

A close-up photograph of an industrial welding process. Bright sparks are being emitted from the point where a welding torch meets a metal surface. The background is dark and filled with the blurred outlines of industrial machinery, creating a sense of a busy manufacturing environment.

Edmonton's Industrial Assets

FUELLED BY ENERGY - DRIVEN BY INNOVATION

CUSTOMERS » CONNECTIONS » COMPETITIVENESS

THE CITY OF EDMONTON | ALBERTA | CANADA 

JULY 2015

The logo for the City of Edmonton, featuring the word "Edmonton" in white lowercase letters on a blue square background.

Edmonton

EDMONTON » FORT McMURRAY » CALGARY » VANCOUVER » TORONTO

» LOS ANGELES » DENVER » HOUSTON » CHICAGO » NEW YORK

GLOBAL AIR ROUTES » MAJOR RAIL, HIGHWAY AND PIPELINE ROUTES IN NORTH AMERICA

CONNECTED to markets next door and around the world



» **EDMONTON'S** dramatic increase in population between 2006 and 2015 highlights the City's core appeal – a vibrant city to live in and a dynamic economic environment to prosper within.



WELCOME to Edmonton

Edmonton is Canada's fastest growing city with unique economic advantages and a strong cultural identity, it offers tremendous opportunity for investors.

Edmonton is a competitive city that cultivates knowledge and innovation, attracts and retains skilled and motivated labour and has the quality infrastructure needed to support industrial and economic development. It is an entrepreneurial city led by an incredible business sector.

Edmonton offers an ideal environment for industrial growth. This has created a strong, diversified and sustainable economy. Edmonton has access to natural resources, established industrial and R&D sectors, a highly skilled labour force, and an outstanding transportation network connecting Edmonton to key North American and Asian markets.

Located at the heart of the Alberta Capital Region, it is the supply and service hub to Alberta's world-class energy sector including the oil sands and natural gas deposits, and is central to Western Canada's extensive road, rail and pipeline networks.

A strong research and development community along with world-class education and training institutions are catalysts for innovation for attracting the best and brightest from all parts of the globe.

Edmonton provides industry with a range of industrial neighbourhoods and lands, various incentives to facilitate investment, first rate infrastructure services, low taxes and regulatory requirements that are transparent and straightforward.

Edmonton's is ranked as one of North America's top 10 major cities for its vibrant arts and culture scene, sports and entertainment options, state-of-the-art amenities and a gorgeous river valley.

» **EDMONTON** is the first Canadian city – one of only 24 cities world-wide to make IBM's Smarter Cities Challenge list, winning recognition for its innovative use of information technology to benefit its citizens and businesses.



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PRIMED FOR **MORE GROWTH**

- » **EDMONTON OFFERS** strong, dynamic economic fundamentals supporting investment in today's business sector. The major economic drivers support business and industry expansion for the next decade and beyond.



- » **Edmonton ranks fourth in Canada and thirteenth in the world base on the best quality of life index.**

NUMBEO'S 2015 QUALITY OF LIFE INDEX

EDMONTON PRIMED FOR MORE GROWTH

STRONG, STABLE ECONOMY UNDERPINS CURRENT BUSINESS FUNDAMENTALS

Edmonton's business and industrial sectors benefit from a strong and stable economy.

Edmonton's economy has demonstrated its resilience and strength even during uncertain global economic conditions.

Edmonton's basic business fundamentals add up to a location at the hub of economic activity. These include:

- a younger, motivated, skilled and experienced workforce,
- access to natural resources,
- connections to key North American and Asian markets through an outstanding transportation network, and
- a strong local and regional customer base.

Edmonton is a growing city with economic momentum strong enough to deliver business results today and well into the future.

The January 2013 "CIBC World Markets' Canadian Metropolitan Economic Activity Index" report provided an assessment of the Edmonton census metropolitan area (CMA) regarding economic conditions and include:

- population growth well above the national average,
- lowest unemployment rate
- high-quality employment opportunities.

Population growth is expected to continue at a rate of 1.9 percent through 2015 adding to Edmonton's current population of 877,926 and the Edmonton CMA to over 1.3 million.¹

With a real gross domestic product (GDP) of nearly \$89 billion, and a forecast year-over-year growth rate of 3.7%² for 2014 and the lowest total taxes of any major Canadian city,³ Edmonton CMA is brimming with economic opportunity.

In addition, the City of Edmonton's economic resilience is further illustrated with rating agency DBRS's AA+ credit rating,⁴ not exceeded by any other city in Canada.

Edmonton's current economic indicators continue to define Edmonton as one of Canada's leading locations, offering a strong and competitive economic environment for business development and employment relocation.⁵

The City of Edmonton issued building permits worth \$2.365 billion in construction value as of June 30, 2015.

This represents an increase of 14% from the same period last year and an increase of 33% compared to the five-year average.⁶

PROXIMITY TO RESOURCES DRIVES ENTERPRISE

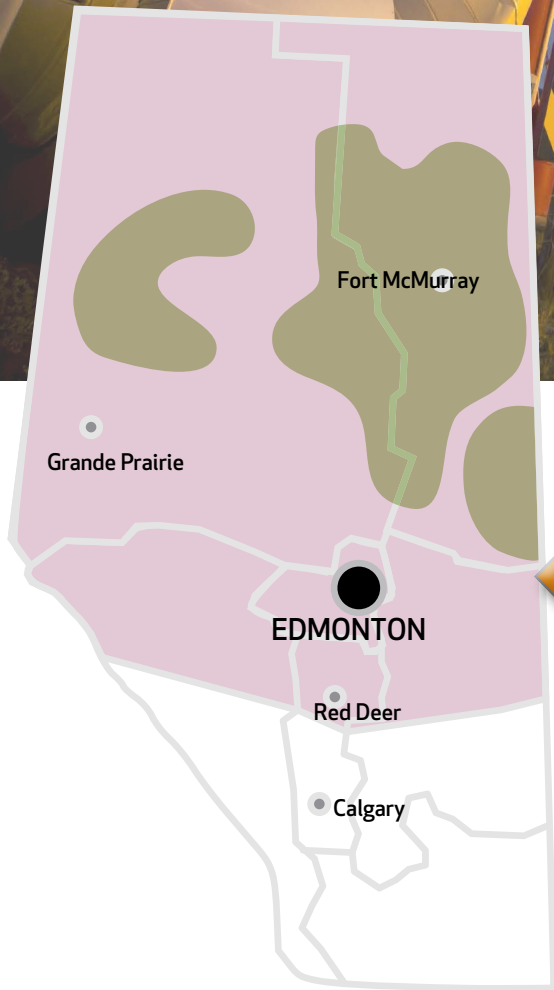
Driving Edmonton's economic engine is its proximity to and connection with Alberta's world-class energy and natural resources.

Edmonton is the major urban research centre, manufacturing, supply and service hub for Northern Alberta's massive oil sands and gas sectors. Alberta's other two key resource industries include agriculture and forestry.

With 97% of Alberta's oil found in the Edmonton service area from Red Deer to the Northern Alberta border, Edmonton is the place to be for industrial investors.⁷



1 Edmonton Census 2014
 2 Edmonton Economic Update, February 2015
 3 Competitive Alternatives 2012, KPMG
 4 Conference Board of Canada Spring Metropolitan Outlook 2014
 5 RBC Canadian City Trends – May 2013
 6 City of Edmonton News Release July 22, 2015
 7 Government of Canada, Invest in Canada, Edmonton



**EDMONTON
SERVICE REGION**
Red Deer to northern border

**\$181
BILLION**

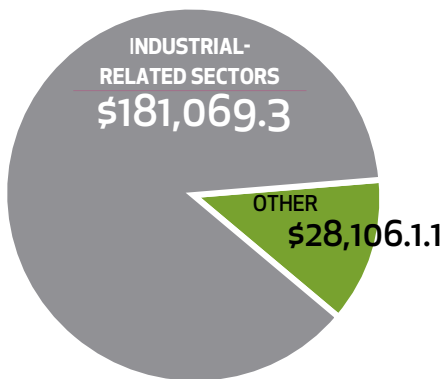
- OIL SANDS DEPOSITS
- EDMONTON SERVICE REGION

Source: Government of Alberta

Construction activity illustrates Edmonton's and Alberta's attractive industrial investment story.

The Province of Alberta's recent inventory highlights over \$200 billion of active projects either under construction or proposed to start in 2015 in Alberta.

Nearly \$181 billion of the projects are located in Edmonton's service region spanning from Red Deer to Alberta's northern border.



INVENTORY OF MAJOR ALBERTA PROJECTS

INDUSTRIAL-RELATED CONSTRUCTION PROJECTS VALUED AT \$5 MILLION OR GREATER CURRENTLY PLANNED

(JULY 2014)

PROJECT SECTOR	# OF PROJECTS	VALUE - ALL PROJECTS (\$ MILLIONS)
Oil sands	58	\$109,306.0
Infrastructure	150	\$8,800.9
Power	22	\$13,274.9
Pipelines	42	\$28,464.2
Oil & gas	13	\$18,395.0
Other industrial & manufacturing	9	\$219.6
Biofuels	2	\$300.0
Mining	2	\$470.0
Telecommunications	1	\$8.0
Agriculture & related	5	\$355.8
Forestry & related	1	\$105.0
Chemicals & petrochemicals	3	\$1,550.0
Subtotal industrial-related construction	308	\$181,069.3
OTHER SECTORS		
Commercial/retail & residential	235	\$17,450.0
Institutional	99	\$6,230.8
Tourism/recreation	103	\$4,419.1
Subtotal other sectors	437	\$28,106.1
Total planned construction	745	\$209,175.4

Source: Government of Alberta 2014

DIVERSIFIED ECONOMY OFFERS RANGE OF OPPORTUNITIES

Edmonton's powerful resource engine drives a diverse range of economic sectors that supply, service, design, construct and manage many direct and ancillary activities. The Conference Board of Canada's Spring 2014 Outlook states that Edmonton's economic structure is very diverse scoring an .89 out of rating of 1.0.

Consumer-driven sectors flourish when there is a healthy level of disposable income and population growth. Together, these factors offer a snapshot of Edmonton as a dynamic, growing and sustainable community.

With billions of dollars being invested from the public and private sectors, a thriving regional customer base is created to support local business growth and the ability to attract new, world-class sector leaders in:

- engineering,
- construction,
- industrial manufacturing,
- petrochemical processing,
- environmental technologies,
- transportation and logistics,
- finance, management and information technology, and
- a diversified range of supply and service businesses.

SKILLED, MOTIVATED WORKFORCE A FOUNDATION FOR GROWTH

Access to resources and customers creates business and industrial development opportunities. However, skilled and motivated labour force is also needed to realize this potential.

Edmonton benefits from a younger growing population which is actively motivated to work.

- Over the past decade, Edmonton's population has grown at a rate of 1.5% - 3% per year¹ with the 2011 census indicating 11.2% growth for the City of Edmonton between 2006-2011, double the national average.²
- Almost 40% of the city's population is between ages 20 to 44.³
- Edmonton has a seasoned and sizable workforce over 45 to mentor younger employees.
- Albertans have the highest productivity rate in Canada.⁴
- A workforce participation rate of nearly 73% illustrates a population actively engaged in contributing to and benefiting from Edmonton's economic prosperity.⁵



» Local businesses are attractive partners for major global players for long-standing relationships and project joint ventures.

Edmonton's successful economic growth is realized by a healthy mix of local workforce growth, a successful track record in inter-provincial migration and a growing trend of attracting skilled workers from around the world.

1 Migration Trends, Province of Alberta
2 Statistics Canada, Feb. 8, 2012
3 Statistics Canada Census, 2011
4 Highlights of the Alberta Economy 2013
5 Edmonton Indicators June 2013

LABOUR FORCE SNAPSHOT

**EDMONTON CENSUS METROPOLITAN AREA (CMA)
SEASONALLY ADJUSTED**

15 YEARS AND OLDER	March 2015	YEAR-OVER-YEAR CHANGE
		May 2013 to Mar 2015
Population	1,092,100	▲
Labour force	797,700	▲
Employment	755,600	▲
Unemployment	42,000	▼
Participation rate (%)	73.0 %	
Unemployment rate (%)	5.3%	
Employment rate (%)	69.2 %	

Source: Statistics Canada, Labour Force Survey, March 2015

A growth in immigration over the past decade has added significantly to the multicultural nature of Edmonton’s workforce and community. These skilled immigrants expand the multi-national capacity of the community and bring a rich network of global connections from Asia, the Middle East, Europe and South America.

MIX OF SKILLS SUPPORT A DIVERSIFIED INDUSTRIAL BASE

Edmonton’s diversified labour pool provides needed worker skills to a range of industries. Drawing from the regional population base of over 1.3 million, an estimated 62% of the local labour force has post-secondary education or apprenticeship training and another 23% are high school graduates.¹

The top three fields of study include:

- architecture, engineering and related technologies,
- business, management and public administration, and
- health, parks, recreation and fitness.

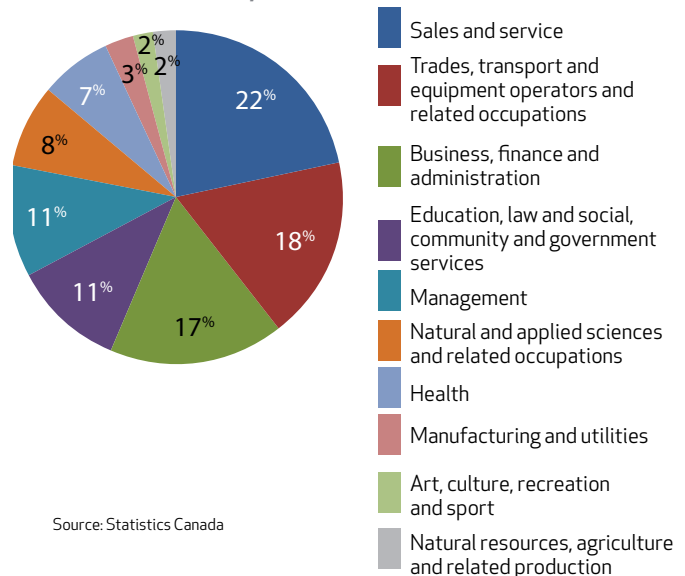
1 Statistics Canada 2015
2 Statistics Canada 2015

The top five occupational fields are:²

- business, finance, administration and management,
- service and service occupations,
- trades, transport, equipment operators, manufacturing, utilities and related occupations,
- education, law, government-related services, and
- natural and applied sciences and related occupations.

These skilled occupations support a diverse range of industries that contribute to Edmonton’s economic success story.

**EXPERIENCED LABOUR FORCE BY INDUSTRY
EDMONTON CMA, 15 YEARS AND OVER**



Source: Statistics Canada

COMPETITIVE TAX ENVIRONMENT

Edmonton strives to ensure a business-friendly tax environment without compromising the quality of infrastructure and services that support business and its workforce needs. Consider the following advantages:

- No provincial sales, payroll or capital taxes
- 12% provincial corporate tax
- Publicly funded health care system keeping payroll costs lower
- No machinery and equipment (M & E) tax
- Lowest property taxes per square foot of seven major Canadian centres¹
- No municipal business taxes other than in the local business revitalization zones

For detailed industrial development scenarios illustrating the City of Edmonton's significant annual tax cost advantage over nearby jurisdictions contact the Industrial Services Team.



“EDMONTON HAS THE MOST COMPETITIVE CORPORATE TAX ENVIRONMENT OF ANY MAJOR CANADIAN CITY”

KPMG's 2014 Competitive Alternatives Special Report on Taxes

GREATER EDMONTON CONSISTENTLY TOPS COMPETITIVE RANKINGS

Edmonton's buoyant economic environment also offers a cost-competitive business environment for most sectors and stacks up well against global competitors. KPMG's 2014 Competitive Alternatives Guide to Business Locations ranked Canada with a cost advantage of 7.2% over the United States.

Greater Edmonton, is one of Canada's most dynamic locations, with a favourable competitive cost advantage of between 1-15% depending on the industry sector evaluated.¹

For sectors where office property is a key cost input, current Class A properties located in downtown Edmonton have gross rental rates in the range of \$41 to \$47 per square foot. This rate is competitive with other major Western Canadian cities such as Calgary and Vancouver which range from \$48 to \$54 per square foot respectively.²

STRONG CUSTOMER BASE

$$\begin{aligned}
 &+ \quad \text{COST COMPETITIVE ENVIRONMENT} \\
 &\times \quad \text{STABLE, SECURE FUNDAMENTALS} \\
 &= \quad \text{LONG-TERM PROSPERITY}
 \end{aligned}$$

¹ 2014 Competitive Alternatives Report, KPMG

² Marketbeat Office Snapshot, Cushman & Wakefield Q1 2015

EDMONTON'S LARGE EMPLOYERS BY SECTOR ¹

ENGINEERING & CONSTRUCTION

- Associated Engineering
- Chemco Electrical Contractors Ltd.
- EBA Engineering – a Tetra Tech Company
- Hemisphere Engineering
- PCL Group of Companies
- Stantec
- Williams Engineering
- WorleyParsonsCord Canada Services Ltd.

MANUFACTURING

- All Weather Windows Ltd.
- AltaSteel Ltd.
- CCI Thermal Technologies Inc.
- CESSCO
- Finning Inc.
- Lafarge Canada Inc.
- Logican Technologies Inc.
- McCoy Corporation
- U. S. Steel Canada Inc.
- Waiward Steel Fabricators Ltd.
- ZCL Composites Inc.

RESOURCE RELATED

- Dreco Energy Services Ltd.
- Suncor Energy Inc.
- Tri-City Drilling (1968) Ltd.

UTILITIES AND TRANSPORTATION

- CN Rail
- CP Rail
- Canadian Utilities Limited
- Enbridge Pipelines Inc.
- EPCOR Utilities Inc.
- Mammoet



EXPORT MARKETS

Key advantages to locating in Edmonton include access to a sustained and lucrative domestic market, excellent transportation infrastructure and established trading relationships with U.S. and Asian markets.

With the Province of Alberta's GDP of over \$3338.2 billion,² in 2013 a significant amount of our province's economic activity was generated from a strong domestic customer base principally from Western Canada.

Alberta is a major exporter of energy and agricultural resources and manufactured products. Exports in 2013 totaled approximately \$103.7 billion of which approximately \$28.5 billion were non-energy-related

products including the growing value-added manufactured sector.³ Alberta's largest market is the U.S., followed by a rapidly growing and increasingly diverse customer base from Asia.⁴

The Greater Edmonton area is home to Alberta's largest manufacturing and processing centre, accounting for 40% of Alberta's manufacturing shipments including products from its top sectors – petrochemicals and chemicals, metal fabrication and machinery.⁵

As Edmonton's professional and technical service sector grows to support the demands of a world-class energy sector, many of these firms are now taking their Alberta know-how to the global marketplace.

¹ Edmonton Economic Development Corporation 2013

² Highlights of the Alberta Economy 2013, Government of Alberta

³ Highlights of the Alberta Economy 2013, Government of Alberta

⁴ Alberta's International Strategy 2013, Government of Alberta

⁵ Regional Economic Indicators – Capital Region July 2013,

Government of Alberta

EDMONTON'S FUTURE IS BRIGHT – 2015 AND BEYOND

» **EDMONTON'S ECONOMIC FUTURE** will build upon its core fundamentals as Alberta's major manufacturing centre and the major northern urban supply and service centre. It is at the crossroads between northern resources and U.S. and Asian customers. The strong economic performance of the past several years sets the stage for a bright future.

OIL SANDS CONTINUE TO DRIVE NATIONAL AND PROVINCIAL ECONOMIC GROWTH

Alberta's real GDP is forecast to grow a mere 0.4% in 2015, well below the average annual increase of over 4% since 2010.¹ This weakness will carry into 2016, with growth edging up to 1.7% before normalizing at around 3% in 2017 and over the medium term as oil prices recover. The economy will continue to transition from investment to export-led growth, with real exports expected to rise around 3.5% annually over the forecast period.¹

The modest signs of economic improvement from the U.S. also bodes well for Alberta, the primary supplier of U.S. energy, as does the growing emphasis that both Canada

and Alberta have placed on increasing exports to Asia – particularly China.

With energy investment declining, trade will drive Alberta's economy in 2015 and 2016. Exports will increase, lifted by rising oil sands production and a weaker dollar, while imports will decline due to the pullback in investment.¹

In addition to primary energy exports, much of this growth will come from the manufacturing, petrochemical production, engineering technology and the supply and service sectors that are intrinsically linked to Alberta's energy sector.

Projects that are well into construction, such as Fort Hills oil sands project are expected to proceed due to the large amounts of capital investment that has already occurred. Lower investment and project delays in 2015 and 2016, however, may affect production towards the end of the forecast horizon.¹

Petroleum manufacturing will expand substantially in 2017 with the completion of the \$8.5 billion North West Upgrader, which will add 50,000 barrels per day in refining capacity.

Other value-added processing of hydrocarbon resources offers strong business opportunities in the processing of petroleum off gases, particularly ethane, ethylene and propylene derivatives.³

Alberta's plentiful supply of natural gas, rich in gas liquids,

offers an important feedstock for the petrochemical industry, a key strength in Edmonton's economy. It also offers a low-cost fuel alternative.

Low natural gas prices are expected to persist, with the Alberta Reference Price averaging \$2.94/GJ in 2015-16 and staying below \$4.00/GJ over the forecast period due to plentiful North American supplies.³

Alberta's secure gas feedstock supply, an attractive price level and domestic demand contribute to a strong business case for more value-added processing of key derivatives such as methanol, ammonia and urea.

This, coupled with the potential to produce other derivative products such as ethane/propane and ethylene and propylene, highlights the range of industrial processing opportunities available in the Edmonton area for the near future.

» **PROXIMITY TO ABUNDANT SUPPLIES** of conventional and unconventional low-cost natural gas and access to Edmonton's pool of talent provide outstanding new petrochemical and off-gas processing opportunities.

1 Albert Economic Outlook 2015
 2 Conference Board of Canada, Metropolitan Outlook, Spring 2014
 3 Alberta's ECONOMIC OUTLOOK <http://www.finance.alberta.ca/> 2015
 4 Economic Outlook, Budget 2013, Government of Alberta

CONTINUED GROWTH PROJECTED FOR AGRICULTURE

According to a BMO Economics Agriculture Report, February 2014, the Canadian livestock industry is set to benefit from a variety of factors this year, including lower feed costs, the weaker Canadian dollar and expected stronger economic growth on both sides of the border.¹

The forecast for 2015-16, world prices are expected to be pressured by abundant world supplies, however, prices in Canada are expected to receive some support from the weak Canadian dollar.

Canadian grain prices in 2016 are forecast to be similar to 2014-15. Area seeded in 2015 to wheat, coarse grain, oilseeds and pulses are all expected to increase compared to 2014. For all crops, average or trend yields have been assumed and total crop production is forecast to increase by about 5% to 84 Mt but, due to lower carry-in stocks, total crop supply is forecast to decrease by 3% from 2014-15.²

Alberta's agricultural industry continues to be competitive with farm cash receipts for 2012 gaining approximately 14% led by gains in crop receipts.³ This growth trend is continuing in 2013 with 9.8% growth in the first quarter resulting in a record \$3.8 billion in receipts.⁴

There are emerging enterprises that are looking at processing either by-products or agricultural waste into fuel or 'green' building products.

Creating an expanded product base through innovation and technology is another way Alberta is supporting value-added processing of its resources.

Supporting this innovation are facilities such as Alberta Agriculture's Food Processing Development Centre located in the Greater Edmonton area.

This facility is staffed with food scientists, engineers and technologists who work with industry to strengthen and expand their capacity to bring new products to market.⁵

Edmonton continues to service the domestic and export agricultural market through:

- its strength as the centre for research and development,
- its machinery and equipment manufacturing, supply and service sectors, and
- targeted agri-food and fertilizer production.

MANUFACTURING, CONSTRUCTION AND SUPPLY AND SERVICING KEY TO LOCAL GROWTH AREAS

The strength of Edmonton's manufacturing, construction and supply and servicing sectors offers the best locational opportunity to capitalize on future growth.

Edmonton's real GDP growth between for 2015 is expected to drop .8% and a forecasted increase of 1.3% in 2016 and 1.9% increase in GDP growth in 2017.⁶

Sustained energy sector activity and population growth will support the following annual compound growth rates over the 2016 – 2019 forecast period:⁷

- wholesale and retail trade sector by 2.2%,
- industrial sector by 1.4%,
- office and personal services sector by 2.4% and 3.1% respectively, and
- transportation and warehousing sector by 2.3%.

» **ALBERTA'S MAJOR ECONOMIC DRIVERS** ensure that business decisions made today will deliver business results for years to come.

1 BMO Economics, Livestock Report April 2014
 2 Canada: Outlook for Principal Field Crops January 2015
 2 Weekly Economic Review, Government of Alberta, May 2013
 3 Government of Alberta 2012-13 Annual Report, Government of Alberta
 4 Weekly Economic Review, Government of Alberta, May 2013
 5 Food Processing Development Centre, Alberta Agriculture website
 6 Conference Board of Canada, Metropolitan Outlook, Spring 2015
 7 Conference Board of Canada, Metropolitan Outlook, Spring 2015

INFRASTRUCTURE INVESTMENT CONTINUES

To support a growing economy, major new transportation infrastructure will soon be completed. In 2012 the Edmonton International Airport opened a major expansion to support significant growth and improve efficiency in trans-border passenger service.

Edmonton’s major ring road, Anthony Henday Drive, is moving closer to completion with the opening of the northwest leg. With the ring road almost complete, there will be an improved connectivity between Edmonton’s northern rail yards and Highway 2 south to the U.S. border. The last leg of the ring road is under construction and will be completed by 2016-2017. This will improve access between Alberta’s northern resource markets and Edmonton’s industrial areas.¹

Major upgrades are underway to the CN lines, especially in Northern Alberta. Canadian Pacific is currently planning a new south side intermodal yard and Kinder Morgan and Keyera Energy have announced the construction of the Alberta Crude Terminal located in Edmonton to support moving 40,000 barrels of crude/day by rail.²

Three major pipeline projects designed to increase export capacity for decades to come are currently moving through the regulatory process. The Keystone pipeline would increase capacity to the U.S. market, the Gateway pipeline will move product to the west coast for shipping through expanded port facilities to Asia and beyond and the twinning of the Kinder Morgan Trans Mountain pipeline between Edmonton and the west coast will add capacity for sale to the U.S. or Asian markets.³

Additional power transmission infrastructure development of two new north-south power lines provide additional transmission capacity for Edmonton major industrial areas located in or near Alberta’s Industrial Heartland.

Major infrastructure investment in expansion of the light rail transit system, major new downtown projects such as an arena, and museum and arts education complex demonstrates business confidence in Edmonton’s future.

EDMONTON REMAINS COST COMPETITIVE

Edmonton offers competitive rental and land purchase prices compared to other major Western Canadian cities such as Calgary and Vancouver.

PROJECTED FOR 2015	EDMONTON	CALGARY	VANCOUVER
Office vacancy rate	10.0%	10.3%	13.6%
Downtown Class A net rental rate (psf)	\$23.00	\$35.00	\$29.00
Overall Class A net rental rate (psf)	\$22.78	\$30.11	\$23.47
Industrial sale price (psf)	\$150.00	\$195.00	\$199.00

Source: CBRE Market Outlook 2015

Looking forward to 2018, Edmonton’s annual CPI inflation rate is projected at 3.9%.³

Edmonton’s workforce is projected to grow by approximately 1.2% per year until 2018 with unemployment forecast in the 5.2% range.⁴ The economic growth opportunities that Edmonton offers far outweigh modest inflationary pressures that are expected to emerge during buoyant economic times.

Affordable and diverse styles of housing are an important ingredient in attracting a talented workforce, and Edmonton continues to offer one of the more affordable places to buy or rent housing. Housing starts in Q1 2015 for the Edmonton CMA and Edmonton saw record breaking numbers in multi-family units.

The growth in multi-family units will meet the housing needs of individuals who are migrating into Edmonton for job opportunities. The availability of more multi-family homes will ease the rental vacancy rate, which has tightened dramatically since 2010. RBC ranks Edmonton’s housing market as the most affordable among Canada’s top municipalities.⁵

1 Anthony Henday , Government of Alberta, 2015
 2 Kinder Morgan http://www.kindermorgan.com/business/canada/terminal_business.aspx
 3 Conference Board of Canada Metropolitan Outlook, Spring 2015
 4 Conference Board of Canada Metropolitan Outlook, Spring 2015
 5 Canada Mortgage Housing Corporation, Housing Starts April 2015





EDMONTON'S **INFRASTRUCTURE SUPPORTS** INDUSTRIAL DEVELOPMENT

2

Edmonton offers industry all the fundamental building blocks needed for industrial success – industrial land of all sizes serviced by quality transportation and utility infrastructure, urban-standard transit, fire and protective services, and ready access to critical feedstock, labour, training, research and business support services.



OUTSTANDING CONNECTION TO MARKETS – MOVING GOODS AND SERVICES

Whether markets lie offshore, in the U.S. or closer, Edmonton's transportation infrastructure offers outstanding access to customers. Edmonton can deliver the freight or cargo services you need from shipping mining equipment to fresh produce.

AIR SERVICE¹

Edmonton's International Airport served 8.2 million passengers in 2014. Service highlights include:

- regularly scheduled flights to all major Canadian cities,
- non-stop flights to more than 50 destinations,
- non-stop flights to 12 key U.S. hub cities,
- non-stop flights to 15 international destinations, and
- has a total catchment area of 1.8 million residents

The airport's cargo capabilities are designed to expedite shipments to all parts of the globe quickly and cost effectively. Highlights include:

- Fifth busiest airport by passenger traffic in Canada
- 24-hour access year-round with no operational or noise restrictions

¹ Edmonton International Airport Authority, Fact Sheets 2015

² Shanghai Daily News July 2015

» Air China Cargo will be the first Chinese cargo airline with direct service between Shanghai and Edmonton starting Sept. 2015.

“This will be the first freighter route between Chinese mainland and Alberta, and it is a key step to connecting two economies with high growth momentum” said Air China Cargo Vice President Partick Yu.²

- 24-hour customs service
- a full range of air cargo services and facilities for all types of aircraft
- among the lowest aviation fees, warehousing and real estate rates, handling charges, fuel costs and trucking rates in Canada
- expertise in moving heavy and oversized loads for the oil, gas and oil sands industries
- can accommodate the world's largest cargo aircraft such as the AN 124
- bonded warehousing for international cargo

Cargo services available:

- 11 airlines
- nine integrated couriers/freighter carriers
- two independent cargo handlers
- more than 25 freight forwarders and customs brokers
- five cargo-handling terminals (including three with coolers/freezers)



RAIL AND INTERMODAL SERVICE

Edmonton is linked to continental and Asian export markets by two Class-1 rail services provided by Canadian National (CN) and Canadian Pacific (CP) railways. Highlights include:

- CN and CP operate approximately 7,000 route miles in Alberta and transport about 66 million tonnes into and out of the province.
- Major commodities moved by rail include agricultural products, petrochemicals and forest products as well as a wide range of consumer products shipped in containers.
- CN's network of 20,600 route-miles of tracks is North America's only transcontinental

network linking eight Canadian provinces, 16 American states, Mexico and all three coasts¹

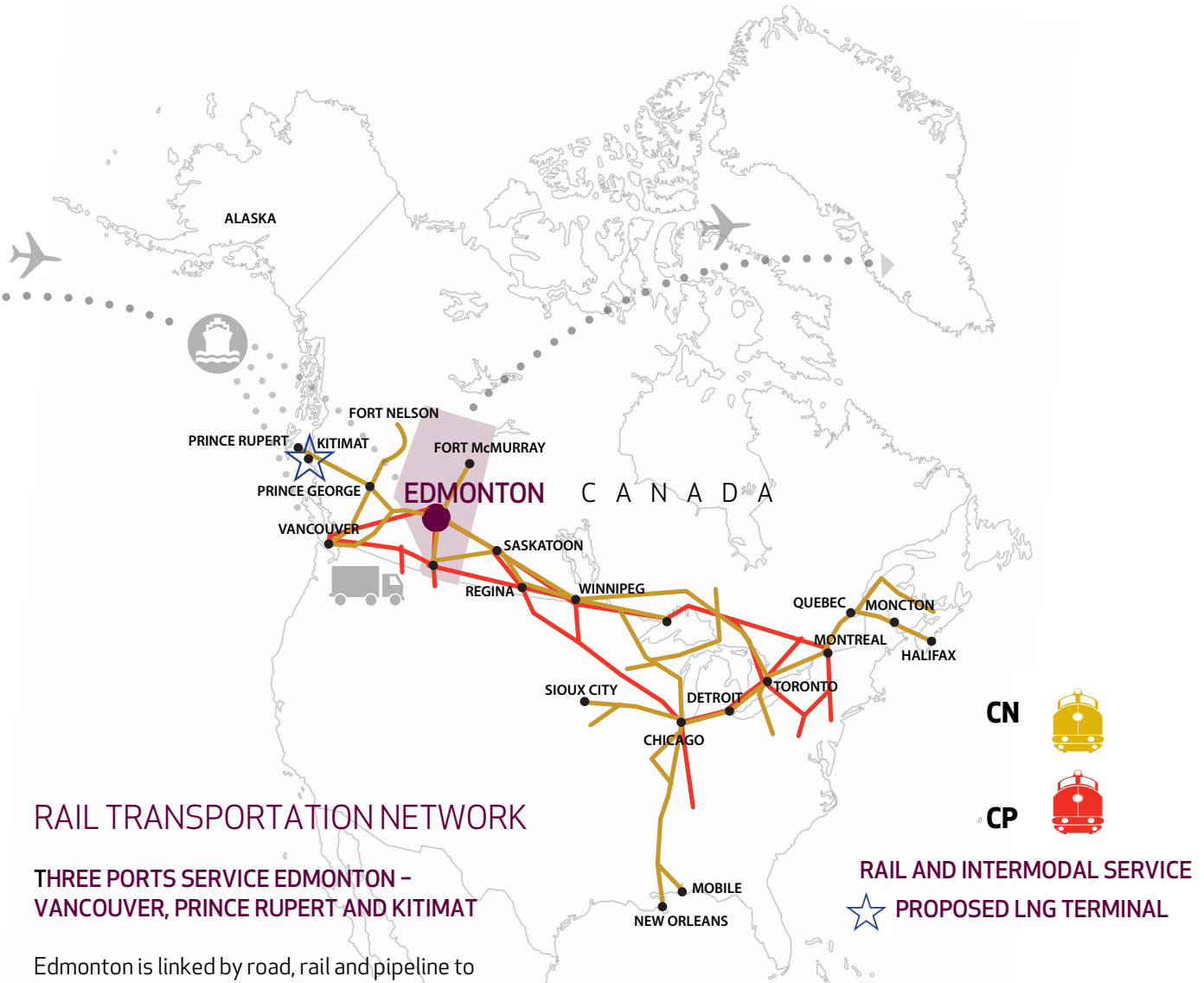
- CN's Western Canadian network operations centre is located in Edmonton and provides direct service to both Prince Rupert and Vancouver.
- CN's Northern Line runs from the deep water port of Prince Rupert through the lowest-grade mountain passes in the Rocky Mountains to Edmonton and beyond.²
- Edmonton's CN yards offer intermodal services from its northwest Edmonton site.
- CP connects Edmonton to Canada's southern trans-Canada route from Vancouver to Montreal and south to key eastern U.S. markets.

- CP Rail has approximately 14,000 miles of rail track across Canada and the United States.³
- CP services the intermodal needs of its customers from its south Edmonton site.



1 CN Fact Sheets /www.cn.ca/ 2015
 2 Prince Rupert Port Authority Advantages website
 3 CP Fact Sheets http://www.cpr.ca/ 2015





RAIL TRANSPORTATION NETWORK

THREE PORTS SERVICE EDMONTON – VANCOUVER, PRINCE RUPERT AND KITIMAT

Edmonton is linked by road, rail and pipeline to Canada’s largest west coast port in Vancouver, B.C.

The Port of Prince Rupert Container Terminal is an ultra-modern, high-capacity North American container facility connected to the North American continent by CN’s network.¹ It is the closest port to Asia by up to 58 hours of sailing time compared to any other North American west coast port.

Edmonton is also connected by road and rail to the Port of Kitimat, the third largest deep water port on the west coast and the proposed location for a major LNG marine terminal re-gasification facility and tank farm with a projected 12.5 LNG shipments per month which translates into export of 10 million tonnes per year.²

RAIL AND INTERMODAL SERVICE

★ PROPOSED LNG TERMINAL

INTERMODAL FACILITIES

Industrial and commercial shippers need direct access to intermodal container and cargo services. Both CN and CP railways operate intermodal container yards in Edmonton and both services are currently planning expansion. The Edmonton International Airport’s AirLINKS cargo park offers convenient access to two intermodal rail yards that provide inland and marine container service. Combined with an extensive network of highways, Edmonton keeps industry in touch with raw materials – and customers.

1 www.cn.ca/en/shipping-ports-prince-rupert.htm
 2 Chevron Canada <http://www.chevron.ca/> 2015

ROAD TRANSPORTATION - SUPERB CONNECTIONS

Edmonton has a highly developed roadway network connecting the region, the country and south to Mexico.

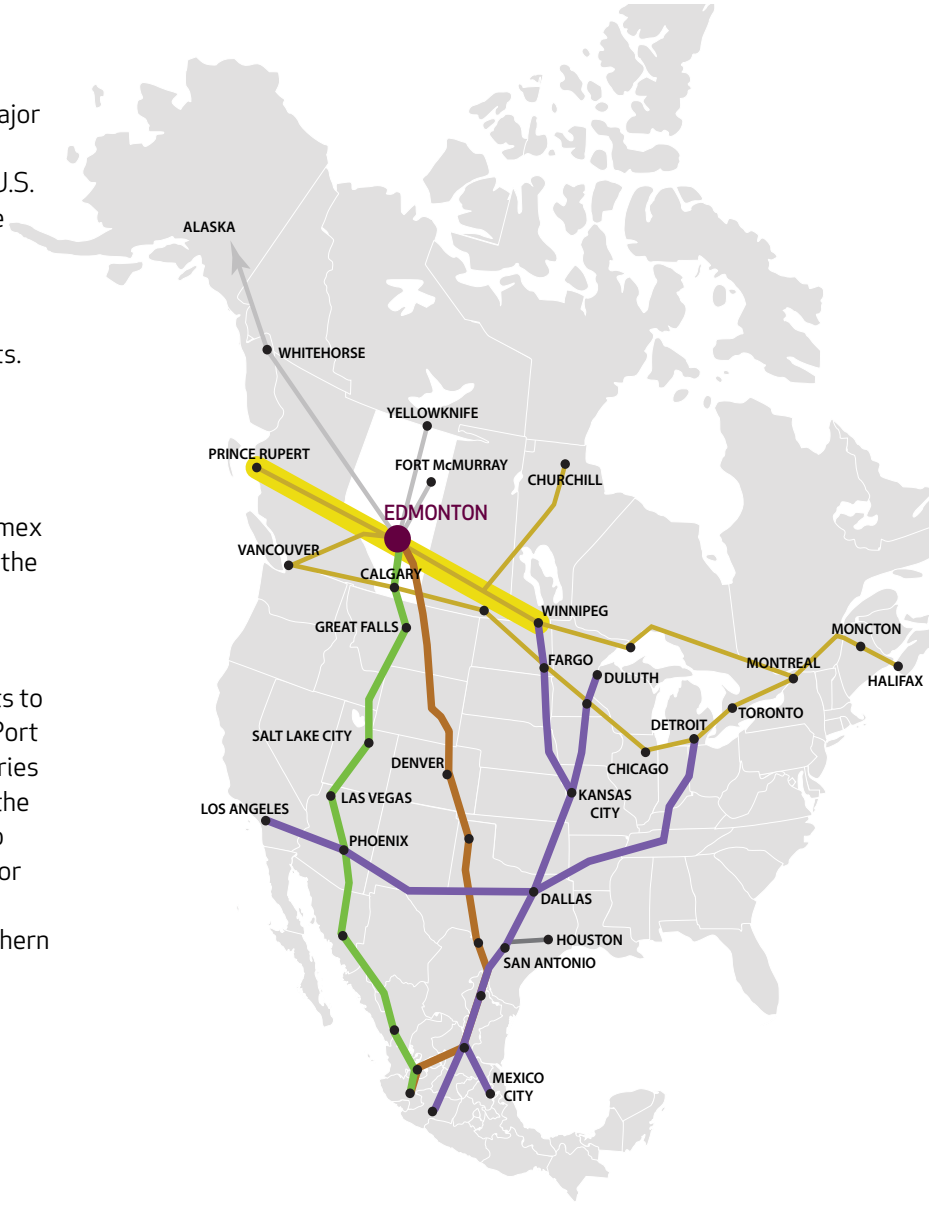
MAJOR HIGHWAYS

The Yellowhead Highway and Trans-Canada Highway are the major Canadian east - west connectors. Alberta is also connected to key U.S. and Mexican markets through the Canamex Highway.

Edmonton is connected to continental markets and key ports. It is situated on the Yellowhead Highway, connected through Highway 2 to Canada's southern Trans-Canada route and is the northern-most point of the Canamex Highway offering connections to the U.S. and Mexico.

Edmonton is also an important transportation centre on the Ports to Plains Corridor route linking the Port of Prince Rupert through the prairies and major Midwest U.S. cities to the Texas gulf coast and is linked into the North American Super Corridor (NASCO corridor) with highway connections to Midwest and southern U.S. markets and ports.

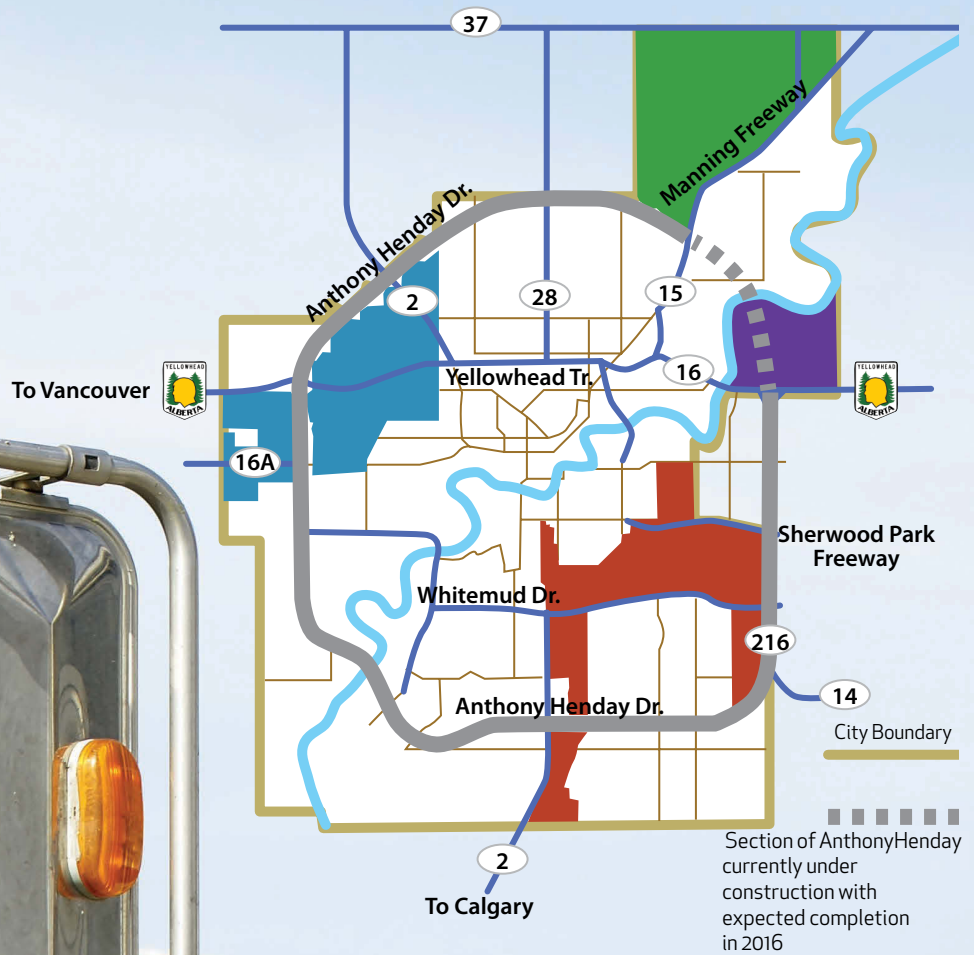
	YELLOWHEAD AND TRANS-CANADA HIGHWAYS AND THE ASIA-PACIFIC CORRIDOR		PORTS TO PLAINS CORRIDOR
	CANAMEX HIGHWAY		NASCO CORRIDOR



EDMONTON AREA RING ROADS

The Anthony Henday Drive ring road significantly improves travel around the city. It has also facilitated significantly more efficient travel around the Capital Region, especially northern and western transportation logistics sites to the international airport and Highway 2 south. All of Edmonton's four major industrial districts are adjacent to major highways. There are designated routes to move high, heavy loads from the Edmonton region to oil sands projects in Northern Alberta.

CITY OF EDMONTON MAJOR TRANSPORTATION CORRIDORS AND INDUSTRIAL DISTRICTS



PIPELINES – SERVE NORTH AMERICA AND ASIA

The Edmonton area is a major centre for pipeline connections. Lowcost, long distance transport is vital to the economic success of plant sites in the Edmonton Region.

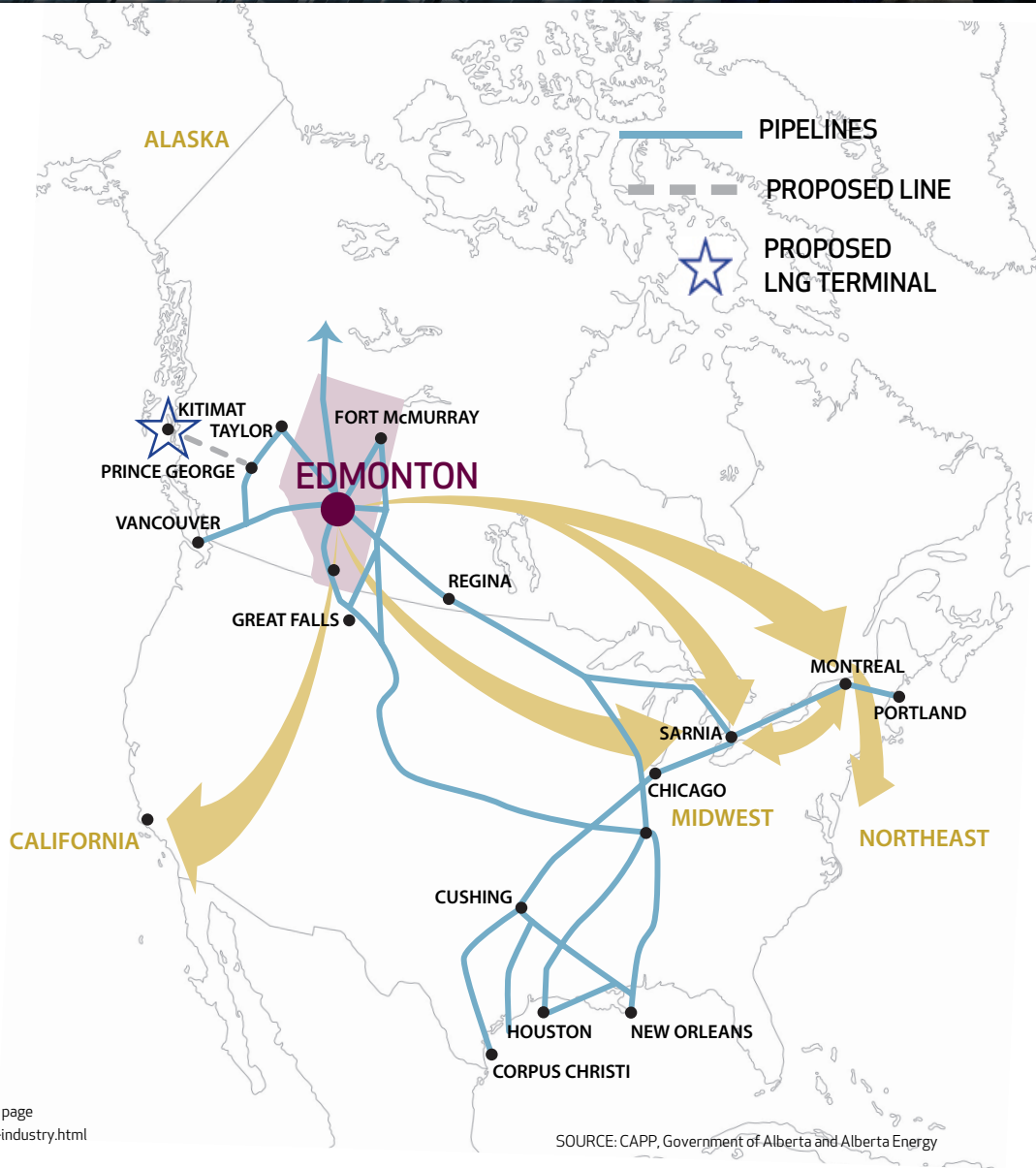
The province has an extensive system of more than 373,000 kilometers of crude oil, natural gas, sour gas, and other pipelines. They are used to distribute most feedstock and natural gas, as well as distribute hydrocarbon products such as ethane and hydrogen.

Called the Alberta Hub, this infrastructure delivers up to 17 billion cubic feet per day (Bcf/d) of natural gas from the Alberta and Western Canada Sedimentary Basin to domestic and U.S. markets.¹

The Edmonton region includes the Enbridge pipeline system—Canada’s largest and the world’s longest crude oil and liquids pipeline system.

The system consists of approximately 9,000 kilometers of mainline pipe in Canada and over 6,000 kilometers of mainline pipe in the United States extending to the US Gulf Coast². Over 3 million barrels of crude travel through Canadian pipelines every day at a speed of 5 kilometers per hour.⁴³

Energy exports account for the largest share of Alberta’s export market and totaled approximately \$75.2 billion in 2013.⁴



SOURCE: CAPP, Government of Alberta and Alberta Energy

1 Alberta's Industrial Heartland website, Transportation page
 2 <http://albertacanada.com/about-alberta/tl-about-the-industry.html>
 3 CEPA Website <http://www.cepa.com/> 2015
 4 Highlights of the Alberta Economy 2014, Government of Alberta



ACCESS TO NATURAL RESOURCES AND FEEDSTOCKS

Alberta is located within the Western Canadian sedimentary basin, home to the Northern Alberta Athabasca oil sands area and the new shale oil and gas plays of Duvernay, Muskwa and Montney that offer natural gas rich in methane, ethane and other gas liquids. These are the foundations of Alberta’s energy sector.

Couple this with huge tracks of northern boreal forest and prime agricultural land and it is clear that Alberta’s resources will support various enterprises for years to come. Edmonton is centrally located for industrial producers to access the following natural resources:

- Coal
- Oil
- Bitumen (oil sands)
- Natural gas
- Forestry products
- Grains, seed oils and livestock (cattle, hogs and poultry)

Fossil fuel reserves indicate secure supplies for current and future petrochemical production.

HYDROCARBON RESERVES AND PRODUCTION LEVELS ¹		
PRODUCT	REMAINING ESTABLISHED RESERVES	2013 PRODUCTION
Natural gas	33.7 trillion cubic feet	3.6 trillion cubic feet
Shale gas	3,406 trillion cubic feet	600,000 metres ³ /day
Conventional oil	1.8 billion barrels	213 million barrels
Bitumen (excluding SCO)	167 billion barrels	761 million barrels
Raw coal	37 billion tons	32 million tons

Edmonton is part of Alberta’s Industrial Heartland (AIH) region - Canada’s largest chemical and hydrocarbon processing area. The AIH region encompasses 582 square kilometers (225 square miles) of industrial land. The AIH partner municipalities have complementary land use plans and work together to promote heavy and medium industrial development.

AIH is home to 15 world-scale hydrocarbon processing facilities which contribute to 43% of the nation’s basic chemical manufacturing. This important cluster of global chemical processors produces a wide range of value-added petrochemical products. Current reserves and production levels for hydrocarbon feedstock are as noted.¹

CONVENTIONAL NGLS (10⁶m³ liquid) raw reserves as of December 31, 2013

PRODUCT	TOTAL RESERVES	2013 PRODUCTION
Ethane	168.6	13.1
Propane	77.0	8.5
Butane	39.4	4.6
Pentanes plus	44.9	7.6
Total	329.9	33.8

Note Ethane gas reserves = 47.4 million cubic meters (10⁶m³ liquid)

¹ AER ST98-2014: Alberta’s Energy Reserves 2013 and Supply/Demand Outlook 2014

UTILITY, TRANSIT AND PROTECTIVE SERVICES

High quality, accessible utility and protective services are fundamental for successful industry. Edmonton's industry is provided with a range of quality services from reliable power, water and waste management to public transit accessing a city-wide labour pool.

WATER AND POWER UTILITIES IN EDMONTON

EPCOR, a municipally owned corporation, and its wholly owned subsidiaries build, own and operate electrical transmission and distribution networks, water and wastewater treatment facilities and infrastructure in Canada and the United States. The City of Edmonton is EPCOR's sole shareholder. EPCOR, headquartered in Edmonton, is an Alberta Top 55 employer.

EPCOR's water and wastewater experts focus on analyzing total water management processes and consider ways to mitigate risks and maximize ongoing operational efficiency, including water reuse opportunities.

EPCOR's Quality Assurance Laboratory is one of only a few Canadian water testing facilities to be accredited by the U.S. Environmental Protection Agency.

WATER ACCESS FOR INDUSTRY

Alberta's supply of water is a precious resource for all us. The Government of Alberta's approach to sound water management is guided by the renewed "Water for Life" strategy.¹

Alberta Environment and Sustainable Resource Development also facilitates a Water Management Framework for the Industrial Heartland and Capital Region, recognizing that a thriving industrial sector forms the backbone of Alberta's economy.² The Capital region and Industrial Heartland is home to world-scale refining of oil and gas, chemical and petrochemical facilities and is a region of significant potential for new investment opportunities in the energy and manufacturing sectors. Over \$25 billion has been invested in new and expanding facilities within the Heartland region and another \$18 to \$24 billion is expected in the next 15 years.³

WATER TREATMENT

EPCOR owns and operates two water treatment plants in Edmonton. The Rossdale plant is located downtown and the E.L. Smith plant is located 18 kilometers further upstream. These facilities provide safe, reliable drinking water to more than a million people in Edmonton and 65 communities in the Alberta Capital Region. The water treatment process uses free chlorine, chloramines and UV light for disinfection. The two plants have a total capacity of 680 million liters per day.

WASTEWATER TREATMENT

EPCOR's Gold Bar wastewater treatment plant, one of the largest of its kind in Canada, is at the forefront of wastewater treatment technology through continual upgrades and reliable compliance to regulatory standards.

Current treatment capacity is 310 million liters per day which equates into a volume of approximately 100,000 million liters annually.

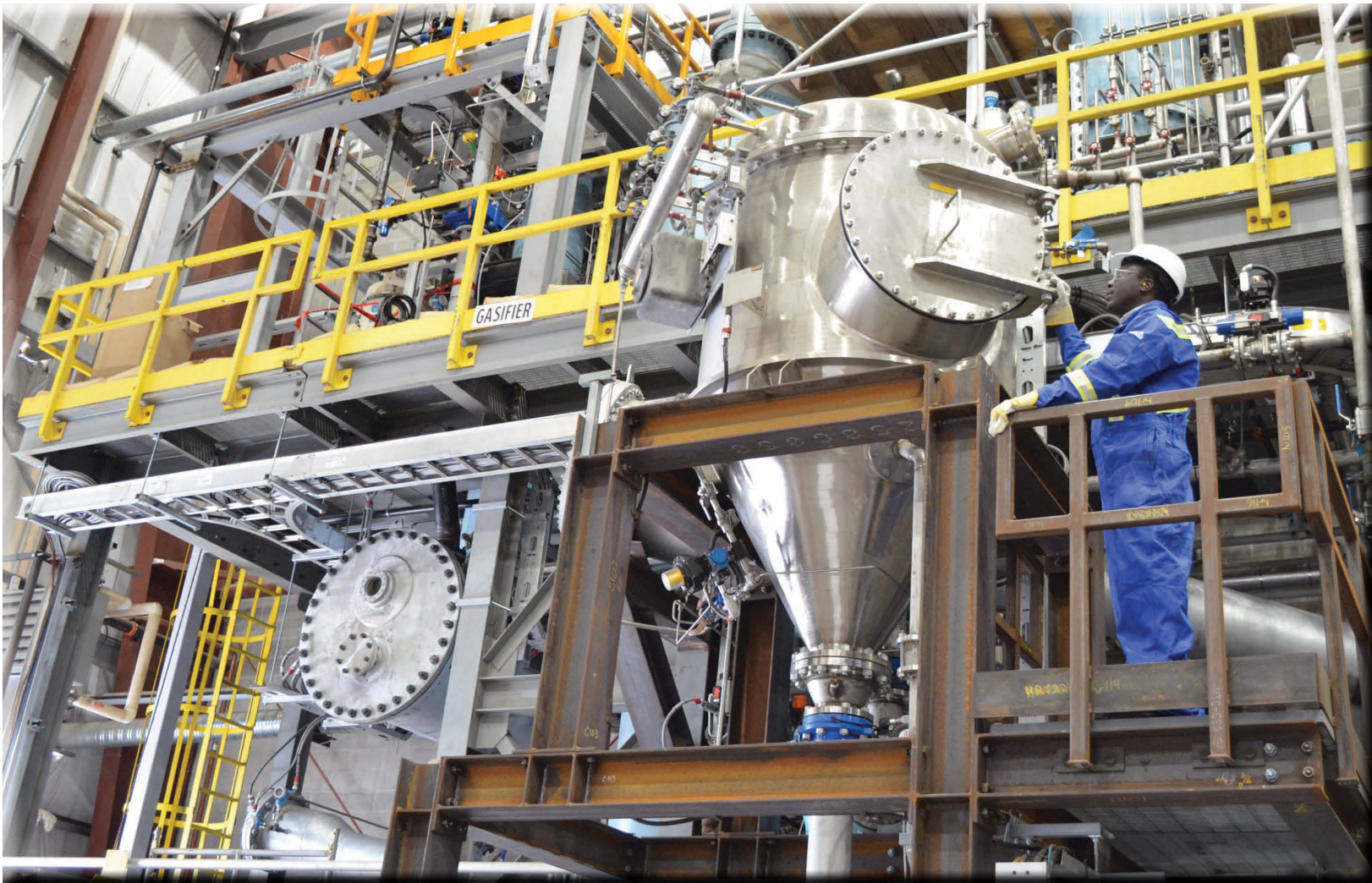
Consistent with the City's eco-industrial priorities, Gold Bar also supplies up to 15 million liters per day of high quality process water to Suncor Energy's Edmonton refinery. Process water from EPCOR may also be an option for other industrial clients.

In addition, EPCOR's expertise supports industrial development outside the Edmonton region. It supplies water and wastewater services to more than 6,000 workers at Northern Alberta oil sands camps and mining sites.

The Alberta Capital Region Wastewater Commission (ACRWC) is a model of regional cooperation providing wastewater transmission and treatment services to 13 municipalities in the Alberta Capital Region.

The Commission provides safe, reliable, cost-efficient and environmentally responsible wastewater transmission and treatment. The ACRWC contributes to the health and safety of Albertans and their ecosystem while enabling the growth and development of our member communities.

1 <http://www.waterforlife.alberta.ca/>
 2 <http://environment.gov.ab.ca/info/library/7864.pdf>
 3 <http://esrd.alberta.ca/focus/cumulative-effects/capital-region-industrial-heartland/default.aspx>



WASTE MANAGEMENT – EDMONTON WASTE MANAGEMENT CENTRE (EWMC)

Edmonton's award-winning waste management system balances economic, environmental and social considerations. Through its direct connection to the community, the utility has achieved some of North America's highest participation rates in waste reduction, reuse and recycling. Efficient collection services include waste and recycling collection for all households and more than 1,200 businesses.

The EWMC is North America's largest collection of modern, sustainable waste processing and research facilities. The 233-hectare site includes a variety of facilities for processing both residential and commercial/industrial waste. These include:

- an Integrated Processing and Transfer Facility,
- a Materials Recovery Facility (MRF),
- a combine area of 80,000 square metres of buildings
- a composting facility (the largest of its type in North America),
- an electronic waste recycling facility,
- a construction and demolition waste recycling facility,
- a paper recycling facility, and
- a research and training centre.

World's first-of-its-kind waste-to-biofuels facility opened in 2014 and will convert 10,000 tonnes of municipal waste into biofuels and chemicals which would otherwise have been sent to landfills.

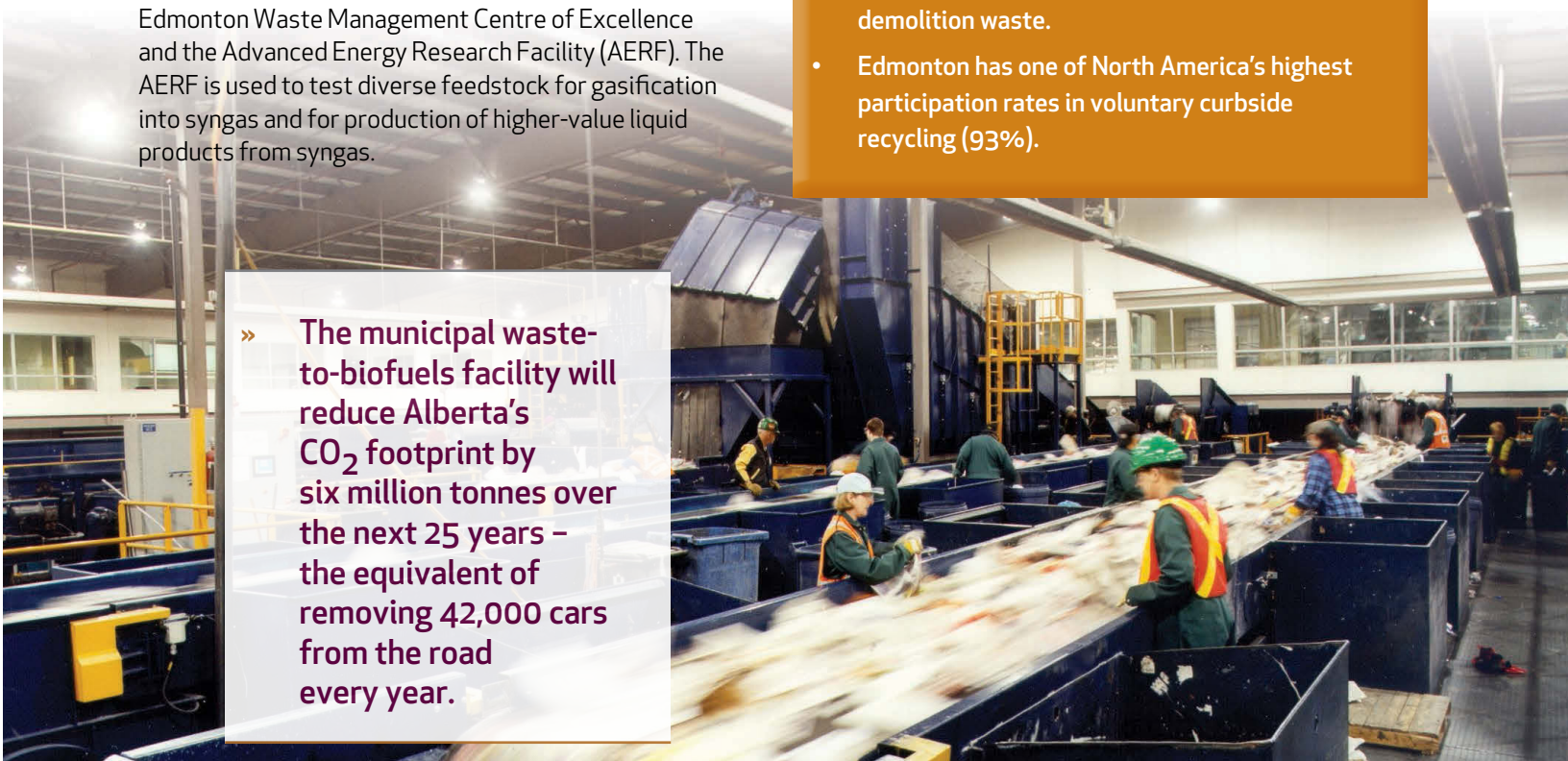
The EWMC is home to two research centres, the Edmonton Waste Management Centre of Excellence and the Advanced Energy Research Facility (AERF). The AERF is used to test diverse feedstock for gasification into syngas and for production of higher-value liquid products from syngas.

» **EDMONTON'S GOAL** to divert close to 90% of residential waste from landfill is expected to be achieved in 2016.

EDMONTON WASTE MANAGEMENT UTILITY QUICK FACTS:

- The Edmonton Waste Management Centre is home to more than 16 processing facilities, both City-owned and privately owned, representing a capital investment of more than \$500 million.
- The Edmonton Composting Facility can process 200,000 tonnes of waste and 25,000 dry tonnes of sewage bio-solids annually.
- The Waste-to-Biofuels facility will enable Edmonton to divert 90% of its residential waste from landfill by 2016. Currently Edmonton diverts 60% of residential waste.
- The Construction & Demolition Waste Recycling Facility is the only facility in the Edmonton area that processes mixed construction and demolition waste.
- Edmonton has one of North America's highest participation rates in voluntary curbside recycling (93%).

» **The municipal waste-to-biofuels facility will reduce Alberta's CO₂ footprint by six million tonnes over the next 25 years – the equivalent of removing 42,000 cars from the road every year.**





POWER AND HEAT

Alberta has a competitive electricity market where industrial power consumers are free to choose a retailer for electricity products and services. Regulated distribution and transmission services are not dependent upon the retailer you choose. A list of licensed Alberta retailers can be obtained at www.ucahelps.gov.ab.ca or by calling 310-4UCA.

Power is delivered through Alberta's interconnected electric system. EPCOR owns and operates high voltage transmission lines and substations that form part of the Alberta system.

These lines are situated primarily in Edmonton. EPCOR distributes approximately 14% of Alberta's energy consumption to 323,000 residential and 35,000 commercial consumers through eight distribution substations, 287 distribution feeders and approximately 5,000 circuit kilometers of primary distribution lines.

Industry has the option to convert excess heat, steam or waste products such as methane or agricultural waste from their process into electricity. Surplus power can then be sold to the wholesale electricity market.

Access to natural gas as a heating source ensures building owners benefit from a clean, low-cost fuel alternative. Service is provided throughout the city by ATCO Gas.

Co-generation of power is increasingly being considered as a viable option for promoting eco-friendly development. In addition various public and private partners are also pursuing biomass projects in Edmonton and surrounding communities. These are designed to create a fuel or heating source from waste products or agricultural residues.¹

¹ <http://biomassmagazine.com/articles/7506/enerkem-announces-additional-project-equity-financing>

PUBLIC TRANSIT

The City of Edmonton operates a comprehensive city-wide bus and light rail transit (LRT) service providing cost-effective public transportation to most neighbourhoods and work sites. The City of Edmonton recently completed a major new leg of LRT service to the southwest quadrant.

The northern leg construction of the LRT is complete and will link the city centre with the main campus of the Northern Alberta Institute of Alberta (NAIT).

Further expansion plans to the southeast and west end have completed the planning stages. In addition, the City of Edmonton has a direct LRT/bus link to the Edmonton International Airport. This connects passengers from northeast Edmonton to southwest Edmonton through one easy connection.



POLICE

The Edmonton Police Service (EPS) offers a full range of policing services to businesses and commercial operations within the corporate boundaries of the City of Edmonton.

From 24-hour response teams to crime prevention strategies, from detailed crime statistics by city district to workplace safety strategies, EPS safety and response services offer 21st century solutions.

Edmonton's neighbouring communities are serviced by various RCMP detachments that work with the EPS as needed.

FIRE AND EMERGENCY RESPONSE

Edmonton's fire and emergency response teams work with key industries to ensure emergency response plans are in place and appropriate for specific industry-related incidents.

The Edmonton Fire Department responds to fires and medical emergencies with trained fire personnel, emergency medical technicians and paramedics, carry out fire investigations and promote fire prevention.

A hazardous materials team responds to substance release incidents including chemical spills, cargo tank truck rollovers and radiological and explosion events.



COMMITMENT TO HIGHER EDUCATION AND ADVANCED TECHNICAL TRAINING

The Edmonton region has a population of well over one million people with more than 700,000 people active in the workforce. The workforce is younger, highly trained and representative of multicultural diversity of the region.

Edmonton's basic education needs are served by two publicly funded K-12 school systems and a range of special charter schools. It is also home to six publicly funded post-secondary institutions and a host of private training schools. Together, they offer a full range of training and educational options to over 180,000 full- and part-time students in the area, supporting the crucial needs of the industrial, manufacturing and construction sectors located in Edmonton.

Edmonton's publicly funded post-secondary institutions are:

- University of Alberta 39,260 students
- Northern Alberta Institute of Technology (NAIT) 48,500 students
- MacEwan University 14,450 students
- NorQuest College 9,000 students
- Concordia College 1,600 students
- King's University College 700 students

UNIVERSITY OF ALBERTA (U OF A)

The U of A has earned an internationally renowned reputation based on the caliber of its courses of study, teaching acumen and research excellence. The University of Alberta has been

ranked as one of the world's top 100 universities, and the university's Alberta School of Business is ranked in the top 100 business schools globally by the prestigious 2013 Financial Times of London.¹ The University has an enrollment of over 39,260 in 18 faculties.

The engineering faculty ranks in size among the top five per cent of more than 400 engineering schools in North America. The faculty is internationally recognized, with engineering and information technology ranked among the top 100 in the world out of more than 2,000 universities considered.

The U of A also offers trans-formative research in many science disciplines, directly supporting Edmonton's economy. The university is home to the Canada Excellence Research Chair in Oil Sands Molecular Engineering.

Research conducted in relation to the engineering faculty attracts more than \$65 million annually in external research funding. As well, the U of A maintains links to Canada's North and the world's boreal regions, including close association with the Canadian Circumpolar Institute.

NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY (NAIT)

NAIT serves 30,000 students at their 16 learning sites in the Edmonton area alone. It is the largest apprenticeship trainer in Canada with the capacity to train about 15,000 apprentices annually in 33 registered trades. In addition, the institute offers 120 credit programs leading to degrees, applied degrees, diplomas and certificates as well as providing more than 1,400 continuing education courses.²

The NAIT Shell Manufacturing Centre (NSMC) helps Alberta's manufacturing industries, especially small and medium enterprises, become globally competitive. The centre offers part-time certificates and customized training in productivity enhancement and manufacturing solutions. The centre includes nine high-tech laboratories with state-of-the-art equipment and software.

novaNAIT is the home of applied research and enterprise development at NAIT. The centre supports and facilitates applied research and development of commercially relevant products and services for industry.

¹ University of Alberta, Annual Reprt 2014

² About Nait Quick Facts 2015

MACEWAN UNIVERSITY

Grant MacEwan University serves primarily the greater Edmonton region and northern Alberta by responding to the learning needs of business, industry, government and communities.

With a student population of more than 14,450 full-time students, MacEwan's four faculties and schools offer 31 Bachelor degrees, four degree-transfer programs, two Applied Bachelor degrees and more than 75 diploma and certificate programs as well as specialized corporate training.¹

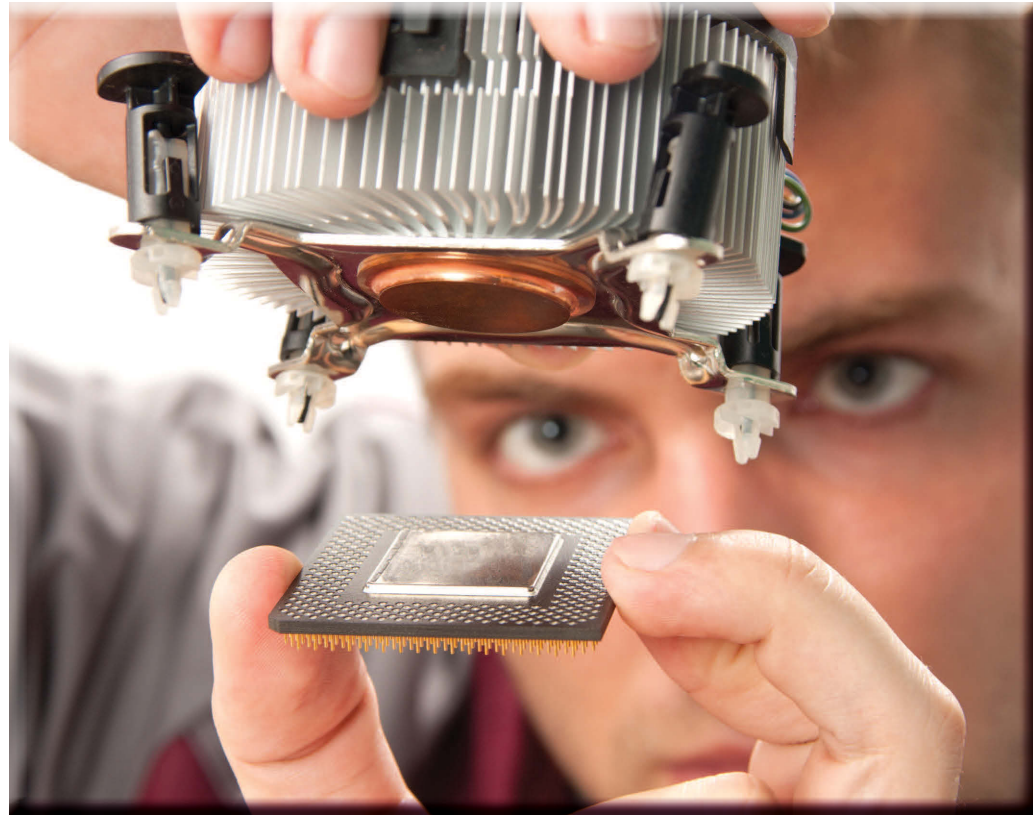
NORQUEST COLLEGE

NorQuest College serves a unique industry need for English as a Second Language (ESL), academic upgrading and employment preparation programs. NorQuest is Alberta's largest community college with about 10,220 full-time, part-time and continuing education students and is the largest provider of college and employment prep programs in Alberta.²

PRIVATE SECTOR TRADE SCHOOLS

The following are a few examples of Edmonton private-sector trade schools and colleges which offer courses that directly support industry:

- Alberta Big Rig Driver Education
- The Bredin Institute Centre for Learning
- Business Career College
- Capilano Truck Driver Training Institute
- Gennaro Transport Training
- GRB College of Welding
- Hilltop Security Academy
- Lokken Career College



RESEARCH AND DEVELOPMENT: SUPPORTING INDUSTRIAL INNOVATION

Another essential fundamental for 21st century entrepreneurial success is a community's ability to support and further innovation across a range of sectors.

Edmonton excels in this endeavour with its extensive research and development (R & D) infrastructure, appetite for excellence and a strong and growing network of partnerships aimed at exploring new approaches and developing new technologies.

Assets within the University of Alberta, NAIT and the Edmonton Research Park along with provincial and federal facilities give the private sector access to leading research and innovation capacity.

1 MacEwan University Annual Rept 2014
2 NorQuest Annual Report 2014

UNIVERSITY OF ALBERTA

The University of Alberta, one of Canada's top institutions in energy and environmental research, plays a major role both in supporting Canada's energy sector and sustaining our environment.

Following are some of the university's major R&D initiatives supporting these sectors:

The Imperial Oil-Alberta Ingenuity Centre for Oil Sands Innovation (COSI) partners with industry to develop breakthrough technologies that will allow Alberta to efficiently and sustainably develop Alberta's oil sands.

The Centre for Earth Observation Sciences (CEOS) has established partnerships with Syncrude and Suncor Energy and focuses on hyper-spectral characterization of oil sands.

The Alberta Centre for Surface Engineering and Science (ACSES) investigates surface characterization and modification. This includes reducing waste from oil sands extraction.

The Centre for Intelligent Mining Systems (CIMS) works on exploratory research in intelligent systems for the oil sands mining industry that integrates sensing with automated reasoning and human interaction.



The Oil Sands Tailings Research Facility (OSTRF) investigates ways to handle oil sands tailings. The goal is to be able to return to a stable landscape directly following mining.

The Centre for Applied Business Research in Energy and the Environment (CABREE) provides applied economic analysis to inform public policy debates on issues of vital importance to Alberta and Canada. Research efforts focus on energy markets, electricity restructuring and climate change issues.

The Canadian Centre for Clean Coal/Carbon and Mineral Processing Technologies (C5MPT) is a research and education centre that supports sustainable and responsible energy and mineral development.

The Alberta Biodiversity Monitoring Institute (ABMI) conducts world-class biodiversity monitoring of more than 2,000 species and habitats to support decision-making with scientific knowledge about provincial biodiversity.

The Faculty of Engineering, with 21 engineering programs and more than 200 professors, 4,400 undergraduate and 1,500 graduate students, is a vibrant research community that attracts more than \$50 million annually in sponsored research funding from external sources.¹

The faculty's areas of specialty are: energy, natural resources and the environment, biomedical engineering and bioengineering, information and communications technologies, and nanotechnology engineering.

The Faculty of Engineering hosts:

- 1 Canada Excellence research chair
- 15 Canada research chairs
- 16 Natural Sciences and Engineering Research Council (NSERC) industrial research chairs
- 5 Foundation-supported chairs
- 11 endowed chairs and professorships



NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY (NAIT)

novaNAIT is the applied research arm of NAIT, offering:

- assistance for industry to prepare proposals and source research collaborations,
- technical services in product development, laboratory services and advisory services, and
- a technical prototype development program that supports the development of technologies, entrepreneurs and companies by funding technical consultancy and product development.

The NAIT Shell Manufacturing Centre (NSMC), the first facility of its kind in Canada to link productivity enhancement services with manufacturing solutions. It was created to help Alberta's manufacturing industries become globally competitive by providing productivity solutions using both time-tested and innovative technology, manufacturing expertise and practical education.

EDMONTON RESEARCH PARK

The Edmonton Research Park (ERP) is designed to accommodate the smallest to the biggest research companies, offering a variety of facilities suitable to various stages of development:

- Advanced Technology Centre, an incubator for start-up companies,
- Research Centre One with flexible lab and production space for second-stage companies, and
- the Biotechnology Business Development Centre providing specialized lab and office space to second-stage biotechnology companies.

More than 1,500 people work for nearly 55 companies at the ERP, engaged in advanced research in medicine, biotechnology, software, petroleum research, cold climate engineering, nanotechnology and clean energy.

Sites are also available for larger companies to build their own research and development facilities.



EDMONTON WASTE MANAGEMENT CENTRE OF EXCELLENCE

The Edmonton Waste Management Centre of Excellence (EWMCE) is a not-for-profit corporation established to meet solid waste and wastewater challenges worldwide. The EWMCE is a collaborative hub for innovative research, technology development and training.

The EWMCE operates at the core of a unique private-public network of environmental leaders. Its members include the City of Edmonton, University of Alberta, Alberta Innovates – Energy and Environment Solutions, AMEC, NAIT and EPCOR.

The EWMCE incorporates the resources and facilities of all its members. This approach provides the facility with access to diverse research and educational sites. The combined centre and member facilities represent almost \$1 billion in assets. Collectively, they offer a tremendous framework for advancing waste management practices.

The municipal treatment facilities provide a full-scale living laboratory making the EWMCE an ideal location for applied research and training.

The Wastewater Research & Training Centre, located at Gold Bar Wastewater Treatment Plant, offers research and training opportunities in advanced biological wastewater treatment.

ALBERTA INNOVATES

The Government of Alberta actively and directly supports a full range of research. The initiatives focus on solving key industry issues using innovation to develop practical solutions including new product development and commercialization.

Alberta aligns the province's research and innovation system through a family of the five following corporations:

- Alberta Innovates - Technology Futures
- Alberta Innovates - Energy and Environment Solutions
- Alberta Innovates - Bio Solutions
- Alberta Innovates - Health Solutions
- Alberta Innovates - Alberta Research and Innovation Authority

Highly client- and industry-focused, Alberta Innovates - Technology Futures, or Tech Futures, advances ideas and innovations through applied research and commercialization supports to solve problems, enhance productivity and move new products and services to market.

Entrepreneurs, businesses, industry associations and researchers have access to a wide range of technical services and funding support including:

- applied research, technical expertise, laboratory facilities and scale-up services on a fee-for-service basis, and
- commercialization supports including intellectual property management, technology deployment, technology transfer, channel development, financing and investment readiness.



Tech Futures' goal is to diversify and grow Alberta's economy. It focuses on sectors key to Edmonton's economic future:

- petroleum: heavy oil, oil sands, fuels and lubricants,
- environment and carbon management: clean energy, environmental analytical services, geo-sciences, CO₂ storage, land and water management, wildlife ecology,
- bio and industrial technologies: advanced materials, industrial sensor technologies, bio-resource technologies, and
- health.

Tech Futures manages a number of consortia and collaborations designed to ensure Alberta's industry remain competitive including:

MARIOS: a consortium of oil sands producers, materials and equipment suppliers, fabricators and technology providers who collaborate to solve industry-wide problems.

AMFI: designed specifically for Alberta's metal manufacturing sector, participants gain access to both production and business enhancement expertise developed and provided by some of Alberta's top research, technology development and process improvement institutions.



PRODUCTIVITY ALBERTA

With the goal of helping Alberta businesses boost their productivity, Productivity Alberta, a not-for-profit corporation, offers a range of services to help businesses compete more effectively within the global marketplace.

Services include:

- productivity assessment for business,
- a productivity inventory of available tools, services and programs to help business,
- productivity improvement specialists and advisors,
- access to leading practices and success strategies,
- sector-specific productivity improvement projects,
- conferences and training opportunities, and
- productivity networks.

Productivity Alberta works in the industrial products and services sectors to improve not only single businesses, but supply chains from top to bottom. Productivity Alberta's approach has gained international attention for its approach to engaging industry.



NATIONAL INSTITUTE FOR NANOTECHNOLOGY

The National Institute for Nanotechnology (NINT) is an integrated, multi-disciplinary institution involving researchers in physics, chemistry, engineering, biology, informatics, pharmacy and medicine. Located on the University of Alberta campus, it is housed in a 20,000 sq m advanced research facility and is operated as a partnership between the National Research Council, Government of Alberta and the University of Alberta.¹

CANMETENERGY

With over 450 scientists, engineers and technicians, Natural Resources Canada's CanmetENERGY is the Canadian leader in clean energy research and technology development. The CanmetENERGY research facility at Devon, near Edmonton, is home to 130 of CanmetENERGY's team and provides solutions and knowledge for addressing critical oil sands environmental issues while also ensuring it remains a valuable product for Canada.²

CanmetEnergy's Devon facility conducts research and technology development programs related to:

- extraction and tailings,
- water management,
- multiphase systems,
- upgrading oil sands and heavy oil, and
- future fuels and emissions.

OTHER EDMONTON-BASED RESEARCH AND DEVELOPMENT ORGANIZATIONS

Edmonton is home to many more businesses and facilities offering their own research to the community and the world. These include:

- Alberta Co-operative Conservation Research Institute**
- Canadian School for Energy and the Environment**
- Canadian Centre for Isotopic Microanalysis**
- Climate Change and Emissions Management Corp.**
- Nanofab**
- Alberta Water Research Institute**
- C-FER Technologies**
- AGAT Laboratories**
- Schlumberger Global Reservoir Fluids Centre**
- Syncrude Research**
- TRLabs**

¹ www.nint.ualberta.ca

² <http://canmetenergy.nrcan.gc.ca>

PLANNING AND REGULATORY ENVIRONMENT

The City of Edmonton supports the needs of business and industry, and works with entrepreneurs through the site location and planning and development process. The City has a streamlined review and planning process that facilitates timely industrial development while ensuring appropriate due diligence.

Over the next five years the City of Edmonton will strengthen this approach through the creation of 'turn-key' industrial opportunities.

The City's Industrial Services Team will work closely with individual clients, other civic staff and regulatory organizations to facilitate and coordinate any regulatory reviews and land use planning and zoning requirements on these major industrial initiatives.

Current processes include environmental protection assessments required by the provincial and federal governments. These regulate water use, the disposal and treatment of wastewater, air quality and more, put in place to ensure a strong and sustainable economy while balancing the needs and interests of industry and the broader community.

MUNICIPAL DEVELOPMENT PLAN AND AREA STRUCTURE PLANS

Edmonton's Municipal Development Plan (MDP) offers the overarching policy and strategy framework to ensure consistent, quality planning and development within the city.

Within the parameters of the MDP, area structure plans (ASPs) lay out an area's long-term development plan. ASPs generally cover areas of at least 200 hectares and must be in place before landowners develop a new neighbourhood.

City Council approves both documents to ensure conformity to City's principles of development and the landowners' obligations and responsibilities.

Review and approval processes explain requirements, including public input, to ensure a transparent and responsive process that considers the perspectives and needs of all affected stakeholders.

EDMONTON LAND USE ZONES

Land use zoning classifies and regulates land development and use. Industrial development is classified into five specialized land use zones. Within each of the zones are permitted and discretionary land uses.

Permitted land uses are given automatic approval provided they meet the regulations of the zoning bylaw. Discretionary land uses are reviewed relative to their compliance with regulations and their relation to surrounding areas and applicable statutory plans. Within the zoning process there is an appeal process through the City's Subdivision and Development Appeal Board.¹

EDMONTON ENERGY AND TECHNOLOGY PARK AREA STRUCTURE PLAN

The Edmonton Energy and Technology Park Area Structure Plan outlines the future development of an industrial business park focusing on petrochemical and manufacturing plants as well as research and development facilities and the transportation and logistics sector.

The ASP outlines an eco-industrial model facilitating companies' use of shared utilities and cleaner alternative energy sources. It leads to reduced water use, reduced waste, the preservation of natural areas and the implementation of sustainable building practices.

Final rezoning and subdivision steps, including an Eco-Industrial Design Plan and a quantitative risk analysis, are required before development can begin.

EDMONTON'S REGIONAL AIRSHED

To help protect the environment, all industrial facilities in the Capital Region must be designed and operated so the ambient air quality surrounding the site meets or exceeds ambient air quality objectives as established by Alberta Environment.

The Alberta Capital Airshed (ACA) helps design solutions to local air quality issues, initiating several programs to ensure a high quality of air throughout the region. In addition to ACA, the Fort Air Partnership covers Alberta's Industrial Heartland region.

¹ www.edmonton.ca

EDMONTON SUPPORT SERVICES FOR BUSINESS AND ENTREPRENEURS

Edmonton strongly supports the business community with the right mix of entrepreneurial freedom, business incentives and government support.

CITY OF EDMONTON INDUSTRIAL SERVICES TEAM

The City of Edmonton's Industrial Services Team works directly with client companies to ensure industrial investors have what they need for a timely and successful development. The team will work closely with clients to:

- assist with site location, servicing and infrastructure identification needs,
- streamline rezoning and development permit approvals, and
- help coordinate municipal reviews with any provincial regulatory review.

In addition to the core Industrial Services Team, an expanded support team from across the City of Edmonton engages in facilitating industrial investment.

For updated public- and private-sector industrial land listings and current economic and demographic data, check out the City's industrial land sales site at www.edmonton.ca/industrialdevelopment

For more details, contact:

Walter Trocenko

Manager, Real Estate, Housing and Economic Sustainability
Sustainable Development, City of Edmonton
Ph. (780) 496-6557
Email – Walter.Trocenko@edmonton.ca

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Executive Director, Economic Sustainability
Sustainable Development, City of Edmonton
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12th Floor, HSBC Bank Place, 10250 - 101 Street NW
Edmonton, Alberta, Canada T5J 3P4

EDMONTON ECONOMIC DEVELOPMENT CORPORATION

Edmonton Economic Development Corporation (EEDC), wholly owned by the City of Edmonton, promotes economic development and tourism development, and manages the Shaw Conference Centre and the Edmonton Research Park.

With a focus on key sectors including advanced technology, energy and tourism, EEDC helps companies from around the world establish new businesses in Edmonton through:

- business plan assistance, offering regional business data and assisting in its interpretation,
- regional business connections, bringing key players together for discussions regarding the location process, and
- real estate information, connecting business with real estate resources to assist in the development of detailed plans, industrial land information or real estate surveys.

For more details, contact:

Brad Ferguson

President and CEO
Edmonton Economic Development Corporation
Ph. (780) 424-9191
3rd floor, World Trade Centre
9990 Jasper Avenue, Edmonton, Alberta, Canada T5J 1P7



ALBERTA'S INDUSTRIAL HEARTLAND ASSOCIATION

Alberta's Industrial Heartland, home to a globally recognized oil and petrochemical processing cluster, is guided by a non-profit association of municipalities dedicated toward sustainable eco-industrial development. Alberta's Industrial Heartland Association (AIHA) represents municipalities that have land within the Alberta's Industrial Heartland geographic area.

A leading principle of AIHA is promoting responsible industrial development within the region. This includes ensuring the region is ready for development in its infrastructure, services and land use zoning principles.

AIHA recognizes that activities in the area can have a major impact on neighbouring communities and can affect their service delivery as well. Together, the municipalities take a proactive and cooperative approach to planning and industrial development.

Current member municipalities include City of Edmonton, City of Fort Saskatchewan, Lamont County, Strathcona County and Sturgeon County.

For more details, contact:

Neil Shelley

Executive Director
Alberta's Industrial Heartland
Association

Ph. (780) 998-7453

Email - neil@industrialheartland.com

EPCOR

EPCOR offers a wide range of water and electricity services for industrial clients, including:

- water and sewer maintenance,
- meter services,
- high-voltage and instrumentation testing, and
- water lab services.

EPCOR's Quality Assurance Laboratory is one of only a few Canadian water testing facilities to be accredited by the U.S. Environmental Protection Agency.



OTHER BUSINESS DEVELOPMENT SUPPORT ORGANIZATIONS

Adding to the strength of Edmonton's business and industrial environment are the following organizations:

- Alberta Entrepreneurs Association
- Alberta Business Incubator Northern Alberta Development Council
- Agriculture Financial Services Corporation
- Alberta Opportunity Company
- Alberta Chamber of Commerce
- Business Development Bank of Canada (CASE)
- (The) Business Link, Business Service Centre
- Canadian Organization of Small Business
- Canadian Plastics Industry Association - Western Canada
- Edmonton Chamber of Commerce
- Industry Canada Invest in Canada (International Trade Canada)
- La Chambre économique de l'Alberta
- National Research Council - IRAP Northern
- TEC Edmonton
- Western Economic Diversification
- World Trade Centre Edmonton

INDUSTRY ASSOCIATIONS

Industry associations also add to the rich fabric of industry and manufacturing support in Edmonton. Following are selected highlights of available resources.

FORESTRY

Alberta Forest Products Association
Resource Industry Suppliers Association of Alberta

ENERGY

Alberta Chamber of Resources
Alberta Geological Survey
Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Canadian Association of Oilwell Drilling Contractors (CAODC)
Canadian Association of Petroleum Land Administration (CAPLA)
Canadian Association of Petroleum Landmen (CAPL)
Canadian Association of Petroleum Producers (CAPP)
Canadian Centre for Energy Information
Canadian Plastics Industry Association (CPIA)
Canadian Energy Pipeline Association (CEPA)
Canadian Energy Research Institute (CERI)

Canadian Gas Association (CGA)
Canadian Heavy Oil Association (CHOA)
Canadian Institute of Mining, Metallurgy and Petroleum (CIM)
Canadian Petroleum Products Institute (CPPI / ICPP)
Canadian Society for Unconventional Resources (CSUR)
Canadian Society of Petroleum Geologists (CSPG)
Canadian Wind Energy Association (CanWEA)
Chemical Institute of Canada (CIC)
Chemistry Industry Association of Canada (CIAC)
Coal Association of Canada (CAC)
Environmental Services Association of Alberta (ESAA)
Gas Processing Association of Canada (GPAC)
Oil Sands Developers Group
Petroleum Communications Foundation
Northeast Industrial Association
Petroleum Human Resources Council of Canada
Petroleum Joint Venture Association (PJVA)
Petroleum Services Association of Canada (PSAC)
Petroleum Tank Management Association of Alberta (PTMAA)

Petroleum Technology Alliance Canada (PTAC)
Small Explorers and Producers Association of Canada (SEPAC)
Strathcona Industrial Association
Society of Petroleum Engineers Canada
Solar and Sustainable Energy Society of Canada Inc. (SESCI)

MANUFACTURING

Canadian Manufacturers and Exporters
Canadian Chemical Producers Association

DEVELOPMENT AND REAL ESTATE

Building Owners and Managers Association - Edmonton
Edmonton Homebuilders Association
Edmonton Real Estate Board
Urban Development Institute - Edmonton

DESIGN AND CONSTRUCTION

Alberta Construction Association
Merit Contractors of Alberta
Alberta Association of Architects (AAA)
Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Association of Consulting Engineers
Association of Consulting Architects





» The energy sector is likely to continue to drive Calgary and Edmonton to the head of the industrial pack in 2015.

Demand has yet to soften in spite of the lowest oil prices in four years. Energy projects have long horizons, which should provide continued stability and growth in these markets.

CBRE Canadian Market Outlook 2015

STRONG, EXPERIENCED CONSTRUCTION INDUSTRY SUPPORTS DEVELOPMENT

Greater Edmonton's construction industry is world class and highly experienced in residential, commercial, industrial, institutional, civil and roadway construction.

With billions of dollars of construction built in Alberta over the past decade and over \$200 billion in major projects under construction or planned in Alberta over the next decade, Edmonton's construction industry has played an important part in the city's success story.

The industry has built the corporate capacity and the skilled workforce needed to rise to the challenge of a booming economy.

In addition, many local firms have forged a unique skill set needed to address industrial or modular construction needs, cold climate considerations and the challenges of building projects in remote sites.

Edmonton is home to construction firms offering a full range of construction services for projects located in Edmonton, throughout the province and in various locations around the world.

Major general contractors active in the area include:

- Aecon Infrastructure Group
- Bird Construction
- Clark Builders in partnership with Turner Construction
- Ellis Don Construction Services
- Graham
- Ledcor Group of Companies
- PCL Construction
- Stuart Olson Dominion Construction

Greater Edmonton's construction industry employs over 55,000 people¹ offering both union and non-union environments. Industry associations and public sector educational institutes such as the Northern Alberta Institute of Technology (NAIT) work together to ensure that the workforce grows to meet the industry's needs from senior management to specific trade apprentices.

Innovative workforce development initiatives such as 'Careers – the Next Generation' actively encourage young people into construction trades, while 'Women Building Futures' targets women for training and integration into the construction industry. Both initiatives highlight how industry partnerships are working to ensure a strong, skilled workforce to support the industry today and in the future.

Edmonton's construction workforce brings the right mix of skills, experience and training to every job here and around the world.

1 Statistics Canada

2 Market Outlook 2013 at a Glance, CBRE



LOCATING, BUILDING AND **OPERATING INDUSTRY** IN EDMONTON

3

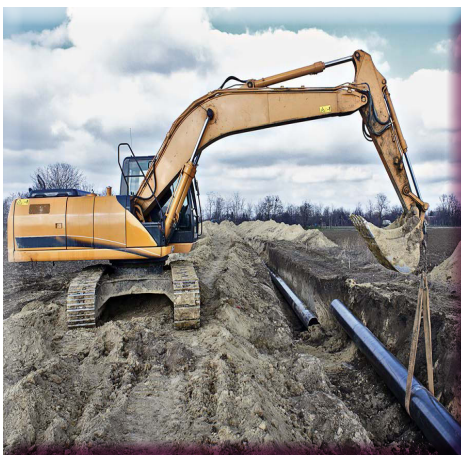
- » MAJOR U.S. LOCATION RESEARCH FIRM BOYD COMPANY finds Edmonton offers the lowest operating costs for head offices of any Western Canadian city and as much as 16% lower than Toronto, Vancouver and Montreal.

EDMONTON'S INDUSTRIAL LAND CAPACITY

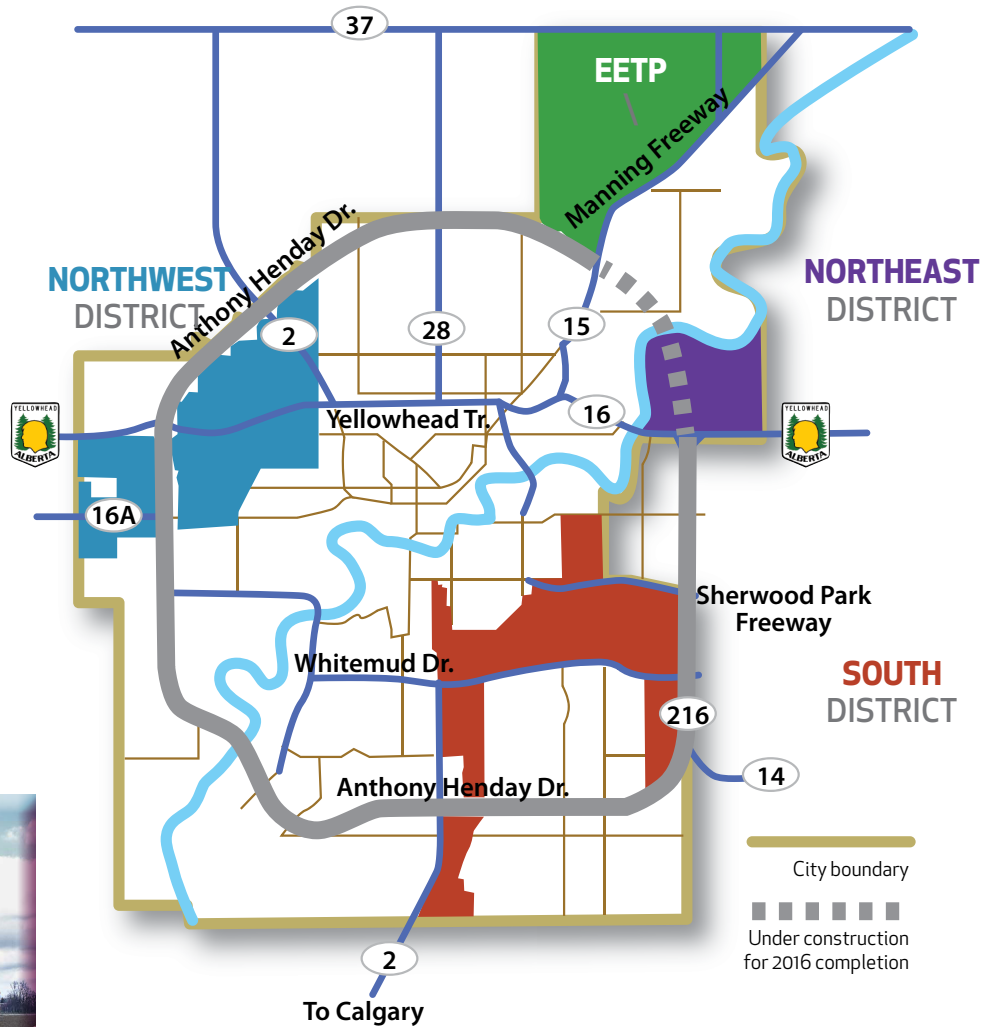
Edmonton has four designated Industrial Districts. The districts are strategically located along major transportation corridors and spread throughout the city.

Edmonton has a range of serviced industrial land. It has 1,115 gross hectares (ha) of designated vacant industrial land available for development. In addition there is a further 4,860 gross ha available in the Edmonton Energy and Technology Park.¹

There are more than 770 net ha (1,902 net acres) of vacant zoned industrial land ready for immediate development.²



Edmonton Energy and Technology Park (Member of Alberta's Industrial Heartland)



» **EDMONTON OFFERS** industrial developers the most diverse range of industrial land opportunities within the Greater Edmonton region.³

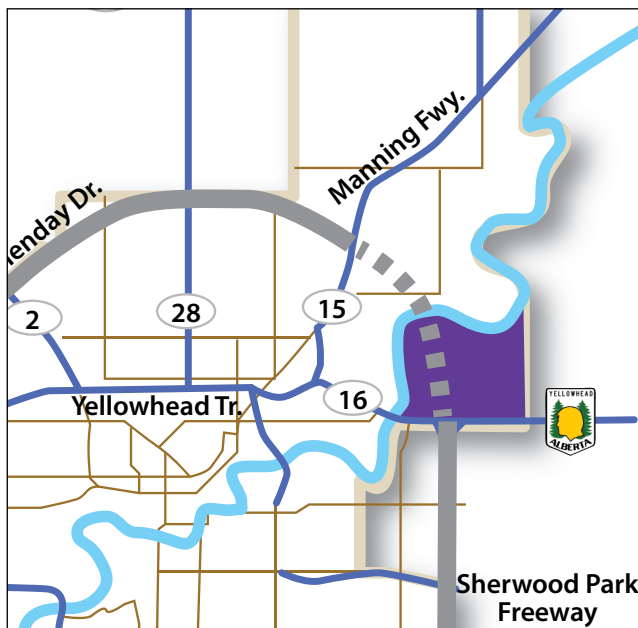
1 City of Edmonton Vacant Industrial Land Update, July 2013
 2 City of Edmonton Vacant Industrial Land Update, July 2013
 3 Edmonton Journal, Tuesday July 31, 2012

EDMONTON'S INDUSTRIAL LAND ZONING

The City of Edmonton identifies five main land use zoning designations for economic purposes.¹

- IB – Industrial Business Zone** – intended for businesses that generate no nuisance outside an enclosed building and compatible with adjacent non-industrial use.
- IL – Light Industrial Zone** – high quality, light industrial developments with limited accessory outdoor activity and no nuisance outside an enclosed building.
- IM – Medium Industrial Zone** – suited for manufacturing, processing, assembly, distribution, service and repair uses that carry out part of their operations outdoors and require outdoor storage areas with some nuisances associated with the operations.
- IH – Heavy Industrial Zone** – industrial uses that due to their appearance, noise, odour, risk of toxic emissions or fire and explosion are incompatible with other residential or commercial land uses.
- AGI – Agricultural Industrial Reserve** – rural land intended for industrial use but not currently zoned.

NORTHEAST DISTRICT



¹ www.edmonton.ca, City of Edmonton, 2013

² City of Edmonton Industrial Land Update, July 2013

In addition to these traditional zoning categories the City of Edmonton has developed specialized eco-industrial zoning for the Edmonton Energy and Technology Park (EETP) with the following specific designations:

- EETB – Edmonton Energy and Technology Park Business Park Zone**
- EETC – Edmonton Energy and Technology Park Chemical Cluster Zone**
- EETL – Edmonton Energy and Technology Park Logistics Zone**
- EETM – Edmonton Energy and Technology Park Manufacturing Zone**

EDMONTON'S INDUSTRIAL NEIGHBOURHOODS

The following selected neighbourhoods offer competitively priced land for new and expanding investment.

Cloverbar Industrial (Aurum)²

- LOCATION:** Northeast Edmonton – situated south of the North Saskatchewan River and west of the City of Edmonton - Strathcona County boundary
- ACCESS:** Roadways link to Anthony Henday Drive and Yellowhead Trail. A number of major pipeline corridors are situated in the area and has access to both CN and CP rail lines
- OVERALL SIZE:** Vacant zoned industrial is 113 ha
- PARCEL SIZE:** Vacant zoned industrial parcels vary in size from 10 ha to 0.2 ha
- ZONED:** Mix of industrial zonings
- OWNERSHIP:** Mix of private owners
- EXISTING USES:** Transportation, logistics and warehousing and manufacturing sectors

Edmonton Energy and Technology Park (EETP)

LOCATION: Northeast Edmonton – a part of Alberta’s Industrial Heartland (AIH)

ACCESS: Bounded by Anthony Henday ring road to the south, Manning Drive to the east, Highway 37 to the north and the Canadian Forces Base (CFB) Edmonton on the west

SIZE: Total area is 12,000 acres (4,857 ha, or 49 square kilometers/20 square miles)

ZONING: Four special eco-industrial zones (EETB, EETC, EETL, and EETM) have been approved and can be applied for in accordance with the area structure plan.

VISION: The EETP provides a vision for a new eco-industrial area for the City of Edmonton. The opportunity for value-added industries and significant economic spin-off activity based on the development of Alberta’s oil sands was the catalyst for the development of this industrial park.

EETP will be of interest to chemical and energy value-added processors who want to capitalize on upgrading, processing and refining natural gas, natural gas liquids, oil and bitumen by-products. Large-scale development opportunities offer outstanding development potential for manufacturers and fabricators with excellent road and rail connections that support a strong transportation and logistics base.

The intended land uses within the EETP include an integrated cluster of industries connected with hydrocarbon processing, manufacturing, logistics and associated research and technology sectors that will incorporate the following eco-industrial principles:

- sustainable development,
- industrial ecology and efficiency,
- effective transportation,
- land use compatibility,
- innovative infrastructure,

- environmental protection, and
- effective implementation.

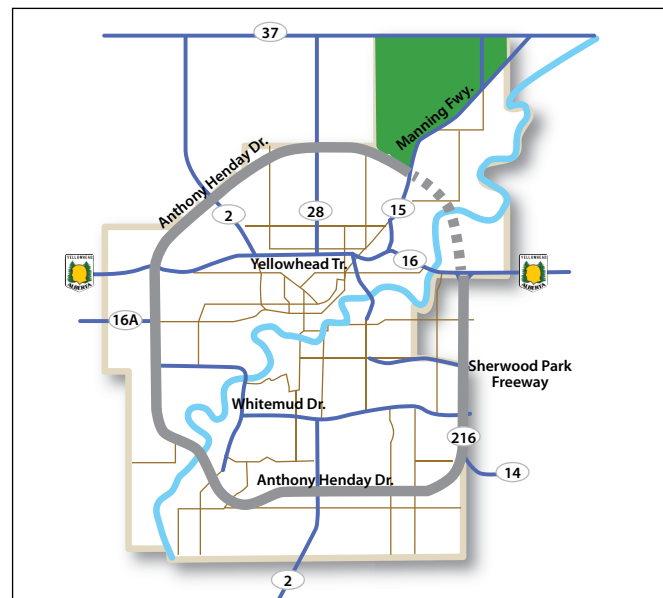
Development is envisioned to include:

- business networks that share common services,
- common pipes and use of waste outputs and inputs for downstream processors,
- ecologically friendly infrastructure and naturalized storm-water management, and
- sites that maximize environmental conditions.

The Edmonton Energy and Technology Park area is currently used largely for agricultural purposes. It offers investors:

- a location for major green-field development,
- proximity to natural gas, oil and ethane feedstock as well as petrochemicals,
- access to the heavy oil and petrochemical industries northeast of Edmonton,
- access to Edmonton’s world-class labour pool,
- process water options via the North Saskatchewan River, or wastewater,
- rail, road and power line access,
- access to the high-load corridor to Fort McMurray, and
- proximity to the critical mass of manufacturing, logistics and construction supply chains.

EDMONTON ENERGY AND TECHNOLOGY PARK

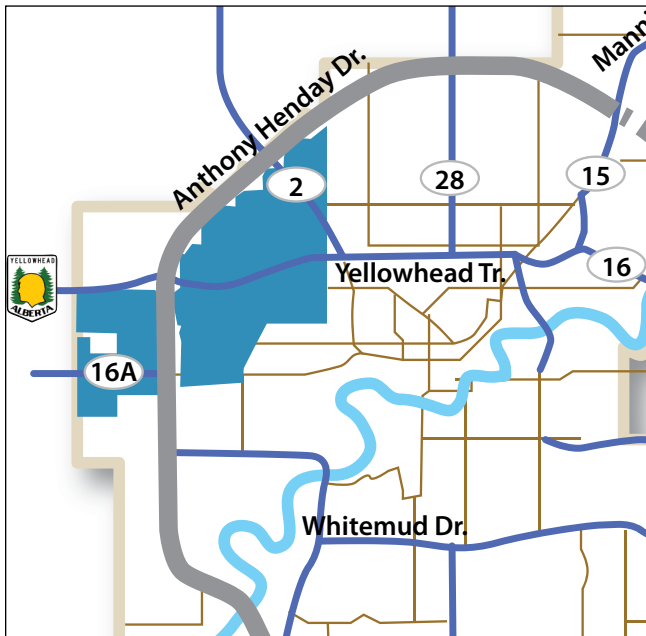


Winterburn Industrial

- LOCATION: Northwest Edmonton
- ACCESS: Adjacent to two major highways - the Yellowhead Highway and Anthony Henday Drive. It is serviced by a CN rail line
- OVERALL SIZE: Vacant zoned industrial land is 179.0 ha¹
- PARCEL SIZE: Vacant zoned industrial parcels vary in size, from 5.1 ha to 0.1 ha
- ZONED: Mix of industrial zonings
- OWNERSHIP: Vacant land is privately owned
- EXISTING USES: Predominantly warehousing, wood manufacturing products, office buildings, professional and scientific offices



NORTHWEST DISTRICT



Rampart Industrial

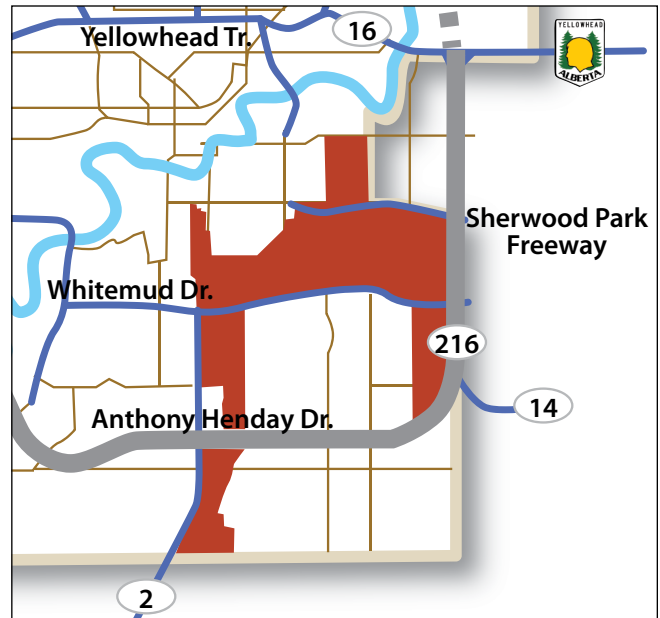
- LOCATION: Northwest Edmonton -
- ACCESS: East of St. Albert Trail and south of Anthony Henday Drive and the Transportation Utility Corridor (TUC)
- OVERALL SIZE: Vacant zoned industrial land is 12 ha²
- PARCEL SIZE: Vacant zoned industrial parcels vary in size between 10.1 ha to 0.1 ha
- ZONED: Mix of industrial zonings
- OWNERSHIP: Mix of private owners and the City of Edmonton
- EXISTING USES: Predominantly logistics, transportation, warehousing, plastics, food and beverage are the primary industrial sectors

¹ City of Edmonton Industrial Land Update, July 2014
² City of Edmonton Industrial Land Update, July 2014

3.5 DEVELOPMENT OPPORTUNITIES

Maple Ridge Industrial

- LOCATION:** South Edmonton
- ACCESS:** Ringed by major roadways including the Sherwood Park Freeway, Highway 216 and Whitemud Drive. The Canadian Pacific Railway bisects the area and there is ready access to the Edmonton International Airport. Maple Ridge Industrial has a number of pipeline corridors.
- OVERALL SIZE:** Vacant zoned industrial land is 15.88 ha¹
- PARCEL SIZE:** Vacant zoned industrial parcels are in the 0.1 ha range
- ZONED:** Mix of industrial zonings
- OWNERSHIP:** Vacant land is privately owned
- EXISTING USES:** Transportation, warehousing and storage, repair and maintenance, recycling, metal fabricators, general freight trucking and construction companies



SOUTH DISTRICT

Ellerslie Industrial

- LOCATION:** South Edmonton
- ACCESS:** Adjacent to Highway 2 leading to Calgary and the Edmonton International Airport with a Canadian Pacific rail line running north-south along the western boundary of the neighbourhood. A TUC forms the northern boundary.
- OVERALL SIZE:** Vacant zoned industrial land is 68.03 ha²
- PARCEL SIZE:** Vacant zoned industrial parcels vary in size from 40 ha to 0.1 ha
- ZONED:** Mix of industrial zonings
- OWNERSHIP:** Vacant land ownership is primarily private with some City of Edmonton ownership
- EXISTING USES:** Plastics firms, machinery and equipment, transportation and warehousing

¹ City of Edmonton Industrial Land Update, July 2014

² City of Edmonton Industrial Land Update, July 2014

Edmonton Research Park (ERP)¹

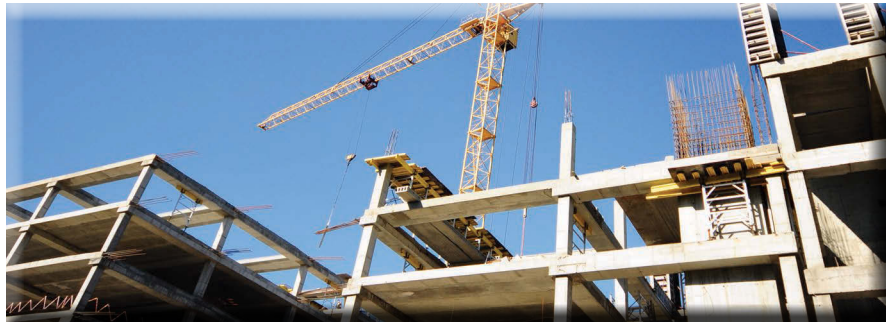
LOCATION: South Edmonton

The park offers a variety of facilities and spaces to suit a range of research requirements. The Advanced Technology Centre is an incubator that can accommodate up to 33 start-ups with flexible space up to 2,000 square feet.

When emerging companies have moved beyond the incubation stage, Research Centre One offers a next-step setting with specialized space such as wet labs or small manufacturing facilities.

The Biotechnology Business Development Centre is designed to help biotech companies in the early stages of development. It provides subsidized, specialized lab space and services for companies with new ideas and products.

Class-A facilities are available to research operations for modest rents.



INDUSTRIAL DEVELOPMENT COSTS LAND AND BUILDING – PURCHASE AND LEASING

There is a wide range of land available for development in Edmonton. Land prices vary based on size, zoning and location. Edmonton's industrial land prices have remained stable for the past several years. With locational factors taken into consideration, current land sales per acre averaged the following:²

Northwest - \$750,000 | South - \$800,000 | Northeast - \$575,000

Current average prices for land located within the City of Edmonton with reduced servicing levels (rural or partial services) range from \$40,000 and up depending on location and size.³

Edmonton's average industrial sales per square foot as of March 2015 were:⁴

Warehouse - \$178 | Multi-bay - \$125 | Single tenant - \$88

Edmonton's average office sales per square foot as of March 2014 were:⁵

Downtown high-rise - \$207 | Suburban - \$198

Edmonton's average Class A gross rent per square foot as of June 2014 were:⁶

Downtown - \$41 - \$47 | Suburban - \$30 - \$34

With the current absorption rate and new product coming on stream there should be enough supply to meet the immediate demands for the next number of years. City-wide industrial vacancy rates are sitting at 2.4% for 2015 Q1, and are expected to move up as 3 million square feet of industrial space comes on-stream this in 2015.⁶

OFFSITE LEVIES

The offsite fees and levies are calculated against cost of delivery of the services. Developers pay for the cost of municipal improvements, such as roads and utilities, within the lands they develop. Development can trigger demands for municipal improvements that service a larger area such as arterial roads and sewer trunk mains. The costs of these major services are levied against a larger, "benefiting" area and a number of developers pay for them. Off-site levy rates are set by City Council.

¹ www.edmonton.com/edmonton-research-park, Edmonton Research Park, 2013

² The Industrial Report Q2 2014, Avison Young Edmonton City of Edmonton

³ Marketbeat - Edmonton Investment Snapshot, Q1 2015, Cushman & Wakefield

⁴ Marketbeat - Edmonton Investment Snapshot, Q1 2014, Cushman & Wakefield

⁵ Marketbeat - Office Snapshot, Edmonton, Q1 2015 Cushman & Wakefield

⁶ Marketbeat - Office Snapshot, Edmonton, Q1 2015 Cushman & Wakefield

CITY OF EDMONTON'S INCENTIVE PROGRAMS

REVOLVING INDUSTRIAL SERVICING FUND

This fund provides rebate incentives to encourage “end user developments.” The program assists developers to service lands by bridging gaps in infrastructure services. The fund has a maximum per project limit of \$4 million and a total expenditure limit of \$26 million.

REVOLVING SERVICING FUND FOR COMMERCIAL DEVELOPMENT

This fund provides rebate incentives to encourage commercial end user developments and strengthen the City’s non-residential tax base. The program allows developers to recover a portion of the servicing costs. The fund has a maximum expenditure limit of \$26 million.

DEVELOPMENT INCENTIVE PROGRAM

This grant program is for revitalizing and reinvesting in Edmonton’s main street commercial areas. The grant may be provided to property owners in Enterprise Areas of a Business Revitalization Zone who invest in new development, redevelopment and or conversion of their properties for mixed use, multi-unit residential, and/or eligible retail and commercial use storefront occupancy.

The program can provide reimbursement of up to 50% of the cost of renovations, up to a maximum of \$15,000 per building.

INDUSTRIAL OPERATING COSTS – OVERVIEW

UTILITY COSTS

Average utility costs vary significantly according due to the nature of the business or industry and are billed based on a combination of consumption and fixed costs. Utility costs are often negotiated on an individual contract basis with the service provider.

Recent studies have illustrated that Edmonton is near the median in relationship to residential utility rates.¹ Edmonton is highly competitive compared to other North American urban centres in relation to gas utility costs.²

While electricity costs are higher than some other locations, this is offset by lower property taxes.

WATER RATES

EPCOR’s rates for potable water, are posted on its website,³ are set for five-year periods (the next renewal date is in 2017). As of April 2015, commercial rates range from \$.08261/m³ to \$1.4060/m³ depending on volume. Rates are set under a Performance-Based Regulation based on EPCOR’s performance and increases are typically limited to less than inflation.



ELECTRICITY RATES

EPCOR offers the Regulated Rate Option (RRO) to residential and small commercial customers who choose not to select a commercial arrangement. The rate is based on market forces such as supply and demand, and differs from month to month. Over the past three years this has averaged about eight cents per kilowatt hour.

For larger customers that use more than 250,000 kWh/year, EPCOR provides default supply electricity service. This rate is based primarily on the electricity pool price. The actual market price of electricity varies from hour to hour depending on weather, time of day and demand for electricity.⁴

NATURAL GAS

Current regulated natural gas rates for commercial customers range from approximately \$2.872/GJ to \$3,204/GJ depending on volume, supplier and location.⁵



- 1 2010 Residential Property Taxes & Utility Charges Survey, City of Edmonton
- 2 2010 Competitive Alternatives City Profiles, KPMG
- 3 <http://www.epcor.com/water/rates-edmonton/Pages/rates.aspx>
- 4 <http://www.epcor.com/power/rates-tariffs/>
- 5 http://www.ucahelps.alberta.ca/documents/20150801_Rates.pdf

PROPERTY TAXES

Edmonton's property tax rates are some of the lowest in the country. Edmonton does not have a business tax except in locally run business revitalization zones nor does Edmonton charge a tax against machinery and equipment.

This provides industrial investors with significant savings compared to other locations in the region, especially on equipment intensive construction. Most businesses, therefore, pay only a non-residential property tax.

KPMG's Competitive Alternatives 2014 Cost Model Comparison Report of the per-square-foot property-based taxes for an average manufacturing operation illustrates Edmonton's low taxes:

Edmonton	\$1.78
Vancouver	\$2.05
Toronto	\$2.01
Houston	\$4.49

Edmonton's industrial neighbourhoods benefit from significant investment of property taxes back into infrastructure and services.

A combination of high quality, flexible servicing and exceptional road and rail access coupled with the lowest property taxes of any major Canadian urban metropolitan area make Edmonton a prime location.

Non-residential properties are appraised using a very transparent methodology. One or more of the following may be used in valuing properties:

- comparison with similar properties that have sold,
- analysis of the typical rental property income and expenses, or
- depreciated replacement cost of buildings plus the market value of the land.



LABOUR FORCE DEVELOPMENT

Edmonton is committed to creating a community and business environment that will retain and attract the workforce needed to capitalize on its bright future.

From its world-class education system that trains and educates our home-grown workforce to support organizations that assist new immigrants to fulfill their dreams of a better life in Canada, Edmonton actively opens its doors to many.

The economic opportunities may motivate many to move to Edmonton, but the lifestyle keeps them here.

The Edmonton Census Metropolitan Area (CMA) June 2015 Labour Force Survey Results illustrate a labour force of 800,000 reflecting a 2.5% year-over-year growth rate.¹

¹ Edmonton Indicators, June Labour Force Report, City of Edmonton, 2015

» **THE CITY OF EDMONTON YEAR-AFTER-YEAR** has the lowest property-based taxes for its non-residential sector of any major Canadian city while continuing to ensure its industrial areas have quality urban infrastructure, responsive protection services and a public transit service that can provide easy access for industries' workforce.

LABOUR COSTS

Edmonton continues to enjoy a very competitive position in regards to location-sensitive labour costs for an average industrial operation as illustrated by the Competitive Alternatives 2015 report’s cost modeling results. Consider the Greater Edmonton area’s advantage:

- **Vancouver** 1.1% more
- **Toronto** 3.2% more
- **Houston** 8.9% more

Currently Alberta is seeing average weekly earning up 0.2%/y to \$1,153 in May 2015 and a consumer price index inflation rate in the 1.7% range.¹

Edmonton also benefits from more modest labour rates in many categories compared to other major Alberta centres and is even more competitive with other Canadian and U.S. cities.

Current average labour costs are summarized below.

OCCUPATION	HOURLY WAGE (ALBERTA MARCH 2015)
Management	\$45.34
Business, finance and administrative	\$27.22
Natural and applied sciences and related occupations	\$38.59
Health	\$32.37
Social science, education, government service and religion	\$33.21
Arts, culture, recreation and sport	\$26.27
Sales and service	\$18.70
Trades, transport and equipment operators and related occupations	\$30.12
Occupations unique to primary industry	\$27.32
Occupations unique to processing, manufacturing and utilities	\$25.62

Source: EEDC Site Location Profile, Statistics Canada, unadjusted by province (Alberta, March 2015)

Cost comparison for key sectors

Overall Edmonton offers various sectors a very cost competitive environment to expand or locate to.

The Competitive Alternatives 2014 rating found between 1- 15% differential to a U.S. baseline with an average advantage of 6.5%.

Key sectors were as follows:

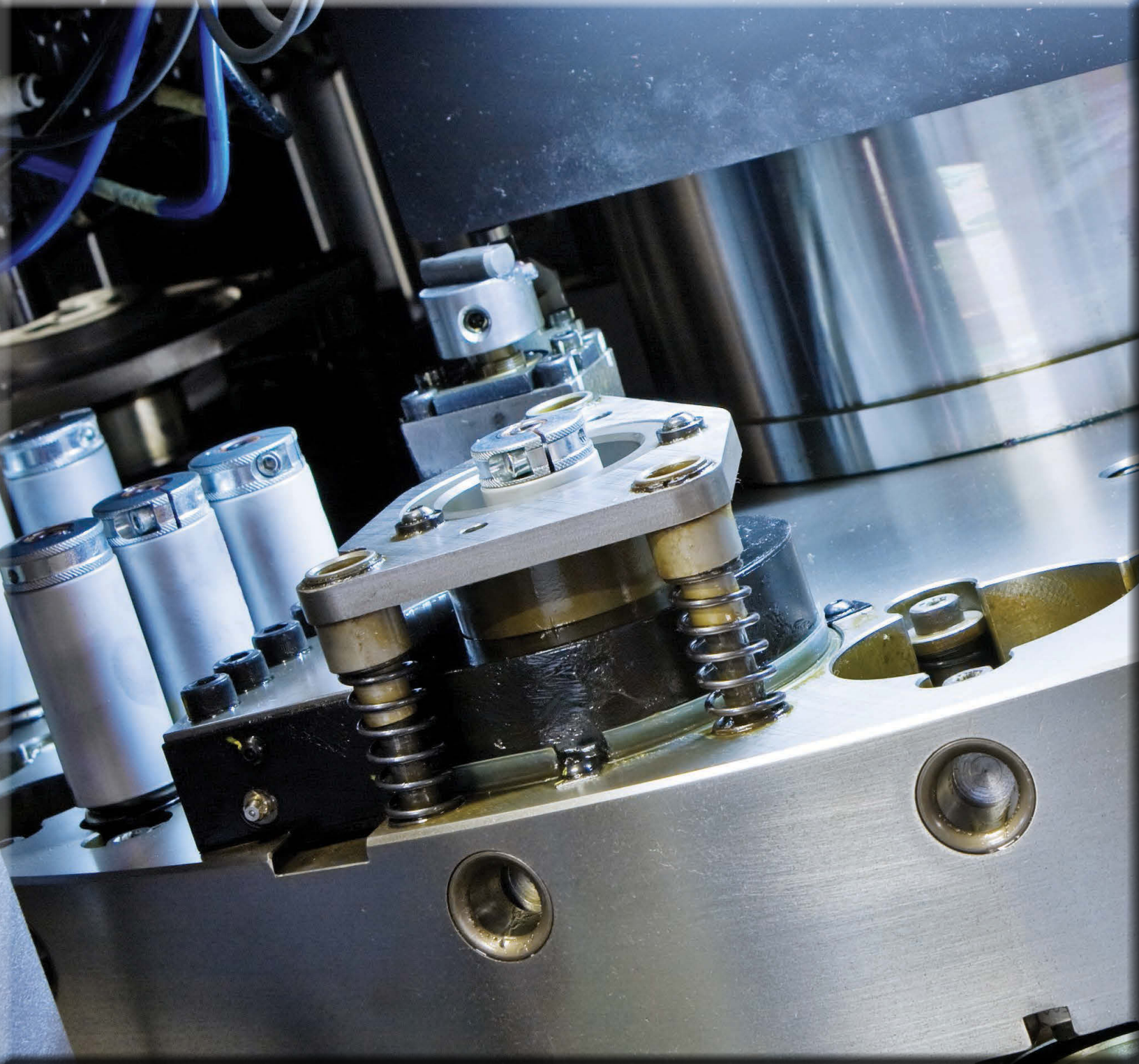
Manufacturing average over 12 types of operations	2.7%
Specialty chemicals	3.4%
Medical devices	4.6%
Precision manufacturing	1.8%
Metal machining	1.4%
Professional services	17%
Research and development averaged over 3 types of operations	16.1%

» **EDMONTON’S RAPID EXPANSION** of population 15 years and older – which is more than three times the Canadian average – demonstrates that Edmonton has become one of Canada’s most attractive locations for individuals seeking work.³

1 <http://finance.alberta.ca/aboutalberta/at-a-glance/2015/2015-0731-alberta-economy-indicators.pdf>

2 Alberta Weekly Economic Review, Government of Alberta, July 12, 2015

3 Edmonton Indicators, June 2014



SECTOR-SPECIFIC INDUSTRIAL ATTRIBUTES

4

Edmonton's diversified economy and strong economic fundamentals contribute to creating business and industrial development opportunities in many sectors.

The following section highlights the attributes and opportunities available for sector-specific expansion and relocation consideration.



Hydrocarbon Processing Sector

Energy drives Alberta’s economy and its feedstocks drive a globally recognized and competitive petrochemical processing sector.

With massive reserves of conventional and shale oil and gas as well as bitumen, a highly skilled technical workforce and the pipeline, road and rail capacity needed to move feedstock and product to major North American and Asian markets, the Greater Edmonton area is both connected and competitive for petrochemical processing or the supply and servicing of this key sector.

Sector snapshot

Edmonton is a member municipality of Alberta’s Industrial Heartland, home to global leaders in petroleum and petrochemical processing and Alberta’s largest petrochemical processing cluster. Its strategic location between major resource extraction areas, natural storage capacity and ready access to a skilled and educated workforce have contributed to the area’s reputation as the primary petrochemical and hydrocarbon processing centre for Alberta and Canada.

This region is responsible for a significant portion of the \$35.6 billion (2014)¹ earned from Alberta’s chemicals and petroleum refining sector. Revenue is earned from the following sub-sectors:²

- \$22.6 billion refined petroleum products
- \$13 billion chemical products including
 - 45% from synthetic resins
 - 32% from basic chemicals
 - 23% from fertilizers and other chemicals

The sector employs nearly 14,000 people in Alberta.³ The Greater Edmonton area represents approximately one-third of Alberta’s overall labour force and its well-established role in this sector means local availability of a skilled and experienced workforce.

Edmonton’s industry has ready access to primary petrochemical feedstocks of petroleum, hydrocarbon liquids, natural gas and natural gas liquids – as well as other agriculture-based feedstock important for fertilizer production. The area is at the centre of a comprehensive rail and pipeline network that moves goods in and around the region, and from the region to all key North American markets and west coast ports serving Asian markets.

The following summarizes the petrochemical product slate available and produced within the Greater Edmonton area.

- | | | |
|--------------------------------------|------------------------------|----------------------------|
| • Agricultural chemicals | • Heating fuels | • Petroleum coke |
| • Anhydrous ammonia and aqua ammonia | • Hydrogen peroxide | • Polyethylene |
| • Butane | • Industrial gases and steam | • Propane |
| • Carbon dioxide | • Iso-octane | • Propylene |
| • Condensates and heavy distillates | • Molybdenum and Vanadium | • Resins |
| • Ethane | • Monoethylene glycol | • Styrene monomer |
| • Ethylene | • Natural gas liquids | • Sulphur-related products |
| • Granular urea | • Oilseed-based products | • Synthetic crude oil |
| | | • Transportation fuels |

Power is generated by co-generation within the region or supplied through a power provider such as EPCOR and delivered through the region’s transmission and distribution network. The transmission system serving the Heartland area currently being expanded to include a new overhead double circuit 500kV transmission line,⁴ ensuring plenty of capacity for future growth.

The Edmonton Energy and Technology Park’s petrochemical zone is well connected to the major highways to move goods and services east/west (Highway 16), north to key resource areas (Highway 63) and south (Anthony Henday Drive to Highway 2) to U.S. markets.

1 Highlights of the Alberta Economy 2014, Government of Alberta
 2 Alberta’s International Exports by Industry – A 10-Year Review, May 2015
 3 Government of Alberta, Economic Commentary, Manufacturing Sector, Jan. 29, 2013
 4 Heartland Transmission Project, 2014

Edmonton's Energy and Technology Park offers industrial development opportunities for greenfield petrochemical processing, industrial manufacturing, logistics, research and development, engineering and other businesses that support, supply and service the heavy industry located within Alberta's Industrial Heartland and resource companies located in the Edmonton service area covering central and Northern Alberta.

Alberta's Industrial Heartland (AIH) is Canada's largest hydrocarbon processing cluster. World-class companies within or neighbouring AIH include:¹

- Agrium Inc.
- Air Liquide Canada Ltd.
- ATCO Energy Solutions
- Aux Sable Canada Ltd.
- Bunge Canada
- Chemtrade West Ltd.
- Dow Chemicals Canada ULC
- Dow Agro Science
- Evonik Degussa Canada
- Horton CBI
- Imperial Oil
- Keyera Energy
- ME Global
- North West Redwater Partnership
- Pembina Pipeline/Williams Energy Canada Ltd.
- Plains Midstream Canada
- Praxair Canada
- Sasol Canada Holdings Ltd.
- Shell Canada Ltd.
- Sherritt International Corporation
- Smith & Nephew (Alberta) Inc.
- Sulzer Metco (Canada) Inc.
- Suncor Energy
- Tervita Corporation
- Umicore Canada
- Univar
- Western Asphalt
- Western Hydrogen Ltd.
- Williams Energy Canada Ltd.

Oil and bitumen-based processing

Alberta continues to develop its huge reserves of conventional oil and oil sands while capitalizing on processing these products and their by-products. Greater Edmonton's well-established refinery and upgrader base with industry leaders such as Imperial Oil, Suncor Energy and Shell continue to upgrade, produce and ship a range of petroleum products.

These industries create significant supply and service opportunities from plant maintenance and turnaround to demand for critical ingredients such as the diluent needed to effectively pipe bitumen.

The North West Redwater Partnership's new refining facility will upgrade bitumen into high-demand products such as low carbon-standard diesel. It will also utilize gasification technology to capture pure CO₂ that will then be sold to enhance oil recovery prior to deep, safe underground storage.²

Improving access to current and new markets for petroleum products is a priority for both the public and private sector and a series of solutions are moving forward that will lead to a strengthened bottom line for years to come.

TransCanada's proposed gas pipeline conversion, Energy East Pipeline, will expand capacity to ship 1.1 million barrels/day

markets.³ This new service will expand both domestic and export market potential.

Keyera Corporation and Kinder Morgan Energy Partners L.P. was placed in service in 2014. The construction of the Alberta Crude Terminal is designed to ship 40,000 barrels/day by rail to any Canadian or U.S. market.⁴

Diversifying the transportation delivery system and increasing the market diversification contributes to optimizing the price secured for Alberta's hydrocarbon products and contributes towards a more favourable business environment for future production and processing.

» This is an historic opportunity to connect the oil resources of western Canada to the consumers of eastern Canada, creating jobs, tax revenue and energy security for all Canadians for decades to come.⁵

Russ Girling, President and CEO, TransCanada, Aug. 1, 2013

1 Alberta's Industrial Heartland

2 www.northwestupgrading.com

3 TransCanada News Release, Energy East Pipeline Project, Aug. 1, 2013

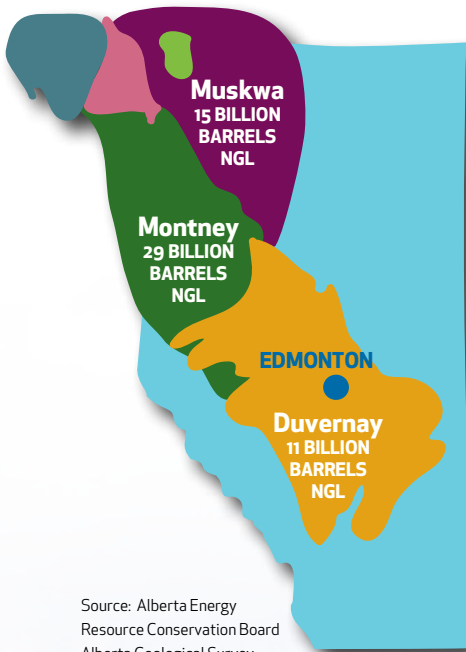
4 <http://www.kindermorgan.com/business/canada/projects.aspx> 2015

5 TransCanada News Release, Aug. 1, 2013

Conventional natural gas and shale gas processing

Alberta’s conventional and shale reserves offer producers both gas sales and value-added processing potential. Alberta’s shale reserves are unique in that they have a higher-than-average percentage of natural gas liquids – key to processing derivatives.

Alberta’s Shale Gas Play



Investment in Alberta’s emerging shale gas play is becoming more attraction because of:

- improved extraction technologies, reducing production challenges,
- access to a strong domestic market with growth potential in targeted products,
- competitive export price potential for the near term,
- ready access to U.S. and Asian markets through current and proposed west coast shipping facilities and a North American-wide rail and pipeline network, and
- a political will encouraging local value-added processing.

This emerging area of development is well suited to build on the strength of the current sector capacities.

Petrochemical processing opportunities

Edmonton’s future in the petrochemical sector and its related supply and service business is very bright. It builds on its proximity to low-cost energy and feedstock, world-class processing infrastructure, expertise and a competitive business climate. Abundant low-cost natural gas and increased bitumen production from the oil sands provides an extra advantage to processing this feedstock into higher value-added products.

An analysis was undertaken for AIHA in 2013 by IHS Global Inc. to assess the competitive opportunities around specific products. The results illustrate business potential in key sectors.

The detailed analysis was based on a generic business case for siting, building and operating petrochemical plants in the Edmonton area that process:

- propylene/polypropylene,
- methanol,
- ammonia/urea, or
- ethylene.

» We are pleased to add to our acreage in this play (Alberta’s Duvernay shale gas field) as we advance our program to evaluate the potential for full-field commercial development.

Jeff Lehrmann, President, Chevron Canada Ltd., Aug. 1, 2013



Highlights of the analysis showcase the opportunity.

	Propylene/ polypropylene*	Methanol*	Ammonia/urea*	Integrated Ethylene, Polyethylene and Monoethylene Glycol*
Total fixed investment assumptions	\$765 million (combined)	\$886 million	\$609 million (combined)	\$2.5 billion (Integrated Ethylene Complex)
Annual cash cost/ metric ton (MT) of output assumption	\$1,035/MT	\$182/MT	\$185/MT	LDPE - \$785/MT HDPE - \$703/MT MEG - \$420/MT
Annual global demand growth to 2025	5%	8%	2%	LDPE - 2.7% HDPE - 4 - 4.5% MEG - 1 - 1.5%
Primary growth markets for Edmonton-based plants	U.S., Mexico	Canada, U.S.	Canada, U.S.	North America
Price-competitive markets for Edmonton-based plants	South America China	China Indian Subcontinent	South America Indian Subcontinent	South America China

Source: Business Case for Methanol, Propylene/polypropylene, Ammonia/Urea, Polyethylene and Monoethylene Glycol, IHS Global, Inc., Alberta's Industrial Heartland 2013

*Note: All three project models assumed to start in 2018, with a capital cost of 10%, life span of 30 years, tax rate of 25% and operating costs as noted

Access to Alberta's liquid-rich shale gas reserves and the forecasted long-term attractive natural gas price contribute to very cost-competitive export netback pricing and a double digit internal rate of return for new plants processing any of these products.

Comparing Edmonton's and Alberta's competitive position with other producing markets, plants located here can effectively compete when shipping any of these product streams to North American markets – **especially polypropylene whose delivered cost to the U.S. is nearly \$100/MT lower than product shipped from the Middle East.**

Williams Energy's Edmonton-area plant expansion highlights growing interest in value-added processing in the Alberta Industrial Heartland area. Their new facility will be Canada's first propane dehydrogenation (PDH) facility and may be able to supply enough high quality propylene feedstock to support at least one new world-scale petrochemical plant.¹

To support value-added processing within Alberta, Alberta's Incremental Ethane Extraction Program provides an incentive through royalty credits to encourage greater production of ethane and promote value-added petrochemical production.²

With easy access to agricultural or forestry-based feedstock, new opportunities relating to bio-diesel, ethanol and plant-based pulp and plastics are emerging.

Alberta's deregulated energy market offers opportunities for merchant power generation using traditional fuel sources of coal or natural gas or converting excess heat or steam from industrial processes.

Proximity to feedstock and a significant research and development community rounds out the business case for producing these additives or products and positions Edmonton as the key location for processing.

More details are available on the compelling business case for these four streams by contacting Alberta's Industrial Heartland Association.

¹ Edmonton Journal, July 20, 2012

² Incremental Ethane Extraction Program Report to the Legislature, Oct. 24, 2011



Petrochemical sector workforce, training and R & D

Current labour rates are generally 1-11% lower than the Alberta average for a range of occupations relating to this sector. The following illustrates sample wages for 2013:¹

	EDMONTON HOURLY
Industrial instrument technician	\$42.22
Industrial engineer	\$38.58
Chemical engineer	\$50.06

University of Alberta

- Home to a dozen key centres of research excellence in resource and processing-related fields
- School of Business – Natural Resources and Energy MBA
- Faculty of Engineering – top 5% of North American engineering faculties and top 5% in chemical engineering
 - features over 6,000 students, over 200 professors and 47 research chairs
 - attracts over \$60 million annually from external sources for sponsored research funding
 - offers specialized degree programs including a Bachelor of Science in Petroleum Engineering

Northern Alberta Institute of Technology (NAIT)

- Largest apprenticeship training program in Canada with capacity to train 15,000 apprentices annually in 35 trades
- Certificate or diploma programs linked to the petrochemical industry include:
 - Chemical Engineering Technology
 - Engineering Design and Drafting Technology
 - Instrument Technician
 - Materials and Instrumentation Engineering Technology
 - Occupational Health and Safety

Local petrochemical support organizations:

- Alberta’s Industrial Heartland Association
- Strathcona Industrial Association
- Northeast Capital Industrial Association

1 www.WAGEinfo, 2013 Alberta Wage and Salary Data

Edmonton's competitive position

According to KPMG's Competitive Alternative 2014 report, Canada continues to rank well, offering a 7% cost advantage over the U.S.

Edmonton mirrors this cost-competitive position with the following specific advantages:

- 2% - 3% cost advantage over key U.S. production hubs,
- lowest property taxes of 9 comparable locations including no machinery and equipment (M & E) taxes and no provincial sales tax,
- over 60 years of experience working with refining and petrochemical industries,
- an established and growing petrochemical production cluster – many major players are here,
- proximity to low-cost natural gas and oil sands-related feedstock,
- skilled, experienced and motivated workforce with very low work stoppage and unionization rates,
- outstanding pipeline and rail connections to multiple markets,
- ability to optimize utility investments through co-generation,
- readily available industrial land either zoned or designated for a range of industrial operations, and
- a municipal and government environment that is supportive of responsible industrial development.

Annual year-to-year property tax savings in Edmonton strengthen your bottom line

Siting industrial processing plants within the City of Edmonton offers equipment-intensive plants a significant annual tax cost advantage compared to neighbouring jurisdictions that levy a mechanical and equipment (M & E) tax.

Using 2012 tax bylaw figures from three neighbouring municipalities, the following shows the percentage tax increase over an Edmonton tax base for a \$5 billion project on a 100 acre site:¹

Edmonton Scenario	Neighbour 1	Neighbour 2	Neighbour 3
75% M & E with 25% M & E removed because it is considered non-assessable	25% more	17% more	35% more



» Research illustrates that the Edmonton area can compete with global leaders in the processing of targeted derivatives such as propylene and polypropylene – with lowest delivery costs to North American markets.²

Couple this with potential local feedstock coming on stream from Williams Energy's new propane dehydrogenation (PDH) facility and you have a winning combination for business success.

¹ City of Edmonton Sustainable Development, 2013

² Business Model, IHS Global Inc., Alberta's Industrial Heartland Association, 2013



Metal Manufacturing Sector

Edmonton is ideally situated and exceptionally well prepared to handle the growing demand anticipated for its manufacturing sector – from both the domestic resource sector and international markets.

With a focus on metal fabrication and machinery manufacturing, Edmonton is the centre of nearly 40% of Alberta’s manufacturing, with the sector contributing to one of the most diverse economies in Canada.

Sector snapshot

Manufacturing – particularly metal fabrication and machinery manufacture – is big business in Edmonton. Fueled by the energy sector, markets are demanding a range of machinery and metal fabrication from pipe and drilling tools to taps, cocks and valves.

Domestic markets remain a dominant focus for the sector. This substantial domestic customer base in Northern Alberta and Northern Canada is easily serviced through the outstanding connections by road, rail and air.

While the manufacturing heavyweights are in metal fabrication and machinery, Edmonton is also home to some production for industrial, commercial and residential construction materials as well as a small but innovative food manufacturing sector.

Edmonton’s metal and machinery companies offer a wide variety of goods and manufacturing services. Examples include:

- drilling rigs and tools, pipe, valves, pressurized vessels, pumps, boring or sinking machinery, derricks, instrumentation and truck trailers to transport oversized goods,
- custom solutions and repairs,
- coatings and heat treatments to metals and pipes, and
- component manufacturing and module fabrication and assembly for oil sands and related energy projects.

Edmonton’s manufacturing sector in brief:¹

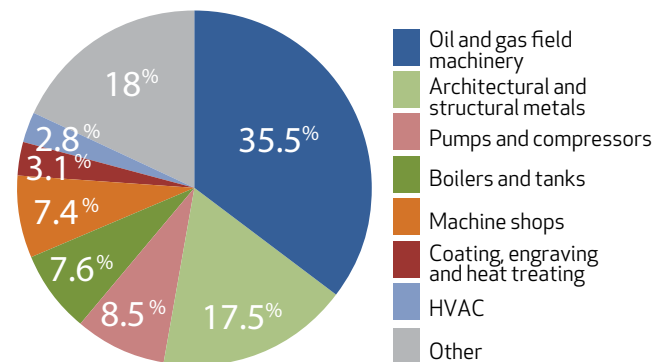
- Manufacturing accounted for 10% of the Edmonton CMA’s GDP and has grown in Alberta at a rate of 1.7% per year in the past 10 years which was the highest among the provinces².
- Most of the 2,000 manufacturers in the region are small and medium-sized businesses.
- The sector includes 13 sub-sectors with fabricated metal products (23%) and machinery (15%) the dominant two.

Edmonton’s manufacturing sector plays an important role in the overall contributions from manufacturing to Alberta’s economic success.

Investments in productivity and enhanced production techniques ensure local manufacturers remain competitive with traditional exports markets such as the U.S. In addition, global markets from Mexico to Russia are taking notice of Edmonton’s manufacturing prowess and steadily increasing their business with Edmonton.

Alberta’s metal manufacturing sector in brief:³

- 2014 revenues: \$14. billion
- Exports: \$5.8 billion
- Employees: almost 50,400



¹ <http://www.edmonton.com/for-business/3386.aspx>
² <http://www.finance.alberta.ca/aboutalberta/economic-trends/2015/2015-05-economic-trends.pdf>
³ http://albertacanada.com/files/albertacanada/SP-EH_AlbertaEconomicQuickFacts.pdf

The majority of Alberta's metal manufactured goods stay within Alberta to support the province's energy sector but exports are picking up steam:¹

- about 55% of output is shipped to customers within Alberta,
- 15% is shipped elsewhere in Canada,
- about 30% is exported internationally,
- the U.S. is the sector's largest export market with exports of various types of primary metal, machinery and fabricated metals to Australia, China, Russia, the Netherlands and South Korea,
- overall manufacturing exports continued a four-year growth trend in 2013 to reach \$22.3 billion with the following major subsectors²:
 - machinery - \$2.9 billion
 - primary and fabricated metal products - \$1.76 billion

Transportation infrastructure ensures products from Edmonton can easily reach key domestic and international markets. Edmonton's major connections to customers include:

- Highway 63 north and CN's northern link to Fort McMurray and the oil sands,
- the Yellowhead Highway, the northern trans-Canada route,
- CN's northern trans-Canada line connecting the Port of Prince Rupert to North American markets through Edmonton, and
- the Canamex and Ports to Plains routes that connect Edmonton to key Midwest and southern U.S. and Mexican markets and ports.
- Edmonton International Airport's air cargo services feature:³
 - 11 airlines,
 - eight integrated couriers/freight carriers,
 - three independent cargo handlers, and
 - more than 40 freight forwarders and customs brokers, and
 - five cargo-handling terminals including three with coolers/freezers.

¹ Metal Manufacturing Profile 2014, Government of Alberta

² Alberta's International Exports by Industry – a 10-Year Review, Government of Alberta, May 2013

³ Edmonton International Airport, 2015

⁴ <http://www.albertacanada.com/about-alberta/metal-fabrication-and-machinery-manufacturing.html>

⁵ http://www.edmonton.ca/business_economy/documents/Edmonton_Industrial_Land_Supply_Study_2011.pdf

Metal manufacturing opportunities

Alberta's energy and resource sector is anticipating a very positive future and, therefore, Edmonton's manufacturing sector also anticipates continuing its current growth trend.

Northern Alberta's economic activity expects to drive nearly \$200 billion of new construction and maintenance spending over the next 25 years, much of it in fabricated metal products:⁴

- metal fabrication including the fabrication and assembly of modular processing units, architectural and structural metals; boiler, tank and shipping containers; coating, engraving, heat treating and related activities; and precision machining for turned products and screw, nut and bolt manufacturing, and
- machinery manufacturing for sectors including agriculture, construction, mining, power transmission, heating, ventilation and air-conditioning and commercial refrigeration.

Edmonton's industrial sector represents the largest employment growth sector in Edmonton, comprising approximately 36% of total forecast employment growth.⁵

Not only is there business opportunity in fabricating components for new plant construction, there is ongoing opportunity to service the processing sector during routine maintenance and plant upgrades. The petrochemical and oil sands processing companies currently project expenditures of 1 – 1.5% of the value of their capital assets on routine annual maintenance.

With \$30 billion in capital assets in the region, these expenditures create a sizable customer base for firms specializing in or supporting annual plant maintenance or specialized plant turnaround maintenance both locally and Northern Alberta.

Edmonton is ready – with customers, connections and a cost-competitive business environment to build and operate manufacturing facilities.

Edmonton manufacturing companies include:¹

- Allfab Metals Ltd. (E.S. Fox Ltd. Constructors)
- Cessco Fabrication & Engineering
- Collins Industries
- Dacro Industries
- CWS Industries
- Edmonton Exchanger & Manufacturing Ltd.
- Flexxaire Manufacturing
- Great Western Containers
- IPEX
- Ledcor Group of Companies (Ledcor Industrial)
- Lenmak Exterior Innovation
- Metal Fabricators and Welding
- AltaSteel (OneSteel)
- Oxford Machine & Welding
- PCL Group of Companies (PCL Industrial)
- Precision Steel and Manufacturing
- Ramparts Steel
- Shaw Pipe Protection Ltd.
- Spartan Steel Ltd.
- Streamflow Group of Companies
- Supreme Steel Group
- Thermal Design Engineering
- Top-Co Group Inc.
- Truck Master Manufacturing and Equipment Ltd.
- Universal Machine Corporation
- Waiward Steel Fabricators
- Welco Beales Industries
- WorleyParsonsCord Canada

Industrial land in Edmonton²

- Edmonton’s four industrial districts – the northwest, south, northeast and the Edmonton Energy and Technology Park (EETP) offer a variety of industrial and mixed-use neighbourhoods.
- Manufacturing accounts for approximately a quarter of all activity in the northeast district.
- Edmonton has 1,115 gross ha of vacant industrial and available for development, excluding the EETP.
- There are more than 738 net ha more than half considered ready for immediate development.
- The EETP has designated 2,014 net acres for future development within the manufacturing precinct.
- Land prices within the EETP start as low as \$40,000 per acre based on unserviced land.

In addition to industrial sites, Edmonton boasts a supply of highly cost-competitive AA office space both in the city core and in business parks located near the industrial districts.

Metal manufacturing - sector workforce, training and R & D

Labour productivity in industrial manufacturing exceeds the average for all Alberta sectors.³

Examples of 2014 labour rates in this sector are:⁴

	EDMONTON HOURLY
Mechanical assemblers and inspectors	\$28.98
Machining tool operators	\$24.60
Machine operators, mineral and metal processing	\$25.87
Welders and related machine operators	\$33.79

A relatively small percentage of manufacturing operations are unionized, labour rates are competitive and work stoppages extremely low.

1 Hoovers Database January 2012 and Alberta Finance and Enterprise and Edmonton Economic Development Corporation
 2 City of Edmonton Vacant Industrial Land Update, July 2014
 3 Alberta Finance and Enterprise - Alberta Industry Sector Performance and Prospects
 4 ww.WAGEinfo, 2014 Alberta Wage and Salary Data

University of Alberta

- Canadian Centre for Welding and Joining, within the Faculty of Engineering¹
- Welding and metallurgy a featured area of research within the Department of Chemical and Materials Engineering
- Research focuses on productivity, weldability, automation and performance
- Works with Alberta Innovates and the Government of Alberta to support the Alberta Metal Fabrication Innovation Program (AMFI) offering private sector opportunities to enhance efficiency, productivity and competitiveness
- Faculty of Engineering - top 5% of North American engineering faculties
- Features over 6,000 students, over 200 professors and 50 research chairs
- Attracts over \$65 million annually from external sources for sponsored research funding

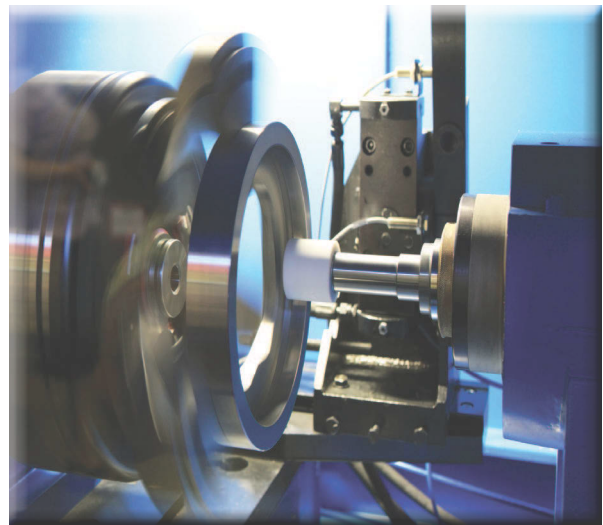
Northern Alberta Institute of Technology (NAIT)

- Largest apprenticeship training program in Canada with capacity to train 13,500 apprentices in 33 trades annually²
- Certificate or diploma programs linked to the manufacturing sector include courses in:
 - airbrake certification
 - autobody
 - automotive
 - blacksmithing
 - fluid power
 - heavy equipment
 - HVAC
 - hydronic design and installation
 - industrial heavy equipment
 - instrumentation
 - machine shop
 - Mastercam
 - mechanical engineering technology
 - millwrighting
 - oil field thread inspection
 - power engineering
 - steamfitter/pipefitter
 - welding

The NAIT Shell Manufacturing gives the sector exposure to leading-edge manufacturing processes and ideas, enabling industry to apply the innovations to their own operations. Specialty areas include lean manufacturing, prototyping, fabrication, control systems, and robotics and automation.

Local metal manufacturing support organizations:

- Alberta Metals Portal
- Alberta Pressure Vessels Manufacturers' Association
- Canadian Manufacturers and Exports Association - Edmonton
- Canadian Welding Association - Edmonton
- Society for Manufacturing Engineers - Edmonton
- Productivity Alberta
- AVAC Ltd.
- Alberta Innovates – Alberta Research and Innovation Authority
- Alberta Energy Research Institute
- Alberta Metal Fab Innovation (AMFI)



1 <http://www.cme.engineering.ualberta.ca/Research/ResearchCentres/CCWJ.aspx>
 2 <http://www.nait.ca/50198.htm>

4.11 SECTOR-SPECIFIC INDUSTRIAL ATTRIBUTES

Metal manufacturing sector competitive position

According to KPMG's Competitive Alternatives 2013 report, Canada offers a 7.2% cost advantage over the U.S.

Edmonton is the centre for manufacturing operations within the region which translates into a competitive advantage for future development of this sector and the City.

Edmonton offers metal manufacturers:

- a large and diverse range of industrial land from shovel-ready property for greenfield development to leasing opportunities within existing developed industrial properties,¹
- a range of service levels, from full urban servicing to partial or rural level services, to meet industry's needs,
- lowest property taxes of 9 comparable locations including no machinery and equipment (M & E) taxes and no provincial sales tax,
- outstanding road, rail and air connections to bring raw materials into the market and final products north to the resource locations and south and west to export markets,
- modern, state-of-the-art utility infrastructure ensuring stable and cost-effective supplies of water, power and natural gas, and
- access to a full range of skilled and semi-skilled labour,
- diverse affordable housing options,
- city-wide public transit service, and
- world-class technical trade training support.

1 City of Edmonton, 2015





Transportation & Logistics Sector

Edmonton is the major supply and service centre for northern communities and resource industries as well as the gateway to the thriving Western Canadian market of over 10 million people.

It leads real GDP growth of any major metropolitan area in Canada¹ and is positioned as **the transportation hub** for moving goods into Western Canada and moving products out to North American and Asian markets. Edmonton is well connected – by road, rail and air service and well serviced by professionals in the logistics sector.

Sector snapshot

Alberta offers an integrated approach to transporting goods and services. Alberta's transportation and warehousing sector contributes over \$10 billion annually to the Alberta economy and employs 116,000 people.²

Trucking benefits from Alberta's modern network of more than 31,000 kilometres of highways that reach north to key resource locations, south to major export markets and west to coastal ports³. Alberta is served by over 20,000 trucking firms that move 60% of all non-pipeline freight, valued at approximately \$7 billion.⁴

Edmonton is centrally connected at a hub of highways.

Highlights include:

- connecting major east/west routes through the Yellowhead Highway, with gentle grades through the Rocky Mountains to the coast,
- northern most connection for the Canamex Highway linking Alberta through the U.S. to Mexico,
- major supply centre on the trucking Ports to Plains Corridor from the northern west coast ports through major Midwest U.S. markets to the Texas coast ports and via the NASCO corridor to additional Midwest U.S. locations and the U.S. gulf coast ports,
- northwest via Highway 43 to Grande Prairie,
- points west and north via the Alaska and Mackenzie Highways, and
- northeast to Fort McMurray and Alberta oil sands development via Highway 63.

Edmonton's Anthony Henday Drive ring road, provides easy access to all major highways and is aligned to support intermodal service to and from both Canadian National (CN) and Canadian Pacific (CP) major rail and intermodal sites.

In 2014, Edmonton's International Airport (EIA) moved close to 40 million kilograms of freight with a total economic output of \$2.2 billion dollars. As a major connection to global markets, EIA offers:⁶

- employment to 12,600 workers
- opportunity for foreign investment as a designated Foreign Trade Zone
- 24/7 year-round access with no operational or noise restrictions,
- some of Canada's lowest aviation fees, warehousing, handling charges, fuel costs and trucking rates,
- rapid customs services and bonded warehousing for international cargo,
- runway and aprons that can accommodate the world's largest cargo aircraft such as the AN124,
- easy access to rail linkages and Highway 2 south to the U.S. markets and Anthony Henday Drive to connect to key northern and western Canadian markets.

Air cargo services are available from:⁷

- 11 airlines,
- eight integrated couriers/freight carriers,
- three independent cargo handlers,
- more than 45 freight forwarders and customs brokers, and
- five cargo-handling terminals including three with coolers/freezers.

Air passenger service continues to grow, nearing seven million in 2013.⁸ Recent expansions to trans-border facilities offer expanded capacity to serve key U.S. markets.

1 Metropolitan Outlook Spring 2013, Conference Board of Canada
 2 Government of Alberta Transportation and Industry Profile, June 2013
 3 Government of Alberta Roads and Highways, www.albertacanada.com
 4 Transportation & International Logistics Industry Profile and About the Industry, Government of Alberta, www.albertacanada.com
 5 International Trade Data from International Trade Division, Statistics Canada, 2012
 6 <http://corporate.flyeia.com/about-eia/reports-and-publications/economic-impact-report>
 7 Edmonton International Airport Authority, 2013
 8 <http://corporate.flyeia.com>

4.13 SECTOR-SPECIFIC INDUSTRIAL ATTRIBUTES

CN and CP operate approximately 9,600 route kilometers in Alberta and transport in excess of 60 million tonnes into and out of the province. These two Class 1 transcontinental rail carriers move over 20% of Alberta's export shipments, valued at approximately \$19 billion in 2012,¹ and link products to both west and east coast ports and through the U.S. Midwest to selected U.S. markets and the gulf coast ports.

Within the Greater Edmonton area, the railways offer 16 rail intermodal and storage facilities. They provide the capacity to move commodities such as grain and a range of oil and gas and petrochemical products and containers.

CN's Walker Yard, located in north Edmonton and bordering on the Yellowhead Highway and Anthony Henday Drive, is one of the largest rail yards in the West, extending 50 blocks. Its 1,600 skilled workers handle an average of 3,000 rail cars/day and operate around the clock.²

The Walker Yard is the southern terminal for rail service to Fort McMurray and the first major urban supply centre along the northern line from the port at Prince Rupert, Canada's closest deep water port to Asia.

CP is currently planning to relocate and expand its current Southside Intermodal Facility. The new, state-of-the-art facility will be located on a 240-acre site closer to the Edmonton International Airport, providing easy access to Highway 2 south.³

Both railways are investing millions of dollars in upgrading their facilities and lines to support the increase in demand-driven growth enjoyed in Edmonton, Alberta and Western Canada.



Edmonton transportation-related companies include:⁴

- Air China Cargo⁵
- Air Canada Cargo
- Canadian North Airlines
- CN Rail
- CP Rail
- Cratex
- FedEx
- Katoen Natie
- Reimer Express Lines
- Rosenau Transport
- Mammoet Canada Western Ltd.
- Westcan Bulk Carriers
- MTE Logistix Edmonton Inc. Westcan Bulk Carriers



1 Highlights of the Alberta Economy 2013, Government of Alberta
2 "We're all part of your community" brochure (CN Partners in Responsible Care)
3 Edmonton intermodal facility public information session, CP Rail website
4 Hoovers Database January 2012 and EEDC 2013
5 Shanghai Daily News July 2015

Transportation and logistics opportunities

This sector is intricately linked to the supply and servicing of Alberta's and northern Canada's resource sector, its robust construction sector and the consumer needs driven by record population growth.

Highway 63, the main access road to the Athabasca oil sands area, currently carries the highest tonnage per kilometer in the country and the largest and heaviest loads carried anywhere. The Government of Alberta has commenced a series of projects designed to twin the highway and expand the parking and staging areas along this 244-kilometre route. This will expand the capacity to safely move large and heavy loads between Edmonton, Fort McMurray and various northern mine sites.¹

With ongoing public and private transportation infrastructure investments, and double digit year-over-year growth, Western Canada accounts for nearly 60% of Canada's rail freight loadings.² Growing volumes and the multi-market access from Edmonton re-enforces the growth potential for Edmonton in the transportation and logistics sector for the near and long term.

A strong domestic market for products strengthens the business opportunity by minimizing the distances hauled, currency fluctuations and customs and brokerage costs. Locating in Edmonton provides close and convenient access to the resource customer base without compromising the ability to connect to targeted global markets.

Edmonton is ideally placed on the aircraft highway overhead with numerous aircraft moving daily en-route to Asia and Europe from the U.S. Edmonton International Airport is uniquely positioned as a service centre and cargo consolidation point for these intercontinental cargo flights and is enjoying growth from major international carriers such as FedEx.

Edmonton offers a stable and low-cost source of aircraft fuel as a result of jet fuel refineries in the region and, most often, the lowest diesel prices at the pump in Western Canada.³

Strategically located in each quadrant of the city and connected by road, rail and air, Edmonton's industrial locations serve any transportation, warehousing and distribution needs.

The distribution and warehouse cluster located in northwest Edmonton still has room to grow and, with the imminent completion of the final east leg of Edmonton's ring road, the industrial locations in Edmonton's northeast and south quadrants can easily serve any market region.

Transportation and logistics sector workforce and training

Examples of 2013 labour rates in this sector⁴

	EDMONTON HOURLY
Transportation manager	\$43.57
Technical sales specialist	\$35.63
Truck driver	\$27.97
Railway & motor transport labourers	\$21.16

1 Transportation Fact Sheet, The Oil Sands Developer Group

2 Statistics Canada, Railway Car Loadings, April 2013

3 Gas Buddy

4 www.WAGEinfo, 2013 Alberta Wage and Salary Data

4.15 SECTOR-SPECIFIC INDUSTRIAL ATTRIBUTES

University of Alberta

- Offers a Bachelor of Commerce with a major in Distribution and Management

Northern Alberta Institute of Technology (NAIT)

- Business administration and information technology baccalaureate and applied degrees
- Apprenticeship training in 34 trades including the full range of trades required to maintain and operate major transportation equipment

MacEwan University

School of Business offers a Supply Chain Management Coop major and a range of transportation and logistics-related areas including:¹

- Supply Chain Planning and Process Management
- Production Planning and Scheduling
- Transportation Management
- Business Logistics Management
- Global Sourcing and Logistics
- E-business Execution
- Business Negotiations and Supplier Management
- Asia Pacific Studies

Private-sector training:

- Alberta Big Rig Driver Education
- Capilano Truck Driver Training Institute
- Gennaro Transport Training

Local transportation and logistics support organizations:

- Port Alberta
- Alberta Motor Transport Association – Edmonton
- Supply Chain and Logistics Association of Canada – Edmonton
- Alberta's Industrial Heartland (rail)

Transportation and logistics sector competitive position

Edmonton's competitive advantage in the transportation and logistics sector is due to its:

- proximity to a large and growing domestic customer base in Alberta and northern Canada,
- growing local market for imports from Eastern Canada, U. S. and Asian markets – ensuring both import and export potential,
- favourable fuel (aviation and diesel) costs,
- network of existing and expanding modern rail and road infrastructure,
- 24/7 international airport with modern cargo services that can handle products from perishables to oil rigs and expanded passenger service facilities,
- access to a wide range of well-connected industrial land primed for development,
- skilled and cost-effective labour force, and
- cost-competitive position compared with other Western Canadian centres serving the resource markets.



¹ MacEwan School of Business, 2013



Environmental Engineering Sector

Edmonton's global reputation for excellence in waste management, water and wastewater and land and water remediation technologies forms the backbone of the environmental products and services sector. With this sector closely aligned to Alberta's oil and gas industries, the potential is strong and the future bright.

Sector snapshot

The world is demanding significantly greater environmental stewardship from industry and the public sector, and the global 'green' economy is worth over \$4 trillion.¹

The environmental focus on Alberta's oil and gas sector has resulted in a robust, and growing, environmental products and services sector within Edmonton.

Edmonton's core strengths are in waste management, water and wastewater treatment, carbon capture and storage and land and water remediation technologies. Sector firms offer a wealth of marketable consulting services, technology development and specialty products.

Sector growth has been driven by the continuing expansion of Alberta's energy sector, public policies to protect the environment, new regulatory frameworks and increased public and private sector funding.

The Government of Alberta, either directly or through a range of government supported agencies such as C3 and Climate Change and Emissions Management (CCEMC) Corporation, supports the development and implementation of strategies that reduce the negative environmental consequences of energy production and the conservation and efficient use of CCEMC, the Government of Alberta has committed \$2 billion to support large-scale storage projects designed to help reduce greenhouse gas (GHG) emissions.²

Edmonton is a leader in development of innovative waste management processing and technologies.

Canada and Alberta's environmental products and services sector in brief:

- Canadian green technology and services sector is projected to grow from \$2.3 billion in 2010 to \$28 billion by 2020.³
- Alberta is home to more than 1,300 companies with revenues of over \$2.8 billion.⁴
- Alberta re-invests its carbon tax to fund research and pilot projects designed to stimulate transformational change through investments in climate change knowledge, clean technology development and operational deployment.⁵
- Alberta leads national expenditures in environmental protection activities relating to its resource sector.⁶
- Alberta's oil and gas sector had the highest operating expenditures for environmental protection, reporting over \$2 billion in site reclamation, decommissioning and pollution prevention processes.⁷
- Alberta's workforce, with significant depth in engineering and expertise in natural resources planning and management, aligns well with skills needed for this growth sector.⁸
- Alberta is home to the largest remediation conference in Canada.



1 Greening the Economy, Federal-Municipal Policy Alignment, David Thompson, Sustainable Prosperity, 2013
 2 <http://www.solutionsstarthere.ca/24.asp>
 3 Greening the Economy, Federal-Municipal Policy Alignment, David Thompson, Sustainable Prosperity, 2012
 4 Environmental Products and Services Profile, Province of Alberta 2013
<http://ccemc.ca/about/>
 5 Statistics Canada, Environmental Protection Expenditures in Business Sector, 2010
 6 Statistics Canada, Environmental Protection Expenditures in Business Sector, 2010
 7
 8 The Green Jobs Map, ECO Canada, 2012

Edmonton's environmental products and services sector in brief:¹

- Over 40 professional consulting engineering firms in Greater Edmonton's environmental sector.²
- Canada's first four large-scale carbon capture and storage projects located in the Greater Edmonton area.
- The world's first industrial-scale municipal waste-to-biofuel facility opened in 2014 and will convert 100,000 tonnes of sorted municipal solid waste into 38 million liters of ethanol annually.³
- Thriving recyclable (including metals, plastics, electronics, oil, construction materials and paper products) sector that contributes both millions of dollars to the local economy and saves millions from public expenditures.
- Home to several major public and private research facilities and engineering services that pioneer land reclamation, mobile thermal soil remediation and greenhouse gas emissions.

1 Consulting Engineers of Alberta, 2013

2 <http://www.edmonton.com/for-business/3391.aspx>

3 Edmonton Waste-to-Biofuels website, 2013

4 Hoover Database, January 2012

Edmonton environmental engineering and service-related companies include:⁴

- Aecom Canada Ltd.
- Al-Terra Engineering Ltd.
- AMEC Americas Ltd.
- Arrow Engineering Inc.
- Associated Engineering Alberta Ltd.
- Bantrel Co.
- Canadian Advanced ESP Inc.
- C-FER Technologies (1999) Inc.
- EBA Engineering Consultants Ltd.
- Golder Associates Ltd.
- Hemisphere Engineering Inc.
- ISL Engineering and Land Services Ltd.
- Matrix Solutions Inc.
- Millennium EMS Solutions Ltd.
- Morrison Hershfield Limited
- Nelson Environmental Remediation Ltd.
- Orbis Engineering Field Services Ltd.
- Petrospec Engineering Ltd.
- Read Jones Christoffersen Ltd.
- Rice Engineering & Operating Ltd.
- Scheffer Andrew Ltd.
- Select Engineering Consultants
- SNC-Lavalin Inc.
- Stantec
- Tamarack Power Partners
- Thurber Engineering Ltd.
- WorleyParsonsCord Canada Services Ltd.



Environmental engineering and service opportunities

The Alberta oil sands and energy sector's environmental challenges and renewed public and private commitment to mitigate environmental impacts from resource extraction and processing offer strong potential for Edmonton's environmental products and services sector.

In this sector enterprises are harnessing new technologies to better manage, mitigate and remediate the footprint made through oil sands extraction, transportation and processing. Examples of some of the areas of endeavour include:

- land remediation planning, design and implementation,
- a wide range of environmental assessment and monitoring related to air, water, habitat, etc.,
- alternate drilling and extraction technologies designed to minimize environmental impacts,
- water conservation and industrial water treatment,
- mine and tailings pond reclamation,
- pipeline flow efficiency, and
- low-pressure lifting technologies.

Edmonton is expected to experience a significant increase in "knowledge-based" employment – including growth in engineering and environmental services, professional and technical services, and research and development. Much of this non-population-related commercial employment growth will be associated with the energy sector.¹

With Edmonton's growing international reputation for excellence in waste management, water and wastewater treatment and the development of climate change solutions, these specialties are likely to lead the way in growth potential. A prime location for siting environmental engineering and technology business is Edmonton's largest eco-industrial park, the Edmonton Energy and Technology Park (EETP).

1 http://www.edmonton.ca/business_economy/documents/Edmonton_Industrial_Land_Supply_Study_2011.pdf
 2 "Horsehills Area Structure Plan, City of Edmonton
 3 www.WAGEinfo, 2013 Alberta Wage and Salary Data

Edmonton Energy and Technology Park

Located in Alberta's Industrial Heartland, the City of Edmonton is facilitating the development of this park to take advantage of the huge potential for refining the by-products from oil sands production (the residual feedstocks) into consumer and industrial products. Designed as a key location to support and service the needs of the petrochemical and oil sands processing, the park:

- is situated only 15 kilometers from existing and proposed upgrader sites,
- covers approximately 4,857 hectares of largely vacant land,²
- includes precincts planned for sector-specific industrial operations including manufacturing with 855 net hectares and R&D, education and services with 439 net acres, and
- will use an "eco-industrial development" model where companies will share utilities, use cleaner alternative energy sources, reduce water use and waste, preserve natural areas and implement sustainable building practices.

Environmental sector workforce, training and R&D

Examples of 2013 labour rates in this sector are:³

	EDMONTON HOURLY
Environmental auditor	\$36.70
Hazardous waste management technologist	\$36.70
Natural & applied science policy consultants	\$39.62
Biologist	\$40.98
Soil scientist	\$49.07
Environmental engineer	\$46.11
Chemical engineer	\$55.54

4.19 SECTOR-SPECIFIC INDUSTRIAL ATTRIBUTES

University of Alberta

- Faculty of Agricultural, Life & Environmental Sciences
 - attracts over \$35 million annually in research funding
 - over 1,800 students and 110 faculty members
- Faculty of Engineering - Top 5% of North American engineering faculties
 - features over 6,000 students, over 200 professors and 50 research chairs
 - attracts over \$65 million annually from external sources for sponsored research funding
 - about 30 professors and 300 researchers are conducting water-related research

Northern Alberta Institute of Technology (NAIT)

The School of Sustainable Building and Environmental Management:

- centres include:
 - NAIT's Centre for Chemical Studies
 - Cenovus Centre for Power Engineering
 - the new NAIT Centre for Sustainable Energy Technology
- programs include:
 - building environment
 - environmental design
 - environmental management
 - natural resources
- The School's Department of Physics also includes study in environmental matters

Research highlights:

Edmonton Waste Management Centre of Excellence

The Edmonton Waste Management Centre of Excellence (EWMCE) is a not-for-profit corporation established to meet solid waste and wastewater challenges worldwide.

The Centre includes state-of-the-art research, demonstration and education facilities and engages in:

- technology development with a mix of pilot and commercial-scale facilities, real-time access to waste streams and close linkages to expert researchers,
- research covering the spectrum of waste management,
- education and training that delivers scientific and applied knowledge to individuals or corporations, and
- advisory services to offer technical advice and project management in all areas of waste management.

University of Alberta

Faculties, centres and institutes doing research in energy and the environment:

- School of Energy and the Environment
- Canadian Circumpolar Institute
- Helmholtz Alberta Initiative
- Imperial Oil-Alberta Ingenuity Centre for Oil Sands Innovation
- Oil Sands Tailings Research Facility
- Centre for Earth Observation Sciences
- Canadian Centre for Clean Coal/Carbon and Mineral Processing Technologies (C5MPT)



Alberta Innovates – Energy and Environment Solutions

This agency is a catalyst for developing innovative, integrated ways to convert Alberta's natural resources into market-ready, environmentally responsible energy. Alberta's lead agency for energy and environmental research and innovation focuses on four areas:

- environmental management (primarily carbon capture and storage technologies, oil sands tailings and water management, and enhanced ecology),
- energy technologies,
- renewable and emerging resources such as the Edmonton municipal bio-waste demonstration project, and
- water resources.

Alberta Innovates - Bio Solutions

This arm of Alberta's innovation system leads the way in finding new, innovative uses for renewable wood or agricultural fibres. Projects currently underway are exploring the development of green biocomposite building products including high-strength, light-weight foam core sandwich structure, low-cracking concrete, high-performance cross-laminated timber panels and structural insulated panels from oriented strand board.

Alberta Innovates - Technology Futures (AITF)

One of the areas of focus for AITF is to support research and product development in the environmental management field including carbon management and storage, clean energy, environmental analysis, land and water management geosciences and wildlife ecology. Services are delivered through a network of applied research centres and include:

- technical expertise,
- lab services on a fee-for-service basis, and
- business development support to entrepreneurs as they move products towards commercialization.

More than 900 clients are supported by over one million square feet of laboratory, pilot plant, scaled-up office and collaboration space.

In 2009, AITF launched an industry-directed consortium, Materials and Reliability in Oil Sands (MARIOS), to significantly reduce downtime and improve operational reliability and productivity in the oil sands industry. The consortium links oil sands producers, materials and equipment suppliers, fabricators and technology providers to collaboratively solve industry-wide problems.



Other R&D facilities in the Edmonton region include:¹

- The CanmetENERGY Research Centre – focuses on reductions in greenhouse gases, water consumption and other impacts of energy production
- The Climate Change and Emissions Management Corporation - focuses on clean coal, water-based oil sands extraction, mineral processing and carbon capture
- C-FER Technologies – a leading applied research facility providing the private sector with innovative engineering and technology testing facilities
- Syncrude Research at Edmonton Research Park – pioneering the creation of fen wetlands as part of oil sands reclamation

Local sector support organizations:

- Alberta Clean Technology Industry Alliance
- Alberta Environmental Network (AEN)
- Alberta Innovates – Energy and Environment Solutions
- Alberta Plastic Recycling Association (APRA)
- Alberta Recycling Management Authority (ARMA)
- Alberta Used Oil Management Association (AUOMA)
- Association of Professional Engineers and Geoscientists of Alberta (APEGA)
- Beverage Container Management Board (BCMB)
- Clean Air Strategic Alliance
- Environmental Services Association of Alberta (ESAA)
- Innovative Energy Technologies Programs (Alberta Energy)
- Recycling Council of Alberta (RCA)
- Solar Energy Society of Alberta
- Solid Waste Association of North America (SWANA) – Canadian Prairie Chapter
- Technology Assistance Programs for Alberta Environmental entrepreneurs

Environmental sector competitive position

Edmonton offers several competitive advantages to enterprises in this sector. Top on the list are:

- Edmonton's outstanding environmental research facilities,
- a significantly sized labour pool of highly educated talent,
- strong post-secondary programs that maintain and grow the labour pool,
- a strong and committed customer base,
- a very cost-competitive operating environment, and
- regulatory regimes that ensure improved environmental outcomes.

These advantages are well illustrated by the 2014 Competitive Alternatives Report by KPMG with Canada ranking second among top 10 countries, with business costs 7.2 percent lower than in the United States. Moving ahead of both the Netherlands and the United Kingdom, Canada re-establishes a competitive advantage over these countries.¹

¹ http://www.competitivealternatives.com/reports/2014_compalt_report_voll_en.pdf
² Market Outlook 2013 at a Glance, CBRE

Edmonton offers access to a range of business park and research and development (R & D) facilities including lease and development opportunities at the Edmonton Research Park and prime development locations at the Edmonton Energy and Technology Park (EETP) with nearly 440 net hectares (924 acres) designated for R & D, education and service operations.

Whether it is close to Alberta's Industrial Heartland, northeast industrial sites and the Highway 63 route north to Fort McMurray, northwest industrial sites and Highway 43 to Grande Prairie or close to Edmonton's International Airport for connections north and around the world, Edmonton offers cost competitive leasing and development opportunities for consulting services and R & D operations.

For those office-intensive operations, Edmonton offers:

- very competitive office property rates; current Class A net downtown rental rates of approximately \$25.36 per square foot located within the City of Edmonton are lower than other major western Canadian cities such as Calgary and Vancouver by as much as 40%.²
- city-wide transit service, and
- a full range of services needed to support research and consulting businesses.





KEY CONTACTS

5.1 KEY CONTACTS

WEB RESOURCES

NATIONAL AND REGIONAL STATISTICS

Statistics Canada www.statcan.gc.ca

PROVINCIAL SITES – DOING BUSINESS IN ALBERTA

Alberta Government www.alberta.ca
Alberta Treasury Board and Enterprise www.treasuryboard.alberta.ca
Doing Business in Alberta www.albertacanada.com
Investing and Locating www.albertacanada.com/intl-business/establishing-a-company.html
Exporting your Products www.albertacanada.com/ab-business/exporting-your-products.html
Industry Sectors www.albertacanada.com/ab-business/alberta-industries.html
Productivity Alberta www.productivityalberta.ca
Alberta Innovates www.albertainnovates.ca
Regional Development www.albertacanada.com/about-alberta/regional-economic-development.html
Community/Market Information www.albertacanada.com/about-alberta/the-economy.html

PROVINCIAL SITES – MOVING TO AND LIVING IN ALBERTA

Alberta Energy www.energy.alberta.ca/EnergyProcessing/841.asp
Immigrating www.albertacanada.com/immigration
Health Care www.health.alberta.ca
Education www.education.alberta.ca
Advanced Education and Technology www.advancededucation.gov.ab.ca

EDMONTON – LIVING AND DOING BUSINESS IN EDMONTON

City of Edmonton www.edmonton.ca
Edmonton Economic Development Corporation www.edmonton.com
Edmonton industrial land sales www.edmontonindustrialand.ca
TEC Edmonton www.tecedmonton.com
University of Alberta www.ualberta.ca
Northern Alberta Institute of Technology (NAIT) www.nait.ca
MacEwan University www.macewan.ca
Edmonton Region Immigrant Employment Council www.eriec.ca

KEY INDUSTRY SITES

Alberta metal fabricators www.albertametal.ca
Alberta's Industrial Heartland Association www.industrialheartland.com
Strathcona Industrial Association www.sia.ab.ca
Northeast Capital Industrial Association www.ncia.ab.ca

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