NORTHWEST

SWAN ISLAND/LOWER ALBINA

RIVERGATE

AIRPORT

INNER EASTSIDE

COLUMBIA CORRIDOR EAST

BANFIELD

OUTER SOUTHEAST

Industrial Districts

PORTLAND, OREGON

2004 Atlas

CITY OF PORTLAND, OREGON BUREAU OF Planning

PDC PORTLAND DEVELOPMENT COMMISSION

RIVER RENAISSANCE

Freightliner Corporation, a truck manufacturer, is the largest employer at Swan Island. High-wage, blue collar jobs are one of the enduring strengths of Portland's quality of life.

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Introduction

Why an Industrial Districts Atlas?

Portland's industrial districts are unknown territory to most residents. This atlas was chosen as a tool to make these districts more widely accessible and understandable. A combination of maps, numbers, text and images is used to give a broad description of each district and appeal to readers who prefer one media over another. Maps, however, are the heart of the document. They reveal at a glance how many aspects of a place fit together and provide a detailed context that one can come back to repeatedly as a reference. The intended audience is the community, to better understand this less visible part of the city; industrial businesses and developers, to make more informed investments; and policy makers, to respond to the needs of these critical places to the local economy.

Industrial districts are functional, utilitarian parts of the city. They provide a place for much of a its "traded sector" activity, such as factories and interregional distribution facilities, which bring income into the region and make up its economic base. They also provide a place for locally serving industrial functions, such as utilities, local distributors, construction yards, and various industrial services. And industrial jobs provide an important entryway into the middle class for many city residents.

How does a healthy, resilient industrial district look and function? How do industrial districts differ? What factors influence the mix of industries in a district? What is the capacity for growth in a given district? The recently completed inventory of Portland's 15,500 acres of industrial land offers a broad information base to explore these questions. Also, Portland has been an exception to the recent pattern of urban industrial decline in many large U.S. cities as global competition has expanded. As a result, Portland in 2004 offers a fortunate opportunity of time and place to understand urban industrial districts. Industrial jobs grew by 37 percent in the Portland metro area (Oregon portion) between 1980 and 2000, compared to 12 percent growth nationwide. While manufacturing jobs declined in the U.S. by 9 percent during these decades, they increased by 18 percent in the metro area. Most of this growth, especially in high tech manufacturing and wholesale trade, has occurred in the expanding outer parts of the region where more vacant land is available. Still, the City of Portland is the diverse and heavy industrial core and distribution hub of the metro area.

How We Got Here

A wealth of recent research has shed light on the region's industrial areas. Extensive geographic information system (GIS) data has been made available by Metro and Portland's Corporate GIS program. Local clusters of firms in the distribution/logistics, metals, transportation equipment, and high tech industries have been identified and explored (Institute of Portland Metropolitan Studies, 1999; ECONorthwest, 2002; Martin Associates, 2001 and 2003). The regional industrial land supply and demand have been analyzed and estimated (Otak, 1999 and 2001; Metro, 2002). Growth of freight tonnage handled in the region has been projected by mode (DRI-WEFA, 2002). And the needs of some specific industrial areas in Portland have been studied through River Renaissance and area planning projects (Portland Bureau of Planning, 2001 and 2003; E.D. Hovee & Company, 2003).

This atlas builds on these precursors and particularly on the *Citywide Industrial Land Inventory Assessment* completed in 2003 for the Portland Development Commission. That project consisted of a citywide inventory of industrial land (industrial and general employment zones and corresponding Comprehensive Plan areas) by the Bureau of Planning, a 20-year forecast of industrial land absorption by ECONorthwest, and development feasibility case studies on 37 vacant or underutilized sites, including 20 sites added this year, by Group Mackenzie. The inventory was extensively refined and updated to develop this atlas. Refinements in site boundary determination, facility types, and vacant land classification are described in Chapter 3.

What the Atlas Is and What It Is Not

The atlas presents a snapshot in time. While giving an impression of the way things are, it actually peers into a dynamic industrial system. Some aspects are changing quickly, while others have looked similar for decades. County and metro area employment trends are briefly cited for context, but comparable historical data is not available for most of the information presented here at the site and district levels. The atlas does provide a baseline of information that potentially can be repeated in the future to analyze trends among districts and types of sites.

The atlas reflects a methodology for organizing data. It presents over a year of work compiling and developing data

sets that are linked to each site in the city's industrial districts. However, it masks many details that make each site different, and the data it draws from is limited. A balance is intended between case-by-case ground-truthing to describe such details and a sound methodology that can be replicated objectively and repeated in the future to analyze trends.

The atlas is primarily a set of maps. It emphasizes land and geography and does so at a district level. Other critical dimensions of the industrial system, such as output, labor, organizational strategy, and freight flows are described in other documents and given less attention here. Additionally, the region and nation are basic levels of economic geography that get less emphasis in the atlas, in order to focus on the most descriptive data available at the site level. The result is intended to shine new light on this core feature of the city and the industrial system.

How to Read This Atlas?

Organization of the Document

The main body of the atlas is Chapter 2, a description and series of maps of the city's eight industrial districts. Chapter 1 describes the citywide industrial land supply, aggregating the district information of Chapter 2 and presenting it in more detail. Chapter 3 summarizes the primary methodological steps of the atlas and lists data sources, references, and a glossary of terms used.

A 20-Minute Tour

Start with the citywide map on pages 6-7 that depicts the industrial districts in context and the largest industrial employers. The typology of "How Districts Differ" on pages 10-11 suggests the general structure of the city's industrial areas. The half-page summaries at the beginning of each district section in Chapter 2 describe the character and features of the eight districts. And the facilities map in each district section depicts the land use pattern (focusing on general types of industrial facilities), the freight transportation system, and a "figure ground" delineation of structure footprints.

Where to Look if I Don't Understand Something?

1. The footnotes in the tables and the Information Sources section of each map are intended to clarify the most commonly asked questions.
2. The glossary on page 111-112 describes most of the terms used, including the column headers of tables.
3. The layouts of several tables are described on this and the next page.
4. A table of information sources used is on page 109. Chapter Three also includes a detailed description of the steps used to determine the inventory area, sites, facility types, and categories of vacant land.
5. Three maps are presented of each district, showing aerial photos, land use patterns, and the vacant land supply. If one map does not answer a question you might have about a site, look at all three together.

Understanding the Layout of Tables

Much of the information in the atlas is presented in tables, using the same format for each district. A few examples of selected tables are shown below to clarify the information presented.

ESTABLISHMENTS AND JOBS

This table shows the mix of industries in a district by how many businesses and jobs they represent.

NAICS is the North American Industrial Classification System, used here to identify the industries in each row.

Each establishment is an employer at a given address.

Total employment of the sector (or industry) within the district.

Average employer size (number of employees).

A breakdown of each sector's share of the jobs in the district, compared with that among all 8 districts.

A sector is a group of industries, such as manufacturing. The top half of the table breaks down the total jobs and establishments in a district by sector.

The bottom half of the table shows the number of jobs and establishments in the district's highest employment industries.

ESTABLISHMENTS AND JOBS, 2002

	NAICS	Establishments	Jobs/Establishment	Jobs	% of All Jobs in Area: District	% of All Jobs in Area: All Districts
All Sectors		892	27	23,938	100%	100%
Production & Raw Materials		225	25	5,693	24%	34%
Manufacturing	311-339	127	32	4,085	17%	25%
Construction	236-238	76	17	1,270	5%	8%
Highest Employment Industries						
Air Transportation	481	25	172	4,303	18%	4%
Wholesale, Durable	423	126	19	2,393	10%	9%

FACILITY TYPES

This table shows the mix of industries in a district by how many sites and acres they occupy.

Developed area is the portion of a site left after excluding land that is unimproved (vacant) or not available for development (open space).

Breakdown of the occupied, developed land in the district by facility type, compared with that in all 8 districts.

The number of sites and their total acreage in each facility type.

Average developed acres per site.

A facility type is identified for each occupied site, classifying it by the industry of its occupant or its primary use.

Occupied sites have a current tenant, and unoccupied sites do not.

Heavy industrial sites have large-scale operations or rail, runway or harbor use.

FACILITY TYPES

Facility Type	Sites	Total Acres	% of Occupied** Developed Area* Acres	Average Size	Developed Area District	Developed Area All Districts
Occupied Sites**	729	5,107	3,943	5.41	100%	100%
General Industrial	84	304	**257**	3.06	**7%**	17%
Manufacturing	50	242	199	3.97	5%	13%
Utilities	8	31	30	3.71	1%	2%
Construction	26	31	28	1.07	1%	2%
Unoccupied Sites	145	580	116	0.80		
Heavy Industrial	24	2,335	1,759	73.29	45%	48%

ENVIRONMENTAL CONSTRAINTS

This table quantifies the land area in the district affected by various environmental constraints.

Share of total district acres.

Open space in the atlas describes land that is generally not available for development, including particular zones, mitigation sites, public drainage facilities, and 10-year floodplain (Johnson Creek only).

The acreage affected by various constraints is quantified. Much of this area is affected by multiple, overlapping constraints. A composite acreage identifies land affected by any of the constraints shown.

The combined acreage that is either identified as open space or affected by the other constraints shown.

ENVIRONMENTAL CONSTRAINTS

	Acres	% of District
Open Space*	321	6%
Constrained Land (Composite)	1,315	23%
100 Year Floodplain	368	6%
Other 1996 Inundation Area	175	3%
Title 3 Wetlands	144	3%
10% or Greater Slope	40	1%
Goal 5 Significant Habitat	1,008	18%
Open Space or Constrained	1,344	24%

VACANT LAND

This table quantifies the vacant land area in the district and classifies this land by types of constraints.

Land on the market for sale, tracked by CoStar.

Vacant land in public or utility ownership, with some exceptions.

Buildable, private land (in blue) is the core of the vacant land supply. "Buildable" means that open space and partly buildable land (e.g. floodplain) are excluded. "Private" means that public and utility sites are excluded.

Tiers A-D identified by Metro address various availability and use constraints. Tier E is other buildable land.

Vacant land affected by floodplain, slope, wetland or habitat, except open space.

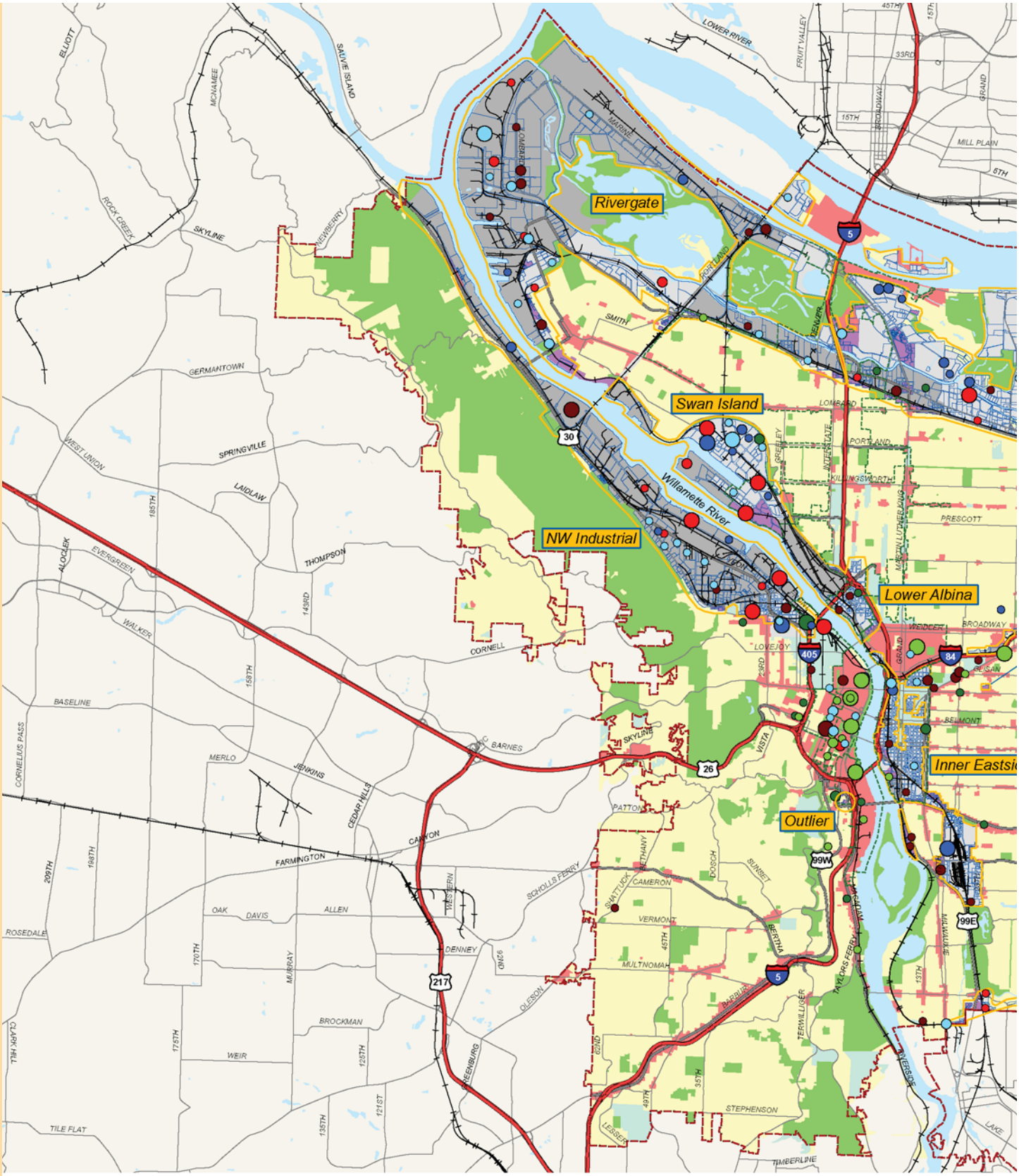
Vacant land is unimproved land identified by Metro from aerial photography. Unimproved outdoor storage areas are included.

Vacant land on sites where environmental cleanup or investigation is underway.

VACANT LAND (UNIMPROVED ACRES) 2002

	All Vacant Land	Buildable, Private Land* Total	Unconstrained Tier A	Buildable Tier B - E	Partly Buildable Tier F**	Public & Utility Sites	Land for Sale
All Vacant Sites	1,440	766	16.4	713.8	425.7	132.8	134.7
Potential Cleanup Sites	536	318	0.0	315.2	158.7	33.3	

Citywide Industrial Land Supply



Portland's Industrial Districts and Largest Industrial Firms

Employment: Industry / Size

Metals & Equipment Manufacturing
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Transportation
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Construction
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Other Manufacturing
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Wholesale
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Communications & Utilities
- 100 - 249 Employees
- 250 - 499 Employees
- 500 + Employees

Zoning

- Heavy Industrial
- General Industrial
- General Employment
- Open Space
- Commercial
- Residential
- Central Employment

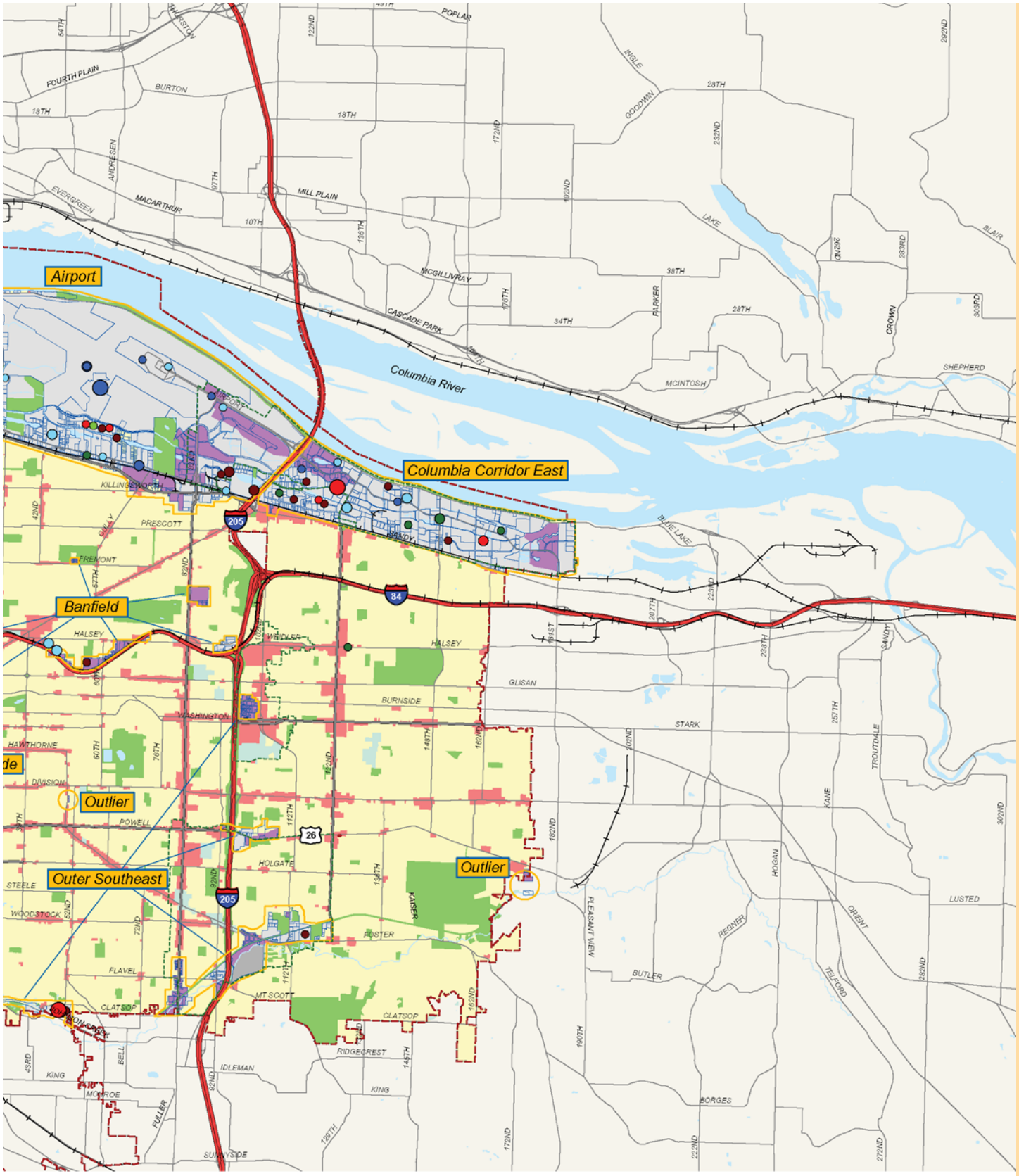
- City of Portland Boundary
- Urban Renewal Area Boundary
- Inventory Area Boundary
- Site Boundary

Transportation Infrastructure

- Railroads
- Freeways
- Major Truck Streets
- Streets

N

0 1,900 3,800 7,600 11,400 15,200 Feet



Information Sources:
- Sites - Bureau of Planning, based on taxlot information provided by City of Portland Corporate Geographic Information System and Multnomah County Assessment and Taxation (February 2003).
- Employers - Inside Prospects (2003).
- Zoning - Digitized from bureau zoning maps by Roy F. Weston, Inc. for the Bureau Planning. Registered to taxlots.
- Urban Renewal Boundary - Created and maintained by the Portland Development Commission (Updated April 2004).
- Railroads - Metro from 2000 Regional Transportation Plan.
- Truck Streets - Portland Office of Transportation from Transportation System Plan (2002).

- Information sources and methodology are described further in Chapter 3.

Investing in Portland's Future

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CITYWIDE INDUSTRIAL LAND SUPPLY

A 150-YEAR INDUSTRIAL HISTORY

How did Portland become an industrial city?

1800

1850's

Portland originated as a seaport for Oregon's timber and grain exports to other regions. The city was sited at the farthest accessible point of inland navigation.

1900

Turn of the 20th Century

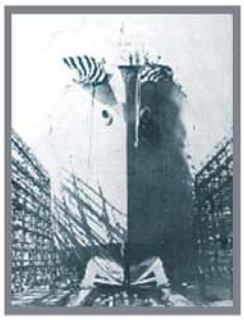
Portland's railroad connection to the east was completed in 1883 along the Columbia River, a sea level route through the Cascades which still rivals that of any West Coast city. Rail lines were completed to San Francisco in 1886 and to Seattle in 1909. The Port of Portland was created in 1891 to dredge the Columbia River channel from the ocean to Portland Harbor.

WWI and WWII

Wartime shipbuilding transitioned into enduring local industries in metals and equipment manufacturing. The City of Portland Commission of Public Docks began construction of Terminals 1-4 in 1920.

Postwar years

Columbia River and Columbia Slough dike construction made way for over 5,000 acres of industrial development in the Columbia Corridor. The Portland-Columbia Airport was completed in 1940 on the site of today's Portland International Airport (PDX).



1964

The Port of Portland purchased 2,000 acres to be developed as Rivergate Industrial District.

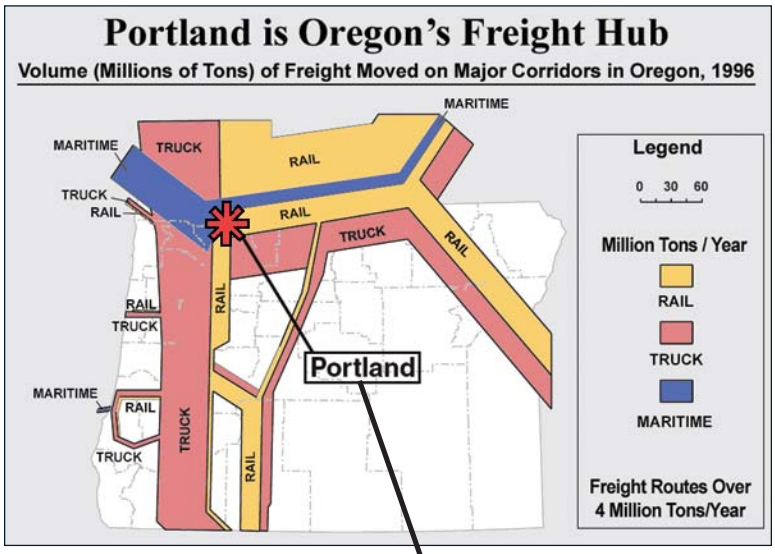
1980

A national leader in land use planning, Portland adopts industrial sanctuary policy and zoning.

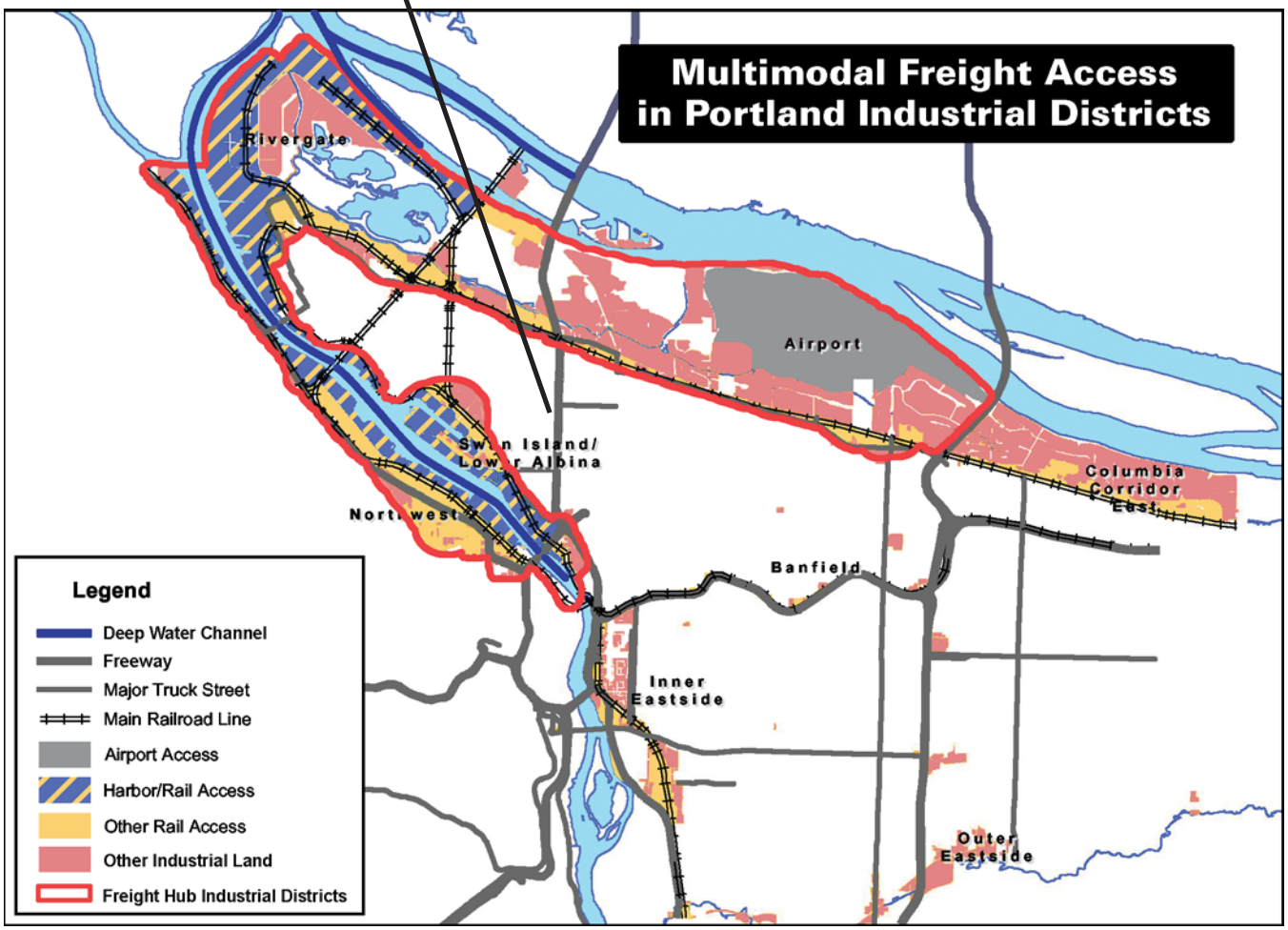
2000

PORTLAND'S FREIGHT ADVANTAGE

Advantageous freight access is one of the defining historical features of the city's industrial land supply. Portland is a West Coast seaport and distribution hub, like Los Angeles/Long Beach, the San Francisco Bay Area, and Seattle/Tacoma. These metro areas serve as gateways for international trade and as distribution hubs for the West Coast states. The adjacent map of Oregon depicts this distribution function. The lines on the map are the state's primary freight corridors and their widths represent annual tonnage of rail, truck, and marine cargo. The convergence of freight infrastructure in Portland—the seaport channel, the Upper Columbia barge routes, Oregon's two national railroads, its two interstate highways, the Olympic Pipeline, and Portland International Airport—comes together at the Portland Harbor and Columbia Corridor industrial districts.



Portland's legacy of freight infrastructure investments has key implications for its industrial future. For one, it would be very difficult to relocate this convergence of infrastructure that built up over a century, making Portland's harbor and Columbia Corridor districts uniquely advantageous locations for industrial land. Distribution and heavy products manufacturing have become major basic industries in these districts and the region. Portland appears to be well situated for continued growth in distribution activity, benefiting from increases in Pacific Rim trade and the expanding importance of logistics flexibility at multimodal hubs for the evolving distribution industry. Freight tonnage moving though the metro area is projected to double to 520 million tons between 2000 and 2030 (DRI-WEFA, 2002).



A TYPOLOGY OF DISTRICTS

How Do Portland's Industrial Districts Differ?

Portland's industrial districts span 15,500 acres. To describe this varied industrial land supply, eight districts are identified. They are geographically separate, except for the 11,000-acre Columbia Corridor industrial area that is separated into three districts, divided for simplicity by the I-5 and I-205 freeways. How do these eight districts differ? They generally fit into three types: freight hub districts, mixed industrial/employment districts, and dispersed areas. Each type differs in transportation access, site characteristics, and mix of industries.

Conclusions

Three types of districts stand out in Portland, indicating that their mix of industries, land use pattern, and regional infrastructure are closely interrelated:

- The freight hub districts centered along the harbor and airport comprise 80 percent (12,500 acres) of the city's industrial land. Heavy industrial facilities use 57 percent of that land.
- The Inner Eastside and Columbia Corridor East are mixed industrial/employment districts with nearly half of their jobs in service sectors.
- Small, dispersed industrial areas of varying character are also located along I-84, I-205 and Johnson Creek.

Freight Hub Districts

Portland's function as a West Coast freight distribution hub stands out as a defining feature of its industrial history and industrial land supply. This freight hub function is concentrated in the Airport, Rivergate, Northwest, and Swan Island/Lower Albina industrial districts. These 1,000+ acre districts are characterized by large shares of land area with marine, rail, or air access; heavy industrial facilities (rail, harbor, or runway usage, large-scale structures, or large outdoor maneuvering or storage area); and sites larger than 50 acres. Their leading employment sectors are transportation or manufacturing.

Airport is a 5,700-acre district, 47 percent of the land area with PDX runway access. Heavy industrial facilities use 45 percent of the occupied, developed land. Distribution firms provide 50 percent of area jobs.

Rivergate is a 4,050-acre district, 46 percent of the land area with harbor access and 61 percent with rail access. Heavy industrial facilities use 73 percent of the occupied, developed land. Manufacturing firms provide 50 percent of area jobs.

Northwest is a 1,700-acre district, 41 percent of the land area with harbor access and 67 percent with rail access. Heavy industrial facilities use 56 percent of the occupied, developed land. Manufacturing firms provide 44 percent of area jobs.

Swan Island/ Lower Albina is an 1,100-acre district, 38 percent of the land area with harbor access and 57 percent with rail access. Heavy industrial facilities use 51 percent of the occupied, developed land. Distribution firms provide 40 percent of area jobs.

Mixed Industrial/ Employment Districts

The Inner Eastside and Columbia Corridor East districts are characterized by high concentrations of service sector jobs and high jobs-to-acreage ratios relative to the other larger districts. They also have less land area in heavy industrial facilities and fewer sites larger than 50 acres.

Columbia Corridor East is a 1,700-acre district with 15 jobs per developed acre and 47 percent of its jobs in the service sectors. Only 7 percent of the occupied, developed land is in heavy industrial facilities.

Inner Eastside is a 630-acre district with 37 jobs per developed acre and 43 percent of its jobs in the service sectors. Only 20 percent of the occupied, developed land is in heavy industrial facilities (primarily Brooklyn Rail Yard).

SITE CHARACTERISTICS AMONG DISTRICTS

District	Acres	District Share	Average Site Size	50+ Acre Sites	Land Value/sq. ft. Avg.	Land Value/sq. ft. Sites >$6	Freight Access Rail	Freight Access Harbor	Freight Access Runway
All Districts	15,473	100%	4.3	41%	$4.67	18%	33%	19%	17%
Columbia Corridor	11,462	74%	7.1	48%	$4.40	11%	27%	16%	23%
Airport	5,686	37%	6.5	59%	$4.71	15%	5%	0%	47%
Columbia Corridor East	1,726	11%	4.9	5%	$4.56	10%	19%	0%	0%
Rivergate	4,050	26%	10.6	50%	$3.90	7%	61%	46%	0%
Inner City	3,406	22%	2.1	23%	$5.56	41%	60%	32%	0%
Inner Eastside	626	4%	0.7	9%	$9.68	73%	47%	1%	0%
NW Industrial	1,717	11%	3.5	27%	$4.99	34%	67%	41%	0%
Swan Isl./Lower Albina	1,063	7%	4.1	25%	$4.07	33%	57%	38%	0%
Dispersed Areas	605	4%	1.6	17%	$4.42	18%	8%	0%	0%
Banfield	117	1%	1.6	0%	$5.32	23%	25%	0%	0%
Outer Southeast	471	3%	1.7	22%	$4.13	17%	4%	0%	0%
Outliers	17	0%	1.4	0%	$4.59	16%	0%	0%	0%

INDUSTRY MIX AMONG DISTRICTS

District	Jobs*	District Share	Jobs/ Devel. Acre	Jobs by Sector* Mfg.	Constr. & Util.	Distri-bution	Services	Developed, Occupied Acres Heavy Industrial	Mfg.	Distri-bution
All Districts	101,389	100%	9	25%	9%	34%	32%	48%	13%	47%
Columbia Corridor	47,099	46%	6	24%	8%	39%	30%	50%	11%	48%
Airport	23,938	24%	6	17%	7%	50%	27%	45%	5%	47%
Columbia Corridor East	13,978	14%	15	19%	13%	21%	47%	7%	11%	12%
Rivergate	9,183	9%	3	50%	2%	36%	13%	73%	20%	62%
Inner City	48,664	48%	17	26%	10%	32%	33%	51%	20%	47%
Inner Eastside	21,761	21%	37	16%	11%	30%	43%	20%	12%	37%
NW Industrial	15,594	15%	11	44%	7%	28%	21%	56%	22%	53%
Swan Isl./Lower Albina	11,309	11%	13	21%	10%	40%	29%	51%	21%	45%
Dispersed Areas	5,626	6%	12	32%	12%	16%	41%	3%	9%	19%
Banfield	1,592	2%	18	7%	6%	28%	59%	0%	3%	23%
Outer Southeast	3,717	4%	11	45%	11%	11%	33%	5%	10%	18%
Outliers	317	0%	23	10%	49%	6%	34%	0%	9%	0%

* NAICS codes: manufacturing = 311-339; distribution = 481-493, 423-425; construction & utilities = 236-238, 221, 517, 562; services = 441-454, 511-928 except 517 and 562.

Source: Covered employment, Oregon Employment Department

Dispersed Areas

The Banfield and Outer Southeast districts are groupings of small industrial and employment areas along the I-84 and I-205 freeways and Johnson Creek. They have high concentrations of land in multi-tenant (flex space) facilities, less land in distribution facilities, and minimal land in heavy industrial use.

Banfield is a 120-acre district in four separate areas. None of the area is in heavy industrial facilities. Service firms provide 59 percent of its employment.

Outer Southeast is a 470-acre district in four separate areas. Only 5 percent of the occupied, developed land is in heavy industrial facilities. Manufacturing firms provide 45 percent of area jobs.

THE MIX OF INDUSTRIES

The 3,700 business establishments in Portland's industrial districts in 2002 employed 101,000 workers — 34 percent in the production sectors (manufacturing and construction), 34 percent in distribution (transportation and wholesale), and 32 percent in industrial and other services. Industrial districts are an important part of the economic base of regions, providing land for many "traded sector" businesses that compete in global markets and thus bring income into the region. For example, about 69 percent of the metro area's manufacturing output is exported out of the region, 37 percent of the transportation sector's output, and 33 percent of that in the wholesale sector (Hovee, 2003). Another major economic advantage of industrial districts is as a source of high-wage jobs that provide pathways into the middle class. Metro area manufacturers paid 130 percent of the average wage among all firms in 2002, and distribution firms paid 121 percent of the average.

What are Portland's industrial specialties relative to the region? Those with 50 percent or more of their metro area (Oregon portion of PMSA) employment in Portland's industrial districts are air transportation, transportation support activities, transit, couriers, primary metals manufacturing, and transportation equipment manufacturing. Other industries with 30 percent or more of their metro area employment in Portland's industrial districts are wholesale of durable goods, fabricated metal products manufacturing, truck transportation, food products manufacturing, and printing.

Portland's specialty industries tend to be anchored by a few large establishments. The primary metals and transportation equipment manufacturing industries have been described as having a "hub and spoke" structure with large, often locally headquartered firms that export most of their products outside the region and have numerous local suppliers (E.D. Hovee & Co., 2003). The Port of Portland has a comparable function in air and water transportation.

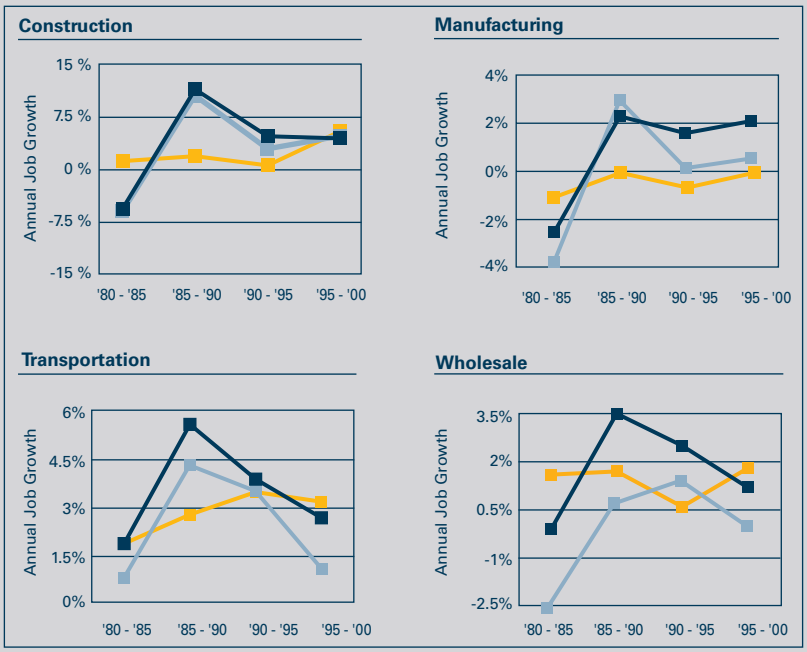
Conclusions

- The industrial districts contain a fourth of the city's jobs. A third of them are in production, a third in distribution, and a third in services.
- Industrial districts are a core location for "traded sectors" that make up a region's economic base. Portland's largest industrial specialties relative to the region are its 19,700 jobs in transportation (e.g. air, truck, courier, marine) and 12,500 jobs in metals, machinery, and transportation equipment manufacturing.
- Which sectors are industrial? Manufacturing and distribution are clearly concentrated in the city's industrial districts. Construction, utility, and industrial service jobs are more dispersed.

These industries are not an exhaustive list of the region's "industry clusters." Semiconductor and wood products manufacturing, for example, are regional specialties that are concentrated in suburban areas. Moreover, clusters include a linked group of suppliers, service providers, and support institutions that are classified in different industries. Clusters also overlap, making it less than accurate to identify them separately.

Which sectors tend to locate in industrial areas? Portland manufacturing firms have 84 percent of their employment in the industrial districts; transportation firms 77 percent, and wholesalers 73 percent. Other industrially related activities are less concentrated in industrial districts, such as construction (45 percent of city employment in industrial districts) and utilities (17 percent). A grouping of service industries labeled here as "rental and equipment" has 51 percent of its employment in the industrial districts. It includes repair, rental, industrial laundry, and building maintenance services.

INDUSTRIAL GROWTH TRENDS



Industrial employment in the Portland metro area (5-County Oregon portion of PMSA) grew by 37 percent between 1980 and 2000, three times as fast as the U.S. average of 12 percent. The distribution sectors created 46 percent of those new jobs, manufacturing 26 percent, and construction 28 percent. The metro area share of U.S. manufacturing jobs grew by 31 percent during this period (Bureau of Planning, 2003). The graphs show job growth rates by sector.

INDUSTRIES BY EMPLOYMENT

	NAICS	Establishments and Jobs, 2002 Estab-lishments	Jobs/ Estab.	Jobs	% of Jobs by Zone All	I	EG	Area share of City Jobs	Metro Jobs*	% of Avg. Pay*
All Sectors		3,712	27	101,389	100%	100%	100%	27%	12%	100%
Production & Raw Materials		1,049	33	34,816	34%	37%	22%	63%	20%	122%
Manufacturing	311-339	652	39	25,693	25%	27%	15%	84%	23%	130%
Construction	236-238	341	23	7,797	8%	8%	5%	45%	18%	117%
Utilities & Waste	A	46	25	1,165	1%	1%	1%	17%	11%	144%
Agriculture	111-115	10	16	161	0%	0%	0%	45%	1%	56%
Distribution		1,258	27	34,381	34%	39%	13%	75%	43%	121%
Wholesale	423-425	852	17	14,648	14%	16%	7%	73%	29%	138%
Transportation	481-493	406	49	19,733	19%	23%	5%	77%	66%	93%
Services		1,405	23	32,192	32%	25%	66%	12%	6%	91%
Information	B	44	18	776	1%	1%	1%	9%	5%	144%
Management	551	39	116	4,531	4%	3%	10%	39%	25%	165%
Rental & Maintenance	C	315	19	6,079	6%	6%	7%	51%		
Government	921-928	4	267	1,068	1%	0%	5%	6%	1%	105%
Retail	441-454	300	18	5,485	5%	5%	7%	17%	6%	65%
Training & Unions	D	58	47	2,722	3%	0%	14%	11%		
Financial	E	108	11	1,195	1%	1%	2%	4%	3%	139%
Professional	F	276	12	3,309	3%	3%	7%	8%		
Human Svcs.	G	49	56	2,768	3%	3%	2%	5%		
Leisure & Food	711-722	172	22	3,835	4%	2%	12%	11%	5%	42%
Other Services	H	40	11	424	0%	0%	0%	5%		
Highest Employment Industries										
Wholesale, Durable	423	499	17	8,694	9%	9%	5%	73%	36%	131%
Specialty Contractors	238	249	25	6,167	6%	6%	5%	51%	22%	111%
Wholesale, Nondur.	424	199	27	5,321	5%	6%	2%	79%	27%	136%
Mgmt. of Companies	551	39	116	4,531	4%	3%	10%	38%	25%	165%
Air Transportation	481	25	172	4,303	4%	5%	0%	100%	93%	99%
Fabricated Metal Mfg.	332	162	26	4,139	4%	4%	1%	95%	39%	97%
Truck Transportation	484	125	31	3,926	4%	5%	1%	92%	45%	101%
Transp. Support	488	140	28	3,862	4%	4%	1%	82%	76%	103%
Transp. Equip. Mfg.	336	38	93	3,530	3%	3%	7%	95%	50%	125%
Admin. & Support	561	128	27	3,515	3%	3%	5%	17%	7%	65%
Primary Metal Mfg.	331	23	146	3,362	3%	3%	0%	79%	55%	125%
Transit	485	18	178	3,201	3%	4%	1%	82%	100%	51%
Educational Services	611	22	145	3,182	3%	1%	14%	10%	23%	69%
Couriers, Messengers	492	43	69	2,986	3%	3%	2%	91%	63%	76%
Food Manufacturing	311	43	65	2,779	3%	3%	2%	71%	37%	88%
Printing and Support	323	81	26	2,101	2%	2%	2%	59%	36%	101%
Food & Drinking Places	722	117	17	2,020	2%	1%	4%	8%	4%	35%
Prof. & Technical Svcs.	541	193	10	1,946	2%	1%	5%	8%	5%	141%
Computer & Elec. Mfg.	334	18	104	1,868	2%	2%	0%	92%	5%	185%
Repair Services	811	193	9	1,669	2%	2%	1%	42%	18%	92%

NAICS: A = 221, 517, 562; B = 511-519, exc. 517; C = 532, 5617, 811, 8123; D = 6112-6117, 6213, 81393; E = 521-533, exc. 532; F = 541, 561 exc. 5167; G = 611-624 exc. 6112-6117; H = 812 exc. 8123, 813 exc. 81393, 814

* Metro area (Oregon portion of PMSA) jobs and percent of average pay in all metro area industries apply to Clackamas, Columbia, Multnomah, Washington, and Yamhill Counties. Information on industries identified by 4- or 5-digit NAICS codes is not included.

Source: Covered Employment, Oregon Employment Department

INDUSTRIAL LAND USE PATTERNS

How does the use of land vary among industries?

Distribution facilities are the predominant land use in Portland's industrial areas, taking up 47 percent of the developed, occupied land. Freight terminals in particular (rail yards, marine terminals, the airport runways and terminal, and larger truck terminals) use 32 percent of the city's developed, occupied industrial land. Transportation and wholesale businesses, typically occupying warehouse buildings, use another 15 percent.

General industrial facilities, including manufacturing, construction, and utilities, use 17 percent (1,752 acres) of Portland's developed, occupied industrial land. This is the most diverse category of industrial building types. Utilities and manufacturing have the highest value of site improvements per square foot among industrial facilities.

Multi-tenant facilities, such as flex space, use 18 percent (1,881 acres) of the developed, occupied land. The land use mix of multi-tenant sites approximates that of all sites in the industrial districts, as shown in the table on the opposite page.

Conclusions

- Distribution facilities use 47 percent of the city's occupied industrial land; general industrial facilities use 17 percent; mult-tenant facilities, 18 percent; industrial services, 11 percent; and non-industrial, 8 percent.
- Nearly half of the city's occupied industrial land is in heavy industrial use, mostly as freight terminals. Heavy is defined here as large-scale operations - rail, harbor or runway use; large structure footprints; or large outdoor use areas.
- The average job density is similar among manufacturing, wholesale, and transportation facilities (excluding freight terminals) – 10-13 jobs per developed acre.
- The mix of industries in multi-tenant facilities (e.g. flex space) approximates that of all sites in the industrial districts.

Industrial service facilities use 11 percent of the developed, occupied land. Public facilities are loosely classified as industrial services. They consist primarily of public maintenance yards and military facilities with harbor or runway access but also include unoccupied public ownership and non-industrial facilities (e.g. jails). Other industrially related service facilities include equipment rental, repair, building maintenance, and industrial laundry businesses.

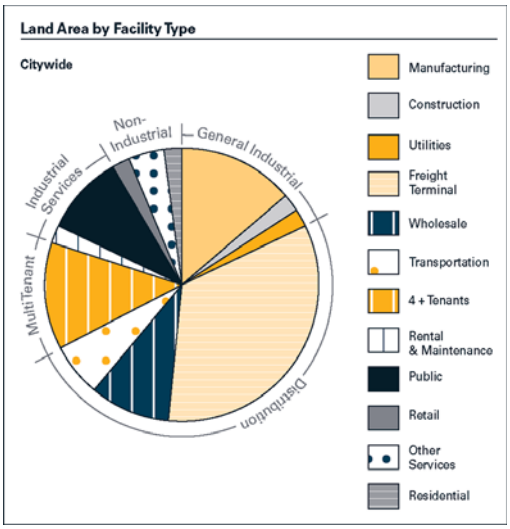
The Swan Island industrial area.

Non-industrial facilities use 8 percent of the developed, occupied land and include retail, other services typically in office buildings, and housing.

Heavy industrial sites span a range of facility types that take up 41 percent of the developed, occupied land. These sites represent large-scale industrial facilities, including freight terminals and other sites with rail, harbor, or PDX runway usage, structure coverage of 100,000 or more square feet or outdoor impervious area of 10 or more acres.

The Land Use Mix in Industrial Sanctuaries

Portland's industrial sanctuary policy reserves land to encourage industrial growth in the city. The 13,800 acres of industrial zones that implement this policy limit land uses to achieve a compatible mix, excluding new residential and large-scale commercial development. As a result, distribution, general industrial, and industrial service facilities use 80 percent of the occupied, developed land in the industrial zones. Multi-tenant facilities use another 16 percent. Non-industrial facilities take up only 4 percent of the occupied, developed land, including 1 percent in retail, 2 percent in other services, and 1 percent in housing. Nearly half of the land in industrial zones is in heavy industrial use. In contrast, within the pockets of general employment zones in Portland's industrial districts, 37 percent of the developed, occupied land is in non-industrial use, and none is in heavy industrial use.



Job Density among Industries

The average job density is similar among manufacturing, wholesale, and transportation facilities—10-13 jobs per developed acre. The job density at public and freight terminal sites is only 1-3 jobs per developed acre, but available employment data undercounts the workforce at those sites (For example, "Covered Employment" data does not track railroad employment and links many employees who work at marine or air terminals to employers at other addresses. Also, public employment is concentrated in large employers with several faciliites that report those jobs at only some of their addresses, giving an incomplete picture of where public employees work). Construction and office-related service facilities have the highest employment density of 24 to 25 jobs per developed acre.

FACILITY TYPES BY ACREAGE, JOB DENSITY, AND PROPERTY VALUE

Facility Type (1)	All Sites	% of Un-Developed Area (2)	Developed Area (2) Acres	Average Size	% of Occupied Acres by Zone All Zones	I	EG	Jobs per Acre	Real Property Value per square foot (3) Land	Improvements
All Sites	3,566	28%	11,067	3.1				9	$4.34	$11.52
Occupied Sites	2,904	23%	10,524	3.6	100%	100%	100%	9	$4.55	$11.76
General Industrial	522	20%	1,752	3.4	17%	18%	7%	14	$4.74	$22.74
Manufacturing	349	19%	1,378	3.9	13%	14%	5%	13	$4.42	$22.80
Utilities	51	32%	208	4.1	2%	2%	1%	6	$1.69	$41.53
Construction	122	14%	166	1.4	2%	2%	2%	25	$5.10	$8.36
Distribution	597	16%	4,955	8.3	47%	51%	9%	6	$4.24	$7.18
Freight Terminal	68	10%	3,388	49.8	32%	35%	1%	3	$4.17	$5.86
Transportation	134	39%	616	4.6	6%	6%	3%	10	$3.31	$5.85
Wholesale	395	13%	951	2.4	9%	9%	5%	11	$5.34	$12.78
Multi-Tenant	510	16%	1,881	3.7	18%	16%	37%	16	$5.28	$13.82
2-3 Tenants	348	9%	579	1.7	6%	5%	10%	16	$6.27	$13.84
4+ Tenants	162	19%	1,302	8.0	12%	11%	28%	17	$4.89	$13.81
Industrial Services	407	53%	1,120	2.8	11%	11%	10%	3	$4.73	$8.30
Public	272	56%	921	3.4	9%	9%	7%	1	$4.53	$7.87
Rental & Mtnc.	135	21%	199	1.5	2%	2%	3%	14	$6.38	$10.22
Non-Industrial	868	16%	816	0.9	8%	5%	37%	17	$5.37	$14.09
Retail	150	10%	215	1.4	2%	2%	7%	17	$6.73	$10.91
Other Services	179	10%	412	2.3	4%	2%	23%	24	$5.51	$18.48
Residential	539	31%	189	0.4	2%	1%	7%	1	$3.97	$7.53
Unoccupied Sites	662	70%	543	0.8					$2.75	$6.82
95% + vacant	172	99%	4	0					$1.73	$7.42
No Employer	490	48%	539	1.1					$3.52	$6.82
Heavy Industrial	123	25%	5,022	40.8	48%	52%	2%	7	$3.80	$22.88
Manufacturing	48	22%	857	17.9	8%	9%	0%	11	$3.44	$24.67
Freight Terminals	68	10%	3,388	49.8	32%	35%	1%	3	$4.17	$5.86
Transportation	9	69%	146	16.2	1%	2%	0%	40	$2.81	$1.89
Wholesale	19	20%	237	12.5	2%	2%	0%	36	$3.82	$14.60
Utilities	3	25%	92	30.7	1%	1%	0%	12	$2.04	$87.98
Public	24	64%	302	12.6	3%	3%	0%	2	$5.06	$14.45

1. The Bureau of Planning identified facility types generally from employment data supplemented by field inspection. Utility and public facilities also include unoccupied sites in corresponding ownership. Freight terminal and heavy industrial facilities are identified from use and scale characteristics. Methodology is described further in Chapter 3.
2. Developed area is all acres minus vacant and other open space acres.
3. Land value per square foot applies to all land; improvements value applies only to developed area.

Source: Multnomah County Assessment & Taxation - property values, March-July 2004; Oregon Employment Department -Covered Employment 2002

INDUSTRY MIX OF MULTI-TENANT FACILITIES

Facility Type	Share of Facility Type Employment by Industry (NAICS) All Industries	Manufacturing (311-339)	Construction (236-238)	Wholesale (423-425)	Rental & Transportation (481-493)	Professional Mtnc. (5617, 532, 811, 8123)	Services 541-561	Food & Retail 441-454	Other Leisure 711-722	Services (misc.)
2-3 Tenants	100%	22%	17%	17%	8%	10%	5%	9%	5%	3%
4+ Tenants	100%	16%	7%	15%	13%	5%	18%	6%	5%	8%
All Sites	100%	25%	8%	14%	19%	6%	8%	5%	4%	9%

Source: Covered Employment, 2002, Oregon Employment Department

SIZE OF FACILITIES AND STRUCTURES

How does site and structure size vary among industries?

Industrial facilities have a wide range of site and building sizes. The 123 identified heavy industrial facilities in Portland have an average structure footprint of 189,000 square feet, outdoor storage and maneuvering area (estimated by impervious surface) of 20 acres, and total developed land area of 29 acres per site. Developed area excludes the vacant (unimproved) portions of sites, as well as open space areas that are generally not available to develop. Freight terminals are the most land-intensive of heavy industrial facilities. They include 100- to 200-acre rail yards, 5- to 500-acre marine terminals, and the 1,100-acre airport runway site.

Manufacturing sites vary in developed area from an average 9 acres in Rivergate to 0.8 acres in the Inner Eastside. The 349 manufacturing sites among all districts have an average developed area of 3.9 acres and average structure size of 60,000 square feet. The developed portion of the 395 wholesale sites is concentrated in the 1- to 10-acre size range, averaging 2.4 acres. The average structure area on wholesale sites is 36,000 square feet.

Conclusions

- Site and structure sizes vary widely among industrial facilities, more than any other land use type. Construction and services sites tend to be smaller than 10 acres; freight terminals larger than 50 acres; wholesale and transportation sites in the 3-20 acre range, and manufacturing and utility sites spread across all size ranges.
- Outdoor use areas (storage, parking, maneuvering) are a standard part of industrial sites, not a sign of underutilization. The average size of developed outdoor area is 20 acres on heavy industrial sites.

The smallest industrial facilities are construction and rental and maintenance services, averaging 1.4 to 1.5 acres in developed area. Non-industrial facilities are also relatively small. Retail sites in industrial areas have an average structure area of 15,000 square feet and developed area of 1.4 acres. Other non-industrial service facilities have an average structure area of 22,000 square feet and developed area of 2.3 acres.

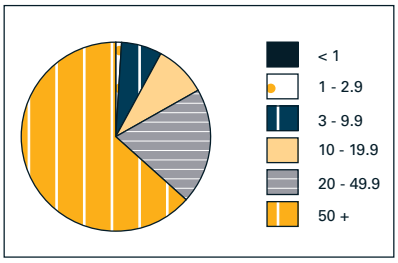
FACILITY TYPES BY SITE AND STRUCTURE SIZE

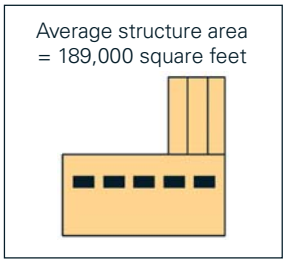
	Share of Developed Area by Site Size (Acres)						Average Size (Acres)*			
Facility Type	<1	1 - 2.9	3 - 9.9	10-19.9	20-49.9	50+	Developed Area	Structures (sq. ft.)	Site Coverage	Outdoor Impervious
All Sites	7%	11%	20%	13%	14%	36%	-	-	-	-
Occupied Sites	6%	10%	20%	12%	14%	37%	3.6	39,926	25%	2.3
General Industrial	7%	13%	26%	14%	21%	18%	3.4	46,893	32%	2.0
Manufacturing	6%	12%	28%	12%	24%	19%	3.9	59,903	35%	2.3
Utilities	7%	12%	15%	27%	11%	29%	4.1	39,530	22%	2.7
Construction	21%	28%	24%	14%	13%	0%	1.4	13,570	23%	0.8
Distribution	2%	6%	14%	10%	11%	56%	8.3	51,876	14%	5.4
Freight Terminal	0%	0%	3%	6%	12%	79%	49.8	175,564	8%	33.4
Transportation	2%	14%	37%	27%	8%	11%	4.6	33,338	17%	3.1
Wholesale	10%	22%	39%	15%	13%	0%	2.4	36,482	35%	1.4
Multi-Tenant	7%	13%	23%	20%	16%	22%	3.7	34,965	22%	2.1
2-3 Tenants	17%	28%	33%	13%	9%	0%	1.7	2,692	4%	0.8
4+ Tenants	2%	6%	19%	23%	19%	32%	8.0	104,822	30%	4.7
Industrial Services	8%	10%	25%	11%	14%	32%	2.8	24,996	21%	2.0
Public	5%	7%	22%	12%	15%	39%	3.4	37,189	25%	2.5
Rental & Mtnc.	20%	23%	38%	8%	11%	0%	1.5	16,011	25%	1.0
Non-Industrial	24%	24%	23%	7%	9%	12%	0.9	19,000	46%	0.5
Retail	20%	23%	28%	19%	10%	0%	1.4	15,491	25%	0.8
Other Services	8%	24%	30%	0%	12%	24%	2.3	21,923	22%	1.1
Residential	64%	23%	4%	9%	0%	0%	0.4	2,795	18%	0.1
Unoccupied Sites	25%	26%	22%	19%	8%	0%	0.8	12,752	36%	0.8
>95% Vacant Land	60%	37%	0%	0%	0%	0%	0.0	1,903	-	0.9
No Employer	24%	26%	22%	20%	8%	0%	1.1	13,487	28%	0.7
Heavy Industrial	0%	1%	7%	9%	20%	64%	29.4	188,846	15%	20.2
Manufacturing	0%	1%	14%	16%	38%	30%	17.9	234,177	30%	11.3
Freight Terminals	0%	0%	3%	6%	12%	79%	49.8	175,564	8%	33.4
Transportation	0%	3%	18%	12%	20%	46%	16.2	38,470	5%	11.6
Wholesale	0%	1%	26%	23%	51%	0%	12.5	191,034	35%	7.5
Utilities	0%	0%	0%	11%	24%	65%	30.7	305,877	23%	18.3
Public	1%	1%	10%	10%	31%	48%	12.6	141,977	26%	14.1

* Developed area is all acres minus Metro's vacant land inventory and committed open spaces. Impervious area is determined differently by multispectral imaging. Site coverage is the share of developed area in structures. Outdoor impervious land excludes the area covered by structures.

Source: Bureau of Planning

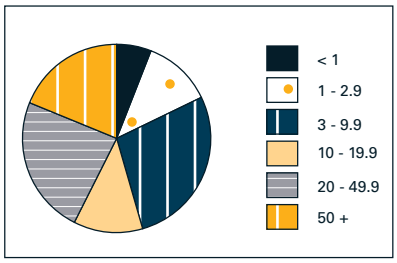
Heavy Industrial Facilities

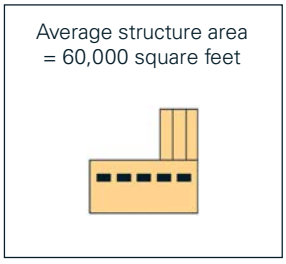




Port of Portland Terminal 4.

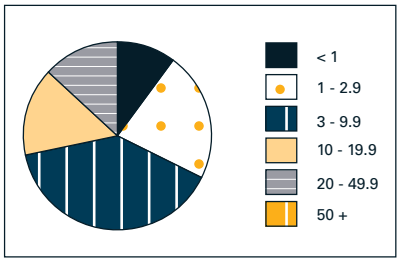
Manufacturing Facilities

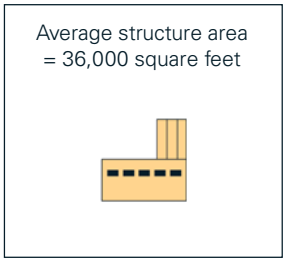




Kraft Foods bakery.

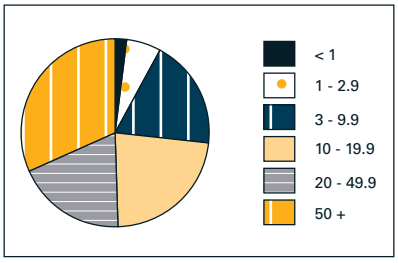
Wholesale Facilities

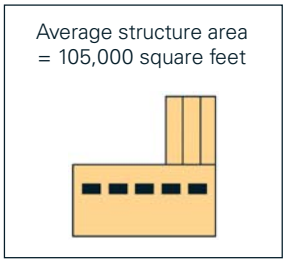




Valvoline distribution facility.

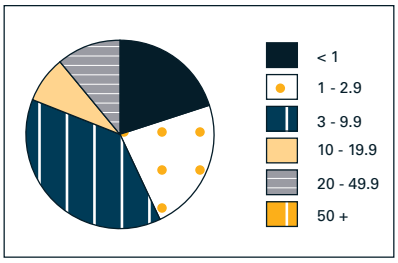
4 or More Tenant Facilities

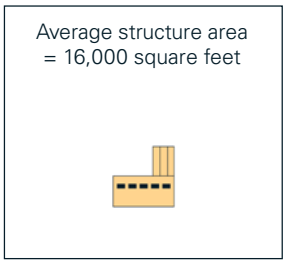




Kokusai Semiconductor Equipment occupies part of a business park facility.

Rental and Maintenance Facilities





Amtech Lighting Services.

HEALTHY INDUSTRIAL SITE CONDITIONS

What types of site conditions make for healthy industrial districts?

A city's industrial competitiveness is often seen in terms of the specialties and diversity of its industries, their productivity, and their rates of growth and innovation. Competitiveness is also influenced by factors outside of firms, particularly in the supply and quality of industrial land, infrastructure, and labor that are available in a region or district. The tables below and in the next chapter gauge Portland's performance on some of these relevant site conditions.

Land. Industrial zoning largely determines the supply of land available for most manufacturing and distribution uses. Portland has 15,500 acres of land in industrial districts, committed to future industrial use by zoning or *Comprehensive Plan* designation. The ability of that land supply to encourage industrial investment is also affected by having competitive industrial land values (generally $4 to $6 per square foot in this region), buffers from neighborhoods, a range of site sizes to suit demand, and manageable risks from environmental and cleanup constraints.

Infrastructure. Industrial districts have large-scale and varied needs for infrastructure. Particular advantages of Portland's industrial districts are their proximity to truck routes and transit and substantial land area with harbor, air, or rail access. Also, nearly all sites have access to existing municipal water, sewer, and storm sewer and private utilities, although some locations have deficiencies and some industrial facilities have unusual needs that limit location options.

Labor. The metro area labor market of one million workers is widely mobile within the region, although Portland has specific labor advantages in its relatively dense urban neighborhoods and central location. The metro labor market also has advantages over other large U.S. cities in high levels of educational attainment and a growing share of 25-34 year old workers.

Conclusions

- Freight access is fundamental. Rail is available to 33 percent of the city's industrial land; harbor access to 22 percent, and airport runway access to 17 percent. Guaging truck access, 46 percent of the industrial land is on sites within a mile from a freeway ramp and 73 percent within two miles.
- Average market land values in Portland's industrial districts are $4-6 per square foot, competitive with the regional industrial land market. Inflation of land values to commercial or residential levels would constrain industrial growth potential.
- Most of the city's industrial land is along waterways. As a result, 29 percent of it is affected by environmental constraints to development such as floodplain, steep slopes, and significant wildlife habitat.

Zoning

The *Portland Zoning Code* regulates the types of new land uses allowed in different zones across the city. Ninety percent of the land in industrial districts has industrial zoning (IH Heavy Industrial and IG1 and IG2 General Industrial), which does not allow new residential or large-scale commercial development. Another 8 percent of the area has employment zoning (EG1 and EG2 General Employment), where most industrial uses are allowed along with a broader mix of other uses. The IG1 and EG1 zones apply to areas with predominantly small lots. The remaining 2 percent of the area is in other zones and either is designated in Portland's *Comprehensive Plan* to eventually convert to an industrial or employment zone or is on a taxlot that is partly in an industrial or employment zone.

	Industrial			Employment		
	IH	IG1	IG2	EG1	EG2	Other
Acres	5,550	724	7,556	63	1,200	375
% of All Acres	36%	5%	49%	0%	8%	2%

* IH = Heavy Industrial. IG = General Industrial. IG1 and EG1 are small-lot zones.

Source: Bureau of Planning

Distance from Residential Zones

Nearby housing represents a potential constraint for some industrial activities with off-site impacts (e.g., noise, late hours, vibration, appearance), particularly heavy industrial facilities. Most of Portland's large industrial districts are on river plateaus and are generally buffered from neighborhoods by bluffs, major roadways, and in some areas employment zones. Only 2 percent of the land area in industrial districts is within 200 feet of a residential zone, and 10 percent is within 500 feet.

Distance from residential zone	Sites	% of All Sites	Acres	% of Area
Less than 200 feet	466	13%	282	2%
200 - 500 feet	716	20%	1,201	8%

Source: Bureau of Planning

Property Values

The total value of existing structures and other real property improvements in Portland's industrial districts is $5.6 billion, based on the Multnomah County Assessment and Taxation estimates of market value. Average land value in these districts is $4.67 per square foot, which is competitive with typical industrial land values in the metro area. Inflation of land values to residential or commercial levels would constrain their industrial growth potential.

	All Districts ($ million)	Average per sq. ft.*	High Land Value Sites (exceeding $6/sq. ft.)
Land	$2,926	$4.67	Sites 1,893
Improvements	$5,605	$8.94	Acres 2,777
Total	$8,531	$13.61	% of Area 18%

Average Improvements/ Land Value Ratio = 1.92

* Square footage does not include open space.

Source: Multnomah County Assessment & Taxation, March - July 2004

(acres)	< 1	1-2.9	3-9.9	10-19.9	20-49.9	50+
Sites	2,085	720	488	155	75	43
% of All Sites	58%	20%	14%	4%	2%	1%
Acres	808	1,267	2,616	2,183	2,254	6,344
% of All Acres	5%	8%	17%	14%	15%	41%

Average Site Size = 4.34

Median Site Size = 0.74

Source: Bureau of Planning

Site Size

Portland's large industrial districts have a broad range of site sizes (except in the Central City) to suit a diverse mix of industrial uses. Average site size in the industrial districts is 4.3 acres. Sites larger than 50 acres make up 41 percent of the city's industrial land and are used mostly as freight terminals (marine, rail, and air) and manufacturing facilities.

	Acres	% of All Districts
Open Space*	1,085	7%
Constrained Land (Composite)	4,430	29%
100 Year Floodplain	1,740	11%
Other 1996 Inundation Area	783	5%
Title 3 Wetlands	592	4%
10% or Greater Slope	1,371	9%
Goal 5 Significant Habitat	3,581	23%
Open Space or Constrained	4,504	29%

Potential Cleanup Sites

238 sites with cleanup or investigation projects;

57 cleaned or investigated sites with "no further action required".

* OS, p, n zones; mitigation sites; public drainage; 10-year floodplain

Source: Oregon DEQ - cleanup sites

Environmental Constraints

Most of Portland's industrial districts are along waterways—the Willamette and Columbia Rivers and Johnson Creek. As a result, 29 percent of the city's industrial land is affected by related environmental constraints. Approximately 1,100 acres function as "open space" that is generally not available for development, including certain zones (open space, environmental protection, and river natural zones), mitigation sites established through development projects on regulated wetlands and habitat area, public drainage facilities, and the 10-year Johnson Creek floodplain. Another 3,400 acres is affected by certain environmental constraints where development is generally allowed but limited, including 100-year floodplain, wetlands, 10 percent or steeper slopes, and significant habitat. In addition, 233 sites in the industrial districts have active environmental cleanup or investigation projects that are being tracked by the Oregon Department of Environmental Quality. Some of these sites are underutilized brownfields, which are discussed in the following pages on growth capacity.

TRUCK & TRANSIT ACCESS

Miles from Site	Major Truck Street Sites	Acres	% of Area	Freeway Ramp Sites	Acres	% of Area	Miles from Site	Bus Stop Sites	Acres	% of Area
< 1	3,249	10,348	67%	2,074	7,074	46%	<1\4	3,063	9,228	60%
< 2	3,558	15,442	100%	3,095	11,221	73%	<1\2	3,495	14,439	93%
< 3	3,566	15,474	100%	3,543	15,302	99%				

MULTIMODAL FREIGHT ACCESS

	Airport Sites	Acres	% of Area	Railroad Sites	Acres	% of Area	Harbor Sites	Acres	% of Area
Adjacent	12	2,685	17%	727	5,166	33%	199	3,379	22%
< 5	1,378	7,277	47%						

Source: Bureau of Planning

Proximity to Transportation Infrastructure

Most of the city's industrial land is developed along freight routes and continues to be well served by freight infrastructure. To gauge freight access, the distance was measured from the center of each site to the nearest infrastructure. Nearly three fourths of the industrial land supply is on sites within two miles of a freeway ramp, and two thirds is within one mile of a Major Truck Street (designated in Portland's *Transportation System Plan*). Rail access is available (adjacent but not necessarily used) to 33 percent of the city's industrial land, airport runway access to 17 percent (the Port of Portland ownership at PDX), and Portland Harbor access to 22 percent. Portland is also well served by transit. An estimated 93 percent of the city's industrial land is within ½-mile (about a 20-minute walk) of a bus stop.

	Sites	% of All Sites	Acres	% of Area
Adjacent to Sewer	3,289	92%	15,035	97%

Source: Portland Bureau of Environmental Services

Access to Sanitary Sewer

Municipal sewer is currently available (adjacent) to 97 percent of the city's industrial land.

GROWTH CAPACITY

What is the capacity for growth in Portland's industrial districts?

The demand for industrial land in the metro area is growing. Metro expanded the region's urban growth boundary in 2002 and 2004, adding about 4,000 acres of industrial land to meet projected needs to the year 2025. In the City of Portland specifically, the absorption of vacant industrial land has been forecast at 1,900 gross acres between 2000 and 2025 (ECONorthwest, 2003). Portland's ability to meet that demand will depend on overcoming development constraints on vacant and less utilized land. Solid information to reduce uncertainty in the development process is essential.

Portland's industrial districts had about 2,900 acres of vacant (unimproved) land in 2002 that might be available for private development (excluding identified open space uses and public and utility sites). Only a fraction of that vacant land is available for sale at any given time (estimated at 350 acres in April 2004). The development feasibility of this vacant land supply was examined here through three filters. First, about 1,100 acres of "partly buildable" land (Tier E) was identified, which is affected by floodplain, wetlands, slope, or significant habitat. The buildable portion of that land depends on regulatory limitations and how individual development proposals respond to site conditions. Second, Metro's Tier A-D classification of availability and use limitations was applied to the remaining 1,750 acres of "buildable" vacant land. For example, about 785 acres (Tier B) is limited by lease-only restrictions, access needs, or being part of occupied sites that may be held for future expansion by the current occupant. Only 143 acres have no identified use or availability constraints (Tier A). Third, about 1,100 acres of the vacant land supply is on sites where active environmental cleanup or investigation is occurring, which may pose an economic constraint to development. However, the vacant portions of those sites may not be contaminated.

New construction in Rivergate

In addition to vacant land, redevelopment and more efficient use of developed land offer long-term prospects for industrial growth. Two types of often challenging redevelopment opportunities are brownfields (see discussion below) and the 274 acres of housing sites in the industrial districts that are zoned for industrial or employment use. In addition, part of the city's industrial building stock is unoccupied at any given time (estimated at 9.6 million square feet of space for sale or lease in April 2004), and the less improved portions of sites may offer potential redevelopment opportunities.

The city's primary financial tool currently available to facilitate economic development is urban renewal, a program designed to help improve and redevelop areas that are deteriorated, unsafe, or poorly planned. Urban renewal funds in Portland are used primarily for infrastructure improvements. However, only a fourth of Portland's industrial land is located within one of the city's ten urban renewal areas. Two enterprise zones, which provide tax abatement and tax credit incentives for certain job creation investments, extend to 78 percent of the land in Portland's industrial districts. The Portland New Markets Program also provides tax credit incentives to facilitate economic growth and community development in low-income census tracts, which include 56 percent of Portland's industrial land.

The following chapter also identifies the city's Capital Improvements Program (CIP) projects within each industrial district that are expected to expand the district's development capacity. The CIP is a ten-year program for planning and budgeting the City's capital improvement priorities.

Conclusions

- Portland's ability to meet forecasted industrial land demand of 1,900 acres by 2025 will depend on overcoming development constraints on vacant and underutilized sites. Nearly all of the 2,900 acres of vacant (unimproved), private industrial land supply in the city is constrained to some degree or has availability or use limitations.
- After excluding open spaces, over 1,100 acres (38 percent) of the vacant, private industrial land supply is "partly buildable", affected by floodplain and other environmental constraints, where development is allowed but limited by current regulations. The uncertain development potential of these sites, which are concentrated in the freight hub districts, is ripe for creative approaches to balance economic development and environmental protection.
- Brownfield reuse is another long-term challenge and opportunity. Potential brownfields are estimated here as the underutilized portion (unimproved or unoccupied) of active cleanup and investigation sites, amounting to over 1,200 acres, 8 percent of the city's industrial land.

What is a Brownfield?

Cleanup of contaminated soil and structures is a common part of recycling industrial sites when tenants leave. Brownfields represent the underutilized portion of that land at a given time, an important land source for growth in older industrial areas. The U.S. Environmental Protection Agency characterizes brownfields as abandoned or underutilized sites where redevelopment is complicated by real or perceived contamination. Most of the 238 environmental cleanup and investigation sites in Portland's industrial areas are not brownfields—they are developed, occupied, and being investigated or cleaned by the owner or another responsible party. Among cleanup and investigation sites, two types of sites are identified here as underutilized and potential brownfields: 320 acres on 39 unoccupied sites (no tenant) and 920 acres of vacant (unimproved) land on occupied sites. Their combined land area is 1,240 acres. However, information is not generally available identifying the portions of sites that are being investigated or cleaned, so much of these 1,240 acres might not be associated with any cleanup liability.

VACANT LAND (UNIMPROVED ACRES), 2002

	All Vacant Land, 2002	Vacant Buildable Private Land						Additional Vacant Land			Land for Sale, 2004
		Buildable Total	No Constraints Tier A	Land with Availability or Use Constraints				Partly Buildable Tier F	Public & Utility Sites	Vacant Open Space	
				Landbanked Tier B	Infill Tier C	Underutilized Tier D	Other Tier E				
All Sites	3,880	1,811	143	785	129	67	687	1,102	413	553	357
% of All Vacant Land	100%	47%	4%	20%	3%	2%	18%	28%	11%	14%	9%
Potential Cleanup Sites	1,095	517	17	252	23	19	205	367	134	0	
% of All Vacant Land	28%	13%	0%	6%	1%	0%	5%	9%	3%	0%	
Columbia Corridor	3,263	1,551	140	618	97	58	638	914	331	467	235
Airport	1,440	748	16	217	40	8	466	426	133	133	135
Columbia Cor. East	730	259	94	106	16	32	9	197	34	240	55
Rivergate	1,093	545	30	294	40	18	162	291	164	94	45
Inner City	479	218	2	143	23	9	41	141	78	43	8
Inner Eastside	14	2	0	0	1	0	1	5	6	1	0
NW Industrial	313	137	2	84	15	8	28	81	61	33	8
Swan Isl./Albina	152	78	0	59	6	0	13	54	10	9	0
Dispersed Areas	134	41	0	24	8	0	8	47	5	42	114
Banfield	29	22	0	19	2	0	1	7	0	0	0
Outer Southeast	105	19	0	5	6	0	8	39	5	42	114

Vacant Land, 2002 (Metro) - unimproved land identified by aerial photography.
Vacant buildable private land (Tiers A-E) - all vacant land minus open space, Tier F, and public and utility sites with exceptions.

Tier A - vacant buildable private land with none of the constraints identified in Tiers B-F.
Tier B - vacant buildable private land that is partly developed, available for lease only, or has access constraints.
Tier C - vacant buildable private land that is less than 1 acre in size or exceeds industrial land values.
Tier D - vacant buildable private land with building coverage less than 10 percent.
Tier E - other vacant buildable private land not identified by Metro as Tiers A-D.
Tier F - vacant partly buildable private land, excluding open space but affected by either 100-year floodplain, 1996 inundation area, Title 3 wetland, slope exceeding 10 percent, or Metro Goal 5 habitat inventory.

Vacant open space - vacant land in OS, p, and n zones; mitigation sites, 10-year floodplain, and public drainage facilities

Sources: Metro - vacant land; Bureau of Planing - Tiers A-F and open space; CoStar - land for sale, April 2004

OTHER POTENTIALLY UNDERUTILIZED PROPERTY

	Cleanup / Investigation			Industrial Land in Residential Use**		Developed Space on Market, April 2004		
	Sites	Acres	% of District	Sites	Acres		Sites	Area
All Land in Sites	238	5,824	38%	539	274	For Sale:	57	2,307,231 s.f.
Developed/Occupied Portion		4,584	30%			For Lease:	244	7,269,909 s.f.
Underutilized Portion* (Potential Brownfields)		1,240	8%					
Unoccupied Sites	39	320	2%					
Vacant Land on Occupied Sites		920	6%					

* Unoccupied sites (no tenant) and unimproved parts of sites (vacant land) are underutilized. Cleanup liability may co mplicate redevelopment on some part of these sites.
** Non-conforming residential use on site zoned or designated in Comprehensive Plan as industrial or general employment.

Sources: CoStar - space for sale or lease; Oregon DEQ - cleanup sites; Multnomah County Assessment & Taxation - residential use

ACCESS TO FINANCIAL TOOLS

	Sites	% of All Sites	Acres	% of Area
Urban Renewal Area	1,407	39%	3,671	24%
Enterprise Zone	1,768	50%	12,044	78%
New Market Tax Credits	1,980	56%	8,630	56%

Source: Portland Development Commission