PUTTING ATLANTA BACK TO WORK:
INTEGRATING LIGHT INDUSTRY INTO MIXED-USE URBAN DEVELOPMENT

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2012
Integrating Light Industry into Mixed-Use Urban Development

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Acknowledgements

This report is sponsored by the Science, Technology, and Innovation Policy (STIP) program, a collaborative program of Georgia Tech’s School of Public Policy and Georgia Tech’s Enterprise Innovation Institute.

The author would like to thank the sponsors of the STIP program, including Georgia Power; the program supervisors, Jan Youtie, Robert Lann, and Alfie Meek; the program coordinator, Lynn Willingham; and the author’s academic advisor at Georgia Tech’s School of City and Regional Planning, Dan Immergluck. Several other individuals also provided information that influenced and enriched this project. Special thanks are due to Bob Fowler, President and CEO of Fowler Design Associates; Chuck Shultz, Principal GIS Planner at the City of Atlanta; Crawford Moran, Brewmaster at 5 Seasons Brewery; David Haddow, President of Haddow and Company; Jared Lombard, Principal Planner at Atlanta Regional Commission; Jonathan Lewis, Senior Project Manager, Planning, at Atlanta BeltLine, Inc.; Larry Callahan, CEO of Pattillo Industrial Real Estate; Michael Hellier, Real Estate and Economic Development Fellow at Harmony Neighborhood Development; Nancey Green Leigh, Professor of City and Regional Planning at Georgia Tech; Nate Hoelzel, City and Regional Planning PhD candidate at Georgia Tech; Pete Cotter, Director of Port Development at Enviva, L.P.; Seth Weissman, President of Weissman, Nowack, Curry and Wilco; and Tony Pickett, Executive Director of the Atlanta Land Trust Collaborative.
Executive Summary

Introduction

In the landmark 1926 case of Euclid v. Ambler Realty Company, U.S. Supreme Court Justice George Sutherland colorfully remarked: “A nuisance may be merely a right thing in the wrong place, like a pig in the parlor instead of the barnyard.” This statement encapsulates the logic of modern, “Euclidian” zoning controls, which originated in the 1920s. Conventional zoning codes have erred on the side of severity, systematically separating all land uses from one another – industrial properties, office buildings, retail stores, houses, apartment buildings, and so on. This modern experiment in reorganizing the layout of cities has played a key role in producing what smart growth advocates today criticize as suburban sprawl.

As urban leaders seek ways to revitalize cities and gain a competitive advantage, potential lies dormant in the traditional distinction between light and heavy industry. To locate in a light industrial zone, an industrial use cannot impact any surrounding properties through loud noises, vibration, noxious fumes, or other hazardous byproducts. Light industrial land uses typically include final-stage or “clean” manufacturing, wholesaling, warehousing and distribution, and the sale and servicing of vehicles and equipment. Light industry includes a broad spectrum of land uses, some of which can be compatible with urban, mixed-use development. Most zoning ordinances do not make this distinction.

In the last century, American industry has changed dramatically due to technological advances, trends in globalization and supply chain management, tighter environmental controls, and the birth of the modern professions of urban planning and public health. Certain light industrial businesses have great potential in America to:

- Revitalize and preserve urban industrial land (Leigh et al., 2009)
- Create relatively high-income, low-barrier-to-entry jobs near existing transit and housing (Helper, Krueger, & Wial, 2012)
- Diversify the economies of cities like Atlanta, reliant on cyclical industries such as construction (Leigh, 2010)
- Improve regional self-sufficiency as rising fuel costs and rising foreign wages undercut the advantages of outsourcing (see Bellio, 2012; Ferreira & Prokopets, 2009; Koerth-Baker, 2012; McDermott, 2009)
- Supply unique products and retail experiences (Phillips, 2012)
- Provide a sense of place and local character (Phillips, 2012)
- Provide a way to activate street-level storefronts as the conventional retail sector contracts
- However, urban industrial land is rapidly being lost by conversion to other uses (Leigh et al., 2009; Leigh & Hoelzel, 2012)

This report focuses on Fulton County, particularly the City of Atlanta, exploring the demand for urban light industry and the supply of urban industrial land. The report then situates these topics in the
context of national trends in urban planning and mixed-use development, concluding with recommendations and tools for integrating light industry into mixed-use, urban development.

Local Demand: Selecting Target Light Industries for Fulton County

Light industrial zones typically permit industrial and quasi-industrial uses, such as car washes, laboratories, light manufacturing and repair establishments, lumberyards, vehicle dealerships, and distribution centers. Often, these zones also permit a variety of non-industrial uses, like banks, motels, offices, and retail establishments. Although light industrial zones may permit a mix of uses, generally their design guidelines due not support a walkable, urban lifestyle. Furthermore, not all of the uses permitted in a light industrial district will be appropriate in a mixed-use, urban environment.

This report selects target light industries for Fulton County on the basis of a web of overlapping criteria. The first set of criteria consists of business needs, such as proximity to customers, labor, and research. The second set of criteria takes into account urban design factors, such as the need for relatively small blocks, an engaging pedestrian experience, and sufficient density to support transit and street-level retail. The third set of criteria involves a lack of significant nuisances or hazards through noise & vibration, freight traffic, fumes, and so on. (That said, these expectations must be managed and enforced through performance requirements in the zoning ordinances and/or legal covenants.)

The fourth and final criterion is economic growth: niche industries that maintained employment growth in Fulton County through the recession, and preferably also saw growth in annual payroll and number of business establishments (data source: U.S. Census Bureau, 2012). In summary, the development concept consists of industry clusters anchored by light manufacturing, with wholesale & retail components. While a mixed-use development could also include other uses such as office space or even apartments, best practices have already been established for incorporating these uses into mixed-use development, so the focus of this report is on light industrial uses.

On the basis of the criteria above, the author selected ten industries in three clusters that present significant opportunities for mixed-use industrial development in Atlanta (see the table on the next page). The first cluster revolves around food production, and contains industries such as chocolate and pasta manufacturers, breweries, and confectionary wholesalers. The second cluster is based in arts and crafts manufacturing, and contains industries like pottery manufacturing and small-scale ornamental metalworking. The third cluster is built around research and development in the hard sciences.
Comparing each of these niche industries with its broader industrial classification highlights the exceptional growth of the target industries. In Fulton County, breweries and pottery manufacturers each saw an average annual employment growth of 132% from 2005 to 2009 (U.S. Census Bureau, 2012; see Appendix 2: County Business Patterns Data). Over the same period in Fulton County, beverage manufacturers overall saw their employment decline by an average of 4% per year, while clay and refractory product manufacturers saw their employment decline by an average of 6% per year (ibid). Appendix 2 contains a complete breakout of growth trends in each target industry as well as comparisons with broader industrial categories.

The target industries in the food production cluster saw a 150% increase in employment from 2005-2009, whereas traditional food production industries, overall, saw a 10% decline in employment over the same period. Similarly, the target industries in the arts and crafts manufacturing cluster experienced an increase in employment of 185%, compared to a 28% decline in traditional industries in the same class. Whereas research and development saw a decline in annual payroll over the same period, the cluster’s 6% employment growth through the recession is still very positive, and more detailed analysis could isolate niche R&D industries with higher than average growth. R&D is an ideal land use for mixed-use settings, due to its office-like appearance and its ability to command the higher rents typical in urban areas.
Industrial-Friendly Zoning in the City of Atlanta

In the City of Atlanta, 12 zoning districts allow at least some form of light industry (including light manufacturing), with different restrictions and caveats applying in each district:

I) Industrial Districts
   1) I-1: Light Industrial
   2) I-2: Heavy Industrial

II) Special Public Interest (SPI) Districts
   3) SPI-1: Downtown (All Subareas)
   4) SPI-18: Mechanicsville (Subareas 7, 8, and 9)
   5) SPI-21: Historic West End/Adair Park (Subareas 9 and 10)
   6) SPI-22: Memorial Drive/Oakland Cemetery

III) Historic and Landmark Districts
   7) HD-20L: Inman Park (Subarea 3)
   8) LD-20C: Martin Luther King, Jr. (Subarea 5)
   9) LD-20N: Castleberry Hill

IV) Other Districts
   10) C-5: Central Business Support
   11) PD-BP: Planned Development – Business Park
   12) LW: Live Work

Together, these 12 zones contain approximately 8,950 parcels – 525 million square feet of land (12,060 acres). Much of this land is not built out with industrial uses and likely never will be. Rather, these figures reflect the total amount of land where the development of at least some form of light industry and light manufacturing (however restricted) is legally permitted. Land zoned heavy industrial is concentrated in the northwest quadrant of Atlanta and includes some of Atlanta’s major rail yards. The most extensive light industrial land is located in the south and southeastern portions of the City. The ten other “industrial-friendly” districts are located primarily in the city center and the southeastern quadrant of the City.

Approximately 5% of these parcels and 6% of this total square footage consists of vacant industrial land with no buildings. There are 450 of these vacant industrial parcels, totaling 31.5 million square feet, according to 2010 tax assessor data. Predictably, the average size of these parcels becomes much more substantial with distance from the city center. However, significant opportunities do exist to integrate light industry into urban, mixed-use, transit-oriented development. There are 1.3 million square feet of vacant industrial and “industrial-friendly” zoned land within 0.5 miles of MARTA stations and the BeltLine. Many of these vacant parcels are clustered and/or contiguous.

This vacant land is concentrated around the following transit facilities:

- Bankhead MARTA Station/BeltLine (420,560 square feet)
- H.E. Holmes MARTA Station (306,100 square feet)
- King Memorial MARTA Station (150,545 square feet)
- West End MARTA Station/BeltLine (144,440 square feet)
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- Garnett MARTA Station (143,400 square feet)

By and large, these are historically African American communities with a history of environmental justice issues. Therefore it is essential in moving forward with these development opportunities to engage the local communities in the visioning process; to put into place high standards for health, safety and environmental impact; and to ensure that existing residents and businesses can remain in these areas and benefit from their redevelopment.

**Industrial Mixed-Use Districts**

Between 2004 and 2009, the City of Atlanta lost 12% of its light and heavy industrial land to rezoning (Leigh et al., 2009). In transit-served locations with strong potential for urban, mixed-use development, implementing industrial mixed-use districts could preserve and expand urban industrial land, while allowing developers to take better advantage of the higher density that these sites can support. Rather than completely prohibiting mixed-use development on the one hand, or letting mixed-use development displace industrial uses on the other hand, these zones could require a base amount of affordable industrial space (e.g. 1 FAR), with mixed-use development permitted for the balance of the density allotment (see City of Battle Ground, 2012; Leigh et al., 2009; Lobel, 2008).

At least twelve industrial mixed-use districts already exist in the United States, in places including: Battle Ground, Washington; Berkeley, California; Boulder, Colorado; Corvallis, Oregon; Denver, Colorado; Glendale, California; Madera County, California; Miami, Florida; New York, New York; North San Jose, California; Pittsburgh, Pennsylvania; and San Francisco, California. Vancouver, British Columbia also has an industrial mixed-use district. These districts incorporate a variety of uses, provisions, and intents, and can serve as valuable resources during the creation of an industrial mixed-use district in Atlanta, (which may occur as soon as next year, according to a source at the City of Atlanta’s Department of Planning and Community Development).

**Suggested Practices**

Some moderately sized blocks are necessary to accommodate light industrial uses in a flexible, mixed-use environment, striking a balance between economic development and urban design considerations. Such blocks could range from approximately 360 x 360 feet for smaller users, to 600 x 600 feet for larger users. Blocks as large as 1,000 by 1,000 feet can still accommodate a lively pedestrian environment through the inclusion of midblock pedestrian passageways or “paseos,” (Field Paoli and City of San Jose, 2010). The industrial uses should have convenient highway access, transitioning to smaller blocks farther from the highway for other land uses. Target large land assemblages for larger, national businesses (Callahan, 2012). Retrofitting older buildings is more appropriate for microenterprise, and more in line with the lower rents feasible for these businesses (Fowler, 2012). While these last two points may sound obvious, it is rare to see this level of coordination in urban and regional industrial planning.

Build to the sidewalk, with retail/showrooms fronting on major pedestrian streets (City of San Francisco, 2001; Field Paoli and City of San Jose, 2010). Orient loading docks to the rear or side of the site.
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(AsianNeighborhoodDesign, 2007), and target industrial users with minimal freight traffic, such as those moving lesser quantities of more expensive goods (Leigh, 2012). The ideal businesses will have relatively small square footage requirements for inventory (ibid). Target light industrial businesses with a strong retail component that lends itself well to an urban storefront. Focus on businesses that benefit from proximity to urban resources such as customers, visibility, labor, transit, employee amenities, suppliers, business services, research institutions, a network of similar businesses, and resource sharing (Helper, Krueger, & Wial, 2012).

Legal covenants can define expectations & reduce conflicts between land uses. The same kinds of questions that should be put toward a project’s stakeholders in the covenant drafting process should be considered by the project team in the early phases of design, in order to minimize unexpected costs and delays (Weissman, 2000).

Apply tools such as deed restrictions, community land trusts, and inclusionary zoning, to spur economic development while insuring that upward pressure on rents and property taxes does not displace existing industrial businesses, small local retailers, and the local workforce (Davis, 2006). These tools will preserve the vibrancy and character that made the area desirable for redevelopment, while ensuring that the lifeblood of the neighborhood – the existing residents, businesses, and institutions – can remain in the community that they helped to build.

Financial Instruments and Incentives

A variety of financial instruments and incentives support the development of light industrial properties and businesses in the city of Atlanta. Tax allocation district funds are available for new construction, renovation, equipment, public works, and clearing/grading land. These funds can range from 4% to 10% of the total development costs (Invest Atlanta, 2012). The Georgia Department of Community Affairs offers several forms of gap financing. The Atlanta Regional Commission offers competitive planning grants to local governments and nonprofits, as well as transportation implementation funds. In addition, a variety of incentives are available for industrial businesses locating in the City of Atlanta, including Industrial Revenue Bonds, the Regional Assistance Program (RAP), R&D Tax Credits, and the Employment Incentive Program (Georgia Dept. of Economic Development, 2012). The Environmental Protection agency offers competitive grants for brownfield assessment and cleanup, as well as a promising pilot program that supports economic development through area-wide planning for the revitalization of brownfield sites. In terms of conventional debt, the standardization and commodification of urban and mixed-use industrial property types would greatly improve financing for these specialized projects by increasing lending liquidity and volume, as well as improving loan terms.

Recommendations

Create industrial mixed-use districts. Urban light industry can: create high-wage, low-barrier-to-entry jobs; diversify urban economies; replace imports with locally made products; improve regional self-sufficiency; and provide unique retail experiences and a local sense of place (see page 1).
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Preserve urban industrial land. The City of Atlanta lost 12% of its light industrial (I-1) and heavy industrial (I-2) land between 2004 and 2009, (Leigh et al., 2009). Limit the conversion of strategically important industrial lands to other uses. In an industrial mixed-use district, protections might include: (1) limiting other land uses to a percentage of the total district square footage (Battle Ground, 2012) or (2) requiring 1 FAR of industrial development and allowing other uses to make up the balance of the permitted density (Lobel, 2008).

Economic developers should present targeted industries with site options in walkable town centers or with convenient access to transit (Fowler, 2012). In Georgia’s largest manufacturing industry (food processing), businesses like microbreweries are ideal for urban areas due to their strong retail component, low nuisance factor, and local customer base. Developing industry-specific smart growth strategies can improve Georgia’s competitive advantage and quality of life. To continue with the previous example, allowing microbreweries to diversify their distributors would increase market efficiency and improve the business environment (Fennessy, 2004; Moran, 2012). Permitting mixed-use development over a minimum amount of affordable light industrial and retail space would make it easier for microbreweries and other small food production businesses to serve urban neighborhoods, rather than chasing cheap space in automobile-dominated industrial areas (Fowler, 2012; Moran, 2012, mentioned the importance of zoning reforms more generally to achieve this objective).

As budget constraints force government at all levels to do more with less, collaboration between agencies and across jurisdictions can help ensure that public investments achieve the maximum public benefit. Metro Atlanta’s ability to attract and retain both young knowledge workers and executive-level talent is increasingly dependent on reducing traffic congestion and providing urban, walkable, transit-oriented environments (Market Street Services, 2012). In addition, Metro Atlanta’s growth will be impacted by our ability to secure a sustainable water supply, improve the quality and perception of our schools, and stabilize neighborhoods that have been hit hard by the foreclosure crisis. Economic developers should strive to break down traditional policy silos, working with the Georgia Regional Commissions and other planning bodies to make incentives responsive to different regional planning priorities; to coordinate public investments in jobs, transportation, infrastructure, housing, and education; and to achieve shared goals.
Introduction

Zoning, Suburbanization, and the Decline of American Cities

In the benchmark 1926 case of Euclid v. Ambler Realty Company, U.S. Supreme Court Justice George Sutherland quipped: "A nuisance may be merely a right thing in the wrong place, like a pig in the parlor instead of the barnyard." At the time, modern zoning ordinances were in their infancy. There was some contention over whether it was constitutional to restrict certain land uses (such as industrial or residential) to separate geographic zones through urban planning. Justice Sutherland essentially ruled that the government does not have to pay compensation to property owners if zoning reduces their property values, as long as the overall public benefit is greater than the loss. This ruling utterly redefined the way modern American cities are planned and built.

“Euclidian” or land use zoning – initially hailed as a major victory for the urban planning profession – is increasingly maligned as an agent of suburban sprawl. Stringent separation of land uses puts everyday needs beyond walking distance; results in a walking experience that is less pleasant, less safe, and less convenient; and often reduces population density to an extent that damages the feasibility of both transit and Main Street-style retail (Geller, 2010). This is particularly the case since Euclidian zoning frequently mandates suburban density standards, setting maximums for the height and bulk of buildings, as well as minimums for the size of yards and the number of parking spaces. While a suburbanizing intent has come to be associated with Euclidian zoning, this need not be so.

Starting in the 1920s, concurrent with the creation of Euclidian zoning, planners and engineers began aggressively reconfiguring our cities for cars, attempting to conquer congestion through more and wider roads, lower population density, and suburbanization. This approach has produced diminishing marginal returns in traffic flow, while causing unintentional harm to the environment, public safety, quality of life, and – increasingly – the public coffer (Kulash, 1996).
The Industrial Smart Growth Imperative in the New Economy

America’s inner cities have only recently begun to recover from the urban disinvestment and decay that accompanied suburbanization. Meanwhile, in addition to the consequences touched upon in the last section, suburban development has produced commuting patterns that have increased America’s reliance on foreign oil and exposure to shocks in fuel prices. As the world’s population rises and the global economy comes of age, the carrying capacity of the Earth is coming under increasing scrutiny as a matter of national security. General James Amos, Commandant of the U.S. Marine Corps, calls sustainability “a strategic, operational, and tactical imperative” (United States Marine Corps, 2011).

Given the extent of poor reporting and sensationalism from both political parties, it cannot be overstated that scientists have reached areas of collective agreement and relative certainty regarding global climate change (Doran & Zimmerman, 2009). This consensus has been established through systematic reviews of the scientific literature, the stances of national and international scientific bodies, and surveys of atmospheric scientists. These areas of agreement have been reported in high-level summaries, with the reports from the Intergovernmental Panel on Climate Change (IPCC) being the most significant. The IPCC predicts a global rise in temperature between 1.4 and 5.8 degrees Celsius from 2001 to 2100, compared to the 0.6 degree change that occurred over the last century (Houghton et al., 2001). There is a 90% chance that this difference is attributable to carbon dioxide and other greenhouse gases produced by human activities, such as deforestation and fossil fuel combustion (Intergovernmental Panel on Climate Change, 2007).

It is misleading to call global climate change an environmental issue, as it has profound implications for human civilization. While some of the consequences of global climate change are more certain than others, what is most certain is that it will deeply impact American lives and the American way of life, and we must act decisively to mitigate that effect. Atmospheric scientists predict that rising seas will flood...
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Important coastal cities like Savannah, Georgia. Certain regions will become hotter and others colder, altering agricultural patterns and increasing food insecurity, migration, and the cost of living (Eubanks, Middlecamp, Pienta, Heltzel, & Weaver, 2006). Global climate change is already affecting the range, biodiversity, and habits of plants and animals (Eubanks et al., 2006). Epidemiologists predict that increasing temperatures will broaden the geographic range of mosquitoes, tsetse flies, and other carrier agents, bringing diseases like malaria, dengue fever, and sleeping sickness to the United States (ibid).

More extreme weather events (including hurricanes, floods, and droughts) will result in human casualties, greater challenges in rebuilding our communities, and major expenditures on more resilient buildings and infrastructure (Eubanks et al., 2006).

Meanwhile, a growing majority of economists and logisticians consider rising fuel prices a long-term reality (Bellio, 2012; Koerth-Baker, 2012; McDermott, 2009). Global warming and rising fuel costs create financial imperatives (among others) for smart growth and sustainable industry. A recent report from Grubb and Ellis and CoreNet Global remarks: “by relying primarily on trucking and underutilizing more efficient forms of transportation, companies are leaving themselves open to the risk of huge transportation cost increases,” (p. 5). The author warns industrial real estate practitioners that they may under-estimate transportation costs, which are currently 10 times higher than the cost of rent for most logistics companies. He lists a few ways to prepare industrial real estate portfolios for global logistics challenges:

The optimal approach is to fit real estate within the framework of logistics. For some this may result in a greater number of small distribution centers closer to population centers. The benefit of this design is to allow for faster delivery, improved customer service and lower fuel and trucking costs. Of course, these benefits must exceed the cost of additional facilities, especially higher inventory cost. Others, such as Whirlpool, will work toward greater savings by adopting a policy of full truckloads whenever possible. Where full load trucking does not yield large enough savings, utilization of rail and intermodal for greater long-distance efficiency is a practical strategy especially for shipping large, heavy items, (p. 4).
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As transportation cost containment drives the reorganization of global supply chains, workers will also seek more cost effective means of commuting. The confluence of these forces will increase demand for compatible light industrial land uses in walkable and transit-oriented contexts. This demand can be met both by retrofitting suburban industrial parks (see Dunham-Jones, 2008) and by revitalizing urban industrial areas (Leigh & Hoelzel, 2012). Industrial districts with strong multi-modal access will be the best equipped to respond to these changes (McDermott, 2009).

A number of other factors are impacting global supply chains in a way that may signal an end to (or at least a slow down of) the long-term decline of American manufacturing. Many manufacturing executives are adopting more inclusive cost models for offshoring, in recognition that savings on foreign labor costs, commodity prices, and exchange rates are increasingly insufficient to justify losses from quality control problems; longer, slower, and less nimble supply chains; lack of visibility; and issues of piracy and intellectual capital theft (Ferreira & Prokopets, 2009). From 2005 to 2008, ocean freight costs increased by 135%, the global commodity price index rose by 27%, the Chinese Yuan gained 18% in value relative to the U.S. dollar, and Chinese manufacturing wages rose by 44% (2009). As a result of these trends, ninety percent of the manufacturing executives surveyed by Ferreira’s firm were either contemplating a change to their global manufacturing and supply strategy, or had already made a change (2009).

These trends are evident to a certain degree in Metro Atlanta’s industrial real estate market. Larry Callahan is CEO of Pattillo Industrial Real Estate, which has developed, owned, and/or managed a total of 70 million square feet of industrial space over the last 60 years, including 450 manufacturing plants. Callahan is seeing a shift to smaller inventories and direct transfer, with a large need for distribution facilities as close to the consumer as possible. (He is careful to note that most industrial businesses serve
regional, national, or global markets, so “as close as possible” may mean a particular metropolitan area, rather than a specific neighborhood or intersection.

Callahan also believes that Georgia could see a surge in high value-added manufacturing operations, particularly automotive, heavy equipment, and appliance manufacturing. As contributing factors, he cites intellectual property theft issues at companies like General Electric; the trend of automakers like BMW, Mercedes, Nissan, and Toyota building facilities in the South; and Chinese wage growth. In point of fact, Baizhu Chen, an economist at the University of Southern California, predicts that this decade’s steady 14% annual increase in Chinese wages will continue for the next 5-10 years, accompanied in the short-term by a 3% annual increase in the Yuan (Flannery, 2011).

It is too early to tell, but factors like these may bring the end of a 50 year slide in industrial jobs as a percentage of American employment. If so, the rapid loss of urban industrial land presents a serious challenge, since zoning ordinances typically privilege less obtrusive uses, and existing residential neighborhoods are notorious among planners and developers for “NIMBYism” – activism to the tune of “not in my backyard.” Once lost, much of the industrial land in urban areas may be lost for good. As rail access and walking-sheds regain some of their historical importance, studies should examine the potential impact of losing our urban industrial lands (Leigh et al., 2009; Leigh & Hoelzel, 2012).

Even at current levels, manufacturing, extraction, transportation, and crafts still account for roughly 20% of U.S. employment and 22% of U.S. gross domestic product (Central Intelligence Agency, 2012). To give these figures a sense of scale, consider that the United States is, by varying accounts, either the first or second largest manufacturer in the world (Marsh, 2011; Vargo, 2011). If the American manufacturing sector was a self-standing economy, it would be roughly the eighth largest economy in the world (Vargo, 2011).
As shown in the figures below, industry consumes 20% of the total energy used (U.S. Energy Information Administration, 2011) and produces 26% of the total greenhouse gases emitted in the United States (U.S. Environmental Protection Agency, 2012). In order to lessen the negative impacts of global climate change on American lives, it is not enough to simply retrofit buildings for energy-efficiency and develop more sustainable industrial processes. Transportation accounts for an additional 27% of total energy consumption (U.S. Energy Information Administration, 2011) and 29%-32% of total greenhouse gas emissions (U.S. Department of Transportation, 2010; U.S. Environmental Protection Agency, 2012). While logistics companies’ imperative of reducing transportation costs is inherently sustainable in certain respects, it is less common for industrial businesses to concern themselves with reducing employees’ commute times and making alternative forms of transportation (walking, biking, transit, carpooling, etc.) more convenient. There is much to gain from re-envisioning the way that industry relates to both human settlements and the natural environment.

**Primary Energy Consumption by Source and Sector, 2010 (Quadrillion Btu)**

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United States CO\textsubscript{2} Emissions in 2010

<table>
<thead>
<tr>
<th>End-Use Sector</th>
<th>Million Metric Tons</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>1,750.00</td>
<td>32%</td>
</tr>
<tr>
<td>Industrial</td>
<td>1,415.40</td>
<td>26%</td>
</tr>
<tr>
<td>Residential</td>
<td>1,183.70</td>
<td>22%</td>
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<tr>
<td>Commercial</td>
<td>997.1</td>
<td>19%</td>
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<td>U.S. Territories</td>
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<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>5,387.80</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Environmental Protection Agency, 2012

One essential step – one of many – is to integrate a consideration of sustainable industry into the family of movements known alternatively as smart growth, new urbanism, neotraditional town planning, and transit-oriented development. While new urbanism has aimed to provide a comprehensive alternative to “suburban sprawl,” it has placed little focus on the industrial land use conflicts that spawned Euclidian zoning and other sprawl-inducing policies (Leigh & Hoelzel, 2012).

To date, new urbanism has produced a wide array of mixed-use developments, which typically include ground-level retail in combination with housing, offices, and other use such as hotels. While coffee houses, restaurants, art galleries, live-work units, and offices are frequently a part of the vision, virtually the entire industrial sector is left almost entirely out of the equation (Schweitzer, 2012).

America’s transition from an industrial economy to a service economy over the last forty years has been a major factor in the spread of unprecedented wealth inequalities, which have been exacerbated by the pandemic of foreclosures and underwater mortgages brought by the recession. According to the CIA’s World Fact Book, America now ranks 42\textsuperscript{nd} worst out of 136 countries in terms of family income inequality. Our great country – the land of opportunity – ranks worse than countries like Iran and the recently toppled plutocracies of Egypt and Tunisia (Stiglitz, 2011). Is it any wonder that anemic consumer spending is stymying our economic recovery? America’s cities are in sore need of relatively high-wage, low-barrier to entry jobs, which have been disappearing since the 1970s. The average wage
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for all U.S. manufacturing jobs was $58,485 in 2010, compared to an average wage of $47,290 for all U.S. jobs (Helper et al., 2012). Urban industrial revitalization can play a key role in diversifying the urban employment base, strengthening the supply of high-quality job-producing land, and reducing industrial-sector suburban sprawl (Leigh & Hoelzel, 2012).

The Market for Industrial Real Estate

In 2003, industrial properties occupied approximately 25 billion square feet in the United States and constituted the largest sector of U.S. real estate, both in value and in square footage (Yap & Circ, 2003). The U.S. market for industrial real estate bottomed out in 2010, with clear signs of recovery in 2011 (Cushman and Wakefield, 2012a). In the first quarter of 2012, “the nation’s industrial market continued to post strong leasing activity and declining vacancies, […] slowly moving beyond recovery and into expansion,” (2012a). Leasing activity in Metro Atlanta posted a first quarter 60.7% year-over-year gain, the second highest in the country (2012a).

In June, however, the U.S. manufacturing sector contracted for the first time in almost three years, largely due to a lack of investor and consumer confidence brewed by the European debt crisis and China’s slowing growth rate (Cushman and Wakefield, 2012b). Still, the fundamentals of the industrial real estate market are continuing to improve (2012b). In the second quarter, Metro Atlanta posted the fourth highest year-over-year gain in leasing (28.8%) in the United States. Nationally and in Atlanta, the industrial sector is poised for a growth cycle. Yet the industrial properties under construction and in planning in the United States are predominantly suburban in nature (Helper et al., 2012).

In the development field, early innovators sometimes shoulder the costs of ground-breaking advances, while the fruits of their labor go to later investors, who swoop in to acquire their failed projects at bargain prices, injecting extra capital with the benefit of hindsight (Speck, 2012; Tague, 2012). Perhaps even worse, innovative projects may scrape by for years, only to be decimated by competition from
copy-cat projects free of the mistakes and missteps of the vanguard (Speck, 2012; Tague, 2012). It is no wonder, therefore, that in recent years the United States has seen little integration of industrial land uses into mixed-use, urban contexts. The potential nuisances and environmental hazards associated with industrial properties are, after all, the very raison d’être for zoning regulations, are they not?

In fact, as argued throughout this report, not all land uses need to be separated from one another – not even all industrial uses. Furthermore, existing projects offer insights into the practices and policies needed to make mixed-use industrial development function smoothly and add value to the surrounding community. One such example is Jamestown Properties’ Chelsea Market, the trendy (and highly profitable) new home of Google’s operations in New York (Phillips, 2012). Here in Atlanta, light industrial uses in mixed-use contexts include the Cacao Atlanta chocolate factory, the 5 Seasons Westside microbrewery, and the proposed Ponce City Market mixed-use redevelopment, which may also feature a brewery.
Integrating Light Industry into Mixed-Use Urban Development

Chelsea Market in New York City


Ponce City Market Redevelopment in Atlanta (In Progress)


The Cacao Atlanta Chocolate Factory Store in Atlanta’s Inman Park Neighborhood

Source: [http://goo.gl/maps/SHIU](http://goo.gl/maps/SHIU)

The 5 Seasons Westside Brewery in Atlanta’s West Midtown Neighborhood

Source: [http://soulsesssionsvolume5.eventbrite.com/](http://soulsesssionsvolume5.eventbrite.com/)
Industry in America is fundamentally different than it was a century ago. Technological advances, environmental regulations, and the new disciplines of public health and urban planning have all contributed to a cleaner, healthier way of life. The containerization of cargo and innovations in supply chain management have completely revolutionized the way goods are distributed. Meanwhile, the emerging discipline of industrial ecology is unlocking the secrets of a sustainable economy (from renewable, plant-based replacements for petroleum-based products like plastics, to alternative energy systems and industrial waste recycling).

Simultaneously, the new urbanism movement is attempting to provide a comprehensive alternative to sprawl. This cannot be accomplished without providing a more nuanced scheme for the treatment of industrial land uses. As fuel costs continue to rise, it stands to reasons that the pendulum may begin to swing back from globalization to localization, bringing new opportunities for better jobs to the average American. However, for America to retain its economic preeminence and the promise of the American dream, we must recapture our civic pride in industry, develop more environmentally sustainable production processes, and pursue more fuel-efficient models for real estate development and product distribution. “Light industrial” land uses present unique opportunities at the nexus of these trends.
Defining Light Industry
In contrast with “heavy” industry, “light” industry:

- Relies more on labor and less on heavy machinery
- Produces finished products from partially processed materials
- Produces smaller products with higher value per unit weight
- Requires less raw materials, square footage, and power
- Has less environmental impact (Evans & Evans, 2007; "Light industry," 2012)

One example of a light industrial business would be a wholesale food producer, such as a commercial bakery or a chocolate factory. Another example would be a final manufacturer of consumer products (such as apparel or home furnishings).

Definitions of “light industry” vary in local zoning ordinances and statutes. However, land use regulations are less restrictive regarding the placement of light as opposed to heavy industrial uses, and their proximity to other land uses such as residential and office buildings. Generally, to locate in a light industrial zone, a business must not produce any loud noises, vibration, noxious fumes, or other hazardous byproducts – beyond the property line. In heavy industrial districts, generally a business must not produce these negative effects beyond the boundaries of the entire district (Frej, 2001).

Zones Permitting Light Industry in the City of Atlanta
Currently, at least twelve zoning districts in the City of Atlanta permit some form of light industry, including some form of light manufacturing.

1. I-1 – Light Industrial District
2. I-2 – Heavy Industrial District
3. C-5 – Central Business Support District
4. SPI-1 Downtown Special Public Interest District (all subareas)
5. SPI-18 Mechanicsville Neighborhood Special Public Interest District (subareas 7, 8, & 9)
6. SPI-21 Historic Westend/Adair Park Special Public Interest District (subareas 9 & 10)
7. SPI-22 Memorial Drive/Oakland Cemetary Special Public Interest District
8. PD-BP Planned Development – Business Park District
9. Martin Luther King, Jr. Historic District (Edgewood Commercial District/Subarea 5)
10. Inman Park Historic District (Railroad Commercial Corridor & Industrial District/Subarea 3)
11. Castleberry Hill Landmark District
12. LW Live Work District
Each zone has its own unique requirements, and what follows is a summary with representative examples, not an exhaustive comparison. Requirements may also have changed since the writing of this report. To read the actual terms for each district, consult the City of Atlanta’s Code of Ordinances online at www.municode.com. In summary, common restrictions include: square footage maximums (10,000 square feet Downtown and 15,000 square feet in Inman Park); prohibition of hazardous materials (Planned Business Parks); prohibition of raw materials processing (Planned Business Parks); prohibition of all industrial uses except pre-existing I-1, I-2, and legal nonconforming uses (Inman Park); mandated visual screening of all materials and equipment (MLK, Jr.); restrictions on hours of operation (Live Work), and restrictions on the number and residence of employees (Live Work).

Atlanta’s Light Industrial District (I-1) merits more detailed attention, as it is the closest existing district in Atlanta to a mixed-use industrial district – in terms of permitted uses if not urban design guidelines. It is specifically intended (City of Atlanta, 1977 Code § 16-16.002):

1. To provide locations for wholesaling, warehousing, storage, light manufacturing, processing, repair services, and sales lots, in addition to other retail and service establishments.
2. To create, expand or extend such districts only where there is adequate and direct access to major transportation facilities and where there is minimal conflict with residential districts.
3. To permit dwellings or lodging units as accessory to permitted principal uses.
4. To permit the conversion of industrial buildings which are 50 years of age or older to multi-family dwellings so as to promote the city's policy of permitting combined living and work space in suitable locations.

Among other land uses, the district permits (City of Atlanta, 1977 Code § 16-16.003)

manufacturing, wholesaling, repairing, compounding, assembly, processing, preparation, packaging or treatment of articles, foods, components, products, clothing, machines and appliances and the like, where character of operations, emissions and by-products do not create adverse effects beyond the boundaries of the property [emphasis added].

In particular, “use of heavy drop hammers, punch presses or other machinery; or processing methods creating excessive noise or vibration is prohibited in this district” (City of Atlanta, 1977 Code § 16-16.003). These requirements are not unusual for a light industrial district.
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Other permitted industrial uses in the I-1 district include broadcasting towers and relays, business services (such as printing, maintenance, packaging, and shipping), car washes, clinics, laboratories, repair shops, studios, vehicle dealerships, warehousing and distribution centers, and yards for equipment, lumber, sand, and gravel. These uses provide a sense of the nature of light industry.

While some uses (such as laboratories) may seem easier to incorporate into dense, mixed-use development than others (such as car dealerships), a mixed-use industrial district should base its land use limitations on environmental health evidence rather than vague generalizations, as long as the project team has found a way to meet the urban design requirements. If a team can successfully design, finance, and operate a dense, multistory car dealership such as the Grossinger City Autoplex in Chicago, why prohibit their creativity and initiative? Granted, a staunch new urbanist might begrudge the Autoplex (pictured below) its large setbacks and onsite parking lot, in lieu of on-street or structured parking. The multi-story showroom, however, is very innovative in the United States. It deserves recognition.

The Grossinger City Autoplex Currently Under Construction in Chicago

![Grossinger City Autoplex](http://tinyurl.com/bquwmw8)

Source: [http://tinyurl.com/bquwmw8](http://tinyurl.com/bquwmw8)

Atlanta’s I-1 (Light Industrial) District mandates a minimum 40 foot front yard, which is four times the size of the 10 foot setback required in industrial areas in Miami, Florida’s new form-based code (City of
Integrating Light Industry into Mixed-Use Urban Development

Miami, 2012). Likewise, the mixed-use industrial district in North San Jose, California (Field Paoli and City of San Jose, 2010) recommends a 10 foot public sidewalk and a 15 foot private planting strip – still just over half the size of Atlanta’s requirement. In addition, the I-1 district’s minimum parking requirements are relatively conservative from suburban industrial development standards, but may detract from an urban environment. Particularly around the Atlanta BeltLine, strong potential may exist to implement Miami’s approach of granting transit-oriented industrial developments a 30% reduction in parking by waiver (City of Miami, 2012).

The City of Atlanta already has a track record of progressive and forward-thinking interpretation of its code, as evidenced by the urban design of 5 Seasons Westside (pictured on page 20). This restaurant, bar, and brewery is located on parcels zoned I-2 and I-1-C. What is more, planners at the City of Atlanta are considering creating a Mixed-Use Industrial District as soon as next year, which will dramatically enhance the feasibility and profile of light industrial, mixed-use development in Atlanta. Such a district would put Atlanta in the company of a small handful of other innovative, early adopters.

Existing Mixed-Use Industrial Districts in the United States

1. Battle Ground, WA
2. Berkeley, CA
3. Boulder, CO
4. Corvallis, OR
5. Denver, CO
6. Glendale, CA
7. Madera County, CA
8. Miami, FL
9. New York, NY
10. North San Jose, CA
11. Pittsburgh, PA
12. San Francisco, CA

The author has identified twelve mixed-use industrial districts currently in existence in the United States (see above). There are probably more. This study included a detailed review of the ordinances to verify that mixed-use industrial policies are actually in place. That said, some of these districts have been actively implemented, while others have not. Detailed case studies should be the subject of future research. A brief review of the intent, implementation, and effects of several of these districts can be
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found in the appendix of the report *Industrial Mixed-Use in Downtown Los Angeles* (2008). A key theme of that review was that industrial mixed-use zones can encourage the loss of industrial lands if specific controls are not put into place to manage the mix of uses in the district. Lobel (2008) recommends requiring a minimum floor area ratio (FAR) of industrial development, with the remainder of the permitted density available for other land uses.

Several of the cities above have adopted policies to plan and manage the mix of uses. San Francisco has led an extensive community engagement process to determine the proper mix of uses in its historical industrial areas, moving forward. Battle Ground, Washington’s zoning ordinance regulates the mix of land uses in its mixed-use industrial district by a percentage of the district’s square footage. North San Jose has adopted an area development policy that strictly monitors and enforces the intended mix of uses in the transit-oriented industrial core (City of San Jose, 2012). North San Jose also implemented a traffic impact fee, and permits some restricted high-density residential development in specific portions of the industrial area through an overlay zone and phasing requirements (2012).

A preliminary review reveals that the urban design guidelines in San Francisco (City of San Francisco, 2001), North San Jose (Field Paoli and City of San Jose, 2010), and Miami, FL (City of Miami, 2012) have been particularly well developed (see previous section). San Francisco makes recommendations for harmoniously integrating residential, industrial, and mixed-use buildings into neighborhoods characterized by other uses (again focusing on residential, industrial, and mixed-use areas). San Jose offers guidelines for mixed-use industrial street grids, block sizes, streetscaping, massing, façade treatments, and so on.

Miami integrates industrial uses into several districts in its new form-based code, Miami 21. It also includes a Work-Live building type, which flips the Live-Work concept on its head by requiring a
minimum of 50% of the building to contain an employment-related use. This provision could provide an additional avenue for encouraging industrial mixed-use development in Atlanta.

Spatial Analysis of Zones Permitting Light Industrial Uses in the City of Atlanta

Recall that 12 zones in the City of Atlanta currently permit at least some form of light industry (inclusive of light manufacturing), with each district having its own caveats and restrictions. Together, these zones contain 8,944 parcels totaling 525 million square feet (12,060 acres). Much of this land is not industrial and likely never will be. Rather, these figures reflect the total amount of land in zones in which the development of some light industrial uses (however restricted) is legally permitted.

As illustrated in the map below, heavy industrial zones are concentrated in the northwestern quadrant of the city, with some major rail yards included in these zones. A number of light industrial zones are located nearby to service these heavy industrial clusters. In addition, a few very large light industrial tracts are located in the south and southeastern portions of the city. The other zones permitting some form of light industry are concentrated in the city’s core, and in a band extending southeast from the West End neighborhood to the city limits.
Vacant industrial lots with no vertical development provide an indication of industrial development opportunities in Atlanta. Fulton County Tax Assessor data indicates 450 vacant industrial parcels totaling 31.5 million square feet in the zones mentioned. Predictably, the size of these vacant parcels increases with distance from the urban core.

For the purposes of mixed-use industrial development, the prime market is within ½ mile of MARTA stations and the BeltLine. There are 1.3 million square feet of vacant industrial lots meeting these criteria, with parcels ranging from 2,040 square feet to 192,650 square feet. Many of these vacant lots are clustered or contiguous. As illustrated in the map below, transit-oriented industrial development opportunities are clustered around several MARTA stations: Bankhead, H.E. Holmes, MLK, West End,
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and Garnett. Many of these areas are historically low-income, and predominantly African American. The King Memorial station in particular has major historic and cultural importance as the birthplace of Martin Luther King, Jr. Therefore it is essential in moving forward with these development opportunities to engage the local communities and ensure that the creation of relatively high-wage, low-barrier-to-entry industrial jobs is accompanied by a development concept that serves the existing community and its vision for the neighborhood; puts into place high standards for health, safety, and environmental impact; and prevents the displacement of existing residents and businesses.

Vacant Industrial Lots within ½ Mile of MARTA Stations and the BeltLine
Selecting Compatible Light Industrial Businesses

The higher population density and finer-grained mix of land uses in urban environments can intensify land use conflicts. The most appropriate light industrial businesses will be those that contribute to a vibrant street life while meeting elevated demands for land use compatibility. The standard light industrial restrictions regarding noise, fumes, vibration, and hazardous byproducts must be more carefully tested, evaluated, negotiated, and monitored, because all these factors become greater potential nuisances and threats to the desirability and viability of the development.

In addition, the overall success of a mixed-use environment relies on creating an enjoyable experience for pedestrians, cyclists, transit-users, and street-level retail patrons. The businesses’ freight traffic should be light enough not to detract from this environment. Alternatively, careful attention should be given to designing certain roads and routes that prioritize swift freight movement, while others prioritize a strong pedestrian and bicycling experience. Maps and signage should make these differences obvious. Orienting the short side of buildings toward the pedestrian thoroughfares would increase visual interest on those streets and maximize the density of assets within a five minute walk (A. B. Jacobs, 1993). When freight access is limited, it is more important that the business has a low product turn-over (Leigh, 2012). Relatively small and/or expensive goods such as medical devices and jewelry may fit this description, especially for smaller establishments.

A key element of creating an engaging pedestrian experience is minimizing the size of blocks (A. B. Jacobs, 1993; J. Jacobs, 1961). The Fairlie Poplar District in Downtown Atlanta, for instance, has an average block size of 250 feet by 250 feet (Cohn, 2006), which would limit the footprint of any building to 62,500 square feet (less any setback requirements). The Fairlie Poplar district (pictured below) offers one of the most enticing pedestrian experiences in Atlanta, conveys a fairly spacious appearance despite its 4-5 story buildings, and yet provides the necessary population density to support transit and street-
level retail (2006). While a 62,500 square feet footprint is insufficient for many industrial businesses, it can (for instance) accommodate smaller, light manufacturing companies with only a few employees. In Georgia the majority of companies have less than five employees, so even with extremely small blocks, light industrial opportunities remain.

The Fairlie Poplar District in Downtown Atlanta

Source (left): http://www-us.flickr.com/photos/spellbook/168652622/in/set-1039420/


That said, slightly larger blocks can accommodate a much broader range of light industrial businesses. In Midtown Atlanta, for instance, the average block size is about 400 feet by 400 feet (Cohn, 2006). The block size in Midtown Atlanta can accommodate a 160,000 square foot building footprint (less any setback requirements). This block size can comfortably accommodate wholesalers with retail showrooms, light manufacturers with a moderate number of employees, and even small, regional distributors (if there is sufficient freight access).

Moreover, this block size provides a greater capacity to wrap large industrial spaces with retail frontages on key, pedestrian streets; to provide ground-level lobby space for other land uses on higher floors; or to design courtyard or podium configurations, with both mixed-use towers and single-story, light
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industrial uses on a single block. Limiting light industrial uses to two or three stories in such a manner would enable longer ceiling spans for industrial uses, permit greater floorplan autonomy across land uses, and minimize the construction costs for noise and vibration control. These site plans should also be easier to finance, since many lenders and investors have become jaded with vertical mixed-use developments. Regent Partners’ pending mixed-use development in Charleston, South Carolina (illustrated below) provides an example of the unimposing density and varied street frontages that a courtyard design can provide. (The Regent project is included here for illustrative purposes only; it does not include industrial uses.)

Regent Partners’ Mixed-Use Hotel Development in Charleston, South Carolina
Construction to Begin in Third Quarter of 2012

Source: http://www.regentpartners.com/charleston

Light industrial businesses in urban settings should ideally enliven the streetscape. Development regulations in America are increasingly mandating street-level retail, despite the fact that many mixed-
Integrating Light Industry into Mixed-Use Urban Development

use developments lack the market fundamentals to support such retail. Marketplaces with small manufacturers/wholesalers can offer unique products and experiences that people cannot get anywhere else (Phillips, 2012). Glimcher Realty Trust, a shopping mall REIT, has recently turned to experiential retail such as crafts classes and restaurants for a similar reason – competition from online retailers. At Scottsdale Quarter in Arizona, thirty of the 35 tenants offer dining, entertainment, or a service in addition to traditional retail. As a result, Scottsdale makes $1,000 per square foot, more than any other Glimcher mall.

As noted previously, many industrial businesses also offer relatively high-wage, low barrier-to-entry jobs. They can also diversify the economic base of the neighborhood, providing resilience if another major industry cluster declines. In return, manufacturing and wholesale businesses can benefit from high visibility and proximity to urban customers. Since many of these businesses rely predominantly on wholesaling to established clients, they can also be more stable than traditional retailers in the face of slow retail sales, preventing vacant storefronts. This attribute could make certain light industrial businesses ideal anchors for the early stages of phased projects.

For many industrial businesses, freight transportation costs greatly exceed the costs of owning or renting real estate (McDermott, 2009). Supply chain management is a critical consideration in determining which industrial businesses have a place in mixed-use, urban settings. In some cases, the higher land costs typical of urban settings can be justified by disproportionate savings in transportation costs or customer retention. For instance, fresh, prepared foods must be delivered promptly to urban wholesale customers such as hotels, restaurants, and retailers. For this reason, certain food producers and local distributors are a natural fit for mixed-use, urban settings.

Companies motivated by sustainability are also natural prospects for urban, mixed-use developments. These companies are more likely to embrace high performance standards that minimize environmental,
Integrating Light Industry into Mixed-Use Urban Development

health and safety hazard, and nuisance factors that would be problematic in an urban setting. Such companies typically either have a strong, mission-based focus on sustainability, or are attempting to boost their corporate image. In the latter case, green building is usually reserved for highly visible properties such as corporate headquarters, unless the green improvements are merited strictly on the basis of operating cost savings (Campbell, 2012). Unfortunately, sustainability is still a niche concern in industrial circles.

More companies will be interested in locating in transit-served communities in order to reap benefits from either a large, compatible labor pool, or urban amenities capable of attracting skilled workers from other areas. The high concentration of educational institutions in urban areas can provide a renewable labor source and a local culture and heritage built around particular industries. Locating in proximity to research institutions can be particularly beneficial in quickly changing industries such as advanced technology manufacturing (Helper et al., 2012).

Companies that benefit the most from agglomeration are often very well suited for urban, mixed-use areas. As noted in Helper et al.:

“The geographic clustering of companies in the same industry or related industries — along with the educational, R&D, business, and labor institutions that support them—promotes high wages and innovation. Such clustering gives manufacturers access to specialized workers, suppliers, and customers and makes it easier for them to share ideas that can improve their performance. Manufacturers can also benefit from their location in a geographic area that has a diverse set of industries, including those not associated solely with manufacturing. In such locations, they can learn from the practices of non-manufacturing industries and gain easier access to such services as engineering, finance, legal services, and management consulting,” (p.2).

From an economic development, social equity, and public services perspective, jurisdictions are constantly competing for high-wage, low-barrier-to-entry jobs in “export” sectors. Industries that primarily serve customers outside the local area tend to have what economic developers call a “multiplier effect” for job creation. For instance, if a national car manufacturer opens a new plant, suppliers and business service establishments will open nearby to service the plant’s operations. These
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businesses will in turn buy their supplies from other businesses, who may hire a few extra employees due to the increased sales. Restaurants and apartments may even open to serve the new manufacturing workers, and as well as the new workers in the support businesses now surrounding the plant.

Moreover, in a place with many high paying jobs, such as Austin, Texas, real estate developers can charge higher rents, which gives them the financial room to provide more public benefits, such as affordable housing units for eligible, low-income families (Bell, 2012; Tague, 2012). Lastly, manufacturing jobs pay higher than the average wages and they typically have more opportunities for advancement (Helper, Krueger, & Wial, 2012). Attracting jobs with these attributes ensures that low-income individuals and historically disadvantaged groups have better opportunities for advancement. While some of these factors are not unique to urban locations, they are nevertheless important factors in the selection of target industries.

The North American Industrial Classification System (NAICS) is a useful starting point for identifying the kinds of light industrial businesses that may be particularly well suited to mixed-use development. Based on the criteria just described, the industries on the next page merit further research regarding their compatibility in mixed-use settings. Before proceeding from planning to implementation, it will be important to consult with industry representatives and environmental health professionals to ensure that the targeted industries are in fact compatible, either in the broad sense or with specific caveats. Some of the industries listed may necessitate physical design restrictions, limitations on the scale of production, or other performance requirements that prohibit certain industrial processes or practices. If a listed land use does not seem compatible at first glance, consider the potential for factors such as experiential retail, and the ways in which the use could be scaled back or regulated to make it amenable to an urban environment.
Land uses listed in the “Urban Industrial Necessities” section may not be ideal neighbors in urban, mixed-use settings, but they are nonetheless essential to well-functioning cities. These uses merit investigation in regard to best practices for impact mitigation. Further treatment of this subject can be found in the Appendix.
Selected Industries with Potentially Mixed-Use-Compatible Light Industrial Components

Aromatics Manufacturing
- Essential oils manufacturing
- Perfume manufacturing
- Medicinal and botanical manufacturing
- Candles manufacturing

Food Production & Local Distribution
- Food manufacturing (general)
- Breakfast cereal manufacturing
- Fats and oils refining and blending
- Chocolate and confectionary manufacturing cacao beans
- Confectionary manufacturing from purchased chocolate
- Non-chocolate confectionary manufacturing
- Fruit and vegetable preserving and specialty food manufacturing
- Dairy product (except frozen) manufacturing
- Animal slaughtering and processing
- Bakeries and tortilla manufacturing
- Bread and bakery product manufacturing
- Commercial bakeries
- Cookie, cracker, and past manufacturing
- Mayo-naise and prepared sauce manufacturing
- Spice and extract manufacturing
- Soft drink manufacturing
- Breweries
- Wineries
- Distilleries
- General line grocery merchant wholesalers
- Packaged merchant food merchant wholesalers
- Dairy product (except dried or canned) merchant wholesalers
- Confectionary merchant wholesalers
- Beer and ale merchant wholesalers
- Wine and distilled alcoholic beverage wholesalers

Arts, Crafts & Apparel Manufacturing
- Millwork
- Wood, window, and door manufacturing
- Printing and related support activities (general)
- Commercial lithographic printing
- Commercial screen printing
- Trade binding and related work
- Prepress services
- Pottery, ceramics, and plumbing fixture manufacturing
- Vitreous china, fine earthenware, and other pottery product manufacturing
- Other pressed and blow glass and glassware manufacturing

Note: See caveats on previous page.
Target Industries for Fulton County
This report selects target light industries for Fulton County on the basis of a web of overlapping criteria.

The first set of criteria consists of business needs, such as proximity to customers, labor, and research. The second set of criteria takes into account urban design factors, such as the need for relatively small blocks, an engaging pedestrian experience, and sufficient density to support transit and street-level retail. The third set of criteria involves a lack of significant nuisances or hazards through noise & vibration, freight traffic, fumes, and so on. (That said, these expectations must be managed and enforced through performance requirements in the zoning ordinances and/or legal covenants.)

The fourth and final criterion is economic growth: niche industries that maintained employment growth in Fulton County through the recession, and preferably also saw growth in annual payroll and number of business establishments (data source: U.S. Census Bureau, 2012). In summary, the development concept consists of industry clusters anchored by light manufacturing, with wholesale & retail components. While a mixed-use development could also include other uses such as office space or even apartments, best practices have already been established for incorporating these uses into mixed-use development, so the focus of this report is on light industrial uses.

On the basis of the criteria above, the author selected ten industries in three clusters that could present significant opportunities for mixed-use industrial development in Atlanta (see the table below). The first cluster revolves around food production, and contains industries such as chocolate and pasta manufacturers, breweries, and confectionary wholesalers. The second cluster is based in arts and crafts manufacturing, and contains industries like pottery manufacturing and small-scale ornamental metalworking. The third cluster is built around research and development in the hard sciences.
Comparing each of these niche industries with its broader industrial classification highlights the exceptional growth of the target industries. In Fulton County, breweries and pottery manufacturers each saw average annual employment growth of 132% from 2005 to 2009 (U.S. Census Bureau, 2012; see Appendix 2: County Business Patterns Data). Over the same period in Fulton County, beverage manufacturers overall saw their employment decline by an average of 4% per year, while clay and refractory product manufacturers saw their employment decline by an average of 6% per year (ibid).

Appendix 2 contains a complete breakout of growth trends in each target industry as well as comparisons with broader industrial categories.

Fulton County employment in the Food Production target industries grew by 150% from 2005-2009. In contrast, employment in general food manufacturing decreased 16% over the same period, as one might have expected during the recession. To get a more relevant comparison to the target industries,
this report uses a weighted average of general food manufacturing (counted 3 times), beverage manufacturing, grocery and related product wholesaling, and alcoholic beverage wholesaling.

Employment in these larger industries declined by 10% from 2005 to 2009 (see below).
Food Production Cluster
Percentage Growth in Fulton County (2005-2009)
County Business Patterns Data (Census)

Arts and Crafts Cluster
Percentage Growth in Fulton County (2005-2009)
County Business Patterns Data (Census)

Fulton County employment in the Arts and Crafts target industries (ornamental and architectural metalwork manufacturing, commercial screen printing, and pottery manufacturing) grew by 185% from 2005-2009. In contrast, employment in the corresponding larger industries (printing, clay and refractory product manufacturing, and architectural and structural metals manufacturing) decreased by 28% over the same period.
The Research and Development cluster consists of only one NAICS category. With more nuanced data, it would be possible to isolate subsectors of this industry that are experiencing exceptionally strong growth. The larger comparison industry includes research in the social sciences. The difference in growth is trivial. While the R&D cluster is the least impressive of the three target clusters in terms of growth, this cluster’s trends are still acceptable given the recession, especially in light of the compatibility of R&D facilities with mixed-use, urban settings.

**Research and Development Cluster**  
**Percentage Growth in Fulton County (2005-2009)**  
**County Business Patterns Data (Census)**
Fulton County Target Industries by Cluster: Number and Size of Establishments

<table>
<thead>
<tr>
<th>Fulton County Target Industries by Cluster (2009)</th>
<th>Number of Establishments</th>
<th>Mode Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD PRODUCTION</td>
<td>38</td>
<td>Tie: 1-4/5-9/20-49/50-99</td>
</tr>
<tr>
<td>Butchers</td>
<td>4</td>
<td>1-4</td>
</tr>
<tr>
<td>Confectionery manufacturing from purchased chocolate</td>
<td>3</td>
<td>1-2</td>
</tr>
<tr>
<td>Cookie, cracker, &amp; pasta manufacturing</td>
<td>4</td>
<td>1-2</td>
</tr>
<tr>
<td>Breweries</td>
<td>2</td>
<td>1-2</td>
</tr>
<tr>
<td>Confectionery wholesalers</td>
<td>7</td>
<td>1-4</td>
</tr>
<tr>
<td>Wine &amp; distilled alcoholic beverage wholesalers</td>
<td>18</td>
<td>1-4/10-19/50-99</td>
</tr>
<tr>
<td>ARTS &amp; CRAFTS MANUFACTURING</td>
<td>22</td>
<td>1-4/100-249/50-99</td>
</tr>
<tr>
<td>Commercial screen printing</td>
<td>8</td>
<td>1-4/3/100-249/50-99</td>
</tr>
<tr>
<td>Pottery product manufacturing</td>
<td>4</td>
<td>1-4/2/100-249/50-99</td>
</tr>
<tr>
<td>Ornamental &amp; architectural metalwork manufacturing</td>
<td>10</td>
<td>1-4/3/100-249/50-99</td>
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<tr>
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<td>59</td>
<td>1-4/27/100-249/50-99</td>
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Recommendations for City Planners and Real Estate Developers

City planners should explore the unique potential for light industrial businesses in each district, and alter land use regulations accordingly. Administrators need to carefully evaluate any untested zoning, incentives, or impact fee provisions to ensure that they anticipate and avoid the standard legal attacks applicable to all land use regulations (see Mandelker, Payne, Salsich, & Stroud, 2008).

In a graduate level course at Georgia Tech earlier this year, multiple prominent mixed-use real estate developers from the Atlanta area shared their “lessons learned” with students in the College of Architecture (S. Weissman, 2012). Several of these guest speakers stressed the importance of public financing or funds-matching for streetscape improvements in order to make mixed-use development financially viable. This policy tool will be equally as important for industrial mixed-use developments.

Street-level retail requirements should be loose enough to include compatible light industrial uses with a retail component. Parking requirements should recognize that (whatever the vision), tenants may
demand a sea of parking, and without it the development may not succeed. Therefore, creative regulatory and financial solutions are essential. Consider permitting extra “car storage” parking (McGwier, 2012), if it is developed in a way that can later be converted to other uses. In Atlanta, currently even people who strive to live a transit-oriented lifestyle generally need a car at least occasionally. Zipcars are only a partial solution.

Planners should also be careful not to undermine the feasibility of mixed-use projects through poorly timed public projects. One national-level developer recounted an instance where his company built a parking deck as part of a large, mixed-use development, and was relying on income from the surrounding traffic shed. Shortly thereafter, a major public private partnership constructed a massive, free parking deck right across the street. If this particular developer’s company were not so well capitalized, the revenue shortfall could have killed their development. The situation could have been avoided if the planners specified a smaller free parking deck and entered a contract to lease some additional spaces from the developer’s deck.

Finally, planners should not over-regulate worthwhile projects to the point of killing their returns.

Capital markets cross state lines, so if a project in Atlanta does not offer returns competitive to projects in say, Dallas, the projects in Atlanta may never be built (Bell, 2012; Speck, 2012). Tax allocation district funding and density bonuses can help balance the burden of other regulations, to the extent that the market will actually support, say, the density bonus offered (Bell; Speck). Midtown’s density bonus for street-level retail is a good practice (Speck), as is the neighborhood’s allowance of street-level residential, when deed restrictions are in place allowing future conversion to retail (McGwier, 2012). Given the innovative nature and perceived risk of industrial mixed-use development, the cost of financing will be a central hurdle. Public funding sources will therefore play a major role.
Integrating Light Industry into Mixed-Use Urban Development

From the developer’s perspective, it is important to work in communities that understand and value the mixed-use, light industrial concept. The risk/return profile of the project will be affected by the regulatory regime, the ease and speed of approvals (including the developer’s knowledge of the process), and the degree of community support (Arms, 2012; Bell, 2012). Conversely, when able, developers should consider providing public benefits such as preparatory work for State road requirements, which may help secure public buy-in (2012).

Typically, the developer should ask for regulatory allowances permissive enough for a worst-case scenario, to allow for flexibility as planning and development proceed and surprises inevitably arise (Bell, 2012; Frost, 2012). In the case of light industrial mixed-use development, flexibility means securing city and community approval in writing early on, under conditions that assume the worst (or the least politically expedient characteristics) for the project. Without these assurances, it is unlikely that capital will be forthcoming. A build-to-suit would be a best-case scenario. Regardless, floorplan flexibility to substitute a variety of light industrial (and other) uses is best, to ensure the property remains marketable in the long-term. It is essential to assess the project’s strengths and weaknesses honestly, because inflated projections can result in financial and reputational ruin.

Projects should also be planned for flexibility from a design and construction perspective, both to accommodate market change during the development process or the holding period, and to provide an exit strategy at every stage. Designing flexibility into block layouts, raw space, and MEP concepts allows greater adaptability (Arms, 2012). Designing with typical supply dimensions in mind can minimize construction costs (Arms). Compartmentalizing plans through BIM can make them more legible for each trade, speeding construction and reducing change orders (Arms). It is important for the developer to understand the building codes and regulations as well as the architect does, and to have an understanding of the cost of construction alternatives before consulting an engineer (Arms). While these
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Lessons are fairly universal, they will be particularly important for industrial mixed-use projects, due to the potential for construction cost overruns in innovative and unfamiliar project types.

In any mixed-use development, it is critical to mitigate land-use conflicts through planning, design, construction techniques, and legal structures. Typical points of friction include security, trash, cleanliness, noise, smoke, odors, parking, signage, and special event nuisances, as well as negotiation of floorplates, operating expenses, and covenant enforcement rights. Careful design and the use of tools like parking and door sensors can help prevent abuse of shared resources (Frost, 2012). Light industrial uses merit additional attention to noise control and visual buffers, vibration mitigation, safety, freight traffic and loading, health, and environmental issues. Legal covenants can help anticipate and preempt conflicts that physical designs may not be able to fix (S. E. Weissman, & Vallini, J., 2000).

The attractiveness of a mixed-use development depends largely on site selection. To quote one area developer who spoke in Weissman’s class (2012): “mixed-use doesn’t work in a cornfield in Forsyth County, despite what their codes may require.” Commonly, developers would prefer the area to be a defined market – one with solid growth, public and civic support, strong transit and transportation access, favorable zoning, complimentary uses, infrastructure, safety, and a strong reputation (Baile, 2012). These criteria should apply to each of the proposed uses in a mixed-use development. The exception may be that some declining industrial areas seeing growth in other land uses may also have the potential for industrial renewal, if the inherent potential of the land is strong and there is a concerted push via a public-private-partnership (De Sousa, 2012).

Except for extremely large projects, retail should not depend on the development to survive. It should already be feasible based on the existing market fundamentals, just like the rest of the project (McGwier, 2012); developments with a split of 2/3 retail and 1/3 office/residential have a good track record, because typically the retail is more successful in these developments, which in turn drives
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Premium rents for the other land uses (McGwier, 2012). Achieving this critical mass of retail activity will be equally important for mixed-use developments with retail-focused, light industrial components such as office/showroom properties.

In selecting light industrial uses with a retail component, it is important to consider the strategic mix of retail experiences, in order to create something that truly excites people. Retail is a difficult business, and selecting the right owner with the right work ethic can make or break a project (Phillips, 2012). Finding the right operator may necessitate an extensive search, even crossing state lines. To benefit from the character, originality, and grassroots authenticity of small retailers, it may be necessary to support their activities by providing a generous tenant improvement allowance and architectural support, having clear lease renewal expectations (such as health code compliance), and even subsidizing their activities by charging larger tenants higher rents (Phillips). Marketing and site activation play a major role in the success of retail, by getting people used to coming to the location (Phillips).

Mixed-use developments demand extensive capital, as well as expertise and experience in multiple product classes. Partnerships are common to pool money, share expertise, and spread risk (Frost, 2012). In joint venture mixed-use projects, negotiations often become excruciatingly complex and lengthy, so it is important for partners to have a shared vision and culture (Frost). This is the case even for relatively “cut and dry” mixed-use development, due to these projects’ inherent complexity. For innovative, industrial mixed-use projects, a shared vision between project partners is absolutely essential.

Noise pollution from industrial activity and freight traffic will be a key hurdle to overcome for many industrial mixed-use projects. To minimize noise pollution, special attention should be given to wrapping pipes, sealing connections, shortening strategic floor spans, and using products like cork board and baffling to minimize the transmission of sound vertically and through ducts and chases (Baile, 2012). However, buildings should not be built so tightly that they eliminate white noise, making sound
pollution more annoying (McGwier, 2012). Overly tight buildings can also trap moisture, leading to costly repairs (McGwier).

Operating cost allocations should be determined through a rigorous operational analysis of all land uses in the project. For example, instead of divvying up the maintenance costs for loading docks by the project-wide square footage of each land use, consider allocating these costs by the amount of time the dock will be utilized by each user (Baile, 2012).

**Recommendations for Economic Developers**

A variety of financial instruments and incentives currently support the development of light industrial properties and businesses in the city of Atlanta, and could be put to creative use to integrate compatible light industry into mixed-use settings and revitalize urban industrial areas. Tax allocation district funds are available for new construction, renovation, equipment, public works, and clearing/grading land. These funds can range from 4% to 10% of the total development costs (Invest Atlanta, 2012). The Georgia Department of Community Affairs offers several forms of gap financing. The Atlanta Regional Commission offers competitive planning grants to local governments and nonprofits, as well as transportation implementation funds.

In addition, a variety of incentives could be applied to innovative urban projects for industrial businesses locating in the City of Atlanta, including Industrial Revenue Bonds, the Regional Assistance Program (RAP), R&D Tax Credits, and the Employment Incentive Program (Georgia Dept. of Economic Development, 2012). The Environmental Protection agency offers competitive grants for brownfield assessment and cleanup, as well as a promising pilot program that supports economic development through area-wide planning for the revitalization of brownfield sites. In terms of conventional debt, the standardization and commodification of urban and mixed-use industrial property types would greatly improve financing for these specialized projects by increasing lending liquidity and volume, as well as improving loan terms. Economic developers can facilitate this process of improvement through their extensive knowledge of industrial site selection and the needs of industrial space users.

Target large land assemblages for larger, national businesses (Callahan, 2012). Retrofitting older buildings is more appropriate for microenterprise, and more in line with the lower rents feasible for these businesses (Fowler, 2012). While these two points may sound obvious, it is rare to see this level of coordination taken to its logical extensions in urban and regional industrial planning and policy-making.

To revitalize urban industrial centers, identify industrial growth clusters with minimal freight traffic, such as those moving lesser quantities of more expensive goods (Leigh, 2012). The ideal businesses will have relatively small square footage requirements for inventory (ibid). Identify growth clusters of light
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Industrial businesses with a strong retail component that lends itself well to an urban storefront. Focus on businesses that benefit from proximity to urban resources such as customers, visibility, labor, transit, employee amenities, suppliers, business services, research institutions, a network of similar businesses, and resource sharing (Helper, Krueger, & Wial, 2012).

Legal covenants can define expectations & reduce conflicts between land uses. The same kinds of questions that should be put toward a project’s stakeholders in the covenant drafting process should be considered by the project team in the early phases of design, in order to minimize unexpected costs and delays (Weissman, 2000). Handled properly, these legal discussions can bolster the project partners’ confidence rather than detract from it.

Apply tools such as deed restrictions, community land trusts, and inclusionary zoning, to spur economic development while insuring that upward pressure on rents and property taxes does not displace existing industrial businesses, small local retailers, and the local workforce (Davis, 2006). These tools will preserve the vibrancy and character that made the area desirable for redevelopment, while ensuring that the lifeblood of the neighborhood – the existing residents, businesses, and institutions – can remain in the community that they helped to build.

Advocate for industrial mixed-use districts. Urban light industry can: create high-wage, low-barrier-to-entry jobs; diversify urban economies; replace imports with locally made products; improve regional self-sufficiency; and provide unique retail experiences and a local sense of place (see page 1).

Preserve urban industrial land. The City of Atlanta lost 12% of its light industrial (I-1) and heavy industrial (I-2) land between 2004 and 2009, (Leigh et al., 2009). Limit the conversion of strategically important industrial lands to other uses. In an industrial mixed-use district, protections might include: (1) limiting other land uses to a percentage of the total district square footage (Battle Ground, 2012) or (2) requiring 1 FAR of industrial development and allowing other uses to make up the balance of the permitted density (Lobel, 2008).

Economic developers should present targeted industries with site options in walkable town centers or with convenient access to transit (Fowler, 2012). In Georgia’s largest manufacturing industry (food processing), businesses like microbreweries are ideal for urban areas due to their strong retail component, low nuisance factor, and local customer base. Developing industry-specific smart growth strategies can improve Georgia’s competitive advantage and quality of life. To continue with the previous example, allowing microbreweries to diversify their distributors would increase market efficiency and improve the business environment (Fennessy, 2004; Moran, 2012). Permitting mixed-use development over a minimum amount of affordable light industrial and retail space would make it easier for microbreweries and other small food production businesses to serve urban neighborhoods, rather than chasing cheap space in automobile-dominated industrial areas (Fowler, 2012; Moran, 2012, mentioned the importance of zoning reforms more generally to achieve this objective).

As budget constraints force government at all levels to do more with less, collaboration between agencies and across jurisdictions can help ensure that public investments achieve the maximum public benefit. Metro Atlanta’s ability to attract and retain both young knowledge workers and executive-level
talent is increasingly dependent on reducing traffic congestion and providing urban, walkable, transit-oriented environments (Market Street Services, 2012). In addition, Metro Atlanta’s growth will be impacted by our ability to secure a sustainable water supply, improve the quality and perception of our schools, and stabilize neighborhoods that have been hit hard by the foreclosure crisis. Economic developers should strive to break down traditional policy silos, working with the Georgia Regional Commissions and other planning bodies to make incentives responsive to different regional planning priorities; to coordinate public investments in jobs, transportation, infrastructure, housing, and education; and to achieve shared goals.
References

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Appendix 1: Impact Mitigation

Some other industrial land uses merit attention not because they are desirable, but because they are inevitable necessities of urban life. It is important to explore ways to mitigate the negative impact of facilities such as solid waste transfer facilities, trash incinerators, and urban steam plants. Jared Lombard, a Principle Planner at the Atlanta Regional Commission, has commented that in recent years, solid waste transfer stations have been the most frequent category for ARC’s Development of Regional Impact (DRI) assessments (2012). “These are enclosed warehouses. The smell is not bad. You don’t see the trash. Airports don’t like them, though, because the trash attracts birds. Birds and planes don’t mix,” (2012).

A recent article in Planning magazine profiled several “urban-friendly utilities.” The Hennepin Energy Recovery Center (HERC) in Minneapolis burns the entire city’s residential garbage, generating electricity. Before the new Minnesota Twins baseball stadium was constructed directly adjacent to HERC, the incinerator was retrofitted as part of the larger master plan. The retrofit reoriented HERC’s freight access away from the stadium. In addition, “the area between the building and the elevated ballpark promenade features monumental gabion walls and plantings designed to mitigate elements of the site: switchgrass to absorb petrochemicals, a vast bank of juniper to perfume the air, and birch and swamp white oak to break up the scale of the building,” (Arvidson, 2012).

The False Creek Energy Centre in Vancouver, British Columbia, captures waste heat from the sewer system and uses it to heat the surrounding neighborhood. “The center’s low building hides under the Cambie Bridge,” flanked by plazas (2012). “A large expanse of glass on the neighborhood end of the building demystifies the building’s use and provides that nighttime storefront glow so desired in urban areas. Five exhaust stacks rise up past the bridge in the abstract form of a hand” (2012) as part of an art installation. Lights on the fingertips change from red to blue to indicate high or low energy demand.
Appendix 2: County Business Patterns

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<th>County</th>
<th>Industry Category</th>
<th>Number of Establishments</th>
<th>Employment</th>
<th>Average Annual Wages</th>
<th>Value Added</th>
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*Note: The table above shows the number of establishments, employment, average annual wages, and value added for various industries in different counties. The data is presented in a tabular format for ease of reading and analysis.*