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Smart Growth's Blind Side

Sustainable Cities Need Productive Urban Industrial Land

Nancey Green Leigh and Nathanael Z. Hoelzel

Problem: For many cities and planners, adopting smart growth sprawl-containing strategies is associated with the conversion of relatively inexpensive industrial-zoned land to land zoned for mixed-use commercial and residential redevelopment. This can weaken the urban economic base, reduce the supply of good-job producing land, and contribute to industrial-sector suburban sprawl.

Purpose: We expose smart growth's blind side by revealing the lack of attention to urban industrial revitalization in planning practice. We expand the smart growth dialogue by describing a) the impacts on productive urban industrial land of adopting smart growth policies, and b) local government measures to protect urban industry while pursuing smart growth.

Methods: We review the recent local industrial policies of 14 cities and 10 practice-oriented smart growth publications with local economic development components to reveal the disconnect between urban industrial development and smart growth approaches. We compare elements of adopted local industrial policies from selected cities with commonly accepted smart growth principles to illuminate the challenges smart growth policies pose for protecting and revitalizing urban industrial areas.

Results and conclusions: Our review of cities initiating local industrial policies reveals that significant amounts of industrial land have been converted to other uses as cities pursued smart growth. The smart growth literature provides little to no acknowledgment of the need to coordinate urban industrial development practices with other mainstay smart growth activities. Although development pressures to convert

Smart growth has a policy blind side, that is, as a planning framework for guiding sustainable urban development, it fails to recognize connections between urban industrial land and the activities it supports with smart growth goals of limiting sprawl and revitalizing central cities.

In this article, we support our claim of a policy blind side by documenting the smart growth movement's omission of policies for revitalizing urban industry. We find, in general, that smart growth discourse in planning practice narrowly perceives sustainable land use and economic development as promoting nonindustrial activities over industrial activities. On the one hand, smart

industrial land to higher densities and other uses persist, the national economic crisis has led to a call for strengthening manufacturing. There has also been a decline in the nonindustrial infill development that epitomizes smart growth projects. Together these trends present opportunities and challenges for city and regional planners to change smart growth approaches.

Takeaway for practice: Industrial land is at risk in cities. Recent efforts to reduce this risk, such as explicit local policies to preserve industrial land and jobs while also pursuing smart growth, illustrate how challenging it is to attract new manufacturers and prevent further industrial decline in urban neighborhoods. Pursuing smart growth and sustainable urban industrial development should not be an either/or proposition, and requires approaches that explicitly safeguard productive urban industrial land and discourage industrial sprawl.

Keywords: urban manufacturing, smart growth, industrial sprawl, local industrial policies

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growth promotes compact, dynamic development intended to improve urban neighborhoods by creating jobs, attracting residents, and increasing local tax revenues. On the other hand, smart growth predominately views urban industry as hindering future growth and, ultimately, sustainability (Bronstein, 2009). Smart growth policies, in turn, offer little guidance to cities that are losing productive industrial land essential to supporting industrial firms and jobs and preventing industrial sprawl. Likewise, by not encouraging industrial revitalization in mixed-use, transit-oriented, and infill redevelopment projects, smart growth policies overlook a significant economic sector that contributes to diverse, innovative, and more resilient local economies. The resulting narrowing of cities' economic bases may inadvertently place them in vulnerable positions during economic recessions and slow economic recovery. We argue that planning practitioners and academics should rectify smart growth's blind side by acknowledging the lack of attention to issues and priorities for revitalizing urban industry in the smart growth movement and by promoting the fact that, for sustainable cities and regions, a vital industrial presence in urban neighborhoods is as important as a dynamic commercial and residential presence. This is a particularly compelling time to recognize and correct smart growth's blind side. The lingering impacts of the Great Recession have significantly diminished growth pressures that created the impetus for the smart growth movement, and there is growing interest in the potential for revitalizing U.S. manufacturing to generate jobs and hasten economic recovery.

Urban Deindustrialization

Before proceeding with our analysis of smart growth's treatment of urban industrial land, we will briefly discuss why vacant industrial land became a major urban problem. First, we need to identify the two major private sectors that use industrial land: manufacturing and warehousing. Prior to suburbanization, manufacturing in cities tended to be located in multistory buildings. City warehouse facilities were located along rail spurs. Historical pre-auto building density patterns made it more likely that these properties were bounded on all sides and unable to expand (Fitzgerald & Leigh, 2002).

Suburbanization of manufacturing the decades immediately after World War II coincided with shifts to mass production layouts in one-story buildings that had very large footprints, were surrounded by parking lots, and were adjacent to major road networks. The predominant production mode associated with these locations was a manu-

facture-to-stock or just-in-case system. Large inventories of products requiring large warehouse spaces were created. However, the last two decades saw a return to manufacture-to-order or just-in-time modes of production. These approaches can be adapted to existing central-city industrial facilities that have smaller footprints and multiple stories (Leigh, 1996).

A number of factors have made city warehouses less desirable. The increased use of trucking and air over rail for freight transport decreased the demand for centralized urban warehouse space along rail spurs. The shift to containerization made older warehouses with smaller loading bays unusable, as did the increasing use of larger tractor trailers, which were difficult to navigate through central-city streets. Trucking deregulation resulted in transportation costs being minimized when goods were shipped from a national location that minimized distance to all customers. Thus, products were no longer stored in the cities that manufactured them; instead, they went to market from major regional distribution centers in the midsection of the United States (e.g., Memphis). The centralization of warehousing, along with advances in storage and disbursement of products, required much larger warehouse spaces with high ceilings for automated racking systems. Nonetheless, there will still be demand for warehouse space that supports the efficient distribution of products specifically created for inner-city markets. Further, firms that produce products more easily transported on smaller trucks (due to small size or smaller volumes) can also use inner-city warehouse space (Fitzgerald & Leigh, 2002). Additionally, industrial space that is obsolete for warehousing has the potential to be converted to manufacturing.

With manufacturing production moving overseas, some may wonder whether there is a need for more manufacturing space, particularly in light of the decline in manufacturing jobs over the last three to four decades. (Today, for the first time since 1941, there are fewer than 12 million people employed in the U.S. manufacturing sector.) There are, however, reasons to think positively. First, manufacturing activity has expanded over the past two years (Institute for Supply Management, 2011), and the sector added 250,000 jobs since its low point in December 2009 (U.S. Department of Labor, Bureau of Labor Statistics, 2011). Second, the United States remains the largest manufacturing economy. It produced 21% of the world's total manufactured goods, generating \$1.72 trillion as of 2010 (National Association of Manufacturers, 2011). Manufacturing value added increased 21.3% in the last decade, and the sector accounted for 11.7% of the nation's GDP (U.S. Department of Commerce, Bureau of Economic Analysis, 2011). Lastly, there are a number of

initiatives to strengthen and grow the manufacturing sector, including the Obama Administration's Advanced Manufacturing Partnership and Obama's initiative to double U.S. exports within five years.

Urban Industry in the Smart Growth Movement

The smart growth movement is generally viewed as an alignment of multiple policy networks advocating particular planning policies for curtailing sprawl and revitalizing urban areas. The smart growth movement emerged from two networks: the Smart Growth Network (SGN), established in 1996, and Smart Growth America (SGA), established in 2000. APA was an original member of both. In 2002, APA adopted a policy position on smart growth that included seven goals and focused on five broad policy themes (APA, 2002b).¹ Additionally, APA promoted 13 core principles of smart growth, including targeting areas for compact development and reinvestment, creating a sense of place, and involving diverse interest groups in the planning process. APA's stance on social equity as a smart growth goal called for reversing the negative effects of job sprawl and improving access to a range of quality jobs in central cities. However, while APA's smart growth focus promoted mixed-use areas, infill development, reuse of existing buildings and infrastructure, as well as brownfield redevelopment, it failed to mention specific policies for encouraging industrial uses or reinvesting in industrial land for new manufacturing. Likewise, while APA supported redeveloping former industrial areas in order to improve central-city vitality and encourage new job opportunities in distressed neighborhoods, it did not consider industrial activity a means to achieve these goals in its smart growth policy statement. This was the case even though industrial activity typically produces higher wages and more jobs than commercial activity. Manufacturing, for example, remains the largest export sector and still has the highest economic multiplier of any sector (The Manufacturing Institute, 2009).

To assist localities in implementing principles within the policy guide, APA (2002a) also published the *Growing Smart Legislative Guidebook*, a 1,400-page document that describes best practices in legislating and implementing local smart growth policies. The *Guidebook* included a review of 47 neighborhood plans adopted between 1980 and 1996. Only 6% of the plans mentioned industrial land use and activities, and then only in the context of limiting or removing existing industrial development, rerouting

industrial traffic, and protecting human health and the environment from industrial activities (see pp. 7-273). In the 36 common practices for preparing effective smart growth policies that the *Guidebook* discussed, industrial development was not mentioned once. Indeed, while APA identified planning as an advisory activity that improved the quality of places and supported balanced economic viability in central-city neighborhoods, its *Guidebook* did not consider the possibility of expanding or revitalizing industrial areas in its analysis of common smart growth elements or its reviews of best practices.

In the nearly two decades since the smart growth movement began, planning scholars have put considerable effort into defining smart growth and advancing its policies and goals. Typologies in academic literature have frequently been used to convey how smart growth's core values were incorporated within urban development policies. Ye, Mandpe, and Meyer (2005) offered a set of programmatic elements organized under six main dimensions of smart growth. Downs (2005) provided a set of nine principles that have been reflected in smart growth policies, and asserted that political pressure to adopt these principles typically came from nongovernmental environmentalists, local public officials and planners, and innovative developers that had found a market niche.² The emphasis placed on public-private partnerships by these actors was one of the most notable shifts during smart growth's evolution from earlier policies of urban growth control and management policy (Burchell, Listokin, & Galley, 2000).

These public-private partnerships have subsequently determined how smart growth policies are framed. To illustrate, Burchell, Listokin, and Galley (2000) considered public-private partnerships to be invaluable in overcoming the challenges of revitalizing urban industrial areas. Local governments could inventory their industrial land, provide this information to private developers, streamline approvals, and reduce redevelopment costs in an effort to spark conversion of industrial land to residential and other nonindustrial uses. Edwards and Haines (2007) recommended that local planners, developers, and communities make smart growth objectives more explicit in comprehensive plans that have outcomes such as sustainable economic development. We are interested in the apparent lack of policy directions, either implicit or explicit, for industrial development in APA's policy guide and its typologies of smart growth principles and key concepts. In other words, planning's professional body and its key academic research neither emphasize positive benefits of industrial development for urban revitalization, nor do they make connections with local industrial planning in the smart growth movement.

Background

This article is motivated by our involvement in ongoing efforts to develop the first industrial land and sustainable industry policy for the City of Atlanta, Georgia. During the course of preparing background studies and an implementation framework, we conducted a national search for cities that were already focusing on issues and policies for industrial land preservation. The 13 cities we identified were Baltimore, Boston, Chicago, Los Angeles, Minneapolis–Saint Paul, New York, Oakland, Philadelphia, Portland (OR), San Francisco, San Jose, Seattle, and Washington, DC.³ All of the cities expressed concern about the loss of productive industrial land to other uses, and the subsequent ramifications for local economic development. Local planners and cities worried they would not have enough productive industrial land and building space located in the right areas, and supported by the right type of urban infrastructure, to meet the needs of industrial businesses. They feared they would consequently miss out on significant new economic development opportunities from advanced and sustainable manufacturing and related industries. Several cities were also grappling with the shortage of strategically located industrial land necessary to meet growing demands in public services.

In response to these overarching issues, local industrial policies implemented any or all of the following measures:

- protecting and enhancing industrial areas by restricting nonindustry uses;
- curtailing market-driven overpricing of industrial land by fostering an industrial business climate and limiting competing land uses within existing industrial areas;
- eliminating ad hoc conversions by establishing stricter rezoning criteria and processes;
- improving linkages between workforce training and quality local industrial jobs;
- redeveloping brownfields for industrial reuse;
- integrating public capital and infrastructure priorities with industrial land protection and revitalization; and
- undertaking strategic communications to change smokestack perceptions of modern industry while communicating urban industry's challenges, opportunities, and impacts to policymakers and the public.

Our research identifies a recurring theme in local industrial policies: Industrial development is pitted against mixed-use, retail, commercial, office, high-technology, and residential development. The often-cited explanation that many U.S. cities, including most of those in our review, have shifted from an industrial-based to a service-based economy over the recent decades as a consequence of

broad economic and industrial restructuring does not fully explain this planning conflict. In fact, it obscures the role of local planning policies in converting industrial land, productive or otherwise, to new uses. In our assessment, city planning tends to be conducted in proverbial silos. In one silo, planners pursue industrial land protection and firm attraction and retention through local industrial policies. In another, planners focus on redeveloping industrial land to meet local demands for other uses. We turn to smart growth, the most prominent planning approach for sustainable land use and urban development, for insight into why these divisions exist.

Research Approach

Our exploration of smart growth's blind side focuses on practice-oriented literature intended to guide local economic development planners. The APA smart growth policies and academic literature we discussed above captured smart growth's key concepts and principles. Proponents of smart growth will obviously set forth their own issues and priorities, but we are interested in getting a sense of whether and how smart growth directs planners to discourage industrial suburban sprawl and revitalize central-city industrial areas.

In the APA and academic literature, we specifically look for evidence of whether smart growth, in framing responses for sustainable cities, considers the diminishing supply of urban industrial land and its implications for local land use and economic development planning. In Table 1, we summarize and classify smart growth's view of major economic development planning responses affecting urban industrial development, and present issues and priorities identified by the 14 local industrial policies we studied.

We draw attention to six specific issues and priorities in order to demonstrate how strategies can conflict when urban industrial revitalization and smart growth planning are pursued in isolation from each other. The comparison highlights the division between the two approaches. Yet, it also shows that land use planning and local economic development have shared interests, which, if recognized, would help to dismantle the silos between smart growth planning and urban industrial planning.

We reviewed 10 additional publications, eight of which were written by SGN members and are among the most popular on the U.S. Environmental Protection Agency (U.S. EPA) Office of Sustainable Communities website (<http://www.epa.gov/smartgrowth/publications.htm>). We selected this subset because it

Table 1. Local industrial issues and policies and smart growth planning.

Summary of urban industrial development issues and priorities in 14 local industrial policies	Summary of smart growth issues and priorities impacting urban industrial development
Land use planning issues and priorities	
<ol style="list-style-type: none"> 1. Loss of industrial land and <i>ad hoc</i> zoning conversions threatening productive industrial areas. 2. Market-driven overpricing of industrial land and competition from other land use alternatives. 3. Encroachment and compatibility of uses within and surrounding industrial areas. 	<ol style="list-style-type: none"> 1. Rezone land for functionality and compatible mixes of use. 2. Facilitate transit-oriented development (TOD) and greater access to jobs. 3. Foster compact and dense infill development.
Local economic development planning issues and priorities	
<ol style="list-style-type: none"> 1. Lack of available productive industrial land for advanced manufacturing and sustainable industrial businesses. 2. Link workforce training to quality, local industrial jobs. 3. Foster supportive and innovative business climates for industry. 	<ol style="list-style-type: none"> 1. Balance jobs and housing. 2. Reduce job sprawl and job-resident spatial mismatch. 3. Improve employment diversity, quality, and wages in urban job centers.

included practice-oriented publications with local economic development components. We also reviewed two Planning Advisory Service (PAS) reports on smart growth policies published by APA. Combined, these ten publications include praxis recommendations for planning, policy checklists and evaluation matrices, case studies, and research, as well as outreach publications on smart growth best practices and tools. While the authors of these documents shared smart growth's core principles of limiting sprawl and revitalizing urban areas, they held varied positions on the role of industrial land and activities in urban areas, particularly in central cities. Our final selection of publications is listed in Table 2.

In the next section, we discuss our review of the 10 popular smart growth policy publications. We organize our findings according to the classification scheme presented in Table 1. Under each of set of issues and priorities, we discuss specific policy recommendations that speak directly to urban industrial development concerns. We identify the extent to which the publications addressed concerns; we also identify moments when they appeared to be in conflict with the issues and priorities set forth in the 14 local industrial policies.

Evidence of Smart Growth's Blind Side in Practice-Oriented Literature

To be clear from the outset, the following review does not suggest that smart growth explicitly directs communities and planners to push out existing industrial employers or prohibit new industrial activities in urban areas. Rather, the evidence from the 10 smart growth publications reveals that smart growth and urban industrial development policies, while sharing a desire for sustainable development,

differ in their views of industrial land and of the significance of industry in central cities. Urban industrial areas were generally perceived in the publications to be functionally obsolete, underutilized, or otherwise insufficient to support the dense, mixed-use development smart growth advocates to combat sprawl and improve urban neighborhood quality. Subsequently, the publications' authors placed greater emphasis on improving local conditions (including the conversion of industrial land) in order to attract the type of real estate development that would support the mix of residential and service- and knowledge-based economic activities more consistent with the popular conception of the new economy.

The view of urban industrial areas as unproductive and unattractive dominated the discourse in the publications. This narrow view, in turn, provides little incentive to consider local industrial policies such as those of the 14 cities reviewed in this article. Identifying specific instances when smart growth issues and priorities conflicted with or supported the planning activities taken in local industrial policies may help to broaden this view.

Land Use Planning Issues and Priorities

The loss of industrial land to other uses was the most prevalent issue in the 14 local industrial policies we reviewed. Atlanta, for instance, lost 800 acres or 12% of its industrial land between 2004 and 2009. More industrial land is at risk. In the new urbanist-inspired Glenwood Park neighborhood, a cement plant is under pressure from the encroaching mixed-use development and has recently put 20 acres up for sale (see Figure 1). Table 3 displays the reduction of industrially zoned land in seven cities over the past several years.

Table 2. Ten selected smart growth publications (2002–2009).

Author	Title	Year	In-text abbreviation
1. American Planning Association (Prepared by J. Weitz & L. Waldner)	Smart growth audits (PAS No. 512)	2003	APA, 2003
2. American Planning Association (Prepared by M. Morris)	Smart codes: Model land-development regulations (PAS No. 556)	2009	APA, 2009
3. Congress for the New Urbanism & U.S. EPA (Prepared by W. Fleissig & V. Jacobsen)	Smart scorecard for development projects	2002	CNU & U.S. EPA, 2002
4. International City/County Management Association, & Smart Growth Network	Getting to smart growth I: 100 policies for implementation	2002	ICMA & SGN, 2002
5. International City/County Management Association, & Smart Growth Network	Getting to smart growth II: 100 more policies for implementation	2003	ICMA & SGN, 2003
6. International Economic Development Council	Economic development and smart growth	2006	IEDC, 2006
7. National Association of Local Government Environmental Professionals, & SmartGrowth Leadership Institute	Smart growth is smart business: Boosting the bottom line & community prosperity	2004	NALGEP & SGLI, 2004
8. Smart Growth Leadership Institute	Implementation tools	2007	SGLI, 2007
9. Smart Growth Network, International City/County Management, & U.S. EPA	This is smart growth	2006	SGN, ICMA, & U.S. EPA, 2006
10. U.S. EPA (Prepared by Jonathan Rose Companies & Roberts and Todd)	Smart growth guidelines for sustainable design and development	2009	U.S. EPA, 2009

Since the 1990s, San Francisco lost nearly half of its industrial land, mostly to mixed-use development designed to accommodate growing demand for residential and office space. During the recent planning process for San Francisco's Eastern Neighborhoods, the conversion of over 600 acres of industrial land to mixed-use housing development was intensely contested (San Francisco Planning Department, 2002a, 2002b, 2008). Local advocacy for retaining a balanced mix of industrial land and activities led to the prioritization of industrial land use in the community's infill redevelopment strategy, which was included in the Bay Area's regional smart growth project, FOCUS (Association of Bay Area Governments, 2011).

In Portland, OR, the expansion of the metropolitan area's urban growth boundary by 310 acres to accommodate a current shortfall of urban industrial sites was first granted, and then denied, over concerns about losing productive farmland to industry (Bjork, 2011; Christensen, 2010; Metro Regional Government, 2010; SGN, 2010). Although Portland's industrial sanctuary-zoned districts have protected nearly 14,000 acres of industrial land from new residential and large-scale commercial development since 1980, industrial land remains under conversion pressure in part because of the perceived

successes of smart growth projects such as the Pearl District (Stout, 2003) and the need to construct infill housing because of the region's urban growth boundary ([UGB]; City of Portland, Portland Bureau of Planning, 2003). Since 1991, industrial land loss in Portland has mostly been to mixed-use projects that did not include industry in their mix (City of Portland, Portland Bureau of Planning, 2004).

Baltimore's industrial land, especially the land around its harbor and port facilities, has been under constant conversion pressure for new mixed-use housing and office space. The perceived uncertainty with regard to the city's commitment to supporting industrial activity placed Baltimore at a disadvantage for retaining and attracting industrial companies (Bay Area Economics, 2004). In 2004, the City of Baltimore responded with a comprehensive industrial study and established a maritime industrial zoning overlay district, which eventually became recognized as a smart growth success story (Maryland Department of Planning, 2010).

Seattle's industrial land has been under pressure from speculative real estate development driven by demand for residential and commercial land. In 2007, the City of Seattle completed an extensive survey of industrial businesses, current and future land use demands, and existing industrial

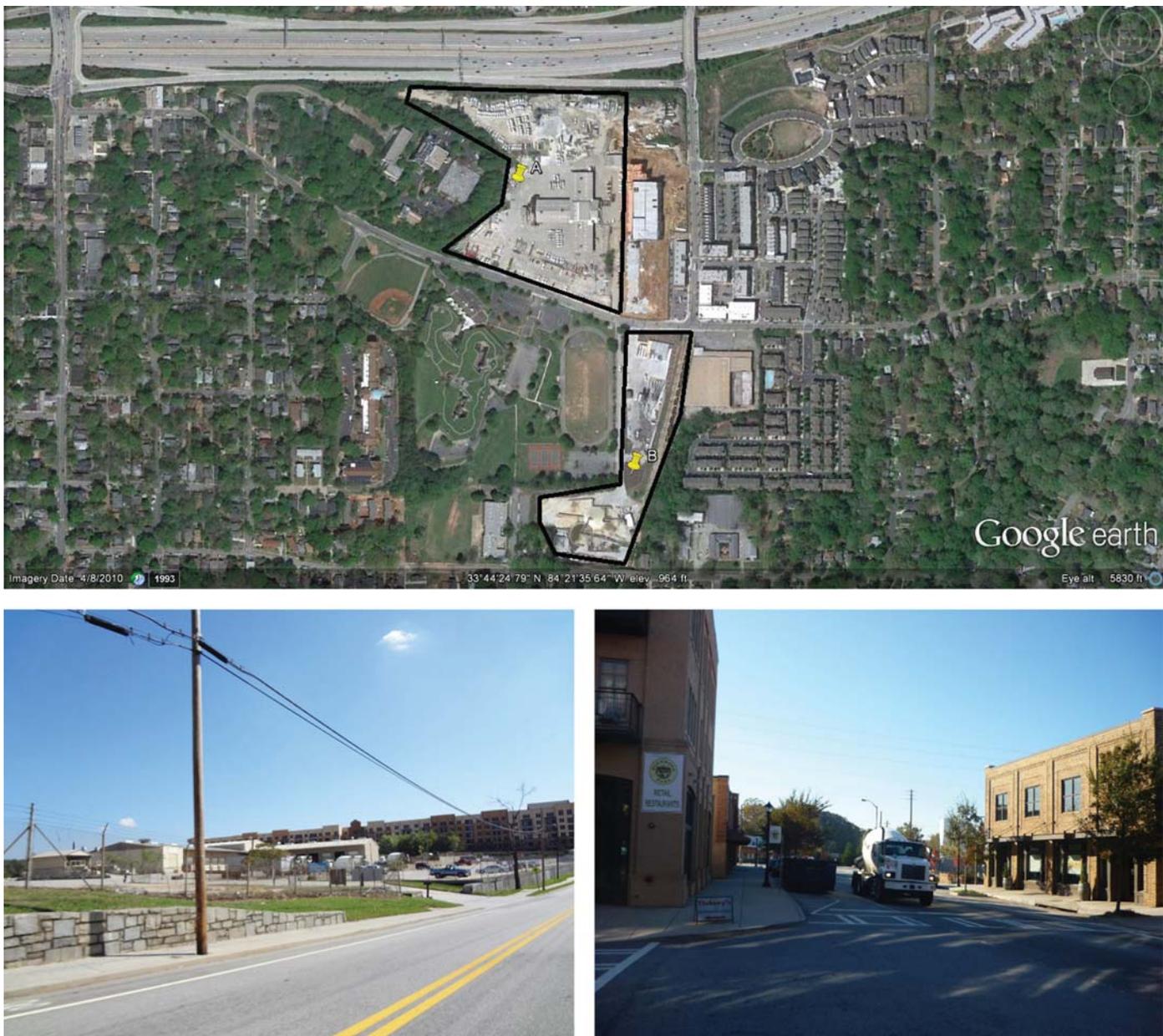


Figure 1. Industrial land under pressure (including pressure for zoning changes) from new smart growth mixed-use development in Atlanta. The concrete company has a 20-acre batch plant (A) for sale. The smaller sand plant (B) is also experiencing pressure. Heavy truck traffic raises incompatibility issues with the development's new residents and businesses located east of the industrial area.

Aerial image source: Google Earth, 2010 (image used in accordance with Google Permission Guidelines, <http://www.google.com/permissions/geoguidelines.html>). Photograph credits: N. Z. Hoelzel.

(Color figure available online.)

zoning codes. The efforts resulted in changes to zoning ordinances that limited nonindustrial activities in the city's industrial employment centers. Furthermore, after assessing whether there was enough land in Seattle's designated urban villages to accommodate both housing and nonindustrial employment growth over the next decade and half, the City determined it did not need to convert industrial land in order to curb sprawl (City of Seattle, 2007a, 2007b, 2007c; Seattle Planning Commission, 2007).

Pressure for residential development was by far the most prevalent cause of industrial conversion in Minneapolis's central area. Fifteen industrial buildings were converted to new city-living lofts between 2000 and 2005 alone (Maxfield Research Inc., 2006). Saint Paul has also experienced its share of industrial land conversion: 387 acres between 2000 and 2005 (CDC Associates, 2008). The Twin Cities took note of these losses and determined that preserving productive industrial areas was necessary if

Table 3. Loss of industrial land to rezoning in select U.S. cities.

Cities	Industrial land lost (acres)	% Lost	Years
Atlanta, GA ^a	800	12	2004–2009
Minneapolis–St. Paul, MN ^b	1,812	18	1990–2005
New York, NY ^c	1,797	14	2002–2007
Philadelphia, PA ^d	1,645	8	1990–2008
Portland, OR ^e	489	2	1991–2001
San Francisco, CA ^f	1,276	46	1990–2008
San Jose, CA ^g	1,470	9	1990–2009

Source:

- a. Leigh et al. (2009b).
- b. CDC Associates (2008).
- c. Pratt Center for Community Development (2009).
- d. City of Philadelphia (2011).
- e. City of Portland, Portland Bureau of Planning (2003).
- f. San Francisco Planning Department (2008).
- g. City of San Jose, Department of Planning, Building, Code Enforcement (2009).

they wanted to meet the growing demands in new manufacturing and maintain a balanced and sustainable economy. Recently, the Mayors' Initiative on Green Manufacturing was established.

As previously discussed, a number of factors have made central cities less attractive locations for manufacturing and other industrial activities over the decades (e.g., obsolete facilities, limited space for expansion, less conducive urban infrastructure, competition from suburban and overseas localities, and overall national decline in the number of manufacturing firms and employees). The local industrial policies we reviewed specifically identified other factors, particularly increased conversion pressures on industrial land. Together these influences posed formidable challenges to planners attempting to revitalize urban industries. However, the smart growth movement, as portrayed in the 10 publications we reviewed, has as yet been unresponsive to these concerns.

Several of the publications promoted rezoning existing urban industrial areas to accommodate a mix of land uses (APA, 2003, 2009; Congress for the New Urbanism & U.S. Environmental Protection Agency [CNU & U.S. EPA], 2002; Smart Growth Network, International City/County Management, & U.S. Environmental Protection Agency [SGN, ICMA, & U.S. EPA], 2006; U.S. EPA, 2009). Without mentioning industrial reuse, they suggested that redeveloping single-use areas (such as industrial parks and large industrial buildings) as dense, mixed-use and live-work developments was critical to the success

of regional development strategies for promoting efficient use of transportation networks and other infrastructure, increasing housing options and opportunities to achieve the American dream, and protecting farmland. It is striking that smart growth considers preserving productive farmland a viable means to sustainable urban development, while virtually ignoring the contribution of urban industrial land and the activities industry supports. The cities that have created local industrial policies argue that losing productive industrial land is similar to losing productive farmland: Once it is converted it is often difficult, if not impossible, to reclaim it.

The 10 smart growth publications we examined paid little attention to the necessity of industrial land in providing public services. Cities' own governments are among the heaviest users of industrial land, and local industrial policies revealed that some cities had an immediate need for additional industrial space, especially for public works, waste management, and parks and vehicle fleet maintenance. This demand for new space was partially attributed to the demand generated by the sort of dense, nonindustrial developments promoted by smart growth, and the growing demand for alternative, more sustainable forms of public services. The smart growth publications provided some guidance on recycling construction and demolition (C&D) debris, incorporating local recycling programs in end uses, and integrating onsite renewable energy sources (CNU & U.S. EPA, 2002; U.S. EPA, 2009). However, they failed to connect *where* these activities take place with the type of land necessary to support them. Recycling, composting, remanufacturing, and alternative energy production and distribution are activities that usually occur on industrial land, but the publications did not direct planners to ensure that industrial land would be available for *local* facilities. They failed to mention that the local production of these products and services would be relevant for meeting sustainability goals. The publications also made no reference to the role of municipal operations in supporting these private activities.

Adjusting smart growth's outlook so that it considers productive industrial land essential for sustainable cities requires planners to assess current land use and zoning plans, and to consider amendments, such as protective industrial districts. However, the publications provided little to no guidance on this point. Instead, APA recommended that when reviewing local smart growth policies, planners should ensure the presence of zoning districts that allowed for a mix of residential and commercial uses. APA did not ask planners to consider the benefits of local zoning ordinances that provided protections for industrial areas while allowing compatible industrial uses adjacent to

or mixed with residential and commercial uses. Further, while APA emphasized the benefits of form-based codes for expanding housing opportunities, encouraging pedestrian activity, and preserving open space, it did not discuss the potential benefits for industrial productivity or revitalizing industrial areas (APA, 2003, 2009).

Four other organizations provided vague guidance on including industrial uses in smart growth redevelopment projects (International City/County Management & Smart Growth Network [ICMA & SGN], 2002, 2003; International Economic Development Council [IEDC], 2006; Smart Growth Leadership Institute [SGLI], 2007). They encouraged mixing land uses to correct previous planning practices of low-density, single-use developments. Planners could now promote form-based codes in mixed-use areas with light industry; allow some small manufacturers to operate in live-work zones; expect industrial facilities that were cleaner and more neighbor-friendly; and redevelop brownfields with a mix of residential, retail, and office space, as well as high-tech manufacturing, biomedical incubators, and pharmaceutical distribution. However, no specific policy tools or incentives were discussed; neither was there discussion about how to prepare form-based codes or create the mix of uses to revitalize urban industrial areas.

A related land use planning issue raised in several smart growth publications is the placement of transit-oriented development (TOD) to encourage greater access to jobs (APA, 2003, 2009; ICMA & SGN, 2002; IEDC, 2006; SGLI, 2007; SGN, ICMA, & U.S. EPA, 2006). None of the publications, however, offered guidance on how to provide workers with adequate transit services and access to urban industrial areas. Industrial development patterns and the types of jobs industrial land supports were not considered transit friendly. Alternatively, the publications offered several specific policy recommendations and examples of the type of dense, compact, mixed-use development that attracts the critical mass of transit ridership necessary to support TODs. APA (2009), for example, provided a model TOD overlay district that specified the exclusion of warehousing and distribution facilities, freight terminals, and industrial uses. In Portland, OR, the city "shed its industrial heritage, welcoming art galleries, boutiques, trendy nightspots, and fashionable restaurants and turning warehouses into loft apartments" in the Brewery Blocks district, a TOD (IEDC, 2006, p. 9).

Fostering compact, dense infill redevelopment is a core tenet of smart growth policies, and the majority of the publications promoted this form of redevelopment. Several publications encouraged planners to allow dense developments within existing urban areas (APA, 2003; ICMA &

SGN, 2002; SGN, ICMA, & U.S. EPA, 2006; U.S. EPA, 2009). However, by emphasizing only residential and commercial density in land use policies, communities and their planners may perceive larger industrial parcels and buildings to be inefficient land users. That is, narrowly defining efficient land use by a density criterion misses other important economic factors such as the fact that manufacturing has higher value and employment multiplier effects than many other land uses, and the fact that local tax revenues generated by manufacturers may be greater than the costs of providing them basic public services. APA (2009) did provide guidance on encouraging industrial development at productive intensities and with a mix of other complementary uses. It cited Oregon's UGB policy, which provided some measure of assurance that urban industrial land would be available, while encouraging infill development. However, as the recent conflict over expanding buildable industrial land in Portland's reserve illustrates, there are still challenges to meeting industrial land needs and resolving land use conflicts. APA did not propose ways to resolve land use conflicts arising within or adjacent to industrial areas; neither did it offer policies for protecting industrial land from conversion. It can, however, look to several of the cities that undertook local industrial policies, and recommend criteria for industrial land conversions and schemes for mitigating loss of productive industrial land. For example, San Jose has a policy whereby conversion requests must be accompanied by a designation of more industrial land somewhere else within the city (City of San Jose, Department of Planning, Building, Code Enforcement, 2007). The New York Industrial Retention Network (2004) recommended to the City of New York that a citywide conversion fee program be put in place to recapture a portion of the increased value of a converted industrial property, and the proceeds be used to help retain displaced industrial firms and jobs.

Local Economic Development Planning Issues and Priorities

Local industrial policies promote resilient and sustainable local economies by supporting a strong industrial base and greater economic diversification. Of the 10 smart growth publications we reviewed, none provided policy guidance for ensuring a sustainable mix of industrial jobs. The publications addressing the issue of balancing jobs and housing offered no guidance on how and why planners should include industrial jobs in the balance (APA, 2003; ICMA & SGN, 2002; National Association of Local Governmental Environmental Professionals & Smart Growth Leadership Institute [NALGEP & SGLI], 2004). For example, the National Association of Local Government

Environmental Professionals and Smart Growth Leadership Institute (2004) discussed Silicon Valley Manufacturing Group's⁴ program for providing transportation and affordable housing options to San Jose's industrial workers, but failed to mention how workforce housing policies related to the city's industrial policies. While the publications generally accepted the premise that smart growth allowed communities to respond to the market, the focus was predominantly on housing. As such, recommended policies were limited to inventorying and incentivizing redevelopment for meeting housing demands; policies for meeting current and future industrial demands and ensuring adequate supply of industrial land and jobs in urban areas were not mentioned.

Reducing job sprawl and job-resident spatial mismatch are popular smart growth issues, but, again, the publications offered little to no guidance on how planners could address these issues by supporting urban industrial development. Policies promoting job-housing balance tended to focus on the ratio of jobs to houses without making distinctions about the type or quality of jobs (APA 2003; ICMA & SGN, 2003; SGN, ICMA, & U.S. EPA, 2006; U.S. EPA, 2009). The publications focused instead on public-private partnerships in the form of retailers; office developers; real estate brokers; neighborhood service providers; and local activists, nonprofits, and government to revitalize urban employment districts and create affordable housing for employees. In discussions of public-private partnerships for economic development, industrial stakeholders were noticeably absent.

The publications' modest guidance for encouraging urban industrial development in order to reduce job sprawl and provide local residents with job opportunities tended to rely on the traditional approaches to attracting and retaining industrial employers (ICMA & SGN, 2002; NALGEP & SGLI, 2004). The ICMA and SGN (2002) recommended local economic development incentives to support urban employment districts that would accommodate light industrial users and create job opportunities for local residents. However, the guidance did not discuss which incentives were most appropriate or suggest how planners should determine the right mix of land uses. Vermont Forum on Sprawl and Vermont Business Roundtable's 2003 report, "New Models for Commercial and Industrial Development," was briefly mentioned by NALGEP and SGLI (2004) as a source for strategies to curb industrial sprawl and attract industrial development back to urban cores. The Roundtable's report made a series of recommendations and offered brief case studies to illustrate how alternative approaches to industrial revitalization could be consistent with smart growth principles and reduce industrial suburban sprawl. The NALGEP and

SGLI publication's only recommendation was limited to prequalifying developable areas to encourage private development and streamline public approval and incentives.

The smart growth publications we reviewed addressed diversity and quality of employment in urban employment districts. While several offered policy ideas for strengthening urban employment districts, they did not clearly connect employment strategies to revitalizing urban industrial areas and activities (APA, 2003; ICMA & SGN, 2002; SGLI, 2007; SGN, ICMA, & U.S. EPA, 2006). Instead, smart growth policy recommendations tended to emphasize business improvement districts directed toward revitalizing commercial employment districts and expanding diversity of residential and commercial uses in mixed-use districts. They did not discuss the benefits of putting similar mechanisms or policies in place to promote stronger industrial areas that in turn would support more vibrant urban job centers.

In the concluding section below, we offer our insights on the smart growth movement's inattention to revitalizing urban industry and its associated planning implications. We also offer suggestions for specific topics to best frame future research and dialogue for advancing smart growth policies that improve connections between urban industry and the broader smart growth goal of sustainable urban development.

Conclusion: Correcting Smart Growth's Blind Side

The manner in which the planning community has discussed and practiced conventional smart growth policies has largely ignored industry's challenges and opportunities in urban areas. We have argued smart growth's policy blind side may even be contributing to the problems facing local industrial policies and planners. To reiterate, we are not suggesting that industrial uses are necessarily more important than other uses, and we recognize that many cities implement smart growth policies because they face a growing shortage of quality housing, particularly for low- and middle-income residents. They may also pursue opportunities in high technology, information, and other industries that may require particular urban conditions. However, urban industrial development and smart growth should not be an either/or proposition. The smart growth movement sets forth its own issues and priorities, but there are specific situations in which productive exchanges of policy ideas can occur between smart growth and urban industrial planning. To foster this dialogue, we suggest four research and policy directions.

Make Industry a Smart Growth Priority for Sustainable Local Economic Development

The title of a recent post on *The Atlantic Cities*, “Redeveloping Former Industrial Sites Doesn’t Mean Giving Up On Industry” (Badger, 2011), captures the motivation behind the City of Philadelphia’s industrial planning within the context of smart growth. The examples from Philadelphia and other cities we discussed illustrate that the smart growth framework must be adjusted so that it acknowledges industry’s critical role in creating sustainable and innovative economies. Planners, through local industrial policies, argue that vibrant industrial bases are essential for sustainable cities. The planning community, and the smart growth movement within it, can take the lead by ensuring that major policy issues and priorities found in local industrial policies are not ignored. To expand the smart growth dialogue, planners should focus greater attention on the impacts of smart growth policies on productive urban industrial land and on developing local measures to protect urban industry while pursuing smart growth. Proponents of smart growth should seek the expertise of local industrial planners to identify particular characteristics of productive industrial land. Philadelphia, for example, offers a working definition of productive industrial land that combines employment, local tax revenue, land utilization, real estate stability, and business diversity (Interface Studio, 2010). Planners should also identify the types and quality of industrial employers and the jobs most suitable for urban industrial land.

Include Urban Industrial Land Use Planning in Smart Growth

Cross-fertilization between smart growth and industrial planning requires the exploration of design and regulatory alternatives to segregating industrial land uses and the creation of well supported industrial districts.

Mass transit alternatives should provide for (rather than displace) industrial labor. Connecting employment centers to transit is a common solution to job sprawl and spatial mismatch, but, as we discussed earlier, the reviewed smart growth publications provided no planning guidance on how industrial districts could support transit, and in particular, TODs. Furthermore, several of the local industrial policies we reviewed documented that TOD projects created pressures for industrial land conversion (City of Los Angeles, Department of City Planning and the Community Redevelopment Agency, 2007; City of Oakland, Office of the Clerk, 2008; District of Columbia, Office of Planning, 2006).

We acknowledge that some sectors of the economy are more easily oriented toward transit than others. For in-

stance, manufacturing and warehousing, if they are located in isolated single-use districts, cannot easily be built at the densities that will promote high transit ridership (Greenberg & Belzer, 2008, p. 12). To avoid displacing industrial jobs and furthering industrial job sprawl, planners should explore TOD models that include industrial uses. Local industrial planners have specifically addressed this issue by examining the transit ridership of the local industrial workforce and developing policies for alternative transportation that would be compatible with existing industrial traffic.

The Philadelphia Industrial Development Corporation assessed the local and regional passenger rail and bus routes servicing its industrial districts. Significant industrial employers in the city are located along public transit routes (see Figure 2). The Center for Transit-Oriented Development (2010), working with the City of Los Angeles, additionally promoted “employment TODs” to “reconcile the City’s employment land preservation policy with transit-supportive land uses” (p. 10).

Local industrial policies have already incorporated design guidelines, including innovative sustainable building and landscaping features, in order to reduce compatibility issues within and surrounding industrial districts. We recommend improving smart growth audits by having planners share experiences and expand design guidelines and form-based codes concepts. San Francisco’s Pier 70 redevelopment project, for example, may set a national precedent for mixing industrial activities with other uses in an effort to attract employment to the currently unproductive industrial area (see Figure 3). This collaboration could go a long way toward revising the smokestack image of modern industry, adopting sustainable and neighborhood-scale industry in areas with residential and commercial uses, and improving the urban design and function of central-city industrial districts. In short, smart growth and urban industrial planning researchers and practitioners should work together to advance sustainable and competitive industrial development in central cities.

Conduct Additional Research on the Costs and Benefits of Industrial Reuse on Urban Brownfields and the Contributions of the Industrial Base to Central-City Economies

After several years of economic recession, local governments are finding it increasingly difficult to avoid further cuts to services and to balance budgets without incurring large debt burdens. Research is needed on the implications for local tax bases of the growing imbalance between land designated for residential versus industrial use. Is there a fiscally sound threshold for the amount of



Figure 2. An industrial employer in Philadelphia, PA, located along a local and regional passenger rail route.
Source: Reproduced with permission of Interface Studio, LLC.

(Color figure available online.)

locally zoned industrial land? Research indicates that, on residential land, cities may spend more on providing basic public services than the tax revenue they collect. The opposite is true for industrial land (American Farmland Trust, 2010). Consequently, maintaining and growing the industrial sector could be especially beneficial to localities facing fiscal crises.

Furthermore, redeveloping brownfields, which are often industrial sites, for nonindustrial end uses introduces complications and costs that industrial reuse would not (Fitzgerald & Leigh, 2002). Howland (2010) reviewed recent trends of brownfield developers in Baltimore and provided empirical data to substantiate this claim. By protecting productive industrial areas and redeveloping underutilized industrial sites for new industrial activity, cities can strengthen their economic base

even when local revenues are severely depleted and resources are too small to support nonindustrial infill development.

Link Industrial Land Use to the Local Production Needs of the Green Economy

Consider the need for industrial land to take advantage of emerging opportunities, specifically, recycling and remanufacturing business opportunities, in sustainable and innovative industries. Smart growth emphasizes sustainable buildings, and certification programs that require construction and demolition waste tracking, and using recycled building materials are increasing in popularity. These services and products depend on industrial land, facilities, and workers, and represent lost economic development potential if they are not locally sited.



Figure 3. Pier 70 in San Francisco is a former ship repair and steel fabrication complex being redeveloped into a mix of industrial and commercial uses. Local planners are incorporating requirements for mixes of land uses, form-based codes, building design, and infrastructure to maintain a significant amount of industrial employment.

Source: Reproduced with permission from SFMade.

(Color figure available online.)

Encourage Greater Involvement of Urban Industrial Stakeholders in Smart Growth Decisions

Downs's (2005) stakeholder typology included environmentalists, developers, planners, and public officials, and called for the smart growth movement to pay more attention to the general public, especially homeowners. However, it failed to mention an obvious and major stakeholder—industry—specifically, industrial employers and their employees. The Smart Growth Leadership Institute's Smart "Growth Strategy Builder" (included in SGLI, 2007) also offered several suggestions for encouraging stakeholder participation in smart growth policies and projects, but, again, did not address the specific concerns of industrial stakeholders. We recommend that planners reach out to industrial stakeholders by modifying the strategy builder series of questions. For example, question 24 could be modified to ask, "Is smart growth seen as a way to limit industrial land growth?" Ques-

tion 27 could be reframed to ask, "Are there trusted organizations that can act as intermediaries to facilitate a more cooperative industrial development process?"

National smart growth networks and federal agencies, particularly the U.S. EPA and its Sustainable Communities Initiative partners, can elevate urban industrial revitalization within the smart growth agenda. These leading entities can promote job creation and balanced-economy objectives that include industry. These two objectives are currently missing in APA, U.S. EPA, SGA, and SGN's lists of smart growth's core principles.

There are, however, two early leaders who warrant recognition. Good Jobs First (2010a, 2010b) has prepared a series of reports and websites connecting organized labor interests with smart growth. The organization advocates for economic development policies that are supportive of jobs held by working families, and for improving the diversity of employment in urban areas since the formation

of the Smart Growth America. Unions tend to be based in urban areas, and Good Jobs First has shown that unions consider sprawl a problem for labor (LeRoy, 2003). In fact, the AFL-CIO has been engaged in the smart growth debate for over 10 years (AFL-CIO, 2001; Goodno, 2002).

Another early leader is the Pratt Center for Community Development, which, with its partners, is drawing national attention to neighborhood-scale, urban manufacturing within the framework of sustainable local economic development.⁵ Through these efforts, a national policy framework for small- and medium-size manufacturers (a large portion of which are concentrated in large U.S. cities) is starting to take shape, and it complements smart growth's priorities for curbing sprawl and revitalizing local economies.

In conducting background research for Atlanta's industrial policy, we found local networks of businesses, nonprofits, and public institutions advocating on behalf of urban industry in Seattle, Oakland, San Francisco, Chicago, New York, and Philadelphia. These policy networks also played an important role in local industrial policymaking and, therefore, could be influential stakeholders in smart growth policies. Together, national smart growth networks, federal agencies, and local industrial policy networks can strengthen the connection between smart growth and urban industrial development, and work to resolve the conflicts we have discussed. Future work about the perception of modern industry and industry's benefits to urban economies may be warranted at the national and local levels. Best practices for urban industrial land use policies; investment in brownfield cleanups and infrastructure to create conditions supportive of innovation within small and medium-size urban manufacturers; and training curricula linked to the skill requirements of industrial employers all merit further study. Last, national partnerships with local-level industrial stakeholders may elevate the dialogue on reforming transportation, energy, tax, and environmental policies in order to redirect investment in urban industry in the United States.

In summary, our review of planning practice literature documents the blind side of the smart growth movement. The slow recovery from the Great Recession, the high residential and office foreclosure and vacancy rates, the fiscal woes of cities, and the high urban unemployment rate (which is projected to last for years) are all compelling reasons for the smart growth movement to widen its vision to include urban industrial revitalization. Further, these conditions have also diminished the economic growth pressures that created the impetus for the smart growth movement in the first place. This is a particularly appropriate moment to take stock of the smart growth movement, and we believe explicit efforts to incorporate urban

industry and innovative industrial land strategies will help to ensure that smart growth strategies remain relevant in the long term.

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Notes

1. APA's five broad themes for smart growth include a) planning structure, process, and regulation, b) transportation and land use, c) regional management and community building, d) social equity and community building, and e) environmental protection and land conservation.
2. In earlier work, Downs (2001) grouped proponents into one of four groups: a) anti- or slow-growth advocates, and environmentalists, b) pro-growth advocates, c) inner-city advocates, and d) better-growth advocates.
3. The Appendix provides the relevant policy documents and responsible local economic development authorities for each of these cities.
4. The network is now referred to as the Silicon Valley Leadership Group (see <http://svlg.org/>).
5. See *The Federal Role in Supporting Urban Manufacturing* (Mistry & Byron, 2011), and the Pratt Center for Community Development's recently announced commitment by the Clinton Global Initiative to support the Urban Manufacturing Alliance (http://www.clintonglobalinitiative.org/commitments/commitments_search.asp?id=715707).

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Appendix: Local industrial policies of 14 U.S. cities (2002–2010).

City	Year	Local industrial policy documents	Local economic development planning authority
1. Atlanta, GA	2009	A plan for industrial land and sustainable industry in the City of Atlanta: Background and Final reports	City of Atlanta Atlanta Development Authority (Prepared by Leigh et al.)
2. Baltimore, MD	2004	Industrial land use analysis	Baltimore Development Corporation (Prepared by Bay Area Economics)
3. Boston, MA	2002	Boston's industrial spaces: Industrial land and building spaces in Boston and its neighborhoods	Boston Redevelopment Authority
4. Chicago, IL	2004	Corridors of industrial opportunity: A plan for industry in Chicago	City of Chicago, Department of Planning and Development (Prepared by URS Corporation)
5. Los Angeles, CA	2007	Los Angeles' industrial land: Sustaining a dynamic city economy	City of Los Angeles, Department of City Planning Community Redevelopment Agency
6. Minneapolis–St. Paul, MN	2006	Industrial land use study and employment policy plan for the City of Minneapolis, Minnesota: Technical report	City of Minneapolis (Prepared by Maxfield Research Inc.)
	2008	Making it green in Minneapolis-Saint Paul	Mayors' Initiative on Green Manufacturing (Prepared by CDC Associates)
7. New York, NY	2005	Protecting and growing New York City's industrial job base	City of New York
8. Oakland, CA	2008	Citywide industrial land use policy	City of Oakland
9. Philadelphia, PA	2010	An industrial land use and market strategy for the City of Philadelphia: Industrial land atlas	City of Philadelphia Philadelphia Industrial Development Corporation (Prepared by Interface Studio, LLC)
		Portland harbor industrial lands study	City of Portland, Portland Bureau of Planning
10. Portland, OR	2003	Portland harbor industrial lands study	City of Portland, Portland Bureau of Planning
	2004	Industrial districts atlas: Portland, OR	City of Portland, Portland Bureau of Planning
11. San Francisco, CA	2002	Industrial land in San Francisco: Understanding production, distribution, and repair	City and County of San Francisco, Planning Department
	2008	Central waterfront area plan	City and County of San Francisco, Planning Department
12. San Jose, CA	2004	Employment lands conversion framework: Towards the future: Jobs, land use and fiscal issues in San Jose's key employment areas	City of San Jose (Prepared by Strategic Economics)
	2008	Existing land use and development trends background report	City of San Jose, Department of Planning, Building, Code Enforcement
13. Seattle, WA	2007	Seattle's industrial lands background report	City of Seattle, Department of Planning and Development
	2007	The future of Seattle's industrial lands	City of Seattle, Seattle Planning Commission
14. Washington, DC	2006	Industrial land in a post-industrial city: District of Columbia industrial land use study	District of Columbia, Office of Planning