

PORTLAND BROWNFIELD ASSESSMENT FINAL REPORT



December 18, 2012

Prepared for:

City of Portland
Bureau of Planning and Sustainability



**E.D. Hovee
& Company, LLC**
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**REDEVELOPMENT
ECONOMICS**

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December 18, 2012
Project No. 0559.02.01

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The findings and recommendations in this report do not necessarily reflect the views or policies of Metro.

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1 INTRODUCTION

The cleanup and redevelopment of brownfield properties is a key strategy for meeting economic, environmental, and social goals for the City of Portland (Portland). Continued economic development within the Urban Growth Boundary requires adaptive reuse of and infill redevelopment for urban properties. Portland's Economic Opportunity Analysis (EOA) projects a shortfall of industrial land supply within the Urban Growth Boundary in the

Brownfields Defined

The term "brownfield" refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substances.

next 20 years and estimates that brownfield properties account for about one-third of the growth capacity in Portland's industrial, commercial, and other employment areas. However, brownfields face significant, but not insurmountable, challenges in the marketplace. Recent trends indicate that most of Portland's brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development.

The Portland plan and comprehensive plan update provide opportunities to shape how Portland will develop over the next 25 years. In order to provide adequate land supply to capture economic development opportunities, effective public policy to encourage redevelopment of brownfield properties will be needed. To support those policy decisions, Portland has undertaken this Portland Brownfield Assessment to examine the financial and economic development characteristics of brownfield redevelopment, with a particular focus on industrial lands. Brownfield sites are traditionally characterized by real or potential environmental contamination concerns, but the driver for redevelopment of brownfields is their potential value when redeveloped. With the guidance of an advisory panel of public- and private-sector experts, the Portland Brownfield Assessment report has:

- Evaluated the scale and financial challenge of brownfields in Portland
- Forecasted the public benefits of redevelopment of these properties
- Reviewed a suite of policy tools and reforms that can enhance the redevelopment of brownfields

The results of the Portland Brownfield Assessment summarized in this report are intended to inform policymakers and stakeholders; form the basis for sound economic policies; and provide a framework for future urban infill and economic development in Portland.

Figure 1-1. Interconnection of Planning Efforts



Public Role in Promoting Brownfield Redevelopment

The federal Superfund Law and the Oregon Cleanup Law provide the regulatory framework for cleanup of contaminated sites, based on the principle that responsible parties must pay for remediation. This enforcement-based approach has been effective in addressing many of the most highly contaminated sites, but has its drawbacks. In many cases, the fear of liability for cleanup has had a chilling effect on new investment in properties that have experienced historical uses typically associated with contamination. Many potentially contaminated properties are owned by small businesses that do not have the financial resources to conduct expensive cleanups or that may have ceased operations years ago. These two factors have led to increasing numbers of vacant properties that contribute to blighted conditions.

Many brownfield properties are remediated with support from new investors: innocent parties that seek to redevelop the property. National and local experience with brownfields in the last 30 years has shown that these properties are more likely to be remediated within a shorter time frame and to meet or even exceed cleanup standards when they are part of a redevelopment effort. Incentives, combined with a predictable and efficient regulatory framework, have led to more cleanups than enforcement alone. This proactive approach can increase the rate of brownfield redevelopment to achieve policy goals and can play an integral role in meeting Portland's land demand needs over the 25-year planning horizon.

City of Portland and Metro Brownfield Studies

Portland and Metro have undertaken concurrent studies of brownfield property economic impacts and policy solutions. Both of these studies incorporate financial feasibility analysis of brownfield projects and review of potential policy tools and reforms to promote cleanup and redevelopment of these brownfield properties. While the two studies complement one another through a robust inventory effort and an in-depth review by stakeholders, industry practitioners, and policymakers, there are still important distinctions between the studies, including:

Geographic Scale: The Portland study focuses on issues related to the city, in particular employment lands, while the Metro study incorporates the three-county area in a broader context, including property types.

Focus of Economic Analysis: The more focused scale of the Portland study requires a narrower categorization of market areas and conditions.

Policy Objectives: The Portland study is more focused on economic development and employment-related objectives, while the Metro study places a greater emphasis on land use and community development goals.

1.1 Key Findings

Scale of the Brownfield Problem

- There are approximately 910 acres of potential brownfield properties in Portland. This includes approximately 558 industrially zoned acres, which could offset the projected 720-acre shortfall of industrial land forecasted for the next 20 years.
- It is estimated that the total cleanup costs of all potential brownfield properties in Portland is approximately \$240 million. The burden of these costs places nearly all analyzed development prototypes (in all market areas) underwater financially.
- With potential federal Superfund liability costs added, the total cost of remediating affected properties within the Portland Harbor Waterfront is estimated to increase to as much as \$24 per square foot of site area—more than three times the market value of unconstrained industrial land.

Potential Economic & Community Benefits of Brownfield Redevelopment

- Redevelopment of all potential brownfields identified in Portland could potentially result in 31,000 new jobs and over \$40 million in additional annual Portland tax revenues.
- The potential for added industrial land availability, assuming 100 percent brownfield redevelopment, would be about 335 acres of extra land capacity, reducing the industrial lands shortfall by 45 percent, from a 740-acre to a 405-acre deficit.

- High-density development in downtown accounts for nearly 50 percent of both potential employment and Portland tax revenue, but represents only 6 percent of total brownfield acres.
- Redevelopment of brownfields in industrial areas accounts for approximately 30 percent of future potential jobs.
- It is estimated that full build-out of the inventory of potential infill brownfields would represent a reduction of 39,000 metric tons of CO² annually, relative to expanded suburban greenfield development through reduced employee commuting—the equivalent of taking 9,200 cars off the road every year.
- Infill development on brownfields has the potential to avoid \$115 million to \$180 million in public infrastructure investment that would be necessary if new greenfield sites were developed.

Innovative Policy Solutions

- Existing financial incentives are not sufficient to overcome the financial feasibility gap of a large number of brownfields.
- Potential new incentives such as Remediation Tax Credits, Job Creation Tax Credits, Property Tax Abatement, Brownfield Land Bank, and Pooled Environmental Insurance have great potential, with each potentially facilitating redevelopment of about 150 acres.
- Public investment in new brownfield incentives is estimated to have a positive return on investment (ROI), as high as \$10 returned in state and local tax revenue for every \$1 invested.
- Incentives for redevelopment in industrial areas have the potential to revitalize a large amount of land area, but with relatively low increase in Portland tax revenues. The tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are significant and support a rationale for shared investment in this area as a regional economic asset.

2 APPROACH

The Portland Brownfield Assessment included four main tasks:

1. Estimate the number of potential brownfield properties in Portland and categorize them by land use and market typologies.
2. Assess market conditions and barriers to brownfield redevelopment.
3. Estimate the public benefits of brownfield redevelopment.
4. Identify a public policy toolkit to promote brownfield redevelopment.

The methods used to conduct these interrelated tasks are summarized in the following section. More detailed descriptions of methods and results are provided in the appendices to this report.

2.1 Brownfield Inventory and Typologies

To understand the brownfields challenge for Portland, it is important to quantify the scale of the issue. It is inherently difficult to precisely count the number of brownfields in a community. While properties that are vacant or underutilized can be seen, it is often not apparent if there are concerns related to contamination in soil or groundwater. Landowners are often very reluctant to notify public agencies about potential contamination because of anxiety over legal liability, cleanup costs, and stigma that may impact property value. Given these challenges, an extensive effort was made to develop an inventory of potential brownfield sites to provide a foundation of information on which to conduct economic analysis and develop policy, while at the same time not creating negative perceptions at the parcel level.

The inventory was developed through the following steps:

1. Identify Vacant and Underutilized Lands—The Buildable Lands Inventory was used to identify properties with development capacity, based on comparison of existing to maximum allowed floor area ratio. Note that the inventory focused on commercial and industrial lands and did not include residential properties.
2. Cross Reference with Reported Contaminated Sites—The Oregon Department of Environmental Quality (DEQ) maintains databases of known contaminated sites and properties with reported leaking underground storage tanks. Parcels with development capacity that were also on the state databases were identified as potential brownfields.

3. Historical Records Research—Research was conducted in historical business directories to explore whether underdeveloped parcels were formerly used for industrial or commercial activities commonly associated with hazardous materials, such as gas stations, dry cleaners, and chemical plants. Properties that were both currently underutilized and associated with historical uses that may have left contamination were identified as potential brownfields.

The inventory was used to define typologies in order to organize and assess common market and environmental characteristics of brownfields in Portland. The traditional approach for categorizing brownfield properties has been to focus on the contamination issues. However, experience with revitalization of these properties demonstrates that it is market forces that typically drive cleanup and redevelopment of brownfield properties. Therefore, an integrated approach that considers both market potential and contamination provides a more accurate and meaningful categorization.

R2V

The R2V is positive for properties that have a high enough potential value to offset the costs of remediation (common in the Pearl District), and it is negative for properties with low market value and high cleanup liability (common in industrial areas).

The fundamental guiding principle underlying the brownfield typologies is that the potential for redevelopment of a property is driven primarily by market factors and that the type and level of contamination must be considered in the context of property value. The relationship between redevelopment potential and cost to remediate is the “remediation to redevelopment value” (R2V). This relationship is the basis for financial feasibility analysis conducted in subsequent tasks of the Portland Brownfield Assessment.

The categorization of the brownfield typologies took into account a number of characteristics, including market location, zoning, future use potential, historical use, and contamination issues.

2.2 Financial Feasibility Analysis

To assess the market potential for redevelopment of brownfields in Portland, a range of prototypical development scenarios were modeled for properties in the different typologies. Pro forma estimates of development costs, likely rents, and property values were created for each of the prototypes.

The critical test of financial feasibility for the prototypical redevelopment scenarios lies in the relationship of project *cost to valuation*. This is different from R2V, as defined above, because remediation costs are not included and therefore are not a factor. If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as having a “financial feasibility gap.”

Financial pro forma spreadsheets were developed to compare the cost of developing a property (including land acquisition, hard and soft development costs, and site remediation) to the market value of the completed building as an indicator of feasibility. It evaluated a mix of building types as appropriate for zoning and employment geography. The pro forma analysis also incorporated a range of typical cleanup costs based on local and national data sources.

2.3 Public Benefit

Based on the results of the pro forma analysis, the potential public benefits of redevelopment of the entire inventory of brownfield properties were forecasted. The public benefit analysis included the following key elements:

Employment—Jobs associated with different uses and density of potential projects were calculated based on Portland metropolitan research and standard economic models.

Tax Revenue—Estimates of employment capacity and of tax revenue generation from the development scenarios were based on current rates for Portland, Multnomah County, and the State of Oregon for property taxes, corporate taxes, and personal income taxes.

Environmental and Growth Management—Using estimates from published local and regional studies, forecasts were made of implications of brownfield redevelopment for greenhouse gas emissions, land consumption, and infrastructure costs.

2.4 Policy Options

A review of national best practices for promoting brownfield redevelopment was conducted. These policy tools were tailored to Portland and combined with other locally originated concepts to create a suite of options for consideration. The policy tools were reviewed and prioritized by the advisory panel. An ROI analysis was conducted on the priority tools to compare their potential impacts.

Figure 2-1. Brownfield Inventory Map

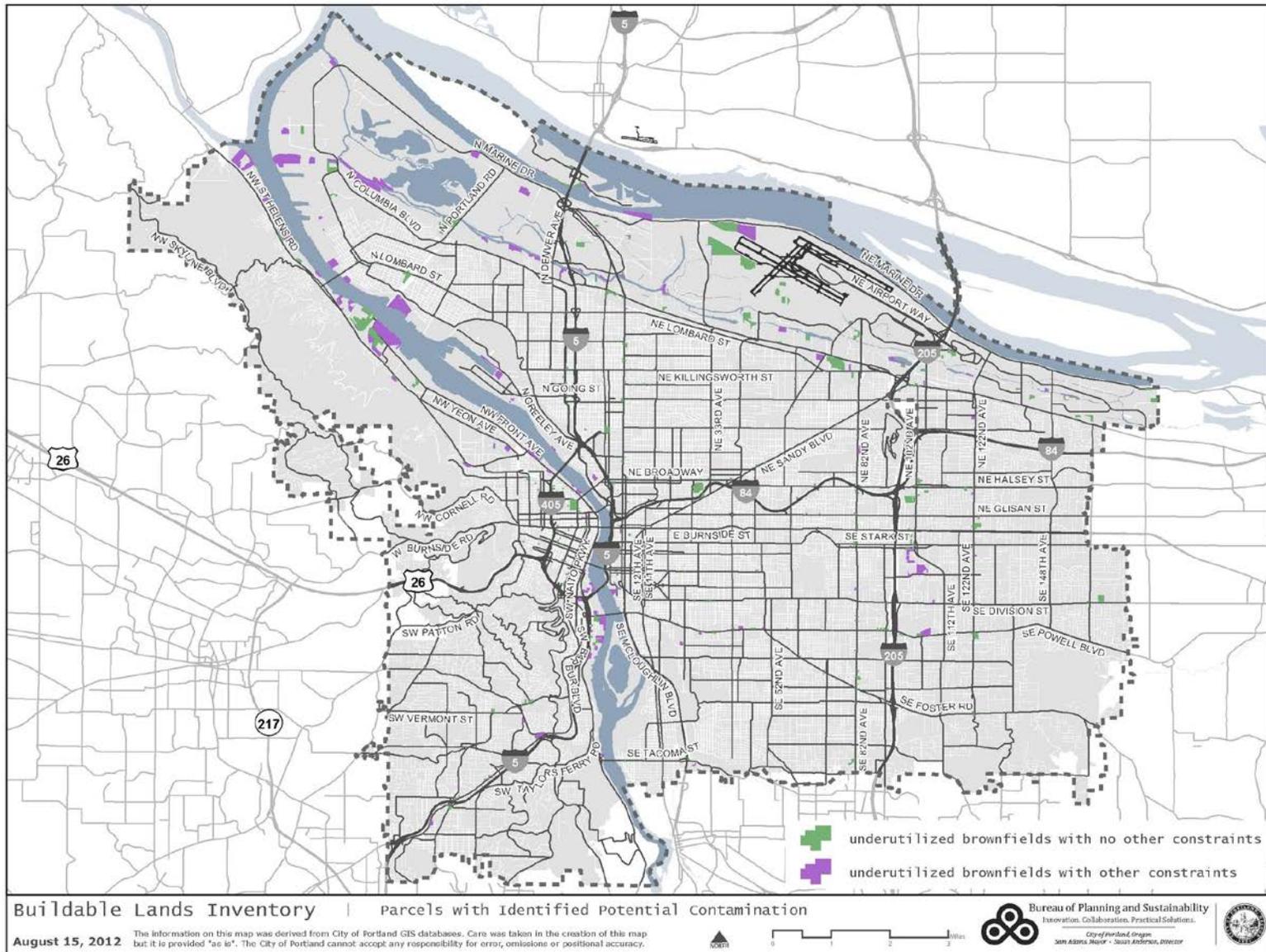
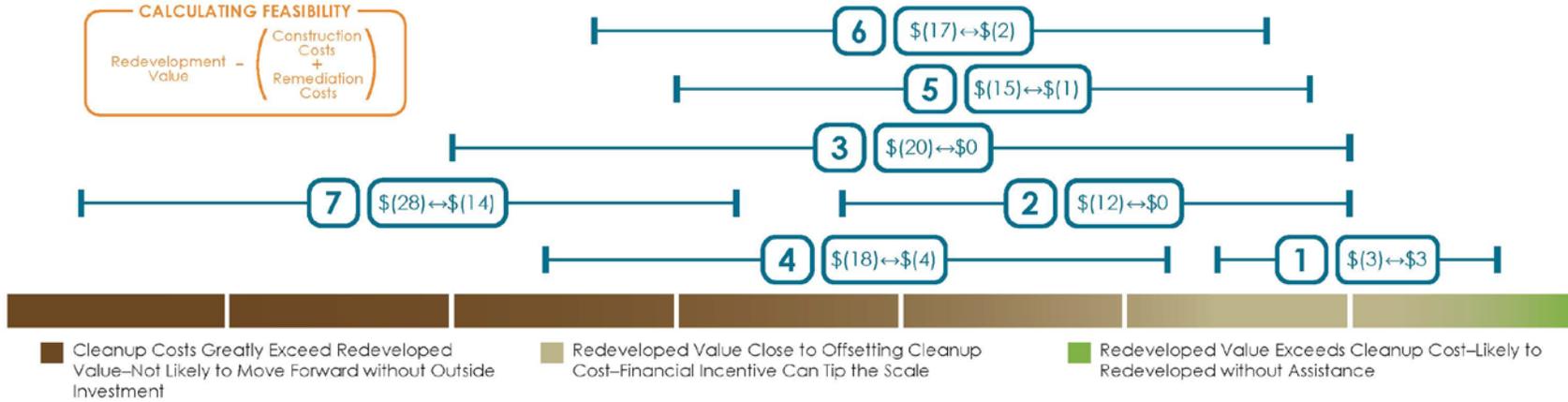


Figure 2-2

PORTLAND BROWNFIELD ASSESSMENT FINANCIAL IMPACT SUMMARY

BROWNFIELD TYPOLOGY FINANCIAL FEASIBILITY GAP (\$ PER SQUARE FOOT)



TOTAL GAP AND BENEFITS FOR ALL BROWNFIELDS IN PORTLAND

BROWNFIELD TYPE	ACRES	TOTAL FINANCIAL GAP	JOB POTENTIAL	TAX REVENUE POTENTIAL CITY OF PORTLAND	TAX REVENUE COMBINED
1 Downtown High Density	94	\$ (4)MM	14,000	\$ 21 MM	\$ 104 MM
2 Mixed Use Hubs	58	\$ (10) MM	2,600	\$ 3 MM	\$ 16 MM
3 Main Street	194	\$ (34) MM	5,300	\$ 5.9 MM	\$ 32 MM
4 Central City Industry	4	\$ (1) MM	280	\$ 400 K	\$ 2 MM
5 Standard Industry	326	\$ (79) MM	5,700	\$ 7.4 MM	\$ 52 MM
6 Superfund Shadow	79	\$ (24) MM	1,400	\$ 1.8 MM	\$ 12.5 MM
7 Harbor Waterfront	154	\$ (154) MM	1,900	\$ 2.7 MM	\$ 19 MM
TOTAL	910	\$ (307) MM	31,000	\$ 42.5 MM	\$ 238.5 MM

3 BROWNFIELD TYPOLOGIES

3.1 Typologies

While all brownfield sites share the common characteristics of either real or perceived environmental contamination as well as underutilization, not all sites are the same. Understanding the different types of brownfields will allow policymakers to refine and target tools to support successful revitalization of these properties. Brownfield typologies also serve as an analytical tool for evaluating the range of impacts that different categories of sites have on the region. Grouping brownfields by certain key criteria facilitates the evaluation of challenges faced by these impacted sites and helps prioritize potential solutions to address the unique issues faced by discrete groups of properties.

Based on analysis of land use and environmental factors, the following types of brownfields have been categorized for Portland (see Figures 3-1 and 3-2).

1. **Downtown High Density**—Characterized as former industrial and commercial operations in an area of increasing high-density development. High property values drive redevelopment and often result in conversion to commercial and residential mixed-use properties. Examples: Pearl District, South Waterfront, Downtown.
2. **Mixed-Use Hub**—Significant neighborhood centers that contain a mix of uses and represent historic and planned town centers. Redevelopment typically results in commercial and mixed-use projects with more density. Examples: St. Johns, Gateway.
3. **Main Street Commercial**—Commercial corridors characterized by mixed uses and smaller-scale commercial activity. Redevelopment of this type of brownfield typically results in conversion to commercial and mixed-use projects with more density. For purposes of financial analysis, this typology has been subdivided into Main Street East and Main Street West, with 82nd Avenue serving as the boundary. This subdivision was made in order to reflect the substantially different market conditions in East Portland. Examples: SE Hawthorne, NW 23rd, NE Alberta, sections of SE 82nd, SE 122nd.
4. **Central City Industrial**—Large-scale industrial operations typically including historical and current manufacturing activities. Redevelopment is driven by changing land use patterns and increased land values through zoning. Redevelopment of this brownfield type generally results in industrial and flex space. Examples: Central Eastside Industrial, Albina.

5. **Standard Industrial**—Variety of industrial uses, ranging in size and intensity and located in multiple areas in Portland. Redevelopment typically is constrained by location, land value, and regulatory requirements such as environmental overlays and industrial sanctuary. Examples: Johnson Boulevard, Brooklyn/Milwaukie Rail Yard.

Portland Harbor Superfund

In 2000, the U.S. Environmental Protection Agency (USEPA) designated the Portland Harbor a Superfund site. The Superfund site is defined by contamination in sediments on the bottom of the Willamette River and extends approximately from the Steel Bridge at River Mile 12 to Evraz Oregon Steel Mills at River Mile 2. While the Superfund designation is focused on sediments, it creates potential for federal environmental liability for adjacent properties and inland properties with stormwater discharges to the harbor as potential sources of contamination.

The Superfund designation creates a special case for brownfields because of the uncertainty regarding costs, regulatory closure, and the involvement of the USEPA. In recognition of this special case, two brownfield typologies related to the Superfund have been defined for properties immediately adjacent to sediment contamination areas and for properties that contribute stormwater runoff to the harbor.

6. **Superfund Shadow**—Properties located upland from the Portland Harbor Superfund area. These sites may be impacted by the Superfund designation and therefore are limited in their redevelopment potential. Redevelopment would result in industrial and flex space uses, but is hindered by regulatory uncertainty. Examples: Areas within NW Industrial and the Portland Harbor.
7. **Portland Harbor Waterfront**—Sites located on the Portland Harbor with direct connection to the areas identified as having sediment contamination. Sites in this type are typically large-scale and current or former heavy industry operations. Examples: Portland Harbor sites from Columbia River South to the Fremont Bridge (approximately).

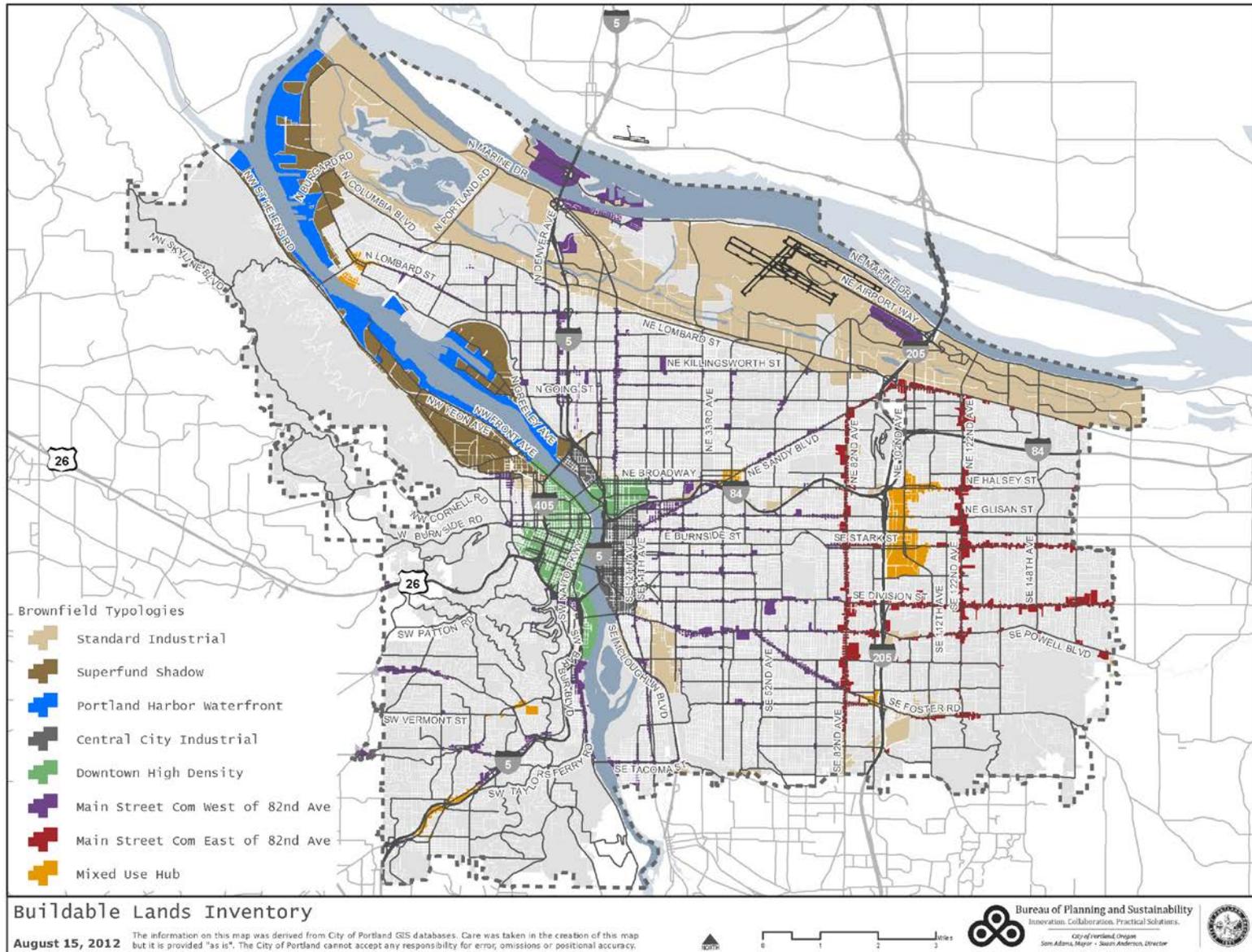
Metro Brownfield Study Typologies

A concurrent study of brownfields led by the Metro regional government has developed typologies for the same purpose: understanding the issues of brownfields on a regional scale. The Metro typologies were considered in this Portland Brownfields Assessment, and the summary figure below indicates how they relate to Portland typologies. In general, the smaller geographic extent of Portland lends itself to a more detailed understanding of typologies than areas addressed by the Metro study.

Figure 3.1 Portland Brownfield Typologies

	Portland Typology	Metro Typology	Historical Use	Employment Geography	Potential Future Uses
COMMERCIAL	1. Downtown High Density	Types 1 and 2	Automotive, Dry Cleaner, Manufacturing, and Chemical	Central City	Commercial, Mixed Use, Multifamily
	2. Mixed Use Hub	Types 1 and 2	Automotive and Dry Cleaner	Town Center, Gateway Regional Center	Commercial, Mixed Use, Multifamily
	3. Main Street Commercial	Types 1 and 2	Automotive, Dry Cleaner, Manufacturing, and Chemical	Neighborhood Commercial	Commercial, Mixed Use, Multifamily
INDUSTRIAL	4. Central City Industrial	Type 3	Automotive, Manufacturing, and Chemical	Central City	Industrial, Flex Space
	5. Standard Industrial	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor and Dispersed Industrial	Industrial
	6. Superfund Shadow	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor	Industrial
	7. Portland Harbor Waterfront	Type 3	Automotive, Manufacturing, and Chemical	Columbia Harbor	Industrial

Figure 3-2. Brownfield Typologies Map



3.2 Inventory of Potential Brownfields

It is estimated that there are approximately 910 acres of potential brownfield properties in commercial and industrial areas of Portland (see Figure 3-3). While most of these sites are concentrated in current and/or historically industrial areas, brownfields are found in nearly every neighborhood in Portland. The brownfield inventory identified properties constrained not only by contamination, but also by other factors such as infrastructure, access, or environmentally sensitive areas.

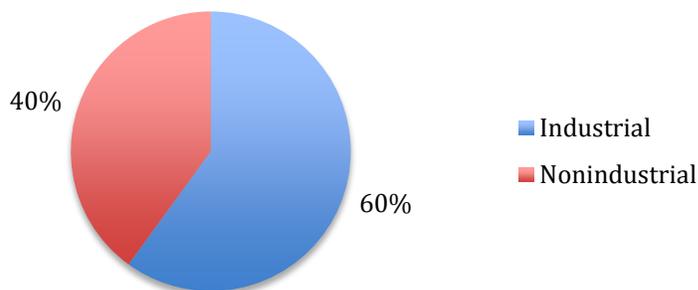
Figure 3-3. Number of Brownfields in Each Typology

Typology/Zone/Site Type	Contamination Only	Multiple Constraints	Total
Downtown High Density	42.9	51.5	94.4
Mixed Use Hub	31.8	26.2	58
Main Street Com E of 82nd	48	9.6	57.6
Main Street Com W of 82nd	87.6	49.5	137
Central City Industrial	3	1.1	4.2
Standard Industrial	249.2	76.7	325.9
Superfund Shadow	53.7	25.1	78.8
Portland Harbor Waterfront	37.5	116.4	153.9
Total Acres	553.7	356	909.7

Source: Portland Bureau of Planning and Sustainability; August 8, 2012.

Approximately 356 acres (39 percent) of the properties are impacted not only by contamination, but by other site constraints as well, including inadequate infrastructure or other physical site characteristics. Portland’s industrial areas (including the Standard Industrial, Superfund Shadow, and Portland Harbor Waterfront typologies) comprise nearly 559 acres, or more than 60 percent, of the employment lands brownfield total.

Figure 3-4. Brownfield Acreage



4 ECONOMIC ANALYSIS

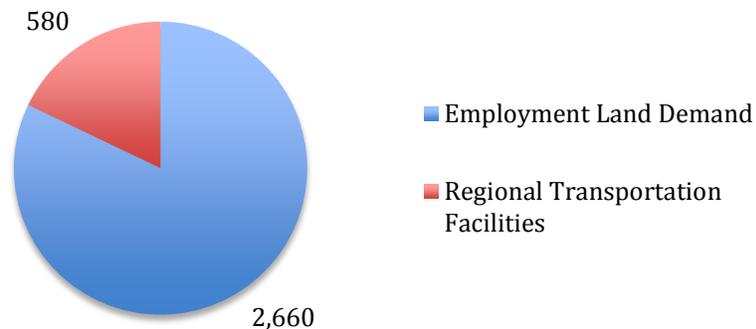
Brownfield projects are no different than any complex real estate development projects that can be subject to a wide range of entitlement issues and other constraints. Like all real estate projects, they are driven by market conditions and financial ROI. To provide context for the specific analysis of brownfields, a broad assessment of economic conditions and trends in Portland was conducted (Section 4.1). To provide a property-specific perspective, a financial feasibility assessment was conducted for prototypical development scenarios (Section 4.2).

4.1 Economic Trends and Forecast

As of 2010, Portland had an in-city employment base of 370,000 jobs. In-city employment is projected to experience a net increase of approximately 147,000 jobs over the 2010-35 period. The pace of job change represents an annual average growth rate of 1.3 percent, and Portland expects to capture 27 percent of the metropolitan region's employment growth.

The EOA translates this forecast employment growth into demand for additional employment-related development and land. After accounting for jobs that locate in residential areas (schools, home occupations, nonconforming uses), there is an estimated demand for 2,660 acres of employment land in Portland, with over half of it in industrial areas. An additional 580 acres of land for regional transportation throughput facilities is required—bringing the 25-year total industrial-commercial need to 3,240 acres.

Figure 4-1. Total Land Demand for Industrial, Commercial, and Transportation Uses (Acres)



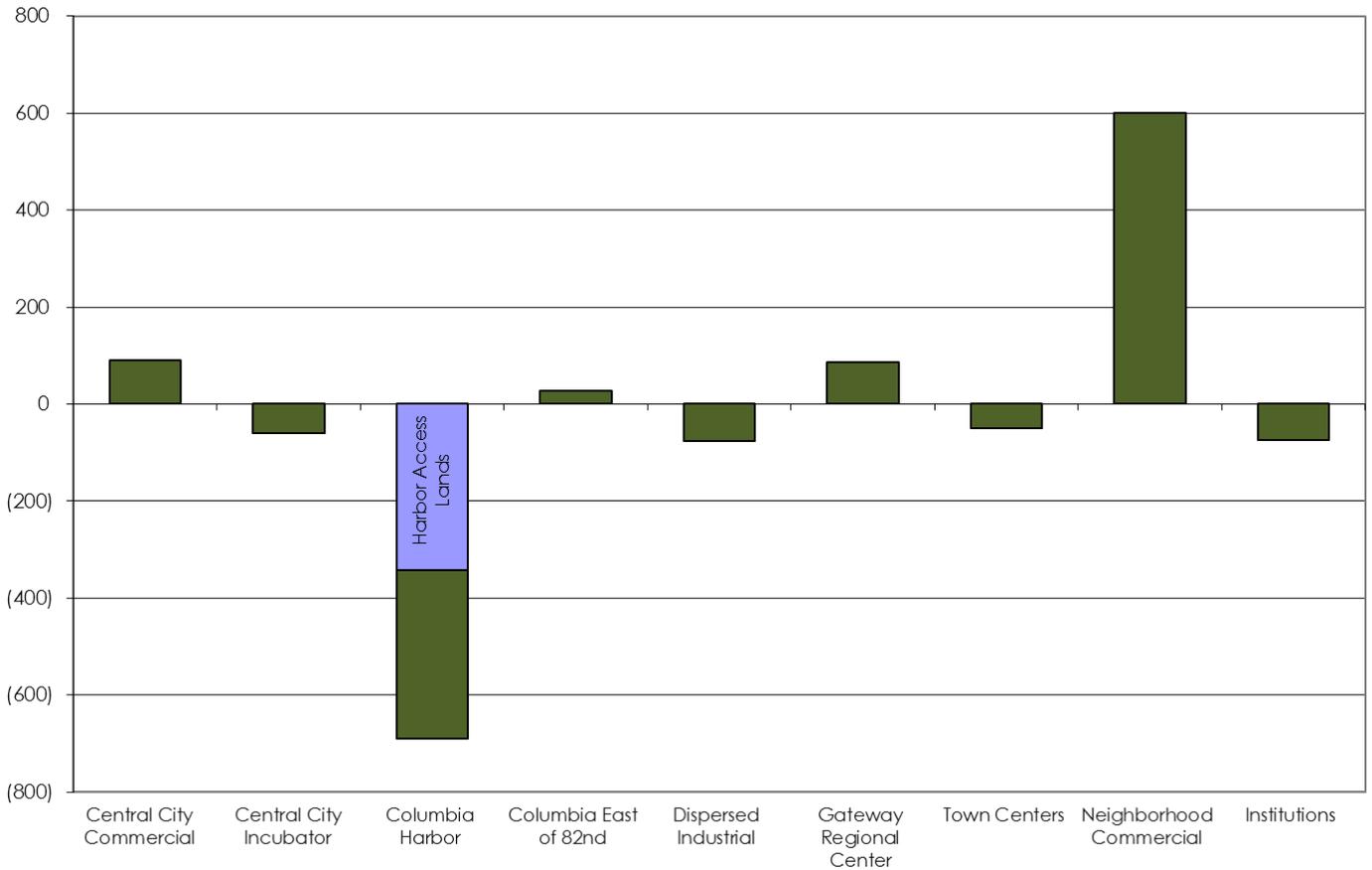
Industrial and Commercial Land Supply

Compared to forecast employment land demand of 3,240 acres, the EOA indicates the total estimated employment land supply to be 3,094 acres. This leaves a net deficit of as little as 146 acres, assuming that land is fully interchangeable between industrial and commercial uses. However, the extent of land shortage is potentially much greater, as land is not distributed on the basis of where the demand is greatest.

Projected demand for industrial land exceeds existing buildable land supply by **720 acres**.

The shortage of land for Portland's industrial areas has been estimated at 720 acres. Taken as a combined group, Central City and other commercial areas appear to have a surplus of employment land through 2035.

Figure 4-2. 2035 Employment Acreage Surplus/(Deficit) by Geography



Source: E. D. Hovee & Company, LLC and Portland Bureau of Planning and Sustainability.

Potential Brownfield Contribution to Employment Land Supply

The draft EOA anticipates that an estimated 90 percent of Central City brownfield acreage may redevelop because of strong market support over a time horizon to 2035. Non-Central City commercial properties are expected to have redevelopment rates at 50 percent through 2035 and industrial properties redevelopment rates of 40 percent.

At these ratios, close to 440 acres of the citywide 910-acre brownfield inventory would be assumed to redevelop over the EOA time horizon, leaving more than 470 acres not redeveloped as late as 2035.

The added contribution that full (100 percent) redevelopment could offer is most significant for industrial properties. The potential for added industrial land supply, assuming 100 percent brownfield redevelopment, would be about 335 acres of extra land capacity, reducing the industrial lands shortfall by 45 percent, from a 720-acre to a 385-acre deficit.

4.2 Financial Feasibility Analysis

While the economic analysis demonstrates a long-range demand for commercial and industrial land, the potential for brownfield redevelopment to meet this demand is largely driven by the R2V of individual properties. Simply put, businesses and developers are not likely to invest in real estate projects that cost more than they are worth. To assess financial feasibility of brownfields across Portland, pro formas were prepared for a range of development alternatives—commercial office/retail, industrial business park/warehouse-distribution, and/or mixed use—as applicable to each of Portland’s seven brownfield typologies. With each pro forma, it has been possible to quantify the extent to which remediation of brownfield sites on industrial and commercial property is financially feasible in the context of current market trends and ultimate site value. The analysis quantifies the potential feasibility gap associated with costs of brownfield remediation and then, for affected harbor area properties, the additional costs associated with Superfund Shadow or Portland Harbor Waterfront properties.

Results of specific development prototype feasibility testing are then aggregated to assess overall cost and feasibility implications across the full citywide employment-related brownfield inventory of 910 acres.

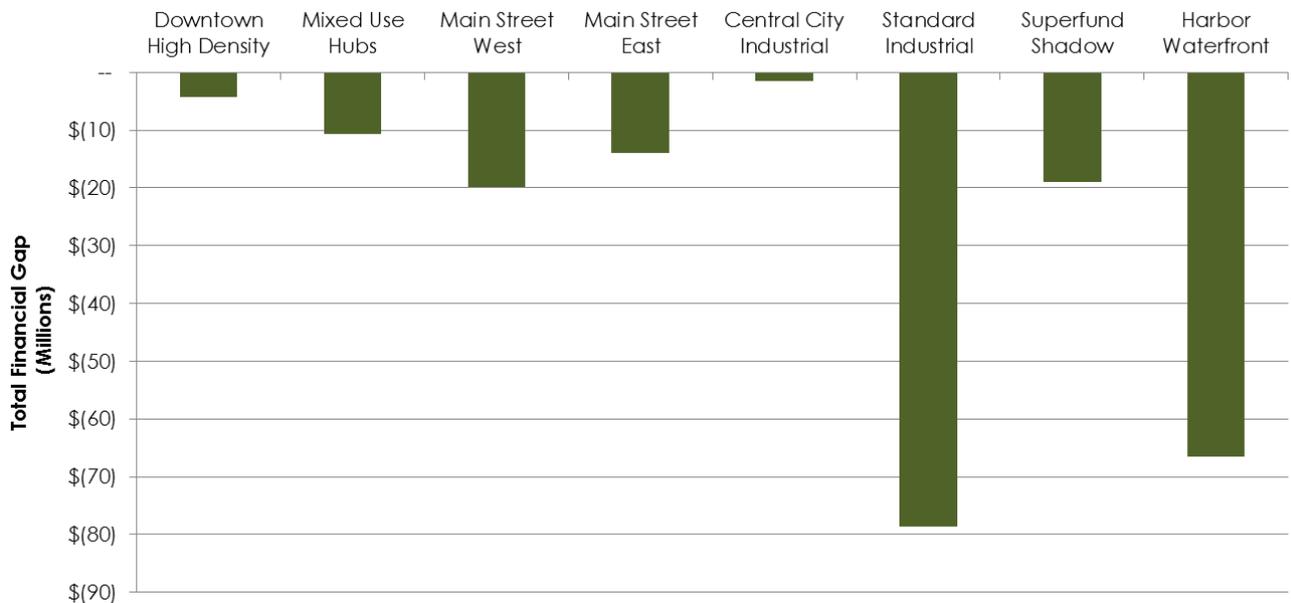
Financial Feasibility Gap Results by Typology

- Generally, environmental cleanup costs have a stronger overall influence on feasibility than the costs associated with market variables (i.e., rents, development costs, location).
- The total feasibility gap (or amount by which properties are financially underwater) is estimated at \$214 million across all

employment brownfield typologies, or \$307 million when Superfund costs are included for affected properties. These costs are about 9 to 12 percent less than total cleanup cost because some development types can absorb a portion of remediation cost without the need for financial incentives or offsets.

- High-value locations with high allowed density development are much more likely to be market feasible. For example, properties in downtown Portland can often absorb average remediation costs and their redevelopment can still be financially viable. The feasibility gap for downtown high-density typology is a total of \$4 million spread over 94 acres of property (see Figure 4-3).

Figure 4-3. Estimate of Total Financial Feasibility Gap by Typology



Source: Portland Bureau of Planning and Sustainability, Maul Foster & Alongi, Inc., and E. D. Hovee & Company, LLC
 Note: Financial gap does not include potential Superfund liability.

- Mixed-use developments in some typologies such as Main Street East are often financially infeasible because construction costs outweigh potential rents achievable with current market conditions. The addition of remediation costs only exacerbates those scenarios. However, these development types make up a small portion of total potential brownfields in Portland.
- Redevelopment of industrial brownfields is generally challenging because cleanup costs often exceed the redeveloped property value, which is limited by the lower density of development.
- The financial gap for the Portland Harbor Waterfront is nearly \$67 million. Taken together, industrial properties (associated with typologies 4 through 7) account for a combined 77 percent of the

overall feasibility gap associated with on-site remediation. This increases to an estimated 84 percent of the gap affecting brownfield constrained properties, if potential Superfund-related liability is included.

4.3 Closing the Financial Gaps in Achieving Redevelopment Goals

Reaching complete build-out of the brownfield inventory is not a realistic goal, so interim targets of reaching redevelopment of 50 percent, 70 percent, and 90 percent of these properties were evaluated to establish a context for the level of public investment that may be needed to put these sites into productive use. These targets align with analysis conducted in the EOA to examine the potential for brownfields to meet the forecasted industrial land supply shortfall within the Urban Growth Boundary.

The analysis indicates that a large number of properties included in the brownfield inventory can be redeveloped with a relatively modest investment (Table 4-1). Achieving higher levels of redevelopment likely will result in a diminishing-returns scenario. Closing the estimated financial feasibility gap on 50 percent of the brownfield acreage requires approximately \$36 million. That investment doubles to achieve an additional 20 percent of redevelopment, then doubles again to achieve 90 percent. The analysis indicates that there is a large amount of “low-hanging fruit” in projects that could become financially feasible with some level of public investment. The increasing costs to achieve higher levels of redevelopment are largely driven by the assumed high costs of cleanup associated with a relatively small number of individual properties.

Table 4-1. Financial Gap to Reach Target Levels of Redevelopment

% of Total Acres	Number of Acres	Total Financial Gap	% of Total Financial Gap	Jobs	Portland Tax Revenue (Annual)	Total State & Local Tax Revenue (Annual)
50%	408	\$36,371,000	17%	23,000	\$31,760,000	\$170,385,000
70%	572	\$74,860,000	35%	26,000	\$35,103,000	\$194,107,000
90%	735	\$158,820,000	74%	30,000	\$40,397,000	\$224,235,000
100%	817	\$214,296,000	100%	31,000	\$42,511,000	\$238,698,000

Note: The financial gap shown here excludes costs associated with Superfund sites.

4.4 Barriers to Redevelopment

While the financial feasibility gap is a fundamental barrier to redevelopment of brownfields, these properties face a number of other, interrelated challenges.

Financial—Financial feasibility is the controlling factor that determines project success or failure. The additional direct costs of remedial actions and

the indirect increased carrying costs associated with longer timelines make cleanup and redevelopment of many brownfield properties financially infeasible without some public intervention. Factors that enter into the calculation include: competition with greenfield sites, cost overruns, timing, limited public and private financial resources for conducting investigation and cleanup, and other non-brownfield constraints.

Uncertainty and Risk—Redevelopment of a contaminated property inherently involves uncertainty and risk related to potential extent of contamination, lack of predictability in regulatory decisions, and potential for federal liability. Uncertainty is a serious liability in the development context, because it has the potential to affect the development timeline, funding sources, and even site design and engineering costs. This uncertainty discourages development, sometimes more than the actual cost of cleanup. Issues that influence uncertainty in the Portland context include: fear of the regulatory environment, the Superfund overlay in the harbor, and the transaction costs of the regulatory process.

Regulatory Process—A few states have excellent reputations for making the brownfield regulatory process predictable and customer friendly. Some perceptions of the Oregon process include: overly constrained land use regulations, uncoordinated or even conflicting permitting processes, and lack of a timely pathway to liability settlement.

5 PUBLIC BENEFITS ANALYSIS

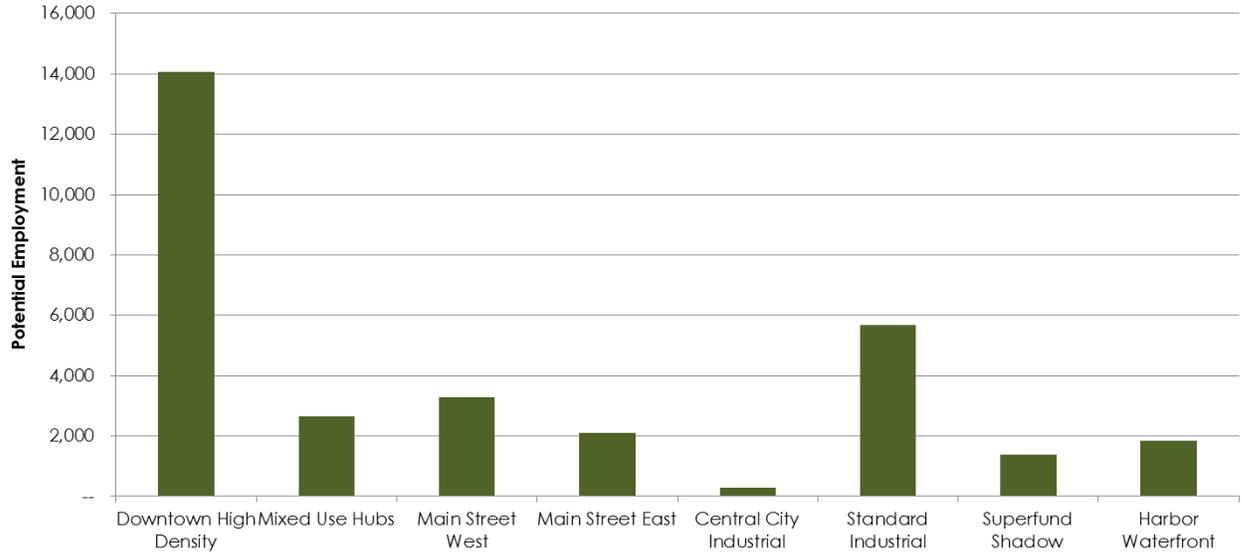
Putting underutilized, contaminated property back into productive use has multiple economic, environmental, and social benefits. Building on the pro forma analysis of prototypical brownfield redevelopment scenarios, an estimate of the economic and environmental benefits of redevelopment of the inventory of potentially contaminated sites has been calculated. While it is clearly unlikely that 100 percent of the brownfields will redevelop within any reasonable planning horizon, this analysis provides a sense of the scale and potential represented by these properties.

5.1 Employment

Redevelopment of the full inventory of brownfield properties has the potential to provide over 31,000 gross jobs. This would generate an estimated \$1.4 billion in annual payroll potential for the affected sites. The number of jobs provided through each brownfield typology is driven both by employment density and by the number of acres in that category (Figure 5-1). Downtown High Density provides nearly 45 percent of the job potential. Another 8,300 jobs (27 percent of the total) may be oriented to Mixed-Use Hubs and Main Street areas. The industrial typologies account for

approximately 9,200 (30 percent of total) potential jobs. Industrial jobs account for much of the total projected payroll because of relatively high wage rates and large acreage of properties represented in the brownfield inventory.

Figure 5-1. Employment Potential

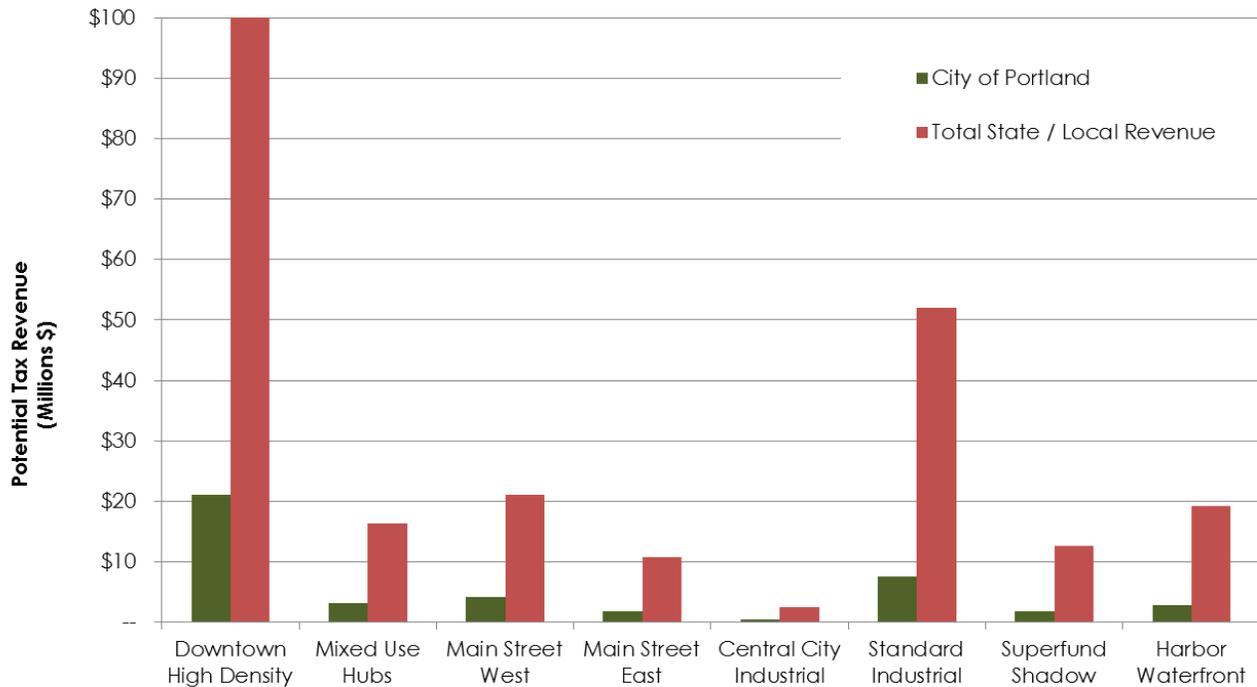


Note: Employment represents gross jobs based on building floor area and use type.

5.2 Tax Revenue Potential

Full redevelopment of the entire brownfield inventory also has the potential to generate approximately \$240 million per year in potential state and local income and property and business tax revenues (estimated in 2012 dollars). Annual tax revenues for Portland account for approximately \$42 million of that total (see Figure 5-2). Since tax revenues are largely driven by business and personal income taxes, the implications for typologies are similar to the employment figures. The high density of high-paying jobs in downtown annually drives over \$20 million in Portland taxes and over \$100 million in combined state and local tax revenues. Industrial typologies provide Portland approximately \$12 million in tax revenues and over \$86 million in combined state and local taxes.

Figure 5-2. Total Annual Tax Revenue by Brownfield Typology



Redevelopment of brownfields in Portland directly contributes annual tax revenues to Portland, county, state, and other tax authorities, so it is possible to compare the estimated cost of closing the financial feasibility gap through public investment to the estimated tax revenue generated by the redeveloped parcels (see Table 4-1). This analysis provides a general understanding of the benefits of redeveloping brownfield sites relative to the level of public investment. **In practice, of course, the tax revenues that result from redevelopment could not explicitly fund brownfield remediation.** Portland has many constraints on its ability to expend its tax revenues, and multiple demands for tax dollars. This analysis simply provides some context for considering how expenditures on brownfield incentives might compare to benefits over time.

The analysis indicates that Portland would see a net gain after less than ten years if it invested in remediated brownfields in the commercial typologies. The payback period for industrial sites is longer; the Portland Harbor Waterfront has a large financial gap and generates relatively low Portland tax revenues, so it takes over four decades for Portland to regain any investment in remediation.

These findings indicate that while Portland may be able to realize substantial ROIs in higher-value commercial brownfield properties, a regional or statewide investment is more appropriate for supporting remediation of industrial properties around the harbor. While this may appear financially advantageous for Portland, it is also important to consider that the EOA and the financial feasibility analysis (Section 4.2) indicate that

the downtown commercial typology brownfields are also likely to develop without any public investment.

Table 5-1. Payback Period

TYPOLOGY	YEARS	
	PORTLAND TAX REVENUE	TOTAL STATE & LOCAL TAX REVENUE
1. Downtown High Density	< 1	< 1
2. Mixed Use Hubs	4	< 1
3a. Main Street West	6	< 1
3b. Main Street East	9	2
4. Central City Industrial	4	< 1
5. Standard Industrial	13	2
6. Superfund Shadow	13	2
7. Portland Harbor Waterfront	43	4

Note: This analysis excludes costs attributable to Superfund sites. Including Superfund costs would increase the payback period for the Superfund Shadow and Portland Harbor Waterfront typologies.

5.3 Environmental and Smart Growth Benefits

In addition to economic benefits, brownfield remediation and redevelopment can help protect the environment directly through cleanup of contamination and often through the associated impacts of compact, infill land development.

Redevelopment of brownfields can help Portland achieve its greenhouse gas reduction goals. By encouraging infill development in areas with a mix of uses and transportation options, redevelopment of these properties represents a reduction in vehicle miles traveled when compared to suburban development. It is estimated that full build-out of the inventory of potential brownfields would represent a reduction of 39,000 metric tons of CO² annually, relative to sprawl development—the equivalent of taking 9,200 cars off the road.

Redevelopment of brownfields typically allows buildings to connect to existing infrastructure rather than requiring construction or expansion of roads and water and sewer lines. This use of existing infrastructure can result in significant savings to local governments. Based on national studies, it is estimated that infill development on brownfields in Portland has the

potential to save \$115 million to \$180 million in public infrastructure investment compared to typical greenfield development.

6 POLICY TOOLS

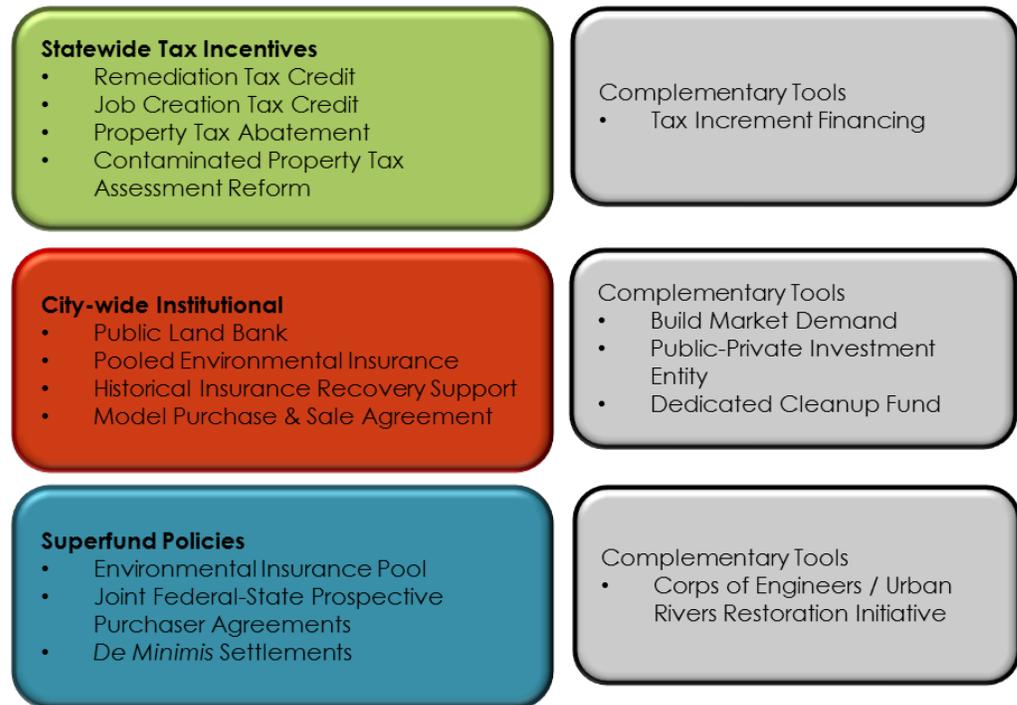
An effective policy framework is critical for promoting brownfield redevelopment and capturing the potential economic, environmental, and social benefits described above. There are two major components to existing policy in Oregon: regulatory and financial.

Regulatory Framework—The DEQ regulates cleanup of most contaminated properties, with the USEPA playing the lead role for areas designated as federal Superfund sites. The Oregon Cleanup Law establishes a risk-based approach to cleanup that allows flexibility for remediation to align with redevelopment of property. A Prospective Purchaser Agreement (PPA) program has been established that provides certainty of liability settlement for innocent developers of properties. This program is generally considered to be very effective, but is used by an average of only eight sites per year.

Financial Incentives—Portland and the State of Oregon offer several grant and loan programs to support assessment and cleanup of brownfield properties. However, these programs have limited capacity, so while they can play a critical role on individual projects, they are not able to have broad impact across the market. For example, the largest program is the Oregon Brownfield Redevelopment Fund, which provides low-interest loans and some grants for site assessment and cleanup. The program was recapitalized in 2008 with \$9 million in state appropriation, which is just a quarter of the estimated \$36 million needed to close the financial feasibility gap to redevelop 50 percent of the brownfield inventory just in Portland, not accounting for the rest of the state.

A set of innovative policy options that can accelerate brownfield redevelopment to achieve Portland’s economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are briefly described below and explained in more detail in the Financial Analysis Report, included as Appendix B. Tools prioritized by the advisory group are described below, with other tools assessed in the study listed as “complementary tools.”

Figure 6-1. Priority Policy Tool Bundles



6.1 Statewide Tax Incentives

Tax policy provides a way to improve the financial feasibility of brownfield redevelopment projects in a way that is predictable for developers and that requires relatively little administration by public agencies. As the financial analysis demonstrated, the fundamental challenge to brownfield redevelopment is that the costs of cleanup often exceed the value of a property. Implementation of tax policy changes would require state legislative action. The demonstration of the large potential increase in tax revenues associated with job creation on brownfields in Portland alone presents a strong case for investment by the state.

Two taxation policies have been prioritized: a remediation tax credit and reform of the existing property tax assessment for contaminated lands. Additionally, a job creation tax credit or a property tax abatement policy could be developed for brownfields.

Remediation Tax Credits allow property owners and developers to decrease their business or personal income taxes by a percentage of the documented costs of conducting a cleanup. To ensure that this incentive makes a true difference in financial feasibility, applicants could be required to present a pro forma for a project to demonstrate real need in order to be eligible. In order to manage the short-term impacts on the state budget, limits could be set on the amount of credit available on an individual project or for

all projects in a fiscal year. Making the tax credits transferable would allow nonprofit and public entities to use the tool.

A **Job Creation Tax Credit** could be targeted to brownfield redevelopment projects that create a certain number of new, family-wage jobs. This incentive could be particularly beneficial to industrial projects that typically create higher-wage jobs than retail developments.

A **Redeveloped Brownfield Tax Abatement** gives landowners a reprieve for payment of property taxes for a set period of time after a development is constructed. The Portland Development Commission (PDC) currently manages the Enterprise Zone that offers property tax abatements for industrial developments in a designated area. To promote redevelopment of brownfield properties for industrial uses, the abatement could be expanded to a longer duration and offered to qualifying sites outside the designated Enterprise Zone.

Contaminated Property Tax Assessment policy in Oregon is currently considered a disincentive to cleanup. The state administrative rule regulating assessment for property taxes establishes a method for reducing the value of contaminated land by the cost of the environmental liability. This policy can result in a substantial decrease in property tax payments on a brownfield property. While the market value of a 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.

Complementary Tax Tools:

- Tax Increment Financing (TIF) can be a powerful tool for promoting urban redevelopment; however, Portland is reaching its statutory limits for use of this incentive. Several options could be explored to tailor TIF to more effectively target brownfields or to expand capacity. It would be necessary to change state TIF-enabling legislation in order to facilitate the brownfields-TIF connection. (See discussion immediately below.)

6.2 Citywide Institutions

Portland's brownfield program and PDC have played major roles in redevelopment of a number of contaminated properties, including supporting redevelopment of the Pearl District and the South Waterfront. The capacity of public agencies to promote brownfield revitalization could be bolstered through a set of policy tools that strengthen or create new institutions focused on cleanup and redevelopment. These tools include establishing a land bank, establishing an environmental insurance pool,

supporting claims on historical insurance policies, and creating Model Purchase and Sale Agreements for contaminated property transactions.

Brownfield Land Bank—A Brownfield Land Bank creates an entity with the resources and long-term perspective to acquire and reposition brownfield properties without putting additional liabilities on Portland’s balance sheet. The Brownfield Land Bank would operate with a clear mission and long-term plan for community revitalization. To be effective in repositioning contaminated lands, it should have special powers, such as protection from environmental liability, authority to clear title, and ability to issue bonds and use 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 through sale of properties to the private market.

If it were granted special authorities in the use of TIF, the land bank could be a frontline tool. One example could be to allow exceptions to debt limitations and the ability to use TIF for noncontiguous parcels outside urban renewal areas. TIF may be the most effective mechanism for addressing more difficult and upside-down properties, such as port and industrial properties. In order to be most effective, a land bank should be enabled with an environmental liability exemption on acquired properties.

Environmental Insurance—A number of private insurers provide policies that protect against discovery of unknown environmental contamination and potential for contribution claims or third-party personal injury suits. These insurance policies can be critical risk management tools in facilitating a brownfield land transaction, but they can also be costly or difficult for smaller projects to obtain. Portland could establish a pooled environmental insurance program through preselecting insurers and establishing common terms to reduce transaction costs. Portland could also potentially subsidize the premiums for environmental insurance policies to promote certain types of projects that meet multiple policy goals. A specialized environmental insurance pool could be established to address risk related to Superfund liability. That concept is discussed below in Section 6.3.

Historical Insurance Recovery Support—Before the mid-1980s, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Since federal and state law has made liability for environmental contamination retroactive, cost recovery may be pursued from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. It takes technical expertise and resources to make a claim on a historical insurance policy, but case law makes Oregon one of the most favorable states in the country for these actions, and they are becoming standard practice. Portland could provide technical support to property owners submitting a claim on historical insurance policies for environmental impacts. This relatively minor investment in staff or contractor resources

could potentially generate millions of dollars to support assessment and cleanup of contamination.

Model Purchase and Sale Agreement—The legal transaction of contaminated property is a complicated and risk-laden operation. Portland could reduce transaction costs and uncertainty by creating a Model Purchase and Sale Agreement that includes indemnification terms and standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection periods. Such a model agreement would require few city resources to develop and could be useful for a large number of transactions. Portland might also consider creating models for continuing obligations agreements, contaminated media management plans, and tailored easements and equitable servitudes.

The environmental insurance pool, historical insurance support, and Model Purchase and Sale Agreement all would be valuable tools to support the efforts of a Public Land Bank or the acquisition of contaminated property by Portland, PDC, or the Port of Portland. As a group, these policies provide substantial tools to manage risk, reduce transaction costs, and leverage outside funding to promote brownfield cleanup and redevelopment.

Brownfields-Focused TIF—Although Portland has limitations in using this tool, TIF is the most powerful tool in the local economic development toolshed, and it would be a mistake to ignore its potential. A strong rationale could be developed for making exceptions to debt limitations for brownfields that are producing little or no tax revenue. Other TIF changes, for example allowing noncontiguous brownfield properties outside urban renewal districts, could work to maximize the TIF-brownfields connection. This more flexible brownfields-focused TIF tool could work in conjunction with the Brownfield Land Bank to address the more difficult and upside-down industrial sites. Additionally, TIF could be a repayment source for a brownfields-focused HUD 108 loan pool, effectively turning loans into grants. TIF also could be used as a subsidy source to pay for the Superfund-focused environmental insurance program referenced above.

Complementary Tools:

- **Building Market Demand**—Business Oregon and PDC actively market properties. Their efforts could be expanded to emphasize brownfield properties that represent important regional assets.
- **Public-Private Entity**—The Community Investment Initiative represents an innovative approach that is emerging to leverage public and private resources to address infrastructure needs and property constraints, including brownfields.
- **Dedicated Cleanup Fund**—A bond measure or other revenue source could establish a fund to support site assessment, cleanup, and integrated planning for redevelopment of brownfields. A brownfields

revolving loan fund can also be created without a new revenue source by using HUD 108 authority.

6.3 Superfund Policies

The financial feasibility analysis demonstrates that the potential Superfund liability has a dramatic negative impact on industrial property in the Portland Harbor. There are many complex issues related to the Portland Harbor Superfund designation, such as the technical analyses of risk and remediation options, and legal arguments over allocation of costs, which are beyond the scope of this project. There are also a number of large-scale strategies for resolving the harbor issue, such as implementation of interim actions to support Superfund delisting or seeking a major federal budget appropriation to offset costs, which are very important for policymakers to explore but which are also beyond the scope of this study.

The policies proposed in this section focus on risk management and creating certainty to promote property transactions and investment in redevelopment of upland properties around the harbor. To protect this regional economic asset, Portland and the state could work with the USEPA to modify Superfund policies to allow upland property owners to expeditiously reach regulatory closure and remove a dark cloud over land transactions and redevelopment on industrial lands. These policy proposals are targeted toward upland properties that are considered to be in the “Superfund shadow”; they are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historical and ongoing contamination.

Pooled or Subsidized Environmental Insurance—To address Superfund Shadow upland properties, Portland could allow project proponents to make a payment to the government as closure for tailing environmental liability, specifically. The government could in turn use those funds to buy insurance policies to cover a pooled group of sites. To be eligible for the insurance pool, participants would be required to complete upland cleanup actions and implement stormwater best management practices. If the USEPA or other potentially liable parties seek a contribution from that party, the claim would be directed to the environmental insurance policy. If Portland offered a tax incentive equivalent to the extra cost of the environmental insurance, the result would be the effective nullification of the disincentives for investment that are attributable to the Superfund designation.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) de Minimis Settlements—The concept behind this policy is simply for the USEPA to use its existing authority to provide expedited settlement agreements for owners of properties that are likely to cause only minor or insignificant impacts to the Portland Harbor.

Federal PPAs—The DEQ manages a highly effective PPA program that allows innocent buyers of property to enter into an agreement with the state that defines cleanup requirements and limits liability before they actually take title. The USEPA also has the authority under CERCLA to execute PPAs. To make implementation of this tool efficient, the USEPA could establish a memorandum of agreement (MOA) with the DEQ that recognizes and provides federal support for state PPAs executed for properties around the harbor that meet certain conditions. The eligibility criteria could include source control and completion of cleanup actions, and could even incorporate application of sustainable stormwater solutions such as rain gardens and pervious pavements.

It is important to note that such an MOA would work only for non-National Priority List (NPL) sites. However, to initially eliminate the stigma of a site’s Superfund status, Portland could use the current delisting process, or the equivalent determination process for acquiring a USEPA decision that a site is not part of an NPL site..

One potentially promising avenue to creation of a template for PPA agreements is the use of green infrastructure to reduce stormwater-related contributions to sediment contamination.

Complementary Options

- Corps of Engineers Urban Rivers Restoration Initiative—An innovative approach to cleanup of an urban waterway is under way on the Passaic River in northern New Jersey in which the U.S. Army Corps of Engineers is taking a lead role in planning for remediation and restoration of the river. Engaging the Corps of Engineers through an MOA with the USEPA could shift the paradigm of the cleanup to a large public works project, establish a more collaborative process, and position the remediation for a large federal appropriation through the Water Resources Development Act.

6.4 Cumulative Benefit of Policy Tools



Figure 6-2. Cumulative Benefits of Policies

Implementation of the policies in the three bundles would have an additive effect. The tax incentives would be applicable to brownfield properties across the state. Contaminated properties in Portland would benefit from those tax incentives and also utilize the environmental insurance pool and Historical Insurance Recovery Support. Additionally, the properties that have the largest financial gap, those associated with the Portland Harbor Superfund site, would capitalize on all those tools and the additional policies that create certainty and lead to settlement of federal liability.

It is not likely that one policy tool will resolve the range of issues and the financial barriers for all brownfield sites in Portland. Adoption of a

set of mutually supportive tools will have a more dramatic impact in putting these properties back into productive use.

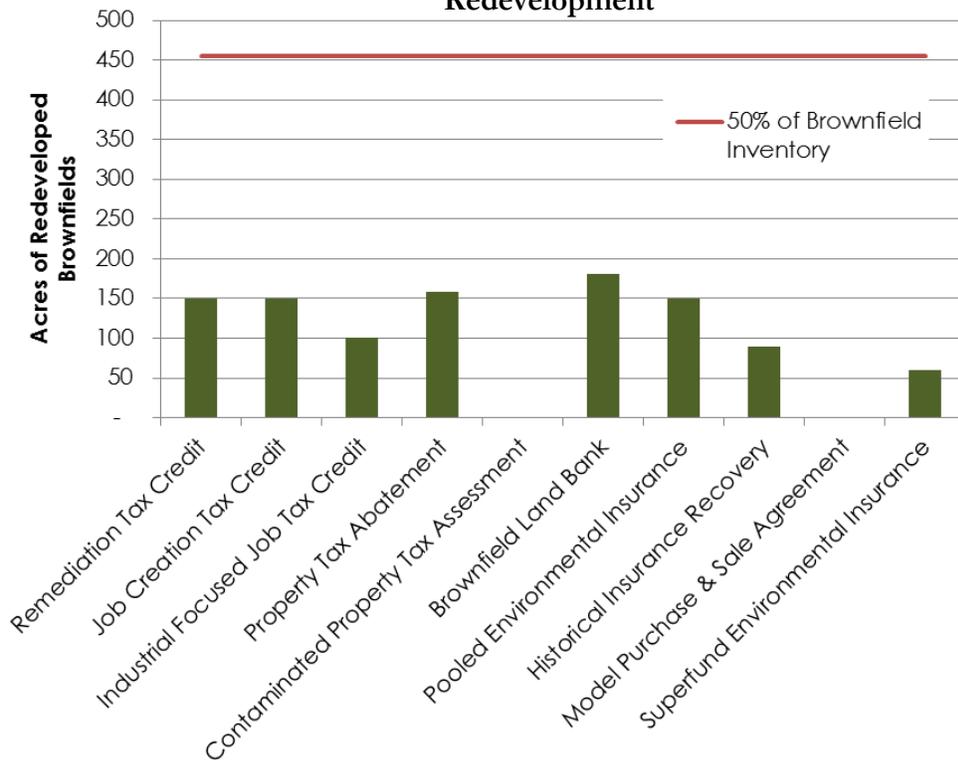
6.5 Return on Investment

An ROI analysis was conducted to compare the relative impacts of these tools. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order-of-magnitude estimates. The analysis examined how many acres of brownfield property are likely to be redeveloped through application of the particular 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 a property to market).

Key Findings

- No single policy incentive likely will be sufficient to catalyze redevelopment of all the brownfields or even achieve the 50 percent target. The Remediation Tax Credit, Job Creation Tax Credit, Redeveloped Brownfield Property Tax Abatement, Pooled Environmental Insurance, and Public Land Bank appear to have the largest potential impact, with each accounting for about 150 acres of brownfield redevelopment (see Figure 6-3).

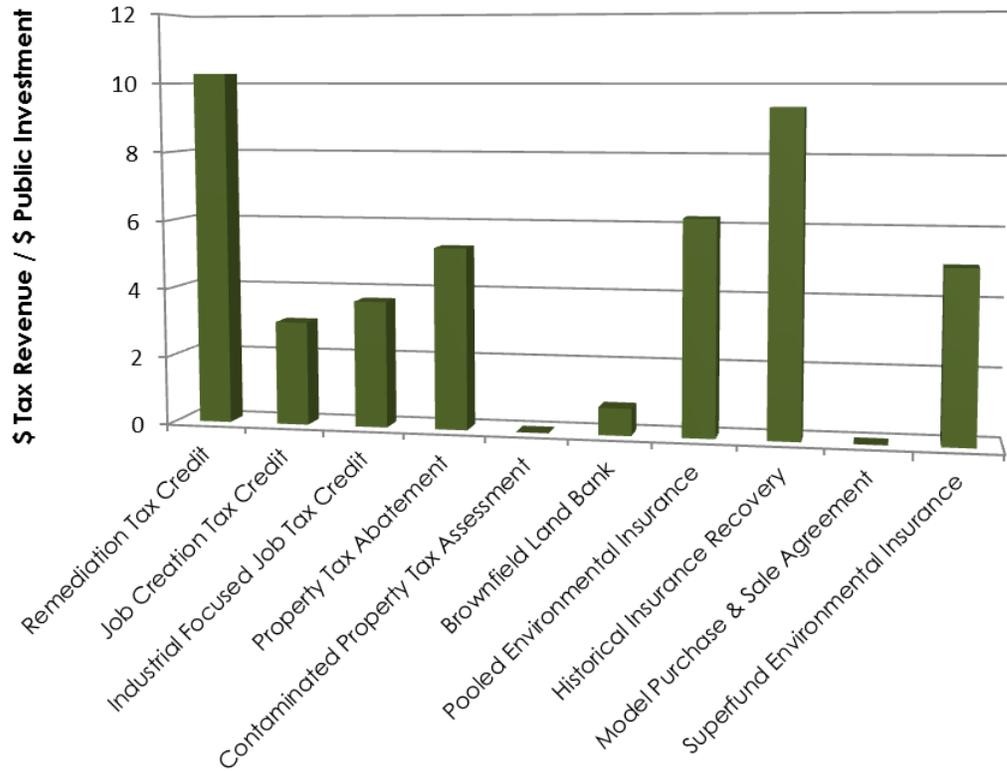
Figure 6-3. Potential for Policy Tools to Catalyze Brownfield Redevelopment



- The Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery Support programs provided the greatest return on total tax revenues relative to public investment. Each approaches a \$10 return in annual state and local tax revenue for every \$1 invested in the brownfield incentives (see Figure 6-4).
- Differences in tax return relative to public investment are driven by the mechanics of the policy. Some, such as the Remediation Tax Credit, essentially provide funds to fill the financial feasibility gap. The Historical Insurance Recovery Support program leverages outside funding sources. The Public Land Bank has a relatively low ROI because funds are used for acquisition as well as gap financing. An acquisition strategy, although more expensive, facilitates the redevelopment of more difficult and upside-down properties, including port and industrial properties.
- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed-use development in strong markets. These areas are also the most likely to redevelop with little to no public investment.
- Brownfield incentives have the potential to reduce the projected industrial land supply shortfall, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of

Oregon for industrial redevelopment are substantial and support a rationale for shared investment in Portland industrial lands as a regional economic asset.

Figure 6-4. Rate of Return on Public Investment



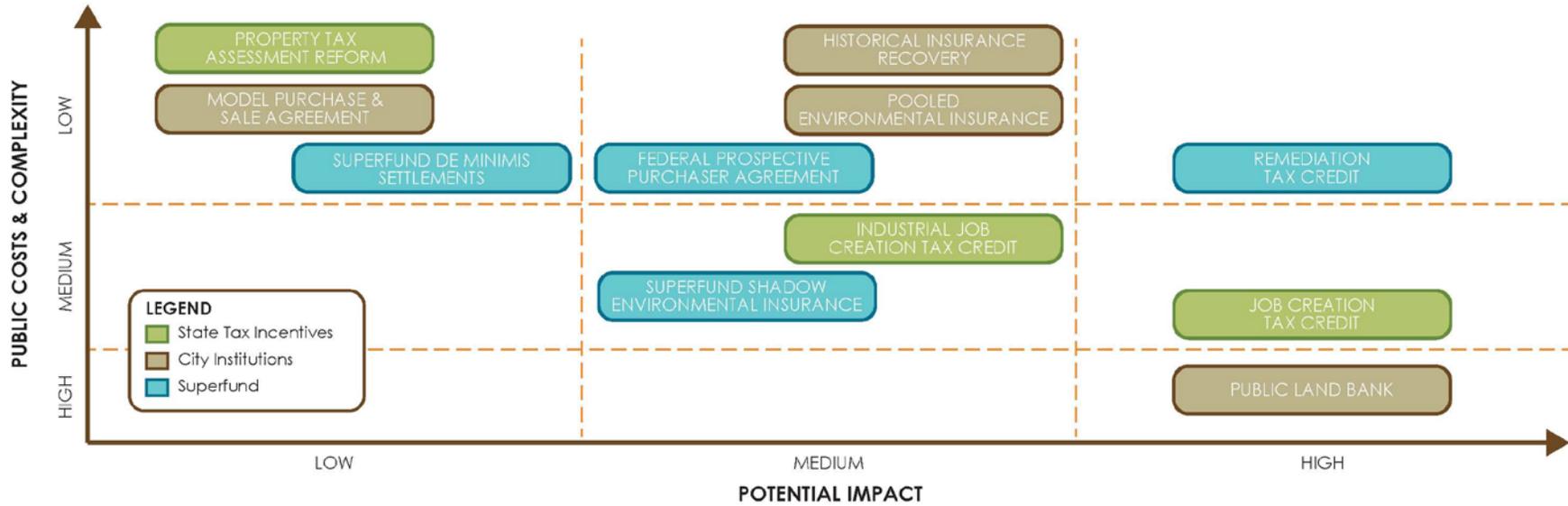
6.6 Policy Implications

In setting policy, the potential financial returns of a policy should be considered with a number of other factors, including costs and complexity to implement. Figure 6-5 provides a conceptual graphic of how the brownfield policy options align in terms of potential impact and public cost and complexity. The highest-rated policies are the Remediation Tax Credit and Historical Insurance Recovery Support. The Public Land Bank has a high potential impact over a long-term time horizon, but likely will require significant investment of public resources for it to be successful. Several low-cost, low-impact policies, such as creating a Model Purchase and Sale Agreement, represent actions that Portland may want to take to build momentum for larger endeavors.

Figure 6-5

PORTLAND BROWNFIELD ASSESSMENT

PUBLIC BENEFIT & RETURN ON INVESTMENT SUMMARY ANALYSIS



POLICY ROI SUMMARY

POLICY TOOL	ACRES	JOBS	TOTAL COST	PORTLAND TAX REVENUES	TOTAL STATE & LOCAL TAX REVENUES	TAX REVENUE/COST	\$ PUBLIC INVEST./ ACRE	\$ PUBLIC INVEST./ JOB
Remediation Tax Credit	150	9,800	\$7,221,000	\$13,970,000	\$ 74,237,000	10	\$ 48,000	\$ 700
Job Creation Tax Credit	150	9,800	\$24,557,000	\$13,969,500	\$ 74,237,000	3	\$ 163,000	\$ 2,500
Industrial Focused Job Tax Credit	100	1,600	\$4,028,000	\$2,133,500	\$ 14,840,500	4	\$ 40,000	\$ 2,500
Property Tax Assessment Reform	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Land Bank	180	8,000	\$55,000,000	\$6,525,300	\$ 43,456,400	1	\$ 305,000	\$ 6,900
Pooled Environmental Insurance	150	1,850	\$2,500,000	\$ 2,271,400	\$ 15,584,850	6	\$ 17,000	\$ 1,400
Historical Insurance Recovery	90	2,200	\$2,000,000	\$2,725,700	\$ 18,701,800	9	\$ 22,000	\$ 910
Model Purchase & Sale Agreement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Superfund Environmental Insurance	60	1,500	\$2,500,000	\$1,813,300	\$ 12,466,20	5	\$ 42,000	\$ 1,670

7 IMPLEMENTATION

Developing a strategy for implementation of an effective package of brownfield policy tools requires consideration not only of the potential fiscal ROI, but also of political, program development, and procedural factors. A summary of these factors is provided in Table 7-1.

7.1 Industrial Focus

There is a particular focus on tools that could help meet the forecasted 720-acre shortfall of industrial land supply in the next 20 years. Most of the policy tools can be designed to focus on industrial properties by limiting eligibility to lands in industrial zones or other specifically designated areas. The Remediation Tax Credit is estimated to have the potential to promote redevelopment of approximately 70 acres of land in the Standard Industrial typology, but only 17 and 8 acres of land in the Superfund Shadow and Portland Harbor Waterfront typologies, respectively. The Remediation Tax Credit is assumed to support redevelopment of properties that are relatively close to financial feasibility. To address more challenging properties, a combination of targeted tools may be needed, such as:

- The Brownfield Land Bank has the potential to be a powerful tool to target individual properties or designated areas.
- Historical Insurance Recovery Support can be a critical tool for bringing outside resources to offset the costs of site assessment and cleanup.
- Pooled Environmental Insurance tailored to address potential Superfund liability could have a transformative impact on the perception of risk associated with properties in the Superfund Shadow.

7.2 Synergies

There is potential for synergy between the proposed policies. For example, the effectiveness of a Public Land Bank would be greatly enhanced by brownfields-focused TIF, a Remediation Tax Credit, and/or Pooled Environmental Insurance to offset the costs of addressing contamination and other project feasibility gaps.

Table 7-1
 PORTLAND BROWNFIELD ASSESSMENT
 POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
TAX INCENTIVES				
Remediation Tax Credit	<ul style="list-style-type: none"> • Provides a financial incentive for private and public sectors. • Dependable and predictable. • Implementation and administration can be streamlined. • Strong potential impact and return on public investment. • Broadly applicable for many brownfields. 	<ul style="list-style-type: none"> • Short-term impact to state budget. • May be critiqued as a financial windfall for potentially responsible parties. 	<ul style="list-style-type: none"> • Fewer administrative constraints are more attractive for private sector. • Limits on credit amount per project or per year can constrain impact. • Define eligible costs and eligible entities. • Important to make credits transferable. 	State (Statutory Change)
Job Creation Tax Credit	<ul style="list-style-type: none"> • Incentive directly tied to economic benefit. • Does not require establishing a new tax or fund. • Broadly applicable for many types of brownfields. • High potential for promoting brownfield redevelopment. 	<ul style="list-style-type: none"> • Implementation and administration may be cumbersome. • Relatively low potential return on public investment. • May be critiqued as a financial windfall for potentially responsible parties. 	<ul style="list-style-type: none"> • Consider limited eligibility to industrial projects. • Eligibility criteria and reporting requirements may make it unappealing to private sector and difficult to administer. 	State (Statutory Change)
Property Tax Abatement	<ul style="list-style-type: none"> • Builds on existing Enterprise Zone tax abatement program. • Provides a financial incentive for private and public sectors. • Dependable and predictable. 	<ul style="list-style-type: none"> • Short-term impact to local tax revenues. 	<ul style="list-style-type: none"> • Coordinate with PDC on policy development and operation. 	Portland (Ordinance)
Tax Increment Financing Reform	<ul style="list-style-type: none"> • Expands a financial incentive program that has a track record of effectiveness. • Provides funding source to support public-private partnerships and leverage outside investment. • Works in conjunction with other tools, such as the land bank, environmental insurance pool, and/or a HUD 108 brownfields loan pool. 	<ul style="list-style-type: none"> • Current market conditions create risk that incremental tax revenue generation will not meet expectations. 	<ul style="list-style-type: none"> • Leverage outside funding, such as HUD Section 108, to support financial capacity. • Tailor to complement other tools such as environmental insurance. 	State (Statutory Change)

Table 7-1
 PORTLAND BROWNFIELD ASSESSMENT
 POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
Contaminated Property Tax Assessment Reform	<ul style="list-style-type: none"> Removes a perceived financial disincentive to cleaning up contaminated properties. Potentially increases local tax revenues. 	<ul style="list-style-type: none"> Reforms may encounter resistance from affected property owners. 	<ul style="list-style-type: none"> Review legal constraints to changing property valuation rules. Couple with Remediation Tax Credit to limit impact on property owners. 	State (Administrative Rule)
INSTITUTIONAL				
Brownfield Land Bank	<ul style="list-style-type: none"> Potential to become financially self-sustaining over time. Provides patient capital and long-term vision. Establishes an alternative to local governments taking title of contaminated properties through tax foreclosure. Potential to leverage state and federal grants. High potential to promote brownfield redevelopment. 	<ul style="list-style-type: none"> Requires substantial initial public investment in challenging budget climate. Relatively low projected ROI rate. 	<ul style="list-style-type: none"> Define focus (geographies, types of properties). Effectiveness would be greatly supported by Remediation Tax Credit and Pooled Environmental Insurance. 	Portland or State (Statutory Change)
Pooled Environmental Insurance	<ul style="list-style-type: none"> Makes a proven risk management tool more broadly available. Pre-negotiated policy terms reduce transaction costs and time frames. High potential benefit for relatively low public investment. 	<ul style="list-style-type: none"> Public investment to subsidize premiums needed to maximize effectiveness. 	<ul style="list-style-type: none"> Coordinate with private environmental insurance industry to refine proposal. Connect public subsidy for premiums to TIF. 	Portland or State (Policy Change)
Historical Insurance Recovery	<ul style="list-style-type: none"> Potential to bring substantial new resources to support site investigation and cleanup. High potential return on public investment. 	<ul style="list-style-type: none"> Successful settlement of claims is not guaranteed. Potential opposition from insurance carriers. 	<ul style="list-style-type: none"> Structure program to recoup public costs upon settlement of insurance claims. Contract services or build capacity internally. 	Portland or State (Policy Change)
Model Purchase and Sale Agreement	<ul style="list-style-type: none"> Low-cost solution to help facilitate a large number of property transactions. 	<ul style="list-style-type: none"> Likely to have limited quantifiable impact. 	<ul style="list-style-type: none"> Coordinate with specialized attorneys and regulatory agencies in crafting model agreement. Separate model agreement for sites with potential Superfund liability. 	Portland

Table 7-1
PORTLAND BROWNFIELD ASSESSMENT
POLICY TOOL SUMMARY

Policy Tools	Advantages	Disadvantages	Considerations	Enacting Agency
Dedicated Cleanup Fund	<ul style="list-style-type: none"> Increases financial capacity for conducting cleanups. Provides state or local control of funds in contrast to competing with priorities of federal funding. Large potential impact. Potential to support other tools such as Brownfield Land Bank. 	<ul style="list-style-type: none"> Challenging economic and political conditions for establishing a new tax or issuing large bonds. Competition with other funding priorities (e.g., infrastructure, education, salmon recovery). 	<ul style="list-style-type: none"> Consider wide range of potential revenue sources (bond, targeted commodity fee, etc.). 	Portland or State (Statutory Change)
SUPERFUND				
Superfund Insurance Pool	<ul style="list-style-type: none"> Empowers Portland to provide risk management to facilitate transactions impacted by uncertainty of Superfund liability. 	<ul style="list-style-type: none"> Portland takes on greater responsibility and risk associated with Superfund liability. Policy designed for a special type of brownfield, so not applicable across city. 	<ul style="list-style-type: none"> Coordinate with insurance industry and regulatory agencies to refine proposal. 	Portland
Federal Prospective Purchaser Agreement	<ul style="list-style-type: none"> Builds on successful model of Oregon State PPAs. Creates incentive without direct public financial investment. 	<ul style="list-style-type: none"> Requires commitment and staff resources of USEPA. 	<ul style="list-style-type: none"> Pursue MOA between state and USEPA rather than process for individual sites. 	USEPA and State
De Minimis Settlement	<ul style="list-style-type: none"> Provides certainty and closure. Creates incentive without direct public financial investment. 	<ul style="list-style-type: none"> Requires commitment and staff resources of USEPA. 	<ul style="list-style-type: none"> Potential for broad applicability of this tool. 	USEPA
Corps of Engineers Urban River Restoration Initiative	<ul style="list-style-type: none"> Positions project for federal funding. Potential for more collaborative and expedited cleanup process. 	<ul style="list-style-type: none"> Requires USEPA to share more control over the cleanup process. Portland Harbor may be too far into the Superfund process for a structural change to be viable. 	<ul style="list-style-type: none"> Viability of federal funding through Corps of Engineers versus appropriation under Superfund. 	USEPA and Corps of Engineers

ACRONYMS AND ABBREVIATIONS

CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Oregon Department of Environmental Quality
EOA	Economic Opportunities Analysis
MOA	memorandum of agreement
NPL	National Priority List
PDC	Portland Development Commission
Portland	City of Portland
PPA	Prospective Purchaser Agreement
R2V	remediation to redevelopment value
ROI	return on investment
TIF	Tax Increment Financing
USEPA	U.S. Environmental Protection Agency

APPENDICES TO THE PORTLAND BROWNFIELD ASSESSMENT— FINAL REPORT

A—INVENTORY AND EXISTING CONDITIONS ANALYSIS

B—FINANCIAL ANALYSIS REPORT

C—PUBLIC BENEFIT REPORT



MAUL
FOSTER
ALONGI

APPENDIX A

INVENTORY AND EXISTING CONDITIONS ANALYSIS



PORTLAND BROWNFIELD ASSESSMENT INVENTORY & EXISTING CONDITIONS ANALYSIS

Prepared for
CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

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ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
ECSI	Environmental Cleanup Site Information
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
EZ	Enterprise Zone
GIS	Geographic Information Systems
Harbor ReDi	Portland Harbor Redevelopment Initiative
HiFAR	No vacant sites with a floor area ratio above 20% pf zoned maximum potential
ICP	Independent Cleanup Pathway
LoFAR	No vacant sites with a floor area ratio of up to 20% of zoned maximum potential
NFA	No Further Action
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
STAMP	Site Technical Assistance for a Municipal Project, National Brownfield Association
TIF	Tax-Increment Financing
TGM	Transportation and Growth Management
TOD	Transit-Oriented Development
UGB	Urban Growth Boundary
URA	Urban Renewal Area
USEPA	United States Environmental Protection Agency
VCP	Voluntary Cleanup Pathway
VHDZ	Vertical Housing Development Zone

1.1 Context

Brownfields Defined

The term “brownfield” refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substance contamination.

The cleanup and redevelopment of brownfield properties is an important tool for sustainable economic development in the City of Portland (Portland). Continued economic development within the Urban Growth Boundary (UGB) requires adaptive reuse and infill redevelopment of properties. The draft Economic Opportunity Analysis (EOA) found that buildable employment land supply in Portland is inadequate to meet forecasted demand in 2035; and that “potential brownfields” account for about one-third of the growth capacity in Portland’s industrial, commercial and other employment areas. However, brownfields face significant challenges in the marketplace. Recent trends indicate that most of Portland’s brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development. The EOA forecasts that only 40% of brownfield acreage in industrial areas and 50% in neighborhood commercial areas are expected to redevelop by 2035.

The brownfield issue inherently involves both the cleanup and redevelopment of property. To generalize, brownfields are sites where cleanup is hindered due to development constraints, and development is hindered due to high or uncertain cleanup liability, resulting in prolonged contamination and underutilization.

The Portland Plan and Comprehensive Plan Update provide opportunities to consider far-reaching new directions for how Portland develops over the next 25 years, including actions to encourage more brownfield redevelopment. The goals of the Portland Brownfield Assessment are to:

- Refine the understanding of the scope, scale, and impact of brownfields in Portland;
- Characterize the challenges to cleanup and redevelopment of these properties;
- Review policy tools to promote revitalization; and
- Evaluate the potential benefit of adopting new policies.

1.2 Purpose and Approach

This report summarizes the findings of Task 2 of the Portland Brownfield Assessment project. It is intended to provide background for subsequent financial feasibility and public benefit analysis together with policy

recommendations to facilitate increased redevelopment of brownfields in Portland.

Key work elements in this initial report include:

- Inventory of brownfield properties in Portland;
- Identification of preliminary brownfield typologies;
- Assessment of development trends and their relationship to brownfields in Portland; and
- Perspective on barriers to brownfield development.

1.3 Linkage to Portland Economic Opportunity Analysis

In March 2012, a proposed draft EOA was released for review with the Portland Planning and Sustainability Commission. As part of its Periodic Review process to update Portland's Comprehensive Plan, the City is required to complete an EOA in compliance with Oregon Statewide Planning Goal 9.

Key elements of EOA documentation include: evaluation of trends, opportunities and market factors; employment land needs and supply analysis; and alternative choices for policy changes, public investments, development incentives and other public interventions needed to accommodate forecasted employment growth to 2035 consistent with the Portland Plan. Development trends and projections reviewed with this report, including preliminary brownfield redevelopment assessments, are consistent with the EOA methodology and results.

2 BROWNFIELD INVENTORY

To understand the brownfields challenge for Portland, it is important to quantify the scale of the issue. It is inherently difficult to precisely count the number of brownfields in a community. While properties that are vacant or underutilized can be identified visually, it is often not entirely apparent if there are contamination concerns that are usually underground in soil or groundwater. Land owners are often very reluctant to notify public agencies about potential contamination because of anxiety over legal liability, cleanup costs, and stigma that may impact property value. Given these challenges, Portland has made an extensive effort to develop an inventory of potential brownfield sites to provide a foundation of information upon which to develop policy.

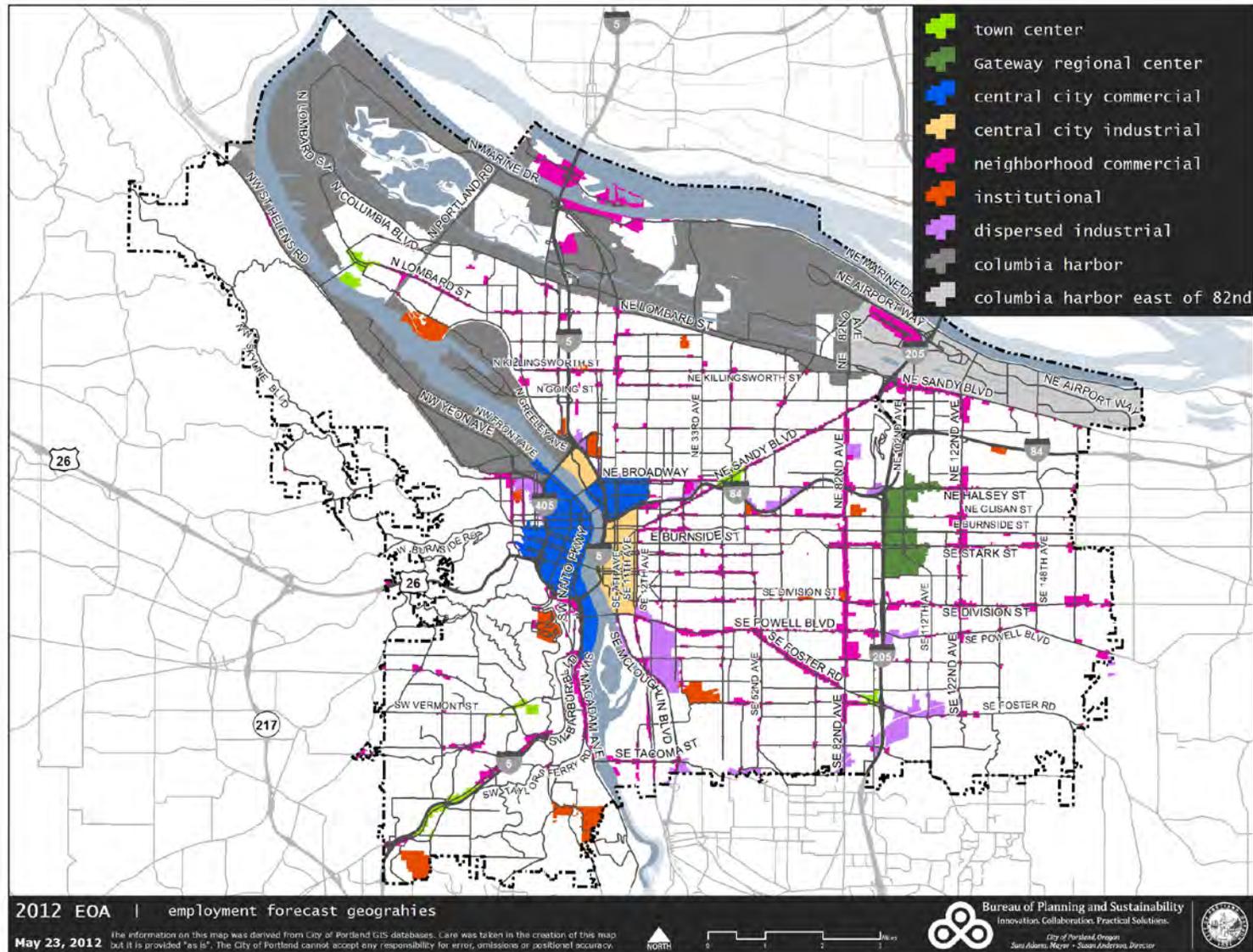
The EOA prepared for the Portland Plan includes a brownfield inventory of the city's business districts. The current draft of the EOA found approximately 1,050 acres of potential brownfields in Portland. These sites were identified as the intersection of the Portland Bureau of Planning and Sustainability (BPS) buildable lands inventory (unimproved or under-improved properties) and the Oregon State Department of Environmental Quality (DEQ) inventory of environmental cleanup sites and leaking underground storage tanks. The qualifier "potential" means that, while these sites have been identified by DEQ, contamination has not been confirmed on many of them. Because the brownfield inventory focuses on employment lands, residential properties with contamination from underground heating oil tanks have been excluded from this analysis. Analysis conducted for the EOA indicated that approximately 350 brownfield acres, 29 percent of the potential brownfield inventory, is forecasted to be cleaned up and redeveloped by 2035, based on development trends and market factors under current programs.

In order to address the land demand shortfalls identified in the EOA, it is important to take a more comprehensive approach to identifying the scale of the brownfield issue across employment geographies throughout Portland. The Portland Brownfield Redevelopment Assessment is the first step in developing an expanded brownfield inventory to make the policy and regulatory decisions to return these sites to a more productive use.

2.1 Brownfield Inventory Methodology

The first step in developing the expanded brownfield inventory was to create a spatial database containing all sites within employment geographies (Figure 2-1) that are identified in the buildable lands inventory (BLI) as having development capacity. The employment geographies were developed for the EOA based on zoning and market potential among other factors.

Figure 2-1. Employment Geographies.



The characteristics of the employment geographies are discussed in more detail in Section 4 of this report. Portland has refined the BLI developed by Metro to estimate development capacity and describe where growth might occur in the future. Development capacity is defined as the likely number of new dwelling units or jobs that could be accommodated in Portland under existing regulations, assuming the continuation of recent development trends. The BLI by itself does not consider or predict market demand for new construction. It only identifies lands that could potentially be available for development, should a market demand exist. The BLI is one of the key assumptions in Portland's comprehensive planning process.

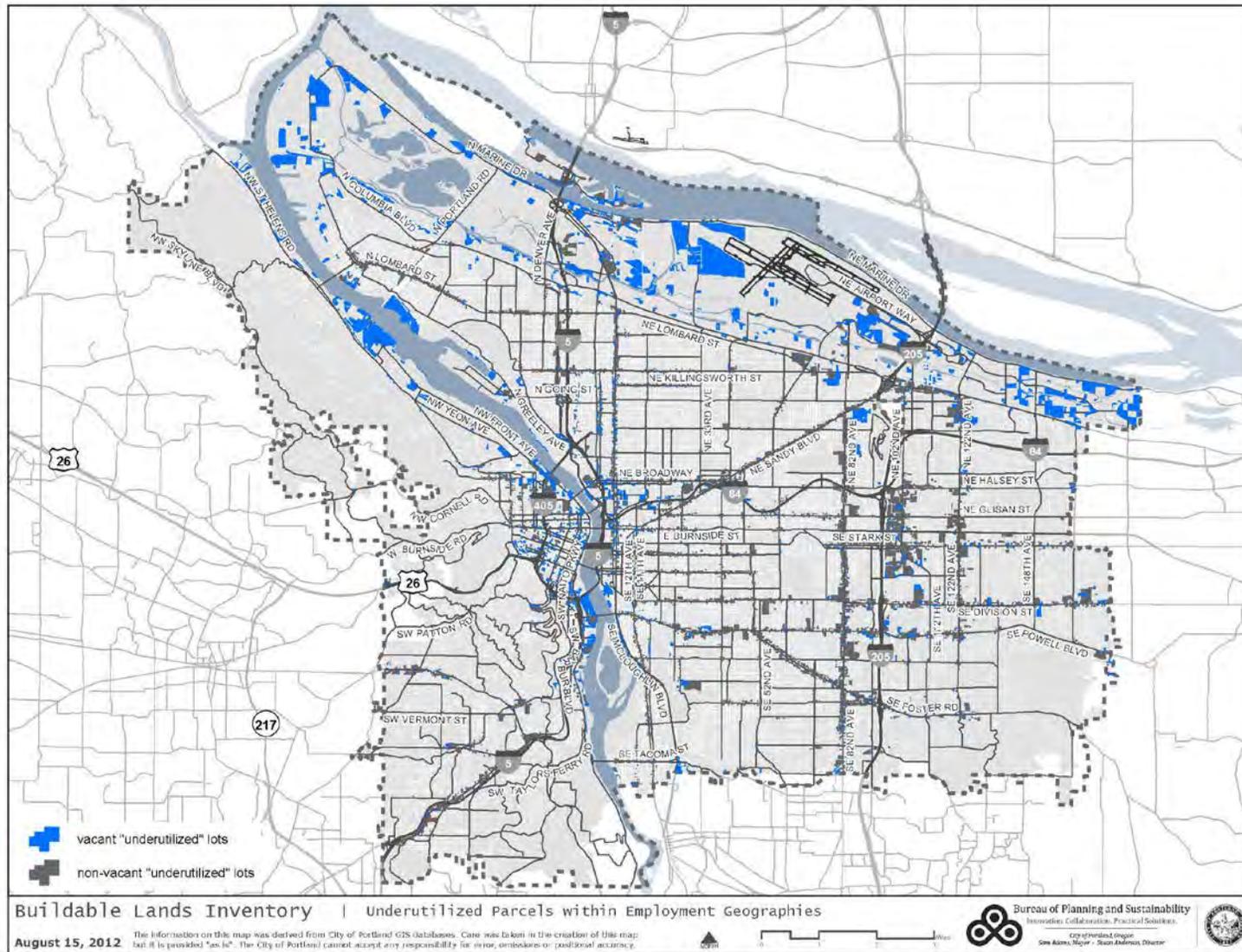
The employment capacity analysis analyzes the difference between existing and allowed development to determine the remaining development capacity under the current comprehensive plan. The first step to inventory buildable land is a relatively straightforward process to identify vacant sites or land utilizing tax assessment data, Metro's vacant land inventory, and verification process utilizing aerial photos and field checking. Parcels under 0.5 acres were not considered viable for industrial uses and parcels less than 1,500 square feet (0.03 acres) were not considered viable for commercial development.

The BLI has a sophisticated process for identifying developed parcels that are significantly under-developed or underutilized and are likely to redevelop. Within the Central City, a parcel must have less than 20% of the allowed floor area and have an improvement-to-land ratio of less than 50%. Outside the Central City, parcels within 500 feet of a "frequent service" transit line are mapped as underutilized if they are using less than 20% of their allowed floor area (regardless of the improvement-to-land ratio). Improvement and land values are not as accurate or consistently recorded outside Portland's Central City, so they are not used in other parts of the city at this time. Frequent service transit lines are defined as bus and light rail lines that run every 15 minutes or better during weekday peak hours. All other parcels are mapped as underutilized if they are using less than 10% of their allowed floor area (regardless of the improvement-to-land ratio).

Figure 2-2 shows the final inventory of sites within employment geographies that have been identified as having development capacity.

The next step in developing the expanded brownfield inventory was to apply sites identified in the DEQ Environmental Cleanup Site Information (ESCI) and Leaking Underground Storage Tank (LUST) databases that intersect the sites identified in the BLI as having capacity for development (Figure 2-3).

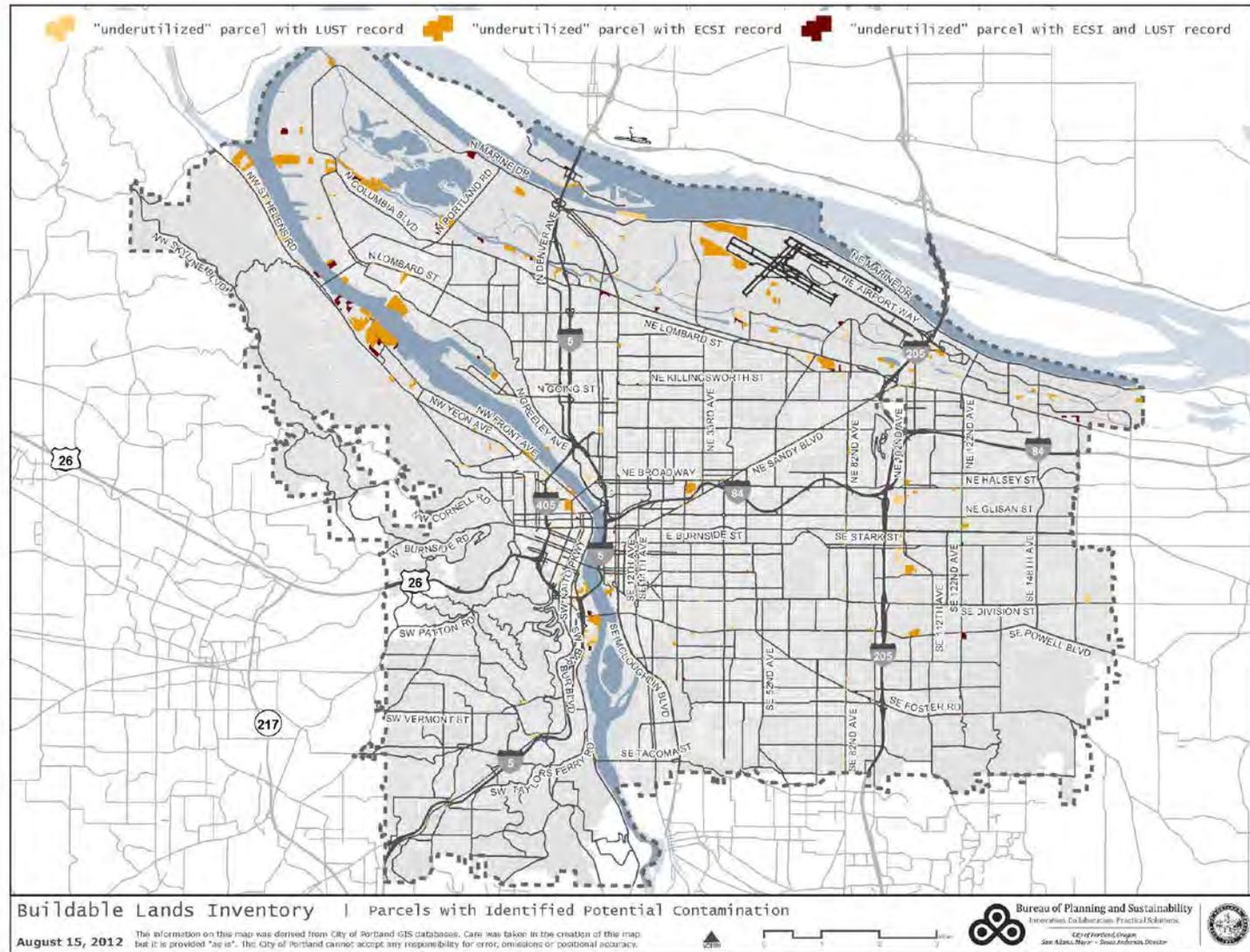
Figure 2-2. Buildable Lands Inventory



The ECSI database records sites with known or potential contamination from hazardous substances. ECSI generally excludes sites with petroleum releases from underground storage tanks. This data includes all sites in the ECSI database regardless of status. ECSI data was mapped by the Portland Bureau of Environmental Services (BES) using DEQ data updated in April 2012. The LUST database is a listing of all sites with reported releases of petroleum products from regulated underground storage tanks (USTs), unregulated USTs, and home heating oil tanks.

The Development Capacity Model in the BLI uses several parameters, such as a vacant land dataset, to split parcels. The ECSI and LUST dataset compiled by BES and BPS is a parcel-level dataset. No attempt was made by BPS to locate or identify the portion of individual parcels impacted by ECSI or LUST status. Rather, if any portion of a parcel contained an ECSI or LUST record the entirety of the parcel was included in the brownfield inventory.

Figure 2-3. Buildable Lands with Identified Contamination Concerns



The final step in developing the brownfield inventory was the creation of a database of historical land uses. The DEQ databases only include records of sites that have been reported to have hazardous material concerns, so they are not a comprehensive inventory of all potentially contaminated properties. It is not possible to definitively know if there are contaminants above cleanup standards on a property without actually collecting soil and groundwater samples and analyzing them in a laboratory. Since that level of effort is not feasible across the entire city, historical land use was used as an indicator to estimate this shadow inventory of unreported potentially contaminated sites. This estimation is based on the assumption that certain industries are known to handle, process, or dispose of hazardous materials, and that properties that have been used for those activities have a high potential for legacy environmental contamination.

BPS staff analyzed historic economic trends to identify three peak years in the economic cycle to represent peak years for industry in Portland. BPS identified the years 1936, 1955, and 1973 as appropriate points in time to compile data from diverse business types and to also represent a broad spectrum of the economy roughly every twenty years.

Historic land use data was collected for the targeted years from Polk City Directories. BPS worked with Portland staff and agency partners to create a list of business types that included processes or products that are known to have potentially contributed to site contamination. BPS staff collected individual business records from the Polk City Directories within these business type categories. These business records include business name, business type, and business address. A historic land use database was developed for each year using these business records.

BPS staff then geocoded the historic land use database and joined the resulting point level data to the appropriate parcel in a tax lot dataset. The result of these efforts is a citywide historic land use inventory that can be applied for use along with the ESCI and LUST datasets for an expanded potential brownfield inventory that can be used to estimate the extent of potential brownfields citywide.

2.2 Refined Brownfield Inventory Findings

Estimate of Potential Brownfields in Employment Geographies

Sites that have identified ESCI and/or LUST status and are unimproved or under-improved in the development capacity model account for 910 acres of potential brownfields on 1,086 parcels throughout the employment geographies. The development and inclusion of the historic land use dataset adds an additional 378 estimated acres of potential brownfields on 531 sites in employment geographies. The development of this updated and refined brownfield inventory estimates that there may be approximately 1,288 total acres of potential brownfields on 1,586 parcels throughout Portland.

To get a more nuanced perspective on how brownfields impact economic potential, further analysis was conducted only on sites that have identified ECSI and/or LUST contamination concerns and are unimproved or under-improved in the development capacity model. Previous analysis conducted for the EOA identified parcels within employment geographies impacted by ECSI and LUST status as a development constraint which estimated a total of 1,050 acres of potential brownfields in employment geographies throughout the city. The refined brownfield inventory employs an alternative approach that estimates there may be approximately 910 acres of brownfields in the employment geographies. The decrease in total estimated brownfield acres can be attributed to alternative approaches in the brownfield inventory methodology that account for brownfield redevelopment on land per acre basis for commercially zoned sites as opposed to a capacity per acre basis as identified in the EOA. Additionally, 297 acres were added to the ECSI and LUST datasets between March 2009 and April 2012 which accounts for some of the changes to the brownfield inventory totals.

Table 2.1. Employment Geography Potential Brownfield Inventory

Database	# of Parcels	Acres
ECSI and LUST	1,055	910
Historic Land Use	531	378
Total Potential Brownfield Inventory	1,586	1,288

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

Analysis conducted to examine development constraints and development trends has indicated there are a variety of issues that impact brownfield properties in different employment geographies in different ways. As such, it is important to examine the scale of potential brownfields in each of these geographic areas. Brownfields occur in each of the employment geographies. The greatest number of potential brownfield properties occurs in the Neighborhood Commercial areas. By total area, the Columbia Harbor employment geography is the highest with approximately 55% of total acres in the brownfield inventory. This analysis demonstrates that there are a large number of small brownfield properties (under one acre), but that a limited number of large properties account for the vast majority of the areal extent of brownfields.

Table 2.2. Potential Brownfields by Employment Geography

Employment Geography	# of Parcels	Acres	Avg. Size	% of Total Acres
Town Centers	57	19	0.5	2%
Gateway Regional Center	35	41	1.3	5%
Central City Commercial	166	94	0.5	10%
Central City Industrial	27	4	0.3	<1%
Neighborhood Commercial	328	194	0.6	21%
Dispersed Industrial	22	16	1.0	2%
Columbia Harbor	368	496	2.3	55%
Columbia Harbor East of 82nd	83	46	.7	5%
Total	1,086	910	1.2	100%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

Table 2.3. Potential Brownfields by Brownfield Typology

Employment Geography	# of Parcels	Acres	Avg. Size	% of Total Acres
Downtown High Density	188	94	0.5	10%
Mixed Use Hub	76	58	0.9	6%
Main street Com W of 82nd	237	137	0.6	15%
Main street Com E of 82nd	90	58	0.7	6%
Central City Industrial	27	4.2	0.3	<1%
Standard Industrial	270	326	1.6	36%
Superfund Shadow	43	79	2.3	9%
Harbor Waterfront	155	154	2.0	17%
Total	1,086	910	1.2	100%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

3 BROWNFIELD TYPOLOGIES

3.1 Purpose of Brownfield Typologies

While all brownfields share common characteristics of environmental concerns and underutilized development condition, they are not all the same. Understanding the different types of brownfields will allow policy makers to refine and target tools to support revitalization of these properties. The brownfield typologies also serve as an analytical tool for evaluating the range of impact that different categories of sites have on the region. Grouping brownfields by certain key criteria will facilitate the evaluation of challenges faced by impacted sites and will help the prioritization of potential solutions to address the unique issues faced by discreet groups of properties.

3.2 Key Features for Determining Types

The traditional approach for categorizing brownfield properties has been to focus on the contamination issues. However, experience with revitalization of these properties demonstrates that redevelopment typically drives cleanup actions. Therefore, an integrated approach that considers both market potential and contamination provides a more accurate and meaningful categorization.

The fundamental guiding principle underlying the brownfield typologies is that the potential for redevelopment of a property is driven primarily by market factors and that the type and level of contamination need to be considered in the context of property value. Brownfield properties with high market potential are commonly remediated and redeveloped by the private sector, even if cleanup costs are relatively high. The Pearl District in Portland includes many examples of these kinds of properties. Alternatively, a property that is relatively simple to clean up may still remain vacant if there is no viable redevelopment use that can create value to offset even a low remediation cost. This paradigm of financial feasibility informs the brownfield typologies and characterization of the ‘level of brownness’ of a property. The relationship between redevelopment potential and cost to remediate is the remediation to redevelopment value (R2V). This relationship will be the basis for financial feasibility analysis conducted in subsequent tasks of the Portland Brownfield Assessment.

Brownfield typologies were developed based on analysis of the expanded brownfield inventory, the EOA, and the Portland’s land use database. These resources provide information on known contamination issues, historical uses that may be correlated to environmental concerns, and land use characteristics. The main factors used to develop the brownfield typologies

included location, size, zoning, historical use, and listing on state ECSI and LUST databases.

Location and Zoning

Employment geographies were developed as part of the EOA process as a way to account for different market conditions within the various sectors of the city. The employment geographies take into account location and zoning, which are two critical factors for determining the redevelopment potential of a specific property. Location represents a number of market factors such as land value, accessibility, infrastructure capacity, and amenities. Zoning is a major determinant in intensity of development allowed on a property which correlates strongly with potential redevelopment value. The financial feasibility of many successful brownfield redevelopment projects hinges on a zone change from a historically industrial use to a higher value commercial or mixed use. For this reason the brownfield typologies separate properties limited to redevelopment for industrial uses and those with potential for commercial uses under current land use regulations.

Historical Use

As mentioned in Section 2, “historical use” provides an indication of potential for environmental contamination on a property. Certain economic activities, such as gas stations, dry cleaners, chemical plants, and manufacturing have historically been associated with legacy environmental contamination. The period of time when these uses occurred is very important, since with the passage of modern regulations on the use, handling, and disposal of hazardous materials, these same industry sectors continue to operate today with strict procedures to prevent and respond to releases of hazardous materials.

The most common historical uses often associated with contaminated properties that were identified in the brownfield inventory are listed in Table 3-1 below:

Table 3-1. Historical Uses Commonly Associated with Brownfields

Historical Use Category	Percentage of Parcels
Auto services (gas stations and repair shops)	38%
Manufacturing (including a wide range of fabrication and assembly operations)	34%
Commercial laundries (including dry cleaners)	17%
Chemical manufacture and processing	11%

Source: Oregon Department of Environmental Quality, Bureau of Environmental Services, Bureau of Planning and Sustainability; 2012.

It is interesting to note that each of these categories of uses occurred in nearly every employment geography. As one would expect, there were few commercial laundries in the industrial lands along the Willamette and Columbia Rivers, but auto services, manufacturing, and even chemical processing has historically occurred with some frequency in each of Portland's traditional areas of commercial and industrial activity.

Identified Contaminated Sites

The Oregon Department of Environmental Quality maintains an extensive database of sites that where contamination have been identified and reported. The Environmental Site Cleanup Index (ECSI) database of known and suspected contaminated sites and the Leaking Underground Storage Tank (LUST) databases were used to characterize the location of potential brownfield properties in Portland.

Some contaminants are generally considered more toxic or more difficult to remediate, which impacts financial feasibility of a project. For the purposes of developing typologies, historical use is used as an indicator for potential contamination rather than records of specific types of hazardous materials. The primary reason for using this approach is that characterizing properties by types of use more readily translates to land use and economic planning policy than distinguishing sites by chemicals of concern. Historical use was employed based on the assumption that specific industries typically use certain hazardous materials with similar practices for use and disposal and given the fact that information on past activities is more widely available than data on specific contaminants. The ECSI database does contain information on specific types of toxics found on known contaminated sites. However, this information is not consistently available due to a number of factors,

including changes in reporting requirements and protocol, variation in data entry, and consistency in record keeping. Therefore, this study was reluctant to use specific contaminant types as a feature for determining typologies.

Size

The size of properties was evaluated as a potential factor for determining typologies. While the size of a property is fundamentally important for designing a specific redevelopment proposal, it did not appear to be a significant factor for the general typologies. While some historical uses, such as gas stations and dry cleaners, have typical sizes, most of the former industrial uses of concern have a wide range of property sizes that do not lend themselves to meaningful categorization.

Metro Brownfield Typologies

A concurrent study of brownfields led by the Metro regional government has developed typologies for the same purpose of understanding the character of the issues of these properties on a regional scale. The Metro typologies were considered in this analysis and the summary table below indicates how they relate to the Portland typologies. In general, the smaller geographic extent of Portland lends itself to a more detailed dissection of typologies than the Metro study.

Metro Draft Brownfield Typologies

Type 1—Small Commercial Sites. Common historical uses were gas stations, repair shops, and dry cleaners, characterized by small parcel size and location along highways, arterials, and commercial centers.

Type 2—Formerly Industrial Properties in City and Town Centers. Properties range in size and historically housed various uses in areas that have transitioned from industrial to office, retail, and mixed use centers. Change of zoning and use often drives redevelopment of these properties.

Type 3—Industrial Area Sites. Properties in areas with an industrial past that continues today. Constraints on land value and types of use can be a challenge to redevelopment of these properties.

Type 4—Heritage Sites. Properties associated with rural residences and natural resource extraction industries and agriculture. These properties are typically large and located on the edge of the urban growth boundary. Structural economic changes can make these properties difficult to redevelop.

3.3 Brownfield Typologies

Based on analysis of land use and environmental factors, the following types of brownfields have been categorized for Portland.

1. **Downtown High Density**—Characterized as former industrial and commercial operations in an area of increasing high-density development. High property values drive redevelopment and often result in conversion to commercial and residential mixed use properties. Examples: Pearl District, South Waterfront, Downtown.
2. **Mixed Use Hub**—Significant neighborhood centers that contain a mix of uses and represent historic and planned town centers. Redevelopment typically results in commercial and mixed use projects at a higher level of density. Examples: St. Johns, Gateway.
3. **Main Street**—Commercial corridors characterized by mixed uses and smaller-scale commercial activity. Redevelopment of these type of brownfields typically results in conversion to commercial and mixed use projects at a higher level of density. (This typology is further subdivided into East of 82nd and West of 82nd for analytical purposes. The uses are the same, but market conditions are significantly different) Examples: SE Hawthorne, NW 23rd, NE Alberta.
4. **Central City Industrial**—Large-scale industrial operations typically including historic and current manufacturing activities. Redevelopment is driven by changing land use patterns and increased land values through zoning. Redevelopment of this brownfield type generally results in industrial and flex space. Examples: Central Eastside industrial, Albina.
5. **Standard Industrial**—Variety of industrial uses, ranging in size and intensity and located in multiple areas within Portland. Redevelopment typically is constrained by location, land value, and regulatory requirements such as environmental overlays and industrial sanctuary. Examples: Johnson Boulevard, Brooklyn/Milwaukie Rail Yard.
6. **Superfund Shadow**—Properties located upland from the Portland Harbor Superfund area. These sites may be impacted by the Superfund designation and therefore are limited in their redevelopment potential. Redevelopment would result in industrial and flex space uses, but is hindered by regulatory uncertainty. Examples: Areas within NW Industrial and Portland Harbor.
7. **Portland Harbor Waterfront**—Sites located on the Willamette River with direct connection to the areas identified as having sediment contamination. Sites in this type are typically large-scale and current or former heavy industry operations. Examples: Portland Harbor sites from Columbia River South to Fremont Bridge (approximately).

Table 3-2. Brownfield Typologies

	City of Portland Typology	Metro Typology	Historical Use	Employment Geography	Future Use	Financial Feasibility (Brownness)		
						Brown	Neutral	Green
COMMERCIAL	1. Downtown High Density	Type 1 & 2	Auto, Dry Cleaner, Manufacturing, & Chemical	Central City	Commercial, Mixed Use, Multi-Family	N/A	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	2. Mixed Use Hubs	Type 1 & 2	Auto & Dry Cleaner,	Town Center	Commercial, Mixed Use, Multi-Family	N/A	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	3. Main Street (subdivided into East of 82 nd and West of 82 nd)	Type 1 & 2	Auto, Dry Cleaner, Manufacturing, & Chemical	Neighborhood Commercial, Gateway Regional Center	Commercial, Mixed Use, Multi-Family	Medium Land Value & High Cleanup Cost	Medium Land Value & Medium Cleanup Cost	Medium Land Value & Low Cleanup Cost
INDUSTRIAL	4. Central City Industrial	Type 3	Auto, Manufacturing, & Chemical	Central City	Industrial, Flex Space	High Land Value & High Cleanup Cost	High Land Value & Medium Cleanup Cost	High Land Value & Low Cleanup Cost
	5. Standard Industrial	Type 3	Auto, Manufacturing, & Chemical	Columbia Harbor & Dispersed Industrial	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	Low Land Value & Low Cleanup Cost
	6. Superfund Shadow s	Type 3	Auto, Manufacturing, & Chemical	Columbia Harbor	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	Low Land Value & Low Cleanup Cost
	7. Portland Harbor Waterfront	Type 3	Auto, Manufacturing, & Chemical	Columbia Harbor	Industrial	Low Land Value & High Cleanup Cost	Low Land Value & Medium Cleanup Cost	N/A

3.4 Financial Feasibility (Brownness)

The financial feasibility of redevelopment of a property within any of the brownfield types depends primarily on two factors, the redeveloped value of the property and the cost of the environmental remediation. The relationship of these two factors can be characterized as the redevelopment to remediation value (R2V). The R2V is positive for properties that have a high enough potential value to offset the costs of remediation, and it is negative for properties with low market value and high cleanup liability. An evaluation of the R2V for any property places it on a spectrum of 'brownness' from being financially upside down to profitable. For the purposes of characterizing the financial feasibility of the different brownfield typologies, this spectrum can be simplified into three categories:

Brown—Properties where the cleanup costs far exceed the potential value that can be generated on the property.

Tan—Properties where the redevelopment value is financially close to offsetting the costs of addressing environmental contamination.

Green—Properties that have great enough potential to generate revenue that the costs of remediation can be covered and still generate a profit.

Since the brownfield typologies are informed by location and redevelopment potential, the potential value each category can be assumed to lie within a relatively narrow range. The level of contamination and costs for remediation can vary widely on any given brownfield property. It is challenging to narrow the cleanup cost range without detailed study of an individual property. It can be generally assumed that properties with higher redevelopment potential will generally fall into the Tan and Green categories of financial feasibility, while properties with lower value more commonly fall into the Brown.

Methodology

A financial analysis of the brownfield typologies will be conducted in the next phase of this project. This analysis will develop a model that incorporates land values based on location in different employment geographies along with cleanup costs. The analysis will be based on a combination of study of the real estate market, cost analysis of brownfield cleanup projects, and assumptions based on best professional judgment.

4 DEVELOPMENT TRENDS

This section is focused on outlining development trends and forecast expectations for Portland through the year 2035. The analysis is based on the recently released draft Portland Economic Opportunities Analysis (EOA). This analysis begins with a brief review of national economic experience and employment forecasts. This is followed by discussion of economic development trends and forecast expectations specific to Portland and a review of brownfield redevelopment experience city-wide in recent years. Review of development trends concludes with consideration of barriers to brownfield development experienced nationally as well as locally.

Note: It is important to note that the figures used in this analysis were based on the draft EOA dated March 2012. There has been a continued effort by the City and its consultants to refine and finalize the EOA subsequently; however the March figures represent the most complete analysis available at the time of this writing.

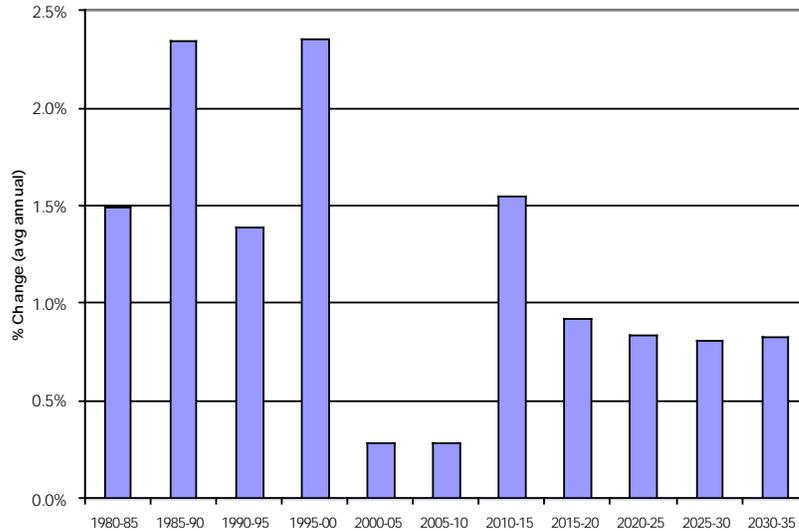
4.1 National Trends & Forecast

Both nationally and regionally, employment growth has not occurred at an even pace over time. While this discontinuity of experience over the last approximately 30 years has made it more difficult to forecast future conditions, the expectation remains that job growth over the long-term will match needs of the population for labor force participation and employment. Of specific note is that:

- Over the 25-year period of 1980-2005, employment across the U.S. increased at an average annual rate of 1.6% per year, reflecting a particularly rapid 1.9% rate of job growth during the 1980s. The 1980-90 time period also coincided with entry of a large baby boom cohort into the job market.
- Since 1990, job growth nationally has slowed to a more modest 1.3% annual rate from 1990-2005. During the first half of this decade (2000-2005), job growth was even more modest averaging 0.3% per year, reflecting a post-2001 period of economic contraction followed by a slow recovery.
- Looking forward, Metro's regional forecast is based on national job growth remaining at a similarly anemic pace through 2010 (reflecting rapid run-up to 2007 followed by the current recession). The national forecast predicts an economic recovery period for 2010-2015 with relatively strong anticipated job growth (1.5-1.6% per year) that declines over time to a rate of about 0.9% by 2025-2035 (Figure 4-1).

At these rates of projected employment growth, the U.S. would have about 173.5 million non-farm jobs by 2035, an increase of just under 40 million jobs (or 30% gain) compared to 2005 conditions.

Figure 4-1. U.S. Non-Farm Employment Growth Rates (1980-2035)



Source: Global Insight, 2008 QR US Long-Term Outlook, as compiled by Metro and used as a basis for regional employment growth projections.

4.2 Portland Development Trends & Forecast

Portland’s EOA began with an analysis of recent employment trends within Portland over the last employment cycle of 2000-2008. Some citywide job changes clearly have paralleled those of the nation and/or region. However, this review clearly indicates that Portland’s position as the largest city in the region and state has created distinctive market niches with opportunities, as well as limitations, affecting future job and development prospects.

4.2.1 Employment & Development Trends of Last Decade

In 2000, an estimated 389,520 persons worked at jobs within Portland. By 2008, the in-city job count increased to 392,640 for a net gain of 3,120 jobs over the last economic cycle. Table 4-1 reports employment at the detailed sector level with the 2008 distribution and net change both in terms of numerical change and annual average growth rate (AAGR).

As noted, this 2000-08 time period of the last decade corresponded to the most recent economic cycle of the region and nation, representing a peak-to-peak period in employment both citywide and for Multnomah County. This was a period of economic downturn early in the decade, followed by rebounding job growth through mid-decade and then substantial job losses with the recession after 2008.

Table 4-1. Portland Citywide Employment (2000-08)

	NAICS	2000	2008	2008 Distrib.	Change Net	AAGR
Industrial	11 Agriculture	180	210	0%	30	1.9%
	22 Utilities	3,960	2,580	1%	(1,380)	-5.2%
	23 Construction	19,840	18,380	5%	(1,460)	-1.0%
	31 Man: food, textile, apparel	5,990	5,800	1%	(190)	-0.4%
	32 Man: wood, petrol, chemicals	9,120	6,740	2%	(2,380)	-3.7%
	33 Man: metal, machine, computer	24,670	17,800	5%	(6,870)	-4.0%
	<i>Manufacturing subtotal</i>	<i>39,780</i>	<i>30,340</i>	<i>8%</i>	<i>(9,440)</i>	<i>-3.3%</i>
	42 Wholesale Trade	25,510	20,380	5%	(5,130)	-2.8%
	48 Transportation	19,770	15,650	4%	(4,120)	-2.9%
	49 Transport & Warehousing	9,160	8,010	2%	(1,150)	-1.7%
	<i>Industrial subtotal (21-42, 48,49)</i>	<i>118,200</i>	<i>95,550</i>	<i>24%</i>	<i>(22,650)</i>	<i>-2.6%</i>
Retail	44 Retail	22,130	22,200	6%	70	0.0%
	45 Retail: Dept, misc.	14,940	10,830	3%	(4,110)	-3.9%
	<i>Retail subtotal (44,45)</i>	<i>37,070</i>	<i>33,030</i>	<i>8%</i>	<i>(4,040)</i>	<i>-1.4%</i>
Services	51 Information	12,350	11,570	3%	(780)	-0.8%
	52 Finance & Insurance	21,390	18,810	5%	(2,580)	-1.6%
	53 Real Estate	9,870	8,580	2%	(1,290)	-1.7%
	54 Prof., Scientific, Tech Services	25,530	27,200	7%	1,670	0.8%
	55 Management	6,820	14,590	4%	7,770	10.0%
	56 Admin Support, Waste	14,020	21,770	6%	7,750	5.7%
	61 Education	29,640	35,510	9%	5,870	2.3%
	62 Health & Social Asst.	40,960	49,150	13%	8,190	2.3%
	71 Arts, Enter., Recreation	6,200	6,280	2%	80	0.2%
	72 Accommodation & Food	30,410	35,770	9%	5,360	2.0%
81 Other Services	17,190	17,210	4%	20	0.0%	
	<i>Service subtotal (51-81)</i>	<i>214,380</i>	<i>246,440</i>	<i>63%</i>	<i>32,060</i>	<i>1.8%</i>
Public	92 Public Administration	17,110	17,500	4%	390	0.3%
Other	99 Unclassified?	2,760	120	0%	(2,640)	-32.4%
	Total	389,520	392,640	100%	3,120	0.1%

Source: Oregon Employment Department, E. D. Hovee & Company. Data is rounded to the nearest 10 jobs and reflects jobs covered by unemployment insurance, equating to about estimated 85% of the workforce.

For the entire 2000-08 time period, overall job growth was experienced at relatively low rates for Portland as well as for the state and nation, certainly in comparison with the prior decade of the 1990s. In effect, Portland captured only about 5% of the net job growth in the region, well below its current share of 38% of all jobs in the 7-county Portland Primary Metropolitan Statistical Area (PMSA).

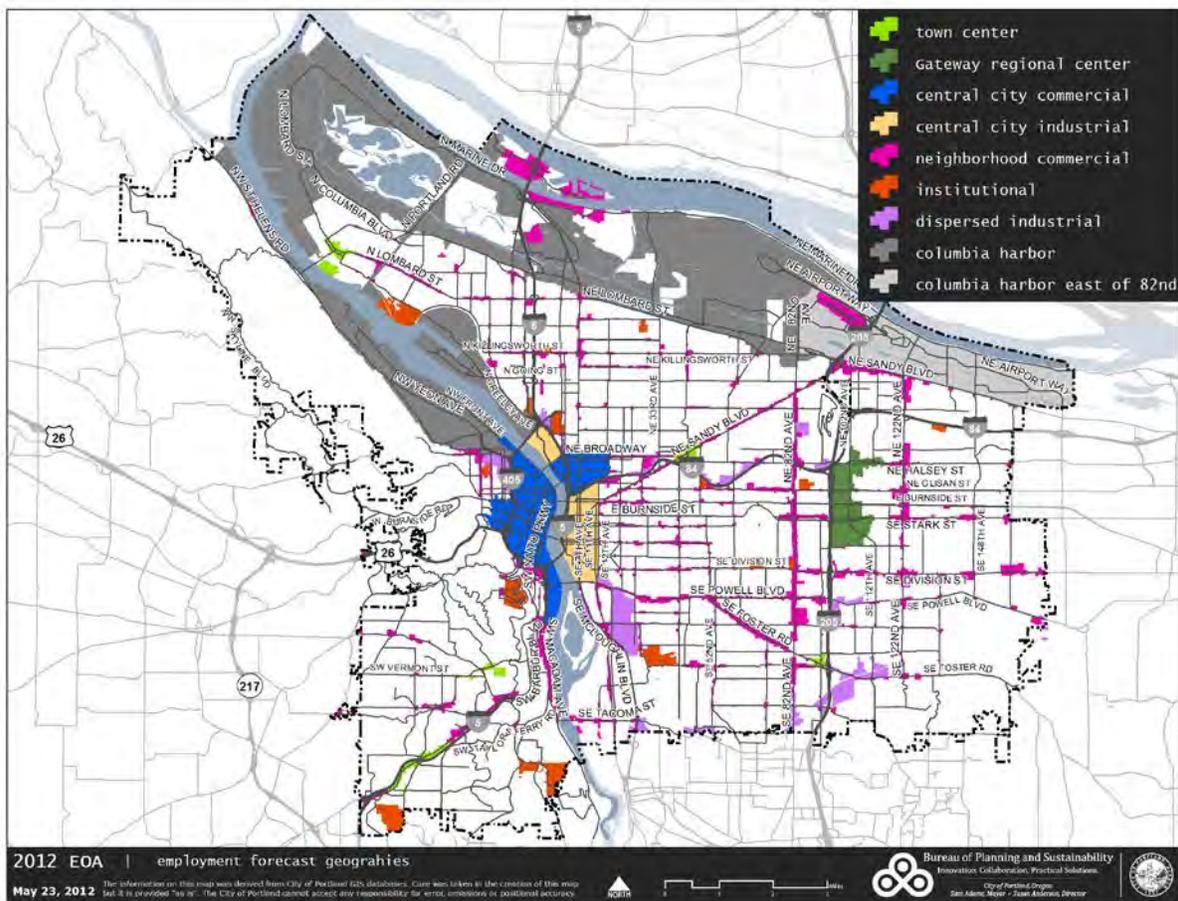
Numerically and in percentage terms, the strongest employment growth was experienced in the service sectors. In contrast, declining employment was

noted for industrial and retail sectors with little change in public administration job levels.

4.2.2 Portland Employment Geographies

Changes in employment by sector are also reflected in varied patterns of development by employment geography across Portland. With the EOA, employment geographies have been broadly grouped into Central City, Industrial, Neighborhood Commercial, Institutional, and Residential categories (Figure 4-2).

Figure 4-2. Portland Employment Geographies



Key observations of note include the following:

Central City—With 107,600 jobs, the Central City Commercial geography encompassed 27% of Portland’s job base in 2008. With a 0.1% average annual growth rate between 2000-2008, employment increased at about the same rate as employment increased citywide over the same time period.

- With nearly 66,400 jobs, the Central Business District + South Waterfront comprises the largest Central City subarea, although this core submarket experienced a loss of an estimated 3,100 jobs from 2000-08. The most rapid job growth occurred within the River District submarket (up by 2.1% per year), followed by the Lloyd District.
- Two Central City sub-districts, Central Eastside and Lower Albina, are included within the Central City Incubator geography. These are often referred to as “incubator” rather than heavy industrial districts and have out-performed the overall Central City area with annual job gains of nearly 3% and 2% per year respectively.

Urban Centers—Comprised just 5% of citywide employment in 2008 and experienced job growth averaging 1.4% per year. Of the six urban center submarkets profiled, Gateway has the largest employment base with about 9,500, followed by Hollywood at 6,500 and West Portland at 2,600.

- The highest levels of employment growth since 2000 are indicated for Hollywood and Lents Town Center, both averaging employment gains of better than 5% per year. Gateway also experienced employment growth, but at a much lower growth rate. The other urban centers experienced relatively flat to declining employment.

Institutions--Excluding PSU and Adventist Hospital, accounted for over 35,200 jobs in 2008 (nearly 9% of citywide employment), with job growth averaging 3.6% per year from 2000-08.

Industrial Areas--Comprise a total of 119,500 jobs (or better than 30% of employment citywide). Overall job growth has occurred at about the citywide average of 0.1% per year but with wide variation between districts.

- With more than 61,600 employees, the Columbia Harbor geography accounts for more than one-half (52%) of the Industrial total (or 16% of all employment citywide). The Columbia Corridor east of NE 82nd Avenue accounts for more than 19,400 jobs with Dispersed Industrial at 17,200. The two Central City Industrial (or incubator) districts account for 18,000 and 3,300 jobs respectively.
- Columbia Harbor reports some job loss averaging close to 1% per year, with even more rapid attrition for Dispersed Industrial. Job gains of close to 3% per year are noted for Columbia East of 82nd. Employment has increased 0.1% per year in all the Industrial areas combined. As noted, both the Central City Incubator districts have experienced employment gains.
- Harbor Access Lands are shown as a subarea (or subset) to the Columbia Harbor employment area. Harbor Access Lands are

riverfront industrial lands in the Portland Harbor and along the Columbia River. As of 2008, Harbor Access Lands accounted for an estimated 9,300 jobs, approximately 15% of Columbia Harbor employment. From 2000-08, Harbor Access Lands experienced declining employment at a rate averaging 2.4% per year, a substantially more rapid rate of job loss than for the entire Columbia Harbor geography. Reported employment losses were most substantial in manufacturing, followed by transportation, warehousing and wholesale trade. It is notable that a separate analysis indicates that the economic activity in the Portland Harbor grew at 1.6% per year during approximately the same timeframe (2002 to 2008). During that same time period, cargo volumes increased by 4.8% per year.¹ As addressed more directly with the EOA land demand analysis, employment may not be the best indicator of land needs in the harbor area which fulfills a major transportation role both locally and regionally.

Neighborhood Commercial—With 70,400 jobs or 18% of citywide employment, the Neighborhood Commercial geography has experienced net job loss since 2000. Of the neighborhood-related employment activity, nearly 56% of jobs are indicated as located in Commercial Corridors, followed by Dispersed Commercial.

- Commercial Corridors account for the largest base of neighborhood activity with just over 39,000 jobs, but lost jobs at a rate averaging 1.5% per year. Commercial Nodes (about 20 key intersections) supported 9,600 jobs in 2008 or 14% of the neighborhood-related jobs total. Taken together, Neighborhood Commercial areas experienced a net loss of 1,900 employees from 2000 to 2008 coming primarily from reduced employment in Commercial Corridors.
- More than 38,900 jobs are reported for Residential areas plus open space. The majority of these jobs are in Residential areas which account for just under 10% of citywide employment. Job losses are exhibited in every employment sector, except public sector employment.

4.2.3 Portland EOA Forecast

Review of past employment trends set the stage for the primary purpose of the EOA, the determination of future employment growth and related needs for industrial and commercial land. Key steps in this forecast process involved consideration of Portland's capture of regional employment growth, resulting in-city forecast allocations, and reconciliation of land needs with vacant and redevelopable supply (including brownfield sites).

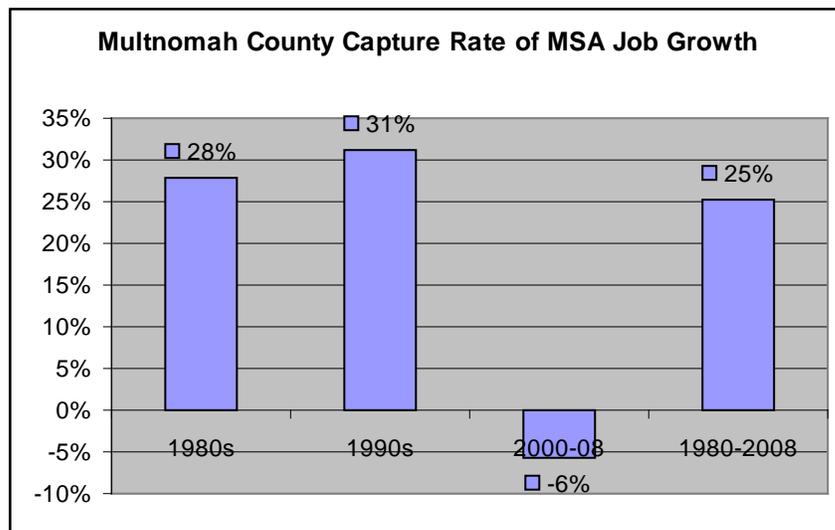
¹ EcoNorthwest, *Portland Harbor Industrial Land Supply Analysis*, February 2012.

Portland Capture of Regional Employment Growth

A key economic and policy question addressed by the EOA is whether future employment growth and development will reflect conditions of the last decade or the longer term experience of the last several decades, coupled with region-wide growth management expectations.

This long-term retrospective is based on county employment data because reliable, comparable data for Portland is not available before 2000, due both to changes in data reporting and major annexations by Portland in the 1980s and 1990s. Figure 4-3 illustrates the degree to which short-term (2000-08) job losses countywide appear inconsistent with long-term trends.

Figure 4-3. Multnomah County Capture Rate of Regional Job Growth (1980-2008)



Source: City of Portland Bureau of Planning and Sustainability, from Oregon Employment Department Quarterly Census of Employment and Wages (QCEW) data.

The EOA forecast is predicated on a long-term linear trend of employment change that includes, but extends beyond, what appears to be the anomalous experience of 2000-08. In effect, if Multnomah County's long-term linear job growth pattern were to continue along the full 28-year time line, 184,000 new countywide jobs would be added between 2010 and 2035, reflecting a 34% anticipated capture rate of new PMSA covered employment.

In 2008, Portland accounted for 87% of Multnomah County employment, up from 86% in 2000. Assuming Portland has a slightly declining share of county jobs over time, estimated at 82% of new Multnomah County jobs from 2010 to 2035, 151,000 new Portland jobs would be added in the forecast period, representing a 28% Portland capture rate of PMSA job growth to 2035.

Separate from this BPS analysis, Metro forecast modeling resulted in an employment allocation of an added 147,000 jobs for Portland between 2010-35, indicating a slightly smaller 27% capture of forecast PMSA job growth. Based on this comparison, the Portland EOA is consistent with the Metro projection.

Employment Forecast

Metro's updated baseline forecast anticipates that regional employment increases from just under 1 million jobs in 2010 to nearly 1.5 million in 2035, a gain of over 537,000 jobs, with an average annual growth rate in the range of 1.8% per year over the 2010-2035 period.

Metro allocates 517,000 of these future jobs by 2035 to Portland. When compared with actual 2010 employment of 370,000 jobs, the projected Portland job gain is approximately 147,000 jobs over the 2010-35 forecast period which represents an annual average growth rate of 1.3% and a 27% capture rate of regional employment growth.

In effect, the forecast reflects an expectation of a continued, but relatively slower, decline in the Portland's overall share of regional employment. In 2010, Portland had nearly 39% of the region's job base. With the EOA forecast, the in-city share of the region's job base would decline somewhat to 35% by 2035.

While each of Portland's job sectors has varied shares of regional employment, the allocation assumes that each sector's proportion of corresponding regional employment declines at a similar rate over the 25-year forecast period (Table 4-2). As has occurred over the last 2-3 decades, the institutional sectors (health and education) account for a substantial share of forecast employment growth at nearly 53,000 new jobs or 36% of the net increase. While the manufacturing sector declines slightly as consistent with national and regional forecast expectations, the warehousing and distribution sectors are expected to see strong growth with over 16,000 net new jobs by 2035.

Table 4-2. City of Portland Employment Forecast by Sector (2010-35)

Employment Sector	2010	2035	Job Change 2010-35	Avg Rate of Growth 2010-35
Agriculture & Mining	392	357	(35)	-0.4%
Construction	14,224	21,765	7,541	1.7%
Manufacturing	25,035	24,328	(707)	-0.1%
Wholesale Trade	18,009	23,250	5,241	1.0%
Retail Trade	31,060	33,309	2,249	0.3%
Transportation, Warehousing & Utilities	23,676	35,345	11,669	1.6%
Information	9,640	13,906	4,266	1.5%
Finance	17,048	24,524	7,476	1.5%
Real Estate	7,946	15,527	7,581	2.7%
Professional Services	26,943	39,268	12,325	1.5%
Management	14,322	21,910	7,588	1.7%
Administrative & Waste Services	18,449	28,404	9,955	1.7%
Educational Services	37,937	61,838	23,901	2.0%
Health & Social Services	50,616	79,702	29,086	1.8%
Arts, Entertainment & Recreation	6,741	8,582	1,841	1.0%
Accommodation & Food Services	35,102	44,686	9,584	1.0%
Other Services	16,802	23,318	6,516	1.3%
Government (Civilian)	15,498	16,422	924	0.2%
TOTAL EMPLOYMENT	369,440	516,440	147,000	1.3%
City Share of Portland Metro Employment	39%	35%		

Source: E. D. Hovee & Company, LLC based on Metro Gamma forecast, November 2011.

Industrial & Commercial Land Demand

Portland's EOA translates this forecast employment growth into demand for additional employment related development and land demand (Table 4-3). After accounting for jobs that locate in residential areas (schools, home occupations, non-conforming uses), there is an estimated demand for 2,660 acres of employment land in Portland, with over half of it in industrial areas.

Portland serves as a key freight distribution hub on the West Coast. As a result, in addition to the building space and related land needed for employment uses, additional land is needed for shipping/transportation related facilities. Air, marine, and rail terminals are needed to support the overall traded sector economy, where land needs relate more directly to increasing transportation throughput than on-site employment growth.

These types of freight transportation drivers are treated as separate line items of land demand, because they are estimated primarily by transportation throughput. They also represent specialized, land-intensive building types that do not match the typical building needs of other transportation sector employment growth. With these transportation-driven factors included, an additional 580 acres of land is identified as needed for these facilities and is added to the demand for industrial land.

Table 4-3. 2035 Employment Forecast and Land Demand

Aggregate Geography	Jobs	% of Total	Acres	% of Total
Central City	46,480	32%	160	6%
Industrial	32,910	22%	1,410	53%
Commercial	36,210	25%	710	27%
Institutions	23,360	16%	380	14%
Residential	8,040	5%	NA	
Total	147,000		2,660	100%

Traded Sector Support Facilities	Acres
Rail Yards	200
Marine Terminals	350
Airport Facilities	30
Total	580

Note: Aggregate employment geographies reflect combinations as follows: Central City includes Central City Commercial and Incubator geographies; Industrial includes the Columbia Harbor, Columbia East of 82nd Avenue, and Dispersed Industrial; Commercial includes Gateway Regional Center, Town Centers and Neighborhood Commercial. Also noted is that modest adjustments to geographically based allocations may be made pending BPS Commission review of the March 2012 draft EOA.

Source: E.D. Hovee & Company, LLC.

Employment Land Supply

The EOA compares Portland industrial and commercial land needs with the existing inventory of vacant and redevelopable property, the Buildable Lands Inventory (BLI) described in Section 1 of this report. The BLI looks at the difference between existing and allowed development to determine the remaining development capacity under the current comprehensive plan (Table 4-4). The capacity is reduced to account for constraints such as infrastructure, brownfields, and natural resource protection areas.

Development capacity is also reduced if the site is likely to be developed as a mixed-use employment/residential building by discounting the portion of building space that would be residential space based on past development trends. For some employment geographies, development capacity is further adjusted for market factors in some areas to reflect zoned capacity that is more than is currently being developed or expected to be developed in the foreseeable future.

Citywide development capacity is distributed across the employment geographies. The employment land supply is calculated in three stages:

- Base supply (of vacant and underutilized parcels)—estimated as having development capacity for up to 251 million square feet.

- *Less* constrained supply (for identified environmental, infrastructure, historic landmarks, low constraints such as view corridors and historic district designation, greenway designation, and brownfield constraints)—reducing the maximum remaining developable capacity to 183 million square feet
- *Less* market adjustments in development densities (for employment geographies where development is occurring at well below zoned capacity as with Gateway Regional Center, Town Centers and Neighborhood Commercial)—for a final market adjusted capacity of about 101-102 million square feet.

Table 4-4. Summary of 2035 Employment Development Capacity (Adjusted for Constrained Supply & Market FARs)

Aggregate Geography	Bldg Sq Ft	% of Total
Central City	37,837,000	37%
Industrial	19,944,000	20%
Commercial	33,139,000	33%
Institutions	10,676,000	11%
Total	101,596,000	100%

Source: City of Portland Bureau of Planning and Sustainability.

Brownfield redevelopment could add 33% more capacity in the Columbia Harbor

In the absence of brownfield constraints, an added development potential of approximately 6.1 million square feet would be added to the Portland’s overall employment development capacity. While this represents an overall 6% add-on across all employment geographies, the potential added development capacity is greatest for the Columbia Harbor area (at an added 33%). For Harbor Access Lands (a subset of the Columbia Harbor), the potential add-on to developable supply is even greater at an added 48%.

Note that industrial development capacity is counted for vacant parcels only and not redevelopment sites. If all vacant and redevelopment sites across Portland are included, the total building square footage capacity affected by brownfield issues is an even more substantial 34 million square feet. This expanded estimate includes existing uses on underutilized properties with brownfield designation as well as the development capacity of vacant properties.

Land Needs Reconciliation

By subtracting effective land supply from demand, it is possible to determine whether and to what extent Portland’s employment land base will be adequate to serve forecast needs over the 2035 planning horizon. In cases where there is adequate inventory, a land surplus is indicated; where the inventory is not adequate, a resulting deficit is calculated.

Citywide, forecast employment land demand exceeds vacant and redevelopable land supply by an estimated 146 acres (Table 4-5). However, the extent of land shortages is potentially much greater as land is not necessarily distributed in proportion to where the demand is greatest.

Specifically, additional policy changes, zoning capacity, public investments, and development incentives will be needed to address capacity shortfalls in the **Central City Incubator, Columbia Harbor (especially Harbor Access Lands), Dispersed Industrial, Town Centers, and Institutional** geographies (Figure 4-4).

Portland's EOA notes that the Comprehensive Plan update will need to identify changes to policy, regulations or programs to address these deficits and meet the forecast demand. With respect to creation of added industrial capacity, opportunities are identified as including:

- Supporting remediation and reuse of brownfields;
- Making progress on the Portland Harbor Superfund cleanup program;
- Maintaining industrial district sanctuary designations; and
- Giving priority to investments that yield greater utilization of existing industrial properties

All four of these recommendations bear directly on the financial feasibility analysis to be conducted as subsequent phases of this Portland Brownfield Assessment.

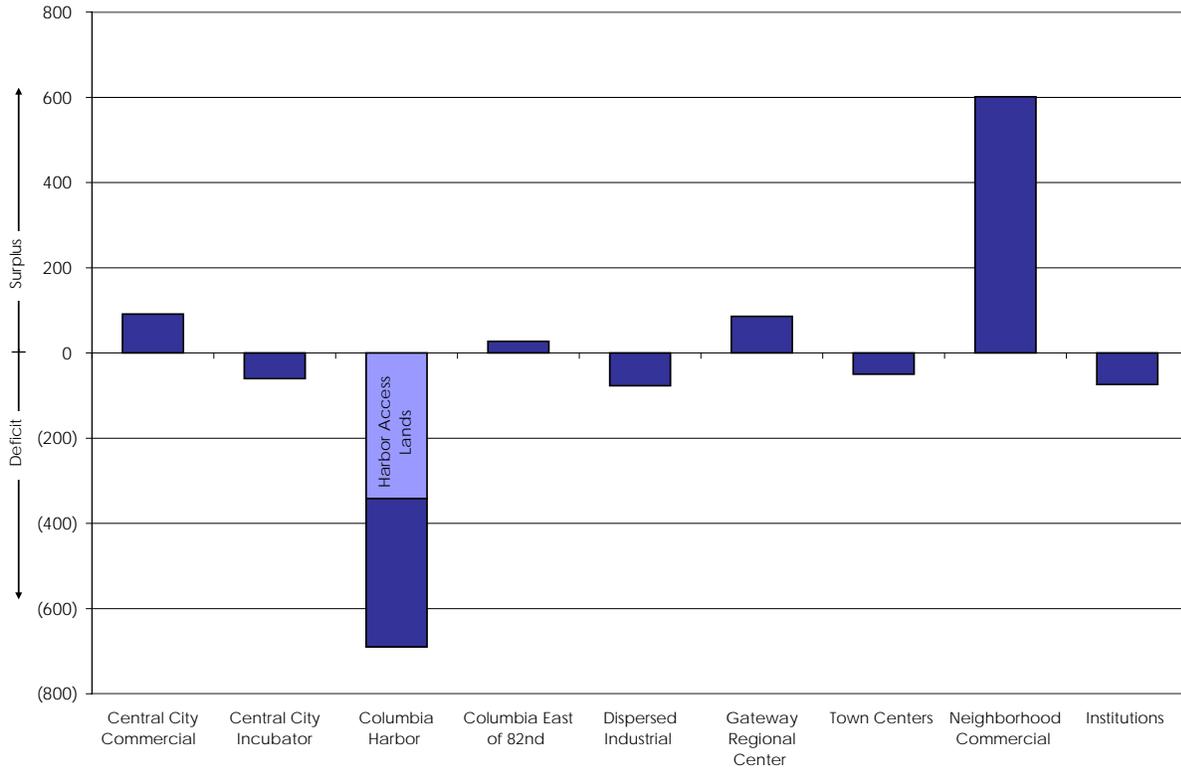
Table 4-5. 2035 Employment Land Needs (Demand-Supply Reconciliation)

Employment Geography	Demand	Land Supply	Surplus/Deficit	% Capacity
Central City Commercial	60	151	91	252%
Central City Incubator	100	40	(60)	40%
Columbia Harbor	1,490	800	(690)	54%
<i>Harbor Access Lands</i>	450	108	(342)	24%
Columbia East of 82nd	360	387	27	108%
Dispersed Industrial	140	63	(77)	45%
Gateway Regional Center	50	136	86	272%
Town Centers	140	90	(50)	64%
Neighborhood Commercial	520	1,121	601	216%
Institutions	380	306	(74)	81%
Total	3,240	3,094	(146)	
Aggregate Geography				
Central City	160	191	31	119%
Industrial	1,990	1,250	(740)	63%
Commercial	710	1,347	637	190%
Institutions	380	306	(74)	81%
Total	3,240	3,094	(146)	

Note: Columbia Harbor includes 630 acres and Harbor Access Lands 400 acres for regional transportation needs.

Source: Bureau of Planning and Sustainability.

Figure 4-4. 2035 Employment Acreage Surplus/(Deficit) by Geography



Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

Employment Land Supply & Brownfields Significance

Columbia Harbor has the greatest land supply deficit, but it can be largely offset by putting brownfields back to productive use.

In terms of acreage, the potential added land that could be put into productive use if all further brownfield constraints were removed is estimated at 326 acres city-wide. The Columbia Harbor employment geography is most affected by brownfields – at an added 267 acre potential. Currently, the EOA estimates that approximately 40% of industrial brownfields will redevelop through 2035 consistent with past experience. The 267 net add figure represents the maxed added potential of going from 40% brownfield redevelopment to 100%.

4.3 Brownfield Redevelopment Rate Analysis

Pivotal to Portland’s capacity to accommodate forecast growth is the ability for development to occur not only on vacant and unconstrained greenfield sites but, increasingly, on constrained and previously developed sites, as well. The question has been: how much redevelopment can reasonably be expected to occur on sites with varied constraints and with varied experience in terms of greenfield status or previous development?

To ground-truth observed experience, redevelopment rates were calculated using Metro's Regional Land Information System (RLIS) tax lot data for the years 1999 and 2011. Constraints evaluated included environmental, infrastructure, historic landmarks, low constraints such as view corridors and historic district designation, greenway designation, and brownfields as defined by the BLI.

Properties were also differentiated by employment geography and level of prior development, as vacant or previously developed at low or higher levels of development intensity. The focus of this discussion is on redevelopment experience with sites partially or fully constrained by brownfields as defined by the BLI.

4.3.1 Redevelopment Analysis Methodology

As noted, the redevelopment analysis is based on development activity from 1999-2011 based on the development status of a tax parcel in 1999 – Vacant, LoFAR, or HiFAR. The LoFAR category comprises sites determined to be underutilized or redevelopable and is defined as sites with less than 20% of the building square footage allowed by zoning (based on applicable zoned floor area ratios (FARs)) calculated on existing building square footage in 1999. HiFAR properties are defined as sites with existing (1999) FARs in excess of 20% of zoned capacity.

Metro RLIS data is used to create a side-by-side comparison of tax lots with a new year built or for which there was more than 50% building square footage added (as opposed to a minor addition). A review of the RLIS data revealed a number of parcels for which there was no building square footage indicated in 1999 but had a 1999 building value of over \$25,000, indicating some kind of improvement. Tax parcels greater than 10,000 square feet in size with missing data were cross-checked with development permit data to better determine which parcels were: a) previously developed in 1999 with no added building space developed through 2011, or b) previously developed but added some amount of net new building space since 1999.

This analysis was limited to parcels for which there was comparable data regarding building square footage and land and improvements valuation by matching parcel numbers in 1999 and 2011. Excluded were parcels for which there was not a matching tax parcel identifier or for which other data is missing in either year.

Also excluded are parcels for which building square footage was increased by less than 50% or no indication of a change in the year built from 1999-2011. For these reasons, the analysis should be viewed as a conservative representation of development activity on employment lands over this time period.

Using this revised parcel dataset totaling 10,779 acres citywide, development activity was assigned to the type of site in 1999 – Vacant, LoFAR, or HiFAR. The proportion of development activity that occurs on Vacant or LoFAR is development that would occur on underutilized sites.

There is an added caveat that properties within an industrial sanctuary are limited to vacant sites and that commercial outside of the Central City and transit corridors was subsequently assigned to sites with less than 10% rather than 20% of zoned capacity. While of interest for analysis, development that has taken place on HiFAR parcels is on sites not considered underutilized with the BLI.

4.3.2 Redevelopment Analysis Findings

Out of 10,779 commercial and industrial acres evaluated citywide, 2,346 acres (including both undeveloped and developed sites) were identified as potential brownfield sites (with matching parcel numbers for both 1999 and 2011). Of this acreage, an estimated 915 acres are noted as having experienced new development or substantial redevelopment over the 1999-2011 time period.

As illustrated by the following chart, brownfield redevelopment rates were then calculated by employment geography and by development status of the property in 1999 (Table 4-6).

Table 4-6. Brownfield Redevelopment Rates

Forecast Geographies	Development Rates				
	Vacant	LoFAR	HiFAR	Total	Vac+Lo
EOA Geographies					
Central City Commercial	89.0%	0.0%	55.4%	62.1%	76.8%
Central City Incubator	94.8%	2.3%	0.0%	8.3%	9.0%
Columbia Harbor	20.2%	32.5%	0.0%	30.3%	30.5%
Columbia East	56.5%	17.6%	0.0%	41.1%	41.4%
Dispersed Industrial	100.0%	14.2%	14.2%	39.7%	44.3%
Neighborhood Commercial	65.5%	0.0%	22.5%	24.6%	44.5%
Town Centers	100.0%	0.0%	0.0%	10.9%	70.7%
Regional Center	63.1%	NA	12.2%	13.3%	63.1%
Institutions	NA	NA	100.0%	100.0%	NA
Total	35.8%	30.9%	64.5%	39.0%	31.9%

Aggregate Geographies

Central City	89.5%	2.0%	52.8%	46.0%	39.0%
Industrial	31.3%	31.6%	5.3%	31.2%	31.6%
Commercial	70.0%	0.0%	19.1%	21.6%	48.8%
Institutions	NA	NA	100.0%	100.0%	NA
Total	35.8%	30.9%	64.5%	39.0%	31.9%

Note: For purposes of this analysis, vacant sites are those designated as vacant by RLIS data as of 1999, including parcels with less than \$25,000 building value. LoFAR sites are those with floor area ratio of less than 20% of zoned FAR, HiFAR sites are sites with floor area ratios of more than 20% of zoned FAR – as of 1999. Industrial redevelopment rates are calculated for vacant sites only.

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

Citywide, approximately 39% of brownfield constrained properties that were evaluated exhibit new development or significant redevelopment between 1999-2011. However, the experience is widely varied depending on employment geography and 1999 vacant or development status of the property:

- Approximately 36% of brownfield constrained properties identified as Vacant in 1999 experienced some level of new development from 1999-2011 with the highest levels of redeveloped (at virtually 100%) noted for the Town Center and Dispersed Industrial geographies (where very little vacant acreage was available). In contrast only 20% of Columbia Harbor vacant sites with brownfields exhibited new development from 1999-2011.
- Just under 31% of LoFAR brownfield constrained properties indicate significant new development (where building square footage increased by at least 50%). For commercial geographies, this proved to be a category of limited application as there was very little

previously developed commercial property with 1999 FARs at less than 20% of zoned capacity.

- For industrial properties, redevelopment rates on previously developed LoFAR properties ranged from 14% for the Dispersed Industrial geography to about 33% in Columbia Harbor. The Columbia Harbor LoFAR rate exceeds that of vacant brownfield properties, perhaps reflecting greater willingness of existing uses on contaminated properties to invest (where there is an existing liability) than new owners on vacant sites to take on this liability.
- Overall, a relatively high 65% redevelopment rate is indicated for HiFAR properties citywide. However, this is strongly influenced by the Institutional geography, which had over 80% of the HiFAR but brownfield constrained property and where there was no vacant or LoFAR opportunity.
- High redevelopment rates for brownfield sites were also indicated for Central City Commercial, where vacant and LoFAR land is extremely limited. Examples would include brownfield redevelopment in the Pearl and South Waterfront districts of the Central City. HiFAR is not applicable to industrial sanctuary properties where there is no maximum zoned capacity—all redevelopment sites are classified as LoFAR.

Sites constrained by brownfields are often also associated with other infrastructure and/or environmental constraints. For the EOA, redevelopment rates for sites with an added constraint were discounted by an added 10%. Sites with two or more added constraints were discounted by 20% (in addition to the redevelopment rate indicated for brownfields).

4.3.3 Redevelopment Rates Applied to EOA Forecast

A follow-on question addressed by the EOA is the degree to which redevelopment of sites constrained by brownfields should be anticipated over a 2010-35 forecast horizon. While serving as a starting point for this determination, the 1999-2011 development experience on vacant and LoFAR sites was refined in several respects for application to future forecast expectations.

A process similar to that illustrated for brownfield properties was followed in determining redevelopment rates for the five other categories of development constraints considered across Portland's employment geographies. An initial refinement for all constraints was to apply the experience of the aggregate geographies rather than more detailed employment geographies, where "outliers" could substantially influence results.

Other key assumptions are illustrated by the columns provided with the following EOA brownfield development rate chart:

- Column A begins with the actual redevelopment rates observed over the 1999-2011 time frame for brownfield sites as compared with sites that have no development constraints.
- Column B calculates the development rate for brownfield sites in relation to the rate observed for unconstrained sites. Where the brownfield rate exceeds that of the unconstrained sites, the relationship is capped at 100% of unconstrained sites.
- Column C shows the incremental FAR at which brownfield sites developed as compared with unconstrained properties.
- Column D calculates the FAR development rate for brownfield sites as a percentage of the FARs for unconstrained sites. For all aggregate geographies, the incremental FARs associated with brownfield sites are below what was experienced for unconstrained sites.
- Column E calculates a composite rate of land developed (column B) multiplied by FAR experienced with incremental development (column D).
- Column F provides EOA adjusted constraints reflecting rounding and other BPS testing based on review of project files to control for outlier experience.

Table 4-7. EOA Brownfield Development Rate Calculations (2010-35)

	(A) 99-11 Land Development Rate	(B) Development Rate as % of Unconstrained	(C) 1999- 2011 FAR	(D) 1999-2011 FAR % of Unconstrained	(E) 2010-2035 Composite Rate	(F) EOA Adjusted Constraint
Brownfields						
Central City	39.0%	100.0%	2.14	92.1%	92.1%	90%
Industrial	31.3%	61.8%	0.20	62.9%	38.9%	40%
Commercial	48.8%	100.0%	0.19	47.9%	47.9%	50%
Unconstrained						
Central City	16.6%	100.0%	2.32	100.0%	100.0%	
Industrial	50.6%	100.0%	0.32	100.0%	100.0%	
Commercial	46.6%	100.0%	0.39	100.0%	100.0%	

Note: Industrial rates are calculated for vacant properties only. Central City and Commercial district rates are calculated for vacant and LoFAR properties. Institutional rates were excluded from the final analysis due to the unique characteristics of these large site holdings and reliance on campus master plans.

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability.

The results of this analysis are that Central City properties with brownfields are expected to develop at 90% of the level of intensity as unconstrained properties through 2035. This reflects limited land availability of remaining vacant and LoFAR property in the Central City combined with the high desirability of brownfield sites (as in the Pearl and South Waterfront areas).

For other Commercial geographies citywide, development on brownfields is expected to occur at about 50% the level of development on unconstrained sites. For industrial, development is anticipated to occur at 40% of what could be expected with unconstrained properties.

4.3.4 Adjusted Findings

The redevelopment rates calculated with the EOA may be viewed as representing a conservative estimate of commercial and industrial brownfield sites in Portland. To this might be added other sites with historical uses often associated with some level of contamination. Depending on determinations of a more aggressive brownfields inventory, it may be possible to estimate redevelopment rates realized for these added sites over the 1999-2011 time period, as well.

4.3.5 Added Potential Capacity to Reach EOA Job Targets

As previously described, brownfield redevelopment rates applied with the EOA already have been targeted at 40% for industrial, 50% for commercial and 90% for Central City geographies. Best case, the ability to go from the redevelopment rates as currently applied to **100% redevelopment** of BLI brownfield sites would be the effective gain of 6.1 million square feet of development affecting an approximately 326 acres of added development capacity (Table 4-8).

The greatest added gain in development potential is noted for the Columbia Harbor geography (including Harbor Access lands). With 100% redevelopment of vacant brownfield sites, an estimated 267 acres of land capacity would be added the Columbia Harbor geography (including 52 acres for Harbor Access lands).

The next greatest acreage potential is noted for Columbia east of 82nd Avenue (at 25 acres). Lesser acreage gains are noted for commercial geographies. Central City commercial shows added potential of only an added 4 because 90% redevelopment is already factored into the EOA.

Table 4-8. Maximum Added Capacity With Brownfield Redevelopment to Reach EOA Jobs Targets

Employment Geography	EOA Sq Ft Market Adjusted Capacity	Added Sq Ft Potential @ 100% B-field Redevelopment	% Added Potential Supply @ 100%	EOA Acreage Surplus / (Deficit)	Added Acreage Potential @ 100%
Central City Commercial	35,664,000	849,434	2%	91	4
Central City Incubator	2,173,000	44,860	2%	(60)	1
Columbia Harbor	12,203,000	4,067,249	33%	(690)	267
<i>Harbor Access Lands</i>	<i>1,600,000</i>	<i>772,206</i>	<i>48%</i>	<i>(342)</i>	<i>52</i>
Columbia East of 82nd	6,747,000	435,881	6%	27	25
Dispersed Industrial	994,000	134,077	13%	(77)	8
Gateway Regional Center	5,617,000	285,181	5%	86	7
Town Centers	2,124,000	62,396	3%	(50)	3
Neighborhood Commercial	25,398,000	262,610	1%	601	12
Institutions	10,676,000	-	0%	(74)	-
Total	101,596,000	6,141,689	6%	(146)	326

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability. Data is preliminary and subject to refinement.

It is possible that greater non-Central City gains would be shown for Portland commercial geographies if sites with historic use indicating potential for brownfield issues were added to sites in the current Portland BLI. This represents a potential step for added consideration depending on the outcome of discussion regarding adding other non-BLI indicated brownfield properties.

Table 4-9 illustrates the change in Portland’s anticipated surplus / (deficit) of industrial and commercial lands at alternative levels of brownfield development: 50%, 70% and 90% as well as a theoretical maximum of 100%. With 100% or 90% brownfield redevelopment, Portland’s land shortage (in aggregate) goes from a deficit to a surplus of land. However, this assumes fungibility of land between industrial and commercial sites which may be possible for commercial uses between employment geographies but not as likely for industrial uses to expand into commercial areas.

Table 4-9. Added Capacity to Reach EOA Jobs Targets

Employment Geography	Acreage Surplus / (Deficit) @ 100%	Acreage Surplus / (Deficit) @ 50%	Acreage Surplus / (Deficit) @ 70%	Acreage Surplus / (Deficit) @ 90%
Central City Commercial	95	91	91	92
Central City Incubator	(59)	(60)	(60)	(60)
Columbia Harbor	(423)	(662)	(567)	(471)
<i>Harbor Access Lands</i>	(290)	(342)	(326)	(302)
Columbia East of 82nd	52	31	40	48
Dispersed Industrial	(69)	(75)	(73)	(70)
Gateway Regional Center	93	86	86	89
Town Centers	(47)	(50)	(50)	(48)
Neighborhood Commercial	613	601	601	604
Institutions	(74)	(74)	(74)	(74)
Total	180	(112)	(6)	111

Source: E.D. Hovee & Company, LLC and Bureau of Planning and Sustainability. Estimates are preliminary.

The ability to increase redevelopment rates above current EOA projections has the most dramatic effect for the Columbia Harbor area where it could reduce the land deficit from 690 acres (assuming 40% redevelopment) to a smaller deficit of 471 acres (assuming 90% redevelopment).

5 BARRIERS TO BROWNFIELD REDEVELOPMENT

Increasingly, local governments are exploring the role that brownfield redevelopment could play in achieving policy goals ranging from reducing the cost of infrastructure provision to reducing greenhouse gas emissions. However, the challenges associated with brownfield redevelopment continue to affect outcomes and demand practical solutions. This section articulates those challenges, and describes some of the approaches that local governments have taken to overcome them.

5.1 National Perspective

From a market point of view, brownfields redevelopment is generally regarded as a sub-set of urban redevelopment, i.e. the infill/smart growth alternative to suburban sprawl. While this paradigm ignores small town and rural sites, it is still a useful perspective for the majority of brownfields sites.

Real estate analysts have documented several trends that are favorable to urban infill redevelopment. In summary, demographic trends favor the urban marketplace because:

- Young people, in general, are waiting longer to form families and have children;
- Gen Y (“twenty-somethings”), in particular, shows strong preferences for living in walkable neighborhoods, with work easily accessed via transit, walking, or short car trips;
- At the other end of the age spectrum, empty nesters are also in the urban demographic, looking for stimulating living situations, contrasted with suburban environments seen as sterile.
- Businesses that rely on a “creative class” workforce are increasingly locating in downtown or in-town settings that are convenient to urban dwellers and the educated workforce.
- In many cities, the outward push of suburban and ex-urban development may have reached a point of diminishing returns. The combination of land use controls, protective measures for natural areas, developer impact fees, and the practical limits of commuting times are all working to reduce the outward push and thereby increase interest in infill/urban redevelopment.
- The generally upward trend of gas prices also favors commute-friendly urban locations.

Residential Trends—The 2012 Urban Land Institute Market Trends report classifies “Infill and in-town housing” as the most promising residential investment and development category.² A 2010 US Environmental Protection Agency (USEPA) report on residential construction trends in the 50 largest metro areas found, “In more than half of the largest metropolitan areas, urban neighborhoods had dramatically increased their share of new residential building permits (from 1995 – 2000 to 2003 – 2008).”³ Portland was one of 12 metro areas where the center city share more than doubled.

Targeted consumer preference surveying by the [Robert Charles Lesser](#) group documents the strong urban bias of “Gen Y”, and predicts that many urban demand projections will prove to be far too conservative. Adding more evidence, a recent [National Association of Realtors survey](#) found that Americans favor walkable, mixed-use neighborhoods, with 56 percent of respondents preferring smart growth neighborhoods over neighborhoods that require more driving between home, work and recreation.

Northeast-Midwest Institute in 2008 tracked a number of brownfields surveys and reports and concluded that, in the mid-2000’s there had been a fairly dramatic shift in brownfields reuse, with residential and mixed use now predominant, where industrial projects had comprised a plurality of reuse plans in the 1990’s⁴. This change aligns brownfields redevelopment even more closely with smart growth objectives and the previously cited trends that favor urban infill for residential development.

Commercial Trends—The news is not as favorable on the commercial development side. A Brookings Institution report outlines the continuing suburbanization of jobs, despite the creative class niche that many cities have successfully mined: “In the largest metropolitan areas between 1998 and 2006, jobs shifted away from the city center to the suburbs in virtually all industries.”⁵

5.2 Market & Non-market Barriers to Redevelopment

The brownfields marketplace is now maturing, with regulatory issues, in particular, becoming more efficient and predictable. Further, the private sector has responded to the need for investor certainty, providing an array of

² Urban Land Institute, Emerging Trends in Real Estate® 2012, available at: <http://www.uli.org/sitecore/content/ULI2Home/ResearchAndPublications/EmergingTrends/Americas.aspx>

³ US EPA, Residential Construction Trends in America's Metropolitan Regions, 2010, available at: http://www.epa.gov/smartgrowth/construction_trends.htm.

⁴ Paull, Evans. 2008. The Environmental and Economic Impacts of Brownfields Redevelopment. Northeast-Midwest Institute.

⁵ Brookings Metropolitan Policy program, Job Sprawl and the Suburbanization of Poverty, March, 2010, available at: <http://www.brookings.edu/research/reports/2010/03/30-job-sprawl-stoll-raphael>

environmental insurance products, fixed price cleanups, and even three-party transactions (a buyer, a seller, and a third entity that accepts liability).

However, brownfield sites still face greater risk, liability, and regulatory hurdles than non-brownfield sites—the playing field is still unequal. Following are some of the challenges to redevelopment faced on brownfield sites identified through analysis for case studies in the Portland Metropolitan region, discussion with experts in the field, and professional experience.

Financial—To state the obvious, financing is the controlling factor that determines project success or failure. The additional direct costs of remedial actions and the indirect increased carrying costs associated with longer timelines make many brownfield properties financially infeasible to cleanup and redevelopment without some public subsidy. Some of the factors that enter into the financing picture are:

- **Competition with Greenfield Sites**—The added costs and complexity of redeveloping a brownfield site generally makes them financially less attractive than comparable undeveloped (greenfield) properties⁶.
- **Cost Overruns**—The uncertainty involved in characterizing and remediating a contaminated site often leads to cleanups exceeding their cost estimates.
- **Timing**—Cleanup costs are typically incurred at the front end of a project before there is any offsetting revenues from a project. Extended project schedules can pose an obstacle to delivering clean property at an appropriate time relative to the real estate market cycle. The interest costs of financing projects over a longer timeframe can also create a significant impact on large projects.
- **Limited Financial Resources to Conduct Investigation and Cleanup**—Obtaining financial participation from responsible parties and/or insurance companies can consume significant amount of time, energy, and cost. There are also complications associated with leveraging and multiple funding sources on a single project.
- **Limited Public Cleanup Funds**—Oregon DEQ, Business Oregon, and the City of Portland have grant and loan programs that can support environmental assessment and cleanup, but these programs have relatively small budgets.

⁶ Brownfield/Greenfield Development Cost Comparison Study. 2004. Prepared for Port of Portland, Portland Development Commission, City of Portland, METRO.

- **Property Tax Disincentive**—Oregon property tax assessment rules reduce the taxable value of property for the cost of environmental liability. This effectively makes inaction on contamination financially advantageous and encourages mothballing of properties
- **Other Property Constraints**—Many brownfield sites are located in areas that are already market-challenged for redevelopment. Some sites may have poor access to transportation facilities, be poorly located proximate to the amenities that support higher density redevelopment, or otherwise be unlikely to redevelop, even in absence of the higher costs associated with brownfield clean up.

Uncertainty and Risk—Redevelopment of a contaminated property inherently involves uncertainty and risk related to potential extent of contamination, lack of predictability in regulatory decisions, and potential for federal liability. Uncertainty is a serious liability in the development context, because it has the potential to affect the development timeline, funding sources, and even site design and engineering costs. This uncertainty discourages development, sometimes more than the actual cost of clean-up.

- **Fear of the Regulatory Web.** Owners of contaminated sites are sometimes reluctant to discuss environmental issues with regulatory staff for fear of triggering legal obligations, fines or liability. Rather than proactively addressing potential contamination issues, many property owners have a perception that it is more cost effective to maintain a low profile and delay taking remedial actions.
- **Superfund Overlay.** The designation of the Portland Harbor as a Superfund Site has added a significant layer of complexity and uncertainty to redevelopment of properties on the waterfront and properties that contribute stormwater runoff to the harbor. There is uncertainty regarding remedial actions that may be required and assigned liability.
- **Transaction costs of regulatory process.** Process for site investigation, risk assessment, and study of cleanup alternatives requires a high level of time and resources.

Linking Cleanup & Redevelopment—The most successful brownfields programs are closely tied to economic and community development, i.e. cleanup is not an end in and of itself, but is rather a piece in the redevelopment puzzle. Note the following considerations:

- **Lack of agency coordination.** Uncoordinated or potentially conflicting requirements from multiple agencies involved in

permitting and approving cleanup and redevelopment cause challenges and time delays.

- **Cleanup in Context of Redevelopment.** Requirements for remediation often occur without consideration for demands of redevelopment.
- **Lack of knowledge.** Property owners and developers might not understand the tools and finance mechanisms available to help realize site cleanup and redevelopment, and may not understand the degree to which contamination actually affects redevelopment potential and development costs. Most property owners only go through the process once, so there is always a learning process.

Regulatory Process—A few states have excellent reputations for making the brownfields regulatory process predictable and customer friendly. Some perceptions of the Oregon process are:

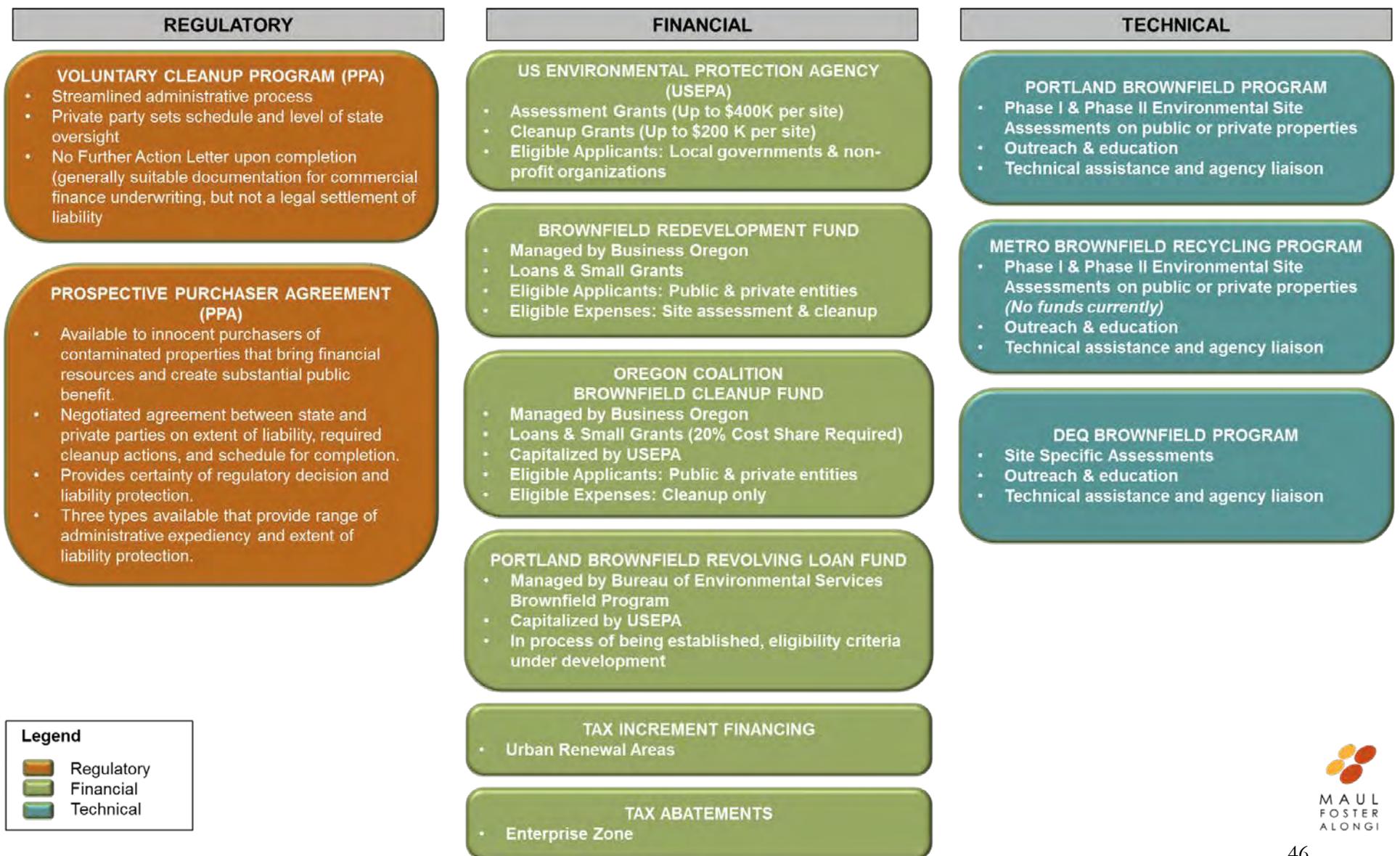
- **Land supply and competition**—If the process is too difficult, developers might go elsewhere in the region or country to buy and redevelop property.
- **Outcome-based management and unified permitting**—The process of arriving at an acceptable remediation solution is currently often characterized by delay and poor communication between parties. Additional challenges arise from permitting requirements that require coordination and negotiation with multiple agencies, sometime simultaneously.
- **Liability Release**—The Voluntary Cleanup Program provides a No Further Action letter when cleanup is determined to be complete but does not provide a legal settlement of liability. The lack of a timely pathway to liability settlement can deter property developers from investing in contaminated sites.

5.3 Existing Brownfield Incentives

The State of Oregon, Metro Regional Government, and the City of Portland provide a number of programs that support cleanup and redevelopment of brownfield properties. These programs attempt to address many of the challenges identified in section 5.2, including risk management, financial capacity, education, and agency coordination. The programs can be grouped into those that provide support from regulatory, financial, and technical perspectives (See Figure 5-1).

Figure 5-1

EXISTING BROWNFIELD INCENTIVES IN OREGON



Legend

-  Regulatory
-  Financial
-  Technical



5.3.1 Regulatory

The Oregon Cleanup Law (Oregon Revised Statute 465 and Oregon Administrative Rule 340-122), which is implemented by the state DEQ, is the primary law regulating remediation of brownfields in the state. It establishes the procedural and technical requirements for remediation of contaminated properties. The Cleanup Law incorporates several fundamental policies designed to promote cleanup and redevelopment of brownfields. The most important of these are the Voluntary Cleanup Program, and Prospective Purchaser Agreements.

5.3.1.1 Voluntary Cleanup Program

The Voluntary Cleanup Program (VCP) provides an expedited administrative process in which the schedule and level of involvement of the DEQ is controlled by the project proponent. The VCP Program was authorized by the 1991 Legislature in order to provide willing parties DEQ oversight while they investigate and, if necessary, cleanup contamination from their properties. This cooperative process helps parties move through the process efficiently, and meet sometimes tight funding and redevelopment deadlines. VCP sites may be of low, moderate, or high environmental priority. In this program, DEQ provides active oversight throughout the investigation and remediation through a collaborative process with the participant. DEQ also provides the Independent Cleanup Pathway, a subprogram of the VCP designed for property owners of low- to moderate- risk sites. The Independent pathway is similar to the VCP program in that participants voluntarily enroll. However, DEQ provides little to no oversight in the Independent Pathway, thereby leaving the participant responsible for more liability and risk.

The Voluntary Cleanup Program is the most common administrative pathway for cleanup of brownfield properties. In 2010, DEQ reported that there were approximately 400 active Voluntary Cleanup Program sites, with approximately 300 sites following the traditional VCP, and approximately 100 in the Independent Cleanup Pathway program⁷.

The end goal of the VCP is to achieve a No Further Action (NFA) determination. DEQ will issue a NFA letter to the responsible party if

⁷ DEQ, 22nd Annual Environmental Cleanup Report, January 2011.
<http://www.deq.state.or.us/lq/pubs/docs/cu/AnnualCUREporttoLegislature2011.pdf>

determines that the chemicals of concern have been adequately characterized and restored to a level protective of human health and the environment⁸. NFAs are only issued after cleanup activities are completed, reviewed, and approved by a public comment process. The NFA is not a legal settlement of liability, however it is generally accepted by commercial lenders as sufficient assurance that environmental issues have been addressed to allow underwriting of loans. However, NFA determinations may be rescinded or reopened under specific circumstances.

In some instances, NFAs are issued on a conditional basis whereby the property owner must complete specific remediation efforts, engineering, and institutional controls as outlined by the NFA letter. If DEQ finds that these measures have not been successfully completed, the NFA may be revoked. Additionally, NFAs may specifically address individual contaminants and certify successful cleanup as it relates to those toxins mentioned by name in the NFA. If new hazards are discovered on-site, or advancements in scientific knowledge raise new concerns, DEQ may reopen the NFA and impose additional cleanup requirements.

5.3.1.2 Prospective Purchaser Agreement

Prospective Purchaser Agreements (PPA) create a mechanism for innocent parties to negotiate the extent of cleanup and liability settlement with the State before purchasing a brownfield property^{9,10}. A PPA is a legally binding agreement between the DEQ and a prospective purchaser or prospective lessee, which limits the purchaser's or lessee's liability under state law for environmental cleanup at the property in exchange for providing a "substantial public benefit" (ORS 465.327).

From the purchaser's perspective, the PPA is a risk management tool that provides certainty about the requirements for cleanup and protection from potential claims. With these protections, a purchaser can have greater certainty about cleanup costs and liability for past releases. PPAs can also satisfy lender concerns and make it easier for a project to obtain outside financing.

⁸ DEQ. Information About DEQ No Further Action Decisions Fact Sheet, updated 2007.

<http://www.deq.state.or.us/lq/pubs/factsheets/cu/NoFurtherActionDecisions.pdf>

⁹ Prospective Purchaser Program Guidance. Oregon Department of Environmental Quality. December 2011.

<http://www.deq.state.or.us/lq/pubs/docs/cu/GuidanceProspectivePurchaserProgram.pdf>

¹⁰ Fact Sheet: Key Information About Prospective Purchaser Agreements in Oregon. Oregon Department of Environmental Quality. December 2011.

<http://www.deq.state.or.us/lq/pubs/factsheets/cu/ProspectivePurchaserAgreement.pdf>

PPAs are a frequently used tool for promoting cleanup and redevelopment of brownfields in Oregon. Between 1995 and 2010, DEQ had negotiated 128 PPAs.¹¹

Eligibility—The state places a number of requirements on a purchaser to allow them access to the protections provided by a PPA.

- **Innocent Purchaser**—The prospective purchaser must not be responsible for contaminating the property. Under the strict, joint, and several liability regime, this means they cannot have caused the contamination as an operator of a facility or the transporter of hazardous materials, or be responsible as an owner of the property.
- **Future Use**—The proposed future use of the property will not exacerbate the contamination or interfere with necessary cleanup actions.
- **Significant Public Benefit**—This factor is evaluated on a case-by-case basis, but typically involves
 - Substantial new resources to facilitate cleanup
 - Substantial environmental cleanup activities
 - Productive reuse of a vacant or abandoned industrial or commercial facility
 - Development of the property by a public agency or non-profit to address an important public purpose

Legislative Enhancements to PPAs in 2011 – New legislation signed by Gov. Kitzhaber and effective January 01, 2012 protects “innocent purchasers” (i.e., persons not responsible for prior contamination at a site) from litigation by third parties. It also expanded PPAs to include the release or spilling of oil (in addition to hazardous substances), and allows DEQ the option to streamline the process for PPAs by providing greater liability protection through administrative order than judicial decree.

Type of PPAs—The legislation described above has resulted in three different forms of PPAs: Administrative Agreement PPA, Consent Order PPA, and Consent Judgment PPA. The Administrative Agreement version is the simplest and quickest, but cannot provide third-party liability protection. The Consent Order and Consent Judgment versions do provide third-party protection, but both require a 30-day public notice and comment period. The fundamental difference between these two types is that a Consent Judgment is formally reviewed and executed in court while the Consent Order is accomplished administratively by the DEQ. Prospective purchasers decide which type to use based on their risk tolerance and schedule constraints.

¹¹ Landman, C. Oregon Department of Environmental Quality. Personal communication. May 25, 2011.

Table 5.1 Summary Comparison of PPA Types

Elements	Administrative Agreement PPA	Consent Order PPA	Consent Judgment PPA
State Liability Protection	State agrees not to require purchaser or future owners to perform or pay for cleanup actions beyond those defined in the PPA.	Same	Same
Contribution Protection	No contribution protection under state law.	Protects purchaser and future owners from contribution claims	Protects purchaser and future owners from contribution claims
Third-Party Liability Protection	No protection provided	Protects purchaser and future owners from third-party liability claims.	Protects purchaser and future owners from third-party liability claims.
Public Notice Requirements	None required for PPA. Future remedial action may require notice.	30-day public notice period required before executing PPA.	30-day public notice period required before executing PPA.
Administrative Process	Negotiated and executed by DEQ	Negotiated and executed by DEQ	Negotiated by DEQ. Attorney General's Office files with Circuit Court to be approved by a judge.

5.3.2 Financial Programs

A number of public grants and loans are available in Oregon through various federal, state, and local government agencies to help overcome financial obstacles associated with brownfield redevelopment (See Figure 5-1). Successful brownfield projects often combine funding from a number of sources that are targeted for both cleanup and redevelopment. The following section provides a brief overview of the primary public funding sources for brownfield projects in Oregon. While these are identified as the primary funding sources, brownfield projects are often able to leverage funds from a variety of sources beyond those discussed in this report.

5.3.2.1 U.S. Environmental Protection Agency (USEPA) Assessment and Cleanup Grants

The USEPA provides separate grants for site assessment and for cleanup of brownfields. These grants are awarded through a highly competitive national application process on an annual basis.

Assessment Grant—The Assessment grants provide funding to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites. Applications are solicited on an annual basis. The maximum award is \$400k for a single applicant or \$350k for a single assessment.

Cleanup Grant—These grants provide funding for the cleanup activities on brownfield sites. Applications are solicited on an annual basis. The maximum award is \$200k per site.

5.3.2.2 Brownfield Redevelopment Fund

This fund, managed by Oregon Business, provides for loans and grants for site assessment and cleanup projects in varying amounts to local governments, nonprofits, public, and private entities. This fund was recapitalized with \$9 million in 2008 by state appropriation. This program has great flexibility in financing structure to make it effective for applicants, however it is decreasing in its capacity.

5.3.2.3 Oregon Coalition Brownfield Cleanup Fund

Through a second revolving loan fund, Business Oregon awards loans and grants for brownfield site cleanup to local governments, nonprofits, public, and private entities as a 20% cost share award in amounts up to \$1 million. This program was originally capitalized by \$2 million in USEPA funds and received an additional \$575,000 in 2011. Because of the USEPA funding, it

carries federal requirements such as National Environmental Policy Act review and federal prevailing wage compliance.

5.3.2.4 Portland Brownfield Revolving Loan Fund

The City of Portland was recently awarded \$1 million from USEPA to capitalize its own brownfield revolving loan fund. This program is currently being established, so specific criteria for eligibility and loan amounts are under development.

5.3.2.5 Tax Increment Financing

Tax Increment Financing (TIF) is the primary redevelopment and economic development tool associated with urban renewal areas (URAs). It helps Oregon cities and counties revitalize public and private properties and provide development-supportive infrastructure within URA boundaries (ORS Chapter 457). As such, TIF has been used to address environmental cleanup as this is one example of a blighting condition. TIF investments are guided by the goals outlined in the urban renewal plan for each URA. Urban renewal and tax increment financing enable local governments to focus resources on a particular area and stimulate much larger private investments. TIF offers a number of advantages over other funding alternatives: it is locally created and controlled; it can be invested more flexibly than general fund dollars; it provides a more certain and stable source of funding; and it leverages other public and private investments.

Urban renewal funds are primarily used to update and improve an area's infrastructure, including capital expenditures on transportation improvements and parks, and to provide incentives for desired development such as mixed-use projects, affordable housing, storefront improvement, and building rehabilitation. By leveraging TIF with private and other public investments these improvements help revitalize blighted areas.

Limitation Issues

Though they are a powerful tool for urban redevelopment, URAs are restricted in their application¹². Oregon law limits the percentage of land in a city that can be designated for urban renewal. In a large cities (population greater than 50,000), the area inside URAs may exceed neither 15% of a city's total area nor 15% of its assessed valuation. Portland has approached 14% of its land (15% total allowance), effectively meaning that an existing URA district would need to be reduced or discontinued before a large new one is established.

¹² Oregon Department of Revenue. Urban Renewal, December 2007. <http://www.oregon.gov/DOR/PTD/docs/504-623.pdf?ga=t>

Other restrictions on urban renewal dictate that area boundaries cannot be expanded by more than 1% without new voter approval under Portland charter amendment approved by voters in 2008.

Changes to tax laws over the past two decades have also placed limitations on TIF. Measures 5 (1990) and 50 (1997), affected how TIF is collected and categorized three types of urban renewal areas.

5.3.2.6 Tax Incentives

Tax incentives are financial tools that governments implement to encourage private investment to accomplish various economic and social objectives. The State of Oregon does not have tax incentives specifically targeted to brownfield cleanup and development, but there are several business tax credit and property tax abatement programs that may be applicable to certain brownfield projects. Tax incentives offer advantages to local governments by providing financial support to developers without directly taking money out of the current budget.

Property tax abatements allow cities or counties within the state to temporarily reduce property taxes for certain housing development and rehabilitation projects. These tax incentives are often connected to designation of special districts. These programs can be used to offset front end costs and support financial feasibility of brownfield redevelopment projects in these designated areas. Examples of these programs include:

Enterprise Zones—Enterprise zones exempt businesses from local property taxes on new investments for a period of three to five years (ORS 285C.050). Sponsored by municipal or tribal governments, an enterprise zone typically serves as a focal point for local development efforts. Portland has established an Enterprise Zone that encompasses North and Northeast areas of the city. The Portland Enterprise Zone is managed by the Portland Development Commission and provides five-year property tax abatements for industrial-based businesses making new investments.

A new building/structure, structural modifications or additions, or newly installed machinery and equipment may qualify for exemption, but not land, previously used property value and miscellaneous personal items. To qualify for the tax exemption, businesses need to meet a number of criteria, including:

- Increase full-time, permanent employment of the firm inside the enterprise zone by the greater of one new job or 10% (or less with special-case local sponsor waivers);
- Generally have no concurrent job losses outside the zone boundary inside Oregon;

- Maintain minimum employment level during the exemption period;
- Enter into a first-source agreement with local job training providers;
- Compensate new workers at or above 150% of the county average wage.

Tax Assessment for Contaminated Properties

Oregon’s property tax assessment framework includes a provision for reducing the assessed value of a property by the cost to cure environmental impacts. This valuation system has been used to reduce property taxes on some contaminated properties to nearly zero and is often critiqued as a policy that discourages cleanup of brownfields.

The Oregon Department of Revenue developed an administrative rule to provide a methodology for valuing contaminated property for the purpose of assessing property taxes (OAR 150-308.205-(E)). The rule defines a “contaminated site” as real property that is on the USEPA National Priority List (a Superfund site), in the DEQ inventory of confirmed releases, an illegal drug manufacturing site, or demonstrated to have had a release of hazardous substances. The rule requires that all three commonly used appraisal methods, the sales comparison approach, the cost approach, and the income approach be used to determine real market value of a contaminated site. The property values derived from these methods are adjusted to account for a number of factors related to the contamination including:

- Cost to cure defined as “the discounted present value of the estimated after tax cost of the remaining remedial work specific to the subject property to remove, contain, or treat the hazardous substance. Cost to cure may include the cost of environmental audits, surety bonds, insurance, monitoring costs, and engineering and legal fees. The costs must be directly related to the clean up or containment of a hazardous substance”
- Limitations on use of the property due to the contamination or governmental restrictions
- Fiscal implications such as the increased cost to insure or finance the property.

5.3.3 Technical Assistance

The state DEQ, Metro, and City of Portland each have programs and specialized staff that provide assistance to property owners and prospective purchasers to facilitate cleanup and redevelopment of brownfields. Each of

these programs utilizes site assessment grant funds from USEPA to provide Phase I and Phase II Environmental Site Assessments on public or private properties. The ability to provide that service is limited by the amount of federal funding. These programs also provide important functions as liaisons between the various government agencies involved in a brownfield project and the property owner. The brownfield programs also conduct outreach and education to develop capacity in the local government, real estate, financial, and environmental professional communities.

6 SUMMARY IMPLICATIONS

While the conditions and trends analysis included in this report is intended to serve primarily as background information, summary implications can be drawn on a preliminary basis for further discussion with the Brownfield Advisory Group.

Initial Substantive Observations

- The pivotal importance of brownfields to achieve Portland EOA forecast projections for a strong and growing local as well as regional employment base.
- The greatest concentration of brownfield sites is within the industrial areas of the city. Industrial land also represents the greatest deficit in terms of land needs for employment uses in the city. Industrial lands are a critical component of providing employment uses to a growing population. However, the redevelopment of industrial land to other industrial uses is the most challenged from a development perspective.
- Successful brownfield redevelopment is of particularly critical importance for Portland's Columbia Harbor employment area including Harbor Access Lands. Not only is this the area with the city's most significant deficiency of employment land, the Columbia Harbor comprises regional transportation functions that cannot be readily duplicated elsewhere regionally or statewide.
- Changed development perception for commercial areas with potential historic uses that further magnify the brownfield stigma, even on smaller sites. This is particularly the case for Portland's Neighborhood Commercial employment geography which shows a relatively small number of brownfield sites through the BLI, but may have numerous historic uses, such as gasoline stations and dry cleaners, that dampen marketability for now vacant or underutilized sites.

Implications for Portland Brownfield Assessment Study Tasks

- Continued analysis of the brownfield inventory as key to an informed assessment of policy solutions best-suited to the Portland market and property context.

- Applying the results of the feasibility / financial gap analysis to typologies in a way that can be extrapolated across the full range of industrial and commercial brownfield sites city-wide (with both the base case and expanded inventories)
- Need to better understand the impact of financial risk and feasibility on effective redevelopment capacity. This is important to better understand public policy and incentive mechanisms that could make a difference—establishing conditions for higher rates of redevelopment in the years ahead.
- Since state and local/regional funding is fundamental to addressing brownfield cleanup and redevelopment study. Further discussion should include analyzing a viable resource that can invest in brownfields that can spawn redevelopment.
- Extend the brownfield redevelopment analysis as conducted for the Portland EOA to also cover the expanded brownfield inventory

APPENDIX B

FINANCIAL ANALYSIS REPORT



PORTLAND BROWNFIELD ASSESSMENT FINANCIAL FEASIBILITY ANALYSIS

Prepared for
CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

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Redevelopment Economics



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ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
BLI	City of Portland Buildable Lands Inventory
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
ECSI	Environmental Cleanup Site Information
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
EZ	Enterprise Zone
FAR	Floor Area Ratio
GIS	Geographic Information Systems
Harbor ReDi	Portland Harbor Redevelopment Initiative
HiFAR	No vacant sites with a floor area ratio above 20% of zoned maximum potential
ICP	Independent Cleanup Pathway
LoFAR	Non vacant sites with a floor area ratio of up to 20% of zoned maximum potential
MFA	Maul Foster Alongi
NOI	Net Operating Income
NFA	No Further Action
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
RLIS	Metro Regional Land Information System (a GIS database)
RMV	Real Market Value as determined by Multnomah County Assessor for tax assessment purposes
ROI	Return on Investment
SMA	Sediment Management Area
STAMP	Site Technical Assistance for a Municipal Project, National Brownfield Association
TIF	Tax-Increment Financing
TGM	Transportation and Growth Management
TOD	Transit-Oriented Development
UGB	Urban Growth Boundary
URA	Urban Renewal Area
VCP	Voluntary Cleanup Pathway
VHDZ	Vertical Housing Development Zone

1 INTRODUCTION

This report summarizes the findings of analysis completed as part of Task 3 and 4 of the Portland Brownfield Assessment project. It is intended to provide background for subsequent public benefit analysis together with prioritized policy recommendations to facilitate increased redevelopment of brownfields in Portland.

The goal of the Portland Brownfield Assessment is to examine opportunities to incrementally increase the rate of brownfield redevelopment through:

- Identification of barriers to brownfield redevelopment,
- Development of financial feasibility and public benefit analyses,
- Analysis of financial and technical assistance incentives to address barriers to brownfield redevelopment, and
- Developing implementation actions based on proven best practices from around the country.

Key work elements in this draft report include:

- Present the preliminary results from the pro-forma-based financial model designed to estimate redevelopment feasibility by employment area and brownfield type.
- Present an economic estimate of the lost revenue opportunities as a result of idle brownfields by type and employment area.
- Identify national best practices for financial and other incentives to encourage brownfield redevelopment that are appropriate for Portland.

2 FINANCIAL FEASIBILITY ANALYSIS

A distinctive feature of the Portland Brownfield Assessment is the focus on evaluating the financial feasibility of brownfield redevelopment across the landscape of Portland employment geographies and associated brownfield typologies. This tailored approach recognizes the varied levels of environmental contamination (or “brownness”) as well as the range of market conditions that may affect different types of sites and employment uses in distinctive ways. The results clearly suggest that policy and incentive tools may need to be individualized to respond to the specific needs and opportunities associated with Portland’s varied employment typologies.

This analysis begins with an overview of the financial feasibility analysis methodology, followed by evaluation of feasibility results across the full spectrum of the typology alternatives, with resulting discussion regarding critical feasibility barriers.

2.1 Methodology Statement

A financial pro forma represents a means of assessing financial feasibility of a future (not yet built) real estate development. The critical test of financial feasibility lies in the relationship of project *cost* to *valuation* upon completion. If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as not feasible – unless actions are taken to rectify the resulting “financial gap” – or the amount by which the project is *upside down*.

This analysis is not site or owner specific – but rather relies on prototypical project pro formas generated for each typology under alternative assumptions of market use and brownfield remediation cost. For ease of application across Portland’s full employment and brownfield geography, all pro formas are calculated on standard per unit measures of:

- Development cost versus valuation per *building square footage*
- Resulting financial surplus (or gap) per square foot of *land area*

Uses Evaluated

This brownfield assessment addresses the financial feasibility of developments associated with industrial and commercial real estate. The following building types are considered – to the degree applicable with each of the brownfield typologies:

- Manufacturing / Warehouse – with pro formas reflecting real estate costs only and not cost of equipment for on-site processing
- Flex / Business Park – typically multi-tenant building space that includes a combination of industrial space with substantial office build-out
- Office Commercial – typically built on floors above ground level
- Retail – storefront space, typically with ground-level access
- Residential – for multifamily housing as may be included with a mixed use building with ground level retail or other commercial uses
- Structured Parking – for uses that typically require some or all of the on-site parking to be included as a part of a building structure (rather than at-grade)
- Other – generally identified as non-revenue space not associated with a specific user in a multi-tenant building, as with a lobby area

Measures of Cost

Costs of building an industrial, commercial or mixed use project are typically defined as including:

- Land Acquisition – reflecting typical values distinctive to each typology considered; with land values differentiated between sites without constraints and those identified by the BLI as brownfield constrained
- Site Development – covering costs of demolition (of existing structures), site preparation / landscaping, and at-grade parking
- Brownfield Remediation – reflecting alternatives of low, mid and/or high cost of remediation
- Building Construction – covering hard cost of development, specific to each of the uses involved
- Other Project Cost – for costs that might be unique to a specific use or site such as infrastructure (essentially a placeholder not covered with this preliminary analysis but available for analysis refinements)
- Indirect (Soft) Cost – covering variables such as architectural / engineering fees, public fees / permitting, developer profit, and financing during construction

Data for this analysis is drawn from a number of sources. Land acquisition costs are based on Multnomah County assessor's data together with a review of recent vacant land sales transactions (from RLIS, differentiated by typology). Site development costs reflect A/E data from prior comparable projects. Brownfield and superfund remediation cost estimates are based on case study data and other literature as compiled by MFA.

For purposes of this analysis, cleanup of low-cost remediation sites is estimated at \$1.50 per square foot of land area. Mid-cost sites are shown at \$6.00 and high cost sites at \$16.00 per square foot of land area.

Building construction costs reflect comparable pro forma analysis and the Second Quarter 2012 RLB (Rider Levett Bucknall) Quarterly Construction Cost Report. Indirect (soft) cost is drawn from comparable project pro formas. Cost parameters utilized with this analysis (by building use type) are provided with Appendix A to this report.

Measures of Valuation

Valuation of income-producing real estate can be accomplished by determining a property's net operating income (as rental and related income *less* expense) divided by a capitalization (or "cap") rate. This income capitalization approach is one of three methods typically applied by property appraisals – the other two being depreciated cost analysis and comparison of comparable property sales. The income capitalization approach is of particular relevance to projects not yet constructed.

Capitalization rates reflect the amount that an owner or investor is willing to pay for a property with an income stream based on experience and/or projection. These rates are readily observable in the real estate market as may be specific to a point in time for a particular type of investment real estate.

Cap rates may vary between metro areas or within a metro region or city. In the current lending market, cap rates available to investors or owners with "deep pockets" may be substantially less than for more thinly capitalized developers. A well-capitalized investor may be able and willing to pay more for a particular property than a party that will have access to capital at much less generous terms.

In effect, cap rates reflect a combination of current financing terms (interest rate and duration of financing) together with investor expectations regarding risk-adjusted return on required equity. Cap rate expectations applied with this analysis are drawn from Urban Land Institute (ULI) publication *Emerging Trends in Real Estate 2012*.

Some properties are not purchased or developed for capitalized value to an investor or developer, but rather for their end use value to the owner. With

the typologies considered in this pro forma evaluation, end use value is of particular importance in two situations:

- For residential condominium purchasers in a mixed use development. In this situation, the net sales value (price less developer return and sales transaction expense) is shown as a separate line item in the pro forma (in addition to capitalized value for rental uses). Note that for sake of apples to apples comparisons across the typologies that may involve mixed commercial and residential use, a mix of 50/50 owner/renter use is assumed for illustrative purposes (except in typologies of Mixed Use Hubs and Main Street East where values may not currently be adequate to support condo development cost).
- For industrial end users (or operating businesses that own their own real estate), a multi-tenant developer's approach to valuation is of little relevance. The industrial company will consider cost of real estate development in the context of the firm's total business operations requirements and balance sheet together with profit and loss statement. Many end user buildings are also special uses designed for a specific product or manufacturing process. Special purpose buildings are of most value to a specific type of industrial user and often are not as readily adaptable to other generic industrial uses.

For the industrial end user, what is of importance is the cost of industrial land (a *shovel-ready* site) as compared with other similar sites either in the Portland metro region or globally. Consequently, a special variation of industrial pro formas are run for owner-occupied, end-use buildings that reflect land valuation (with brownfield effects calculated in relation to land cost) rather than as a developer's real estate oriented model to valuation.

Key data inputs and assumptions utilized are provided with Appendix A to this draft feasibility evaluation report. Valuation related inputs covered include rental rates and operating expenses together with cap rates for income producing properties, sales valuation for condo units, and land values for all typologies considered.

Of specific note is that rental rates and condo sales pricing inputs reflect mid-upper range estimates currently associated with each employment / brownfield typology. Rental rates required for new construction feasibility are typically above average rates for a particular market (comprising the full mix of newer and legacy properties).

Also noted is that seemingly small changes in any of a number of data inputs can have substantial effects on resulting development feasibility. The pro formas provided with this analysis are intended to represent what might be considered as typical conditions, but should not be construed as any conclusion of feasibility for a specific use and/or site-specific project.

Site Development

Assumptions regarding how a particular project prototype will be developed on the ground can be of considerable importance for assessing financial feasibility. The following site factors are taken into consideration with each of the seven typologies and 32 associated pro forma alternatives:

- Site Use Intensity – measured as floor area ratio (FAR) with development (including existing use FAR associated with occupied, but underutilized properties, as part of Portland’s BLI)
- Site Coverage – measured as the proportion of the site for which there is building footprint (with the remainder of the site used for such purposes as parking / loading, landscaping, storage, remediation area, and/or habitat / open space)
- On-Site Parking – based on a review of minimum and maximum parking ratios by use and zone (generally in a mid-range, also reflecting scale of nearby development and transit accessibility), with parking allocated first to available at-grade site area and second, as needed, to structured on-site facilities

Added Notes: A need for some proportion of structured parking is assumed with new construction for the Downtown High Density, Mixed Use Hub, Central City Industrial, and mixed use portions of the Main Street typologies. All industrial typology parking is assumed to be accommodated at densities allowing for at-grade parking.

On-site parking is provided at ratios within the medium to maximum ranges prescribed by zoning designation, at urban ratios well below typical suburban ratios. Parking ratios by use vary by typology in ranges as follows: manufacturing / warehousing (1.00-1.50 spaces per 1,000 square feet of building area), flex / business park (1.00-2.00), office space (1.00-3.00), retail (1.00-2.00), and residential (at 0.75-1.00 spaces per unit).

- Distribution of On-Site Building Square Footage – with some typologies indicated as being developed for a single use and others for multiple or mixed use activity.
- Relationship of Net Rentable to Gross Building Area – a reflection of building efficiency for 85-90% for multi-tenant properties with shared building common area and shown at 100% for stand-alone or in-line building uses.

Data inputs and assumptions related to site development for the pro forma alternatives are as indicated with the assumptions and/or pro forma worksheets provided in Appendix A to this report.

2.2 Alternatives Analysis

This discussion summarizes results of the alternatives analysis by typology, with detailed pro forma worksheets provided with Appendix A.

1. Downtown High Density

This typology covers the commercial and mixed use portion of Portland's Central City area – including the downtown core, River / Pearl district, South Waterfront, and Lloyd District. Four alternative pro formas are considered:

- Mixed Use – office / retail combined with residential use, differentiated between mid-cost and low-cost site remediation alternatives
- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between mid-cost and low-cost site remediation alternatives

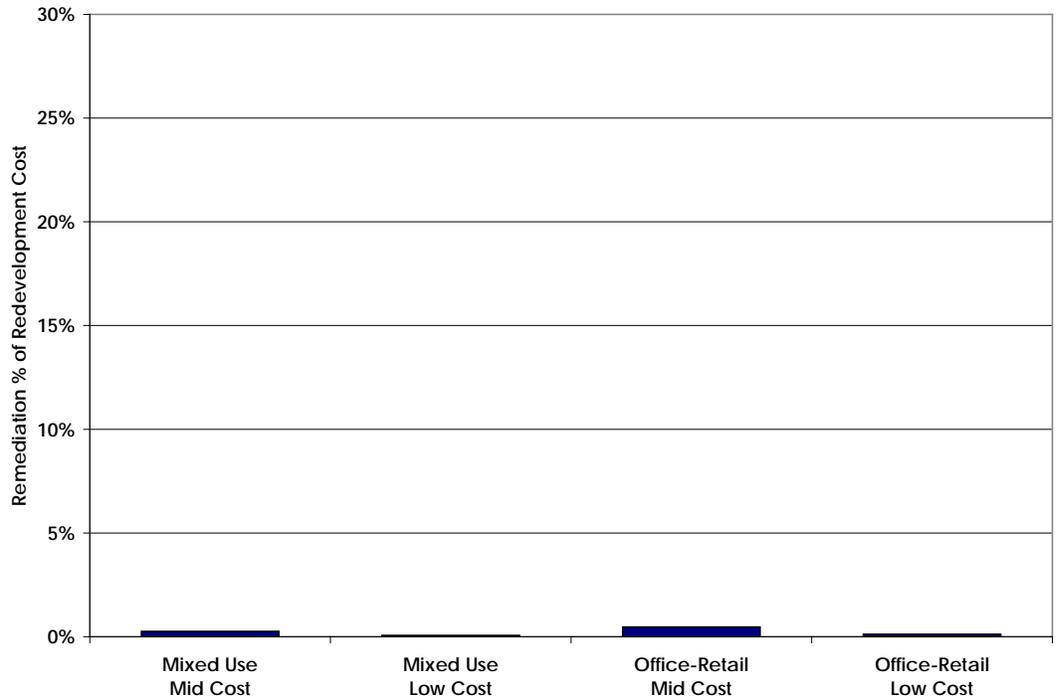
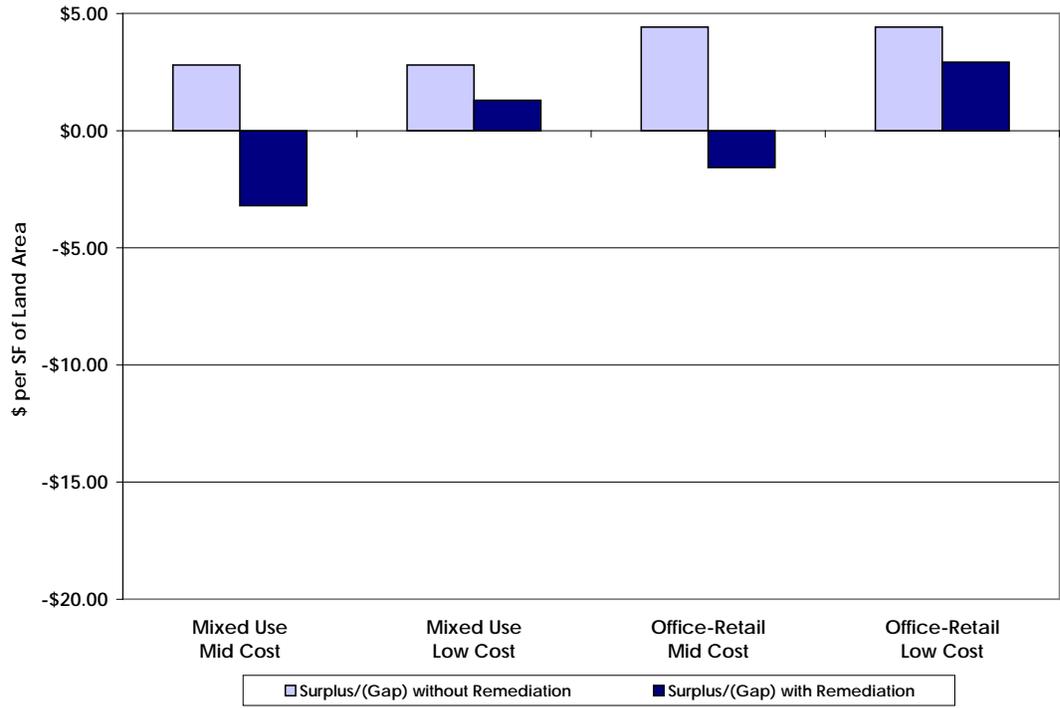
Note: The following graphs for Downtown High Density together with subsequent graphs for other brownfield typologies are intended to illustrate the results of detailed pro forma analysis in terms of:

- a) Financial feasibility with and without brownfield impacts (first graph of each set). While pro formas with Appendix A are shown in terms of building square footage, the graphs translate financial results to site area metrics (as dollars per square foot of site area). A positive number indicates that the development alternative considered appears feasible based on the data inputs and assumptions applied with this analysis. A (negative) number indicates lack of feasibility – as an indication of the financial gap that might be required to achieve a viable project.
- b) Remediation as a % of total project redevelopment cost (second graph of each set). This provides an indicator of the relative significance of environmental cleanup cost to the overall cost of the development project being considered.

The y-axis shown with each graph is based on the ranges for the typology with the most extreme values associated with cost per square foot or remediation as a % of project cost. For example, the downtown typology is associated with the positive values per square foot of land area due to high intensity (or FARs) associated with development. Conversely, the most negative per square foot conditions are noted for the industrial typology where remediation costs are magnified when considered on an FAR basis.

As a % of development cost, remediation is relatively insignificant for the downtown prototypes considered, while much more substantial for other typologies, especially industrial.

Figure 3-1. Downtown High Density Development Feasibility



Specific observations regarding downtown high density feasibility for the mixed use and office-retail prototypes considered include the following:

- For unconstrained sites, both the mixed use and office-retail concepts appear to be within a range of feasibility given current top of market conditions for the Portland metro area – though not by any significant margin. Valuation less cost at a positive figure of less than \$5 per square foot of land area represents a slim margin when considered in terms of total project cost of nearly \$2,400 per square foot of land area (for the mixed use concept assumed to be developed at an 11:1 FAR ratio).
- Presence or absence of brownfields has a relatively low effect on overall project cost – as other cost and market considerations are more important in a high density environment. In part, this is because no high cost remediation sites are viewed as applicable to remaining brownfield properties in the downtown high density area.
- In effect, brownfield remediation reflects only a relatively small proportion (less than 1% of development budget) in even the mid-cost development alternatives. Viewed from another perspective, downtown area land value is estimated at more than 12 times the expense of a mid-cost remediation scenario.
- However, at the margin, a mid-cost brownfield remediation could shift either the mixed use or office-retail project from slightly positive to slightly negative. Low-cost remediation does not appear to as materially affect feasibility results.

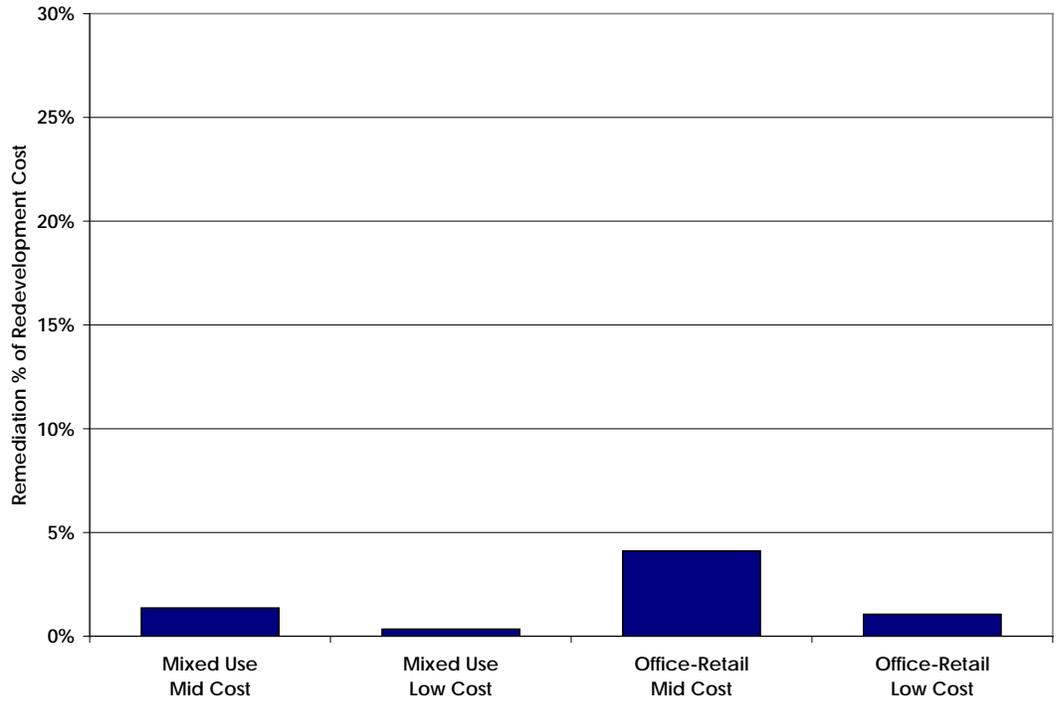
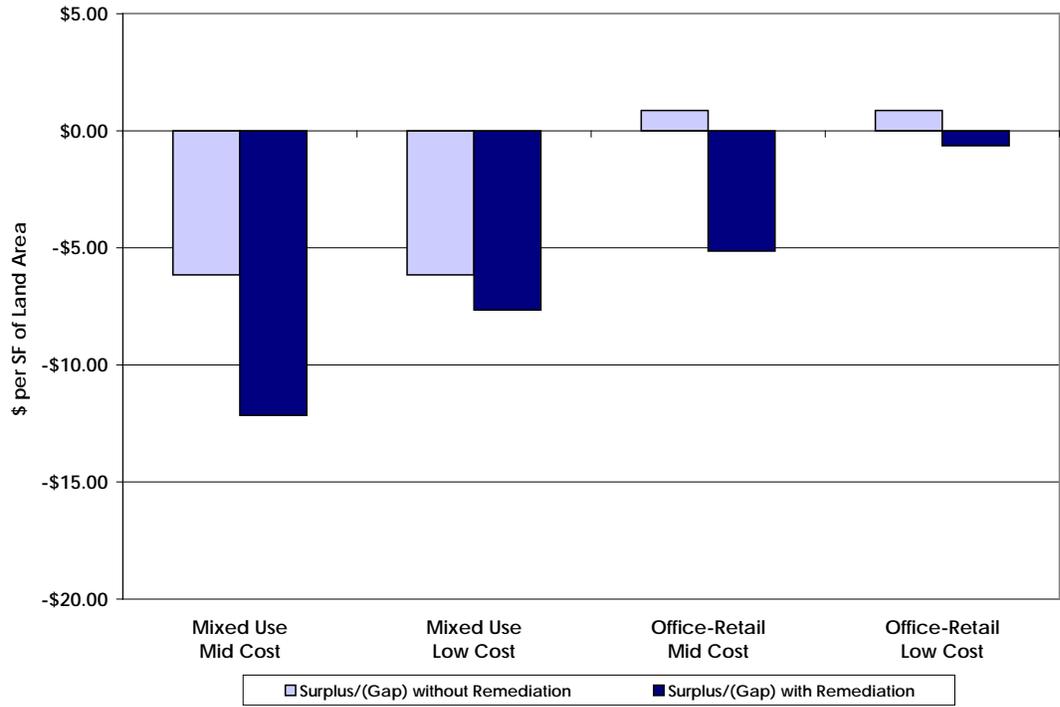
2. Mixed Use Hub

The mixed use hub typology covers Portland’s Gateway regional center together with EOA identified town centers of Hillsdale, Hollywood, St. Johns, and Lents. As with the downtown area, four alternative pro formas are considered with this Mixed Use Hub typology:

- Mixed Use – with office / retail combined with residential use, further differentiated between mid-cost and low-cost site remediation alternatives
- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between mid-cost and low-cost site remediation alternatives

The following graphs illustrate the results of detailed pro forma analysis for two key variables of interest – financial feasibility with and without brownfield impacts, as well as remediation cost as a percentage of total development costs.

Figure 3-2. Mixed Use Hub Development Feasibility



Overall density of development is considerably below that of the downtown typology. Somewhat different conclusions can be drawn about financial feasibility of Mixed Use Hub development and associated brownfield effects:

- Unlike downtown, the mixed use concept that combines residential with ground floor retail appears less feasible given current apartment rental rates that are well below what is achievable closer in to Central City Portland. While office rents are also below those of closer in properties, retail rents appear stronger making the office-retail combination marginally feasible.
- While low-medium cost brownfield remediation does not appear to be the only factor affecting development feasibility, brownfield cleanup will reflect a greater proportion of overall development costs (at up to 4% of development budget) with the mid-cost development alternatives. This is because the lower scale of development with mixed use hubs provides less development over which a given remediation cost must be spread (than with the Downtown High Density typology).
- With brownfield remediation, feasibility of the mixed use development concepts become more negative. Feasibility of the office-retail concepts go from marginally positive to negative – especially with mid-cost remediation.

3a. Main Street West

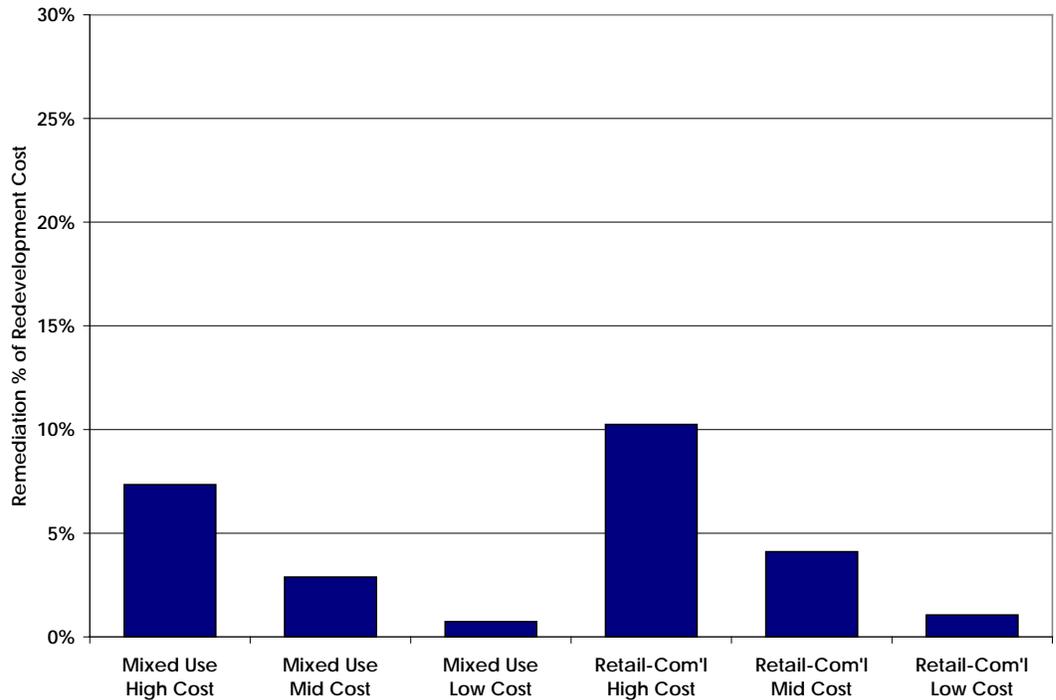
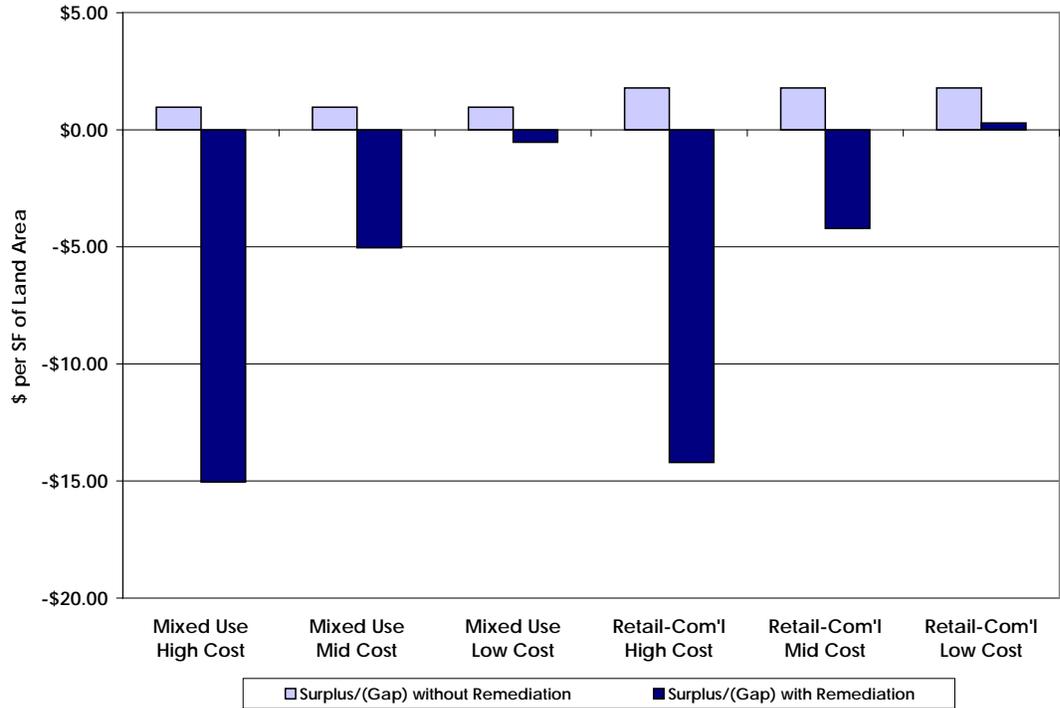
The Main Street typology is similar to the Neighborhood Commercial designation of the Portland EOA together with the EOA identified West Portland town center. For purposes of this feasibility analysis, the Main Street typology has been divided into two subsets – Main Street West and Main Street East.

Covering the neighborhood commercial districts generally west of about 82nd Avenue, the Main Street West geography has been generally associated with somewhat higher levels of development density and greater redevelopment activity in recent years – especially in proximity to corridors offering strong transit accessibility. Six alternative pro formas are considered with this Mixed Use Hub typology:

- Mixed Use – with office / retail combined with residential use, further differentiated between high-cost, mid-cost and low-cost site remediation alternatives
- Office-Retail – involving high density commercial development without on-site residential, also differentiated between high-cost, mid-cost and low-cost site remediation alternatives

The following graphs illustrate the results of detailed pro forma analysis for two key variables of interest – financial feasibility with and without brownfield impacts, as well as remediation cost as a percentage of total development costs.

Figure 3-3. Main Street West Development Feasibility



Consistent with experience of the last decade, development potential for this sub-typology appear relatively strong:

- For Main Street West, both mixed use and retail commercial prototypes appear to offer reasonable (and improving) prospects for development feasibility. However, recognizing that rents used with the pro forma represent the mid-upper range of the market, it should be recognized that some neighborhood commercial areas west of 82nd Avenue are accompanied by stronger market activity and higher rents than others. Over the 25-year time horizon of the Portland EOA, there is good opportunity for Main Street revitalization to expand to portions of Portland that have experienced lesser levels of revitalization to date.
- The introduction of mid-high cost brownfield remediation alternatives to this typology represents a definite dampening effect on feasibility for redevelopment prospects of affected sites. Remediation may account for as much as 10% of development cost for these high-cost sites.
- In effect, both the high- and mid-cost brownfield alter feasibility results from positive to negative – substantially negative if high-cost remediation is involved. Low-cost remediation has a generally much lesser effect, but could compromise viability of projects that otherwise are right at the cusp of feasibility.

3b. Main Street East

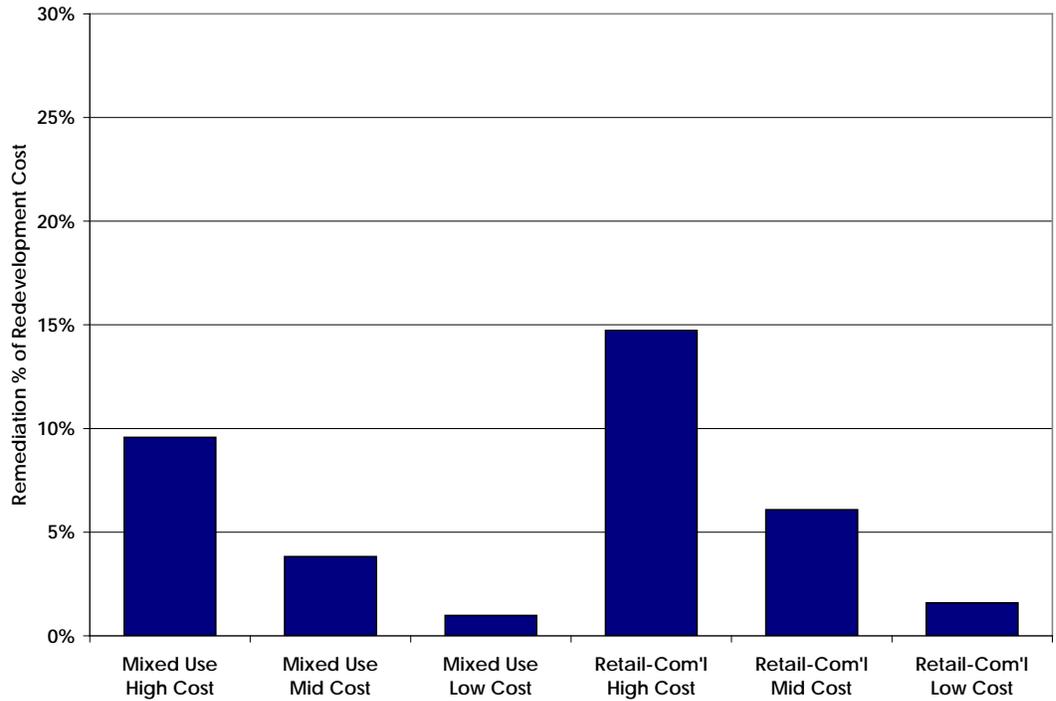
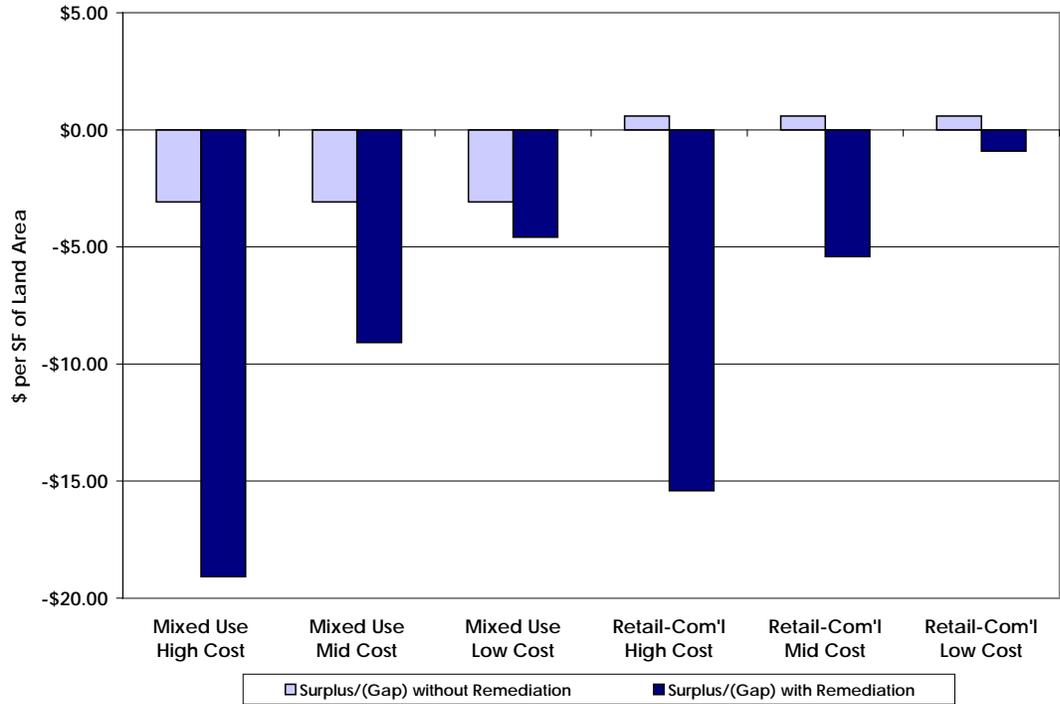
As noted, the Main Street East grouping comprises neighborhood commercial districts extending from about 82nd Avenue east. This area developed later in time than closer in neighborhoods and generally at lower densities typical of the post-World War II era through the 1970s. Redevelopment activity has also occurred at a slower pace, and rental rates are generally below those of Main Street West.

As with Main Street West, six pro forma alternatives are evaluated with the Main Street East sub-typology:

- Mixed Use – with office / retail combined with residential use, further differentiated between high-cost, mid-cost and low-cost site remediation alternatives
- Office-Retail – involving high density commercial development without on-site residential, but also differentiated between high-cost, mid-cost and low-cost site remediation alternatives

Pro forma results are less favorable than for Main Street West for unconstrained properties. And feasibility effects of brownfield conditions can be expected to be even more negative, as illustrated by the following graphs.

Figure 3-4. Main Street East Development Feasibility



Observations of added note regarding Main Street East development feasibility include the following:

- Development feasibility appears challenged, at least in the near-term, due to lower rents achievable east than west of 82nd Avenue. To some extent, this is counterbalanced by lower densities of development allowing for lesser levels of structured parking and lower cost of construction. Over the 25-year time horizon of the Portland EOA, there is good opportunity for Main Street revitalization to expand further east than has been the case to date – especially if accompanied by revitalization initiatives including remediation of contaminated sites.
- Mixed use feasibility appears negative, even for sites without development constraints. Retail-commercial feasibility (without residential mixed use) appears slightly positive for unconstrained sites. If brownfield remediation is involved, no project alternative appears readily feasible, though the low-cost retail-commercial option is only slightly negative.
- As is the case throughout the Main Street typology, the introduction of either mid- or high-cost remediation represents a definite chilling effect on feasibility for redevelopment prospects of affected sites. Main Street East remediation may account for as much as nearly 15% of development cost for high-cost sites.

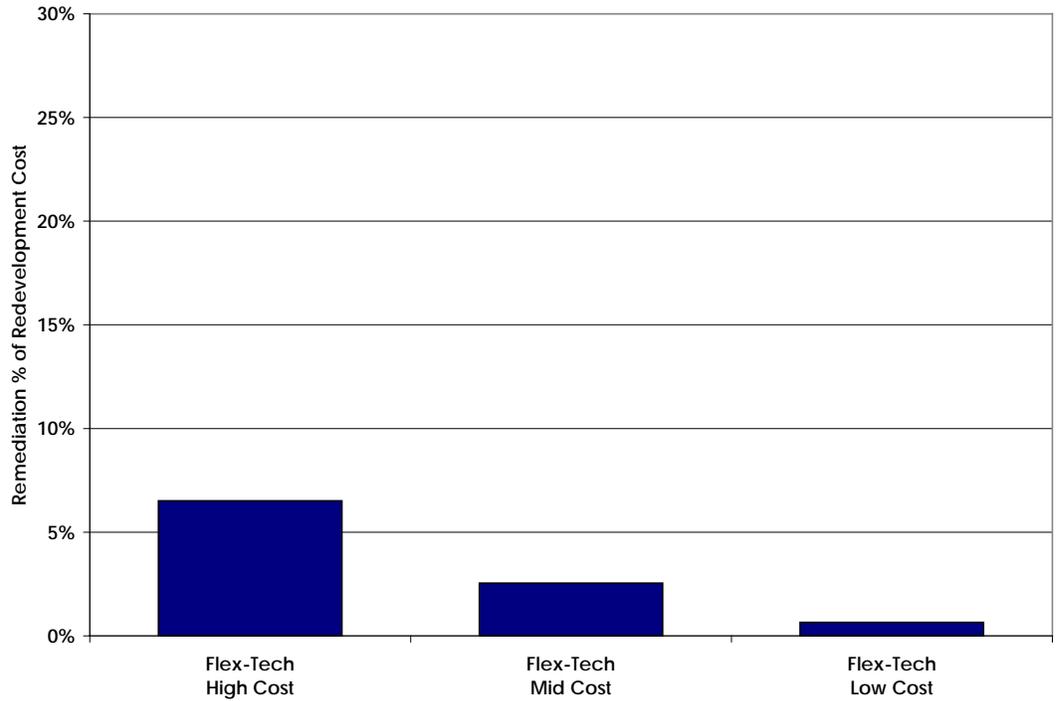
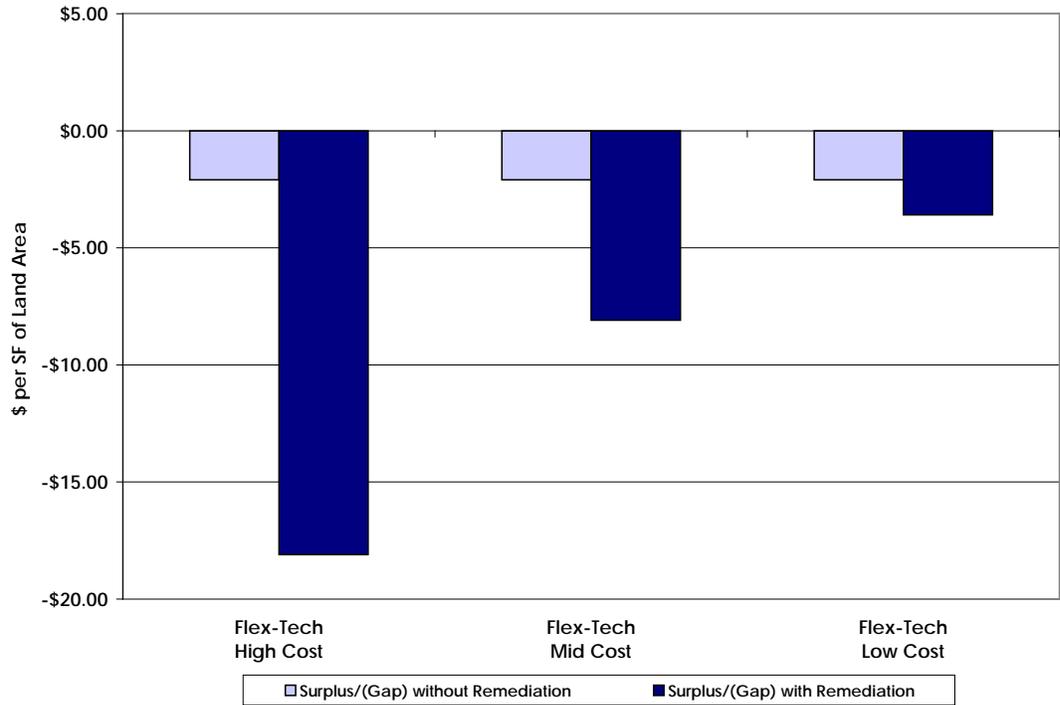
4. Central City Industrial

The Central City Industrial typology covers Portland's inner industrial areas of the Central Eastside and Lower Albina districts. These districts have been identified by the EOA as offering increasing opportunity as incubators for small startup and creative firms – supplemented by continued reinvestment in viable, ongoing industrial distribution functions benefitting from a central Portland location.

A single development concept is considered for the pro forma alternatives considered with this typology:

- Flex-Tech – with redevelopment and new construction of a high density, more urban and gritty version of the flex office space product seen, for example, on the Sunset Corridor. As experienced with Central City Industrial, the flex / Class B office approach has appeared particularly attractive for creative service firms. The flex-tech prototype is further differentiated by separate pro formas for high-cost, mid-cost and low-cost site brownfield remediation alternatives.

Figure 3-5. Central City Industrial Development Feasibility



As illustrated by the above graphs, development feasibility of new flex-tech space is still somewhat pioneering, with feasibility extremely sensitive to any added cost pressures at the margin:

- To date, much of the creative / flex space developed in the Central Eastside has involved reuse of existing buildings rather than new construction. Due to the recession and the legacy of this existing space, it is not yet clear that rental rates have stepped up to the levels required for new construction as the supply of potential rehab sites diminishes. Going forward, feasibility of new construction will be materially affected by encouraging non-auto use and accommodation of remaining added parking needs for net new development.
- As is the case with the Main Street Commercial typology, the potential for mid-high cost remediation sites would pose a definite challenge to development feasibility of affected sites, equating to as much as 6-7% of total project cost.

5-7. Industrial

The typologies of Standard Industrial, Superfund Shadow, and Harbor Waterfront are covered as an overall grouping. These properties are assumed to share similar characteristics as to market and site development.

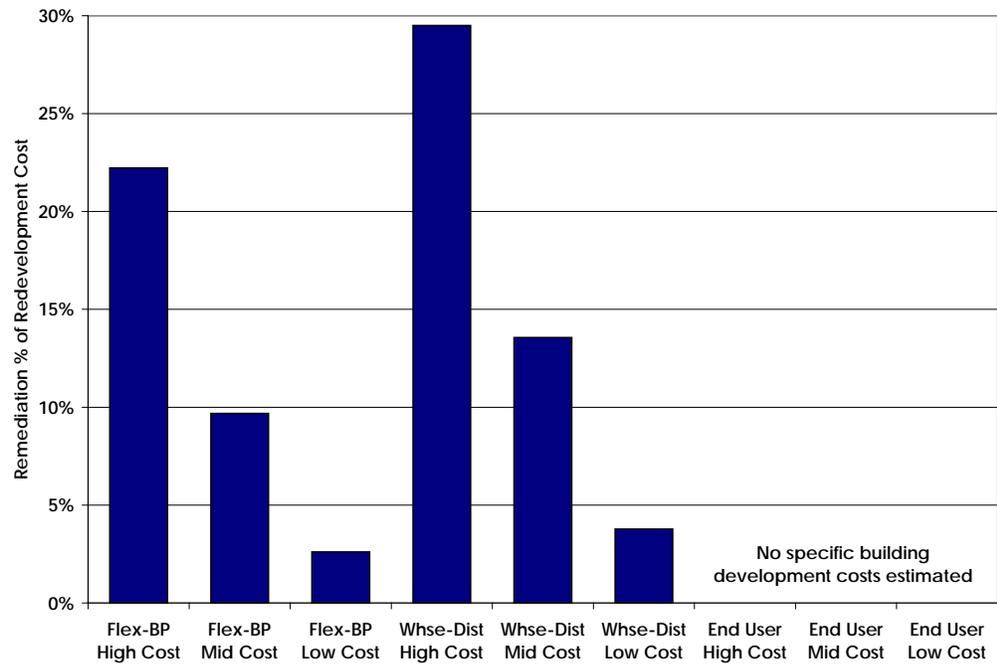
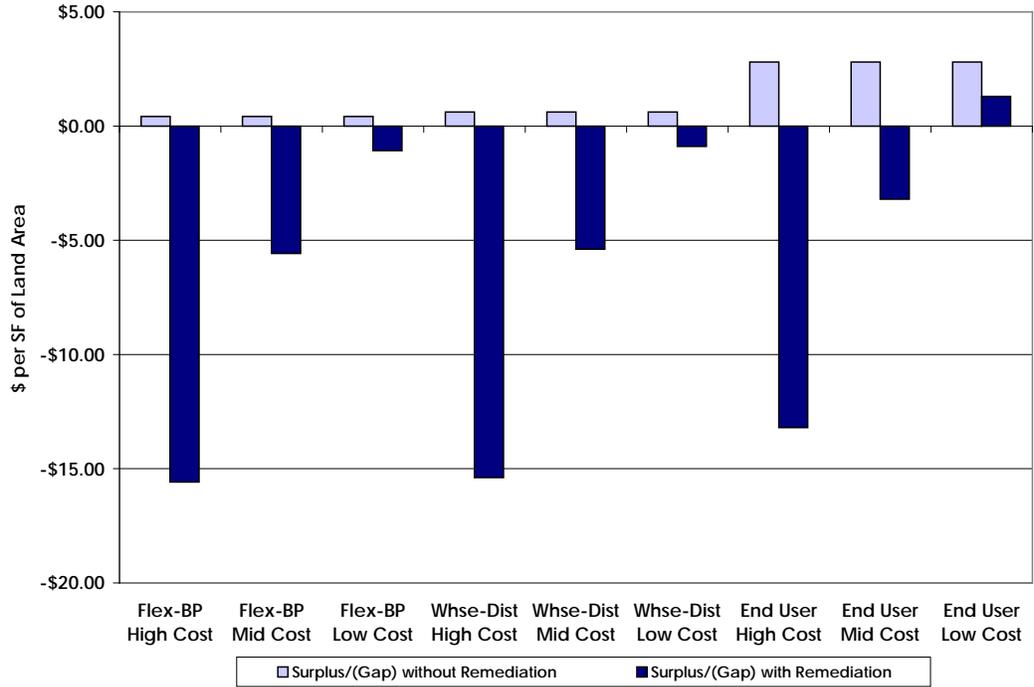
The primary differentiation factor relates to the level of cleanup expenses that may be associated with Superfund (in-water) liability with Harbor Waterfront sites (as Typology 7) and contributing factors with what are termed as Superfund Shadow sites (Typology 6). As there is considerable uncertainty regarding the ultimate determination of potential financial liability, potential amounts are indicated as supplemental costs averaged over all affected properties (but should be viewed as having a considerable margin of potential variability by property owner).

Nine alternative pro formas are considered with the Industrial typologies:

- Flex Space / Business Park – as a multi-tenant development product further differentiated between high-cost, mid-cost and low-cost site remediation alternatives
- Warehouse / Distribution – as a lower cost development product (with minimal office build-out), also differentiated between high-cost, mid-cost and low-cost site remediation alternatives
- End User Industrial – considered separately on the basis of land value / cost effects associated with brownfields, but also differentiated between high-cost, mid-cost and low-cost sites

The following graphs illustrate the results of detailed pro forma analysis for industrial sites involving development of rental space for lease to both warehouse / distribution and manufacturing related tenants. Also, shown with the right hand portions of the graph are feasibility effects associated with end user sites. Implications of each are then considered, in turn.

Figure 3-6. Industrial Development Feasibility



Flex & Industrial Rental Space: The pro forma analysis indicates that the feasibility of developing industrial space is fairly challenging under the best of conditions – with brownfields posing an even greater threat to feasibility than with the other typologies considered:

- Even before consideration of potential brownfield effects, development of new industrial space on unconstrained sites is currently challenged by soft rental rates – with recovery from the recession not yet fully in place.
- Introduction of brownfield contamination has a significantly greater effect on reducing development feasibility for industrial property (even before consideration of potential superfund issues). The lower FARs associated with industrial use means that there is less income-producing space with which to recover a given amount of brownfield remediation cost.
- With high cost sites, remediation can amount to as much as an estimated 30% of total development cost (with a wide range of variability depending on site-specific conditions). Mid-cost remediation also represents a significant cost – at 9-14% of an industrial project’s development budget.
- In effect, the mid-cost and cleanup alternatives involve a level of added site expense that nearly or fully eliminates any positive land value. The high-cost alternative will invariably result in negative land value – as is further considered with discussion of end user effects described below.

End User Sites: As noted, end user or owner-occupied industrial sites are best considered on a land value basis.

While shovel-ready industrial land is indicated at an overall value of about \$7 per square foot, real market values (RMVs) for industrial sites identified as brownfield constrained by assessor’s data are already discounted to an average of about \$2.80 per square foot across the industrial typology.

With remediation ranging from \$1.50 per square foot of site area with (low-cost remediation) to \$6 (mid-cost) to \$16 (high-cost), it is clear that the resulting land value quickly goes negative with all but the low-cost scenario. For example, with high-cost remediation, resulting valuation goes to a negative \$13.20 per square foot of site area.

Once the site is clean, there is potential for some bounce-back in value to a level comparable to that of a shovel-ready site – making back up to an added \$4.20 per square foot if the cleaned up site can be sold (as unconstrained by brownfield or other limiting site conditions). This potentially reduces the net loss from \$13.20 to \$9.00 per square foot (or about \$392,000 per acre).

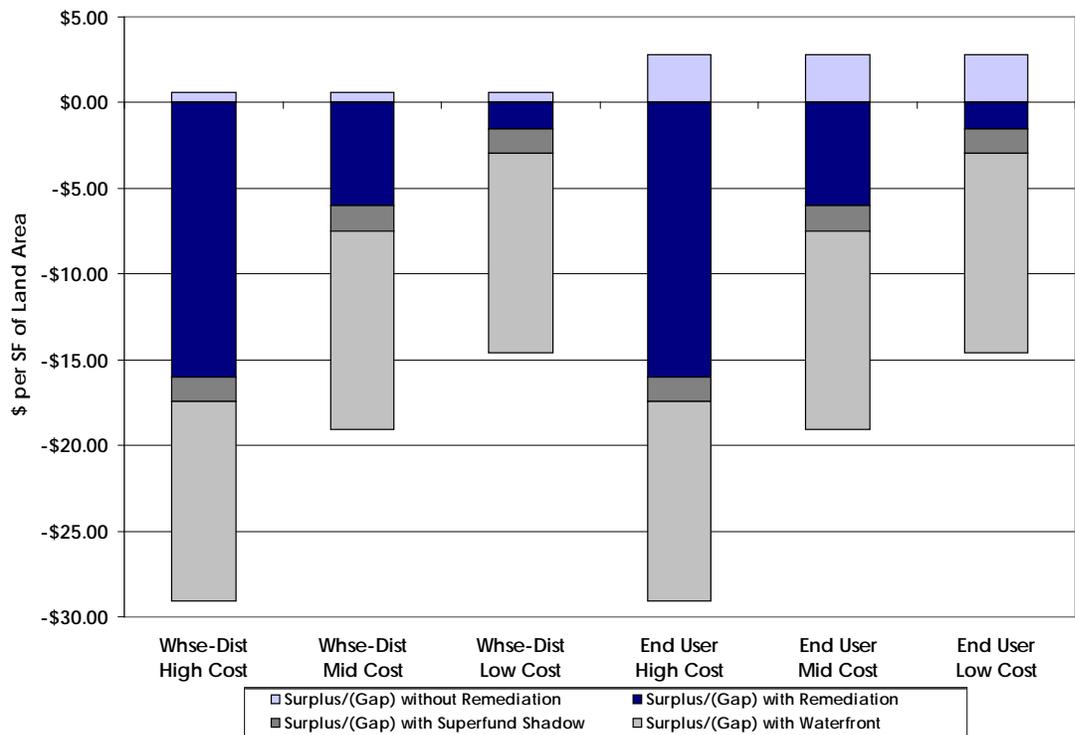
The odds of recouping this value are enhanced if the cleanup is completed by an existing owner prior to sale. However, there still may be little incentive for an existing owner to incur a high-cost redevelopment, as value net of cost will still be substantially negative.

An owner's motivation might be greater with a mid-cost site, where a net loss of \$3.20 per square foot translates to a positive net of \$1.00 per square foot upon sale of a cleaned up site (assuming no other significant site constraints). An owner in this situation gets the benefit of taking responsibility to address a long-term liability at no net loss upon eventual property disposition.

Superfund Implications: To this point, the analysis of brownfield remediation expense has not included potential added effects of superfund liability for waterfront sites, as well as some upland properties. Inclusion of these effects is illustrated by the following graph, based on MFA-calculated estimates for all Sediment Management Areas (SMAs) using the low cost of the high impact alternative for all contributing SMAs:

- Superfund Shadow sites – with cost estimated at \$1.46 per square foot of site area.
- Harbor Waterfront sites – with cost estimated at \$13.10 (or an added \$11.64) per square foot of site area.

Figure 3-7. Industrial Feasibility with Superfund Implications



Based on these very preliminary (and variable) estimates, incremental effects of potential superfund liability can be summarized as follows:

- In a worst case situation with an already high-cost remediation site, a redevelopment property with Waterfront Superfund liability could go to negative feasibility approaching \$30 per square foot of site area. This effectively represents a nearly 75% increase to the cost of development, as compared with unconstrained sites.
- In all cases, the Waterfront Superfund liability could equate to a property owner cost that is almost double the value of unconstrained and vacant industrial land at greenfield sites elsewhere in or outside the Portland metro region.
- For affected upland properties, implications of the Superfund Shadow, while not as devastating as for waterfront properties, can be expected to further render affected property as not feasible for development for warehouse-distribution space as rental income property.
- As previously noted, the situation is more complex for end users who operate industrial businesses as owner-occupants. For these firms, decisions regarding feasibility of remaining or expanding at an existing site will be affected by considerations of revenue versus cost for the full business operation, including but extending beyond real estate considerations.
- For property owners who already are in the chain of title with a potential Superfund liability, the decision of whether to expand or reinvest may be only marginally affected – as the liability remains independent of decisions to stay, expand, or relocate. What is of more importance may be the effects to ongoing business viability at the time costs associated with prospective future liability are actually incurred.

Overall, this valuation analysis indicates that the feasibility of developing industrial space is fairly challenging under the best of conditions – with brownfields posing an even greater threat to feasibility than with the other typologies considered. This appears to be the case both for the end user of industrial property and for the developer of multi-tenant business park or industrial-warehouse space.

Superfund liability further exacerbates negative feasibility – especially for Waterfront sites. While an existing owner in the chain of title may not be able to avoid this liability, there would be no incentive for new development where a prospective purchaser is required to also assume this liability.

Summary Pro Forma Observations

Five overall observations are drawn from this preliminary pro forma financial analysis:

- The financial feasibility of bringing industrial and commercial brownfield properties back into productive use can be severely constrained, especially for high-cost and in some cases, medium-cost remediation sites. In situations where the economics of development are marginal even for shovel-ready property, low-cost remediation sites may push a project from being feasible to infeasible.
- Brownfields are not the only determinant of project feasibility. Other constraints identified by Portland's BLI may also be of importance – including constraints related to infrastructure or other environmental factors. For some typologies, market considerations may render a project as unfeasible or marginally feasible, especially in an economic environment affected by as yet slow and halting economic recovery. Typologies with relatively weak market conditions (even before consideration of brownfields) include Mixed Use Hubs and Main Street East (for mixed use) and Central City Industrial (for new construction as rehabilitation opportunities shrink).
- Remediation costs vary widely in terms of their impact on overall real estate development cost – with lesser impact on high density projects, where remediation can be spread across more development per square foot of land area. Remediation equates to less than 1% of project cost for the Downtown High Density typology, to up to 5-7% for Mixed Use Hub and Central City Industrial, to as much as 10% for Main Street West or 15% for Main Street East, to a substantial 30% of project cost for Standard Industrial warehouse-distribution use (before consideration of potential Superfund liability).
- Due to lower density of development and the greater risk of high-cost remediation sites, the feasibility of developing Portland's industrial properties that are brownfield constrained are far more seriously impaired than for all of the other employment and brownfield typologies considered. However, in cases where other infrastructure or environmental constraints are also present, removal of the brownfield constraint alone may not prove adequate to assure project feasibility. Rather, cleanup incentives might be more effectively targeted to sites where remediation appears as the major obstacle to site redevelopment.
- The potential addition of Superfund Shadow liability will make medium- and high-cost remediation sites even more underwater financially. The full liability of Superfund Waterfront cost will render

development from a prospective new purchaser infeasible whether or not the site has other brownfield contamination issues – unless this liability is not transferred to the new owner.

If resources of existing owners are not adequate to fund these future costs and/or if public resources are not available, these sites are not likely to be redeveloped (unless by an existing owner with an ongoing, viable business for whom the prospective liability is a responsibility that cannot otherwise be avoided).

3 PUBLIC BENEFIT ANALYSIS

Over the last five years, Portland has become increasingly involved in assessing the public benefits that might be realized through stepped up initiative to redevelop underutilized brownfield sites. The *flip side* of public benefits is identifying economic opportunities lost if brownfields remain idle indefinitely into the future.

Initial steps were taken in 2007, when the National Brownfields Association through its Site Technical Assistance for a Municipal Project (“STAMP”) was engaged by a coalition of public and non-profit interests in Portland to perform an analysis of how best to spur redevelopment of approximately 400 non-contiguous acres, on 25 contaminated parcels in Portland’s industrial sanctuary. The 2007-08 STAMP process led to a series of recommended actions, the first of which was to recognize the “cost of doing nothing,” defined as follows:

The costs (of doing nothing) include financial losses in terms of jobs, tax revenue and economic growth, stigmatization of the area, possible exacerbation of the environmental impact and taking industrial sanctuary property out of play within the urban growth boundary. This stagnation not only increases pressure to convert agricultural lands to industrial use, which creates additional high costs associated with adding infrastructure, but also thwarts the carefully developed state land use planning laws intended to protect open space and agriculture and prevent urban sprawl.

This public benefit analysis expands the STAMP approach to consider the full range of brownfield affected properties across commercial as well as industrial geographies citywide.

3.1 Lost Economic Opportunities

With this analysis of seven brownfield typologies, the cost of doing nothing can be identified and quantified in terms of:

- Reduced employment, payroll and business revenue capacity – limiting Portland’s ability to realize EOA-defined employment objectives through 2035.
- Fiscal impacts to local jurisdictions and the State of Oregon – focused for the purposes of this analysis on property tax, state income tax, Multnomah County business income tax, and City of Portland business license tax.

Methodology

Key elements of the methodologies associated with this benefits evaluation can be summarized as follows:

- For consistency and ease of comparison, measures of economic and fiscal benefit are defined on the basis of *per square foot of site area developed* or as *a percentage of total real estate development cost*.
- Employment potential is estimated consistent with job density ratios derived from the Portland EOA.
- Business revenue and average annual wage per worker is from IMPLAN data for the Portland metro region as of 2009 (including self-employed and proprietors) – as per data provided in conjunction with the EOA.
- Net income as a percentage of gross business revenue is estimated from business license data of Portland Revenue Bureau by business type for 2000 and 2007.
- Property tax rates reflect a composite rate per \$1,000 tax assessed valuation across varied in-City levy codes as of 2011-12, including change ratios as applicable to industrial, commercial and residential uses.
- Personal property tax rates are estimated at an average 16.5% add-on to real market value (RMV) for industrial uses and 12.2% for commercial uses based on urban renewal analysis for the Portland Development Commission (PDC). Note that personal property can vary widely, especially for industrial uses, depending on the capital intensiveness for equipment of a particular industrial operation.
- Oregon personal income tax is based on current income-adjusted rates and corporate income tax at an estimated 7.6% marginal rate.
- The Multnomah County marginal rate is 1.45% applied to net business income; Portland marginal rate is at 2.2%.

Data assumptions and methodology are subject to refinement based on review of this preliminary draft report.

As with the financial pro forma analysis, this discussion is organized around the seven brownfield typologies and associated public benefit implications. This typology-specific evaluation is then followed by a broader review of lost opportunities across the full Portland employment landscape

1. Downtown High Density

As might be expected, Downtown High Density development is associated with high potential levels of public benefit relative to land area required. Employment densities for the mixed use and office-retail typologies considered range from over 260 to 310+ employees per acre.

When considered in terms of the relationship of on-site payroll to total development cost, annual payroll equates to about 10% of real estate development cost (with mixed residential-commercial use) to 23% (with all commercial use). This is illustrated by the first of three sets of bar graphs provided below.

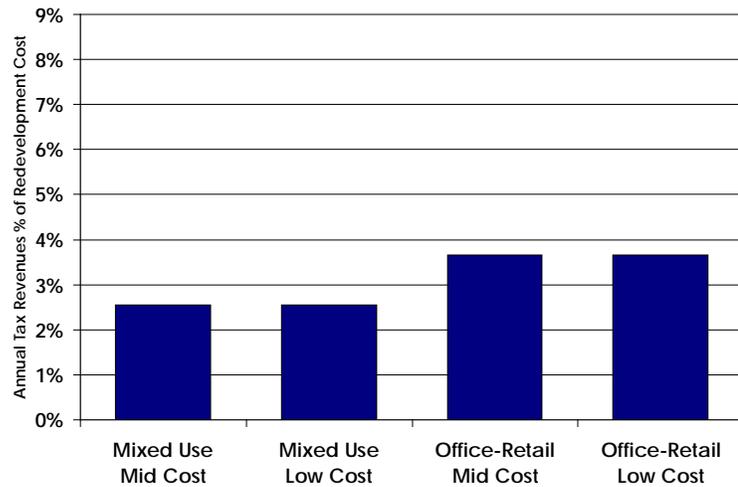
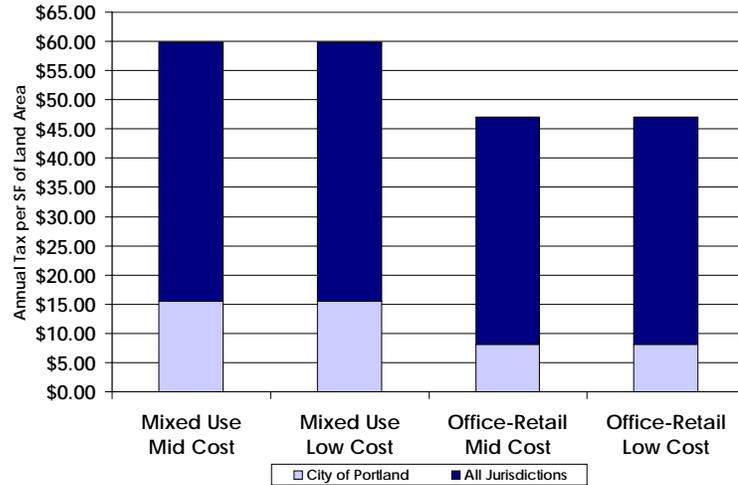
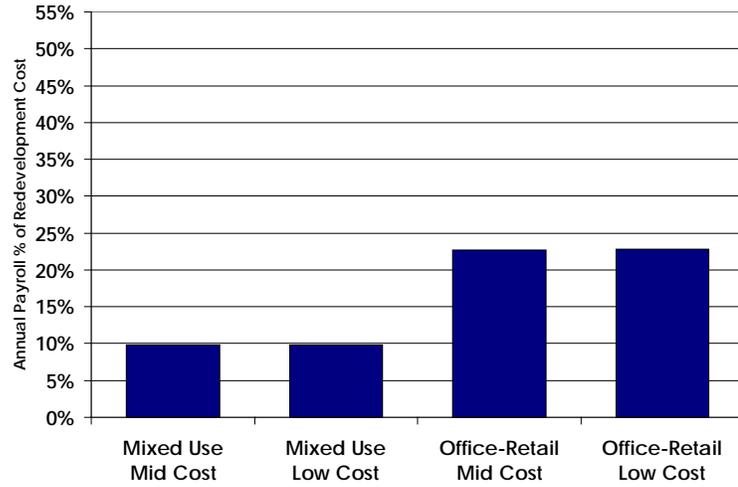
Tax revenues are also relatively high, due to density of development – estimated at nearly \$60 annually per square foot of land area to state and local jurisdictions (including \$15-\$16 per square foot to Portland).

When considered relative to real estate development costs, annualized taxes range up to nearly 4% of project cost.

Note: As with the Downtown High Density typology, three sets of graphs are presented as indicators of economic and fiscal benefit for each of the employment / brownfield typologies considered:

- Annual payroll as % of redevelopment cost
- Annual taxes as per square foot (SF) of land area (including property taxes to Portland and other jurisdictions, business income / license taxes to Multnomah County and City of Portland, and personal / corporate income taxes to the State of Oregon)
- Annual tax revenues as % of redevelopment cost

Figure 4-1. Downtown High Density Development Benefits



2. Mixed Use Hub

Of the seven typologies, Mixed Use Hubs are expected to achieve the third highest levels of development density – behind Downtown High Density and Central City Industrial. Employment densities might range up to about 50 jobs per acre.

With 100% commercial development, annual payroll ranges up to 28% of development cost (a higher ratio than for the downtown).

Annual state and local taxes are generated at a rate of up to about \$9 per square foot of site area. This equates to between 2-4% of total project cost.

3a. Main Street West

The Main Street typology (west of 82nd Avenue) is associated with employment densities in the range of 28-44 jobs per acre – with the lower employment level associated with mixed use development.

Added annual employee payroll ranges up to nearly 27% of real estate project cost, comparable with the Mixed Use Hub typology.

Annual state and local tax take for the mixed use and 100% commercial alternatives considered is in the range of \$5-\$6 per square foot of site area – or up to about 4% of project cost.

3b. Main Street East

Commercial properties east of 82nd are generally expected to develop at somewhat lower densities than is the case with the Main Street West typology, but with a higher mix of commercial as part of mixed use projects. Employment densities of up to about 38 jobs per acre might be expected with redevelopment.

Annual payroll might range up to 34% of development cost.

Annualized state and local taxes run between \$4-\$4.50 per square foot of site area – or at up to nearly 5% of real estate development cost.

Figure 4-2. Mixed Use Hub Development Benefits

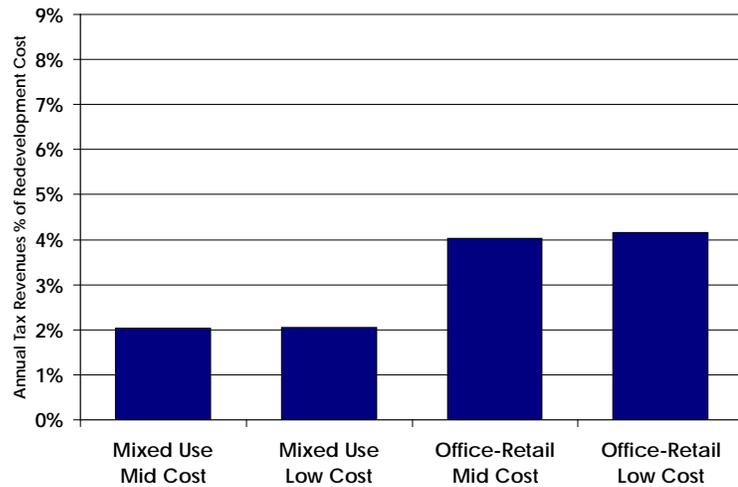
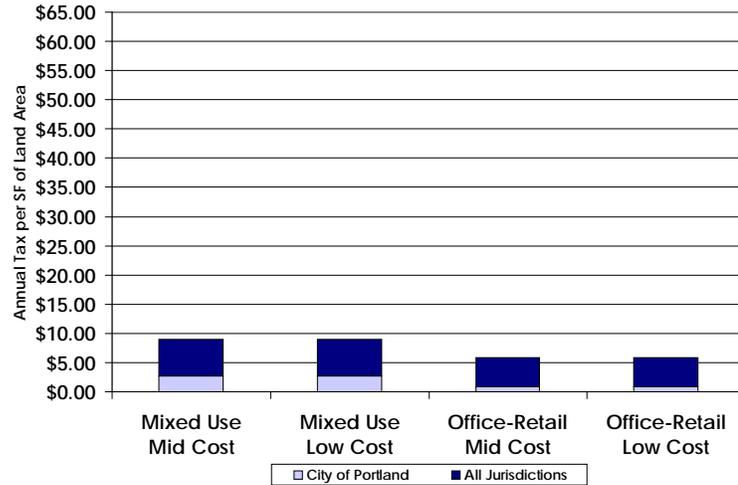
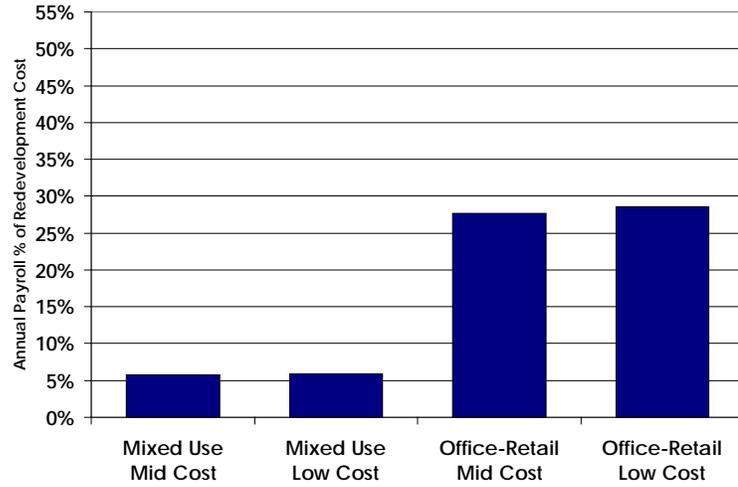


Figure 4-3. Main Street West Development Feasibility

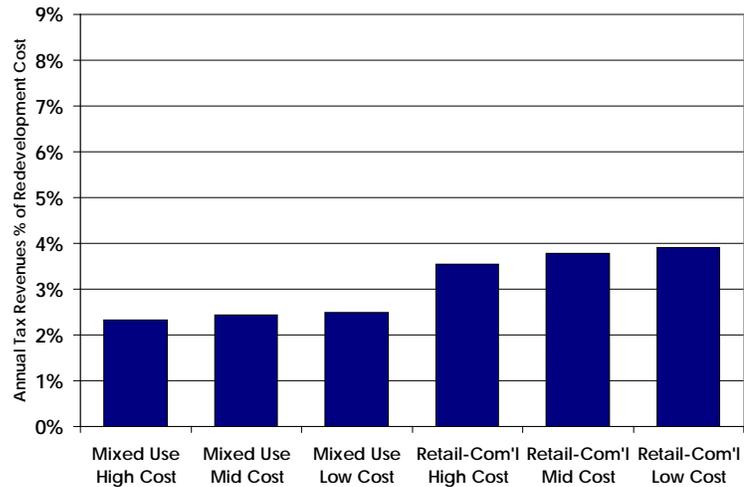
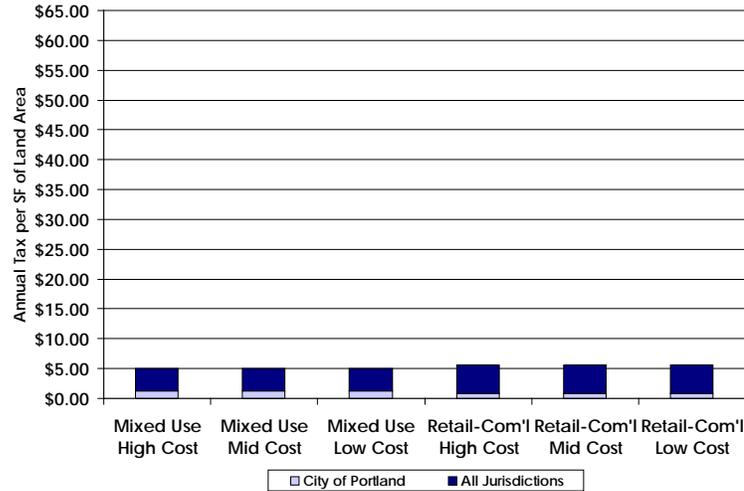
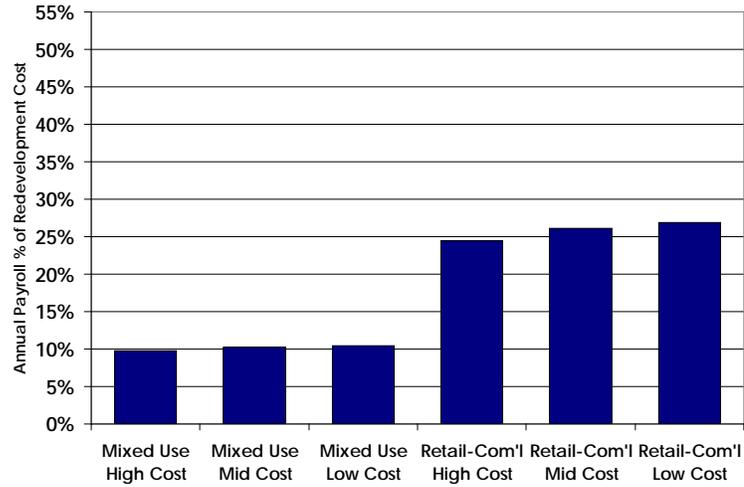
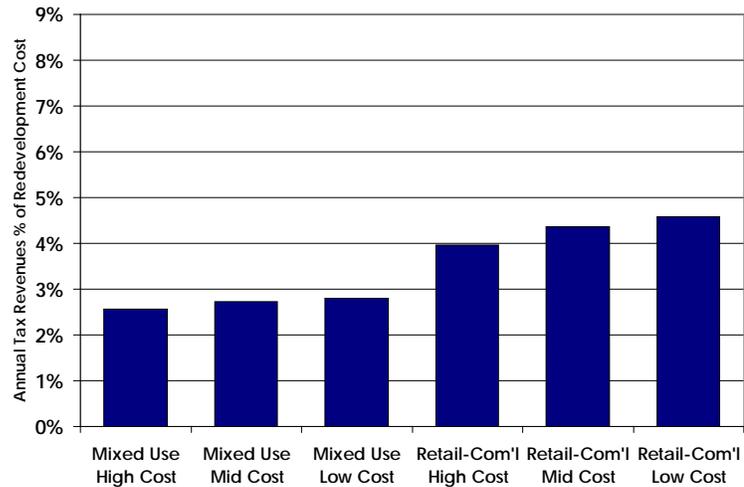
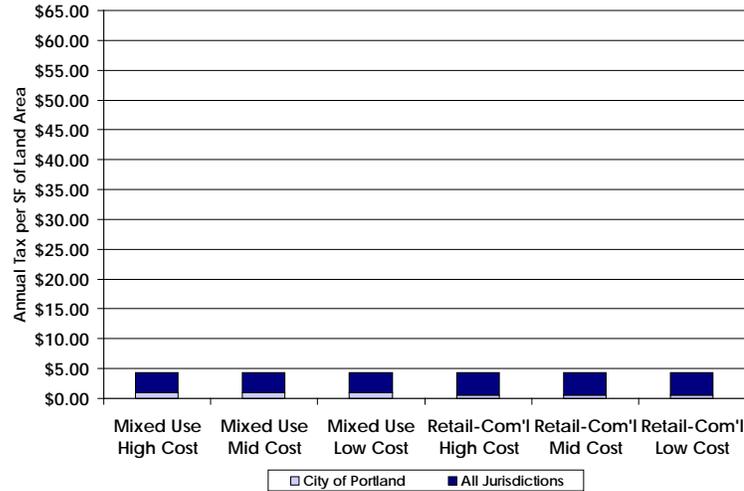
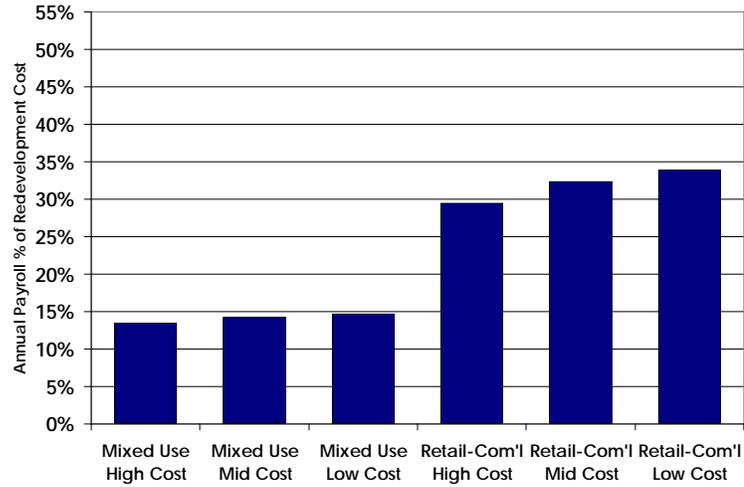


Figure 4-4. Main Street East Development Benefits



4. Central City Industrial

At 68 jobs per acre, the Central City Industrial typology and development prototype is associated with the second highest potential employment density in Portland – second to Downtown High Density.

At 33% of development cost, added annual payroll is also relatively high.

Annual tax revenue to state and local jurisdictions is estimated at \$13 per square foot of site area – or between 5-6% of development cost.

5-7. Industrial

Industrial development benefits are estimated for the flex space-business park and warehouse-distribution project prototypes. Densities are lower than for the other typologies considered, but can still be relatively strong at up to 12-25 jobs per acre if the full site can be effectively utilized with brownfield redevelopment.

When considered on the basis of payroll potential relative to real estate development cost, the public benefit is highest of the typologies considered – with annual payroll potential at up to more than 50% of development cost. In part, this is because average annual wage is estimated at \$69,000 per year for manufacturing / warehouse uses and \$52,000 per job with flex / business park development – as compared with \$46,000 per office and \$24,000 per retail job.

State and local taxes generated from redevelopment are estimated at up to about \$5 per square foot annually for flex-business park development and at just under \$3 per square foot annually for warehouse-distribution space. Annual taxes range between about 5-8% of project cost – highest of the seven employment / brownfield typologies considered.

Figure 4-5. Central City Industrial Development Benefits

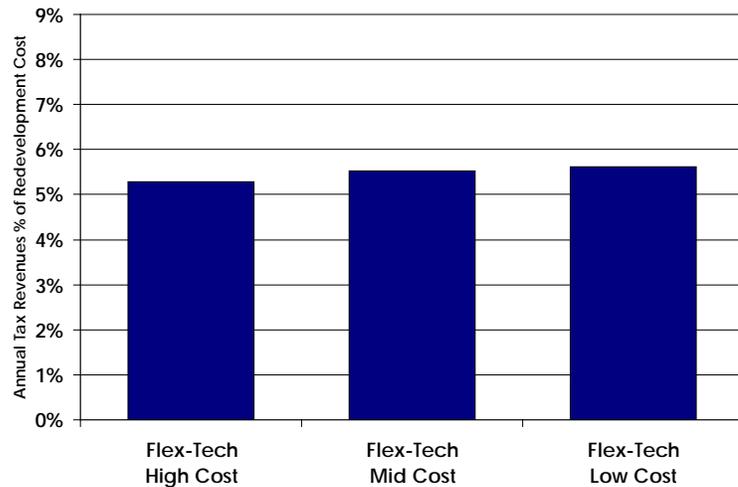
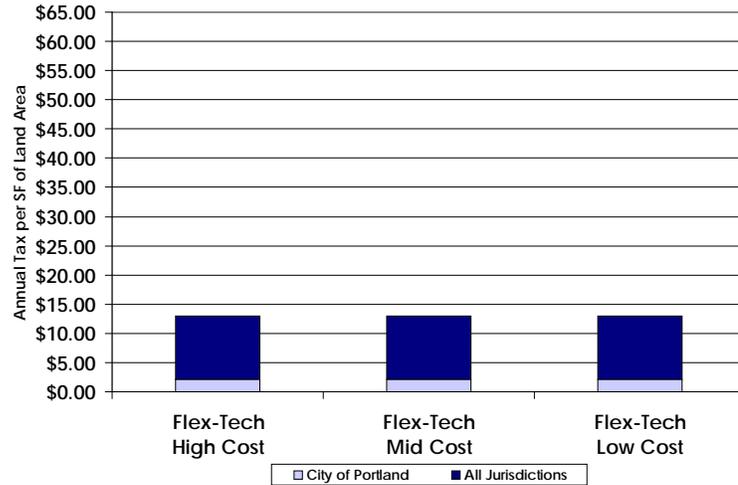
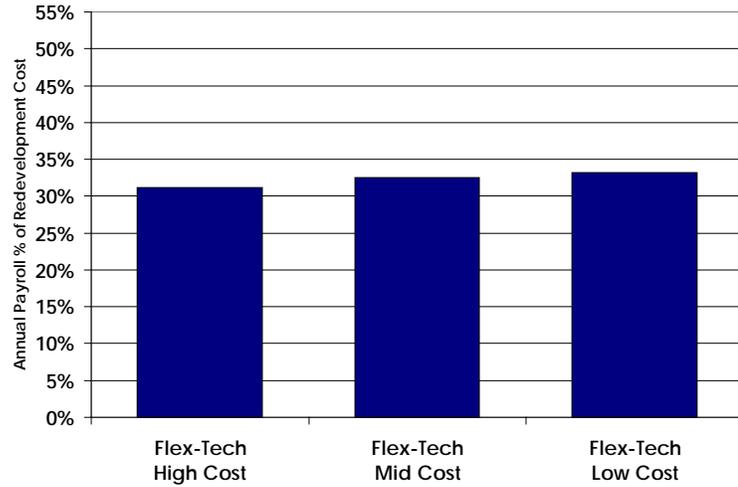
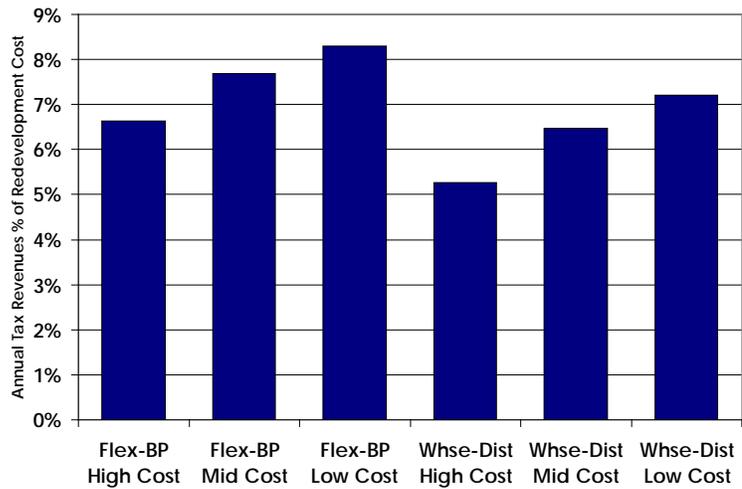
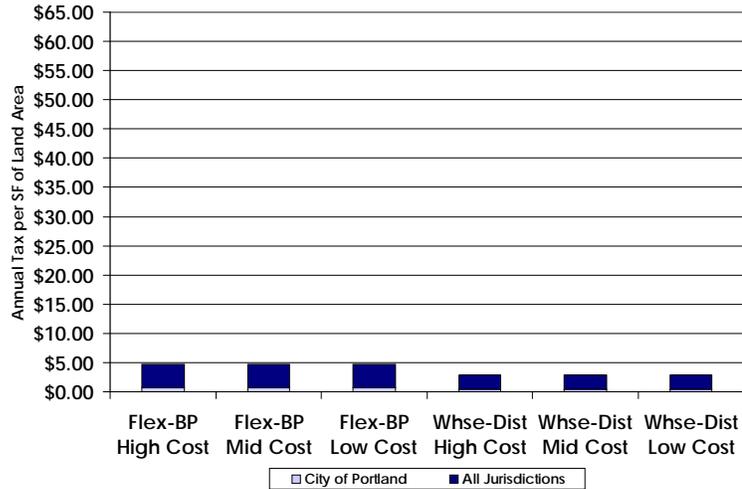
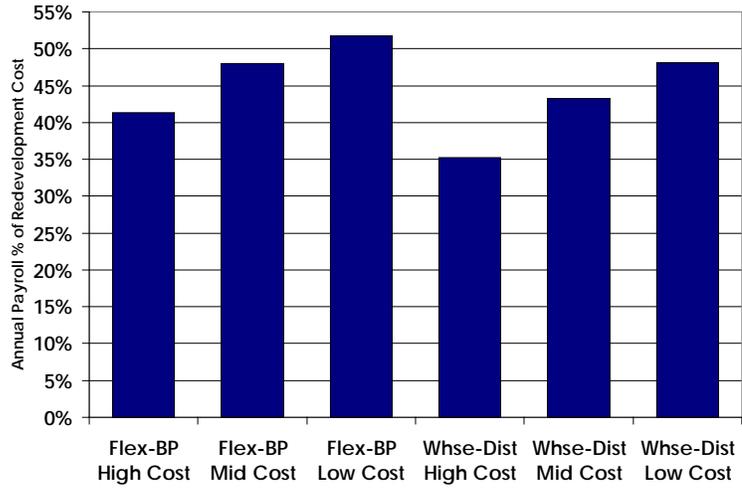


Figure 4-6. Standard Industrial Development Benefits



Overview Observations

This public benefits analysis serves to illustrate the tradeoffs inherent in meeting a multiplicity of employment and tax revenue benefits for Portland businesses and residents. These larger tradeoffs are clearly reflected in choices about investment related to brownfield remediation as well:

- Higher density development – especially with downtown mixed use – can serve to maximize employment and tax return relative to employment land area required. However, the community-wide employment and tax revenue benefits realized are not as strong when considered relative to the dollar levels of real estate investment required.
- In contrast, the Industrial typology requires more land area to achieve similar employment and land benefit. With brownfields, the feasibility of redevelopment is also more seriously impaired than for higher density sites where the cost of remediation can be spread across more square feet of building development. However, when considered relative to total development cost (even with remediation), the return on investment in the form of payroll and tax revenues is considerably higher than for the other typologies considered – as is average wage.

4 NATIONAL BEST PRACTICES

Brownfield cleanup and redevelopment is a challenge faced by cities across the country. Many cities and states have experimented with different policy and planning approaches to promote redevelopment of these contaminated properties, including those encumbered by rivers and harbors designated as Superfund sites. A review of effective policy tools from across the country has been conducted to provide a menu of options that can be analyzed to determine if they may be relevant and appropriate for Portland.

Brownfields Baseline Programs

Almost all cities and states (including Portland and Oregon) that have made cleanup and redevelopment of brownfields a priority have adopted several foundational programs including

Voluntary Cleanup Program—provides an expedited administrative pathway for cleanup of less contaminated properties with limited state oversight.

Brownfield Program—public agency staff that act as liaison between property owners and regulatory agency, typically active in coordinating funding for projects along with outreach and education. Both Portland and Metro Regional Government have brownfield programs.

Assessment Grants—funds for conducting studies to characterize contamination on properties and develop cleanup plans. These grants can be critical to defining the magnitude of cleanup cost and creating certainty that facilitates private investment. State and local grant programs are typically funded through EPA grants. Portland and Metro have both managed assessment grants in the past.

Brownfield Revolving Loan Fund—low interest loan program to support cleanup of contaminated properties. These programs are typically capitalized by federal funds. Business Oregon manages two brownfield revolving loan funds, one capitalized by the EPA and the other by the state. Portland is in the process of establishing a federally capitalized brownfield revolving loan fund.

This report focuses on financial incentives and policy tools that are not currently available in Oregon. They are framed in this report through example cities and governments that are considered national models. These cities include:

Tacoma, Washington—a city that has turned the challenge of a Superfund designation into an opportunity to recreate its waterfront

Minneapolis-St. Paul, Minnesota—partnership between several local and regional governments has been developed to leverage resources to promote brownfield redevelopment.

New Bedford, Massachusetts—a historically industrial community with a strong fishing community that has leveraged federal, state and local resources to develop its economy in spite of a Superfund sediment site

Milwaukee, Wisconsin—an older city with a strong industrial past that is focusing on brownfields as a way to promote sustainable development

Genesee County, Michigan—a leading example of the use of land banks and Tax Increment Financing for brownfield redevelopment.

While each of these communities has created a unique set of policies that incent cleanup and redevelopment of brownfields, they share a number of fundamental similarities that are important to recognize.

Economy and the Environment—Cleanup and liability is a fundamental concern for brownfields, but the paradigm of viewing these properties first and foremost as an economic opportunity lead each of these communities to a proactive and successful approach.

Local Government Leadership—A commitment by local leaders to brownfield redevelopment as a key element of community development and quality of life. This commitment has ranged from investment of local tax dollars, to assumption of environmental liability, to being an advocate for change at the state or federal level.

Coordinated Approach—These communities have not developed a single silver bullet policy tool, but rather created a package of land use and economic development plans, financial incentives, regulatory reforms, and infrastructure investments. These multiple actions have been coordinated and mutually supportive, to target specific brownfields challenges, and designed to address weaknesses in the regulatory and incentive framework.

4.1 Tacoma

More than 100 years ago, the Thea Foss Waterway in Tacoma was home to thriving industrial activities served by rail and marine transportation infrastructure. By the early 1980's, changes in the region's economy had left the area blighted and littered with vacant buildings and the contaminated sediments in the waterway were included in the designation of Commencement Bay as a Superfund Site. The designation was followed by approximately 10 years of investigation and study of cleanup options lead by the US Environmental Protection Agency (EPA) and Washington State that involved dozens of potentially liable parties. As the Superfund process began to focus on allocation of costs for cleanup, the City of Tacoma, with support from private business and community leaders, agreed to take the lead on the cleanup. In 1991, the City acquired approximately 27 acres of property on the Thea Foss waterfront and began to negotiate with the regulatory agencies and potentially liable parties on how to proceed with cleanup. The City created the Foss Waterway Development Authority, a special-purpose public development entity to hold title to the properties and position them for redevelopment. A development plan and design guidelines were established to set the stage for transformation of the formerly industrial area to a high density, mixed use community with a waterfront esplanade and recreation and entertainment opportunities. Redevelopment plans engaged the community, generated enthusiasm for revitalization of the waterfront, and allowed cleanup plans to be tailored to future uses.

There were many challenges along the way, including the recent economic downtown, but twenty years later, Thea Foss Waterway has been transformed. The public esplanade has been largely completed and seven of fifteen development sites are being constructed or planned for redevelopment. Today the Thea Foss is home to unique uses, including the Museum of Glass; the Chihuly Bridge of Glass; Albers Mill, a restored 1904 mill converted to residential use; and Thea's Landing residential community and appurtenances, including small boat moorage and a developing Maritime Center.

A number of policies have supported the success of Tacoma in this project including

State Environmental Cleanup Grants—Washington State provides grants to local governments funded by a tax on hazardous materials. This *ad valorem* fee on the wholesale value of petroleum, pesticides and other listed materials has generated over \$60 million in funds for local government grants per year. See Section 4.6.1 for more discussion of this policy tool.

Integrated Planning & Site Assessment Grants—The significant public risk and investment taken on the Thea Foss was supported in large part based on a community planning effort to create a new vision for revitalization of the waterfront. This model has helped lead to a state grant

program that funds both environmental assessment as well as redevelopment planning for brownfields. See Section 4.6.2 for more discussion of this policy tool.

Public Equity in Brownfields—The local government acquisition of the waterfront properties was instrumental to changing the paradigm of the cleanup process to a neighborhood revitalization effort. It has also positioned the local government to potentially realize direct financial returns on its investment. See Section 4.6.6 for more discussion of this policy tool.

4.2 Minneapolis-Saint Paul

The Minneapolis-St. Paul metropolitan area has taken a leadership role in cleanup and redevelopment of brownfields that is nationally unique for its local government leadership. The Twin Cities have developed a strong partnership between their County, Port Authority and Regional Government Council to establish a dedicated environmental cleanup fund, acquire brownfield properties, and target public investments

Dedicated Environmental Cleanup Fund—In 1997, Ramsey County (which includes the City of St. Paul) established the Environmental Response Fund to create a local funding source for contaminated site cleanup. The fund revenues are generated by a mortgage registry and deed tax of 0.0001 percent of the principal amount. The funds may be used for land acquisition, remediation, site improvements, and indemnification. Public and private entities are eligible to receive grants or loans from the fund. The funds are intended to provide gap financing. To date, twenty-two clean-up projects have received Environmental Response Funds totaling \$5.7 million and representing approximately 200 acres of remediated and redeveloped brownfield property. Note the program is scheduled to sunset in 2012. See Section 4.6.1 for more discussion of this policy tool.

Targeted Funding—The Metropolitan Livable Communities Act established financial incentives to support local governments in voluntarily working toward regional planning goals of equitably providing affordable housing, promoting infill development, and building public infrastructure to support private sector investment. The Livable Communities Fund is managed by the Twin Cities Metropolitan Council and consists of five accounts designed to support different types of compact development projects. The Tax Base Revitalization Account supports cleanup and redevelopment of brownfields. The account is funded by a legislatively authorized levy capped at \$5 million annually and is credited with cleaning up over 1,700 acres of contaminated land.

Brownfield Acquisition—The Saint Paul Port Authority has played a lead role in acquiring, remediating, and redeveloping brownfield properties. The Port Authority is an economic development organization, which has historically focused on river-related commerce. They currently control 17

business centers/industrial parks (13 complete and 4 currently under development) in Saint Paul, all of which resulted from acquisition of brownfield sites. Completed projects house 526 businesses that employ over 17,000 persons. The Port Authority finances projects from bond funds, New Market Tax Credits, revenues derived from past projects, tax increment financing (TIF), and federal and state sources. The tools used to implement this successful acquisition-redevelopment program include several distinguishing elements:

- Land value write-down used frequently as a business incentive with the Port Authority often selling land for \$1. The land value write-down assists businesses in complying with St. Paul's extensive public benefit eligibility requirements for financial incentives.
- TIF is the primary financial incentive for these projects and was strengthened in 2010 when the legislature allowed "pooling," which means that revenues generated by a mature district can cross-subsidize a start-up district.
- The Port Authority is a designated Community Development Entity that has allowed New Markets Tax Credits to support several of their projects.
- Environmental due diligence procedures and Minnesota state liability protections for innocent purchasers minimize the contamination risk taken on by the Port Authority.

Tax Increment Financing—Minnesota has adopted a variations on TIF that specifically supports brownfields redevelopment. The law permits the original tax capacity (the frozen tax value) to be reduced or "written-down" by the cost of cleanup. This provides for a greater increment to be generated as the property is remediated and eventually redeveloped. See Section 4.6.5 for more discussion of this policy tool.

4.3 New Bedford

New Bedford, Massachusetts is one of the leading commercial fishing ports in the United States. In the 1800's the city was renowned for its whaling fleets and textile mills. Through the 1900's the city's economy continued to be based on commercial fishing and industry. This industrial history has left a legacy of contamination in New Bedford Harbor as well as on upland properties. The harbor was designated as a National Priorities List Superfund Site in 1983. The harbor superfund site includes covers approximately 18,000 acres of the urban estuary where sediments are contaminated with polychlorinated biphenyls (PCBs) and heavy metals. After years of study, targeted dredging of contaminated sediments began in 1994. The dredging of

high priority and strategic areas continues on an annual basis and is expected to be completed in 20-30 years.

The City of New Bedford has taken an active role in the Superfund cleanup process and in promoting cleanup and redevelopment of brownfield properties. The City's approach has been based on forming partnerships, leveraging funding, and strategically positioning specific properties for cleanup and redevelopment.

Partnerships—The City has coordinated with its local Port and Economic Development Council to plan for redevelopment and revitalization of the harbor and community. It has engaged federal partners including EPA and the National Oceanic and Atmospheric Administration through the “Portfields” program to bring increase technical and financial capacity.

Leveraging Federal Funding—The City has been successful in obtaining numerous EPA brownfield assessment and cleanup grants for specific projects and has played a key role in obtaining federal funding for cleanup of the harbor including approximately \$30 million in American Recovery and Reinvestment Act economic stimulus funds.

Brownfields Acquisition—The City has taken title to a number of brownfield properties in order to obtain grant funding for site assessment and cleanup. The City and its local partners have conducted a study to prioritize brownfield properties based on economic redevelopment potential and competitiveness for EPA grant funding.

In addition to these broad strategies, a number of specific policies and programs have supported New Bedford in their effort to cleanup and redevelop brownfields

Brownfields Remediation Tax Credit—This program allows work parties to receive a credit on their state business or personal income tax based on the cost of remedial actions. Because the tax credits are transferable, non-profit organizations can take advantage of the credits as well. See Section 4.6.3 for more discussion of this policy tool.

Pooled Environmental Insurance—Massachusetts has established an insurance program to provide management of risks related to contamination liabilities at a discounted price.

4.4 Milwaukee, Wisconsin

Milwaukee has a long-standing and well-regarded brownfields program that has served as a model EPA Brownfields Showcase Community. Since 1990, Milwaukee has been actively involved in at least 87 brownfield redevelopment projects. Successful redevelopment projects have included manufacturing, residential, retail, and commercial projects. The City of

Milwaukee has invested over \$21.7 million in the testing and clean-up of these properties. To date, \$766.1 million of redevelopment investment and 3,384 jobs have been created or retained as a result of these redevelopment projects.

The Menomonee Valley Industrial Park¹ is often cited as model of successful re-positioning of an older industrial center, now accommodating 4,200 jobs and serving as an example of sustainable industrial development, both in that significant land has been preserved and in that a number of the new businesses are green job producers.

Milwaukee's brownfield program is supported by several policies including:

Tax Increment Financing—There are seven TIF zones just in the Menomonee Valley Industrial Park. TIF is usually used to finance infrastructure, cleanup, and site preparation to support new business investment. Milwaukee has also successfully matched up federal Housing and Urban Development (HUD) Section 108 loans and TIF. For the Menomonee Valley Industrial Park, TIF was used as the repayment source for a \$10 million HUD Section 108 loan, linked to a \$2 million HUD Brownfield Economic Development Initiative grant. See Section 4.6.5 for more discussion of this policy tool.

Brownfield Acquisition—Milwaukee has directly taken ownership of key parcels, such as the 135 acres for the Industrial Park. They have also established authority to assist private buyers in acquiring tax foreclosure properties through an expedited process.

Brownfield Remediation Tax Credits—Wisconsin has a Remediation Tax Credit Program that grants a 50 percent credit for cleanup projects located within designated Community Development Zones (distressed areas). See Section 4.6.3 for more discussion of this policy tool.

4.5 Genesee County

Genesee County, Michigan (which includes the City of Flint) was able to bring their rampant property abandonment problem under control through the creation of the Genesee County Land Bank. The land bank is often cited as a model use of land-banking for brownfields. However, the land bank broadly addresses vacant and tax foreclosed land; including, but not limited to, brownfields. The hallmarks of the program are:

- Expedited foreclosure process;
- Disposition of properties according to a plan instead of a mechanical bidding process;

¹ See: <http://www.renewthevalley.org/>

- Elimination of tax liens;
- Use of tax increment financing to enable cross-collateralization.

The use of TIF for cross-collateralization has been generally regarded as the key to success. Michigan passed land bank legislation 1) defining any property in a land bank as a “brownfield,” and 2) allowing scattered site (non-contiguous) TIFs for land banks. These two reforms meant that all land bank properties were eligible for TIF. The County then issued TIF debt based on projected revenues from putting properties back on the tax rolls. As many as 4,000 mostly non-contiguous properties were batched into these TIF plans. This set the stage for stronger ready-for-redevelopment sites to generate tax revenue to cross subsidize sites that needed more upfront investment (often demolition) in order to make them viable candidates for new investment.² See Section 4.6.5 for more discussion of this policy tool.

4.6 Policy Tools

The review of model communities across the county provides a framework for how multiple policy tools are coordinated to create an effective approach to brownfields. This section provides more detailed discussion of specific policy tools that have supported brownfield redevelopment in the model communities. Additionally, Policy options that have been recommended in previous studies or workgroups related to urban infill and brownfields in Portland are reviewed in Section 4.7.

The discussion of each policy option is crafted to provide a brief overview and summary analysis of the tools including the following elements:

Summary—briefly describes the policy tool

Purpose—describes what policy tool is intended to achieve

Method—outlines how the tool works and its key elements

Lead Entity—identifies public agency most suited to lead program

Advantages—states the positive aspects of the policy

Disadvantages—indicates the potential drawbacks of the policy.

The tools are summarized in the table 4-1 and are individually described in narrative.

² Dan Kildee, presentation to the Northeast-Midwest Institute Brownfields Community Network, October 30, 2008, available: <http://nemw.org/images/stories/documents/geneseecountylandbank.pdf>

Table 4-1

City of Portland Brownfield Policy Tools Matrix

TOOL	DESCRIPTION	CHALLENGES				STATES / CITIES THAT HAVE ADOPTED
		Financial	Liability	Industrial Redevelopment	Superfund	
NATIONAL BEST PRACTICES						
Dedicated Brownfield Cleanup & Redevelopment Fund (Section 4.6.1)	Establish a dedicated fund for cleanup and redevelopment of brownfields. The revenues of the fund could be generated from a large state bond or a fee.	X				WA, NY, NJ, MI, OH, PA, Minneapolis-St. Pau & Boston
Integrated Planning & Site Assessment Grants (Section 4.6.2)	Establish a publically funded Brownfield Integrated Planning Grant to conduct environmental assessments and support site-specific redevelopment strategies.	X		X		WA, NY, NJ, OH
Brownfield Remediation Tax Credit (Section 4.6.3)	Consider expanding the use of tax incentives, such as income tax credits for dollars spent on site investigation and environmental cleanup.	X		X		13 states, including MA, WI, NY, NJ, FL, and IL
Pooled Environmental Insurance (Section 4.6.4)	Establish a program that would decrease the transaction costs and reduce the cost of purchasing environmental insurance to covers risk.		X	X	X	Massachusetts, Wisconsin, California
Tax Increment Financing Targeted to Brownfields (Section 4.6.5)	Improve existing TIF authority to provide greater support for brownfield cleanup and redevelopment.	X		X		Wisconsin, Michigan, Kentucky as models
Public Land Bank (Section 4.6.6)	Establish a land bank to acquire contaminated properties (typically also foreclosed properties), manage and finance cleanup and redevelopment, and sell property back into the private market.	X	X	X		Michigan, Minnesota
Job Creation Tax Credits (Section 4.6.7)	Provide a tax break to developers based on the number of jobs provided by a completed development.	X		X		Florida
Build Market Demand (Section 4.6.8)	Develop programs to link more risk tolerant investors and developers with brownfield properties.			X		Pennsylvania, New Jersey, Ohio

Table 4-1

City of Portland Brownfield Policy Tools Matrix

Tool	Description	CHALLENGES				STATES / CITIES THAT HAVE ADOPTED
		Financial	Liability	Industrial Redevelopment	Superfund	
PORTLAND-BASED POLICY OPTIONS						
Public-Private Investment Entity (Section 4.7.1)	Building on models being explored in the Community Investment Initiative, create a new entity to combine public and private funds and foster unique joint venture opportunities.	X		X		
Historical Insurance Recovery Support (Section 4.7.2)	Provide technical support to assist work parties in making claims on historical insurance policies.	X	X	X		Indiana, Oregon (previously)
Reform Contaminated Property Tax Assessment (Section 4.7.3)	Modify tax assessment valuation rules to include time restrictions on the value reduction associated with a cleanup liability to discourage moth-balling	X				
Model Purchase and Sale Agreement (Section 4.7.4)	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.		X		X	
SUPERFUND POLICY OPTIONS						
Federal Prospective Purchaser Agreements (Section 4.8.1)	EPA provide Prospective Purchaser Agreements, jointly with Oregon DEQ to provide certainty and liability protection to innocent purchasers of contaminated properties under federal Superfund Law.				X	Used on individual sites, but not programmatically as recommended.
CERCLA De Minimis Settlements (Section 4.8.2)	EPA provide expedited settlement agreements for owners of properties that likely cause minor impacts to the Harbor.				X	Used on individual sites, but not programmatically as recommended.
Corps of Engineers Urban Rivers Restoration Initiative (Section 4.8.3)	Coordinate Portland Harbor cleanup into federally led project with broader focus to improve health of the river in addition to addressing sediment contamination. The Urban River Initiative uses a more collaborative process than CERCLA and would position the Harbor for a major federal appropriation to support the effort.				X	New Jersey—Passaic River, New York—Gowanus Canal

4.6.1

Fund

Dedicated Brownfield Cleanup and Redevelopment

Summary—A state or local fund dedicated to cleanup and redevelopment of contaminated sites.

Purpose—Provide a robust source of public funds to subsidize cleanup and redevelopment of brownfield sites.

Method—Oregon State and Portland currently have several funding programs for brownfields including

- Brownfield Revolving Loan Fund
- Orphan Site Account
- Site Assessment Funds

However, these funds have limited their financial capacity. Several other states and local governments have created dedicated cleanup and redevelopment funds through bond measures, dedicated taxes, or use of federal Housing and Urban Development (HUD) Section 108 loans.

Bond Measures and Dedicated Taxes

Several states including Michigan, Ohio, Pennsylvania, and New York, have passed large bond measures to support environmental cleanup. Washington State's cleanup law, which was passed by voter initiative, included a fee on the wholesale value of hazardous substances, including petroleum, at a rate of \$7 per \$1,000 of wholesale value. The funds are used to support hazardous waste cleanup and prevention activities. The hazardous substance tax has generated over \$100 million per year in revenues in the last five years. This high level of funding has been driven almost entirely by the high price of oil. The Oregon constitution includes a provision that prohibits the use of a fuel tax for any purpose other than transportation, so the Washington State model would need to be connected to a different tax revenue stream to be effective in this state.

Other dedicated funds for brownfields have used: liquor sales tax add-on (Ohio); real estate transfer tax (New York); bottle bill revenues (New York); municipal waste and tipping fee (Pennsylvania), and a portion of the corporate business taxes (New Jersey). Most of the resulting funds are used for site preparation, as well as cleanup. Usually public sites are eligible for grants, and private sites are eligible for loans and loan guarantees (sometimes private sites are eligible for grants through a public agency sponsor).

The Twin Cities of Minneapolis-St. Paul demonstrate how a local government can establish a cleanup fund. Ramsey County has been

authorized by the state to collect a mortgage registry and deed tax to establish a fund to provide gap financing for brownfield. The use of the fund is very flexible and can cover remediation, site improvements, and indemnification associated costs. The Twin Cities Metropolitan Council also manages a cleanup loan and grant fund that is funded through a property tax levy. The Minneapolis-St. Paul approach may provide a model of a tax revenue stream that could support brownfield cleanup and redevelopment. The large bond model may also be applicable for Oregon.

HUD Section 108 Loan as Brownfield Fund Source

HUD Section 108 can be used to create a brownfields loan pool with low interest rates and other favorable terms. Loans could be geared to cleanup and site preparation for brownfields, provided that the site and the expenditures are eligible under Community Development Block Grants (CDBG).

Local governments that are “Entitlement Communities” (including Portland) are allowed to borrow up to five times their annual CDBG allocation. Portland’s future CDBG allocation must be part of the security for the HUD 108 loan. By loaning out the funds to multiple projects, instead of one large project, Portland would minimize risk exposure related to non-performance. Further, Portland can borrow from HUD Section 108 at approximately 1 percent, and re-loan the funds at 3 or 4%, using the difference to build up a shared reserve account as contingency for a future non-performing project.

The “[Boston Invests in Growth](#)” program is one example of a HUD Section 108 loan pool that has been used for, but is not limited to, brownfield projects. Boston gears the \$69 million program to alternative mezzanine financing and requires that a primary lender be secured for a project. The program is projected to create 1,200 jobs; employment for low and moderate income persons is the rationale for using the HUD funds.

Combining HUD 108 loans with TIF for repayment creates an additional and more aggressive subsidy possibility. Loans could be effectively converted to grants if Portland agrees to use TIF as the re-payment source.

Lead Entity—Large cleanup funds are typically approved and managed at the state level. However, local jurisdictions, such as Minneapolis-St. Paul and Boston have established funds, as well.

Advantages

- Increases financial capacity for conducting cleanups
- Provides state or local control of funds in contrast to competing with priorities of federal funding

- The HUD Section 108 option has the dual advantages of: 1) being in Portland’s control; and 2) not involving any new or diverted local tax dollars.

Disadvantages

- Challenging economic and political conditions for establishing a new tax or issuing large bonds
- Competition with other funding priorities (such as infrastructure, education, salmon recovery, etc.)
- For the HUD 108 option, eligible projects must fit into HUD national objectives, and that will narrow the list of potential projects.

4.6.2 Integrated Planning & Site Assessment Grants

Summary—Integrated planning grants support environmental site assessments to understand cleanup needs, and also fund studies to support a site-specific redevelopment strategy. Eligible planning costs include: market assessment, land use analysis, infrastructure assessment, geotechnical assessment, site planning, and property appraisal.

Purpose—These grants help communities conduct due diligence before investing in contaminated properties and create a redevelopment vision and strategy that can drive the cleanup

Method—Integrated Planning Grants are managed by the Washington State Department of Ecology. The states of New York, Ohio, and New Jersey have also established grant programs to help communities plan for redevelopment of brownfield properties. These grants can focus on an individual property or a neighborhood or area impacted by multiple brownfields. In each of these states grants are available to local governments, including special purposes districts, with little or no matching fund requirement.

Lead Entity—State or local government.

Advantages

- Creates the opportunity for more local governments to play leadership roles in redevelopment of abandoned, underutilized, and contaminated properties while minimizing financial risk to local communities.
- Provides resources to smaller communities that otherwise would lack the capacity to take on important cleanup and redevelopment projects.

Disadvantages

- Creates greater demand for public brownfield funds.
- Not applicable to brownfield redevelopment projects led by private parties.

4.6.3 Brownfields Remediation Tax Credit

Summary—Income tax credit for costs of conducting site investigation and environmental cleanup.

Purpose—Remediation tax credits provide a financial incentive that is dependable, predictable, and substantial. They can be designed to be applicable to both private and public sector entities.

Method—The mechanics of how tax credit programs operate vary among the 13 states that have adopted this type of policy.³ The major policy elements include:

- Cap on the overall total financial capacity of the program (such as an annual limit on the total tax credits that can be allowed)
- Limits to credit available for an individual project
- Transferability of the tax credit (ability to transfer or sell the credit to another party which allows a party to generate upfront capital)
- Eligible costs (limited to cleanup or inclusive of site preparation or other redevelopment expenses)
- Needs testing (requiring that a project meet certain criteria to be eligible for the tax credit)
- Links to certain public benefits, such as job creation or investment in distressed areas (as requirements for eligibility or incentives for greater magnitude of tax credit)

Generally, the programs that offer the possibility of greater subsidy of redevelopment costs (not just cleanup) also have more needs testing and overall program caps, and, consequently, the tax credit is far from automatic. New York, Connecticut, Iowa, and Missouri are in this category.

³ Redevelopment Economics, Chart of State Brownfields Tax Credits, see http://www.redevelopmenteconomics.com/yahoo_site_admin/assets/docs/State_Tax_Credits_chart_7-11.208190334.pdf

At the other end of the spectrum are state programs that are fully automatic but are limited by per project ceilings (Mississippi, Colorado, Illinois, Florida, and Kentucky), and are therefore unable to offer a substantial inducement for larger more complex cleanups.

Several states (Wisconsin, New York, and New Jersey) do not make their credits transferable, which means that non-profits cannot benefit, and many developers with limited tax liability cannot take advantage of the incentive.

Massachusetts is the only state that offers a brownfields tax credit with the combination of being: 1) fully automatic; 2) fully transferable; and 3) not subject to per project ceilings. The Massachusetts program is also a model in that unrestricted use cleanups are rewarded (a 50 percent credit for unrestricted-use cleanups versus a 25 percent credit for restricted use cleanups). The program is also restricted geographically to Massachusetts designated Economically Distressed Areas.⁴

A draft report on the impact of the Massachusetts Brownfields Tax Credit being prepared by Redevelopment Economics outlines the impacts of 44 completed projects (representing between 50 and 65 percent of all tax credit projects):

- \$54 million in tax credits have helped leverage \$2 billion in brownfields investments, a leverage ratio of \$37/other funds to \$1/tax credit. All brownfield tax credit investments are in state-designated Economically Distressed Areas (a statutory requirement) so all investments assist struggling communities and neighborhoods.
- The state's investment in brownfield tax credits is repaid six times over in only 10 years of operation. That is, state tax revenues derived from initial construction and from ten years of the on-going impacts of businesses locating at brownfield sites exceed the initial public investment by a factor of more than six to one.⁵

Lead Entity—State

Advantages

- Provides a financial incentive for private investment in brownfields during a down economic cycle
- Creates a financial incentive that does not require establishing a new tax or fund

⁴ See: <http://www.mass.gov/dep/cleanup/bfhdout2.htm>

⁵ This calculation counts only direct impacts (not multiplier-derived impacts) and does not count the retail businesses attracted to BTC sites.

- If properly crafted, implementation of tax incentives requires few state staff resources.

Disadvantages

- Potential impact on state budget

4.6.4 Pooled Environmental Insurance

Summary—Publicly supported program that would decrease the transaction costs and reduce premiums for environmental insurance.

Purpose—Like standard insurance policies, environmental insurance is a tool to manage risk. Environmental insurance policies are frequently used in brownfield transactions, but because they are individually scripted for each project, the transaction costs can be a barrier. A publicly supported program can make environmental insurance policies more widely available. In Portland, an environmental insurance program could be crafted to specifically address risks and uncertainty related to the Portland Harbor Superfund site.

Method—There are several options for a public role to facilitate the use of environmental insurance that could be effective for addressing brownfield challenges in the Metro area. These include:

Pre-Selected Insurers—To reduce the transaction costs of environmental insurance and make it more accessible for smaller sites, the state or Portland could pre-select brokers or insurance carriers. The states of Massachusetts, Wisconsin, California, and Ohio currently offer this type of program. The program could offer cost cap insurance, pollution legal liability insurance, or blended risk policies. The insurers would establish standard guidelines and template policies to make the process of drafting and executing a policy more efficient. For the privilege of having business directed to the insurers, they could agree to a discounted premium cost (the states of Wisconsin, California, and Ohio programs both provide 10% discounts).

Another approach to reducing the premium costs is for the public agency to subsidize the insurance premiums. For example, Massachusetts covers 50 percent of the premium costs of eligible projects (with a \$50,000 limit for private projects and \$150,000 limit for publicly sponsored projects). The California program is also authorized with a 50 to 80 percent subsidy, but the subsidy aspect has not been funded for several years.

In 2009, the Massachusetts program reported that, over the 10-year life of the program, \$6.6 million in state funds had assisted 330 projects that in turn created 27,000 jobs and \$4.1 billion in new investment. The Ohio, California, and Wisconsin programs are both more recent and less aggressive; so impact numbers are likely more limited.

Public Insurance Pool—In this model, the state or Portland would allow project proponents to make a payment to the government as closure for tailing environmental liability. The government could in turn use those funds to buy insurance policies to cover a pooled group of sites. This method of contribution to reach closure is similar in principle to the current program addressing contaminated sediments in the Columbia Slough.

Portland Harbor Superfund Application—A pooled insurance model could be particularly effective in the Portland Harbor. The program could allow for small contributors to the Portland Harbor Superfund site (those only connected to the Harbor through stormwater discharge) to reach closure ahead of the final federal settlement by insuring against the specific risk that the property may be subject to EPA enforcement/cost recovery actions. Upon completion of upland cleanup actions (if needed) and implementation of stormwater best management practices, the parties would pay a premium that funds the environmental insurance. If the EPA or other potentially liable parties seek contribution from that party, the claim would be directed to the environmental insurance policy.

Lead Entity—State or Portland

Advantages

- Makes environmental insurance more broadly available which can provide the risk management to facilitate brownfield projects.
- Lower-cost environmental insurance premiums
- Pre-negotiated policy terms to reduce transaction costs and timeframes
- Streamlined underwriting process

Disadvantages

- Potential public costs to support the program
- Public takes on some measure of risk in the Public Insurance Pool model

4.6.5 Brownfield Focused Tax Increment Financing

Summary—Modify existing TIF policy to provide greater support to brownfields including:

- Making brownfields outside of urban renewal areas eligible
- Exempt brownfield projects from land and tax base TIF limits

- Allow “pooling” of TIF funds so that revenues from mature districts can “seed” start-up districts
- Augment local TIF revenues with state funds
- Use TIF to support an environmental insurance pool

Purpose—TIF has been an important financial tool to support a number of brownfield projects in Portland. There is potential for TIF to be refined to be an even more effective tool for promoting brownfield cleanup and redevelopment utilizing concepts adopted in other states.

Method—Most of the potential modifications to TIF would require legislative changes or revising criteria for property tax evaluations. However, some proposals might be advanced through administrative mechanisms. Several specific potential modifications for using TIF for brownfields redevelopment in Oregon are presented below.

Urban Renewal Plan Exception. The urban renewal-related requirements dictate that TIF is used only for area redevelopment, not for the redevelopment of isolated or small individual/brownfield sites. Some states, such as Wisconsin, make an exception so that brownfields sites can use TIF without the urban renewal plan requirement. In Oregon a statutory change would be required to create a similar exception, but the result would mean that numerous brownfield sites could potentially make use of TIF. More subtle, limited changes to support isolated or small sites could include 1) limiting brownfield TIF to sites that have been vacant for a certain time period; and/or, 2) limiting brownfields TIF expenditures to cleanup and site preparation, not infrastructure or vertical development.

Land / Tax Base Limitation. The limitation that localities may not designate TIF districts for more than 15 percent of their land or 15 percent of their assessable base in TIF districts may hamper TIF redevelopment, particularly in Portland. Several states have made exceptions to debt limitations for brownfield TIF projects. For example, sites eligible for Wisconsin’s Environmental Remediation TIF program are not subject to the general requirement that TIF districts not exceed 15 percent of the equalized value. If this exception is not feasible, then the same potential compromises referenced for the urban renewal plan could apply to the limitations.

Pooling to Seed Start-up Districts. Brownfield Redevelopment Authorities in Michigan report that one of the keys to their success is the ability to seed start-up districts from unobligated revenues from mature districts. The St. Paul Port Authority also reported that they have been able to advance several new brownfields TIF projects because of a 2010 state reform that allowed pooling of revenues. This could be a general TIF reform or it could be adopted specifically for TIF projects that also qualify as brownfields.

State Revenues Dedicated to Assist Projects that Meet State Objectives. Oregon does not currently dedicate state revenues to supplement local TIFs. Sometimes dubbed “super TIFs,” the pledge of state revenues can make a very significant difference in gap financing, and the logic of the state committing funds to support projects that meet state objectives is indisputable. One of the best examples is Kentucky’s support for “Signature Projects,” defined as mixed use redevelopment projects that involve a minimum \$200 million investment and can be demonstrated to create net positive economic and fiscal impacts to the State.

An option that would have less fiscal impact would be to allow certain state revenues (generated by the project) to be used as extra security for the TIF but not for direct project expenditures.

State TIF Guarantee or Other Credit Enhancement. Several states offer limited TIF guarantees for certain kinds of projects. Connecticut’s Brownfields Redevelopment Authority⁶ is the best brownfields-specific example by both guaranteeing and creating an alternative loan source for brownfields TIF projects.

TIF and Environmental Insurance. Consideration should be given to developing a proposal to tie together TIF and environmental insurance. See discussion under Pooled Environmental Insurance (Section 4.6.4).

Lead Entity—State legislative change, implemented by Portland and other local governments

Advantages

- Expands a financial incentive program that has a track record of effectiveness
- Provides funding source to support public-private partnerships and leverage outside investment

Disadvantages

- Current market conditions create risk that incremental tax revenue generation may not meet expectations

4.6.6 Brownfields Land Bank

Summary—Establish a regional or statewide land bank to acquire brownfield properties and re-position them for redevelopment.

⁶ See: <http://www.ctcda.com/Landing/>

Purpose—Provide patient capital to cleanup and reposition property within the context of a long-term plan.

Method—Land banks can provide an entity with the resources and long-term perspective to acquire and reposition constrained properties. Land banks are usually created to manage the orderly disposition of property that has come under local government ownership, most often through tax delinquency. The disposition process is governed by community plans rather than the short-sighted tendency of local agencies to try to “get the properties off our books.” The orientation toward community planning means that many land banks also selectively acquire properties in order to address blight or to assemble properties that can be redeveloped under the unified plan. A brownfields land bank would be more geared to proactive land acquisition of properties that are currently “upside down” and are therefore not attracting new investment. The land bank could have a strong orientation to industrial development and could hold properties until the “right” user comes along.

Keys to successful redevelopment of brownfields through land banks in other states include:

- Acquire and assemble sites through conventional purchase or eminent domain processes. Assembly of several parcels into a larger redevelopment site can help overcome the barriers to redeveloping isolated parcels that might be upside-down by themselves.
- Issue debt and use TIF to finance site preparation, cleanup, and infrastructure improvements. Debt repayment would be from land sale, TIF revenues, and other public and private funding sources. Note, in particular, that several of the concepts in the “Brownfields-Focused TIF” section could be the difference-makers for a successful land bank. Specific reforms could be limited to Land Bank properties:
 - Making brownfields outside of urban renewal areas eligible
 - Exempt brownfield projects from land and tax base TIF limits
 - Allow “pooling” of TIF funds so that revenues from mature districts can “seed” start-up districts
 - Augment local TIF revenues with state funds
 - Use TIF to support an environmental insurance pool
 - Allow non-contiguous TIF districts based on site characteristics rather than geography

- Provide liability protections for the land bank. The land bank should be exempt from liability to the state and to third parties provided that it does not cause or exacerbate the contamination.
- Provide special powers to clear title and liens on property to make them more attractive for the private market
- State/regional land bank and other revenue sources. If the land bank is a regional or state entity, localities may be reluctant to allow property tax TIFs. In that case, the land bank would need other funding sources. A TIF based on state revenues is one option (see “Brownfields Focused TIF section”). Another possibility would be a dedicated source of revenue (see: “Dedicated Environmental Cleanup Fund” section).

Lead Entity—State, County, or City (establishing a separate land bank entity)

Advantages

- Land bank can target specific types of properties to meet community planning goals, such as industrial properties to meet forecasted shortfall of shovel-ready industrial sites in Portland.
- Creates an entity that is eligible for public funding to take ownership of constrained properties
- Provides patient capital and long-term vision for redevelopment of challenged properties
- Establishes an alternative to local governments taking title of contaminated properties through tax foreclosure
- Potential synergy with state Orphan Site cleanup program

Disadvantages

- Requires additional public investment in challenging budget climate

4.6.7 Brownfield Jobs Tax Credit

Summary— Provide a tax credit to developers based on the number of jobs provided by a completed development.

Purpose—Provide a financial incentive for brownfield redevelopment that is directly linked to job creation and economic benefits.

Method— This policy would require state legislation for implementation. In 2011, Oregon legislators considered a bill that would provide job tax credits for completed brownfield projects⁷. If the legislation had been approved, participants in the DEQ Voluntary Cleanup Program (VCP) would receive a \$1,000 credit per job for a taxpayer who creates 25 or more jobs during a removal or remedial action.

Similar suggested legislation has proposed that participants of the VCP receive a \$5,000 tax refund for each new job created that exceeded average annual county wage and \$2,500 tax fund for each new job that didn't. The incentive would only apply for full-time jobs created in Oregon.

The job credit would be approved following the verification of jobs and awarded as a refund paid out of taxes paid by entities to the State, including corporate taxes. Refunds would be distributed annually with no more than 25% of the approved total bonus refund to be paid in a single fiscal year. DEQ would be responsible for certifying eligible tax payers for the credit prior to redevelopment.

This proposal is similar to jobs tax credits that have proven to be effective in other states. Florida, for example provides a \$2,500 tax refund for each new job created in a designated brownfield redevelopment area.

Lead Entity—State

Advantages

- Provides a financial incentive for private sector investment directly tied to economic benefits of a project

Disadvantages

- Potential impacts to state finances. This concern would need to be studied.

4.6.8 Build Market Demand

Summary— Develop programs to link risk tolerant investors and developers with brownfield properties.

Purpose—Highlight and promote brownfield properties in order to educate investors about tools available to support cleanup and redevelopment of these properties and to mitigate potential stigma.

⁷ House Bill 2949, 76th Oregon Legislative Assembly, 2011 Regular Session

Method—A program to build market demand could function like an extension of Oregon’s Industrial Site Certification program and Prospector site database. Portland, the Portland Development Commission, and/or Business Oregon could develop a listing service that targets brownfield sites with development potential. The New Jersey Site Mart⁸ and Pennsylvania Site Search⁹ websites provide useful examples. The government agency would maintain the listing and actively market and promotes these sites to prospective investors and business site selectors. Brownfields could be one subset of sites currently in the Industrial Site Certification and Prospector programs, or it could be a stand-alone initiative.

Specialized workshops or events could be held with developers that have experience with brownfields to introduce them to available brownfield properties that are considered to have strong market potential or that may be catalyst sites that support neighborhood revitalization efforts.

One special focus of this effort could be creating an easily accessible compilation of existing environmental information on properties in the Portland Harbor. The perception of potential contamination in this area often exceeds the reality of known issues. Providing access to environmental studies may help dispel stigma and misperceptions and provide potential purchasers with enough confidence to invest in this area.

Lead Entity—State, Portland, or Portland Development Commission

Advantages

- Requires relatively limited investment of public resources, but potentially drives significant private investment

Disadvantages

- Potential liability concerns may make property owners reluctant to promote the parcels.

4.7 Portland-Based Policy Options

Portland has strong tradition of planning and policy development around urban infill development and brownfields. Portland was designated as a brownfield showcase community by the EPA in 1998. With federal support, Portland conducted an initiative to study how to promote cleanup and redevelopment of brownfields in the state. That effort led to the creation of the Portland Brownfield Program within Portland’s Bureau of

⁸ See <http://www.njbrownfieldsproperties.com/Default.aspx>

⁹See <http://pabrownfields.pasitesearch.com/>

Environmental Services. Since the Portland Harbor was designated as a Superfund site in 2001, there have been several studies of the challenges to redevelopment in that area and potential policy solutions.

These brownfield efforts fit into the context of broader planning to promote infill development and adaptive re-use of industrial land, such as the Economic Opportunity Analysis for the Portland Comprehensive Plan and the Community Investment Initiative.

Based on those studies and the professional experience of the Advisory Panel, City staff, and the consulting team, a number of potential policy solutions that are unique to Portland have been developed including the following.

4.7.1 Public-Private Investment Entity

Summary— Create a public-private funding partnership entity that invests in infrastructure and brownfield remediation to provide viable returns to each participating sector.

Purpose—Establish a mechanism to leverage public and private resources to meet the estimated \$27 to \$40 billion infrastructure funding need in the Portland metropolitan areas over the next two to three decades¹⁰. Brownfields are recognized as being one type of constraint on redevelopment of employment lands in Portland that is related to infrastructure challenges.

Method—This concept has been proposed by the Community Investment Initiative, a group of public and private sector leaders seeking mechanisms to overcome infrastructure challenges, including those related to brownfield remediation. The public-private partnership for infrastructure funding concept is still under development by the Community Investment Initiative. The details of how the concept could be implemented, including how the funding entity would be structured and how projects would be prioritized have not yet been determined.

Lead Entity—Public-private partnership including Portland and/or Metro.

Advantages

- Leverages private resources with public investment

¹⁰ Metro. 2008. Regional Infrastructure Analysis.
<http://library.oregonmetro.gov/files/regionalinfrastructureanalysis.pdf>

- Potential to significantly increase financial capacity to support infrastructure repair and improvement as well as environmental remediation

Disadvantages

- Creates additional demand on public resources
- Potential issues with lending of public credit to private parties would need to be resolved
- Remediation of brownfields will need to compete with infrastructure projects for funding.

4.7.2 Historical Insurance Recovery Support

Summary—Provide staff or contractor expertise to support parties in submitting a claim on historical insurance policies for environmental impacts.

Purpose—Engage insurance companies to support site investigation and cleanup of contamination that occurred under operations that held comprehensive general liability policies.

Method—Oregon DEQ provided support through a contractor that specializes in insurance archaeology to submit claims against historical insurance policies. This service was managed through State and Tribal Response Program funding from EPA. That particular grant has been expended, but DEQ is considering including insurance archaeology as an expertise to be provided under its prime contractors for environmental services. This service could be provided by Portland either through staff or contractor as well. The insurance archaeology service could be provided as a fee-for-service payable upon settlement with the insurance carrier as a way to minimize expenditure of public resources.

Before the mid-1980s, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Therefore, cost recovery may be pursued from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. Historical insurance recovery requires a commitment of time and resources, but is becoming a standard industry practice. Oregon state law and court decision precedents make it one of the most favorable states in the nation for substantiating environmental claims on historical insurance policies.

Making a claim on an historic insurance policy requires substantiating information of a liability and proof of coverage during the period of the environmental release. It is typically recommended to work with an attorney

to make an historical insurance claim, but there also can be a large amount of document research needed to provide proof of coverage.

Lead Entity—State or Portland

Advantages

- Brings new resources to support site investigation and cleanup

Disadvantages

- Successful settlement of claims is not guaranteed
- Potential opposition from insurance carriers

4.7.3 Reform Contaminated Property Tax Assessment

Summary—Revise the current property tax assessment criteria for contaminated sites by setting time limits for the value reduction whereby lack of remedial action by the property owner results in diminishing tax reductions over time.

Purpose—Limit the tax reduction because it creates a disincentive for cleanup and redevelopment

Method—Currently, owners of contaminated sites are able to secure significant reductions in their property taxes based on the impact contamination has on a site’s value for development purposes. These deep reductions in taxes can last a long time and a site may not be remediated for decades. This situation not only adds to the burdens of local governments and schools by diminishing their financial resources and consequently their services, but also tends to hamper development potential for nearby properties.

The administrative rule establishing procedures for assessing property taxes includes a methodology for valuing contaminated properties (OAR 150-308.205-(E)). This methodology currently discounts the assessed value of contaminated properties based on the estimated cleanup cost, redevelopment constraints, and financing implications. The administrative rule could be amended so that this discount diminishes over time. A reasonable period for the discount should be established that is long enough to be realistic for property owners to conduct remedial actions, but short enough to discourage mothballing of properties. This change could be implemented in a bundle with other programs that enable property owners to access funds and/or reduce ongoing liability for cleanup.

Lead Entity—Oregon Department of Revenue

Advantages

- Potentially removes a financial disincentive to take a contaminated property through the cleanup process.
- By revising to include a time limit, reforms could maintain the important tax break for property owners while they work through remediation.

Disadvantages

- Anecdotal reports indicate that some existing businesses rely on the decreased property tax to remain financially viable.
- Reforms to the tax code will require political support and prioritization at state legislative level, and may encounter resistance from affected property owners.

4.7.4 Model Purchase and Sale Agreement

Summary—Create a model agreement with indemnification language and distinctions between upland and in-land water liabilities along with standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection period.

Purpose—Purchase and sale agreements between buyers and sellers of contaminated properties can be a time-intensive and variable process. Creating a model could reduce the time and cost associated with

Method—A model purchase and sale agreement could include:

- A menu of available government incentives that could apply to offset environmental remediation and infrastructure improvements, and implementation of green building and sustainability initiatives:
- Provide practical indemnification language for addressing past and future liabilities
- Provide language that differentiates and addresses upland and in-water environmental liability and cleanup
- Provide language that will address standard transfer issues (e.g. price, inspection period, down payment, due diligence period, reps and warranties, timing of cleanup and closing)

Lead Entity—Business Oregon or Portland

Advantages

- Potentially a low-cost solution to help facilitate property transactions.

Disadvantages

- Property transactions are not typically uniform in detail and conditions. The model agreement may help, but negotiation and adaptation may be required.

4.8 Superfund Policy Options

Designation of the Portland Harbor as a National Priority List Superfund Site has created a unique set of challenges for redevelopment of properties in that area. There are many complex issues related to the Portland Harbor Superfund designation, such as the technical analyses of risk and remediation options, and legal arguments over allocation of costs that are beyond the scope of this project. There are also a number of large scale strategies to resolve the Harbor, such as implementation of interim actions to support Superfund de-listing or seeking a major federal budget appropriation to offset costs, which are very important for policy makers to explore but are also beyond the scope of this study.

The policies proposed in this section focus on risk management and creating certainty to promote property transactions and investment in redevelopment of upland properties around the Harbor. To protect this regional economic asset, Portland and State could work with EPA to modify Superfund policies to allow upland property owners to expeditiously reach regulatory closure and remove a dark cloud over land transactions and redevelopment on industrial lands. These policy proposals are targeted toward upland properties that are considered to be in the “Superfund shadow,” they are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historic and on-going contamination.

4.8.1 Federal Prospective Purchaser Agreements

Summary—EPA could provide Prospective Purchaser Agreements (PPAs) jointly with Oregon DEQ to provide certainty and liability protection to innocent purchasers of contaminated properties under federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, aka Superfund Law).

Purpose—Provide a mechanism for innocent prospective buyers of properties near the Portland Harbor Superfund site to obtain liability protections ahead of the final settlement and allocation. Like the Oregon state PPAs, this tool provides certainty that can be critical for financing

redevelopment projects and for bringing in new financial resources to fund cleanup actions.

Method— EPA has the authority under CERCLA to execute Prospective Purchaser Agreements. The 2002 Brownfield Amendments included a Bona Fide Prospective Purchaser (BFPP) defense tool with the purpose of providing a legal liability defense based on an innocent party conducting adequate due diligence and taking appropriate care and precautions on a property. EPA intended that the BFPP defense would serve the same role as Prospective Purchaser Agreements without requiring significant agency involvement. However, the BFPP defense has been challenged in court and appears to have limitations rooted in the subjective definition of the due care provisions¹¹.

In recognition of the special circumstances around the Portland Harbor, EPA could make a policy decision to enter into prospective purchaser agreements in this area. Eligibility for a prospective purchaser agreement could be limited to properties not located immediately adjacent to areas of contaminated sediments. Eligibility requirements could include: remediation of any existing upland contamination and implementation of source control measures. As an additional eligibility requirement that may be attractive EPA in meeting their broader water quality goals, properties could be required to utilize Portland “sustainable stormwater” management techniques to promote infiltration of runoff. These low impact development stormwater management techniques are being incorporated into remedies for in-water Superfund sites such as the Gowanus Canal and Newtown Creek in New York City.

To make implementation of this policy tool efficient, EPA and DEQ could enter into a memorandum of agreement and establish a model prospective purchaser agreement for properties in the Harbor area based on existing state templates. The prospective purchaser agreement would need to be executed by both EPA and DEQ to provide sufficient liability protection.

Lead Entity—US EPA and Oregon State DEQ

Advantages

- Provides strong incentive for redevelopment of property near the Portland Harbor without significant public investment
- The green infrastructure option could be appealing to EPA as a creative new approach, consistent with their sustainability agenda

¹¹ See *Ashley II of Charleston, LLC vs. PCS Nitrogen*. That decision sets a high bar for compliance with the due diligence and due care requirements that are connected to the BFPP defense.

Disadvantages

- Requires commitment and staff resources of EPA.

4.8.2 CERCLA *de minimis* Settlements

Summary—EPA provides expedited settlement agreements for owners of properties that likely cause minor or insignificant to the Portland Harbor.

Purpose—Since the Superfund Site designation is based on contaminated sediments in Portland Harbor, there is a perceived potential for liability related to any property that could convey pollution through stormwater, groundwater, or other pathways to the Harbor. This perception has had a chilling effect on property transactions around the Harbor. Providing settlements for properties that are located in the drainage basin for the Harbor, but can be demonstrated to likely have only minor potential contribution to sediment impacts would relieve that concern.

Method—EPA has the authority under CERCLA to provide *de minimis* settlements for parties that have a small share of cleanup liability. To date, EPA has been reluctant to provide these settlements in the Portland Harbor. Broader use of this existing tool could expedite cleanup and redevelopment of a large number of properties that are located within the contributing area to the Superfund site, but that have had small impacts are only linked to the Harbor through the municipal stormwater system.

Lead Entity—Federal

Advantages

- Provides strong incentive for redevelopment of property near the Portland Harbor without significant public investment.

Disadvantages

- Requires commitment and staff resources of EPA.

4.8.3 Corps of Engineers Urban Rivers Restoration Initiative

Summary—Explore the potential advantages of incorporating the EPA-Corps of Engineers “Urban Rivers Restoration Initiative (URRI)¹² in the Portland Harbor Superfund site restoration.

¹² See: <http://www.epa.gov/landrevitalization/urbanrivers/>

Purpose—Based on the experience of parties involved in the Passaic River, bringing the URRI into a Superfund sediment cleanup process has created:

- The potential for large scale federal funding through the Water Resources Development Act and Energy and Water Development appropriations;
- A more cooperative process. Although Superfund enforcement remains central to the program, there are advantages in using the Corps of Engineers Civil Works Project process via the “Integrated Planning Framework.”¹³ This planning process has led to greater involvement and commitment by potentially responsible parties and may help expedite project completion.

Method—EPA and the Corps of Engineers signed a Cooperative Agreement in 2002 (renewed in 2005 and 2006), creating the “Urban Rivers Restoration Initiative” to support “ongoing efforts to clean up the nation’s most polluted rivers and revitalize (them) for public use.” The agreement uses existing authorities such as CERCLA, the Clean Water Act, and the Water Resources Development Act to focus federal attention on sediment cleanup in urban areas. There were eight pilots chosen in 2002, including the Passaic River¹⁴ in northern New Jersey, which was a Superfund site, and the Gowanus Canal in New York City, which was later designated a Superfund site.

Oregon State and Portland could work with their federal counterparts to initiate negotiations to include the Portland Harbor in the Urban Rivers Restoration Initiative.

Lead Entity—Oregon State and Portland, in consultation with EPA and the Corps of Engineers

Advantages

- Creates another avenue for potential federal funding to support cleanup of the Harbor
- May expedite the cleanup process for the Portland Harbor.
- Liability issues related to the upland areas would likely be resolved at an earlier point.

¹³ Jonathan P. Deason, G. Edward Dickey, Jason C. Kinnell, and Leonard A. Shabman, “Integrated Planning Framework for Urban River Rehabilitation,” *Journal of Water Resources Planning And Management*, ASCE / November/December 2010.

¹⁴ The Corps of Engineers involvement with the Passaic pre-dated (and formed the basis for) the 2002 cooperative agreement between EPA and the Corps. Congressional action in 2000 authorized the Corps’ involvement with the Passaic.

Disadvantages

- Involvement of the Corps of Engineers at this stage of the Superfund process may create challenges and delays
- Potential reluctance of EPA to release some control over the current process.

FINANCIAL PRO FORMAS

The following pages include tables with pro forma inputs and results for each of the typologies considered with this draft financial feasibility analysis.

Data Inputs and Assumptions

The first two tables provide assumptions as applied to the resulting pro formas, notably:

- Data inputs and assumptions that may vary by building or use type but are otherwise common to all brownfield typologies
- Assumptions and inputs that vary between building typology

Pro Forma Worksheets

The remaining worksheets are organized to present pro forma analysis by typology with added alternatives reflecting anticipated development use and level of brownness. A total of 32 alternative pro formas are provided with the pro forma worksheets.

The worksheets are provided in the following order:

- Downtown High Density
- Mixed Use Hub
- Main Street Commercial (differentiated between Main Street west and east of 82nd Avenue)
- Central City Industrial
- Industrial (covering Standard Industrial, Superfund Shadow and Harbor Waterfront)

Table A1. Data Inputs & Assumptions Common to All Typologies

	All Typologies			Sources / Notes
	Average	High	Low	
Site Use Intensity (FAR)				
Build-Out FAR - w/o mixed use				Per EOA, March 2011, rounded
Build-Out FAR - w/mixed use				
Residential Share w/Mixed Use				Adapted from EOA
Cost Parameters per SF Land Area				
Market Rate Land Value (RMV)				Vacant/unconstrained sites as of 2011 (except Harbor)
Brownfield Land Cost (RMV)				Shown as less of unconstrained vs. brownfield RMV, composite used for typologies 6+7 is \$2.80 per sf
Brownfield Remediation	\$6.00	\$16.00	\$1.50	Per MFA, from 88 property data base
Demolition	\$6.75	\$8.50	\$5.00	EDH comps ind Gresham/Metro, Spokane 2010/11
Site Preparation	\$4.50	\$6.00	\$3.00	EDH comps ind Gresham/Metro, Spokane 2010/11
Parking (at grade)	\$9.00	\$12.00	\$6.00	EDH, from Gresham, Spokane w/low adjusted
Parameters per GSF Building Area				
				Based on RLB, Quarterly Construction, 2012 2nd
<i>Building Construction:</i>				
Manufacturing / Warehouse	\$85.00	\$105.00	\$65.00	Top range of all reduced by \$5 per sf, more for office
Flex / Business Park	\$107.00	\$130.00	\$84.00	For industrial/warehouse space (low < RLB \$75 PDX)
Office Commercial	\$155.00	\$195.00	\$115.00	Reflects 50/50 industrial/office rates, 60/40 @ low
Retail	\$145.00	\$190.00	\$100.00	High prime, low secondary (w/top rate reduced \$15)
Residential	\$150.00	\$190.00	\$110.00	High center, low strip
Structured Parking	\$85.00	\$105.00	\$65.00	Multi-family low-high (with high adjusted down)
Other (non-income)	\$110.00			Low is above ground, high for below, avg either
<i>Tenant Improvements (as % of Bldg):</i>				
Manufacturing / Warehouse	--			Estimate for common area as with residential
Flex / Business Park	--			
Office Commercial	15%			Separately installed by business occupant
Retail	20%			
Indirect Soft Cost Rate (Single Use)	30%	35%	25%	\$30 for Class A; \$15-\$30 for older per Kidder-Matthews
Indirect Soft Cost Rate (Mixed Use)	35%	40%	30%	Up to \$40 for high cost space
Rental Rates				
<i>Rental Rates per SF Annually</i>				
Manufacturing / Warehouse				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
Flex / Business Park				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
Office Commercial				NBS 4Q11; CoStar 2009 EOA & showcase.com
Retail				NBS 4Q11; CBRE, CoStar 2009 EOA & showcase.com
<i>Added Rate Notes:</i>				
Residential Rate per SF/Month				MMHA; Internet research
Parking Structure Rate per Month				Internet market comps, residential-office (non-retail)
Operating Expenses Ratios				
<i>Operating Expense Ratios (% of GOI):</i>				
Manufacturing / Warehouse	8%			
Flex / Business Park	9%			
Office Space (full service)	25%			
Retail	10%			
<i>Added Expense Notes:</i>				
Annual Residential Expense/NSF				MMHA, 2011/12, newer urban/garden apts Mult Co
Annual Parking Garage Cost/Space				Rick Williams, for non-retail space, unattended
Capitalization Rates				
ULI Emerging Trends 2012 (forecast for 12/12)				
Manufacturing / Warehouse	7.00%	7.00%	7.00%	(all rates rounded)
Flex / Business Park	7.25%	7.50%	7.00%	
Office Commercial	7.25%	8.00%	6.50%	Low for central city, high for suburban
Retail	7.00%	7.50%	6.75%	Low for reg'l mall, avg neighborhood, high power
Residential	5.75%	6.00%	5.50%	Low for high income, high for moderate income
Mixed Use	7.00%	7.50%	6.50%	Banded range from above for resid / commercial
Sales Valuation (of Owned Components)				
Condo / Townhome Price / NSF				Based on RLIS average 2000-12 YTD sales data

Table A2. Data Inputs & Assumptions Varied by Typology

	1. Downtown High Density	2. Mixed Use Hub	3a. Main St Comml-West	3b. Main St Comml-East	4. Central City Indus	5. Standard Industrial	6. Superfund Shadow	7. Harbor Waterfront
Site Use Intensity (FAR)								
Build-Out FAR - w/o mixed use	5.50	0.75	0.50	0.40	1.25	0.40	0.35	0.35
Build-Out FAR - w/mixed use	11.00	3.00	1.00	0.80	NA	NA	NA	NA
Residential Share w/Mixed Use	50%	75%	50%	50%	NA	NA	NA	NA
Cost Parameters per SF Land Area								
Market Rate Land Value (RMV)	\$100.00	\$18.00	\$21.00	\$15.00	\$27.00	\$8.00	\$7.00	NA
Brownfield Land Cost (RMV)	\$75.00	\$18.00	\$21.00	\$15.00	\$25.00	\$4.50	\$1.50	\$5.00
Brownfield Remediation	\$100.00	\$18.00	\$21.00	\$15.00	\$27.00	\$8.00	\$7.00	NA
Rental Rates								
<i>Rental Rates per SF Annually</i>								
Manufacturing / Warehouse					\$12.00	\$9.00	\$9.00	\$9.00
Flex / Business Park					\$17.50	\$12.00		
Office Commercial	\$33.50	\$25.00	\$25.00	\$20.00	\$25.00			
Retail	\$27.50	\$25.00	\$27.50	\$22.50				
<i>Added Rate Notes:</i>								
Residential Rate per SF/Month	\$2.25	\$1.60	\$1.70	\$1.30				
Parking Structure Rate per Month	\$175	\$50	\$75	\$50	\$90			
Operating Expenses Ratios								
<i>Added Expense Notes:</i>								
Annual Residential Expense/NSF	\$5.50	\$4.15	\$4.15	\$4.15				
Annual Parking Garage Cost/Space	\$250	\$200	\$200	\$200	\$200			
Sales Valuation (of Owned Components)								
Condo / Townhome Price / NSF	\$375	\$200	\$275	\$150				

Table A3. Financial Pro Forma – Downtown High Density

Typology Use Type	1. Downtown High Density			
	Mixed Use		Office-Retail	
Brownfield Cost	Mid Cost	Low Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)				
Current Development	2.00	2.00	1.00	1.00
Net Added Development	9.00	9.00	4.50	4.50
Total @ Build-Out	11.00	11.00	5.50	5.50
Building Footprint % of Site	90%	90%	90%	90%
Anticipated Development Use				
Manufacturing / Warehouse				
Flex / Business Park				
Office Commercial	20%	20%	50%	50%
Retail	5%	5%	20%	20%
Residential	50%	50%	--	--
Structured Parking	24%	24%	25%	25%
Other (non-income)	1%	1%	5%	5%
Total Building Area	100%	100%	100%	100%
Rental as % of Residential	50%	50%	--	--
Development Budget				
Parameters per SF Land Area				
Market Rate Land Cost	\$100.00	\$100.00	\$100.00	\$100.00
less Brownfield Discount	-25%	-25%	-25%	-25%
Adjusted Site Cost	\$75.00	\$75.00	\$75.00	\$75.00
Site Development	\$23.00	\$23.00	\$14.50	\$14.50
Brownfield Remediation	\$6.00	\$1.50	\$6.00	\$1.50
Indirect Soft Cost Rate	40.0%	40.0%	35.0%	35.0%
Parameters per GSF Building				
Land Acquisition	\$6.82	\$6.82	\$13.64	\$13.64
Site Development	\$2.09	\$2.09	\$2.64	\$2.64
Brownfield Remediation	\$0.55	\$0.14	\$1.09	\$0.27
Building Construction (w/TIs)	\$145.00	\$145.00	\$160.00	\$160.00
Other (project cost)	--	--	--	--
Indirect (Soft) Cost	\$58.84	\$58.84	\$56.92	\$56.92
Total Development Cost	\$213.29	\$212.88	\$234.29	\$233.47
Cost per SF Land Area	\$2,346.20	\$2,341.70	\$1,288.58	\$1,284.08
Operating Budget (per GSF)				
Annual Gross Income	\$14.10	\$14.10	\$20.70	\$20.70
less Vacancy	\$(0.85)	\$(0.85)	\$(1.25)	\$(1.25)
Gross Operating Income	\$13.25	\$13.25	\$19.45	\$19.45
Less Expenses	\$(2.90)	\$(2.90)	\$(4.25)	\$(4.25)
Net Operating Income	\$10.35	\$10.35	\$15.20	\$15.20
Valuation as Built (per GSF)				
<i>Income Portion of Property:</i>				
Capitalization Rate	7.00%	7.00%	6.50%	6.50%
Capitalized Valuation	\$148.00	\$148.00	\$234.00	\$234.00
<i>Sales Value of Owned Portion:</i>				
Sales Price (net of expense)	\$65.00	\$65.00	\$0.00	\$0.00
Total Project Valuation	\$213.00	\$213.00	\$234.00	\$234.00
Cost % Supported by Value	100%	100%	100%	100%
Surplus/(Gap) w/Remediation	\$ (0.29)	\$0.12	\$ (0.29)	\$0.53
Surplus/(Gap) w/o Remediation	\$0.25	\$0.25	\$0.80	\$0.80

Table A4. Financial Pro Forma – Mixed Use Hub

Typology Use Type Brownfield Cost	2. Mixed Use Hubs			
	Mixed Use		Office-Retail	
	Mid Cost	Low Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)				
Current Development	0.50	0.50	0.15	0.15
Net Added Development	2.50	2.50	0.60	0.60
Total @ Build-Out	3.00	3.00	0.75	0.75
Building Footprint % of Site	85%	85%	65%	65%
Anticipated Development Use				
Manufacturing / Warehouse				
Flex / Business Park				
Office Commercial	--	--	50%	50%
Retail	20%	20%	25%	25%
Residential	50%	50%	--	--
Structured Parking	28%	28%	20%	20%
Other (non-income)	2%	2%	5%	5%
Total Building Area	100%	100%	100%	100%
Rental as % of Residential	100%	100%	--	--
Development Budget				
Parameters per SF Land Area				
Market Rate Land Cost	\$18.00	\$18.00	\$18.00	\$18.00
less Brownfield Discount	0%	0%	0%	0%
Adjusted Site Cost	\$18.00	\$18.00	\$18.00	\$18.00
Site Development	\$9.00	\$9.00	\$7.70	\$7.70
Brownfield Remediation	\$6.00	\$1.50	\$6.00	\$1.50
Indirect Soft Cost Rate	35.0%	35.0%	30.0%	30.0%
Parameters per GSF Building				
Land Acquisition	\$6.00	\$6.00	\$24.00	\$24.00
Site Development	\$3.00	\$3.00	\$10.27	\$10.27
Brownfield Remediation	\$2.00	\$0.50	\$8.00	\$2.00
Building Construction (w/TIs)	\$100.00	\$100.00	\$115.00	\$115.00
Other (project cost)	--	--	--	--
Indirect (Soft) Cost	\$36.05	\$36.05	\$37.58	\$37.58
Total Development Cost	\$147.05	\$145.55	\$194.85	\$188.85
Cost per SF Land Area	\$441.15	\$436.65	\$146.14	\$141.64
Operating Budget (per GSF)				
Annual Gross Income	\$13.15	\$13.15	\$16.60	\$16.60
less Vacancy	\$(0.80)	\$(0.80)	\$(1.00)	\$(1.00)
Gross Operating Income	\$12.35	\$12.35	\$15.60	\$15.60
Less Expenses	\$(2.35)	\$(2.35)	\$(3.35)	\$(3.35)
Net Operating Income	\$10.00	\$10.00	\$12.25	\$12.25
Valuation as Built (per GSF)				
<i>Income Portion of Property:</i>				
Capitalization Rate	7.00%	7.00%	6.50%	6.50%
Capitalized Valuation	\$143.00	\$143.00	\$188.00	\$188.00
<i>Sales Value of Owned Portion:</i>				
Sales Price (net of expense)	\$0.00	\$0.00	\$0.00	\$0.00
Total Project Valuation	\$143.00	\$143.00	\$188.00	\$188.00
Cost % Supported by Value	97%	98%	96%	100%
Surplus/(Gap) w/Remediation	\$ (4.05)	\$ (2.55)	\$ (6.85)	\$ (0.85)
Surplus/(Gap) w/o Remediation	\$ (2.05)	\$ (2.05)	\$1.15	\$1.15

Table A5. Financial Pro Forma – Main Street West

Typology Use Type	3a. Main Street Commercial (west of 82nd Avenue)					
	Mixed Use			Retail Commercial		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	0.15	0.15	0.15	0.10	0.10	0.10
Net Added Development	0.85	0.85	0.85	0.40	0.40	0.40
Total @ Build-Out	1.00	1.00	1.00	0.50	0.50	0.50
Building Footprint % of Site	50%	50%	50%	50%	50%	50%
Anticipated Development Use						
Manufacturing / Warehouse						
Flex / Business Park						
Office Commercial	15%	15%	15%	55%	55%	55%
Retail	15%	15%	15%	45%	45%	45%
Residential	65%	65%	65%	--	--	--
Structured Parking	3%	3%	3%	--	--	--
Other (non-income)	2%	2%	2%	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential	50%	50%	50%	--	--	--
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	\$21.00	\$21.00	\$21.00	\$21.00	\$21.00	\$21.00
less Brownfield Discount	0%	0%	0%	0%	0%	0%
Adjusted Site Cost	\$21.00	\$21.00	\$21.00	\$21.00	\$21.00	\$21.00
Site Development	\$9.10	\$9.10	\$9.10	\$9.20	\$9.20	\$9.20
Brownfield Remediation	\$16.00	\$6.00	\$1.50	\$16.00	\$6.00	\$1.50
Indirect Soft Cost Rate	35.0%	35.0%	35.0%	30.0%	30.0%	30.0%
Parameters per GSF Building						
Land Acquisition	\$21.00	\$21.00	\$21.00	\$42.00	\$42.00	\$42.00
Site Development	\$9.10	\$9.10	\$9.10	\$18.40	\$18.40	\$18.40
Brownfield Remediation	\$16.00	\$6.00	\$1.50	\$32.00	\$12.00	\$3.00
Building Construction (w/TIs)	\$125.00	\$125.00	\$125.00	\$165.00	\$165.00	\$165.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	\$46.94	\$46.94	\$46.94	\$55.02	\$55.02	\$55.02
Total Development Cost	\$218.04	\$208.04	\$203.54	\$312.42	\$292.42	\$283.42
Cost per SF Land Area	\$218.04	\$208.04	\$203.54	\$156.21	\$146.21	\$141.71
Operating Budget (per GSF)						
Annual Gross Income	\$12.60	\$12.60	\$12.60	\$26.15	\$26.15	\$26.15
less Vacancy	\$(0.75)	\$(0.75)	\$(0.75)	\$(1.55)	\$(1.55)	\$(1.55)
Gross Operating Income	\$11.85	\$11.85	\$11.85	\$24.60	\$24.60	\$24.60
less Expenses	\$(2.35)	\$(2.35)	\$(2.35)	\$(4.70)	\$(4.70)	\$(4.70)
Net Operating Income	\$9.50	\$9.50	\$9.50	\$19.90	\$19.90	\$19.90
Valuation as Built (per GSF)						
<i>Income Portion of Property:</i>						
Capitalization Rate	6.75%	6.75%	6.75%	7.00%	7.00%	7.00%
Capitalized Valuation	\$141.00	\$141.00	\$141.00	\$284.00	\$284.00	\$284.00
<i>Sales Value of Owned Portion:</i>						
Sales Price (net of expense)	\$62.00	\$62.00	\$62.00	\$0.00	\$0.00	\$0.00
Total Project Valuation	\$203.00	\$203.00	\$203.00	\$284.00	\$284.00	\$284.00
Cost % Supported by Value	93%	98%	100%	91%	97%	100%
Surplus/(Gap) w/Remediation	\$ (15.04)	\$ (5.04)	\$ (0.53)	\$ (28.42)	\$ (8.42)	\$0.58
Surplus/(Gap) w/o Remediation	\$0.97	\$0.97	\$0.97	\$3.58	\$3.58	\$3.58

Table A6. Financial Pro Forma – Main Street East

Typology Use Type	3b. Main Street Commerical (east of 82nd Avenue)					
	Mixed Use			Retail Commercial		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	0.10	0.10	0.10	0.05	0.05	0.05
Net Added Development	0.70	0.70	0.70	0.35	0.35	0.35
Total @ Build-Out	0.80	0.80	0.80	0.40	0.40	0.40
Building Footprint % of Site	50%	50%	50%	40%	40%	40%
Anticipated Development Use						
Manufacturing / Warehouse						
Flex / Business Park						
Office Commercial	10%	10%	10%	50%	50%	50%
Retail	35%	35%	35%	50%	50%	50%
Residential	50%	50%	50%	--	--	--
Structured Parking	2%	2%	2%	--	--	--
Other (non-income)	3%	3%	3%	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential	100%	100%	100%	--	--	--
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
less Brownfield Discount	0%	0%	0%	0%	0%	0%
Adjusted Site Cost	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Site Development	\$8.80	\$8.80	\$8.80	\$9.70	\$9.70	\$9.70
Brownfield Remediation	\$16.00	\$6.00	\$1.50	\$16.00	\$6.00	\$1.50
Indirect Soft Cost Rate	35.0%	35.0%	35.0%	30.0%	30.0%	30.0%
Parameters per GSF Building						
Land Acquisition	\$18.75	\$18.75	\$18.75	\$37.50	\$37.50	\$37.50
Site Development	\$11.00	\$11.00	\$11.00	\$24.25	\$24.25	\$24.25
Brownfield Remediation	\$20.00	\$7.50	\$1.88	\$40.00	\$15.00	\$3.75
Building Construction (w/TIs)	\$115.00	\$115.00	\$115.00	\$125.00	\$125.00	\$125.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	\$44.10	\$44.10	\$44.10	\$44.78	\$44.78	\$44.78
Total Development Cost	\$208.85	\$196.35	\$190.73	\$271.53	\$246.53	\$235.28
Cost per SF Land Area	\$167.08	\$157.08	\$152.58	\$108.61	\$98.61	\$94.11
Operating Budget (per GSF)						
Annual Gross Income	\$16.55	\$16.55	\$16.55	\$21.25	\$21.25	\$21.25
less Vacancy	\$(1.00)	\$(1.00)	\$(1.00)	\$(1.30)	\$(1.30)	\$(1.30)
Gross Operating Income	\$15.55	\$15.55	\$15.55	\$19.95	\$19.95	\$19.95
less Expenses	\$(3.05)	\$(3.05)	\$(3.05)	\$(3.65)	\$(3.65)	\$(3.65)
Net Operating Income	\$12.50	\$12.50	\$12.50	\$16.30	\$16.30	\$16.30
Valuation as Built (per GSF)						
<i>Income Portion of Property:</i>						
Capitalization Rate	6.75%	6.75%	6.75%	7.00%	7.00%	7.00%
Capitalized Valuation	\$185.00	\$185.00	\$185.00	\$233.00	\$233.00	\$233.00
<i>Sales Value of Owned Portion:</i>						
Sales Price (net of expense)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Project Valuation	\$185.00	\$185.00	\$185.00	\$233.00	\$233.00	\$233.00
Cost % Supported by Value	89%	94%	97%	86%	95%	99%
Surplus/(Gap) w/ Remediation	\$ (23.85)	\$ (11.35)	\$ (5.72)	\$ (38.53)	\$ (13.53)	\$ (2.28)
Surplus/(Gap) w/o Remediation	\$ (3.85)	\$ (3.85)	\$ (3.85)	\$ 1.48	\$ 1.47	\$ 1.47

Table A7. Financial Pro Forma – Central City Industrial

Typology Use Type	4. Central City Industrial Flex - Tech			
	Brownfield Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)				
Current Development	0.20	0.20	0.20	
Net Added Development	1.05	1.05	1.05	
Total @ Build-Out	1.25	1.25	1.25	
Building Footprint % of Site	60%	60%	60%	
Anticipated Development Use				
Manufacturing / Warehouse				
Flex / Business Park	65%	65%	65%	
Office Commercial	25%	25%	25%	
Retail				
Residential				
Structured Parking	10%	10%	10%	
Other (non-income)	--	--	--	
Total Building Area	100%	100%	100%	
Rental as % of Residential				
Development Budget				
Parameters per SF Land Area				
Market Rate Land Cost	\$27.00	\$27.00	\$27.00	
less Brownfield Discount	-7%	-7%	-7%	
Adjusted Site Cost	\$25.00	\$25.00	\$25.00	
Site Development	\$7.80	\$7.80	\$7.80	
Brownfield Remediation	\$16.00	\$6.00	\$1.50	
Indirect Soft Cost Rate	35.0%	35.0%	35.0%	
Parameters per GSF Building				
Land Acquisition	\$20.00	\$20.00	\$20.00	
Site Development	\$6.24	\$6.24	\$6.24	
Brownfield Remediation	\$12.80	\$4.80	\$1.20	
Building Construction (w/TIs)	\$115.00	\$115.00	\$115.00	
Other (project cost)	--	--	--	
Indirect (Soft) Cost	\$42.43	\$42.43	\$42.43	
Total Development Cost	\$196.47	\$188.47	\$184.87	
Cost per SF Land Area	\$245.59	\$235.59	\$231.09	
Operating Budget (per GSF)				
Annual Gross Income	\$16.15	\$16.15	\$16.15	
less Vacancy	\$(0.95)	\$(0.95)	\$(0.95)	
Gross Operating Income	\$15.20	\$15.20	\$15.20	
Less Expenses	\$(1.55)	\$(1.55)	\$(1.55)	
Net Operating Income	\$13.65	\$13.65	\$13.65	
Valuation as Built (per GSF)				
<i>Income Portion of Property:</i>				
Capitalization Rate	7.50%	7.50%	7.50%	
Capitalized Valuation	\$182.00	\$182.00	\$182.00	
<i>Sales Value of Owned Portion:</i>				
Sales Price (net of expense)	\$0.00	\$0.00	\$0.00	
Total Project Valuation	\$182.00	\$182.00	\$182.00	
Cost % Supported by Value	93%	97%	98%	
Surplus/(Gap) w/Remediation	\$ (14.47)	\$ (6.47)	\$ (2.87)	
Surplus/(Gap) w/o Remediation	\$ (1.67)	\$ (1.67)	\$ (1.67)	

Table A8. Financial Pro Forma – Industrial

Typology Use Type	5-7. Industrial (Standard Industrial, Superfund Shadow, Harbor Waterfront)					
	Flex Space - Business Park			Warehouse - Distribution		
Brownfield Cost	High Cost	Mid Cost	Low Cost	High Cost	Mid Cost	Low Cost
Site Use Intensity (FAR)						
Current Development	--	--	--	--	--	--
Net Added Development	0.40	0.40	0.40	0.35	0.35	0.35
Total @ Build-Out	0.40	0.40	0.40	0.35	0.35	0.35
Building Footprint % of Site	45%	45%	45%	45%	45%	45%
Anticipated Development Use						
Manufacturing / Warehouse	--	--	--	100%	100%	100%
Flex / Business Park	100%	100%	100%	--	--	--
Office Commercial						
Retail						
Residential						
Structured Parking	--	--	--	--	--	--
Other (non-income)	--	--	--	--	--	--
Total Building Area	100%	100%	100%	100%	100%	100%
Rental as % of Residential						
Development Budget						
Parameters per SF Land Area						
Market Rate Land Cost	\$8.00	\$8.00	\$8.00	\$7.00	\$7.00	\$7.00
less Brownfield Discount	-44%	-44%	-44%	-60%	-60%	-60%
Adjusted Site Cost	\$4.50	\$4.50	\$4.50	\$2.80	\$2.80	\$2.80
Site Development	\$5.60	\$5.60	\$5.60	\$5.60	\$5.60	\$5.60
Brownfield Remediation	\$16.00	\$6.00	\$1.50	\$16.00	\$6.00	\$1.50
Indirect Soft Cost Rate	30.0%	30.0%	30.0%	25.0%	25.0%	25.0%
Parameters per GSF Building						
Land Acquisition	\$11.25	\$11.25	\$11.25	\$8.00	\$8.00	\$8.00
Site Development	\$14.00	\$14.00	\$14.00	\$16.00	\$16.00	\$16.00
Brownfield Remediation	\$40.00	\$15.00	\$3.75	\$45.71	\$17.14	\$4.29
Building Construction (w/TTs)	\$85.00	\$85.00	\$85.00	\$65.00	\$65.00	\$65.00
Other (project cost)	--	--	--	--	--	--
Indirect (Soft) Cost	\$29.70	\$29.70	\$29.70	\$20.25	\$20.25	\$20.25
Total Development Cost	\$179.95	\$154.95	\$143.70	\$154.96	\$126.39	\$113.54
Cost per SF Land Area	\$71.98	\$61.98	\$57.48	\$54.24	\$44.24	\$39.74
Operating Budget (per GSF)						
Annual Gross Income	\$12.00	\$12.00	\$12.00	\$9.00	\$9.00	\$9.00
less Vacancy	\$(0.70)	\$(0.70)	\$(0.70)	\$(0.55)	\$(0.55)	\$(0.55)
Gross Operating Income	\$11.30	\$11.30	\$11.30	\$8.45	\$8.45	\$8.45
Less Expenses	\$(1.10)	\$(1.10)	\$(1.10)	\$(0.70)	\$(0.70)	\$(0.70)
Net Operating Income	\$10.20	\$10.20	\$10.20	\$7.75	\$7.75	\$7.75
Valuation as Built (per GSF)						
<i>Income Portion of Property:</i>						
Capitalization Rate	7.25%	7.25%	7.25%	7.00%	7.00%	7.00%
Capitalized Valuation	\$141.00	\$141.00	\$141.00	\$111.00	\$111.00	\$111.00
<i>Sales Value of Owned Portion:</i>						
Sales Price (net of expense)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Project Valuation	\$141.00	\$141.00	\$141.00	\$111.00	\$111.00	\$111.00
Cost % Supported by Value	78%	91%	98%	72%	88%	98%
Surplus/(Gap) w/Remediation	\$(38.95)	\$(13.95)	\$(2.70)	\$(43.96)	\$(15.39)	\$(2.54)
Surplus/(Gap) w/o Remediation	\$1.05	\$1.05	\$1.05	\$1.75	\$1.75	\$1.75

APPENDIX C

PUBLIC BENEFIT REPORT



PORTLAND BROWNFIELD ASSESSMENT PUBLIC BENEFIT ANALYSIS

Prepared for
CITY OF PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

December 18, 2012
Project No. 0559.02.01

Prepared by
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ECONorthwest

Redevelopment Economics



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ACRONYMS AND ABBREVIATIONS

BES	Bureau of Environmental Services, City of Portland
BPS	Bureau of Planning & Sustainability, City of Portland
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
DEQ	Department of Environmental Quality
EOA	City of Portland's Economic Opportunities Analysis
EPA	Environmental Protection Agency
GIS	Geographic Information Systems
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PDC	Portland Development Commission
PPA	Prospective Purchaser Agreement
TIF	Tax-Increment Financing
UGB	Urban Growth Boundary
USEPA	United States Environmental Protection Agency

The Portland Brownfield Assessment is a policy study to examine the economic, environmental, and social effects of brownfield properties on the City of Portland (Portland), and review policy options to increase the rate of brownfield redevelopment. As Portland plans for long-term future growth and development within the constraints of the Urban Growth Boundary (UGB), there is an increasing need and opportunity to promote infill redevelopment. The Portland Economic Opportunity Analysis (EOA) projects a 740 acre shortfall of industrial land supply within the UGB in the next 20 years and estimates that brownfield properties account for about one-third of the growth capacity in Portland's industrial, commercial and other employment areas.

This document is one of a series of technical reports that will help policy makers determine how best to cleanup and revitalize brownfield properties to meet the Portland's growth needs. The Public Benefit Analysis reports presents:

- Analysis of the financial barriers to redevelopment of brownfields (Section 2)
- Estimation of the potential economic, environmental, and social benefits that could be derived from redevelopment of brownfield properties (Section 3)
- Forecast of potential return on investment associated with implementation of priority brownfield policy tools (Section 4)

Financial Feasibility Analysis

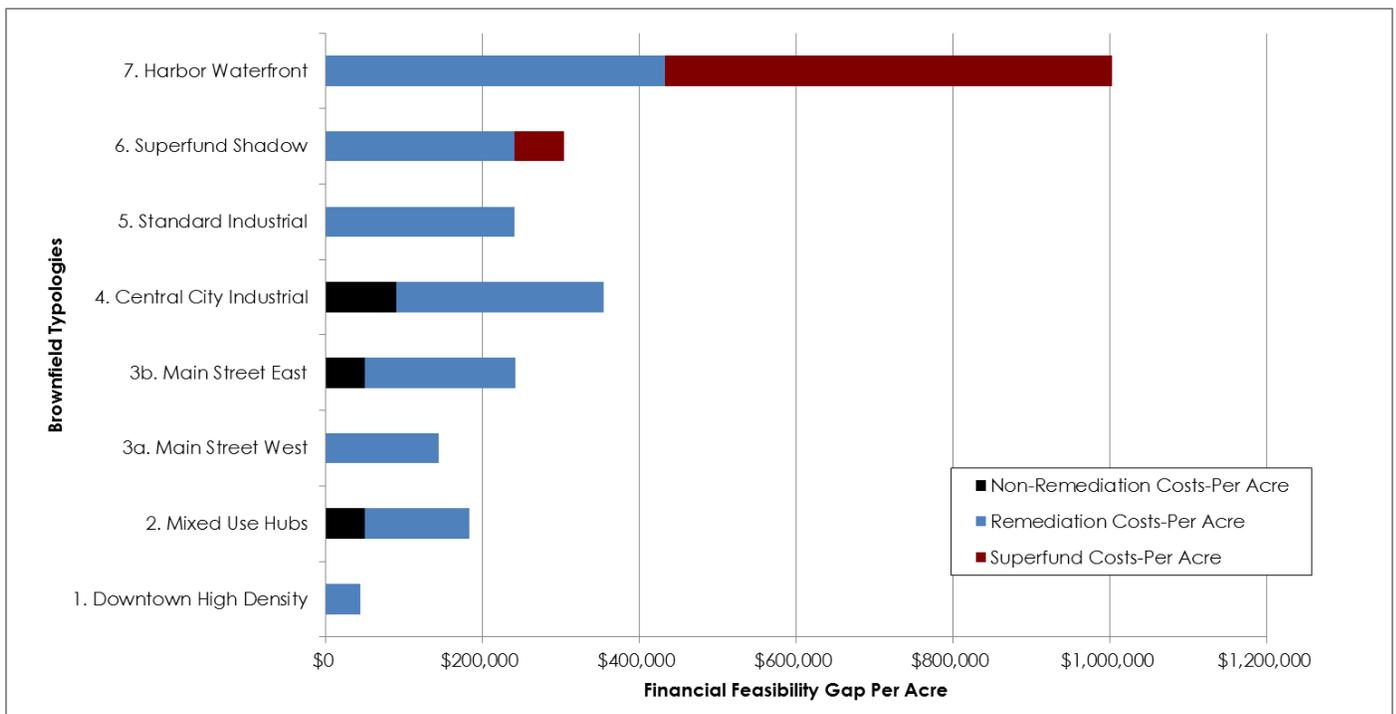
A range of prototypical development scenarios were modeled for potential brownfield properties in different market areas in Portland. Pro forma estimates of development costs and likely rents and property values were created for each of the prototypes. This analysis provides a financial bottom line that relates the costs of construction and environmental remediation to property value.

Key Findings

- It is estimated that the total cleanup costs of all potential brownfield properties in Portland is approximately \$240 million. The burden of these costs drives almost all development prototypes in all market areas underwater financially.

- Theoretical public investment to close the financial feasibility gap for redevelopment of 50% of the brownfield acreage would be approximately \$36 million. That investment more than doubles to \$75 million to achieve 70% redevelopment. This indicates diminishing returns for public investment—half the properties represent ‘low hanging fruit,’ but high potential cleanup costs make the rest increasingly financially challenging.
- High density development downtown is the strongest typology from a financial feasibility perspective; the remediation costs are generally low relative to the high potential redeveloped value of these properties.
- Industrial properties account for 77% of the overall feasibility gap for on-site remediation. That increases to 84% of the gap if potential Superfund-related liability is included.
- With potential Superfund liability costs added, the total cost of remediating affected properties on the Portland Harbor Waterfront is preliminarily estimated to increase to as much as \$23-\$24 per square foot of site area—more than three times the value of shovel-ready (or unconstrained) vacant industrial land.

Figure Exec. 1. Financial Feasibility Gap Per Acre



Public Benefit Analysis

The prototypical development scenario financial models were used as the basis for projecting the potential economic, environmental, and social benefits or redeveloping brownfields in Portland.

Key Findings

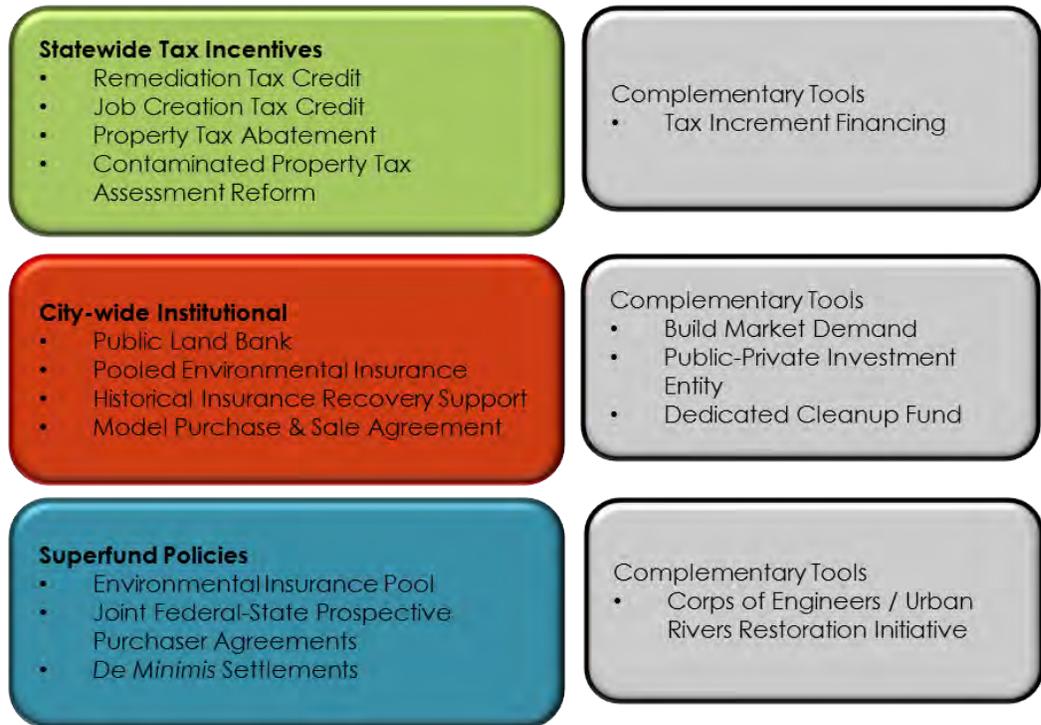
- Redevelopment of all potential brownfields identified in Portland could potentially result in 910 acres of land supply that would support 31,000 jobs and over \$40 million in annual Portland tax revenues.
- High density development in downtown accounts for nearly 50% of both the employment potential and Portland tax revenue potential, even though it accounts for only 6% of total brownfield acres.
- Redevelopment of brownfields in industrial areas accounts for approximately 30% of potential jobs.
- Payback of public investment in brownfields through increased tax revenues ranges from one to four years for commercial and mixed use development areas near downtown up to four to thirteen years for most industrial areas. Because of potentially high cleanup costs and relatively low Portland tax revenue potential, payback from public investment in cleanup of brownfields on the Portland Harbor waterfront may take as long as 40 years.
- Redevelopment of brownfields can help Portland achieve its greenhouse gas reduction goals. It is estimated that full build-out of the inventory of potential brownfields would result in a reduction of 39,000 metric tons of CO₂ annually, relative to sprawl development—the equivalent of taking 9,200 cars off the road.
- Infill development on brownfields has the potential to save \$115 - \$180 million in public infrastructure investment.

Return on Investment for Brownfield Incentives

A set of policy options that can accelerate brownfield redevelopment to achieve Portland's economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are described in detail in the Financial Feasibility Analysis (Part 1 of the Task 3 &

4 report). Tools prioritized by the advisory group are listed in Figure 2 along with other policy options assessed in the study listed as “complementary tools.”

Figure Exec 2. Priority Policy Tool Bundles



The purpose of the return on investment analysis is to compare the relative impact these tools. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order of magnitude. This analysis is most useful for comparing the policies amongst each other to determine which are most likely to create the best return in absence of complete information about how they will be implemented.

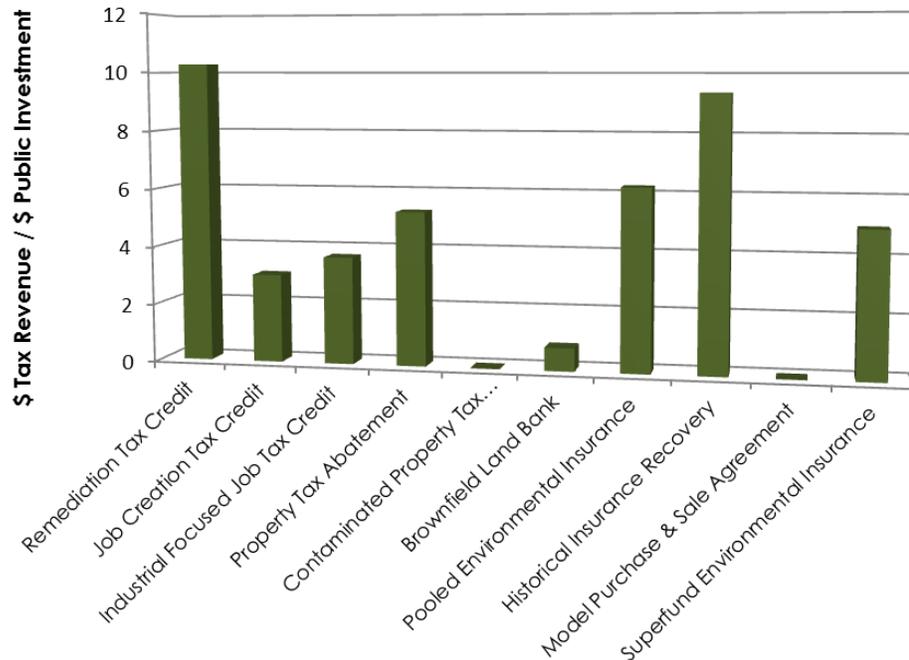
Key Findings

- The Remediation Tax Credit, Job Creation Tax Credit, Property Tax Abatement, Public Land Bank, and Pooled Environmental Insurance appear to have the greatest impact with each potentially facilitating redevelopment of about 150 acres.
- The Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery provided the greatest return on tax revenues relative to public investment. Each approach a \$10 return in state and local tax revenue for every \$1 invested (See

Figure 3). These tools leverage private investment or bring outside resources to projects, thus minimizing the public funds needed to help a project achieve financial feasibility.

- Tax credits and tax abatements appear to have great potential to support redevelopment of brownfields that are close to financial feasibility, including the Standard Industrial, Downtown High Density, and Mixed Use Hub typologies
- To drive redevelopment in the Superfund Shadow and Harbor Waterfront typologies, multiple policy tools are needed, such as combining the Public Land Bank with Pooled Environmental Insurance, and a Remediation Tax Credit.
- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed use development in strong markets. These areas are also the most likely to redevelop with little to no public investment.
- Incentives for redevelopment in industrial areas have the potential to reduce the projected shortfall in land supply, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are substantial and supports a rationale for shared investment in Portland industrial lands as a regional economic asset.

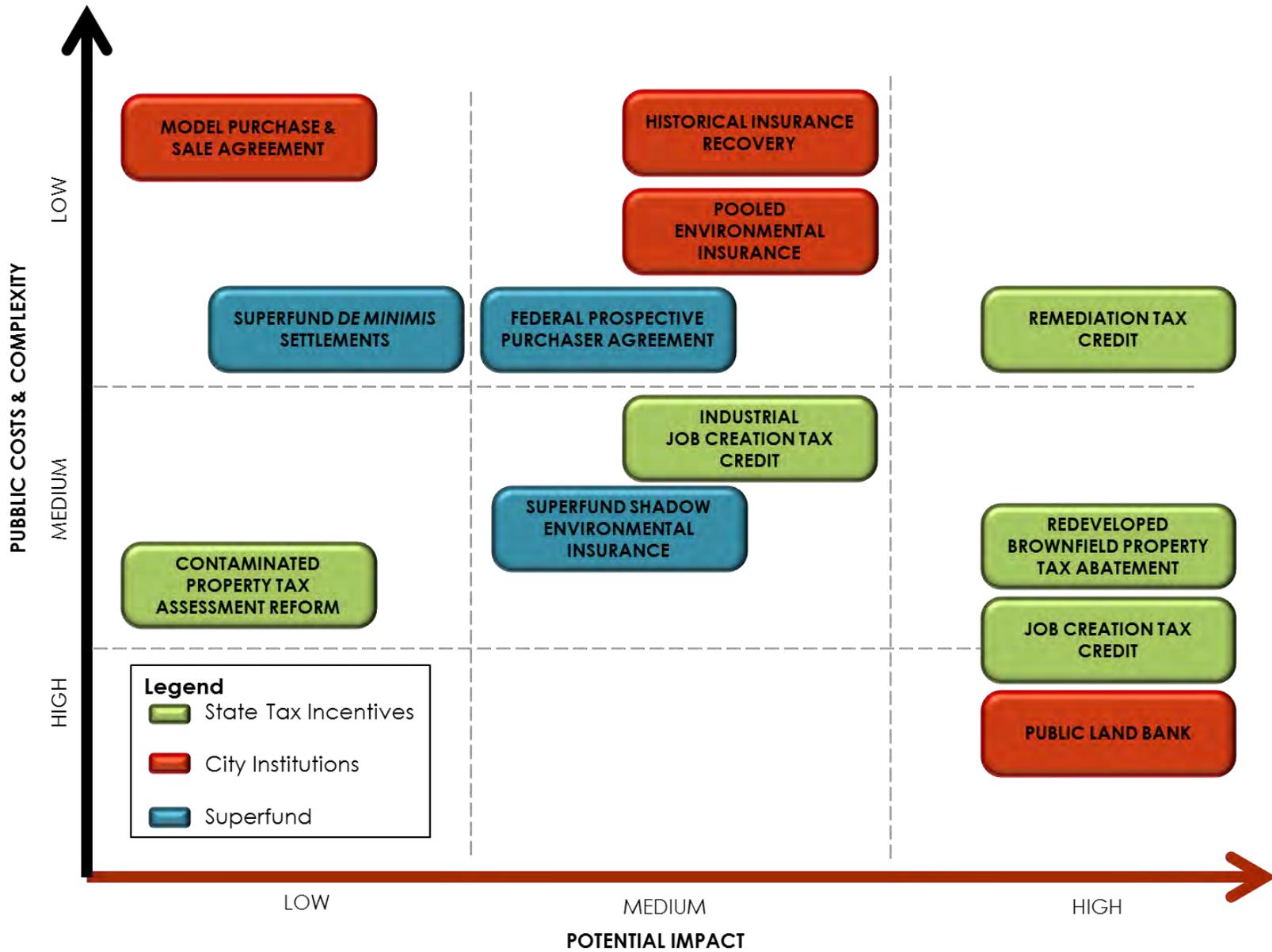
Figure Exec. 3. Return on Public Investment



In setting policy, the potential financial returns of a policy should be considered along with a number of other factors including administrative costs and complexity to implement. Figure 4-3 provides a conceptual graphic that aligns brownfield policy options in terms of potential impact relative to public cost and complexity. The highest rated policies based on this analysis are the Remediation Tax Credit and Historical Insurance Recovery Support. The Public Land Bank has a high potential impact over a long-term time horizon, but will likely require significant investment of public resources for it to be successful. Several low cost, low impact policies, such as creating a Model Purchase and Sale Agreement, are actions that, though difficult to quantify, can support the effectiveness of other tools.

Figure Exec 4

POLICY IMPACT AND COSTS SUMMARY ANALYSIS



1 INTRODUCTION

This report summarizes findings regarding the barriers to redevelopment of brownfields, and the public benefit that could be associated with brownfield redevelopment in Portland. This analysis was completed as part of Tasks 3 and 4 of the Portland Brownfield Assessment project. This report builds on the previous reports listed below which should be read as companion documents for context and complete results.

The goal of the Portland Brownfield Assessment is to examine opportunities to increase the rate of brownfield redevelopment through:

- Identification of barriers to brownfield redevelopment
- Development of financial feasibility and public benefit analyses
- Analysis of financial and technical assistance incentives to address barriers to brownfield redevelopment
- Development of implementation actions based on best practices from around the country

Brownfields Defined

The term "brownfield" refers to real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of hazardous substance contamination.

Key work elements presented in this draft Public Benefits Analysis report include:

- Discussion and quantification of the market-based barriers to redevelopment of brownfields (Section 2)
- Analysis of the economic, environmental, and social benefits that could be derived from redevelopment of brownfield properties (Section 3)
- Forecast of potential return on investment associated with implementation of priority brownfield policy tools (Section 4)

Components of Portland Brownfield Assessment

- Inventory & Existing Conditions Analysis (Task 2 Report)
 - Inventory of potential brownfield properties
 - Identification of brownfield typologies
 - Assessment of development trends at national and local level
 - Review of market & non-market barriers to brownfield redevelopment
 - Review of existing state and local incentives for brownfield cleanup and redevelopment
- Financial Feasibility Analysis (Part 1 of Task 3 and 4 Report)
 - Pro forma analysis of prototypical brownfield redevelopment scenarios
 - Estimate of opportunity costs associated with brownfield properties
 - Review of policy tools to promote brownfield cleanup and redevelopment
- Financial Barriers and Public Benefit Analysis (Part 2 of Task 3 and 4 Report)—*this report*
 - Evaluation of financial gaps to achieving redevelopment goals
 - Analysis of potential economic, environmental, and social benefits to brownfield redevelopment
 - Forecast of return on investment from implementation of priority policy tools to promote brownfield cleanup and redevelopment
- Summary Report (Task 5)

1.1 Context

Portland recently adopted the Portland Plan, a long-term strategic vision for Portland that is built on integrated strategies to promote: economic prosperity and affordability, a healthy connected Portland, and thriving educated youth. The Portland Plan sets ambitious goals for Portland to capture regional growth, meet demands for land supply within the Urban Growth Boundary (UGB), and increase the traded sector economy and competitiveness of industrial land as a multi-modal transportation hub.

Portland is currently in the process of updating its Comprehensive Plan that sets the framework for the physical development of Portland over the next 20 years. Because Portland is essentially land-locked and therefore cannot easily expand its UGB to accommodate expected growth, it must focus more clearly on infill redevelopment. A substantial amount of the land that could accommodate infill and redevelopment are brownfield properties that are constrained by contamination concerns.

As part of its process to update the Comprehensive Plan, Portland has completed a draft Economic Opportunity Analysis (EOA). The study found that buildable employment land supply in Portland is inadequate to meet forecasted demand in 2035; and that “potential brownfields” account for about one-third of the growth capacity in Portland’s industrial, commercial and other employment areas. Brownfield properties face significant challenges in the marketplace. Recent trends indicate that most of Portland’s brownfield land will continue to sit idle despite increasing economic growth and demand for new real estate development. The EOA forecasts that only 40% of brownfield acreage in industrial areas and 50% in neighborhood commercial areas are expected to redevelop by 2035.

This report is one way in which Portland is reconsidering its existing land supply, and evaluating opportunities to make investments inside of its UGB that can result in additional built space to support jobs and people, while avoiding suburban sprawl (See Figure 1-1). This effort is driven by the recognition that addressing brownfields is not only about improving public health and the environmental, but is a critical economic and community development strategy..

Figure 1-1. Interconnection of Planning Efforts



2 FINANCIAL FEASIBILITY ANALYSIS

One of the key features of the Portland Brownfield Assessment is its focus on accounting for the real estate market context in which brownfield redevelopment occurs. In many cases, contamination cleanup costs are just one among many market variables that constrain the potential for redevelopment. Low achievable rents in the planned redevelopment; site constraints (slope, allowed density, access, etc); regional real estate and development financing trends; and other variables all affect development feasibility.

The financial feasibility analysis examines the development potential of individual prototypical development scenarios for each typology (Section 2.1) and then aggregates the results to evaluate the financial condition of all of the identified brownfields in Portland (Section 2.2). To support this analysis, brownfields in Portland have been categorized into seven typologies based both on market potential and contamination issues. (Figure 2-1).

2.1 Summary of Pro Forma Analysis

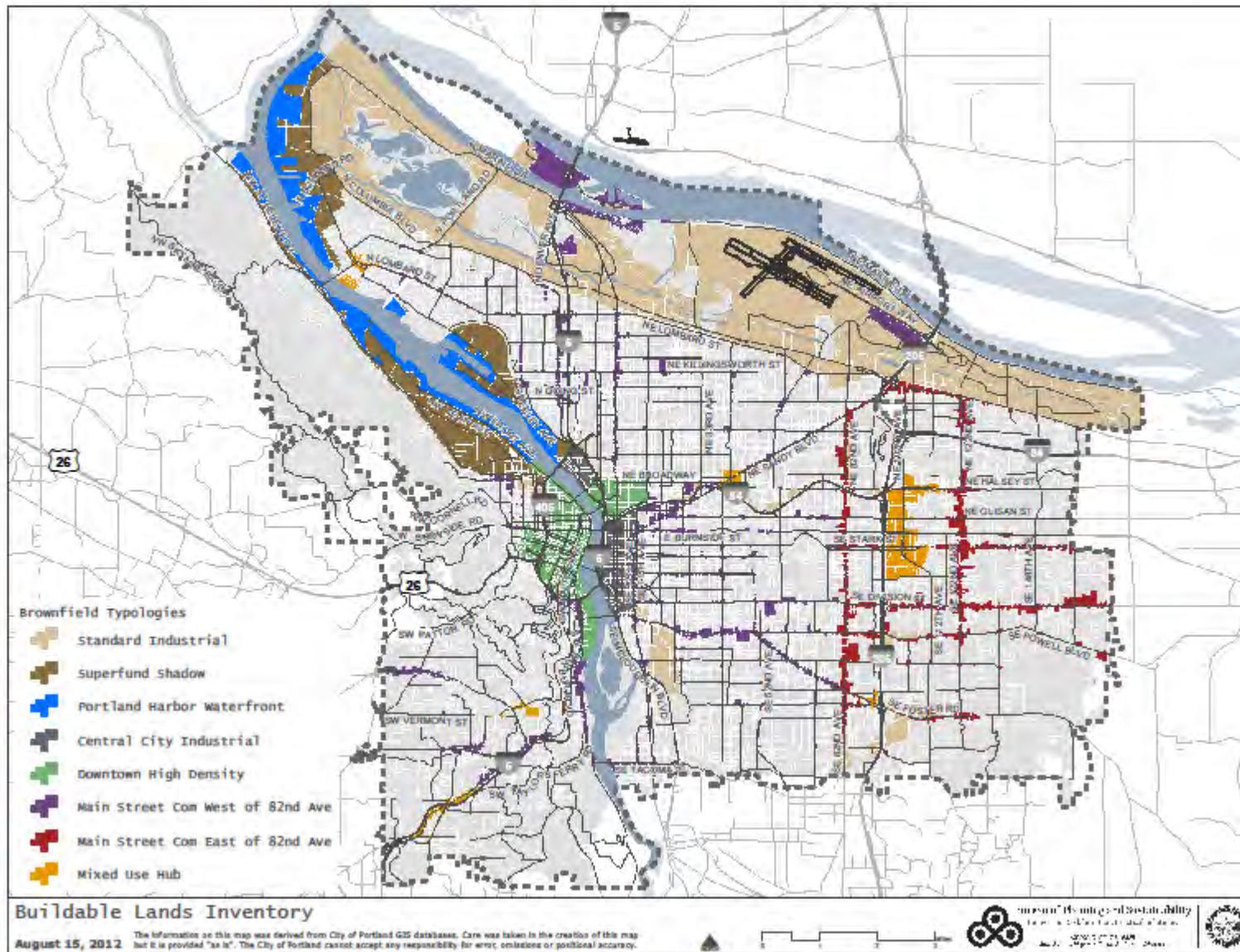
Pro Forma Analysis provides insight into the financial viability of brownfield redevelopment, based on its potential future use.

Pro forma estimates of development costs, cleanup costs, likely rents and property values were created for each of the prototypical development scenarios in each typology (See Table 2-1). The critical test of financial feasibility lies in the relationship of project *cost to valuation*. If the valuation upon completion and resulting occupancy exceeds the cost of development, the project is viewed as feasible. In situations where valuation is less than cost, the project is viewed as having a “financial feasibility gap.”

Table 2-1. Brownfield Typologies and Development Scenarios.

Typology	Use Type	Acres
1. Downtown High Density	Mixed Use	27
	Office-Retail	67
2. Mixed Use Hubs	Mixed Use	11
	Office-Retail	47
3a. Main Street West	Mixed Use	45
	Office-Retail	92
3b. Main Street East	Mixed Use	22
	Office-Retail	36
4. Central City Industrial	Flex-Tech	4
5. Standard Industrial	Flex-Business Park	137
	Warehouse-Distribution	189
6. Superfund Shadow	Flex-Business Park	33
	Warehouse-Distribution	46
7. Harbor Waterfront	Warehouse-Distribution	154

Figure 2-1 Map of Portland Brownfield Typologies



Pro Forma Analysis Methods

The pro forma analysis is not site or owner specific—but rather relies on prototypical development projects generated for each typology under alternative assumptions of market use and brownfield remediation cost. For ease of application across Portland’s full employment and brownfield geography, all pro formas are calculated on standard per unit measures of:

- Development cost versus valuation per *building square footage*
- Resulting financial surplus (or gap) per square foot of *land area*

The financial pro forma compared the cost of developing a property (including land acquisition, hard and soft development costs, and site remediation) to the market value of the completed building as an indicator of feasibility. It evaluated a mix of building types as appropriate for zoning and employment geography including manufacturing / warehouse, flex / business park, office / commercial, retail, and mixed use residential.

The results of the financial pro forma evaluation determined whether each building type was feasible both with and without remediation costs included. Importantly for the next step in the feasibility analysis, it also resulted in an estimate of the dollar amount of “gap” between development costs and finished market value for each of these building types.

Pro Forma Analysis Key Findings

Commercial developments close to downtown have greatest financial strength.

Industrial redevelopment is challenged by comparatively low land values relative to cleanup costs.

- Generally, environmental cleanup costs have a stronger overall influence on feasibility than the costs associated with market variables (i.e. rents, development costs, location).
- High value locations with high allowed density development are more likely to be market feasible. For example, properties in downtown Portland can often absorb average remediation costs and still be financially viable to redevelop.
- Mixed use developments in some typologies such as Main Street East are often financially infeasible because construction costs outweigh potential rents achievable with current market conditions. The addition of remediation costs only exacerbates those scenarios. However, these development types make up a small portion of total potential brownfields in Portland.
- Industrial brownfields are generally challenging to redevelopment because cleanup costs often exceed the redeveloped value which is limited by the lower density of development and land prices.

- The addition of Superfund related liability on top of upland remediation costs has the potential to drive industrial brownfields near the Portland Harbor underwater financially.

2.2 Pro Forma Aggregated Results

Aggregated Pro Forma Results estimate the scale of the financial challenge posed for brownfields redevelopment in Portland.

Financial pro formas were generated in terms of typical square footage estimates of building area together with associated costs and incomes; these results were then translated to per site area figures based on intensity (or floor area ratio) of anticipated development. These results have been aggregated to show how the development scenarios are extrapolated across the full inventory of potential brownfield properties in Portland. Excluding the EOA Institutional geography, Portland currently estimates that there are approximately 910 acres of vacant and underutilized, potentially contaminated industrial and commercial land in Portland¹.

Aggregation Methods:

- Identification of brownfield acreage by typology.
- Distributing high-medium-low remediation cost assumptions across each of the seven typologies based on review of available local and national data on cleanup cost (See Table 2-2).

Table 2-2. Distribution of Typical Cleanup Costs

Brownfield Typology	Application of Costs to % of Brownfield Acres		
	High (\$16/s.f.)	Medium (\$6/s.f.)	Low (\$1.5 / s.f.)
1. Downtown High Density	0%	50%	50%
2. Mixed Use Hubs			
3. Main Street (east and west)	10%	40%	50%
4. Central City Industrial	20%	37%	43%
5. Standard Industrial			
6. Superfund Shadow			
7. Portland Harbor Waterfront	50%	40%	10%

- Distribution of future development types
 - Typologies 1-3—Mixed use (with residential and commercial), commercial, and office-retail. Note that the residential allocations for mixed use have been defined consistent with target shares (ranging from 34-49% of

¹ See Inventory and Existing Conditions Report (Task 2) of the Portland Brownfield Assessment for detailed methodology for brownfield inventory.

affected typologies) as consistent with the Portland EOA for each pertinent Comprehensive Plan designation.

- Typologies 4-7—Flex/business park space, warehouse-distribution. Approximately 42% of future site development within the Standard Industrial and Superfund Shadow typologies is anticipated to occur with flex/business park space and 58% with warehouse-distribution space. For Harbor Waterfront properties, 100% of future development is assumed as warehouse-distribution related use.
- Per square foot remediation costs and feasibility “gap” numbers are converted to acreage equivalents, multiplied across the acreage distributions, and then summed to estimate total remediation cost and associated feasibility gap figures, by typology. Note that for redevelopment prototypes that would be financially underwater even before brownfield considerations, the amount of the financial gap is further intensified by the cost to remediate.
- For the Superfund Shadow and Harbor Waterfront typologies, costs are calculated separately for on-site remediation and potential Superfund liability. For purposes of illustration (and as is further detailed in the Task 3/4 report), these costs are estimated at an added \$1.46 per square foot of land area for brownfield constrained properties in the Superfund Shadow typology and at \$13.10 per square foot of site area for the Harbor Waterfront typology.
- Per site area figures of net added employment, payroll and state / local jurisdiction tax revenue potential are multiplied by typology specific acreage and use distributions to arrive at estimates of potential opportunity cost resulting from brownfield sites not in productive economic use. These preliminary estimates represent maximum gross potential assuming “best case” 100% redevelopment and without taking into account potential relocation of economic activity from one part of the metro region or state to Portland of Portland.

Aggregated Results

Total estimated cost to remediate all brownfields in Portland = \$244M

- Remediation costs for all the identified brownfields is estimated at nearly \$244 million. If potential Superfund liability is added for these sites, the total remediation cost increases to nearly \$337 million.
- Downtown High Density represents the financially strongest typology (See Table 2-2), demonstrated by
 - Estimated 45% of the added job potential with full build out.

- Remediation costs relatively low to overall development costs and redeveloped value
- Another 8,300+ jobs (or 27% of the total) may be oriented to typologies (2-4) for Mixed Use Hubs, Main Street, and Central City
- Industrial typologies account for approximately 8,900 (28-29%) of potential jobs.
- Harbor Waterfront—with potential Superfund liability costs added, the total cost of remediating affected properties is preliminarily estimated to increase to as much as \$23-\$24 per square foot of site area—more than three times the value of shovel-ready (or unconstrained) vacant industrial land.
- Industrial brownfield typologies account for 77% of the overall feasibility gap for on-site remediation. That increases to 84% of the gap if potential Superfund-related liability is included.
- Payroll—Estimated \$1.4 billion in foregone annual payroll potential for the affected sites
- Tax Revenue—Lost opportunity for additional \$239 million per year in potential state and local income, property and business tax revenues (estimated in 2012 dollars).

Table 2-3. Aggregated Feasibility Gap & Opportunity Cost Analysis

	Total All Typologies	1. DT High Density	2. Mixed Use Hubs	3a. Main Street West	3b. Main Street East	4. Central City Industrial	5. Standard Industrial	6. Superfund Shadow	7. Harbor Waterfront
Cost to Cure (per SF Land)									
Remediation Cost	\$6.15	\$3.75	\$3.75	\$4.75	\$4.75	\$6.07	\$6.06	\$6.06	\$10.55
Remediation Cost w/Superfund	\$8.50	\$3.75	\$3.75	\$4.75	\$4.75	\$6.07	\$6.06	\$7.52	\$23.65
Financial Gap w/Remediation (if any)	(\$6.02)	\$(2.05)	\$(4.22)	\$(5.01)	\$(5.55)	\$(8.16)	\$(5.53)	\$(5.53)	\$(9.94)
Financial Gap w/Superfund	(\$8.63)	\$(2.05)	\$(4.22)	\$(5.01)	\$(5.55)	\$(8.16)	\$(5.53)	\$(6.99)	\$(23.04)
Land Area (Acres)									
Brownfield Typology Totals	909.7	94.4	58.0	137.0	57.6	4.2	325.9	78.8	153.9
Total Cost to Cure									
Remediation Cost (w/o Superfund)	\$243,878,000	\$15,417,000	\$9,478,000	\$28,349,000	\$11,929,000	\$1,098,000	\$86,090,000	\$20,814,000	\$70,703,000
Remediation Cost w/Superfund	\$336,680,000	\$15,417,000	\$9,478,000	\$28,349,000	\$11,929,000	\$1,098,000	\$86,090,000	\$25,824,000	\$158,495,000
Financial Gap (w/o Superfund)	\$(214,297,000)	\$(4,207,000)	\$(10,660,000)	\$(19,872,000)	\$(13,948,000)	\$(1,477,000)	\$(78,545,000)	\$(18,990,000)	\$(66,598,000)
Financial Gap w/Superfund	\$(307,098,000)	\$(4,207,000)	\$(10,660,000)	\$(19,872,000)	\$(13,948,000)	\$(1,477,000)	\$(78,545,000)	\$(23,999,000)	\$(154,390,000)
Economic Opportunity Cost									
<i>Employment / Payroll (@ 100% Use)</i>									
Employment	31,310	14,066	2,641	3,298	2,103	281	5,688	1,375	1,857
Annual Payroll	\$1,406,489,000	\$564,887,000	\$94,986,000	\$118,007,000	\$71,119,000	\$13,881,000	\$334,575,000	\$80,890,000	\$128,144,000
Payroll per Job (Average Wage)	\$44,921	\$40,160	\$35,960	\$35,778	\$33,815	\$49,389	\$58,819	\$58,819	\$69,000
Net Added Residential Units	7,306	5,366	566	1,058	316	--	--	--	--
<i>Annual Tax Revenue (@ 100% Use)</i>									
City of Portland	\$42,511,000	\$21,104,000	\$3,094,000	\$4,140,000	\$1,770,000	\$395,000	\$7,482,000	\$1,809,000	\$2,717,000
Total State / Local Revenue	\$238,699,000	\$104,425,000	\$16,336,000	\$21,053,000	\$10,786,000	\$2,354,000	\$51,997,000	\$12,570,000	\$19,178,000

Source: E. D. Hovee & Company, LLC. Analysis is preliminary, intended for illustrative purposes, and subject to revision.

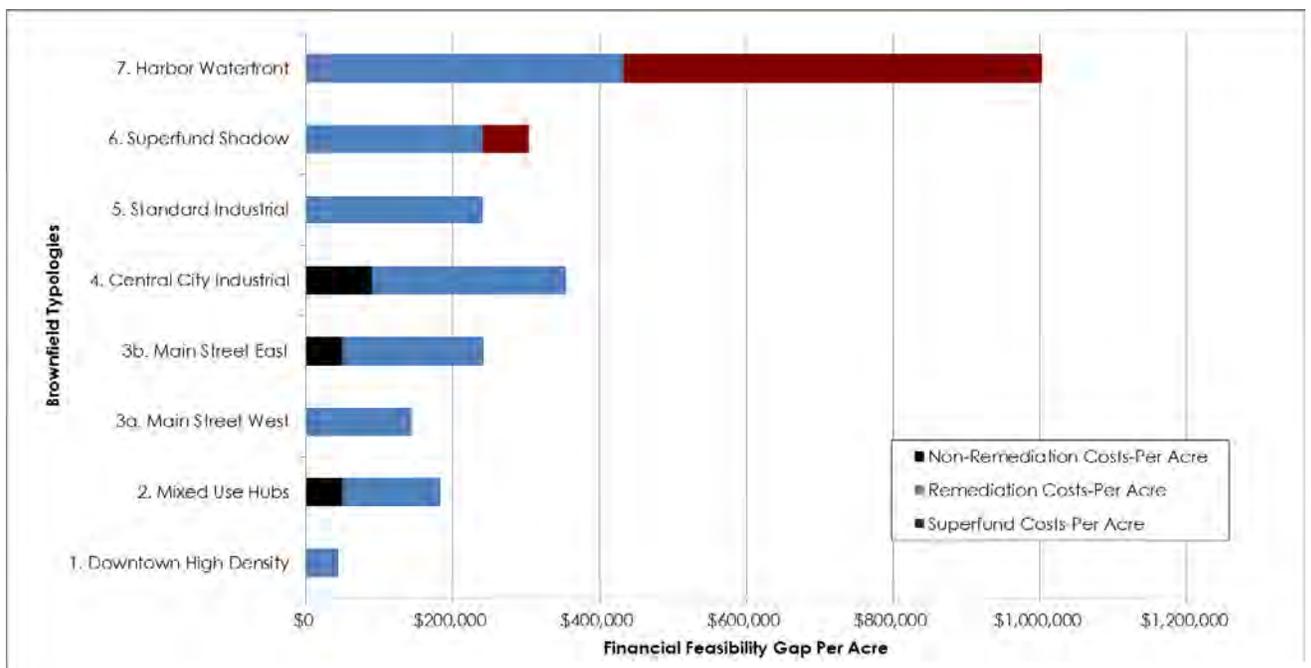
2.3 Analysis of Financial Barriers

The financial feasibility gap is composed of both development and cleanup related factors. The balance of these factors varies by typology and redevelopment scenario (See Figure 2-2). For nearly all the typologies, redevelopment is financially feasible, but for the additional costs associated with environmental remediation. For the three typologies, Main Street East, Mixed Use Hubs, and Central City Industrial, that are “underwater” before accounting for costs associated with environmental remediation, relatively high development costs currently generally exceed the rents those areas will bear. In the Central City Industrial employment geography, recent development activity has largely consisted of rehabilitation of existing buildings, with not much new construction to date. However, the pro forma analysis assumed construction of new building space based on the observation that further opportunities for re-use of existing viable building stock in this area is becoming limited.

As discussed above, the addition of estimated potential costs associated with Portland Harbor Superfund liability has a substantial impact on the Harbor Waterfront and Superfund shadow typologies.

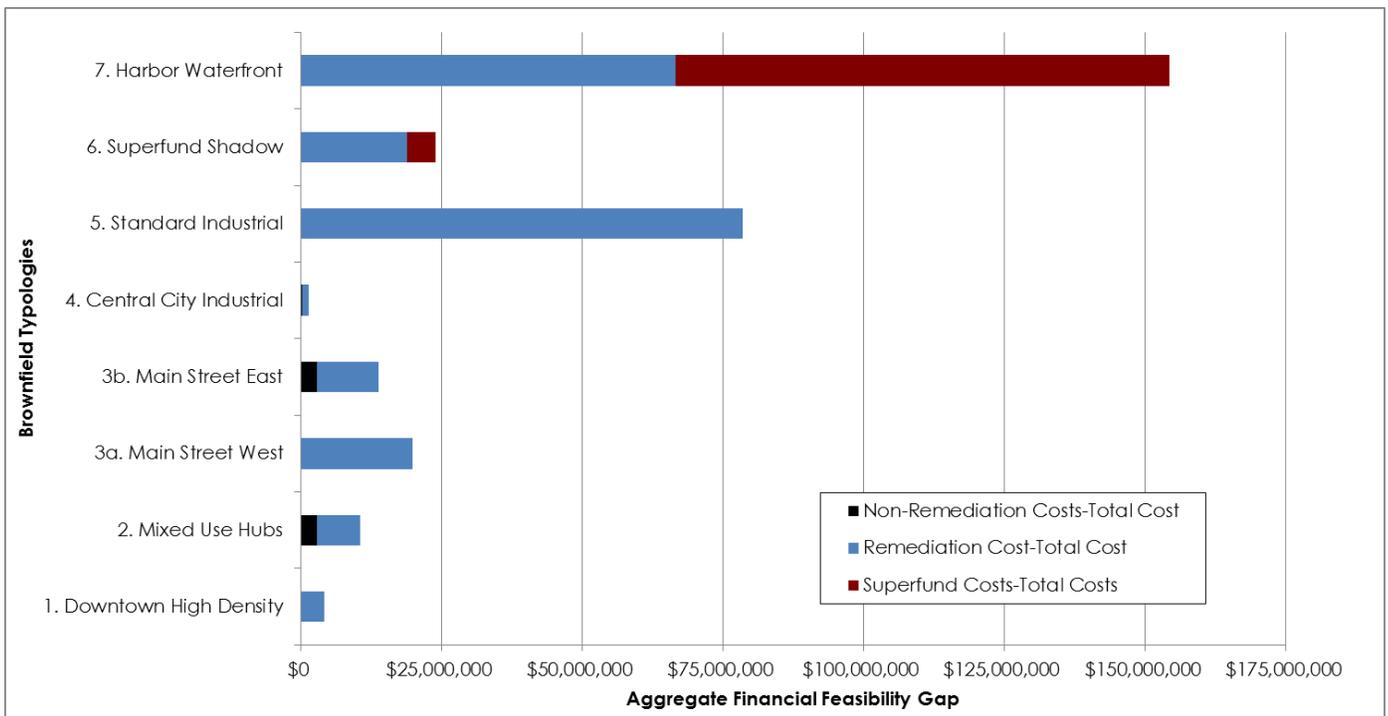
- Superfund Shadow sites—adds approximately \$64,000 in costs/ acre
- Harbor Waterfront sites—adds nearly \$571,000 in costs/ acre.

Figure 2-2. Financial Feasibility Gap Per Acre



Applying this analysis to the entire inventory of potential brownfield sites provides an estimate of the total financial feasibility gap across all sites (See Figure 2-3). The magnitude of the total financial feasibility gap is largely driven by the number of acres in a particular typology. Industrial sites make up the majority of acreage in the brownfield inventory. The Harbor Waterfront typology alone accounts for 150 acres or about 19% of the inventory. This emphasizes the liability associated with remediation of industrial sites in general and the magnitude of the Superfund impact in particular.

Figure 2-3. Total Financial Feasibility Gap



2.4 Investment to Achieve Redevelopment Goals

What level of investment is needed to meet potential targets of 50%, 70%, and 90% redevelopment of the brownfields in Portland?

Reaching complete build out of the brownfield inventory is not a realistic goal, so interim targets of reaching redevelopment of 50%, 70%, and 90% of these properties is evaluated to establish a context for the level of public investment that may be needed to put these sites into productive use. These targets align with analysis conducted in the EOA to examine the potential for brownfields to meet the forecasted industrial land supply shortfall in the UGA.

Methods

- **Sorting**—Development scenarios of the pro forma analysis were sorted by the financial gap on a per-acre basis. That is, the subcategory with the smallest per-acre financial gap was at the top of the sorted list and the subcategory with the largest per-acre financial gap was at the bottom of the sorted list.
- **Winnowing**—Development scenarios that were financially feasible even after adding remediation costs were removed. Three scenarios in the Downtown High Density and Main Street West typologies met this criteria. These accounted for 93 acres or about 10% of the brownfield acreage. Since these development types would not need public investment to make them viable, they were removed from the analysis.

Results

The analysis finds that a large amount of the brownfield inventory can be redeveloped with a relatively modest investment (Table 2-4), but achieving higher levels of redevelopment will be increasingly costly with diminishing returns. Closing the estimated financial feasibility gap on 50% of the brownfield acreage would require an investment of approximately \$36 million. That investment doubles to achieve 70% of redevelopment, then doubles again to achieve 90%. The analysis indicates there is a large amount of “low hanging fruit” in projects that could become financially feasible with some level of public investment. The increasing costs to achieve higher levels of redevelopment are largely driven by the assumed high costs of cleanup associated with a relatively small number of individual properties.

Table 2-4. Financial Gap to Reach 50, 70, and 90% Redevelopment

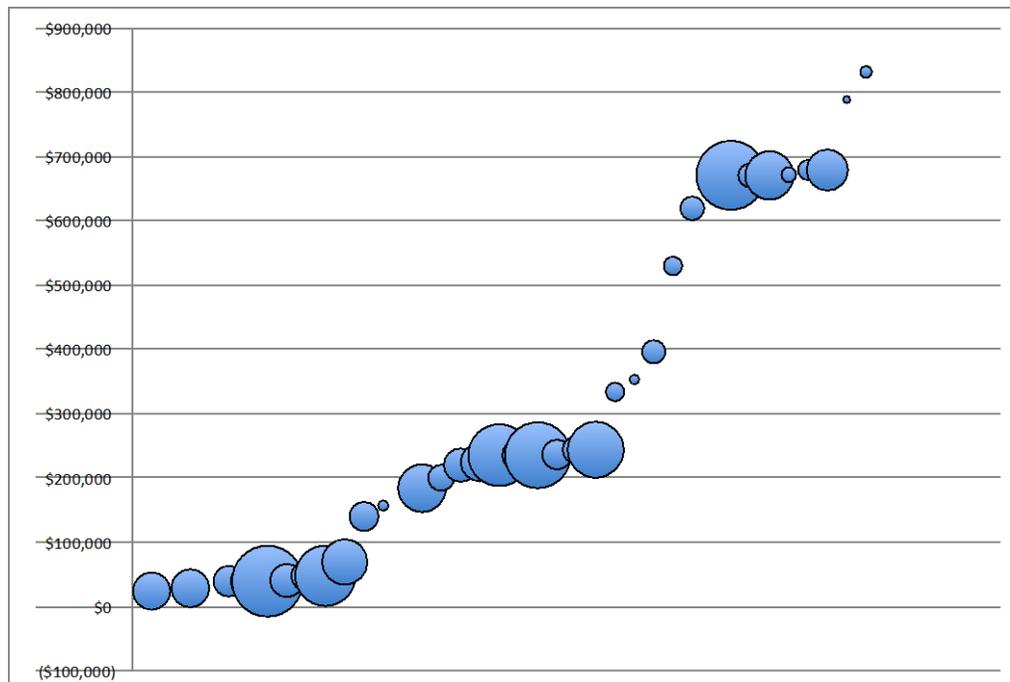
% of Total Acres	Number of Acres	Total Financial Gap	% of Total Financial Gap	Jobs	City Tax Revenue (Annual)	Total State & Local Tax Revenue (Annual)
50%	408	\$36,371,000	17%	23,000	\$31,760,000	\$170,385,000
70%	572	\$74,860,000	35%	26,000	\$35,103,000	\$194,107,000
90%	735	\$158,820,000	74%	30,000	\$40,397,000	\$224,235,000
100%	817	\$214,296,000	100%	31,000	\$42,511,000	\$238,698,000

Note: The financial gap shown here excludes costs associated with superfund sites.

Another key factor that drives these results is that many of the property development pro forma scenarios with a low per-acre financial gap are

applied in the model to a large number of acres. In Figure 2-4, each bubble shows the per-acre financial gap for each of the development pro forma scenarios, sorted from lowest to highest per-acre financial gap. The size of each bubble indicates the number of acres associated with that property type. The chart shows that the property types with a low per-acre financial gap are dominated by mid-sized acreages; the property types with a high per-acre financial gap have a higher portion of small-sized acreages.

Figure 2-4. Per-acre financial gap and acreage by development scenario



Note: the relative size of the bubble indicates the number of acres to which the development scenario is applied in the model.

Limitations and Assumptions

The financial analysis provides an order-of-magnitude estimate of the costs of construction and remediation relative to the value of potential development. The underlying pro forma analysis is based on generalized development prototypes as described in Section 2.2. The following assumptions underlie the analysis of achieving 50%, 70%, and 90% redevelopment of the brownfield inventory.

- Development scenarios with the smallest financial feasibility gap will develop first.
- The model does not include market absorption rates for achieving the different levels of redevelopment; instead, it models the

magnitude of the financial gap to achieving certain levels of redevelopment.

- The model also does not explicitly account for site specific, non-contamination constraints. To some extent, multiple constraints are addressed with Portland's Buildable Lands Inventory, but parcel-specific issues may vary widely from anticipated norms. This analysis does not take into account these external or site-specific factors.

2.5 Other Market Barriers

The pro forma and financial gap analyses show that, when brownfield sites are considered in total across Portland, possible contamination is the most important variable that affects development feasibility. Only 3% of the total financial gap is associated with market barriers other than contamination. However, there are variations among typologies. For the three typologies that have non-remediation financial barriers, about 25% of their total financial gap is attributable to market barriers such as low achievable rent, site constraints beyond contamination, access to affordable development financing, etc. The implications are important:

1. Public policy tools that seek to achieve a redevelopment outcome through addressing only brownfield constraints will be effective in some development projects. The pro forma analysis suggests that those projects are mid-cost projects that are not well-located to achieve maximum value, and certain types of industrial projects where the liability and cost associated with cleanup are the key feasibility factor. For such projects, the brownfield incentive will be the critical factor that allows redevelopment to occur. For other projects, a brownfield incentive on its own cannot overcome the other market variables that affect feasibility.
2. To achieve broader redevelopment outcomes in many situations, targeted brownfields incentives will be more effective when paired with tools that address other market barriers.
3. In many real world examples of brownfield redevelopment, a package of multiple financial tools is used to overcome a mix of barriers and achieve feasibility. As brownfield incentives are more fully developed, they may be more effective when paired with policy tools that address other market barriers.

3 PUBLIC BENEFIT ANALYSIS

The analysis presented in Section 2 focused on the opportunity costs associated with underutilized brownfield properties and the challenge of making those properties financially viable. This section changes focus to the potential benefits that would be accrued to the public if those brownfield properties were remediated and revitalized. The public benefit analysis includes two major components:

1. Financial and economic benefits (Section 3.1)
2. Environmental and social benefits (Section 3.2)

3.1 Tax Revenue Generation

The pro forma analysis of prototypical brownfield redevelopment scenarios required estimates of property values and associated assessed values. Building on those estimates, a rough projection of the tax revenues of full build out of the inventory of potentially contaminated sites can be calculated. While it is clearly unlikely that 100% of the brownfields will redevelop in any reasonable planning horizon, this analysis provides a sense of the scale and potential represented by these properties.

Methods

The estimates of tax revenue generation are based on:

- Current tax rates for Portland, Multnomah County, and the State of Oregon
- Property taxes, corporate taxes, and personal income taxes
- Estimates of jobs and payroll based on development density and types of uses derived from standard economic models (such as IMPLAN)

Results

On a per acre basis, the Downtown High Density typology generates the most tax revenue, far greater than any of the other typologies (See Figure 3-1). Each acre generates about \$1.1 million in tax revenue at full development. A little over half of the tax revenue comes from state income tax generated by corporations located in the development and the individuals employed at

Downtown High Density Typology provides 44% of total potential tax revenue, but represents only 6% of brownfield acreage.

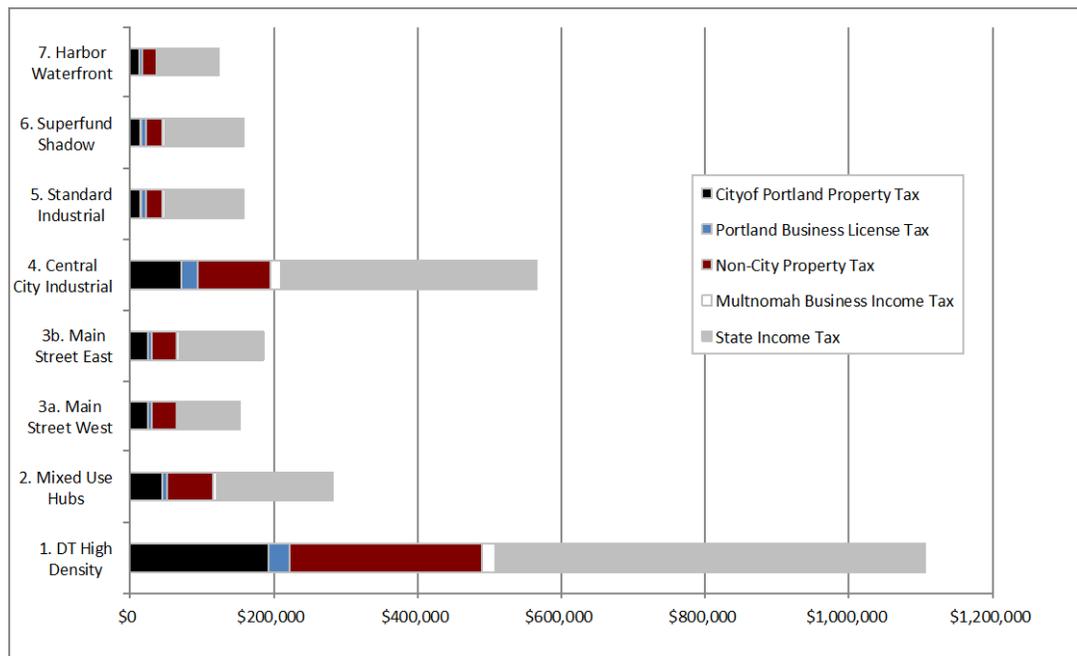
Standard Industrial accounts for 20% of tax revenue and 40% of brownfield acreage.

those firms. The pro forma analysis assumes that the jobs located in the Downtown High Density typology are relatively high-paying jobs—they include the jobs that typically locate in city centers such as financial services, legal services, and other professional occupations.

The Downtown High Density typology also generates substantially more property tax revenue than the other typologies. The multi-story developments yields more built square feet per square foot of land, so there is structure on an acre of land. In addition, the value per square foot of structure is relatively high.

The Central City Industrial typology yields the second highest public benefits on a per-acre basis, primarily in the form of income tax to the state. The model assumes this typology provides space for relatively high paying jobs.

Figure 3-1. Per-Acre Annual Tax Revenue by Brownfield Typology

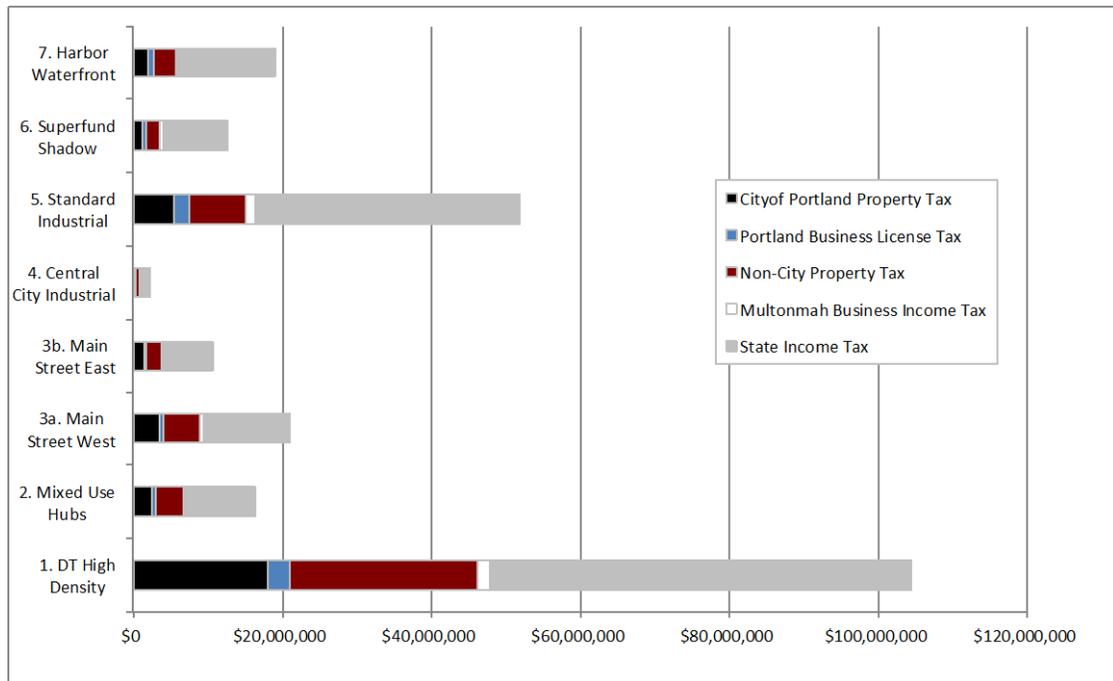


The per acre tax revenues can be multiplied out across the entire brownfield inventory (See Figure 3-2). The data show that the Downtown High Density has the potential to generate the most tax revenue, by far, over the other typologies. It has the capacity to generate about 44% of the total potential revenue, yet it makes up only 6% of the total acres.

Central City Industrial, which is a strong revenue generator on a per-acre basis, accounts for only 1% of total potential revenue. The typology accounts for 1% of the total acres.

The Standard Industrial typology has the second highest capacity to yield tax revenue. Its per-acre revenue is one of the lowest, but the typology accounts for 40% of all 817 acres.

Figure 3-2. Total Annual Tax Revenue by Brownfield Typology



Financial Feasibility Gap Relative to Tax Revenue Potential

The public benefits can be compared to the total remediation costs to show the public benefit associated with funding brownfield remediation (Figure 3-3 and 3-4). These figures are again normalized on a per acre basis and as totals. All the typologies, except Downtown High Density, have a financial gap in excess of estimated annual revenues to Portland. Downtown High Density is estimated to generate more in a single year to the City coffers than the its expected remediation costs.

The commercial typologies have the lowest ratio of annual revenues to total financial gap. Main Street West and Mixed Use Hubs are effective generators of tax revenue. Central City Industrial also has a low ratio, but the typology makes up a small portion of total acres.

The analysis also shows that Multnomah County and the State of Oregon stand to substantially increase tax revenues with redevelopment of these properties as well.

Figure 3-3. Per-acre Annual Tax Revenue and Financial Gap

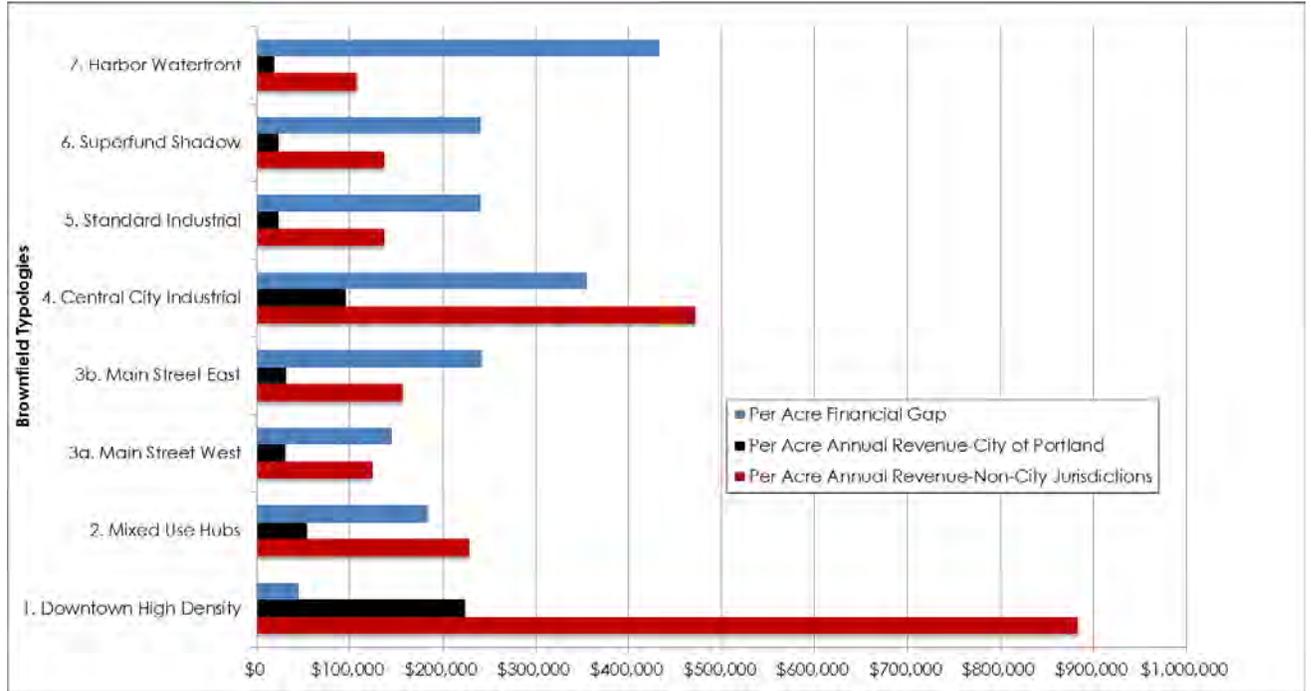
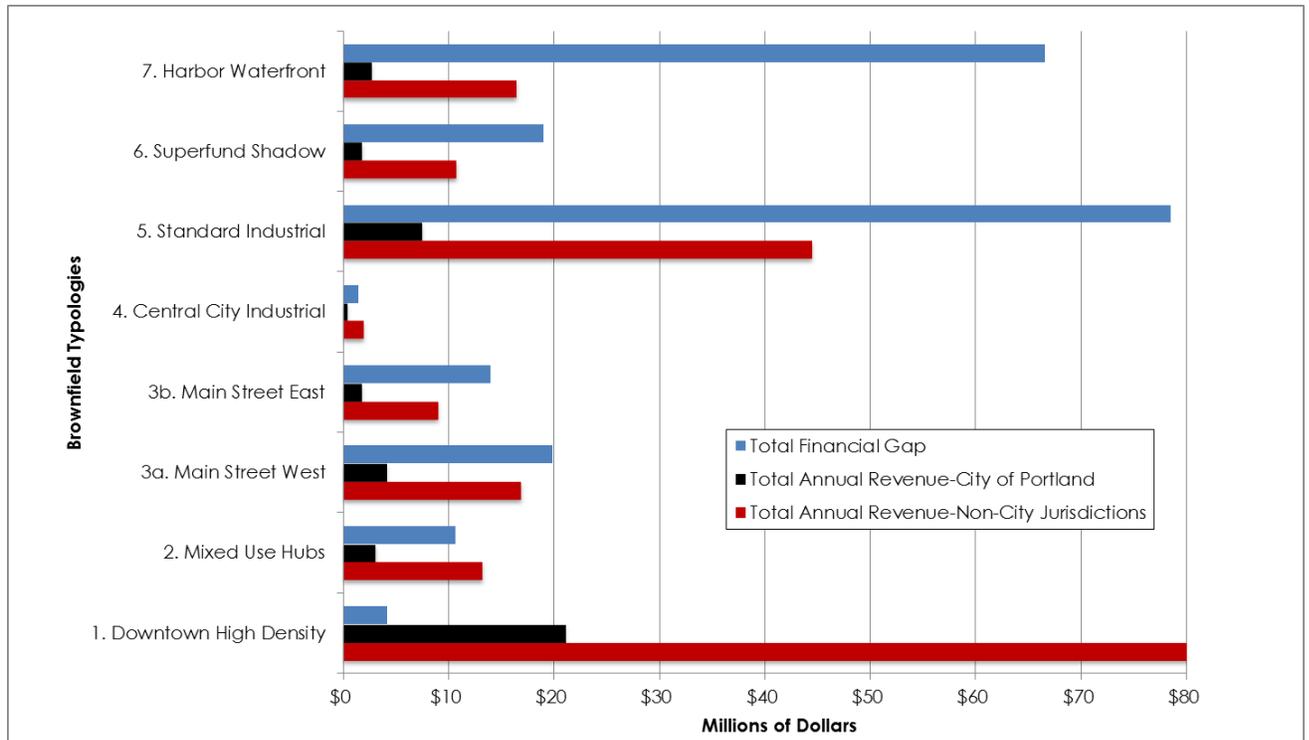


Figure 3-4. Total Annual Tax Revenue and Financial Gap



3.2 Job Creation Potential

Remediating brownfields yields benefits not only in terms of tax revenue, but also in employment. Table 3-1 shows the estimated gross jobs and payroll associated with the seven typologies. The employment benefits mirror the tax revenue benefits—the Downtown High Density typology accounts for the largest portion of potential added jobs and payroll, even though it accounts for only 6% of total brownfield acres. Industrial jobs account for much of the total projected payroll because of relatively high wage rates and the large acreage of properties represented in the brownfield inventory.

Table 3-1. Potential Employment and Payroll

Typology	Per Acre		Total	
	Employment	Payroll (\$millions)	Employment	Payroll (\$millions)
1. DT High Density	298	\$12.0	14,066	\$564.9
2. Mixed Use Hubs	46	\$1.6	2,641	\$95.0
3a. Main Street West	36	\$1.3	3,298	\$118.0
3b. Main Street East	36	\$1.2	2,103	\$71.1
4. Central City Industrial	68	\$3.3	281	\$13.9
5. Standard Industrial	17	\$1.0	5,688	\$334.6
6. Superfund Shadow	17	\$1.0	1,375	\$80.9
7. Harbor Waterfront	12	\$0.8	1,857	\$128.1
Total	38	\$1.7	31,310	\$1,406.5

3.3 Payback Period

Redevelopment of brownfields in Portland directly contributes annual tax revenues to Portland, so it is possible to compare the estimated cost of closing the financial feasibility gap through public investment to the estimated tax revenue generated by the redeveloped parcels (See Table 3-3). This analysis provides a general understanding of the benefits of redeveloping brownfield sites relative to the level of public investment, by asking the hypothetical question: “If Portland simply paid for brownfield remediation and eliminated the feasibility gap, how long would it take for the resulting Portland tax revenues to ‘pay back’ that investment?” In practice, of course the tax revenues that result from redevelopment could not explicitly fund brownfield remediation. Portland has many constraints on its ability to expend its tax revenues, and the multiple demands for tax dollars mean that even those revenues that are flexible are already over-committed. This analysis simply provides some context for considering how expenditures on site remediation might compare to benefits over time.

Assumptions

- All costs of development are in 2012 dollars.
- The tax revenue that is assumed to be collected in future years is discounted to 2012 dollars. A 3% discount rate is used to estimate the net present value of the future tax revenue dollars.

Results

The analysis finds that Portland would see a net gain after a few years if it invested in remediating brownfields in commercial typologies. The Downtown High Density typology performs particularly well: its estimated *annual* revenues exceed the total cost of remediation for the entire typology. At the other end of the spectrum, since the Harbor Waterfront has such a large financial gap and generates relatively low Portland tax revenues, it takes over four decades for Portland to regain any investment in remediation. However, when local and state tax revenues are considered in total, the payback period across all typologies is four years or less.

These findings suggest that while Portland may be able to realize substantial returns on investment in higher value commercial brownfield properties, a regional or statewide investment might be more appropriate to support remediation of industrial properties around the Harbor.

Table 3-3. Estimated number of years for tax revenue (net present value) to equal financial gap

Typology	Years	
	City Tax Revenue	Total State & Local Tax Revenue
1. DT High Density	<1	<1
2. Mixed Use Hubs	4	<1
3a. Main Street West	6	<1
3b. Main Street East	9	2
4. Central City Industrial	4	<1
5. Standard Industrial	13	2
6. Superfund Shadow	13	2
7. Harbor Waterfront	43	4

Note: This analysis excludes costs attributable to superfund sites. Including superfund costs would increase the payback period for the Superfund Shadow and Harbor Waterfront typologies.

3.4 Environmental and Growth Management Benefits

Brownfields projects create direct environmental benefits by remediating contamination and removing threats to public health and the environment. Since many of Portland's brownfields are located near rivers and wetlands, the improvements to habitat and water quality resulting from cleanup of legacy contamination is particularly significant. Brownfield redevelopment can also address environmental justice issues to the extent that contaminated lands may be located near low-income and minority populations.

There are also indirect environmental benefits that are important to recognize including:

- Lower vehicle miles traveled (VMT) and lower greenhouse gases due to locating economic activity in existing communities
- Conservation of rural lands and opens space accommodating growth within the envelope of developed areas
- Reduced infrastructure costs that may have been required to accommodate alternative development
- Reduced stormwater runoff and improved water quality because of greater density than alternative development patterns

The following discussion applies national research findings on these issues to the Portland brownfields redevelopment program. These are “order of magnitude” estimates; national statistics have been adjusted when possible to account for Oregon's unique growth management framework, but more specific and rigorous research that is specific to Portland would be required to refine quantitative estimates of environmental outcomes that might be associated with brownfield redevelopment in Portland. Nonetheless, the analysis here is a helpful starting place for a conversation around environmental and social justice effects.

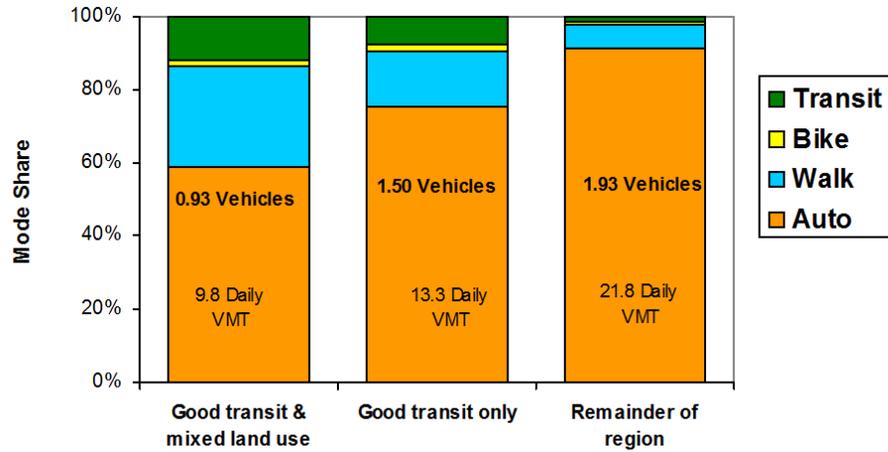
Automobile Greenhouse Gas Emissions

A recent US Environmental Protection Agency (USEPA) study found that, on average, VMT and carbon dioxide (CO₂) emissions related to brownfield redevelopment projects are 32 – 57 percent lower than typical greenfield, suburban development patterns.² The finding is reflective of national research that correlates VMT and CO₂ reduction with urban densities, mixed uses, access to job centers, street connectivity, and access to transit.

² US Environmental Protection Agency, Air and Water Quality Impacts of Brownfields Redevelopment, September, 2011.

Research focused on the Portland metropolitan area (not specific to brownfields) supports this, finding that development sites with good access to mass transit and a mix of use types result in approximately 50 percent lower VMT and CO₂ than areas that rank low for those same two factors (See Figure 3-8)³

Figure 3-5 Transit Oriented Development Impacts on Per Capita Vehicle Ownership and Vehicle Miles Traveled



Source: Litman 2011.

Applying these research findings to the inventory of potential brownfield sites in Portland suggests that redevelopment of 100 % of the sites would reduce CO₂ by 39,000 metric tons annually, the equivalent of taking 9,200 cars off the road. 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 CO₂ reductions related to redevelopment of brownfields (32 % reduction).

It should be noted that the industrial sector is calculated separately from commercial and residential because the market for these uses is more national than local. For example, a warehouse and distribution facility would more likely compare potential sites in Portland with other major west coast cities, while a mixed use developer would be more likely to choose between potential locations in Portland or surrounding suburbs. Estimation of VMT reduction related to industrial development incorporates two information sources:

1. Portland Commuter Traits. Portland has lower VMT per household relative to other metropolitan areas in the country. One analysis

³ Todd Litman, “Can Smart Growth Policies Conserve Energy and Reduce Emissions?” Victoria Transport Project, *Center for Real Estate Quarterly Journal*, May 2011. Available here: www.vtppi.org/REQJ.pdf.

estimated Portland area median household VMT at 17% below the US average.⁴

2. Relative Distance. Industrial development in Portland of Portland is likely to involve lower driving distances than alternative suburban locations (either within the Portland area or compared to other metropolitan areas).

Thus, even though the factors affecting VMT are somewhat different than in other cities in the country, for the purposes of an order of magnitude estimate, this analysis assumes that redevelopment of the Portland brownfields inventory has the potential to produce an industrial development pattern that will reduce VMTs and CO₂ by the same low end percentage: 32% reduction relative to alternative development areas.

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 farm land. One national study estimated that one acre of redeveloped brownfield property absorbs growth that would otherwise consume 4.5 acres of undeveloped land.⁵ This comparison is driven largely by the higher density that urban infill development projects can achieve. Applying this factor to the Portland inventory of 910 acres of potential brownfields, it can be estimated that redevelopment of those properties can “save” up to 4,095 acres of open space and rural land. This estimate, based on national figures, likely overstates the potential benefit in the Portland area given the requirement to maintain industrial uses in the industrial/employment sanctuaries. Nonetheless, these estimates do underscore the very real potential for brownfield redevelopment to reduce the development pressure on the urban fringe.

⁴ Ralph DiNola, “Sustainable Urban Redevelopment and Climate Change: Five Principles for Energy-Effective Development,” Congressional Hill briefing, 2253 Rayburn House Office Building, July 17, 2008, available: <http://nemw.org/images/stories/documents/PortlandDiNola.pdf>

⁵ 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/>

Infrastructure Cost Savings

Redevelopment of brownfields typically allows development to connect to existing infrastructure rather than requiring new construction or expansion of existing roads, water, and sewer lines. This use of existing infrastructure can result in significant savings to local governments. Two national studies have quantified this connection between infrastructure costs and infill development, and can serve to create a basis for estimating infrastructure savings attributable to brownfields redevelopment in the Portland area.⁶ One study by the Center for Neighborhood Technology estimates the differential between greenfield and infill development at five to one or \$49,000 per dwelling unit (in 2012 dollars).⁷ Another estimates a more modest 45 to 50 % savings, or \$31,500 per dwelling unit (assuming 15-dwelling units per acre for infill development and 3 to 5 units per acre for greenfield development).⁸ Applying the more conservative estimate of 50 % savings to Portland suggests that redevelopment of the full inventory of potential brownfields in Portland could save between \$115 - \$180 million in public infrastructure investment that would have otherwise been required to accommodate growth on greenfields. For comparison, a recently published analysis of the Massachusetts Brownfields Tax Credit program estimated that the public investment in the tax credit (\$52.7 million) was recouped entirely in foregone infrastructure investments, estimated at between \$66 and \$104 million.⁹

⁶ 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

⁷ Scott Bernstein, "Using the Hidden Assets of America's Communities and Regions to Ensure Sustainable Communities." Center for Neighborhood Technology, 2003, <http://www.cnt.org/hidden-assets/pt1f.html>

⁸ James Frank, "The Costs of Alternative Development Patterns: A Review of Literature." Washington, DC. Urban Land Institute. 1989.

⁹ "Infrastructure Costs, Brownfields vs. Greenfields," Excerpt, "Analysis of the Economic, Fiscal, And Environmental Impacts of the Massachusetts Brownfields Tax Credit Program," Evans Paull, Redevelopment Economics, June, 2012.

See: http://redevelopmenteconomics.com/yahoo_site_admin/assets/docs/Infrastructure_Costs_-_brownfields-greenfields_final2.213114938.pdf

Figure 3-6. Potential Public Infrastructure Cost Savings

	Portland Brownfields		
	Redevelopment	Greenfields	Difference
Dwelling units projected for Portland brownfields redevelopment			
	7,306	7,306	
> Cost per DU, CNT study	\$12,500	\$62,000	\$49,500
> Cost per DU, Frank study	\$37,500	\$69,000	\$31,500
Total cost to build infrastructure			
> CNT study	\$91,325,000	\$452,972,000	\$361,647,000
> Frank study	\$273,975,000	\$504,114,000	\$230,139,000
Assume state-local government funds 50% of infrastructure			
> Public infrastructure cost savings using CNT study differential	\$45,662,500	\$226,486,000	\$180,823,500
> Public infrastructure cost savings using Frank study differential	\$136,987,500	\$252,057,000	\$115,069,500

Stormwater Management and Water Quality

Studies have also found that dense urban development can result in less stormwater runoff than comparable scale of suburban development. USEPA studies indicate that brownfields and similarly dense redevelopment projects have been found to reduce run-off by 47 to 62% relative to sprawl development patterns.¹⁰ Given the allowed densities in Portland, it can be assumed that redevelopment of brownfields in Portland can reduce stormwater impacts by a similar range.

¹⁰ US EPA, *ibid.*

4 RETURN ON INVESTMENT POLICY COMPARISON

Portland has been a national leader in brownfield policy. In the late 1990s, Portland was named a national “showcase community” by the USEPA. Portland has also established a Brownfield Program within the Bureau of Environmental Services. As Portland continues to develop, there is a need for continued leadership and innovation to address the barriers to brownfield redevelopment.

An effective policy framework is critical for promoting brownfield redevelopment and catalyzing the potential economic, environmental, and social benefits estimated in this report. There are two major components to existing policy in Oregon: regulatory and financial.

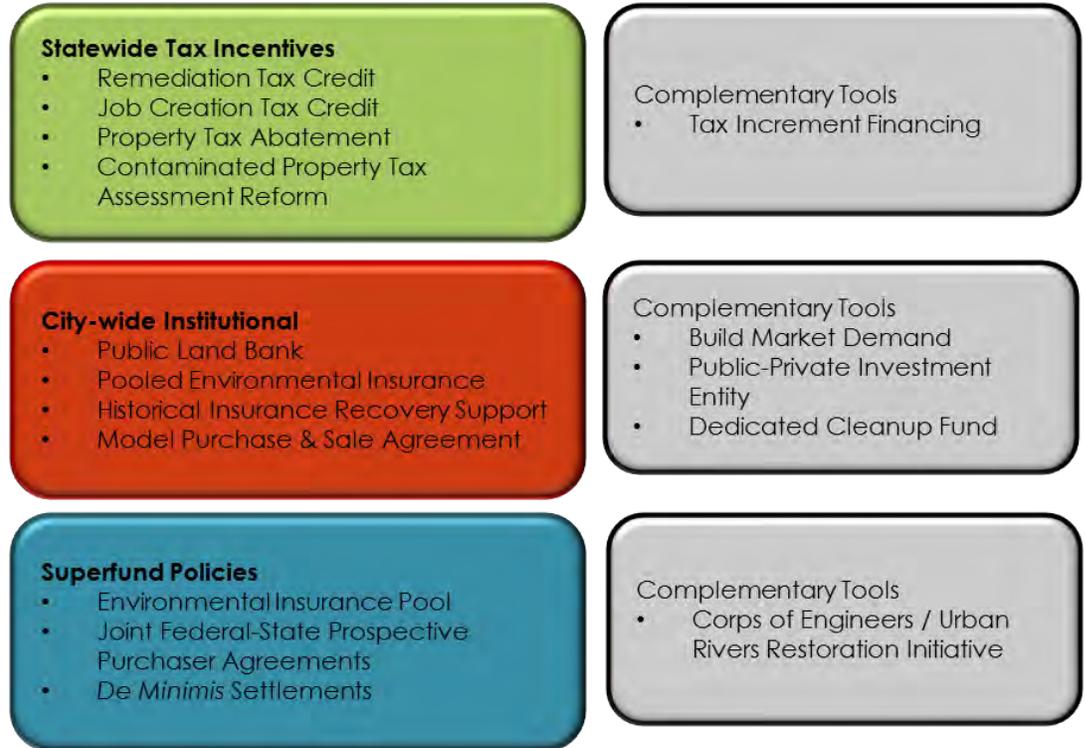
Regulatory Framework—The Oregon Department of Environmental Quality regulates cleanup of most contaminated properties, with the USEPA playing the lead role for areas designated as Superfund sites. The Oregon Cleanup Law establishes a risk-based approach to cleanup that allows flexibility for remediation to align with redevelopment of property. A Prospective Purchaser Agreement program has been established that provides certainty of liability settlement for innocent developers of properties. This program is generally considered to be very effective, but is only used by an average of eight sites per year.

Financial Incentives—Portland and the State of Oregon offer several grant and loan programs to support assessment and cleanup of brownfield properties. However, these programs have limited capacity, so; while they can play a critical role on individual projects, their ability to broadly impact the redevelopment market is limited. For example, the largest program is Oregon Brownfield Redevelopment Fund, which provides low interest loans and some grants for site assessment and cleanup. The program was re-capitalized in 2008 with \$9 million in state appropriation, which is just a quarter of the estimated \$36 million needed to close the financial feasibility to redevelop 50% of the brownfield inventory in just Portland (not accounting for the rest of the State).

A set of policy options that can accelerate brownfield redevelopment to achieve Portland’s economic and community development goals has been developed through a review of best practices in other cities and states across the country and collaborative discussions with the advisory group of stakeholders and experts. The policy tools have been prioritized by the advisory group and bundled to demonstrate synergies between options and lay the foundation for an implementation strategy. The policy tools are described in detail in the Financial Feasibility Analysis (Part 1 of the Task 3& 4 report). Tools prioritized by the advisory group are listed in Figure 4-1

along with other policy options assessed in the study listed as “complementary tools.”

Figure 4-1. Priority Policy Tool Bundles



The purpose of the return on investment analysis is to compare the relative impact that the priority tools could have on brownfield redevelopment. Because the policies have not yet been fully developed and it is uncertain what eligibility criteria, geographic constraints, or other factors might affect their influence on redevelopment outcomes, the results should be considered order of magnitude, and are most useful for comparing the policies amongst each other to determine which are most likely to create the best return in absence of complete information about how they will be implemented.

4.1 Methods and Assumptions

The return on investment analysis uses both financial modeling and comparison of actual results from other states to roughly estimate the potential effect of implementing the priority policy tools in Portland. The policy tools are designed to address different barriers to brownfield redevelopment, including financial, risk management, and regulatory framework. Therefore, they vary in their structure and not all policies can be directly compared. To address this issue, we have attempted to group policies that can be analyzed using similar methods: direct financial incentives and structural incentives (See table 4-1). Direct financial incentives can be considered at their core to represent a public investment in cleanup or

redevelopment of a property. The structural incentives support brownfield projects in other ways that are not reasonably quantifiable in financial terms.

A financial model based on the pro forma analysis is used to forecast the impact of the direct financial incentives, while comparisons to other states are used to estimate potential implications of the structural incentives.

Table 4-1. Policy Categories for Return on Investment Analysis

Direct Financial Incentives	Structural Incentives
Remediation Tax Credit	Public Land Bank
Job Creation Tax Credit	Contaminated Property Tax Assessment Reform
Redeveloped Brownfields Property Tax Abatement	Pooled Environmental Insurance
	Historical Insurance Recovery Support
	Model Purchase & Sale Agreement

Note: Analysis focuses on prioritized tools and does not include “complementary tools”

Direct Financial Incentives

The methodology for evaluating these policies builds on the pro forma analysis of prototypical brownfield redevelopment scenarios presented in Section 2.2. The following steps were taken to estimate the degree to which the direct financial incentives could reduce the financial feasibility gap of prototypical projects:

- Assumed a 10 year period for projecting impacts
- Calculated amount of credit that would be eligible for the project
 - Based on estimated cleanup cost for the remediation tax credit
 - Based on employment creation potential for the job creation tax credit
 - Based on increase in assessed value after redevelopment for property tax abatement
- Added amount of credit to financial feasibility gap of development pro forma
- Selected development scenarios that are financially viable (i.e. redeveloped value is greater than costs or financial feasibility gap of less than \$(0.50) / square foot).

- Assumed that 50 % of sites that are financially viable will redevelop and participate in the incentive program. This assumption was necessary to ensure that estimates are sufficiently conservative; it is based on review of similar programs in other states.

For projects that were projected to be feasible as a result of the incentive, to proceed to redevelopment, and to participate in the program, the public benefits model factors were applied to estimate the acres of property redeveloped, employment potential, and tax revenue forecasts. Note that the forecast of annual tax revenue generation was limited to one year to conservatively account for absorption rate of the property.

Structural Incentives

The structural incentives do not lend themselves to application of the pro forma model. This analysis estimates the effect of these tools based on outcomes experienced in comparable programs in other states. The quantifiable results demonstrated by other states were then applied to Portland with adjustments made based on best professional judgment for factors such as market size (to normalize comparison with larger population cities or states).

As with the analysis of the direct financial incentives, the estimates of job creation and tax revenue generation were calculated based on the acres of brownfields projected to be redeveloped. The method used to analyze these policy options does not allow for quantification of impacts based on each typology, but only as an aggregate across all of Portland.

Superfund Policies

There are no direct comparable programs for the innovative approaches proposed for facilitating redevelopment of upland properties near the Portland Harbor Superfund site. To provide the opportunity for a comparison with the other policy options, some basic assumptions have been made to estimate the number of properties that may be affected by these policies. The pro forma development scenarios are then used to calculate the potential economic impacts.

4.2 Brownfield Remediation Tax Credit

The State of Oregon could provide an income tax credit connected to the costs of conducting site investigation and environmental cleanup. This program would directly reduce the financial impacts of remediation and improve the balance sheet for brownfield projects. Unlike some grant programs, the incentive can be designed to be applicable to both private and public sector entities.

A brownfield remediation tax credit for Oregon could be modeled off the existing programs operating in 13 other states. Based on the experience of those states, the key features that make the tax credit program effective are:

1. Minimize administrative burden. Some states make the incentive fully automatic, so that participants simply document and claim the credit when they prepare their taxes.
2. Make credits transferable. Allow participants, including tax exempt non-profits to generate upfront cash to support cleanup by selling the credits to a third party.
3. No project limit. Allow the tax credit to apply to the full cost of remediation, without setting a ceiling (such as \$500K per project).

For the purposes of conducting the return on investment analysis the following assumptions were made regarding the structure of the brownfield remediation tax credit

- Tax credit amount set as 50% of remediation costs
- No cap for individual projects or the entire program
- No needs testing – fully automatic based on qualifying expenditures
- Transferable credits, enabling it to work for non-profit-led projects

Results

Based on the assumed program structure and penetration, the brownfield remediation tax credit would support redevelopment of approximately 150 acres of property in Portland (See Table 4-2). Industrial properties comprise over half of that land (approximately 95 acres). The public investment in the tax credit necessary to achieve that result would be approximately \$7 million.

Table 4-2. Estimated Public Return on Investment of Brownfield Remediation Tax Credit

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	23	7,030	\$ 10.5 M	\$ 52.2 M	\$ 3.1 M
2.Mixed Use Hubs	12	520	\$0.44 M	\$3.0 M	\$ 0.38 M
3a.Main Street West	11	320	\$ 0.62 M	\$ 2.5M	\$ 0.37 M
3b.Main Street East	9	340	\$ 0.22 M	\$ 1.7 M	\$ 0.29 M
4.Central City Industrial	0	0	\$0	\$0	\$0
5.Standard Industrial	70	1,220	\$ 1.6 M	\$ 11.2M	\$ 2.3 M
6.Superfund Shadow	17	300	\$ 0.39 M	\$ 2.7 M	\$ 0.55 M
7.Harbor Waterfront	8	90	\$ 0.14 M	\$ 0.96 M	\$ 0.25 M
Total	150	9,820	\$13.9 M	\$ 74.2 M	\$ 7.2 M

4.3 Brownfield Jobs Tax Credit

This incentive provides a tax credit to businesses based on the number of new jobs created by a completed development. This type of program creates an incentive that is directly connected to the employment and economic benefits of brownfield redevelopment. Several other states, including Florida have enacted this type of financial incentive.

The assumed structure of the job tax credit for the purposes of the return on investment analysis is:

- Value of tax credit is \$2,500 for each permanent job (excludes short term construction and cleanup jobs)
- Analysis assumes all jobs would be “new” and there is no minimum number to receive the credit (such as at least 10 jobs to receive credit)

Results

The financial investment of the brownfield jobs tax credit would turn approximately 150 acres of property financially viable to redevelop. The total value of the tax incentive for that acreage would be approximately \$24.5 million. The bulk of the tax incentive, approximately 70% (\$17.5 million) would be directed to the Downtown High Density typology. This outcome is driven by the density of high paying jobs in downtown. If Portland decided to focus this program on creation of industrial jobs, the credit could be limited geographically to those areas and would be forecasted to promote redevelopment of approximately 100 acres with a total tax credit value of approximately \$4 million.

Table 4-3. Forecasted Public Return on Investment of Job Creation Tax Credit

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	23	7,030	\$ 10.5 M	\$ 52.2 M	\$ 17.6 M
2.Mixed Use Hubs	12	520	\$0.44 M	\$3.0 M	\$ 1.3 M
3a.Main Street West	11	320	\$ 0.62 M	\$ 2.5M	\$ 0.80 M
3b.Main Street East	9	340	\$ 0.22 M	\$ 1.7 M	\$ 0.85 M
4.Central City Industrial	0	0	\$0	\$0	\$0
5.Standard Industrial	70	1,220	\$ 1.6 M	\$ 11.2M	\$ 3.1 M
6.Superfund Shadow	17	300	\$ 0.39 M	\$ 2.7 M	\$ 0.74 M
7.Harbor Waterfront	8	90	\$ 0.14 M	\$ 0.96 M	\$ 0.23 M
Total	150	9,820	\$13.9 M	\$ 74.2 M	\$ 24.6 M

4.4 Redeveloped Brownfield Property Tax Abatement

A tax abatement gives land owners a reprieve for payment of property taxes for a set period of time after a development is constructed. Oregon currently offers the Enterprise Zone as one mechanism that abates property taxes on economic development improvements within designated areas of a community. Abatements last for 3 to 5 years in urban areas and up to 15 years in rural areas.

Key assumptions for this analysis regarding an expanded property tax abatement program could operate include:

- All brownfield properties are eligible for tax abatement, even if they are located outside of Enterprise Zones.
- Properties are eligible for the abatement if the remediation costs are greater than 10% of the property's current assessed value
- The tax abatement applies only to new assessed value generated by the capital improvements to the property
- The tax abatement continues for three years
- The cost of the abatement is equal to the net present value of the abatement over three years
- Individual projects are capped at the cost of remediation; otherwise, there is no cap for individual projects nor the entire program
- There is no needs testing—it is fully automatic based on qualifying expenditures

Results

The financial investment of the property tax abatement would result in approximately 160 acres of property becoming financially viable to redevelop. The total value of the tax incentive for that acreage would be approximately \$16.8 million. Industrial properties comprise about 60% of the land.

Table 4-3. Forecasted Public Return on Investment of Property Tax Abatement

Brownfield Typology	Land Re-developed (acres)	Jobs Potential	Annual Portland Tax Revenues	Annual State + Local Tax Revenues	Value of Tax Credit (Public Cost)
1.Downtown High Density	24	7000	\$10.6 M	\$62.8 M	\$6.2 M
2.Mixed Use Hubs	12	520	\$0.4 M	\$3.5 M	\$0.8 M
3a.Main Street West	20	570	\$0.6 M	\$3.1 M	\$3.1 M
3b.Main Street East	9	340	\$0.2 M	\$1.9 M	\$0.6 M
4.Central City Industrial	0	0	\$0.1 M	\$0.6 M	\$0.0 M
5.Standard Industrial	70	1220	\$1.6 M	\$12.8 M	\$4.6 M
6.Superfund Shadow	17	300	\$0.4 M	\$3.1 M	\$1.1 M
7.Harbor Waterfront	8	90	\$0.1 M	\$1.1 M	\$0.5 M
Total	159	10,100	\$14.1 M	\$88.8 M	\$16.8 M

4.5 Brownfields Public Land Bank

A public land bank creates an entity with the resources and long-term perspective to acquire and reposition brownfield properties without putting additional liabilities on Portland balance sheet. The land bank would operate with a clear mission and long-term plan for community revitalization. To be effective in repositioning contaminated lands, the land bank should have special powers, such as protection from environmental liability, authority to clear title, ability to issue bonds and use tax increment financing. 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 in a period of 5 to 10 years through sale of properties to the private market.

Key assumptions for this analysis regarding how a land bank program might operate in Portland:

- Initial capitalization of a \$25 million acquisition-redevelopment fund (assumed funds put directly into acquisition and redevelopment without administrative costs)

- Declining annual appropriated for the first five years of operation (such as \$10 million for year one declining to \$2 million for year 5)
- Land Bank would focus acquisition in challenging areas, such as Standard Industrial and Main Street East typologies.

Results

The assumptions provide a high level of initial investment targeted at properties with relatively low land value to provide a conservative estimate of the potential impact of a public land bank program. The initial investment through the first five years would total \$55 million of public funds that could potentially support acquisition and cleanup of 180 acres of property. These are subject to wide changes based on the portfolio of properties that could be acquired, the ability to purchase property at a discount and sell at a premium, and to obtain outside sources such as EPA grants to support cleanup. The land bank would likely operate like a private developer and focus on properties with the smallest financial gap and greatest redevelopment potential first. This approach could allow the land bank to use proceeds from early successes to subsidize investment in more challenging properties in the future.

Success of the public land bank is driven largely by four key factors:

- Ability to acquire property at discounted price
- Ability to obtain grants or other outside support to fund cleanup liability
- Portfolio of properties (balance of projects with large or small financial feasibility gap)
- Ability to recycle properties with low financial gap quickly back into productive employment use.

4.6 Reform Contaminated Property Tax Assessment

Property tax assessment policy in Oregon is currently considered by some to be a disincentive to cleanup. The state administrative rule regulating assessment for property taxes establishes a method to reduce the value of contaminated land by the cost of the environmental liability. This policy can result in substantial decrease in property tax payments on a brownfield property. While the market value of property is certainly impaired by contamination, a modest reform of this policy could be to include a time limit to reduce a disincentive to property owners to address the problem.

While there is some anecdotal information about the impacts of the current policy on individual properties, research has not been able to support an analysis of the current policy or a potential change across the entire city.

4.7 Pooled Environmental Insurance

A number of private insurers provide policies that protect against discovery of unknown environmental contamination and potential for contribution claims or third-party personal injury suits. These pollution liability insurance policies can be critical risk management tools in facilitating a brownfield land transaction, but they can also be costly or difficult for smaller projects to obtain. Portland could establish a pooled environmental insurance program through pre-selecting insurers and establishing uniform terms and conditions to reduce transaction costs. Portland could also potentially subsidize the premiums for environmental insurance policies to promote certain types of projects that meet multiple policy goals. A specialized environmental insurance pool could be established to address risk related to Superfund liability.

To estimate the potential impacts of this program, research was conducted on three other states that currently support pooled environmental insurance: Massachusetts, Wisconsin, and California. The state of Massachusetts was able to provide the most concrete estimates of the performance of the program. Massachusetts provides a state subsidy of 50% of insurance premiums with a limit of \$50,000 for private projects and \$150,000 for public projects. Massachusetts reported that \$6.6 million in state funds to subsidize insurance premiums assisted 330 projects that in turn created 27,000 jobs and \$4.1 billion in new investment. That equals a leverage ratio of over 600 to 1. While these numbers are impressive, it is important to note that these funds assisted projects and it was unlikely to be the lone source of public support.

To estimate how this program could transfer to Portland, a return on investment was calculated with the following assumptions:

- Five projects per year use environmental insurance program
- The average project size is three acres (based on brownfield inventory)
- Public subsidy of \$50,000 per project to reduce insurance premium
- Attribute 50% of public benefits to the insurance policy, since environmental insurance typically facilitates a business deal that may be supported by other public investments that make it financially feasible.

Results

As an order of magnitude estimate of the potential scale of impact of the pooled environmental insurance program jobs, it is forecasted that over a 10 year period, 50 projects accounting for 150 acres would be remediated and redeveloped. If Portland subsidized premiums for these projects at a level similar to Massachusetts, the total public investment would be approximately \$2.5 million.

4.8 Historical Insurance Recovery Support

Portland could provide technical support to property owners in submitting a claim on historical insurance policies for environmental impacts. Prior to the mid 1980's, commercial general liability policies did not contain exclusions for liabilities caused by environmental damage. Since federal and state law has made liability for environmental contamination retroactive, cost recovery may be pursued from historical insurance policies that were in place when pollution occurred and that covered the property owner, operators, or other potentially liable parties. It takes technical expertise and resources to make a claim on a historical insurance policy, but case law makes Oregon one of the most favorable states in the country for these actions and they are becoming standard practice. In some cases, historical insurance claims have supported nearly 100 % of site assessment and remediation costs for projects ranging from small gas station cleanups to large, complex industrial sites.

Oregon Department of Environmental Quality has contracted with firms specializing in historical insurance recovery in the past to support cleanup of orphan sites. A relatively minor investment in staff or contractor resources could potentially generate millions of dollars to support assessment and cleanup of contamination. The insurance archaeology service could be provided as a fee-for-service payable upon settlement with the insurance carrier as a way to minimize expenditure of public resources.

For the purposes of quantifying an order of magnitude forecast of the impacts of this program, the following assumptions are made:

- Three insurance settlements completed per year
- \$200,000 per year annual operating budget for program (one full time employee to manage with administrative and overhead included and with program reimbursed expenses of contractor upon settlement of claims)

Results

Based on those assumptions, the Historical Insurance Recovery program could be projected to facilitate cleanup and redevelopment of 30 brownfields representing 90 acres over a 10 years period. The public costs of this program are estimated at \$2 million

4.9 Model Purchase and Sale Agreement

The legal transaction of contaminated property is a complicated and risk-laden operation. Portland could reduce transaction costs and uncertainty by creating a model purchase and sale agreement that includes indemnification terms and standard transfer issues such as due diligence period, timing of cleanup, warranties, and inspection periods. Such a model agreement would require few city resources to accomplish and could be useful for a large number of transactions. However, it is assumed that this tool, by itself, would not be considered of sufficient impact to account for redevelopment of a significant number of properties.

4.10 Superfund Policies

Policy proposals related to the Portland Harbor Superfund site are targeted to upland properties that are considered to be in the “Superfund shadow.” The brownfield inventory estimates that there are at least 78 acres of potential contaminated, underutilized sites in this area, however these policies will facilitate transactions across a larger 112 acre area where investment has been hindered by the risk and uncertainty of liability associated with the Superfund sediment cleanup. These properties are not on the waterfront, but could be connected to sediment contamination in the harbor through the stormwater system. As the owner and operator of the stormwater system, Portland has some interest in reducing these potential sources of historic and on-going contamination.

Superfund Shadow Environmental Insurance Pool

To address “Superfund shadow” upland properties, Portland could allow project proponents to make a payment to Portland as closure for tailing environmental liability. Portland could in turn use those funds to buy insurance policies to cover a pooled group of sites. To be eligible to participate in the insurance pool, participants would be required to complete upland cleanup actions and implement stormwater best management practices. If the USEPA or other potentially liable parties seek contribution from that party, the claim would be directed to the environmental insurance policy.

For the purposes of quantifying a return on investment of the impacts of this program, the following assumptions are made:

- Assume two projects utilize the program per year (average size 3 acres)
- Assume \$250,000 per year annual operating budget for program (one part time employee, along with legal support, administrative support and overhead included).

Results

Based on those assumptions, the Superfund Shadow pooled environmental insurance program could be projected to facilitate cleanup and redevelopment of 20 brownfields representing 60 acres of land over a 10 years period. The public costs of this program are estimated at \$2.5 million.

Other Superfund Policy Options

The two other proposed options to promote property redevelopment in the Superfund Shadow are both related to federal regulatory policy and settlement of legal liability.

Federal Prospective Purchaser Agreements would provide a protection for new investors through a formal contract with the state that would be recognized by the US EPA. The program would build on the successful model of prospective purchaser agreements (PPA) currently in operation through Oregon DEQ. The state does not have authority to settle liability under the federal Superfund Law, so this recommendation would create a framework for the USEPA to recognize and approve PPAs in concert with DEQ.

The CERCLA de minimis Settlement policy concept is simply for USEPA to use its existing authority to provide expedited settlement agreements for owners of properties that likely cause minor or insignificant to the Portland Harbor.

Since both of these policies involve resources and policy decisions of the state and federal government, rather than financial investment, it is difficult to compare them to the other policies using the pro forma model. In general, it is assumed that these policies would involve a relatively minor investment of public funds and could be critical to allowing redevelopment of several properties a year, similar to the Superfund environmental insurance tool.

4.11 Return on Investment Summary

The return on investment analysis provides a framework for comparison of the potential economic impacts of proposed policies to promote brownfield cleanup and redevelopment. By necessity, the analysis is based on a number of assumptions and provides an order of magnitude estimate of benefits. More accurate estimates of the outcomes of implementing any of the policies can be made after the tools have been defined in greater detail by elected officials and implementing agencies. This relative analysis does provide insight into the potential impacts of implementing the policies such as:

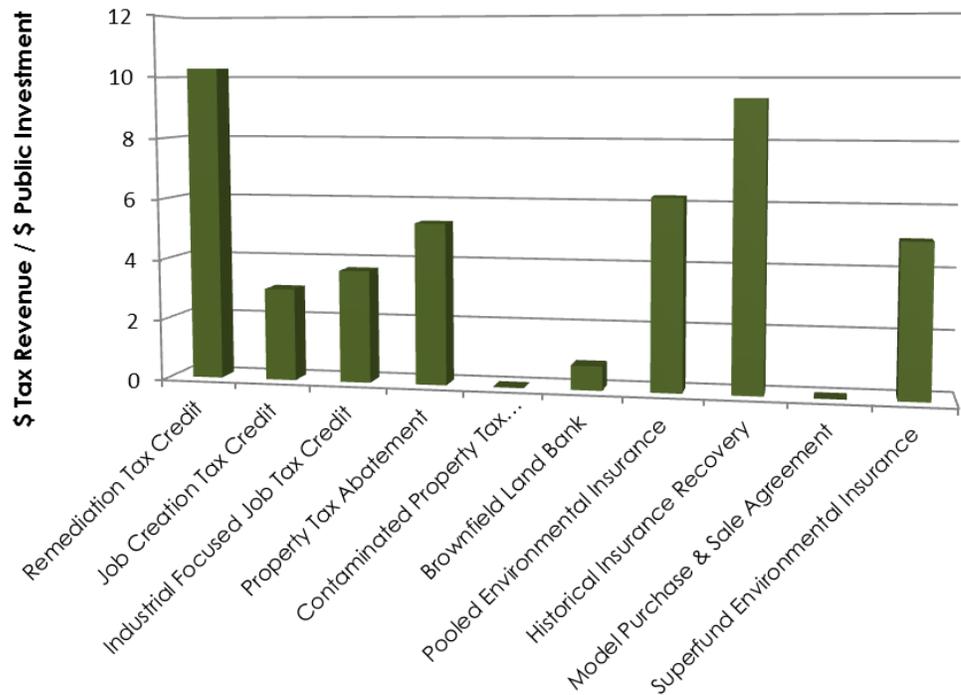
- The Remediation Tax Credit, Job Creation Tax Credit, Brownfield Land Bank, Property Tax Abatement, and Pooled Environmental

Insurance appear to have the greatest impact with each potentially facilitating redevelopment of about 150 acres.

- Greatest return on total tax revenues relative to public investment is provided by the Remediation Tax Credit, Pooled Environmental Insurance, and Historical Insurance Recovery (See Figure 4-2). These tools leverage private investment or bring outside resources to projects, thus minimizing the public funds needed to help a project achieve financial feasibility.
- Tax credits and tax abatements appear to have great potential to support redevelopment of brownfields that are close to financial feasibility, including the Standard Industrial, Downtown High Density, and Mixed Use Hub typologies
- To drive redevelopment in the Superfund Shadow and Harbor Waterfront typologies, multiple policy tools are needed, such as combining the Public Land Bank with Pooled Environmental Insurance, and a Remediation Tax Credit.
- There is potential for synergy between policies. For example, the effectiveness of a Public Land Bank would be greatly enhanced by a Remediation Tax Credit and Dedicated Brownfield Cleanup Fund to offset the costs of addressing contamination. The interactions between policies are too complex to quantify in a meaningful way in this analysis.
- Much of the employment and tax revenue benefit of brownfields is focused in office, commercial, and mixed use development in strong markets. These areas are also the most likely to redevelop without public investment.
- The implications of the costs and benefits of the different tools are distributed across local governments and the state is an important consideration. For example, the Remediation Tax Credit would provide tax reduction in state income tax and/or Portland business income tax, while the public costs of the Property Tax Abatement would be borne by local taxing districts.

- Incentives for redevelopment in industrial areas have the potential to reduce the projected shortfall in land supply, but will require significant investment with relatively low increase in Portland tax revenues. However, the tax revenues generated to Multnomah County and the State of Oregon for industrial redevelopment are substantial and support a rationale for shared investment in Portland industrial lands as a regional economic asset.

Figure 4-2. Return on Public Investment



Notes: Data was not available to estimate impact of Property Tax Assessment reforms or Model Purchase and Sale Agreement.

In setting policy priorities, the potential financial returns of a given policy should be considered with a number of other factors including costs and complexity to implement. Figure 4-3 provides a conceptual graphic of how the brownfield policy options align in terms of

- Potential impact—a combined relative ranking of acres potentially redeveloped and associated employment and tax revenue benefits. Policies forecasted to promote redevelopment of a large number of brownfields and produce employment and tax revenue benefits are ranked high and located on the right side of the graphic.
- Public Cost and Complexity—relative ranking that considers the level of public investment, administration of the program, and complexity. It has been the experience of other states that the private sector

responds much more favorably to brownfield incentives that can be accessed automatically with minimal administrative requirements. Programs with lower public costs and potentially streamlined operations are located on the top side of the graphic.

In terms of potential impact and public cost and complexity the highest rated policies are the Remediation Tax Credit and Historical Insurance Recovery Support. The Brownfield Land Bank has a high potential impact, but will likely require significant investment of public resources for it to be successful. Several low cost, low impact policies such as creating a Model Purchase and Sale Agreement represent actions Portland may want to take to build momentum for larger endeavors.

Table 4-4. Return on Investment Summary

Summary	Acres	Jobs	Total Cost	Portland Tax Revenues	Total State & Local Tax Revenues	Tax Revenue / Cost	\$ Public Investment / Acre	\$ Public Investment / Job
Remediation Tax Credit	150	9,800	\$7,221,000	\$13,970,000	\$74,237,000	10	\$48,000	\$700
Job Creation Tax Credit	150	9,800	\$24,557,000	\$13,969,500	\$74,237,000	3	\$163,000	\$2,500
Industrial Focused Job Tax Credit	100	1,600	\$4,028,000	\$2,133,500	\$14,840,500	4	\$40,000	\$2,500
Property Tax Abatement	159	10,100	\$16,800,000	\$14,100,000	\$88,800,000	5	\$106,000	\$1,700
Contaminated Property Tax Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brownfield Land Bank	180	8,000	\$55,000,000	\$6,525,300	\$43,456,400	1	\$305,000	\$6,900
Pooled Environmental Insurance	150	1,850	\$2,500,000	\$2,271,400	\$15,584,850	6	\$17,000	\$1,400
Historical Insurance Recovery	90	2,200	\$2,000,000	\$2,725,700	\$18,701,800	9	\$22,000	\$910
Model Purchase & Sale Agreement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Superfund Environmental Insurance	60	1,500	\$2,500,000	\$1,813,300	\$12,466,200	5	\$42,000	\$1,670

Notes:

Job creation and tax revenue forecasts based on public benefit analysis model described in Section 3. Tax revenues represent annual revenues for one year.

For all policies except Remediation Tax Credit, Job Tax Credit, and Property Tax Abatement assumed 3 acre average brownfield property size, based on inventory of potential brownfields in Portland and assumed job creation and tax benefits based on Flex-Space / Business Park development scenario.

Figure 4-3

POLICY IMPACT AND COSTS SUMMARY ANALYSIS

