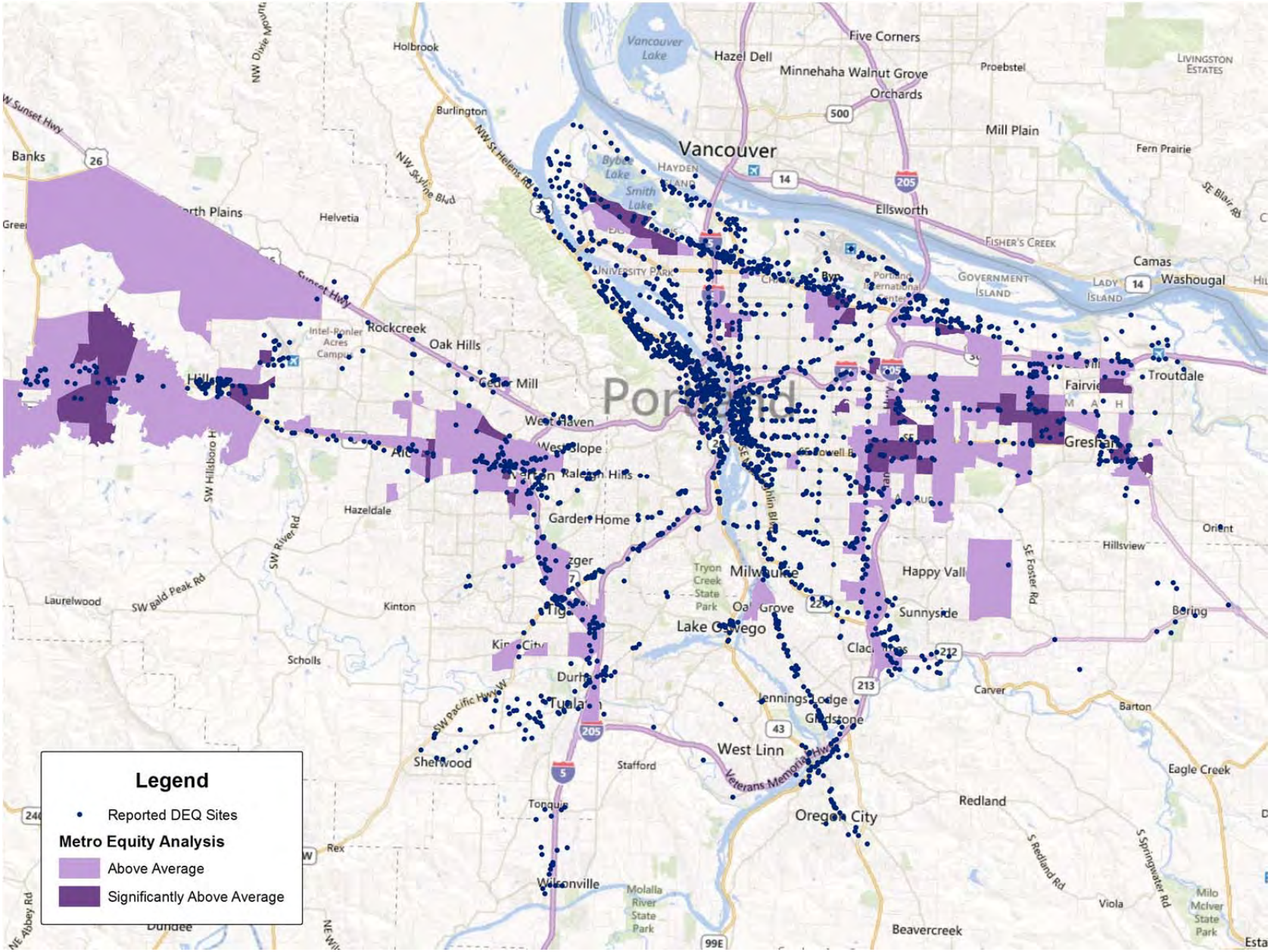


Figure 8. Total Potential Brownfield Sites by Metro 2040 Urban Design Type

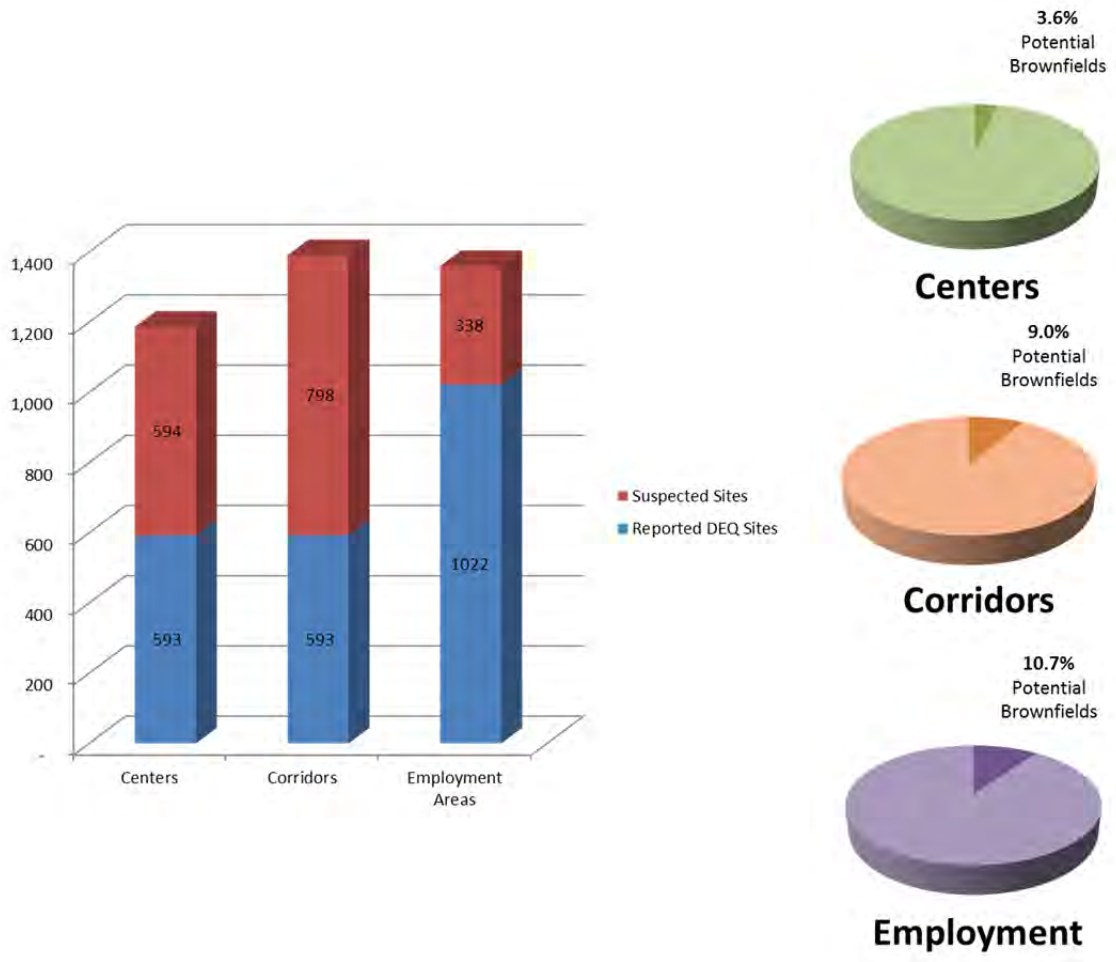


Figure 8 shows the population of potential brownfield sites as classified by Metro 2040 urban design type. This analysis uses total DEQ sites before filtering by Metro's Buildable Lands Inventory status to demonstrate the full potential of contaminated sites in the region. The pie charts show the share of potential brownfield sites within the entire population of sites in the region meeting the different 2040 design classifications. This figure reveals that brownfields are a larger proportion of total sites classified as Employment, and that the greatest potential for unknown or unreported brownfield sites is likely found in the region's Corridor areas.

Figure 9. Total Potential Brownfield Sites by General Zoning Class

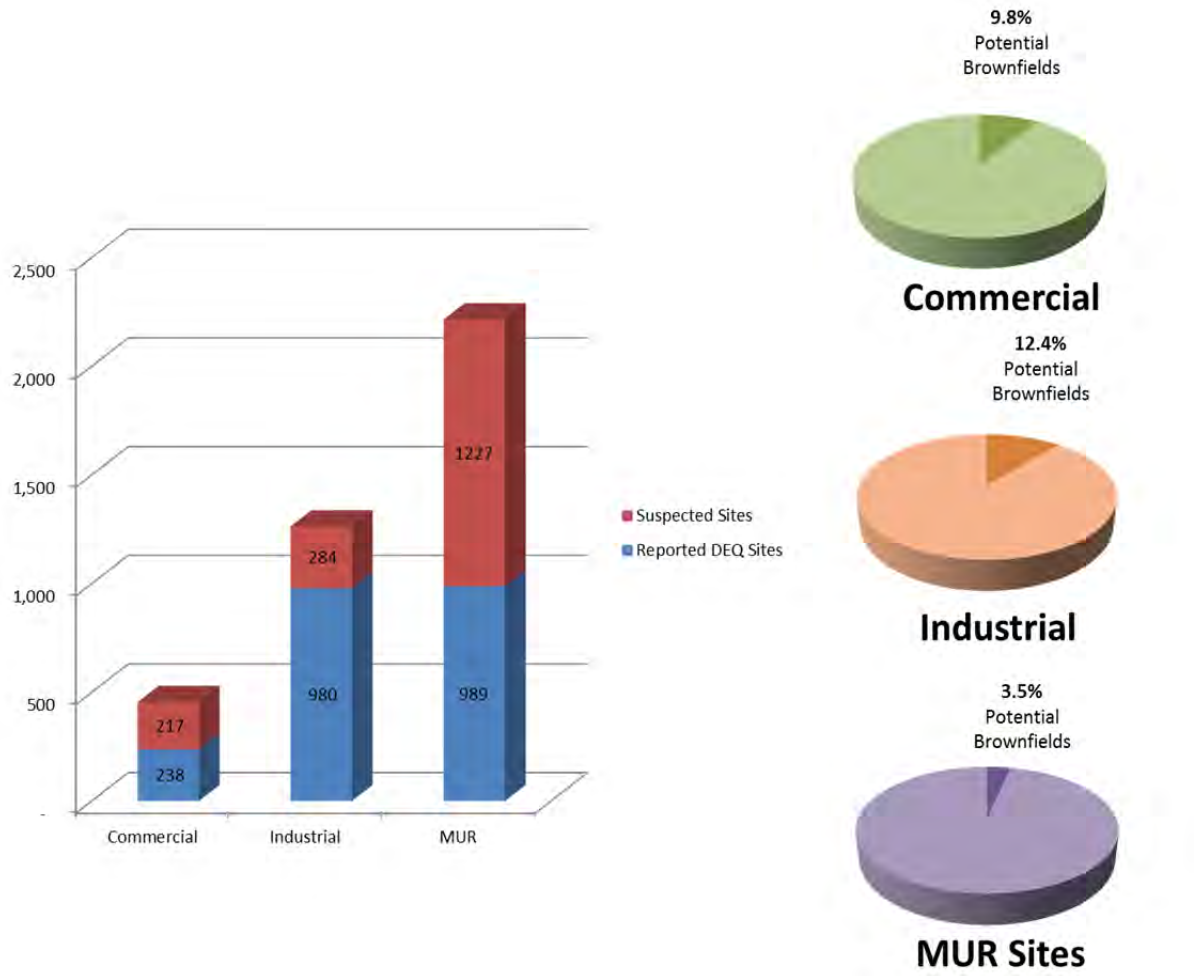


Figure 9 shows the population of potential brownfield sites by Metro's general zoning classifications. This analysis uses total DEQ sites before filtering by Metro's Buildable Lands Inventory status to demonstrate the full potential of contaminated sites in the region. The pie charts show the share of potential brownfield sites within the entire population of sites in the region meeting the different general zoning classifications. This figure reveals that reported DEQ sites are almost evenly distributed between properties zoned as Industrial and as Mixed Use Residential (MUR), but that there is a greater potential for unknown or unreported sites within the properties zoned MUR. It also reveals that the potential brownfield population zoned MUR is a relatively much smaller ratio of the total population of sites zoned MUR than the ratio of potential brownfields zoned Industrial to its total population of sites.

2.3 What Types of Brownfields are in the Region?

Not all brownfield properties are the same. A system of typologies was developed for the Metro region that integrates historical and future uses, acknowledging that redevelopment impacts the potential value of the site and often drives the cleanup process and costs. The location of a site as well as the land uses usually found in those locations are inextricably linked to typical redevelopment, market potential, and policy constraints, and thus form the basis for a typology. Typologies are also characterized by the typical site acreage, since the size of the site can affect development potential and cleanup costs. The typologies are described below and are summarized in Figure 8.

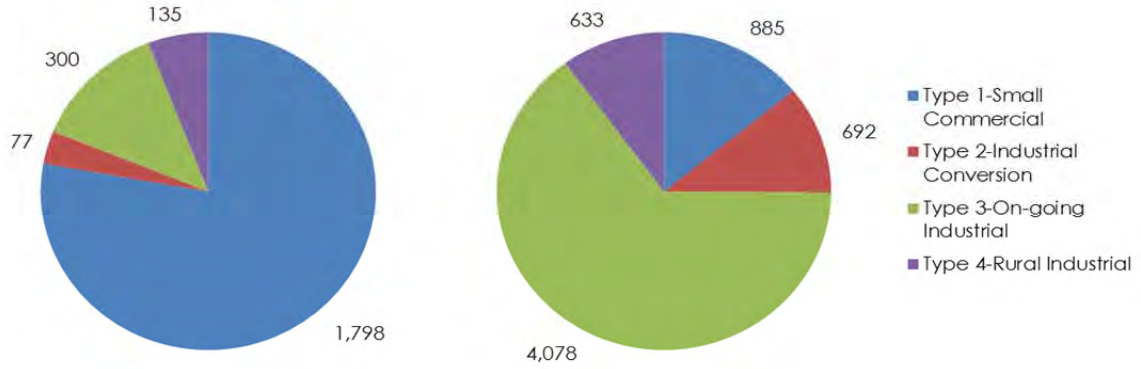
Type 1—Small Commercial Sites. Common historical uses were gas stations, repair shops, and dry cleaners, characterized by small parcel size and located along highways and arterials, and in commercial centers, including main streets and small downtowns. These properties are commonly redeveloped for commercial, office, multifamily, and mixed uses. The small size of these sites can be a challenge to redevelopment, because they often cannot generate enough value to balance remediation costs. This typology represents approximately 80 percent of the number of brownfield properties in the Metro region, but only 20 percent of the acreage. These types of sites are typically located in centers and corridors, and scattered in employment areas.

Type 2—Industrial Conversion Sites. These properties range in size and are historically found in areas that have transitioned from industrial to office, retail, and mixed-use centers. Change of zoning and location often drives redevelopment of these properties. Sites in highly attractive, high-density areas, such as the Pearl District, often are redeveloped by the private sector.

Type 3—Ongoing Industrial. These properties are located in areas with an industrial past that continues today, particularly through regulatory controls such as Metro's Title 4 requirements and local employment sanctuary overlays. The types of historical uses vary, but they share constraints on land value and future use that can be a challenge to redevelopment opportunities. These properties are typically large; while they represent only approximately 14 percent of the number of brownfield parcels, they encompass nearly 60 percent of the acreage.

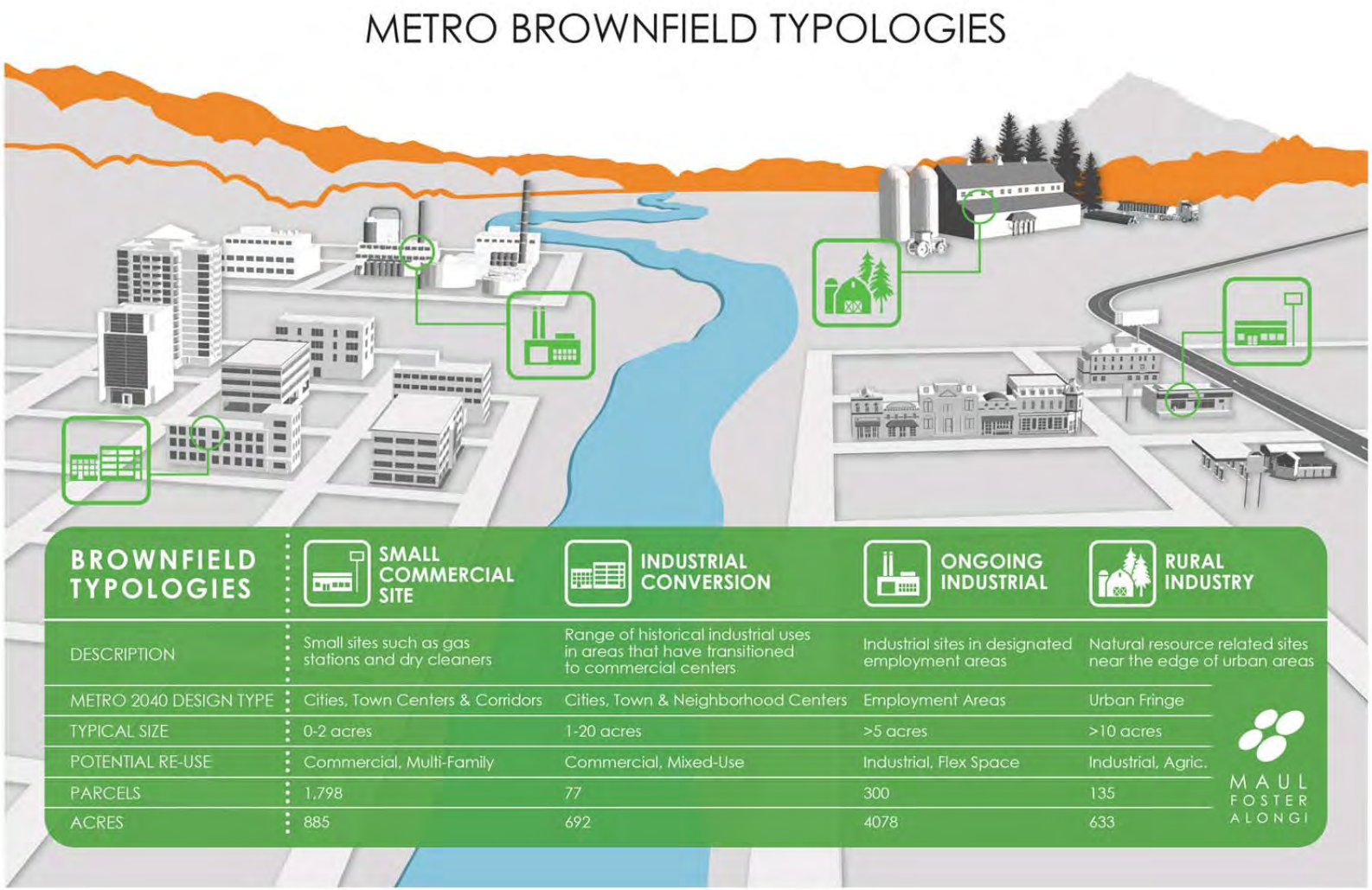
Type 4—Rural Industry Sites. These properties are associated with rural natural resource extraction industries and agriculture. They are typically large and located on the edge of the UGB, especially within urban and rural reserves. Structural economic changes can make these properties difficult to redevelop. There are relatively few of these types of brownfields in the Metro region and its urban reserves, but they individually can occupy large areas and can have significant regional impacts.

Figure 10. Brownfield Typologies by Number of Sites (left) and Acres (right)



Portland South Waterfront. Ongoing cleanup of the Zidell property in foreground with high-rise buildings in the background captures the phases of transformation of this area from historically industrial land to a modern mixed-use waterfront.

Figure 9. Metro Brownfield Typologies



2.4 What Role Does Brownfield Redevelopment Play in the Region?

2.4.1 Methods

Brownfields represent a lost opportunity for economic development as well as an environmental and public health concern. There are many ways that brownfield redevelopment can support economic growth; this analysis looks at a subset of quantifiable variables, based on a model that estimates the physical redevelopment potential. It roughly estimates the number of buildings, total square footage, and of mix of uses that might occupy the known and suspected brownfield properties in the Metro region. This approach provides a general characterization of the brownfield redevelopment market at the regional level. It is not intended to be accurate for any specific individual property, but rather to provide a regional average for redevelopment potential and the market barriers to achieving that potential. This methodology is briefly outlined below and described in greater detail in Appendix B.

1. Identify Prototypical Developments—For each of the suspected brownfield properties in the Study Areas, a prototypical development project was modeled using the Envision Tomorrow ™ software tool. This planning tool has been used in several other recent studies, including the Community Investment Initiative and Metro's Climate Smart Communities report. A prototypical development was assigned based on applicable Metro zoning class and the market area (see Table 2). The planning software tool provides estimated building size, parking needs, and types of uses.

2. Estimate Property Value—For the industrial, commercial, and mixed-use prototypes, low and high range lease rates were estimated based on the current Metro real estate market. Triple net annual rents were used to estimate a net present value based on a 7 percent capitalization rate. Single-family home values were estimated based on a low and high range square foot basis. Low and high range values were used to characterize the breadth of the market represented by the different prototypes.

3. Estimate Potential Space for New Jobs in New Development—The number of employees and the wages were based on specific type of use. The Oregon Employment Department provides estimates of employment density and average annual wages for different land use types. Since many of the potential brownfield properties involve active uses, data were collected from the Oregon Employment Department Quarterly Census of Employment and Wages to subtract existing jobs and wages to determine net new jobs and wages. It is important to note that these estimates should be considered as "space for potential new jobs." The estimates are based on typical densities of jobs per square foot and do not account for market trends, absorption rates, or multiplier effects.

Table 2. Prototypical Developments

METRO ZONE CLASS	BUILDING PROTOTYPE
Commercial (Central Commercial, General Commercial, Office Commercial)	Low-Density Commercial - 14,000 square feet of building/acre - Mix of Retail (70%) and Office Uses (30%)
Industrial Campus (IC)	Business Park - 14,000 square feet of building/acre - Mix of Industrial (75%), Retail (5%), and Office (20%)
Heavy Industrial (IH)	Heavy Industrial - 13,000 square feet of building/acre - Industrial (95%) and Retail (5%) Uses
Light Industrial (IL)	Light Industrial - 14,000 square feet of building/acre - Industrial (95%) and Retail (5%) Uses
Mixed Use Commercial & Residential (MUR1)	Suburban Single Family Residential - 18,000 square feet of building/acre
Mixed Use Commercial & Residential (MUR8)	Suburban Mixed Use - 47,000 square feet of building/acre - Mix of Residential (75%) and Retail Uses (25%)
Mixed Use Commercial & Residential (MUR9)	Neighborhood Mixed Use - 152,000 square feet of building/acre - Mix of Residential (80%) and Retail Uses (20%)
Mixed Use Commercial & Residential (MUR10)	Mid-Rise Mixed Use - 352,000 square feet of building/acre - Mix of Residential (80%), Retail (10%), and Office Uses (10%)
Rural Industrial (RI)	Heavy Industrial - 13,000 square feet of building/acre - Industrial (95%) and Retail (5%) Uses
Rural Residential or Future Urban (RRFU)	Suburban Single Family Residential - 18,000 square feet of building/acre

4. Forecast Tax Revenues—Property tax revenues were estimated based on the use type, estimated market value, changed property ratio, and current property tax rates in Clackamas, Washington, and Multnomah County (applied as appropriate for location of parcels). Income tax revenues were forecasted based on averages wages applied to net new jobs attributed to the development types and the effective state tax rate of 5.6 percent. This represents the average rate paid by all Oregonians after accounting for deductions and credits. It should be noted that average wage rates for industrial jobs were particularly high, based largely on the high number of information technology-sector jobs in the Metro region.

Table 3. Average Annual Wages

EMPLOYMENT CLASS	AVERAGE ANNUAL WAGE
Office	$49,048
Retail	$23,301
Industrial	$73,117

Source: Oregon Employment Department

5. Extrapolate Findings—The findings for each development type were normalized on a per acre basis and applied across the inventory of known and suspected, potential brownfield properties in the Metro region.

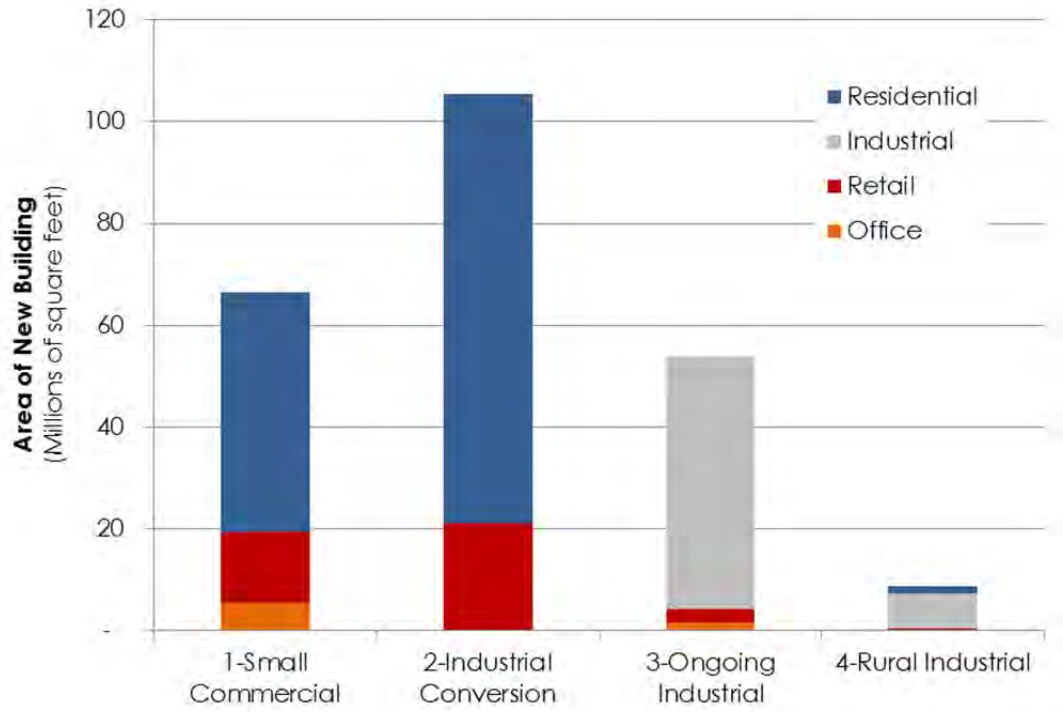
2.4.2 Results

2.4.2.1 Fiscal Impacts

It is important to note that this analysis has estimated an **upper bound** of potential lost development and revenues—the analysis estimates the potential value associated with all the sites.

Under current land use regulations, redevelopment of the entire inventory of documented and suspected, potential brownfield properties could yield almost 234 million square feet of new development (see Figure 10). Across typologies, the largest portion of the brownfield acres is most likely to support residential uses (43 percent of total building area) through mixed-use development. Industrial uses are the second highest use type, representing 37 percent of the total building area.

Figure 12. Development Potential of Metro Reported and Suspected Brownfields



Potential for New Employment Space

The level of development described above would create work space for approximately 69,000 additional jobs. Creation of that many net new jobs would generate approximately $3.3 billion in additional wages. The Ongoing Industrial typology sites are forecasted to generate the majority of wages (55 percent). This is due to the large land area represented by the typology and the assumption that industrial jobs pay a higher wage than the retail and office sectors. Further, growth in industrial jobs creates a stronger effect on the regional economy (a multiplier effect) than other types of jobs, because these jobs are more likely to create products that are sold outside the region, bringing new dollars into the regional economy. In other words, industrial jobs are more likely to be traded sector, the focus of current regional economic development strategies. This potential development capacity could accommodate 18

to 59 percent of the forecasted 20-year employment land demand for the region (based on the low growth and high growth scenarios).[1] It should be noted that this analysis did not include the potential multiplier in estimates of impact, but instead focused on direct benefit.

Table 4. Employment Capacity

TYPOLOGY	NET NEW JOBS	% OF TOTAL NEW JOBS	NET NEW ANNUAL WAGES ($ Millions)	NET NEW ANNUAL PERSONAL INCOME TAX ($ Millions)	% OF TOTAL NET NEW ANNUAL INCOME TAX
1—Small Commercial	21,400	31 %	$720	$40	22 %
2—Industrial Conversion	16,900	24%	$390	$22	12 %
3—Ongoing Industrial	27,500	40 %	$1,930	$108	59 %
4—Rural Industry	3,300	5 %	$230	$13	7 %
Total	**69,100**	**100 %**	**$3,270**	**$183**	**100 %**

Note: The sites in Type 4—Rural Industry are largely outside the current UGB and would not develop at the densities assumed in this analysis. The development analysis relied on Metro-wide zone classes, and assumed the development types that would occur if these areas were brought into the UGB.

Source: ECONorthwest, 2012.

Property Tax Revenue

Cleanup and redevelopment of brownfield sites drive an increase in assessed value that results in greater property tax revenues. It is forecasted that cleanup and redevelopment of all the reported and suspected brownfields in the Metro region could generate approximately $324 million to $427 million in new property tax revenue. This revenue would be distributed across all taxing districts in the region. This would represent a 13 to 17 percent increase in property tax revenues in the three-county region.

[1] Metro urban growth report 2009-2030: employment and residential. January 2010.

Table 5. Potential Increase in Annual Property Tax Revenues

TYPOLOGY	LOW ESTIMATE	HIGH ESTIMATE
1—Small Commercial	$104,277,000	$131,917,000
2—Industrial Conversion	$142,574,000	$174,682,000
3—Ongoing Industrial	$66,837,000	$104,061,000
4—Rural Industry	$10,578,000	$15,876,000
Total	**$324,266,000**	**$426,536,000**

Note: The sites in Type 4—Rural Industry are largely outside the current UGB and would not develop at the densities assumed in this analysis. The development analysis relied on Metro-wide zone classes, and assumed the development types that would occur if these areas were brought into the UGB. The analysis of property tax used a single property tax rate ($15 per $1,000 of assessed value) across the entire region.

Source: ECONorthwest, 2012.

Housing Units

As described above, much of the redevelopment that is likely to occur on brownfields involves mixed-use buildings with multifamily housing. Full build out of all the reported and suspected brownfield properties is estimated to have the potential to accommodate up to 138,000 new dwelling units on brownfield sites. These housing units would be provided almost entirely within the Small Commercial and Industrial Conversion typologies, which assume a mix of housing and other uses in all redevelopment, with 44 percent and 55 percent of the total units, respectively. It is important to note that the areas and brownfield typologies studied in this project do not include single-family, residential-only redevelopment types. This housing type will develop in the region but is not likely to occur in centers, corridors, and employment areas, where brownfields are most likely to be found.

This dwelling unit potential far exceeds the number of additional housing units needed to meet the projected housing demand. According to Metro's Urban Growth Report, the area will need to accommodate an additional 32,200 to 38,800 new households over the next 20 years. This discrepancy means that the redevelopment of even a quarter of all identified and suspected brownfields has the potential to satisfy the region's projected housing needs.

2.4.2.2 Climate and Sustainability

Brownfield remediation and redevelopment can create a wide range of environmental and social benefits to the Metro area beyond the fiscal and development benefits. To begin to consider some of the additional benefits that may accrue in the region as a result of a targeted brownfield remediation strategy, this analysis reviews national

research that estimated these indirect environmental and social benefits, and applies the findings to the Portland Metro region.

Automobile Greenhouse Gas Emissions

A recent U.S. Environmental Protection Agency (USEPA) study found that, on average, vehicle miles traveled (VMT) and carbon dioxide (CO_2) emissions associated with brownfield redevelopment projects are 32 to 57 percent lower than typical "greenfield," suburban development patterns.[2] Because the Portland metropolitan area has stronger growth controls than is typical across the country, only the lower end of the USEPA estimates were used to estimate the potential VMT and CO_2 reductions related to redevelopment of brownfields. Applying these research findings to the inventory of potential brownfield sites in the Metro area suggests that redevelopment of 100 percent of the sites would reduce CO_2 by 127,000 metric tons annually, the equivalent of taking 30,000 cars off the road.

Protection of Rural Land and Open Space

As with other types of infill development, redevelopment of brownfield properties reduces pressure to build on undeveloped greenfield land, including open spaces and productive farmland in the urban and rural reserves that surround the Portland Metro area. One national study estimated that 1 acre of redeveloped brownfield property absorbs growth that would otherwise consume 4.5 acres of undeveloped land.[3] This comparison is driven largely by the higher density that urban infill development projects can achieve. Generalizing this national finding to the Metro inventory of 6,288 acres of potential brownfields would result in "saving" up to 28,296 acres of open space and rural land.

Infrastructure Cost Savings

Brownfield redevelopment is often able to take advantage of connections to existing infrastructure, rather than requiring the construction or expansion of roads, water, and sewer lines. A national research project completed by the Urban Land Institute has quantified the connection between infrastructure costs and infill development, and can serve as a basis for estimating infrastructure savings attributable to brownfield redevelopment in the Portland area.[4]

[2] USEPA. Air and water quality impacts of brownfields redevelopment. September 2011.

[3] George Washington University. Public policies and private decisions affecting the redevelopment of brownfields: an analysis of critical factors, relative weights and areal differentials. 2001, http://www.gwu.edu/~eem/Brownfields/

[4] Frank, J. The costs of alternative development patterns: a review of literature. Washington, DC: Urban Land Institute. 1989.

The report estimates a 45 to 50 percent savings for infill brownfield development over greenfield development.[5] The analysis relied on national statistics to assume a development pattern of 15 dwelling units per acre for infill development relative to three to five dwelling units per acre for greenfield development, which translates into a $31,500 (2012 dollars) per dwelling unit savings connected to brownfields.

To begin to consider what infrastructure cost savings might be realized, this research applies the more conservative estimate of 50 percent savings to the Metro area, and finds that redevelopment of the full inventory of potential brownfields in Metro could save a maximum of $480 million in public infrastructure investment that otherwise would have been required to accommodate growth on greenfields. These findings should be taken as an order-of-magnitude indicator of the potential degree of savings represented by brownfields.

Social Indicators

The benefit associated with cleanup and redevelopment of brownfields includes the protection of present and future public health, safety, and welfare. Oregon rules require consideration of existing and reasonably likely human health impact as a result of exposure to hazardous substances at these sites. Cleaning up properties to levels that are considered protective of human health results in remedies that ensure that individual health is not adversely affected, or that populations are not exposed to hazardous substances that could result in an increased risk of serious degenerative illness.

Geospatial analysis of the existing DEQ sites database has shown that brownfield sites are highly likely to be located in a community designated by Metro's Equity Composite as underserved, an analysis that highlights areas that simultaneously have a high underserved population (nonwhite, elderly, low-income, non-English speaking, youth), a low density of essential services (food, essential retail, health, civic, financial/legal), and low proximity to non-auto transportation. There is no documented nexus between the presence of brownfields and underserved populations; however, the risk to human health presented by environmental contamination can clearly be seen as an additional challenge faced by underserved communities in the region.

Ecological Health

Approximately 50 percent of the DEQ sites are in, or within 1,000 feet of, sensitive environmental areas, such as wetlands and streams, as designated by Title 3 and Title 13 of the region's Urban Growth Management Functional

[5] For a more comprehensive analysis of the research on infrastructure costs within the brownfields vs. greenfields construct see: Evans Paull, "Infrastructure Costs, Brownfields vs. Greenfields," Excerpt, "Analysis of the Economic, Fiscal, And Environmental Impacts of the Massachusetts Brownfields Tax Credit Program," Redevelopment Economics, June 2012. See: http://redevelopmenteconomics.com/yahoo_site_admin/assets/docs/Infrastructure_Costs_-_brownfields-greenfields_final2.213114938.pdf

Plan. Brownfield redevelopment may be of particular benefit to the environment for properties that are situated near areas of high ecological value (e.g., estuaries, rivers, and wetlands). The remediation of environmental contamination on brownfield properties can help protect ecological receptors, including threatened or endangered species, from the adverse impacts resulting from exposure to hazardous substances.

3 CHALLENGES TO BROWNFIELD CLEANUP AND REDEVELOPMENT

Redevelopment of brownfield properties faces the same challenges as standard real estate projects, including market conditions, financing, cost overruns, and timing. Additionally, brownfields face a suite of challenges related to cleanup of contamination. To understand these challenges, 30 real world brownfield projects were examined in detail as case studies (see Appendix C). Additionally, the Technical Review Team (TRT) of public- and private-sector representatives shared their own experiences with these complex projects. The key challenges are summarized below and involve financial costs, risk and uncertainty, a disconnect between cleanup and redevelopment policies, and the environmental regulatory process. Potential policy solutions will need to address predevelopment costs, uncertainty, and unclear or changing regulations.

- **Financial Capacity**—Like any other real estate project, redevelopment of a brownfield property needs to generate more value than cost to be financially feasible. The costs associated with assessment and remediation of contamination can be considerable. If the remediation and development costs exceed the property's redeveloped value, the project is not financially feasible. This financial issue is a fundamental challenge facing these properties. Development on unconstrained property is already difficult to finance in the current market, and this situation is further exacerbated by remediation costs that are incurred at the beginning of a project before any off-setting revenue is generated. These costs are difficult to finance and so are often covered by owner or developer equity.

- **Risk and Uncertainty**—Every real estate development project carries risks associated with the market, construction budget, and schedules. Brownfields carry the additional risk associated with contamination and environmental liability. It is inherently difficult to fully characterize the extent of contamination underground, so there is always a level of uncertainty in a cleanup project. The unique strict joint and several liability regime for contaminated sites in federal and Oregon cleanup laws places an owner or developer in the difficult position of being legally liable for the entire cost of cleanup even if it did not cause the contamination. Once a party in the chain of title, it becomes vulnerable to lawsuits or contribution claims for the contamination. This set of circumstances surrounding brownfield properties creates a high level of risk. Even sites that achieve a determination of No Further Action from DEQ are subject to potential re-openers that can draw a potentially liable party back into obligations to pay for and/or complete additional future remediation actions.

While costs of remediation can be estimated and understood in a development deal, the long-term uncertainty inherent in cleanup liability is very difficult to quantify, which creates a risk that many lenders will not incur. Nearly every development project involves some level of private financing, so if lenders are not comfortable with brownfield risk, the property will most likely fail to redevelop.

- **Disconnect between Cleanup and Redevelopment**—Cleanup and redevelopment are inextricably linked for brownfield properties. It can be a challenge to synchronize both the land use and environmental regulatory processes, which can lead to inefficiencies, higher costs, and conflicts. For example, parties often spend years conducting site assessment and the development of a remediation plan with DEQ. Once a final plan is approved by DEQ, the party seeks local development permits and local regulators may use their discretionary authority to require public access, setbacks, or buffers that significantly impact the remediation plan.

- **Regulatory Process**—Oregon conducted a major reform of its cleanup law and regulations in the mid-1990s to create a policy framework that is more flexible and responsive to brownfield needs. However, there continue to be circumstances in which projects face challenges often related to predictability, timing, and costs. There can be a serious disconnect between the timing pressures of the market and the regulatory response times required to process permits and decisions. The case studies' self-reported time to complete site assessment and cleanup varied from 1 to 23 years, with an average of 8.3 years and a median of 5.5 years (16 of 30 sites reporting). The median duration aligns well with analysis of the DEQ database of contaminated sites that indicates an average of 4.5 years to complete the cleanup process in the agency's northwest Oregon region. It is noteworthy that many sites in the DEQ database do complete the cleanup process in less than two years. The duration of the cleanup process is driven by multiple factors, including the complexity of contamination at a site, DEQ's staff capacity, and the interest of the responsible party in moving the project forward.

Using the Market to Drive Cleanups

While the traditional approach to environmental cleanup is based on liability and enforcement, brownfield properties are typically remediated when there is a plan for redevelopment. This often involves an outside party, such as developer or new business, bringing capital to fund the cleanup. The incentive of financial gain drives the property owner and developer to expedite site assessment and cleanup to meet a market window of opportunity. In contrast, enforcement-based cleanups are typically protracted as liable parties contest with regulators and each other over what actions are necessary and who should pay for them.

3.1 How Large Is the Brownfield Financial Gap?

The financial challenge faced by brownfield properties is one of the fundamental barriers faced by all sites. To better understand this challenge, the project team developed a model to examine the financial performance of prototypical brownfield development projects. Financial feasibility of a real estate project comes down to whether the value of the development exceeds the costs of bringing the product to market. For a brownfield, if the costs of land acquisition, construction, and remediation are greater than the redeveloped value of the property, there is a financial gap and the property is considered "upside down." The financial analysis is summarized below and described in more detail in Appendix B.

Methods

The redeveloped value of the development prototypes was based on current market rents and land value associated with the different model projects and the size of the property, as described in Section 2.4.1. The rents were multiplied by the leasable square feet for each building type, then allowances were subtracted for vacancies and management costs, yielding a stabilized net operating income. The net operating income was divided by a 7 percent capitalization rate—a rough estimate of a market-normal, regional average rate—to determine an estimated value for each parcel. For structures designed to be occupied by the owner (such as single-family housing), a per-foot value for the property type was estimated. A low and high market value was estimated for each parcel.

Construction costs were also estimated for each prototype. Costs included "hard costs" for construction, based on building unit costs per square feet for each use type and per parking space required. "Soft costs" were also included for architectural and engineering fees, permitting fees, a developer fee, and contingency. These hard and soft costs were based on typical industry standards.

Remediation costs are more challenging to estimate because they vary greatly between from site to site and cannot be estimated accurately without field investigation on specific parcels. To account for the costs of remediation, real-world cleanup costs were collected from the case study research and published data from cleanup projects in Oregon and across the country. Based on this dataset of approximately 100 cleanup projects, low and high remediation cost-per-acre estimates were calculated.

- Low—$58,920/acre
- High—$695,639/acre

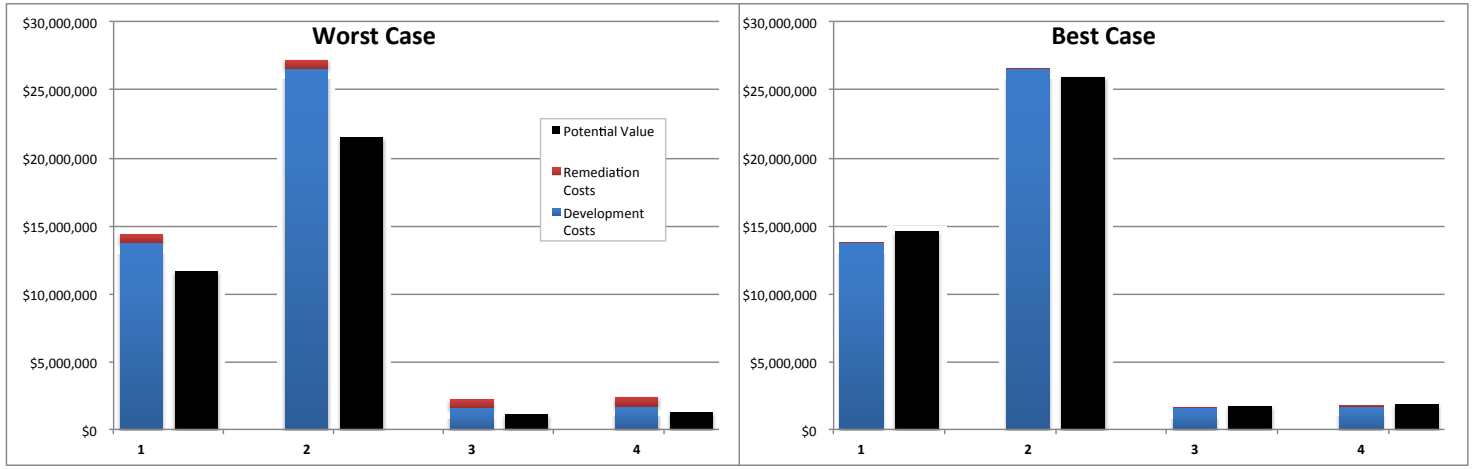
The financial feasibility of prototype projects was calculated both with and without remediation costs. To assess the range of financial feasibility based on market values and remediation costs, "worst case" and "best case" scenarios were evaluated. The "worst case" combined the high end of the brownfield cleanup costs with the low end of the achievable rent costs, and the "best case" scenario combined low-end cleanup costs with high achievable rents.

Results

Overall, the analysis showed that most sites cost more to develop than the estimated market value even if remediation costs were not included. This is an indicator that the sites are not likely to redevelop without market or public sector intervention. Figure 13 shows the per-acre difference between market value and costs. The figure shows four data points for each typology:

- **Development Costs Only—Worst Case—**The per-acre difference between market value and development costs, with the "low" rent assumption
- **Development Costs Only—Best Case—**The per-acre difference between market value and development costs, with the "high" rent assumption
- **Plus Remediation Costs—Worst Case—**The per-acre difference between market value and development costs, including the "high" cost of remediation, with the "low" rent assumption
- **Plus Remediation Costs—Best Case—**The per-acre difference between market value and development costs, including the "low" cost of remediation, with the "high" rent assumption

Figure 13. Financial Feasibility by Brownfield Typology



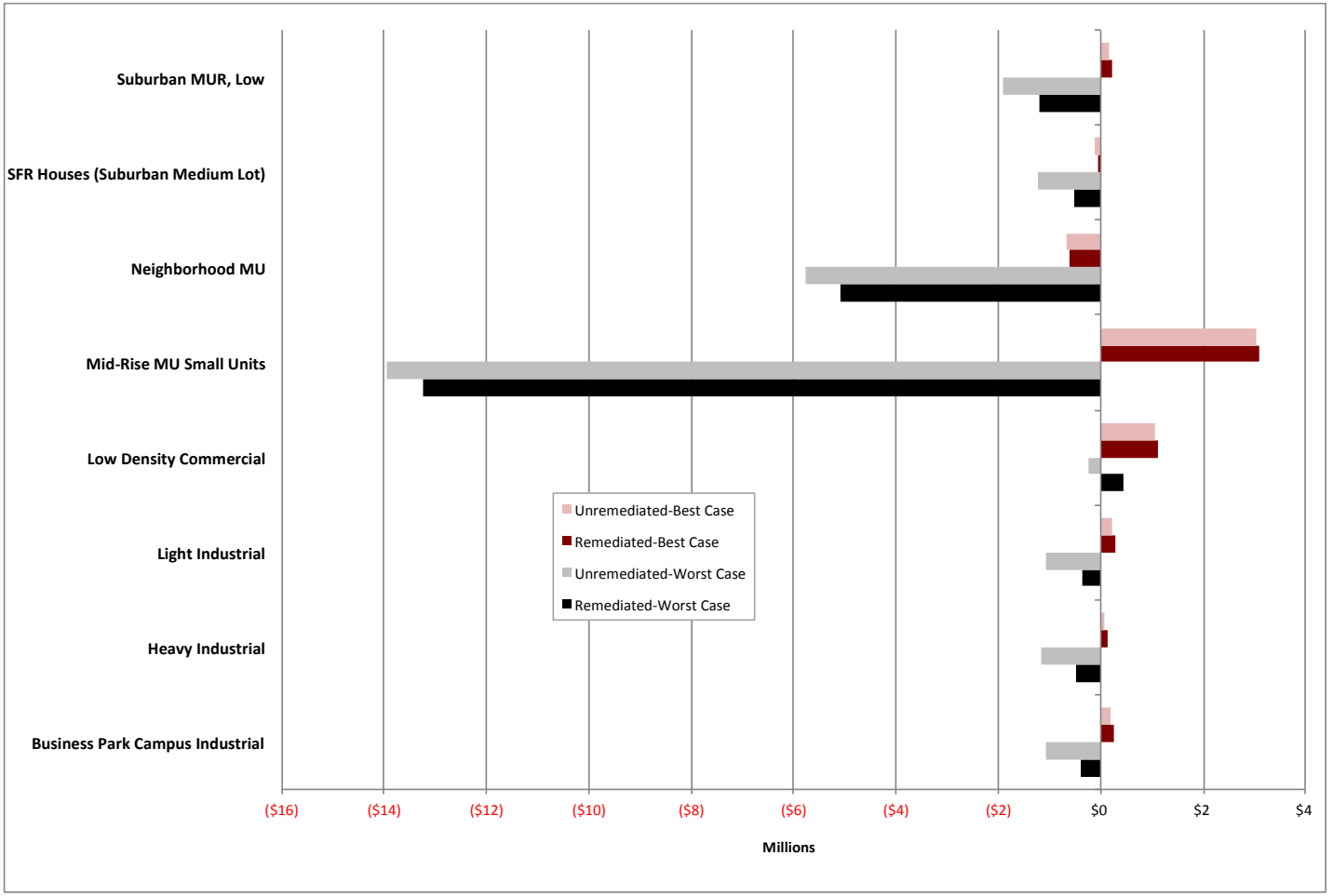
The data show that, on average across all typologies, market rents affect the financial feasibility more than the cost of remediation. In the Small Commercial typology (Type 1), both "worst" case scenarios are not financially feasible. But both "best" case scenarios are feasible. The Industrial Conversion typology (Type 2) parcels have the most difficulty achieving financial feasibility, on a per-acre basis. The financial gap is large even if rents are high and there are no remediation costs. This finding is consistent with the observed redevelopment market: higher-cost projects (such as higher-density mixed-use projects) will continue to be difficult to finance in areas with lower achievable rents outside central Portland until those markets improve. In strong, close-in markets near downtown Portland, conversion of an industrial property to a higher-value, higher-density commercial or residential use could be the best path to feasibility. However, in outlying town centers and corridors that make up most of these parcels across the entire region, market challenges are hindering development of higher-value product such as mixed-use or office, even when brownfields are not an issue.

The Ongoing Industrial (Type 3) and Rural Industrial (Type 4) typologies both show a small positive difference between market value and costs. The data show that the range of market rents affects the feasibility to a greater degree than the cost of brownfield remediation. However, more of the parcels are closer to the feasibility indicator mark, where development costs are equal to market value than in the other typologies. In particular, even in the best-case scenarios, most redevelopment is barely feasible. This suggests that any changes in development factors—whether land costs, entitlement issues, achievable rents, or long-term financing terms—is more likely to have an overall effect on feasibility.

Figure 13 provides the same information by development type, per acre of redevelopment. Again, those development types that have the shortest bars—where all cases hover closest to the feasibility marker of $0 (development costs equal to market value)—are those development types for which feasibility is most likely to be positively affected by an investment in brownfield remediation.

Those development types with the highest development costs (mid-rise mixed-use, neighborhood mixed-use) are the most strongly affected by overall market conditions. In these development types, remediation costs are a lower proportion of total development costs, and investment in remediation, on average, does not affect feasibility. Again, at the site level, this pattern may not hold. An individual site that has high remediation costs but has strong market fundamentals may become feasible if the remediation costs are removed. On average, however, these investments do not swing the needle. All other development types are more sensitive and are more likely to be affected by investment in remediation.

Figure 14. Market value minus development costs (with and without remediation) average per acre, by development type



Policy Implications

From a regional-scale perspective, **the financial barriers posed by contamination are overshadowed by market challenges**. This situation is exaggerated for higher-cost development products such as high-density, mixed-use projects. This indicates that policies targeted at reducing the costs of remediation may not have a broad impact on improving the financial feasibility of brownfield redevelopment on their own. **To promote redevelopment of brownfields, it is therefore important to combine financial incentives that support traditional infill development**, such as combining property tax abatements with remediation incentives. It is important to keep in mind that this financial analysis is generalized across the region and that financial incentives for cleanup may have an important impact on specific properties.

4 POLICY TOOLS

Oregon and the Metro region have a solid policy foundation for promoting urban infill development and for regulating cleanup of contamination, but there are continuing challenges to brownfield redevelopment (see Appendix D for detailed description of current policies and programs). There are a number of potential policy tools that could be adopted to address the challenges of brownfield cleanup and redevelopment. The Portland Metro region can look to policies that have proven effective for other states and local governments to improve existing policies and programs. This section presents a set of potential policy tools based on review of best practices nationwide, meetings of the TRT, input from local brownfield experts, and previous studies. The TRT includes a range of policy experts, technical professionals, public agency staff, and private-sector professionals.

The policy tools were prioritized by the TRT and through initial discussion with the Metro Council, Metro Policy Advisory Committee, and Metro Technical Advisory Committee. Prioritization was based on professional judgment on the potential impact and feasibility of implementation of the tools. The priority policies are organized in bundles of similar or mutually supportive tools: tax incentives, capacity building, and regulatory streamlining. Priority policy tools are briefly described below, with other tools assessed in the study listed as "complementary tools" and described in detail in Appendix E.

Figure 15. Priority Policy Tool Bundles

4.1 Create Tax Incentives

Like all real estate projects, brownfield redevelopments are driven by financials. A package of changes to existing tax policy could be implemented to improve the financial feasibility of brownfield projects. Tax incentives are attractive because they are predictable for the private sector and require relatively low administrative costs for the public sector. Three taxation policies are proposed: a remediation tax credit, a Property Tax Abatement for redevelopment on brownfields, and reform of the existing property tax assessment for contaminated lands.

The public benefit of these incentives is that, while they provide short-term subsidy of private investment, there is a higher long-term return on investment (ROI) through property and income taxes generated on land redeveloped into higher-value uses.

Complementary Tools

- TIF Reform

Remediation Tax Credit would allow property owners and developers to decrease their business or personal income taxes by a percentage of the documented costs of conducting a cleanup. Limits could be set on the amount of credit available on an individual project or for all projects in a fiscal year to provide enough magnitude to stimulate redevelopment while managing impacts on the state budget. Making the tax credits transferable would allow nonprofit and public entities to use the tool.

P**roperty Tax Abatement** extends the existing incentives of Enterprise Zones to provide a property tax break for the initial years of a brownfield redevelopment project. Since brownfield projects require significant upfront costs for cleanup, the timing of this financial incentive is particularly useful. The duration of the abatement could vary to allow brownfields in an Enterprise Zone to receive a longer abatement period than those outside.

Property Tax Assessment policy in Oregon is currently considered a disincentive to cleanup. The assessed value of contaminated land is reduced by the cost of the environmental liability, so little or no property tax is collected on many brownfields. While the value of property is certainly impaired by contamination, the tax assessment should include a time limit to encourage owners to address the problem. Coupling a sunset on the assessed value reduction with a tax credit on remediation would minimize financial impacts to property owners while promoting cleanup. It should be noted that anecdotally, the financial viability of some ongoing businesses relies on the low property taxes the current policy provides and could be impacted if there was a change.

4.2 Build Capacity

Local governments, development authorities, and port districts play a leading role in cleanup and redevelopment of brownfields. A set of policy tools could be adopted to increase the capacity of these public-sector entities. These tools include establishing a land bank, creating a dedicated cleanup fund, and providing grants for integrated environmental assessment and redevelopment planning.

Complementary Tools

- Pooled Bonding
- Historical Insurance Recovery Support
- Community Investment Initiative
- Public Equity in Sites
- Pooled Environmental Insurance
- Brownfield Guidebook

The benefit of these tools is that they expand the role that public agencies can play in brownfield redevelopment. Many properties are so complex or challenging that they are not likely to redevelop without public leadership and investment.

Public Land Bank—Many local governments are reluctant to take title to contaminated properties because of concerns about legal liability and financial implications. A public land bank would create an entity with the resources and long-term perspective to acquire and reposition brownfield properties. The land bank would operate with a clear mission and long-term plan for community revitalization. It would have special powers, such as protection from environmental liability, authority to clear title, and ability to issue bonds and use tax increment financing (TIF). The land bank would require initial capitalization to acquire a portfolio of properties and financial support for the initial years, but should achieve financial self-sufficiency within five to ten years. The land bank would provide a pathway for public support of challenging properties, without adding risk or liability to local governments, and for repositioning land so the private market can invest in redevelopment.

Dedicated Brownfield Cleanup Fund—There are multiple sources of funding at the state level to support cleanup and redevelopment of brownfields, but they are limited in their capacity. A dedicated revenue stream for cleanup could dramatically increase the ability of local governments or a land bank to revitalize properties. A cleanup account could be funded in several ways, such as through a federal Housing and Urban Development Section 108 loan, a statewide bond measure, or a tax on potentially hazardous substances such as coal.

Integrated Planning and Site Assessment Grants—Existing brownfield funding programs focus exclusively on cleanup, but many of these projects are driven by market demand for redevelopment. The dedicated cleanup fund or other sources could be used to establish a grant program that is designed to address both the cleanup and redevelopment aspects of brownfields. Eligible grant activities could include market analysis, community involvement, and site planning in addition to assessment and cleanup of environmental contamination.

4.3 Streamline Regulatory Framework

Cleanup and redevelopment of brownfield properties require regulatory oversight by state and local governments under environmental and land use regulations. Meeting the multiple and potentially conflicting requirements of these different regulatory agencies can add significant delay and costs that create barriers to redevelopment. There are opportunities to improve the regulatory process to provide greater efficiency and predictability while maintaining development standards and protecting the public interest.

Complementary Tools

- Model Purchase & Sale Agreement
- Universal Database
- Presumptive Standards
- Licensed Site Remediation Professional Program
- Federal PPAs
- Superfund *De Minimis* Settlements

The benefit of these tools is that reduced development timelines also reduce costs. This added value can help offset the already additional cleanup costs, increasing the redevelopment potential of a property.

Regulatory Flexibility—To be financially feasible, brownfield redevelopment projects must generate enough value to offset the costs of cleanup on top of standard construction costs. However, as this analysis has shown, in many cases the projects do not generate the benefits to offset costs. Increased flexibility in allowing broader land uses for underutilized sites could be considered if the cost of achieving a given use is an impediment to revitalization. While density bonuses are often considered as a regulatory incentive, it is important to note that the financial feasibility analysis indicated that higher-density development on brownfields is market dependent. The greater costs of constructing multistory projects are feasible only in locations that can demand high rents. Other regulatory flexibility concepts that could provide real value include reductions in parking requirements and expedited approvals.

One-Stop Shop—Brownfield projects inherently involve multiple regulatory agencies, including DEQ oversight of cleanup and local government permitting for development. The complex and sometimes conflicting requirements of different regulatory agencies can add real costs and delays to projects. An interagency panel could be established for brownfield sites to coordinate permitting and connect projects to financial incentives.

Policies That Metro Can Independently Implement

The policy tools researched for this project range from changes in federal agencies to local government ordinances. As a regional government, Metro has rather limited direct authority and powers. It can help influence policy at the federal, state, and local levels through various ways, from advocacy to education. The following policy tools could be directly implemented by Metro:

- Integrated Planning and Site Assessment Grants—allocate budget to grants (or loans) that support planning and site assessment on properties and projects that advance a specific Metro goal.
- Historical Insurance Recovery Support—provide financial and/or logistical support to property owners in making claims on comprehensive general liability insurance policies that were in place when contamination occurred.
- Public Land Bank—allocate budget to a land bank to acquire the most challenging and/or strategic properties to advance a specific Metro goal.
- Brownfield Guidebook—develop a user-friendly manual for jurisdictional partners, property owners, community members, and prospective developers that provides a road map for the process of redeveloping a brownfield property. The guidebook would be the starting point and key reference for regulatory and financial tools for cleanup and redevelopment of brownfield properties.
- Build Market Demand—utilize existing Metro programs to provide indirect incentive and capacity for brownfields development through infrastructure and other improvements that help to build market demand. Expand ongoing efforts to market properties to developers, businesses, and site selectors to focus expressly on brownfields.

4.4 Estimated Return on Public Investment of Policy Tools

The consultant team completed an ROI analysis to compare the relative impact of the priority policy tools. The analysis provides some context for relative comparison of the potential impacts of implementing the policy tools, based on several quantifiable outcomes, including job potential, tax revenues, and redeveloped acreage. These ROI results are just one item to be input into Metro's policymaking process. There are many other important

considerations that will influence implementation, such as legal considerations, attractiveness to the development market, and political viability.

Methods

The financial impact of the policies was analyzed using the pro formas for the prototypical developments (on page 17) and results from other states that have already implemented the policy tools. The value of financial incentives was included in the pro formas to assess whether it enhanced the feasibility of prototypical developments. The analysis examined how many acres of brownfield property are likely to be redeveloped through application of the policy tool and the corresponding employment and tax revenue benefits associated with that redevelopment. A ten-year period was used for the analysis, with tax revenues estimated for one year (to conservatively account for absorption rate for bringing property to market). Because the policies have not yet been fully vetted, it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, and the results should be considered order-of-magnitude estimates. The findings are summarized below, with more detail on methodology and results in Appendix F.

Key Findings

- It is likely that no single policy incentive will be sufficient to catalyze redevelopment of all the brownfields.

- The tools that appear to have the greatest potential in terms of acres redeveloped are Property Tax Abatement and Dedicated Cleanup Fund, with each accounting for over 800 acres of brownfield redevelopment, which represents only approximately 15 percent of the estimated total acreage of brownfields in the Metro region (see Table 6).

- Policy tools that leverage private resources, such as tax credit and tax abatement, typically have a higher financial ROI than those that rely more heavily on public funds to drive redevelopment, such as the Public Land Bank and Dedicated Brownfield Cleanup Fund (see Figure 12).

- The Public Land Bank and Dedicated Brownfield Cleanup Fund have the potential to be powerful tools to target and support properties that have greater remediation costs and financial feasibility challenges (such as Ongoing Industrial and Rural Industrial).

- Remediation Tax Credits and Property Tax Abatements tend to support projects that are close to financial feasibility—predominantly the Small Commercial (Typology 1) and Industrial Conversion (Typology 2) sites.

- High-density commercial and mixed-use development types tend to drive higher tax revenue returns than industrial sites because they generate substantial property tax revenue. Industrial development provides space for manufacturing jobs, which tend to have relatively high wages. While high-density commercial sites appear to provide high ROI, they are also the most likely properties to be financially feasible and not to require public support.

- There appears to be great potential for Regulatory Flexibility and the One-Stop Shop for coordinated permitting to provide a large impact with relatively small public investment. This aligns with a common comment from the development community that certainty and expedited schedule in the regulatory process are of great value.

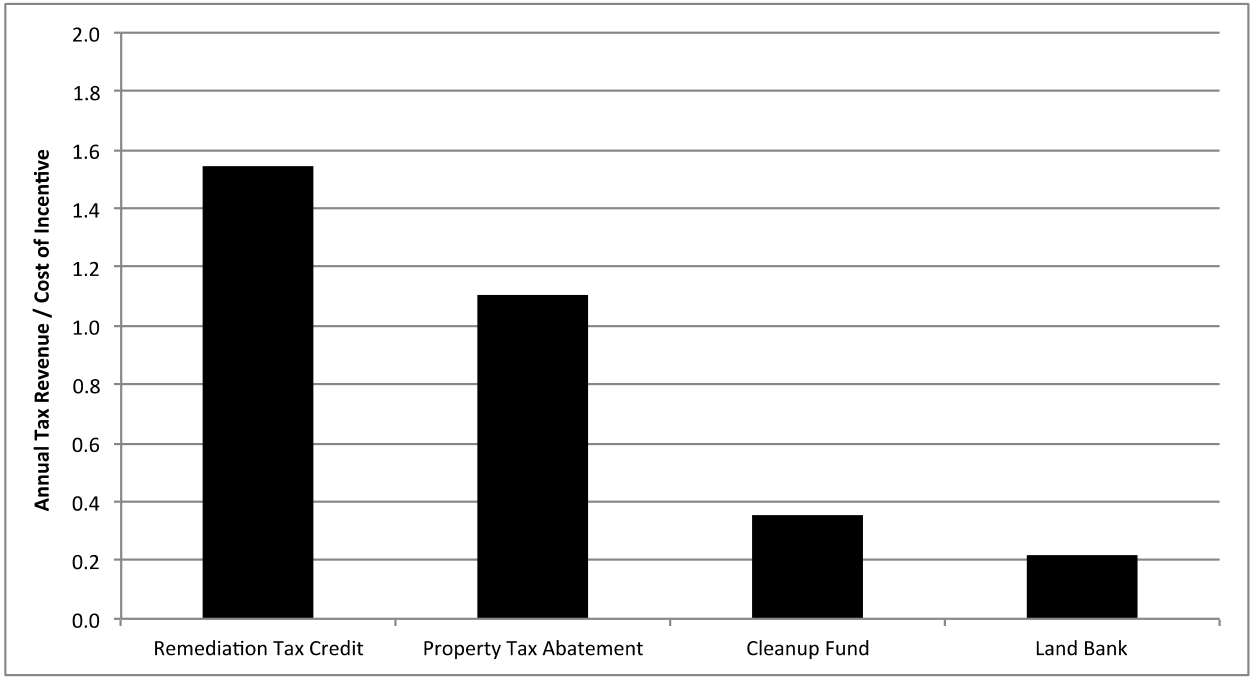
- The potential impact of property tax reform could not be measured, since information is not readily available on how many or which properties are currently claiming a valuation reduction. Without a calculation of current lost tax revenue, it is impossible to project potential return by reversing this policy.

Table 6 shows the outcomes associated with implementing the policies. Figure 16 shows the ratio of annual property tax and personal income tax revenue to the net present value of the policy's cost. A higher ratio indicates a higher return on the cost of implementing the policy.

Table 6. Policy Return on Investment Summary Results

POLICY TOOLS	ACRES REDEVELOPED	TOTAL AREA OF NEW BUILDING (Sq. Ft.)	NET NEW JOBS	DWELLING UNITS	ANNUAL TAX REVENUE ($)	
					PROPERTY TAX	PERSONAL INCOME TAX
Remediation Tax Credit	449	43,839,000	9,200	34,600	69,966,000	18,753,000
Property Tax Abatement	808	78,909,000	16,500	62,300	125,940,000	33,755,000
Dedicated Brownfield Cleanup Fund/Integrated Grants	833	32,728,000	8,700	19,900	51,945,000	24,169,000
Land Bank	195	4,116,000	1,600	1,700	6,809,000	5,195,000
Regulatory Flexibility/One-Stop Shop	397	43,001,000	8,900	34,400	68,430,000	17,738,000

Figure 16. Policy Tax Revenue-to-Cost Ratio



5 NEXT STEPS

5.1 Implementation Strategy

Implementation of the policy tools will require policymakers to decide which they consider to be the most important and to organize an effort to take necessary actions. A summary of the policy tools, including the level of government at which they operate, type of policy action needed to implement them, timeframe for implementation, and recommendations for additional research, is presented in Table 7.

Key considerations for an implementation strategy:

- There is no silver bullet brownfield policy. A coordinated set of policy tools should be adopted that address multiple challenges and different types of brownfields.

- There is potential for synergy between policies. For example, the effectiveness of a Public Land Bank would be greatly enhanced by being able to access a Remediation Tax Credit and Dedicated Brownfield Cleanup Fund to offset the costs of addressing contamination and make the land bank stronger financially.

- All of the policy tools can and should be tailored to meet specific policy goals. For example, eligibility for Remediation Tax Credits and tax abatements could be limited to specific geographic areas that need additional public support to achieve market viability, such as distressed communities or industrial areas.

- Eligibility requirements and administrative requirements of programs should be limited in complexity to create incentives that are attractive and easy for the private sector to access.

- ROI will be limited, and many sites will not see the benefit of these policy tools, if eligibility is limited on properties with potentially responsible parties for contamination. Incentives can be redirected to the new investor or developer.

- Policy tools that appear most likely to support cleanup and redevelopment of Ongoing Industrial brownfields (Type 3) are:

- Public Land Bank
- Remediation Tax Credit
- Dedicated Brownfield Cleanup Fund

- Policy tools that appear most likely to support cleanup and redevelopment of commercial and mixed-use development types (Small Commercial-Type 1 and Industrial Conversion-Type 2 sites) are:

  - Remediation Tax Credit
  - Property Tax Abatement
  - Regulatory Flexibility

- These policy tools and their respective benefits are applicable statewide. Coordination of local governments and interested stakeholders, both in the Portland metropolitan area and across the state, will be important for successfully implementing state legislative and policy changes.

5.2 Further Research Needed

- Impact assessment—this effort included analysis of case study projects and found that little quantitative information has been collected on the job creation, tax revenue, and other benefits of brownfield redevelopment projects. A more detailed study could compile in-depth information on a set of key indicators for brownfield projects.

- Public health risk—contaminated properties are potential public health risks. Assessments of human health risks on contaminated sites are conducted at a site level, and information is lacking on regional impacts.

- Previous ROI analysis—previous public investments in brownfield redevelopment have not been studied to determine the impact or return of those investments. Understanding the local and potential ripple effects of these redevelopment projects could further magnify the likely results of future actions.

- Property value—brownfield properties can have diminished value because of contamination. Research in other areas has demonstrated a ripple effect: brownfields decrease value of surrounding properties as well. The property values of contaminated lands and surrounding areas could be studied to add to the understanding of financial impact of brownfields on the region.

Table 7 Metro Brownfield Policy Tools Matrix

TOOL	DESCRIPTION	LEVEL OF GOV.	POLICY ACTION	TERM	PREV. PROPOSED	FURTHER RESEARCH NEEDED
Bundle 1: Create Tax Incentives						
Tax Credit for Remediation	Consider expanding the use of tax incentives, such as income tax credits for dollars spent on site investigation and environmental cleanup.	State	Statutory Change	Long-term	Legislative	Eligibility requirements, magnitude of credit
Property Tax Abatement	Modify tax abatements associated with Enterprise Zones and urban infill programs to extend the duration of tax abatements in any area and make brownfield remediation for industrial development more viable.	State Policy Change; Local Implementation	Statutory Change	Long-term		Eligibility requirements
Reform Contaminated Property Tax Assessment	Modify tax assessment valuation rules to include time restrictions on the value reduction associated with a cleanup liability to discourage mothballing.	State	Constitutional, Statutory, and Administrative Rule Change	Long-term		Legal constraints
Complementary Tools						
TIF Reforms	Modify policy to make TIF a more effective tool for promoting brownfield cleanup and redevelopment. Use policy mechanisms to create better tie-ins between TIF and brownfield projects to incentivize redevelopment.	State Policy Change; Local Implementation	Statutory Revision	Long-term		Examine range of options

TOOL	DESCRIPTION	LEVEL OF GOV.	POLICY ACTION	TERM	PREV. PROPOSED	FURTHER RESEARCH NEEDED
Bundle 2: Build Capacity						
Public Land Bank	Establish a land bank to acquire contaminated properties, manage and finance cleanup and redevelopment, and sell property back into the private market.	State Legislation; implemented at State or Local level	Legislative	Mid-term/long-term		Identify most appropriate agency sponsor

TOOL	DESCRIPTION	LEVEL OF GOV.	POLICY ACTION	TERM	PREV. PROPOSED	FURTHER RESEARCH NEEDED
Dedicated State Cleanup Tax	Establish a dedicated fund for cleanup and redevelopment of brownfields. The revenues or the fund should be generated from a source that has both a nexus with contamination and the potential to generate a substantial revenue stream.	State	Legislative	Mid-term/long-term		Explore revenue source options
Integrated Planning & Site Assessment Grants	Establish a publicly funded Brownfield Integrated Planning Grant to conduct environmental assessments and support site-specific redevelopment strategies.	State or Local	Legislative	Short-term/mid-term		Explore revenue source options
Complementary Tools						
Pooled Bonding	Allow localities to use bond proceeds to purchase a pool of general obligation bonds to fund cleanup projects.	State Legislation: Local Implementation	Statutory Revision	Short-term		Examine fiscal impacts
Historical Insurance Support	Provide technical support to assist work parties in making claims on historical insurance policies.	State or Local	Programmatic Change	Short-term		Compare cost of contracting vs. in-house service
Community Investment Initiative	Building on models being explored in Metro's Community Investment Initiative, create a new entity to combine public and private funds and foster unique joint venture opportunities.	Coordinated State and Local	To be determined	Long-term	Report (2)	Ongoing policy development
Public Equity in Sites	Make it easier for public development organizations to provide gap financing for projects in exchange for securing an equity interest in the property.	State Legislation: Local Implementation	Legislative	Long-term		Research legal issues
Pooled Environmental Insurance	Establish a program that would decrease the transaction costs and reduce the cost of purchasing environmental insurance to cover risk.	State or Local	Programmatic	Long-term	Report (2)	Explore concept with private market
Brownfield Guidebook	Provide more effective resources to educate landowners and prospective buyers about the cleanup and redevelopment process and the resources available to assist these projects.	State or Local	Programmatic Change	Short-term	Report (1)	

TOOL	DESCRIPTION	LEVEL OF GOV.	ACTION	TERM	PREV. PROPOSED	FURTHER RESEARCH NEEDED
Bundle 3: Streamline Regulatory Framework						
Regulatory Flexibility	Local governments could apply a zoning code overlay to contaminated sites or create a brownfield inventory list for priority sites that would allow developers and property owners to develop the site with greater regulatory flexibility.	Local	Policy Change	Short-term	Report (1)	Examine land use implications
One-Stop Shop	Create a system for interagency coordination for permitting and funding brownfield projects.	State and Local	Programmatic	Short-term	Report (1)	
Complementary Tools						
Model Purchase and Sale Agreement	Create a model agreement with indemnification language and distinctions between upland and in-water liabilities along with standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection period.	State or Local	Programmatic	Short-term	Report (3)	
Model PPA	Review and update model language for legally binding PPAs to streamline the process and encourage their use.	State	Programmatic	Short-term	Report (3)	
Universal Database	Create an open system to share environmental information across projects. This system could include analytical data on groundwater flow and contaminant concentrations, along with beneficial use determinations.	State	Programmatic	Short-term	Report (1)	
Formalize Presumptive Remedies and Standards	Establish guideline documents for simple cleanup sites with common redevelopment uses.	State	Programmatic	Short-term	Report (1)	Convene expert panel to review

TOOL	DESCRIPTION	LEVEL OF GOV.	ACTION	TERM	PREV. PROPOSED	FURTHER RESEARCH NEEDED
CERCLA PPAs	USEPA provide PPAs jointly with Oregon DEQ to provide certainty and liability protection to innocent purchasers of contaminated properties under federal Superfund Law.	Federal	Programmatic	Long-term		USEPA and DEQ discussions
CERCLA De Minimis Settlements	USEPA provide expedited settlement agreements for owners of properties that likely cause minor impacts to the Harbor.	Federal	Programmatic	Long-term		Examine liability implications