

THE PIVOTAL ROLE OF PLANNING IN THE SUCCESS OF CANADIAN ECO-INDUSTRIAL PARKS

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Overview

Progress in eco-industrial park development in Canada has been integrally linked to progress in municipal planning to support eco-industrial activity. It is now well established that municipal government is best positioned, and has a number of the tools, to implement sustainability activity on the ground. Moreover, municipalities are increasingly looking to extend the same principles of green building, smart growth and sustainable design to their industrial and employment lands by pursuing eco-industrial projects. Planning departments in particular have been central to these efforts.

The principles of ecological design are fundamental to eco-industrial parks (EIPs), and influence the entire development cycle, from subdivision planning, to infrastructure design, to zoning, and ultimately, to individual businesses' lot plans, building designs, and operations. For example, at both the subdivision and lot level planning stages, facilitating optimal solar orientation can help to reduce businesses energy consumption. Also at the subdivision planning scale, the use of utility corridors can greatly influence the business case for future energy and water-based by-product synergies. In Canada, subdivision planning, zoning, and lot level development are mainly controlled by municipal governments, and in particular, by the planning departments of those governments. Therefore, planning departments have been playing a major role in supporting eco-industrial activity in Canada.

In return, EIPs offer planners a means by which they can meet a number of common municipal sustainability objectives. For example, planning departments are beginning to see EIPs as a solution to the challenge of continuing to accommodate employment lands while minimizing traditional conflicts with other uses. Often, EIPs are thought of as places where industry can locate to take advantage of by-product synergies. However, in Canada, the EIP concept extends beyond by-product synergy. EIPs offer planners an opportunity to bring the same principles of sustainability that are now becoming mainstream thinking for residential and commercial development, into the realm of industrial development. By applying a whole systems perspective to the planning, design, construction and operation of EIPs, planners can have a significant impact on the overall efficiency of land use and transportation, and encourage reductions in energy, water, emissions and waste within their employment lands. Further, taking an eco-industrial approach can often make green infrastructure projects more feasible. In short, the manner in which EIPs are planned, designed and developed can have a much greater reduction on impacts than by simply focusing on by-product synergy.

Planning policy, zoning regulations, enabling provincial legislation, development permitting processes, approvals procedures and design guidelines are all key tools that can be tailored to support eco-industrial parks and green industrial development. Planning departments can leverage existing policy tools to create the necessary regulatory framework to support EIPs. In Canada, there are examples of the following tools being used to promote eco-industrial activity:

- Official plans¹ – establish the high level support for EIPs and more efficient, lower impact industrial development. This sets the direction for future green industrial development, and catches the attention of progressive industries and developers.
- Secondary / Sub plans² – create greenfield or brownfield redevelopment plans for specific geographic areas that maintain and contribute to the local ecological context, harness the efficiencies of multiple green buildings and shared resources and enhance the business case for green infrastructure.
- Zoning bylaws – implement the eco-industrial objectives outlined in statutory plans, with attention to strategic mix of uses, energy efficiency density, screening, parking, etc.
- Council policies – establish minimum performance requirements that are above and beyond zoning regulations e.g., green roof policy for buildings over 5,000 sq.ft.
- Permitting processes - tie development permits to specific design and high performance requirements in a manner that doesn't inhibit development interest
- Design Guidelines – create guidelines that encourage higher quality performance of the site, building, and operations, as well as to consider synergies with nearby businesses

Effective consultation must be the foundation for the development and use of these planning tools. Meaningful and inclusive consultation processes must pose the right questions, build interest in the business community and retain the support of the development industry. Consultation is key to market acceptance and developer buy in.

Selected Case Studies

1. Zoning Bylaws & Design Guidelines: Innovista Eco-Industrial Park, Hinton, Alberta

The Town of Hinton in Alberta is currently developing a new EIP. A core component of the project is that all businesses must adhere to a set of development guidelines. The guidelines were developed in consultation with industry and developers to ensure feasibility and buy in. They also provide a mix of optional and required guidelines to

¹ The municipal planning framework differs slightly from province to province. For example, in BC, the Official Plan is called an Official Community Plan, while in AB it is a Municipal Development Plan.

² In BC – Local Area Plans; in AB – Area Structure Plans; in ON – Secondary Plans

allow developers the flexibility of meeting the EIPs' sustainability objectives in a manner that made the most sense to them. The Town also developed a new Eco-Industrial District zoning designation. The zoning designation and design guidelines are appended.

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2. Zoning Bylaws & Design Guidelines: TaigaNova Eco-Industrial Park, Fort McMurray, Alberta

The zoning bylaw for the Regional Municipality of Wood Buffalo was also amended to facilitate the development of the TaigaNova Eco-Industrial Park, a new 131 acre development designed to serve industrial businesses that support the nearby oilsands. Key changes included: strategic selection of land uses; energy efficiency considerations in zoning setback & siting requirements; encouraging proponents to adopt an 'integrated design process'; requirements to meet minimum number of optional design & performance guidelines. A copy of the amendments has been appended to this article.

3. General Policy Development, City of Edmonton, Alberta

The City of Edmonton owns very little of its industrial lands, but is projecting significant medium-term industrial growth associated with the petroleum and petrochemical industry. Understanding that it must influence privately held lands, the City has examined all its policies in an integrated manner and developed a checklist of new policies, as well as amendments, to create a sound framework to promote eco-industrial activity. The City examined everything from its subdivision approval process to its municipal development plan to its engineering design standards. Staff from multiple departments e.g., Parks & Recreation, Transportation, Planning, were engaged via two large workshops, which also served to create a broad base of support across the City. The City also invited its consultants on its Horse Hills Area Structure Plan (see case study below) to learn about EIPs so that it could incorporate similar principles into that plan.

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4. Area Structure Plan: Horse Hills Northeast Area Structure Plan, City of Edmonton, Alberta

The City of Edmonton is proposing to designate 12,800 acres in the northeast section of the city as largely industrial, but wanted to ensure that the area was developed so that it could evolve into an EIP. The resulting plan supports eco-industrial development as a principle, aiming to "create a greener business environment through innovative and efficient facility design, infrastructure design and business relationships." Information

about the draft plan may be viewed

at: http://www.edmonton.ca/city_government/documents/CityGov/2008-09-29-OpenHouse.pdf

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5. Local Area Plan*, River Road East Eco-Industrial Community, Zone C Re-Development Plan (Zone C Plan), Corporation of Delta, BC

On behalf of multiple landowners, MK Delta Lands Group (MKDLG) led the redevelopment planning process for an approximately 100 acre brownfield site along the historic Fraser River in Delta. Understanding the sensitivity of the site, and seeing the strong support for sustainability emerging from the municipality, MKDLG set out from the start to create a plan that retained industrial jobs, reflected municipal objectives, and had a sound private sector business case. The resulting plan³ received unanimous Council support, and is seen as a model for the remaining 4 zones in the area. One of the key factors for success was the strong collaboration between MKDLG, its consulting team, and Delta planning staff. The resulting Plan may be viewed on the municipality's website here:

http://www.corp.delta.bc.ca/EN/main/municipal/323/27061/industrial_Lands_Initiative.html

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*The Zone C Plan is actually a pre-cursor to the Local Area Plan, which the municipality will create based largely on the developer's concept plan.

6. Use of Development Permit Process, TaigaNova Eco-Industrial Park, Fort McMurray, AB

In addition to the changes to zoning and the addition of design guidelines mentioned above, the municipality revised their development permitting process to request several key pieces of information from applicants wishing to build in TaigaNova. Before issuing a permit, applicants must provide written statements from accredited architects and engineers regarding how they addressed land use efficiency, alternative transportation, water/ wastewater reuse, waste reduction among other criteria. They were also requested to provide information that would help the municipality determine the material inputs and outputs of the businesses.

Lessons Learned

³ Plan may be viewed on the municipality's website here:

http://www.corp.delta.bc.ca/EN/main/municipal/323/27061/industrial_Lands_Initiative.html

In every case, it has been local government and not the private sector, that has taken a central role in advancing eco-industrial parks and eco-industrial activity within the community. Sometimes, interest in EIPs was initiated by the vision of one or two members of Council, who were seeking new and innovative approaches to revitalizing their industrial lands. In other cases, it was the planning departments taking the lead and looking for opportunities to integrate the principles of sustainability into the planning, design and development of municipal employment lands. An eco-industrial approach can yield beneficial results throughout the entire municipality (lower infrastructure capital and operating costs, higher business retention, green employment opportunities, etc). Therefore, in every case, there was a need to educate a range of municipal staff -not just the planning department, but also engineering, transportation, economic development and Councilors - to recognize the market advantages of developing EIPs.

EIPs can help planning departments bring green design to where its' needed most, and where it has the biggest and most immediate impact on the overall wellbeing of the community. Once made aware of these benefits, planning departments can take advantage their in-depth knowledge of the development process to build the inter-department collaboration required to support EIPs. For instance, working with engineers to identify and remove obstacles to green infrastructure design; or, since by-product synergy opportunities are generally most prevalent at the business operations level, planning and economic development departments can work together to build the business-to-business linkages that are necessary to allow for such opportunities to flourish.

Lastly, the success of the above projects was only made possible due to early, and effective consultation with the private sector. Developers and land owners benefit from similar education programs, and also offer valuable insight into what approaches make sense and offer the most appropriate fit with the local market.

About Eco-Industrial Solutions

Eco-Industrial Solutions Ltd. is Canada's leading eco-industrial consulting firm, and has worked nationally and internationally to

- Transform existing industrial parks into Eco-Industrial Parks
- Plan, design, and manage the development of new eco-industrial parks and regions
- Apply eco-industrial networking (EIN) to improve the performance of green technologies and infrastructure
- Create strategic plans for sustainability that account for infrastructure and business activity.
- Develop local government industry policy.
- Educate business and government about eco-industrial networking.
- Consult on how to make industrial areas greener and more resource-efficient.