

**A PROPOSAL TO
ESTABLISH PILOTS FOR SUSTAINABLE DEVELOPMENT AND
ALTERNATIVE ENERGY REUSE OF BROWNFIELDS**

EPA BROWNFIELDS PROGRAM – ISSUES AND OPPORTUNITIES
The seventh in a series of reports

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THE NATIONAL BROWNFIELDS COALITION

NORTHEAST-MIDWEST INSTITUTE



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The National Brownfields Coalition Includes:

**U.S. Conference of Mayors
National Association of Counties
Northeast-Midwest Institute
National Association of Local Government Environmental Professionals
National Conference of Black Mayors
International City/County Management Association
Local Initiatives Support Corporation
National Association of Towns and Townships
National Association of Development Organizations
International Council of Shopping Centers
Community Revitalization Alliance
The Real Estate Roundtable
National Association of Home Builders
National Association of Industrial & Office Properties
Environmental Bankers Association
National Brownfield Association
National Brownfield Nonprofit Network Initiative
Cherokee Investment Partners, LLC
Smart Growth America
Scenic America
Groundwork USA
Trust for Public Land**

PREFACE - THE GENESIS OF THIS REPORT

The Small Business Liability Relief and Brownfields Revitalization Act was passed by Congress and signed into law in January, 2002. The legislation promoted brownfields redevelopment in several ways, including:

- It established liability protections for “Bona Fide Prospective Purchasers;”
- It established an “enforcement bar” such that EPA has limited authority to use its enforcement powers relative to sites that are in state voluntary cleanup programs; and
- It established the EPA Brownfields Program, which funds site assessments and cleanups.

The law and the resulting EPA Brownfields Program have been successful in stimulating new investment in brownfields. Although not systematically tracked, the number of sites going through state voluntary cleanup programs (VCP) has risen, now totaling almost 50,000 sites nationwide. The EPA program reports a total investment of about \$800 million in the assessment and cleanup of brownfields since 1995. This investment has leveraged more than \$9.9 billion in cleanup and redevelopment monies – a return of more than 10 to one. In addition, this investment has resulted in the assessment of more than 11,000 properties and helped to create more than 45,000 new jobs.

Yet, despite these successes, there is still a vast reservoir of sites – estimated to be between 450,000 and one million nationwide – that are continuing to blight communities and thwart revitalization efforts.

The EPA Brownfields Program reached the end of its five-year authority in 2006. Although the program is proposed for continued funding by the Administration, the need for reauthorization presents an opportunity to re-evaluate and propose improvements that will hasten cleanup and redevelopment of these contaminated and abandoned properties.

The organizations that are members of the National Brownfields Coalition, listed on the on page 2, have raised a series of issues and have proposed potential solutions. This series of reports, which will all be on the Northeast-Midwest Institute website at <http://www.nemw.org/brownfields.htm#Coalition>, will outline the issues, explore opportunities to improve the program, and make recommendations for policymakers to consider.

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SUMMARY

Brownfields revitalization, with its emphasis on infill and pollution prevention strategies, is well suited to advance creative experimentation with sustainable reuse initiatives. These initiatives include construction of green and energy-efficient buildings, green roofs, green infrastructure such as permeable parking lots, stormwater recycling, renewable energy, and similar approaches. This report analyzes opportunities to maximize the tie-ins between brownfields and these sustainable development techniques. The report proposes the establishment of a pilot program to fund projects that go well beyond cleanup and redevelopment, which are worthy objectives and not to be minimized, to the achievement of broader societal environmental and energy conservation goals.

CURRENT EPA PROGRAMS

EPA Brownfields. The authorizing legislation for the EPA Brownfields Program contains a statutory requirement that EPA consider among eight “ranking criteria” the following: “the extent to which a grant would facilitate the creation of, preservation of, or addition to a park, a greenway, undeveloped property, recreational property, or other property used for nonprofit purposes.” EPA’s current grant guidance documents have further refined this to include two criteria:

1. “Creation and/or Preservation of Greenspace/Open Space or Nonprofit Purpose,” and
2. “Sustainable reuse of brownfields... to support the goals” which include to “Prevent pollution ...through... native landscaping, innovative stormwater management/reuse, construction debris/fill reuse, local government commitment to achieving green building and/or energy efficiency building standards...; promote economic benefits... through adjacent greenspace creation...; and promote... smart growth, linked recreational and park areas...”

These sustainable development linkages have led to numerous brownfields and sustainability success stories. Some of these are further described in the examples below; others are documented on the EPA website:

- Green buildings; http://www.epa.gov/swerosps/bf/success/Green_Building.pdf
- Greenspace projects: http://www.epa.gov/swerosps/bf/success/Green_Space.pdf
- Sustainable development: http://www.epa.gov/swerosps/bf/success/Green_Sust_Dev.pdf,
and
<http://www.epa.gov/swerosps/bf/success/sustainable.pdf>

EPA’s ER3 program. EPA has also administratively organized the Environmentally Responsible Redevelopment and Reuse (ER3) program to encourage sustainable reuse of Superfund and RCRA sites. For selected pilot projects, EPA, through ER3, will collaborate with federal, state, public, and private partners to identify, develop, and deliver incentives to encourage developers and property owners to implement sustainable practices during the redevelopment of contaminated sites. See:

<http://www.epa.gov/compliance/cleanup/redevelop/er3/index.html>

OPPORTUNITY FOR GREATER SUSTAINABILITY TIE-INS

While the current program has demonstrated many successful connections between brownfields and sustainability, there is an opportunity to strengthen the tie-in, thereby increasing the environmental and energy conservation benefits of the program. Further, there is an opportunity to support well-planned model projects that can demonstrate specific ways to overcome obstacles to sustainable redevelopment of brownfields. Demonstration projects might illustrate:

- Ways to reconcile best management practices for stormwater, which usually involve filtering the stormwater through permeable surfaces, with brownfields practices such as engineering controls that include capping.
- Creative financing techniques that help overcome the extra costs of sustainability elements.
- Creative lease terms that translate energy savings into benefits for the tenant.
- Creative integration of greenspace with intense development;
- Flexible regulatory approaches that allow productive alternative energy uses of contaminated property. For example, a wind farm or solar field might be allowed as a surface use of property that is impractical to clean up for more job-intensive uses.

The relationship between brownfields and sustainable development is described below for projects that incorporate three kinds of sustainability elements:

1. Green and energy-efficient buildings.
2. Greening elements: trails, parks, and ecosystems restoration.
3. Alternative or renewable energy production.

These are, by no means, the only ways brownfields projects might demonstrate sustainability. Sustainable and re-cycled building materials, green remediation, green engineering, and other sustainable development techniques are also possible (and beneficial) to demonstrate on brownfields sites.

Brownfields and Green/Energy-Efficient Buildings

Green buildings save energy by an average of 25 to 30 percent relative to conventional construction. Innovative site and development plans can raise the energy savings up to 75 percent.¹ Green buildings also lower water consumption and improve water quality through advanced stormwater management. However, green buildings tend to cost more than conventional construction, a phenomenon that has been dubbed the “green premium.” The green premium varies generally between zero and ten percent,² but the differential is widely viewed as falling over time as economies of scale are setting in and the experience level is improving.

¹ See two studies by Neighborhood Buildings Institute Kathy Turner, PE, “A Post-Occupancy Look at LEED Building Performance,” <http://www.hpac.com/GlobalSearch/Article/32116/>, and <http://www.buildinggreen.com/auth/article.cfm?fileName=161201b.xml>,

² Estimates of the green premium vary depending partly on the level of LEED certification. A US General Services Administration analysis estimated the differential at 0 - 8 percent: “LEED Cost Study,” 2004, <http://www.fypower.org/pdf/gsaleed.pdf>.

The changing cost differential has meant considerable growth in the green buildings sector of the building industry; however, green buildings are projected to comprise only 6 percent of commercial development in 2007.³

The extent to which green and energy-efficient development is correlated with brownfields is unknown. The evidence, largely anecdotal, suggests a correlation,⁴ but clearly there is a substantial opportunity to strengthen the connection.

Examples. Examples of brownfields projects that also involve green buildings are now quite abundant. Below and in Table 1, we highlight projects that are exceptionally notable – ones that, with greater funding levels, could be widely replicable.

Portland – South Waterfront. One exceptional example is the Portland South Waterfront site, a 57-acre \$2.2 billion project, with just the first phase slated to provide 3,000 new housing units and 5,000 new jobs. Development plans call for LEED certification for each building, with some reaching LEED platinum certification. One high-rise residential building is being designed to generate more energy than it uses through the use of solar panels that double as exterior sun shades for each balcony. On average, South Waterfront buildings will save 30% of both energy usage and water usage relative to conventional construction. Buildings are topped with vegetated “ecoroofs,” and parking lots are interrupted by a series of landscaped swales engineered to capture and slowly remediate stormwater before discharging to the nearby Willamette River. South Waterfront is also served by an aerial tram, as well as Portland’s light rail system, and the project is regarded as an excellent example of transit-oriented development. A two-acre park, which received \$150,000 in EPA cleanup funds, and immediate access to greenway and hike-bike trails cap this eco-friendly living environment.

Further exceptional examples of green buildings on brownfields are summarized in Table 1.

Brownfields and Greening/Park Projects

The second opportunity area is to enhance the relationship between brownfields redevelopment and greening/park projects. Projects that could serve as models might include:

- Brownfields converted to parkland;
- Accommodation of substantial open space or trails within a development plan; and
- Ecological restoration, particularly for waterfront sites.

Indirect Economic Benefits. For economic development officials, the appeal of park and open space projects is usually indirect: the greenspace facilities may create an amenity that adds value to the neighborhood, making nearby property more likely to experience new investment. A report prepared by the International Economic Development Council (IEDC) found that seven

³ Greg Kats, a green-building consultant, Washington, D.C, as quoted in “Green Building Reaching New Level,” USA Today, July 26, 2006

⁴ For example US Green Buildings Council data indicate that 25 percent of applicants to the Leadership in Energy and Environmental Design—Neighborhood Development (LEED-ND) pilot are applying for points under the brownfields criteria.

completed brownfields-to-greenspace projects reported mean off-site property value increases of 126%, compared to a control group that averaged 25% increases.⁵

⁵ International Economic Development Council, "Converting Brownfields to Green Space," for U.S. Environmental Protection Agency, January 2002

Table 1. Brownfields and Green Buildings Projects

City/Project Name	Development	Status 1/08	Green Elements	Federal Funds
Baltimore, MD – Montgomery Park	1.3 million sq ft office; 3,500 jobs	55% occupied	Green roof; energy-efficient, recycled building materials; bio-retention; recycled grey water	\$1 million BEDI \$8 million HUD 108 Historic tax credit
Portland – South Waterfront	Mixed use – Phase I: 3,000 DU's 5,000 jobs	Several bldgs complete	All bldgs LEED certified, some LEED gold/platinum; solar; trail/open space; stream restoration	EPA cleanup grant for park
Baltimore, MD – Brewer's Hill	737,000 sq ft commercial/mixed use space	First phase complete	Green roof; grey stormwater system; recycled materials; 25% energy efficiency savings	EPA site assessment Historic tax credits
Cambridge, MA - Genzyme	350,000 sq ft Corporate headquarters	Complete	LEED platinum; 42% energy efficiency savings; 34% water usage savings; 75% recycled building materials	
Chicago Center for Green Technology	Non-profit office	Complete	LEED platinum, roof gardens, solar, recycled grey water	(add)
Little Rock, AK – Heifer International	28 ac; 200 jobs	Complete	Model green parking lot	EPA pilot
Baltimore, MD – Gateway South	11 ac; \$125 million mixed use; 1,600 jobs	Planned	LEED silver projected	EPA site assessment \$975,000 BEDI \$13 million HUD 108
Bethlehem, PA -- Lehigh Valley Industrial Park	42,000 sq ft office	Planned	LEED – sunshades, energy efficiency	EPA cleanup HUD 108 BEDI
Denver – Cherokee Denver (Gates Rubber)	Mixed use – 3,000 DU's and 1.75 million sq ft commercial space	To start construction in 2008	Transit-oriented development LEED certification planned	(add)
Atlanta, GA - Atlantic Station	Mixed use – 5,000 DU and 30,000 jobs	More than 50% complete	LEED certification; Going Carless Program	(Add)
Cleveland, OH – Flats East Bank	Mixed use – 500 DU and 600,000 sq ft commercial space	Planned	LEED gold projected	(add)
Redding, CT Georgetown Land Development	Mixed use – 416 DU, 300,000 sq ft commercial space, theater, B&B	Under construction	Photovoltaics, hydro-electric dam, fuel cell system, transit-oriented development	EPA Brownfields CDBG Green Bonds
New York, NY – Via Verde	202 DU affordable housing	Planned	LEED gold - green roofs, geothermal, photovoltaics	

A review and survey of neighborhood and business attitudes toward three brownfields-to-park projects in Chicago and Minneapolis revealed strongly positive quality of life benefits and led the researchers to the conclusion that such projects create indirect benefits that are as substantial as the direct benefits of job-and-tax-generating projects⁶

Energy Benefits. Brownfields-to-greenspace projects have an energy benefit in that the greenspace acts as a “carbon sink.” The U.S. Forest Service estimates that an average tree absorbs and sequesters up to 26 pounds of carbon dioxide per year, which is the amount emitted by a car traveling 11,300 miles.⁷ Greenspace projects that also involve hike/bike trails have further energy benefits in that the trail may function to increase non-auto mode split.

Financing Obstacles. Park/greening projects face one obvious hurdle: financing is more difficult because land sale is not usually part of the financing equation. When contamination issues add costs, the financing of a park project becomes that much more difficult. This is one reason why some of the most successful greening projects are part of larger redevelopment plans, rather than isolated park plans.

Examples. There are numerous brownfields to park projects, but the interesting trend is the emergence of projects that combine development with land conservation. One exceptional example is the Milwaukee Road project:

Milwaukee, WI, Milwaukee Road -- Milwaukee officials, citizen partnerships, and developers have teamed up to bring back the Milwaukee Road corridor, but with a strong environmental theme. Developers are aiming to restore 200 acres of former industrial land on the edge of Milwaukee city limits with a massive sustainable building project. Buildings on the site will comply with the Sustainable Design Guidelines set forth by the City of Milwaukee and Menomonee Valley Partnership (MVP) to promote energy-efficient “green” facilities. The redevelopment will include 70 acres of greenspace that will re-establish previous ecosystems and protect them from further damage. The landscaping of the park includes a variety of environments, including savannah, upland prairies, riparian forest, wetlands, bluffs, and meadows. There will also be a swamp forest reconstructed to restore the habitat and assist in additional stormwater management needs. One section - Chimney Park - pays homage to the history of Milwaukee Road with the placement of two chimney stacks as the focal points of the park. The park provides visitors with three soccer fields, two basketball courts, four handball courts, picnic areas, a playground, a skate park, and a sand volleyball court. The economic development side of the 130-acre project is projected to add 1,830 jobs.⁸

The Milwaukee Road project involves a total of \$23 million from multiple governmental funding sources, including a \$10 million HUD 108 loan, a \$2 million BEDI grant, and a \$200,000 cleanup grant from EPA.

Other examples that illustrate establishment of greenspace within a development plan include:

- *Baltimore, MD, Gateway South* – A five-acre wetlands restoration and a greenway trail were carved out of the Gateway South business park redevelopment area. The project

⁶ Chris DeSousa, “Unearthing the Benefits of Brownfield to Green Space Projects: An Examination of Project Use and Quality of Life Impacts,” *Local Environment*, Vol. 11, No. 5, 577–600, October 2006.

⁷ U.S. Forest Service, quoted in http://www.coolcommunities.org/urban_shade_trees.htm

⁸ See: http://www.hud.gov/offices/cpd/environment/library/milwaukee_redevelopment.pdf

received assistance from EPA for the initial site assessment, as well as a HUD 108 loan and BEDI grant.⁹

- *Pennsauken, N.J., Pennsauken Waterfront* – Developer Cherokee Investment Partners has committed to a \$1.6 billion plan to remediate and revitalize nearly 600 acres of brownfields along the Delaware River. The plan will conserve 200 acres as wetland conservation areas, parks, trails, open space, and wildlife habitat.¹⁰
- *St. Paul, MN, Crosby Lake Business Park* — This former Texaco petroleum tank “farm” is 40 acres; 30 acres will be leased by the port for light industrial use. The remaining 10 acres will be open space, managed by the St. Paul Parks and Recreation Department for general public access. Funding came from Texaco, \$1 million for cleanup, and \$6.2 million from port authority bonds.
- *Austin, TX, Mueller Airport redevelopment* – At the 711-acre former airport site, 140 acres will be greenspace, much of it restored to its origins as a Texas “blackland” prairie.¹¹
- *Taunton, RI, Robertson-on-the-River* – The 6.5-acre, 140,000-square-foot redevelopment of a former mill for mixed residential and commercial space also includes a new greenway along the riverfront.¹²

Further, as an illustration of the need for targeted brownfields assistance for greening projects, in Pittsburgh/Allegheny County plans are being drawn up for a heralded and ambitious plan to establish a 128-mile linear waterfront park and greenway. Much of the land needed was once used for industry and contamination issues are prevalent.¹³ EPA funding, particularly targeted to greening projects like the Pittsburgh greenway trail, could make a critical difference in establishing a greenspace amenity that can help revive a local economy.

Brownfields and Alternative or Renewable Energy Production

The third opportunity area is to redevelop brownfield sites as alternative or renewable energy production facilities. The marriage of brownfields and alternative energy has fairly obvious benefits: reduction of greenhouse gases, improved air quality, and lowered dependence on foreign oil, while helping to demonstrate new energy technologies.

Brownfields can be well suited to this kind of reuse. In some cases, more intense use of land is not practical because of weak market conditions or because contamination issues may make redevelopment with commercial buildings impractical. However, wind farms and solar fields can be developed on sites that may not work for other uses.

The “Brightfields” program, a U.S. Department of Energy initiative, specifically promotes the redevelopment of brownfields to use solar technology to generate both clean energy and revenue for the community.¹⁴

Examples. There a number of successful models for brownfields-to-alternative energy projects. Below are two model projects:

⁹ See: [Gateway South](#)

¹⁰ Triangle Business Journal, May 25, 2005, <http://www.bizjournals.com/triangle/stories/2005/05/23/daily19.html>.

¹¹ Matt Whelan, “Austin converts Brownfield to Blackland (Prairie, that is),” Brownfield News, December, 2007.

¹² See: http://www.rhodeislandapa.org/Newletters/Jan_Feb_07%20Newsletter.pdf

¹³ See: <http://www.gatewaynewspapers.com/woodlandprogress/80081/?printable=story>

¹⁴ Ribeiro, L. 2007. Waste to watts A “brightfield” installation has the potential to bring renewed life to a brownfield site. *Refocus* 8 (2):46-49

- *Lackawanna, NY - Brownfield to Wind Farm* -- The Buffalo-area Bethlehem Steel mill was a blighted Superfund site on the shores of Lake Erie. However, today the site is playing a role in combating global warming with eight windmills. The site has also been removed from the CERCLA/Superfund list.
- *Brockton, MA - The "Brightfield"* -- A 27-acre brownfield site has now been redeveloped for Massachusetts's largest array of photovoltaic cells. The once barren acreage is now a 425-kilowatt electricity plant that, when compared to conventional fossil fuels, accounts for a reduction of 589,570 pounds of carbon dioxide and other emissions.¹⁵ ??per year??

While a number of successful brownfields-to-alternative energy projects have been carried out, they are mostly isolated examples. There is potential for a much larger effort that would begin to produce more substantial energy benefits.

RECOMMENDATION

The connections between brownfields and sustainable development, greening, and alternative energy have been established by many pioneering projects, but a larger effort, with a separate funding source, would not only produce more successes, but also produce more models. If viewed from a strategic point of view, carefully chosen pilots could help establish new greening technologies, new ways to integrate environmental restoration with development, new incentives or regulatory strategies that could help reach sustainability objectives, and new ways to produce sustainable energy.

The recommendation, therefore, is to establish a pilot program, with a separate funding authorization of at least \$20 million, for sustainable development and alternative energy reuse of brownfields. The pilot should work within the funding parameters of the current brownfields program, using funds for site assessments, cleanup, site planning and preparation, feasibility analysis, and engineering studies on sites that will be redeveloped with high performance/green buildings, green infrastructure, parks/greenspace/trails, ecosystem restoration, and/or renewable energy production.

¹⁵ Riberio, op cit