

Intensive Industrial as Part of an Innovative Economy: Augmenting and Enhancing Innovation Districts

Industrial lands have existed for centuries, while innovation districts have gained much attention in the past decade. In cities with scarce lands and growing economies, how can we retain, rather than lose, industrial uses when developing innovation districts?

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Innovation districts have been much discussed, and often hyped, in recent years. In a series of publications by the Brookings Institute, Innovation Districts are defined as:

... geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators ... also physically compact, transit-accessible, and technically-wired and offer mixed-use housing, office, and retail ... innovative firms and talented workers are choosing to congregate and co-locate in compact, amenity-rich enclaves in the cores of central cities. ([The Rise of Innovation Districts: A New Geography of Innovation in America](#), Bruce Katz and Julie Wagner, Brookings, 2014)

They go on to list of contents of innovation districts' three categories of assets: economic, physical, and networking, which can overlap to create an 'innovation ecosystem' that facilitates idea generation and accelerates commercialization:

- **Economic assets** are the firms, institutions and organizations that drive, cultivate or support an innovation-rich environment.

- **Physical assets** are the public and privately-owned spaces—buildings, open spaces, streets and other infrastructure—designed and organized to stimulate new and higher levels of connectivity, collaboration, and innovation.
- **Networking assets** are the relationships between actors—such as between individuals, firms, and institutions—that have the potential to generate, sharpen, and/or accelerate the advancement of ideas.

Building on this concept, the list of ingredients in the recipe and attributes of the phenomenon have expanded over the years, elaborating on the need to accommodate both large tenants and incubator startups, and provision of amenities and programming, to attract a discerning workforce and shifting demographic. Simply put, innovation is when and where new or better ideas, products, services, technologies, or processes are created. But what does this mean from a land use planning perspective?



Now sometimes called urban innovation districts, innovation corridors or tech hubs, common profiles of success tend to be large developments anchored by a research university or some other major institution, driven by public or private sector investments or a combination thereof, often focused on attracting international firms, within a large city-region, in an urban location, and usually on older, underutilized industrial lands prime for redevelopment. Associated uses typically include office, retail, and other commercial, as well as residential being nearby or integrated into the new development.

Cited cases include Kendall Square in Cambridge, Research Triangle Park in Raleigh-Durham, and 22@ Project in Barcelona. The list of cities with attempted or planned but unrealized innovation districts is surely much longer. The potential, form, and viability of innovation districts in small-scale regions and more modest locales could be a study unto itself.



Kendall Square in Cambridge (Photo source: City of Cambridge)

In terms of the business sector and employment aspect of these areas, the focus is decidedly on the high-tech economy and creative classes, such as knowledge-based research, technology, software, life sciences, design, etc. Some of these activities may have some conventional industrial attributes, but are limited, with, in some cases, the visible remnants of industry being the adaptive reuse of historic buildings that once housed factories and warehouses.



Research Triangle Park in Raleigh-Durham (Photo source: Research Triangle Park)

Industrial Uses Definition

Although the long-term decline of manufacturing in North America has been well-reported, and the move towards a service economy well-observed, that's not the entire story.

Manufacturing, increasingly benefiting from technological investments and higher productivity and thus reduced number of workers, is still a major contributor to some regions in North America. Furthermore there are many types of urban industrial activities that are still required to serve local businesses and residents. Industrial jobs, which could be called blue collar, generally pay higher than average and don't all require graduate degrees.

As defined in other publications by the author, industry is diverse and nuanced (*Industrial Lands Densification and Intensification: Profiling Planning Policies and Development Projects in Metro Vancouver*, Eric Aderneck, PND Magazine, 2023):

The term industrial represents a wide spectrum of uses and intensities, which do not all fit into conventional definitions of heavy or light, or traditional and modern. An industrial use can include everything from large transportation, distribution, and manufacturing facilities to small local-serving producers and suppliers as well as new sectors like advanced technology, media / design, bio-tech, and e-commerce.

New light, low impact industrial uses, often with a high proportion of commercial uses, do not need the same types of accommodations as heavy and noxious operations, and associated separation of uses and building setbacks. While some industrial sectors continue to be land-intensive, multi-level buildings can provide more space for sectors that can function on upper levels, be it industrial or other forms of employment uses.

There are two ways to define industrial land uses, and associated measures of utilization:

- Intensity / intensification refers to the amount of activity – measured as jobs per building or land area, or the volume of goods produced or processed.*
- Density / densification refers to the dimensions of a building – measured as floor area ratio, site coverage or building heights/ volumes.*

Increasing both industrial space and activity can be achieved through higher density buildings and higher intensity occupants.

The common misconception that industrial activities are noxious, noisy, and ugly, and thus incompatible with modern cities, as they have been in the past, is only true for some today. It is often forgotten that while there may be negative industrial externalities, there are also many positive ones, in the form of economic, employment, and taxation benefits for the rest of the community. While some industrial uses, be it large scale manufacturing or distribution, may be best located on suburban-scaled sites in areas well-served by major transportation infrastructure, others are low impact and can be accommodated on compact urban footprints, such as small-scale manufacturing and just-in-time deliveries serving urban populations.

The Value of Industry in the City

The need for urban industrial land declined with the removal of warehouses to highway-oriented suburban locations and the relocation of manufacturing factories to other continents. But more recently there is a growing recognition of the need for industrial space that serves the urban core, be it for growing e-commerce delivery sorting, reshoring of some manufacturing, growth of innovative light industrial or quasi-industrial sectors, local serving businesses, construction industry, and enhanced infrastructure such as electrical utilities to power renewable energy forms.

Close proximity to other related businesses, workers, suppliers, and customers are an important part of an efficient economy, which also contributes to reduced travel distances and times which can provide financial, social, and environmental benefits. Industrial and commercial sectors are related and complementary. Even with digital communications, physical proximity can still be important. For example, product designing, prototyping, and testing, could all be located within an integrated space or proximate facilities to allow for both efficiencies and opportunities for close collaboration that spur discovery and innovation. Advanced manufacturing creates quality jobs both from the research and design of ideas, and the production and distribution of products for local and international markets. This can include both high skilled and lower skilled workforces to provide a diversity of employment opportunities for residents of a city.



Photo credit: Pixabay

Furthermore, industrial has many associated linkages (e.g. strong ties and weak ties) to other activities, with economic and employment multipliers that contribute to the wider economy and workforce. Such entrepreneurial ecosystems are stronger and more

successful if containing a wider and deeper pool of participants. This range and diversity helps to create a more dynamic and resilient economic ecosystem.

Industrial lands also increasingly accommodate city-serving industrial uses and new industrial forms such as the craft industry, maker movements, local food production, and breweries. The space needs of these tenants may be conventional, while their proximity to the urban population core is critical.

Yet in the case of many older industrial areas, land values are relatively low and building improvements are dated and functionally obsolete, leading to a decline in further investment. In some cases with brownfields being encumbered with environmental remediation issues, the most financially rewarding form of development is another use. While industrial tenants typically pay lower rents than commercial and residential tenants, that in of itself is not an indication of which is the most appropriate use on those lands.

Innovation Districts and Industrial Uses

Some of the innovation district cases include uses that have certain industrial-like attributes, be it research and development, biotech, labs, or other types of activities that tend to not fit well into an office tower, warehouse, factory, or other conventional building. But as seen from any gleaning of innovation district literature, the types of businesses and workers are decidedly of the clean and green type, up-scale, well-trained, and highly-paid urbanites. But what of industrial uses, be they in traditional or modern forms?

For a city facing population increases, the need to accommodate and attract economic growth may necessitate a review of its lands to determine the best future uses for them. A comprehensive city-wide plan can accommodate different types of land uses in different areas considering such matters as infrastructure, accessibility, and context. While being responsive to the changing economy, plans should not come at the cost of displacing industrial users.

If there are old, underutilized surplus industrial lands, possibly some can be redeveloped as innovation districts or mixed-use developments, however consideration should be given to finding viable accommodations to keep industrial businesses in the area and within the community. As elsewhere noted, there is an opportunity to intensify and densify industrial uses such that the amount and capacity of industrial space and activity can be retained or even increased with a static or declining amount of industrial land in certain markets.

Cities were created through and because of urban economic agglomerations, specialized uses, and knowledge spillover effects. At the district and business level this can include a mix of related functions that contribute to eco-industrial and circular economy outcomes, such as closer cooperation between businesses and integration of processes, operational synergies, increased productivity, shared resources, reduced waste, and decreased traffic. These can contribute to a multitude of long-term economic, social, and environmental benefits to the area and a city.

Solutions, Old and New – Industry and Innovation

Where contextually-appropriate and possible, a greater amount of industrial uses should be included within innovation districts. This could be done through purposefully retaining and growing existing industrial businesses in an area, with specific efforts to encourage them to stay and succeed, and attracting and accommodating additional industrial activities – be they stand-alone industrial businesses or industrial components of integrated, multi-sector businesses – into the new complex or district. Acknowledge that different types of uses have different needs; and in particular ground level loading, ceiling clearance, and road accessibility are requirements for industrial occupants.

In some places, through thoughtful policy, development, design, and finance, these components can be combined or ‘mashed up’ to different degrees. Innovation districts can incorporate light industrial and related uses (e.g., commercial cleaning, construction contractors, equipment suppliers, repair and maintenance services, auto servicing, courier providers) on the ground floor of such buildings, accessed via the back or lane, and accessory uses on mezzanine or upper levels accessible via freight elevators, through contextual consideration, appropriate scale, and integrated designs. While some of these activities may not be conventional industrial uses, they have unique accommodation and location needs, and are part of an urban working economy.



Yet, as much as there are opportunities to integrate light industrial uses into commercial areas and innovation districts, there are heavier industrial processes that are incompatible with urban and residential areas. For certain industrial uses, there remains the need to protect the industrial lands through industrial-only zones with appropriate buffers in place. Directly combining together industrial and residential uses can be possible, but should only be considered in select cases with caution and care. Notably, most, but not all, mixed-use

schemes tend to be predominantly residential and commercial, with limited attention to employment and industrial matters.

Recognizing the land value differential and development profit potential, municipal planning policies should strive to ensure that land use plans include a variety of uses that meet a community's needs, not just those that are financially the highest and best use. Planning should be pragmatic, scalable, and flexible, yet also acknowledge the ever-changing economy and the limitations of future forecasts, and not be overly-prescriptive. Cities should strategically and proactively plan for industry within the city, including allowing innovative ways to accommodate industry's evolution and its integration into an urban environment and modern economy.

We cannot simply consider individual sites in isolation of the wider city context, nor specific land uses in isolation of the function and service that they provide to the rest of the community. A diverse economy includes a diversity of land uses, some containing significant employment opportunities, such as commercial precincts, industrial lands, and innovation districts, and others that are primarily residential. Through (re)development of various types and forms at multiple locations within a city, multiple community objectives can be achieved, ranging from infill residential, transit-oriented development, employment intensification, industrial densification, and the creation of innovation districts, while advancing key goals.

Industrial lands and uses can also contribute to economic development that is more equitable, by providing a source of diverse, distributed, and quality jobs. When done well, such urban revitalization offers business and employment opportunities and benefits that are accessible to an entire community.

The creation of intensive industrial innovation districts is both a land use planning and an economic development matter. While the creative class workforce desires placemaking and lifestyle amenities, the industrial sector prioritizes functionality and infrastructure. We can have some of both. We may live in a post-modern society, but not in a post-industrial economy.

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