

2.0 ECO-INDUSTRIAL

The Edmonton Energy and Technology Park ASP provides a vision for a new kind of industrial area for the City of Edmonton. Environmental considerations are becoming increasingly important in public opinion, business functions, and corporate social responsibility. The Edmonton Energy and Technology Park provides an opportunity to blend both economic and environmental objectives into the planning process. Businesses know that maximizing efficiency is good for the bottom line. Development that maximizes utility and minimizes waste is also good for the environment. This is the fundamental principle behind the development of an industrial movement called 'Eco-Industrial Development', which can be defined as:

Eco-Industrial development promotes environmentally and economically efficient use of all resources and physical assets in new and existing industrial areas. Collaboration and cooperation between stakeholders, innovation, integration, systems thinking, and ecological respect underpin eco-industrial development. This influences the planning and evolution of industrial areas, design and usage of infrastructure and buildings, and operation of

businesses. Eco-industrial development results in an industrial area with efficient land use that can protect and enhance local biodiversity; is integrated with adjacent uses; contains sustainable infrastructure; locally generates energy; and has high performance green buildings. Eco-industrial development enables by-product synergies; reducing waste and increasing efficiency while integrating and reinforcing natural systems.

An eco-industrial project balances economic, environmental, and social interests in a way that maximizes the benefit for each factor. This balanced philosophy is referred to as the 'triple bottom line'. Eco-Industrial development in the City of Edmonton should be underpinned by the following principles:

- Protect, integrate, connect and enhance local and regional ecological features, functions, and diversity.
- Design and operate infrastructure systems that reduce the environmental impact and carbon footprint; are multi-purpose; and future-proof the development against changing needs and technologies.
- Incorporate green buildings, either new, or through retrofitting existing buildings to higher

environmental standards.

- Support business to business symbiosis around all waste materials, water, and energy streams. Maximizes production use of input resources and by-products as waste is nonproductive.
- Foster and enable collaborative strategies; partnerships and actions between stakeholders to reduce costs; increase return on investments; and lower environmental impacts.
- Maximize use of renewable energy systems and sustainably produced feedstocks in order to reduce dependency of fossil fuel sources and finite material supplies.
- Facilitate educational initiatives that increase the eco-industrial literacy of all stakeholders.

There are many practices used to implement these eco-industrial principles. Eco-industrial developments can create networks of businesses that share common services including waste outputs that can be reused as process inputs for other business. A land use framework and regulatory regime based on eco-industrial principles can encourage and facilitate sustainable site and building design. Sustainable infrastructure can be used to improve environmental performance while reducing costs by

developing alternative roadway standards that reduce impermeable surfaces and paving costs; creating naturalized stormwater management facilities that improve groundwater recharge and reduce pipe costs; using recycled wastewater from nearby treatment facilities; and using rainwater instead of treated water for industrial processes or yard maintenance. Local service provision is also common in eco-industrial developments, whether that be an area-specific recycling facility, a local wastewater treatment plant, or even a co-generation power facility. These are just some examples of the many ways eco-industrial development is implemented.

The balance between economic, environmental and social interests makes it an ideal model to use as the basis for development in Edmonton Energy and Technology Park. The plan area does not have extensive existing infrastructure. That allows maximum opportunity to pursue eco-industrial development in the development of sites and major infrastructure.

Development policies and design requirements that respect eco-industrial principles will be incorporated throughout the plan to ensure that eco-industrial objectives become a cornerstone of development in Edmonton Energy and Technology Park.