
Economic Impacts of Oregon's Brownfields Programs

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Prepared for:

Oregon Business Development Department

Contact Information

ECONorthwest (ECO) specializes in economics, planning, and finance. Established in 1974, ECONorthwest has over three decades of experience helping clients make sound decisions based on rigorous economic, planning, and financial analysis.

ECONorthwest gratefully acknowledges the substantial assistance provided by staff at Maul Foster & Alongi, Redevelopment Economics, and Blue Mountain Economics. Many other firms, agencies, and staff contributed to other research on which this report relied.

Lorelei Juntunen, Emily Picha, and Carsten Jensen prepared this report. ECONorthwest is solely responsible for its content.

Throughout the report we have identified our sources of information and assumptions used in the analysis, and described our analytic techniques and their limitations. Within the limitations imposed by uncertainty and the project budget, ECO has made every effort to check the reasonableness of the data and assumptions and to test the sensitivity of the results of our analysis to changes in key assumptions. ECO acknowledges that any forecast of the future is uncertain. The fact that we evaluate assumptions as reasonable does not guarantee that those assumptions will prevail.

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Table of Contents

1. Findings and Conclusions Summary.....	1
2. Economic Impact Summary: Methods and Findings.....	2
3. Policy and Programmatic Findings	4
4. Conclusion.....	13

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1. Findings and Conclusions Summary

Brownfields are:

A brownfield is a vacant or underused property where actual or perceived environmental contamination complicates its expansion or redevelopment.

Common examples include former gas stations, dry cleaners, and industrial properties.

In Oregon, four major state sponsored programs support remediation of environmental contamination through a combination of funding for site assessment and cleanup and technical assistance to property owners. For the purposes of this study, ECONorthwest compiled a database of 250 sites that had received either technical or funding assistance through one of those four state-sponsored programs.¹ The database included projects assisted between 1994 and 2013 by the four programs (see sidebar on the following page) administered by either the Oregon Business Development Department *dba* Business Oregon (OBDD) or the Oregon Department of Environmental Quality (ODEQ). The projects addressed contamination in nearly every county in the state (30 out of 36 counties), including large industrial properties, commercial and mixed-use properties, and open space and parklands. To date, no data have been available to describe the role these programs have played in advancing the redevelopment of contaminated properties, or how the redevelopments have affected state and local economies.

Business Oregon manages two financing programs—the state-funded Brownfield Redevelopment Fund and the federally-funded Oregon Brownfields Cleanup Fund—which provide financing assistance to projects, often in conjunction with, or sequentially with, the DEQ’s programs. The consultant team of ECONorthwest, Maul Foster & Alongi, Blue Mountain Economics, and Redevelopment Economics was contracted to evaluate the community and economic impacts of those programs. Specifically, the team focused on identifying and quantifying the economic impacts of redevelopment that occurred as part of or following cleanup of the property.

The study methodology and analysis comprised three steps: (1) a survey of program participants regarding development outcomes; (2) supplemental research to verify and expand on survey findings including case study and national best practices research; and (3) an economic impacts analysis. This document summarizes key findings and conclusions from the research, with detailed methodology and survey, case study, and impact analysis findings included as appendices.

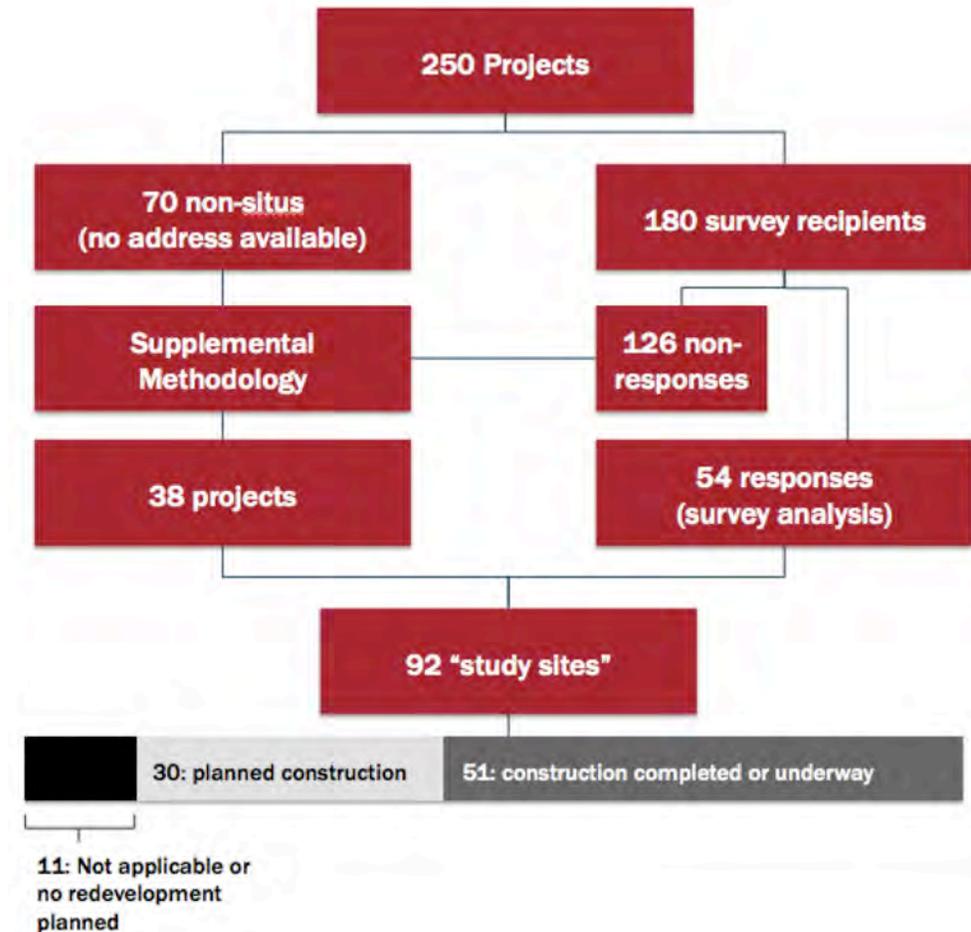
¹ DEQ administers a number of other programs, including the Leaking Underground Storage

2. Economic Impact Summary: Methods and Findings

This study’s main purpose was to evaluate the economic impacts of redevelopment on properties that received assistance from one or several of the state programs. As shown in Exhibit 1, the data for the economic impact analysis drew from survey findings and supplemental research, resulting in focus on the following 92 study sites:

- 54 sites for which data were generated via direct survey of the participants that interacted with state programs
- 38 sites for which data were generated via supplemental research (internet research, aerial imagery, assessors’ databases)

Exhibit 1. Sites Evaluated: Summary of Methods



Programs Evaluated

Business Oregon Programs:

Brownfield Redevelopment Fund. Grants and loans to public and private property owners for projects that are designed to facilitate economic development or community revitalization.

Brownfields Cleanup Fund. Grants and loans to public or private property owners for cleanup only on projects that result in economic or community redevelopment.

DEQ Programs:

Orphan Site Program. DEQ funds remediation at sites where the owner or liable party is unknown, unable, or unwilling to pay for needed cleanup.

Prospective Purchaser Agreements. In return for liability relief, prospective buyers of contaminated sites negotiate an agreement with DEQ, requiring buyers to implement remedial action or other “substantial public benefit.” This program does not provide direct monetary support to projects.

Site-Specific Assessment Program. “Site-specific assessment” assistance is provided by DEQ, utilizing federal EPA funds awarded to the State to evaluate environmental contamination on potential brownfield sites.

After collecting data on project development, ECONorthwest used an input-output model to track dollars as they moved through Oregon's economy from one sector to the next, starting with initial expenditures.² The model determined the total number of jobs, amount of income, and dollars of economic output that could be traced to the initial project.

Remediating environmental contamination is just one among many variables that lead to property redevelopment, resulting in a complex causal relationship between investments in brownfields remediation and redevelopment. For these reasons and others, this study's methodology provides an "order of magnitude" approach that advances available public information about the relative impacts of the state's brownfields programs, and leads to conclusions and findings that can improve service provision in the future. Full details of the methods can be found in *Appendix B: Technical Methods and Initial Findings*. Overviews of select projects can be found in *Appendix A: Case Studies*.

The 92 state-supported brownfield projects for which data were available generated the following impacts:

Redevelopment outcomes

- Redevelopment has occurred on many of the properties for which data were available. **About 88% of these properties have redevelopment completed, underway, or planned.** More specifically:
 - 30 projects have redevelopment planned in the coming years.
 - 51 projects have redevelopment either completed or underway.
- The 51 properties generate the quantifiable economic impacts described in the remainder of the report. Additional redevelopment may have occurred on other properties for which data are not available.

Construction jobs and investment

- The 51 completed or underway projects generated **\$814 million** in private construction investment.³
- Construction activities on these properties generated 5,100 direct and 3,800 indirect jobs.

² ECONorthwest used IMPLAN (regional economic modeling software) to estimate construction employment directly resulting from development activity.

³ Unless otherwise noted, all dollar figures in this report are presented in 2011 dollars.

- Including the 30 additional projects for which redevelopment is planned leads to a projection of a \$1.4 billion in investment and total of 12,700 construction jobs (direct and indirect).

Permanent jobs

- For the 51 completed or underway projects, 4,300 permanent jobs are directly attributable to the redevelopment. In total, **8,900 indirect and direct jobs** resulted from on-site operations.
- **Almost 60% of jobs are in industrial sectors**, which means that the brownfields programs are important contributors to the state's economic base.

Tax revenues for state and local governments

- **\$19.4 million in state income taxes** are generated annually by the ongoing operations of the business occupants (direct impacts only).
- As much as **\$10.5 million in annual property taxes** flow to local governments.⁴

Appendix C: Detailed Results of survey and I/O analysis provides additional detail regarding these findings, as well as a full reporting of the survey findings.

3. Policy and Programmatic Findings

1. While redevelopment on brownfield sites generates community development, , environmental, and health benefits, economic development is the primary motivation for local governments to assist in remediation.

Addressing soil and groundwater contamination reduces human exposure to toxins and improves habitat for protected and other species. Because brownfields are disproportionately located in lower-income areas, removing blight and sources of toxic exposure is also important to achieving social equity and environmental justice outcomes. While these outcomes are very important, the primary motivator of action for survey respondents was economic: brownfields create blight and hinder the ability to make efficient use of the land supply.

The economic impacts analysis describes the key short- and long-term economic impact findings for the 92 study sites for which redevelopment information was compiled. The State of Oregon spent nearly \$19 million through brownfields programs on the 92 sites analyzed in this study. The return on this investment for

⁴Property tax abatement programs, such as Enterprise Zones, were not considered in this analysis and may reduce this total property tax estimate.

Oregon's citizens and local governments is noteworthy and the continuing economic development outcomes are significant.

Of note, redevelopment on brownfields has generated economic outcomes for:

- **Oregon's residents**, through jobs and associated earnings contained in the redeveloped sites, as follows:
 - \$470 million annual earnings through on-site jobs on projects that have already redeveloped
 - \$610 million in projected annual earnings for the on-site jobs that will be contained on planned projects
 - \$532 million in total earnings through construction jobs on projects that have redeveloped or are planned to redevelop
- **Local governments**, through property taxes and redevelopment, as follows:
 - \$10.5 million in property tax revenue for projects that have already redeveloped^{5,6}
 - \$600 million invested in redevelopment projects among the sites analyzed in this study, with another \$211 million underway and \$566 million planned
- **State general fund**, through income tax revenues, as follows:
 - \$19.4 million annually through existing on-site jobs
 - \$22.8 million total for construction jobs on existing projects

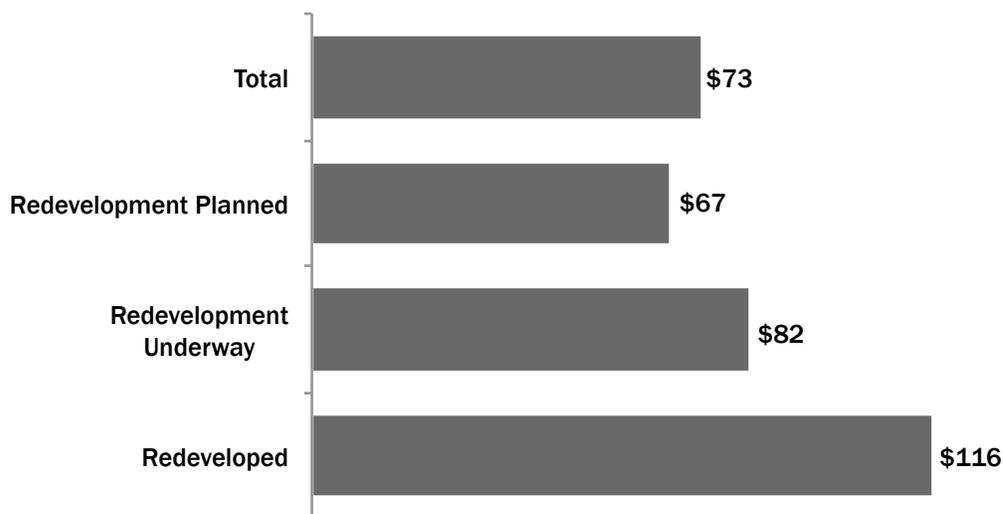
Brownfields programs have a clear impact on redevelopment throughout the state. As a result of state investment through the brownfields programs, about \$600 million of private investment has been made in the redeveloped projects analyzed in this study, with another \$211 million in the projects that are underway, for a total of \$811 million in the 51 projects that are either constructed or underway. Another \$566 million in new investment will be made in the 30 planned redevelopment projects. This is a total of about \$1.4 billion in existing or planned investment on remediated sites.

⁵ The estimated impact on local property taxes does not account for the use of property tax abatement programs for specific projects.

⁶ The catalytic effect on nearby properties could increase this amount by 4.9% to 11.1%. If national estimates hold true in Oregon, we estimate an additional \$2.4 million in local property taxes attributable to brownfields cleanups at the 92 study sites (see *Appendix B* for more details).

Exhibit 2 shows how much investment was made for every \$1 the state invested in brownfield remediation projects using all state programs. For every dollar the state invested (through all programs) in the 92 completed brownfields redevelopment projects, an additional \$116 was invested toward redevelopment.⁷ These ratios may capture investments from a number of local sources that the state programs leverage. For example, some of the projects may have leveraged additional local incentives (such as tax increment finance, infrastructure investments, etc.) that also contributed to the redevelopment outcome. The state programs are critical to unlocking the redevelopment potential on these projects.

Exhibit 2. Amount of Redevelopment Spurred by \$1 Investment through Brownfield Program—All State Programs



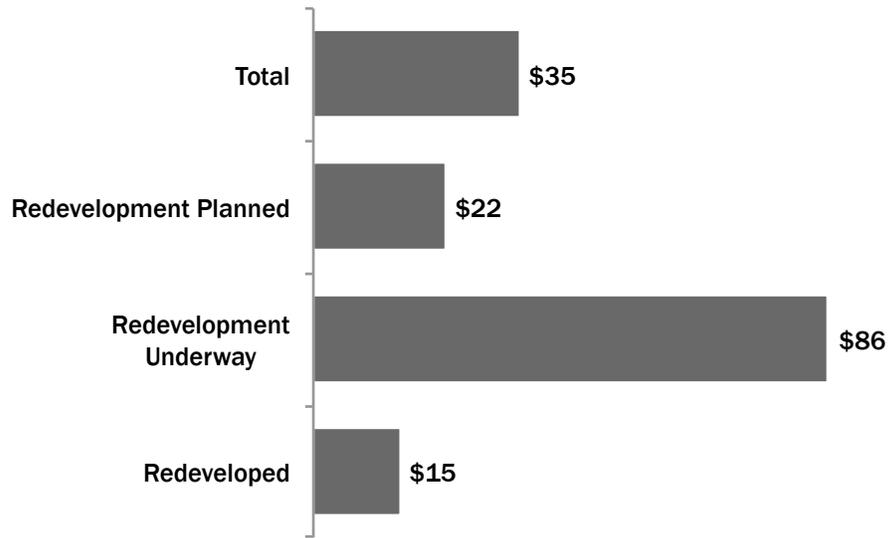
Source: OBDD Database and ECONorthwest Team research.

Note: This chart includes redevelopment associated with the PPA program, a technical assistance program that does not have state investment associated with it.

As shown in Exhibit 3, for brownfields redevelopment projects participating in OBDD programs, every dollar of state funds invested in now-completed projects spurred an additional \$15 toward redevelopment.

⁷ This leverage ratio is similar to findings for the Massachusetts Brownfields Tax Credit program and is higher than the leverage ratios calculated for brownfields programs in New York, Missouri, and Ohio, as well as the leverage ratio for the US EPA Brownfields Program. However, it would take a more in-depth comparative analysis to make a definitive finding, because of the need to control for variations in methodologies and expenditures counted.

Exhibit 3. Amount of Redevelopment Spurred by \$1 Investment through Brownfield Program—OBDD Only Programs

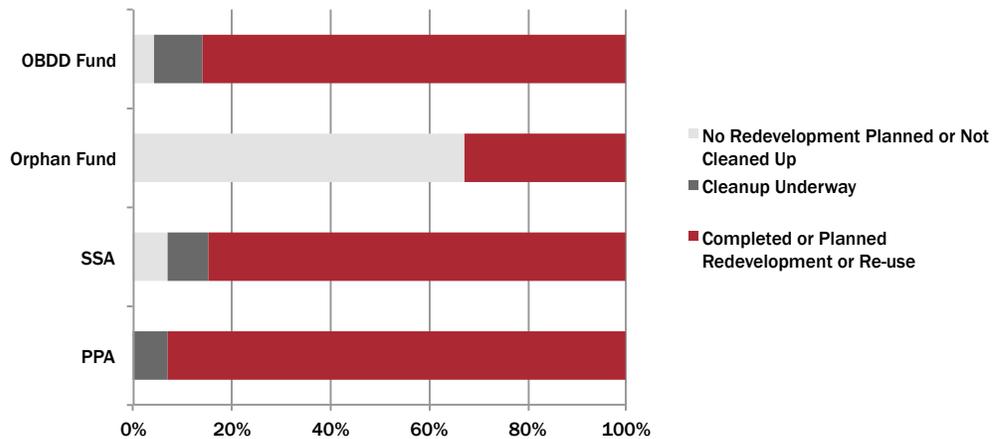


Source: OBDD Database and ECONorthwest Team research.

2. State funding and support is critical.

Brownfield redevelopment projects can be complex, requiring many partners and financing sources to move forward. In this context, state funding and technical support can serve as a catalyst to action that can help fill project funding and process gaps. Exhibit 4 shows the redevelopment status for the sites represented by survey respondents.

Exhibit 4. Summary of Redevelopment Status by Brownfield Program, Survey Respondents



Source: ECONorthwest, 2014. Note: Sites that were categorized as “No redevelopment planned/not cleaned up” included open space sites and sites that had a use in place, but had contamination that needed to be addressed.

The study found that more than 5,600 industrial jobs (60% of all jobs generated from ongoing operations) can be attributed to new activities resulting from completed or planned redevelopment on brownfield sites.

Oregon exceeds Massachusetts, New York, and Missouri in the percentage of industrial jobs created on redeveloped or re-used brownfield sites.

Where redevelopment was completed, underway, or planned, 91% of survey respondents reported that the state assistance through brownfields programs was critical or important. Respondents provided feedback for how the state program affected the project:

- “Funding from OBDD was the only economical way to assist meeting the public purpose identified for the site.”
- “A project, 40 years in the making, would not have been completed without the assistance of the Oregon Brownfields Program. The amount of environmental contaminants that existed at the site made the site virtually unusable and exposed a nearby and downwind subdivision to these contaminants. The project removed these threats.”

At the same time, about a third of respondents reported that the project stimulated additional investment in nearby properties, but about half of the respondents were unsure if it did. The survey respondents who reported that the project stimulated other redevelopment were able to name specific nearby activities that resulted from cleaning up the contaminated site. Some of the comments include:

- “An investor purchased a derelict warehouse between the redeveloped site and the downtown and is renovating it for a brewpub.”
- “The asking price for a neighboring parcel went up by \$2 million after we closed.”

3. Brownfields create a significant constraint to land development. Brownfields redevelopment is a key strategy for meeting the state’s growth management and economic development goals of creating vibrant communities and preserving resource lands.

In 2013, the City of Portland and Metro Regional Government completed complementary policy studies designed to examine the economic, environmental, and social impacts of brownfield properties in their respective jurisdictions. These studies provided a framework to grasp the scale and impact of brownfields and to present policy options that would encourage their cleanup and redevelopment. The studies revealed that environmental costs and risks inhibit cleanup, community revitalization, and economic development.

Specifically, the study found that brownfields in the Portland metropolitan area:

- **Limit opportunities for job creation, especially in industrial areas, commercial hubs, and main streets.** Full build out of all brownfields in the Portland metropolitan area would create 69,000 jobs on those sites.

Survey respondents and case study interviewees emphasized that land is a fundamental building block for community and economic growth, and that the additional cost and uncertainty associated with the presence of brownfields reduce a community’s ability to achieve its fiscal, land use, and environmental health goals.

Nationally, EPA studies conclude that, on average, brownfields redevelopment uses ¼ to ½ less land than alternative development.⁹ They also result in as much as a 30% reduction in vehicular emissions and a 40% reduction in stormwater run-off, in comparison to alternate development patterns. National research also ties brownfields redevelopment to substantial savings in both initial infrastructure investment (at least a 20% reduction) and in city service operating costs (at least a 5% reduction).

- **Exacerbate health, social equity, and environmental justice issues, especially in underserved communities.** Approximately 50 percent of sites listed in DEQ’s ECSI database in the Portland metropolitan area were within 1,000 feet of sensitive environmental areas, such as wetlands and streams.
- **Increase pressure for development in natural areas.** In the Portland Metro area, where land for housing is scarce and there are pressing infrastructure needs, full build out of brownfields properties could accommodate 138,000 new dwelling units, save up to \$480 million in public infrastructure investment, and substantially decrease the need to build in undeveloped, natural areas.

This evaluation estimates that:⁸

- Oregon has about 13,500 sites with known or suspected contamination¹⁰
- Roughly 35% of brownfield sites have undergone assessment or at least some cleanup activities
- At least 23% of brownfield sites are remediated to a point where the DEQ has issued a No Further Action letter
- Approximately 4% of all brownfield sites are undergoing cleanup
- As many as 10,000 brownfield sites have not undergone any assessment or cleanup activities (65% of known and suspected brownfield sites)
- 54% of brownfields are located in economically distressed counties
- 76% of brownfields are located within an urban growth boundary

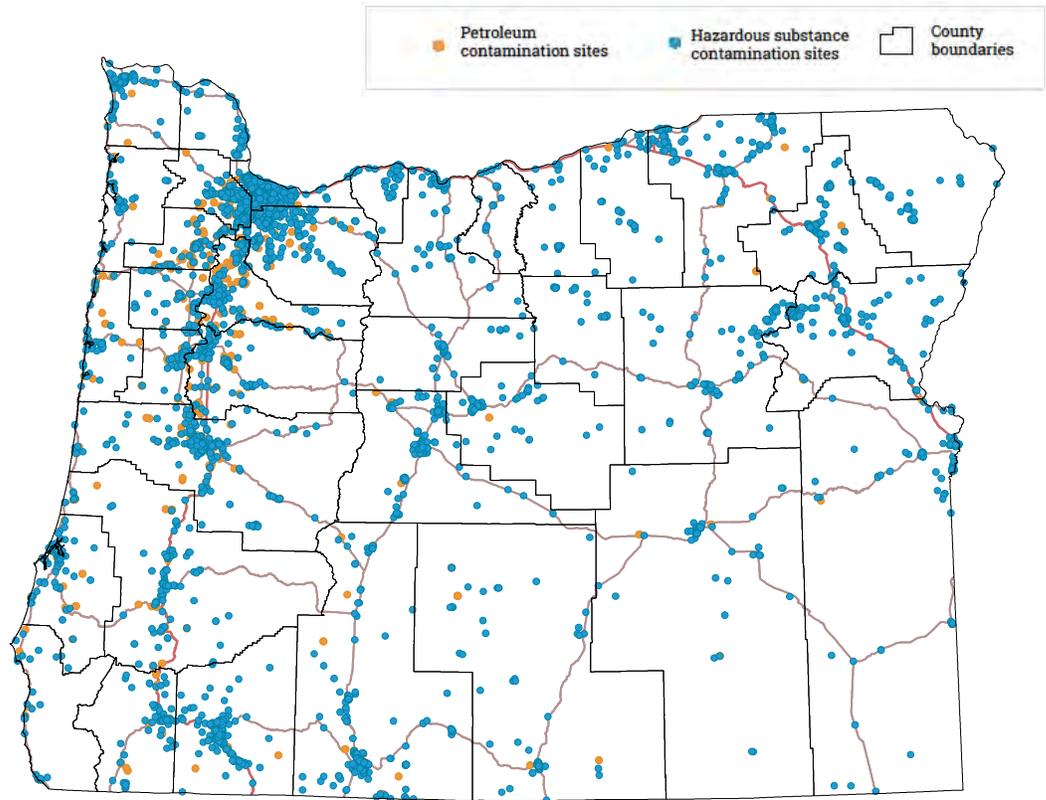
As shown in Exhibit 5, Oregon’s brownfield sites are concentrated around cities and along or adjacent to major transportation corridors (highway, rail, and marine). They also affect rural communities, typically in the form of large-scale industrial properties, mills, lumber yards, wood treatment facilities, and agricultural sites. These sites make it difficult for struggling communities to redevelop infrastructure and revitalize their local economy.

⁸ MFA analysis of DEQ’s Environmental Cleanup Site Information database (ECSI) and non-residential properties in the Leaking Underground Storage Tank (LUST) database.

⁹ US EPA Office of Brownfields Land Revitalization, “Air and Water Quality Impacts of Brownfields Redevelopment: A Study of Five Communities,” 2011.

¹⁰ Based on sites identified in DEQ’s ECSI and LUST databases.

Exhibit 5. Brownfields in Oregon



Source: Maul Foster and Alongi, 2014.

This study resulted in a first look at the state-wide economic benefits of redevelopment on former brownfield sites, and found a substantial return on the state's direct investments in projects: *for every dollar invested in redeveloped properties in the OBDD Program, about \$34.60 in total private construction investment was returned, with a return of \$58.40 on those projects with redevelopment either complete or underway.*

While various state agencies have been instrumental in moving many of these sites to completion, as many as **two-thirds of the total number of estimated sites in Oregon still have not undergone any assessment or cleanup activities**. These remaining brownfield sites create blight in communities around the state and consume valuable, developable land within downtown areas and business districts.

This study confirms that the brownfields-related challenges identified in the Portland Metropolitan Region are, in fact, statewide challenges. Brownfields hinder the implementation of growth management policies in nearly every corner of the state. Survey respondents and case study interviewees emphasized that land is a fundamental building block for community and economic growth, and that the additional uncertainty and burden associated with the presence of brownfields reduce a community's ability to achieve its fiscal, land use, and environmental health goals. The location of brownfields can inhibit new development in already urbanized areas and limit the ability to develop vital, attractive communities and make efficient use of land. This leads to unnecessary pressures on urban growth boundaries. Addressing brownfield properties

supports Oregon’s land use framework, preserving natural resources and quality of life while allowing Oregon’s communities to grow and prosper.

4. Because of the complexity of projects, access to a range of programs and tools remains very important.

To continue to address the brownfields challenge across the state, partners should focus on maintaining existing programs as well as additions to the toolkit. This evaluation found that each of the state’s programs has its strengths, whether they are providing assistance at a specific stage in the redevelopment process or addressing properties with complicated ownership or use patterns. Importantly, estimated returns on redevelopment outcomes were greater when all state programs were considered: *one dollar of investment returned \$116 in total construction value of redevelopment*. This ratio included programs that provide technical assistance rather than direct project funding (such as DEQ’s PPA program), which skewed the results as a measure of return, but offered insight into the value of providing an array of programs that address the complete range of challenges.

About 12 of the 92 sites accessed more than one program, emphasizing the need for a range of tools to address complexity of redevelopment projects.

In some cases, a project will use more than one state program during remediation and redevelopment. Recapitalizing and committing to existing programs, such as OBDD’s Brownfield Redevelopment Fund and DEQ’s Orphan Fund, increases the certainty that these tools will remain available for local jurisdictions, private-sector investors, and brownfields land holders.

At the same time, existing programs are insufficient for remediating all properties in any reasonable timeframe. An important step in determining the best and most cost-effective additions to existing programs will be partnering with local governments and other leaders in environmental remediation. Efforts are underway to better understand the status of brownfields and the effects that they are having on Oregon’s communities. Through the work of several policy studies, leaders in brownfield policy are looking at options for encouraging brownfield cleanup and redevelopment using new initiatives, programs, and funding. A component of this may be a statewide legislative agenda for upcoming legislative sessions. Other states’ efforts can provide a model, with tools that include brownfield cleanup tax credits and abatements, land banks, targeted regulatory amendments, and qualified professional licensing programs, to promote efficient and successful cleanup processes.

5. The state could better prepare its programs for future evaluation or analysis with clarified program outcomes and improved data tracking that would help to quantify program impacts over time.

For all government-led programs, tracking outcomes and describing impacts is increasingly important, both to secure future funding streams and as a basis for improving program implementation. The process of gathering data about

redevelopment outcomes to complete this evaluation was complex and time-consuming, suggesting that the state could do more to describe expected program outcomes and to track data over time.

Developing meaningful, rigorous estimates of program impacts requires a foundational work to ensure that program evaluation produces useful quantitative measures of project benefits, and can accurately reflect whether or not individual projects have met established goals. Remediating the situation described above involves developing a more intentional evaluation framework. The framework should:

- **Clarify and confirm desired program outcomes.** For example, is the program goal property cleanup, property redevelopment, or both? Furthermore, should “redevelopment” be defined as primarily an economic metric, or incorporate less tangible measures of community well-being?
- **Identify quantifiable outcome measures (or metrics) directly related to the program goals that are measurable over a reasonable time frame.** While each program currently has goals associated with it, it is not clear that those goals are tied to metrics. The state should also commit to evaluation over a sufficiently long period of time to observe important project outcomes. Redevelopment can take many years to complete.
- **Identify sources for the data necessary to calculate identified outcome measures.** Some measures may require development of new data sources (e.g., property owner or developer surveys).

4. Conclusion

This evaluation has resulted in a better understanding of the extent of brownfields across Oregon, the economic and community benefits that result from redevelopment on brownfield sites, and the degree to which brownfields are hindering economic and community revitalization. The findings from this analysis emphasize just how critical addressing brownfields is to our state's ability to grow and prosper.

The study also highlights gaps in our knowledge about brownfields. There are many brownfields that either remain undocumented or have not been evaluated, and Oregon's programs, while successful in many cases, are insufficient to address all of these sites.

The findings make clear that public sector involvement in brownfield redevelopment is often the difference between lingering blight and community revitalization, especially in areas of the state with large gaps in financial feasibility. For projects that have been redeveloped, the state has seen over tenfold return on its investments in OBDD's Brownfield Redevelopment Fund, with more than \$15 of investment generated on redeveloped sites for every \$1 invested. The interplay between the four programs evaluated shows that no one tool will suffice in helping to remediate Oregon's brownfields. The state and its partners will need to be creative, collaborative, and proactive in creating a comprehensive toolkit to address the continuing challenge of spurring brownfields redevelopment.