

Section 2 **Context**

Section 2 provides background about the local historical and geographic context for industrial development, the reasons for conducting the industrial land inventory, and a definition for what industrial activity includes, particularly those activities in Anchorage's land use system.

Historical Industrial Development Pattern

Anchorage's development history helps explain today's industrial land use patterns and helps ground forecasts of what future development patterns may be. The following information is adapted from several studies conducted previously for the Municipality².

From its origins in 1914 as the Alaska Engineering Commission's (A.E.C.) field headquarters and supply terminal for construction of the Alaska Railroad, Anchorage's development pattern focused significant and strategic land assets on industrial development—particularly in transportation and distribution. The Ship Creek delta and its straight-line distance and negligible grade from shoreline were favorable for launching railroad construction to the Matanuska coal fields. The flat lowland between the Anchorage Townsite and Government Hill plateaus provided ample room for rail yards, machine shops, and warehouses, as well as the initial construction camp, or “tent city.” During the rail construction period from 1915 to 1923, industrial expansion eastward along the Ship Creek basin was flanked by initial residential settlements on Government Hill and the early town of 600 lots on the elevated land to the south. This initial pattern of industrial development along the rail line extends to Merrill Field, the vital airfield commissioned in 1930 to replace the original airstrip constructed in 1924. It supported the primary air and rail movement of both goods and people throughout the state.

At the larger geographic scale, “The Anchorage” at the mouth of Ship Creek and head of Cook Inlet was centrally located on Alaska's Railbelt region. The Port of Anchorage, established initially to support rail construction, experienced stable, incremental growth for nearly 50 years. Relocation of the railroad headquarters to Anchorage from Seward, and flooding in Seward in 1917, solidified the Port of Anchorage as the primary logistics center for Alaska.

The railroad yards and adjoining waterfront have evolved into a complex of maritime, industrial, power utility, distribution, and transportation facilities that today extend for most of the length and width of the coastal basin of Ship Creek.

² Patterns of the Past: An Inventory of Anchorage Historic Resources (1986); Anchorage Bowl Commercial and Industrial Land Use Study (1996); Anchorage 2020 – Anchorage Bowl Comprehensive Plan (2001); Anchorage Industrial Land Assessment (2009); and the Anchorage Commercial Land Assessment (2012).

As World War I ended in 1918, many pilots made their way to Anchorage to continue flying. The bush pilots and their daily ferrying of goods and people throughout the Alaskan frontier from Merrill Field further enhanced the growth potential of the Port. Moreover, the completion of the rail line linking Anchorage to Fairbanks in 1923 opened a valuable heavy goods transportation link to the Interior. Overall, Anchorage's industrial land and facility supply was able to support these expanded opportunities.

Two significant events led to population increases of over 200 percent during the 1940s and 1970s. The first was the establishment of the Elmendorf Air Force Base and Fort Richardson Army Post in response to increased Pacific threats. During World War II, Anchorage's strategic location made it well positioned for the construction of defense facilities serving the North Pacific Theater of operations. During this period, construction of the Glenn and Alaska Highways gave Anchorage an overland link to the Lower 48. Growth related to the military expansion caused the census documented population to increase from fewer than 3,500 in 1940 to more than 11,250 in 1950. Anchorage's strategic location continued to play a valuable role during the conflicts in Korea, Vietnam, and throughout the Cold War and post-Cold War eras. Today, Joint Base Elmendorf-Richardson remains a vital national security asset. It is a major employment facility, consumer of local business and utility services, and land management unit that constrains the geographic expansion of the Anchorage Bowl and Chugiak-Eagle River civilian community within the Municipality.

As demand for air cargo rapidly grew in the mid-twentieth century because of Anchorage's location advantages as a supply center and air crossroads, Merrill Field's ability to accommodate that demand, and modern aviation technology, reached capacity. At the same time, the Alaska Road Commission was completing the northern terminus of the (Old) Seward Highway, further strengthening Anchorage's role as the regional logistics center for Alaska.

The construction of the International Airport and adjoining airport road and the completion of the (Old) Seward Highway facilitated industrial land development adjacent to these two primary vehicle circulation arterials throughout the 1950s and early 1960s. Since zoning was not then a limiting factor in industrial development, higher, dry land near transportation routes were preferred development sites.

The Good Friday Earthquake and tsunamis of 1964 devastated the Ports of Seward and Valdez. While Anchorage's building stock also suffered significant damage, the Port of Anchorage was able to resume operations within a short period of time. During the years of reconstruction following the earthquake, the population increased very little and few industrial parcels were developed until the construction of the Trans-Alaska Pipeline began in 1975. Following the discovery of petroleum in Prudhoe Bay in 1968, getting Alaskan oil to market became a national imperative. Getting goods and people to construction sites was enhanced through the completion of the Parks Highway from Palmer to Fairbanks in 1971.

While industries such as mining, fishing, fur, and timber helped sustain incremental growth for industrial land use in Anchorage's earliest decades, those industries were waning by the middle of the twentieth century. In the decades preceding construction of the Trans-Alaska Pipeline System (TAPS), construction projects around Alaska sponsored by the federal government were the primary source of demand for industrial land in the Anchorage area.

In the mid-seventies, TAPS construction stimulated several years of rapid economic growth. From 1974 through 1977, a rapid influx of contractors, subcontractors, and materials led to extensive industrial development, particularly in the North and Central Industrial Subareas of the Bowl. Municipal data indicates that nearly 300 industrial parcels were developed from 1975 to 1980, more parcels than in the previous 30 years. The spike in oil prices and state revenues starting in 1979 primed another growth surge. Industrial development continued at a healthy pace over the first half of the 1980s with more than 500 industrial parcels developed through the mid 1980s.

Anchorage's economy became overbuilt, and crashed with the mid-eighties oil price slump. Industrial land development came to a virtual halt during the statewide recession, and only resumed, at a much slower growth rate, in the 1990s. This boom-bust building cycle was devastating to construction related manufacturing and contracting, and suppliers of goods.

Beginning around the time of the Exxon-Valdez oil spill response operations in 1989-1990, Anchorage's economy entered a 20-year period of stable, moderate employment growth. The national Great Recession ended this run; however, moderate growth resumed, with some industrial enterprises anticipating a new era of expansion in the energy sector. However, the availability of development sites in the Bowl has become a limiting factor.

Throughout this history, industrial development in Anchorage has followed a pattern common to industrial expansion elsewhere, in that it has occurred primarily on sites adjacent to infrastructure including arterial roadways and other major transportation facilities, including the port, railroad, and airports.

The industrial road network has developed in a similar fashion to other mid-century industrial areas in the U.S. Older districts have roads that were built for lighter, shorter vehicles and less intensive uses. Newer districts developed wider roads with the ability to accommodate heavier loads and longer trailers. This juxtaposition of old and new infrastructure exists in all industrial subareas of the Bowl.

The regional trucking freight circulation network relies on two highway corridors, the Seward and Glenn Highways. These primary double load (twin trailer and long semitrailer) truck routes serve the entire industrial land supply, including the port, airports, and railroad terminal industrial areas—either directly, or through industrial supporting arterials. The three main supporting double load routes include the International Airport Road connector, the Minnesota Drive/O'Malley Road bypass loop, and Tudor Road/Muldoon.

During the past twenty years, the Northern and Central Anchorage Bowl gradually built out to near full extent, with 80 to 90 percent of the land supply in active use. Bound between the mountains, the military base, and the sea, development in the Anchorage Bowl finally stretched to the limits of its physical boundaries. Industrially zoned lands and enterprises began to experience competition for space from other land uses. In the early 1990s, nearly 1,000 acres of developable industrially zoned land existed in the Bowl. Twenty years later, only 25 percent of this land remains. Many recently developed industrial parcels in the I-1 and I-2 zoning districts indicate a significant shift to commercial retail and other non-industrial uses.

Remaining industrial opportunities are primarily infill. However, as its name implies, the “Bowl” is a lowland between the Chugach foothills and the glacial deposit uplands of Kincaid, Sand Lake, and the International Airport. It is home to numerous natural features including creeks, lagoons, lakes, and wetlands. Many remaining undeveloped parcels are affected by these features. Some of these sites are infeasible to develop or are preserved by law. Other sites are too costly for industrial users to develop because of peat soils, poor parcel configuration, seismic ground failure hazards, previous development, and other marginal conditions. Industrial development is less able than competing commercial land uses to absorb the additional costs to develop constrained sites.

Fire Island, Birchwood, Chugiak, and Eklutna present larger-scale future opportunities with better soil conditions for expanding the industrial land base within the Municipality. However, these areas are constrained to varying degrees by other factors. These constraints include: distance to markets and existing industrial clusters, lack of road access, and no water and sewer services. In addition, the land ownership pattern in these areas requires most potential enterprises to accept ground lease terms instead of fee-simple ownership of a development site.

Why an Industrial Land Inventory

Anchorage has a variety of activities that make up its land use system. Because its land area is limited, and its remaining land supply is constrained, there is competition over space for housing, businesses, and other uses. These land use activities are interrelated – they support and impact one another. So where each occurs is important to the rest. To be successful, a city provides space for a diversity of important activities. The space for each should be adequate and in appropriate locations. Anchorage’s challenge is to allocate its land resources to achieve the right balance in new development among these various land use activities.

Industrial distribution, production, and repair activities are a part of that balance. They provide economic driver (basic) industries and local industrial support to other local economic sectors. They are integral to Anchorage’s function as a statewide transportation hub. Industrial sectors also provide jobs in STEM³ fields that are more able to support middle-income wages than are other sectors such as retail. They diversify the local economy to become more resilient through changing economic cycles. In addition, non-industrial commercial businesses need efficient, reliable, and timely access to physical goods and services that industrial businesses provide: hotels need laundry services; restaurants need food wholesalers and equipment suppliers; financial and professional offices need paper and other supplies; and all residential and commercial uses depend on the services of local fabrication, construction, and repair enterprises. There is also an ongoing need for well-located industrial space for the provision of public services, such as street maintenance and transit vehicle parking and maintenance, snow disposal sites, power generation plants, and waste-management facilities. These industrial services support Anchorage’s “urban transition” to an era of growth through infill and redevelopment of existing properties to higher intensities. Supporting industrial distribution, production, and repair uses is a mutually beneficial policy with other land use activities in Anchorage.

A lack of appropriate industrial land may limit the community’s ability to capture employers, and potentially basic industries that can make a disproportionate contribution to regional income. Loss of urban industrial land supply has been a growing concern in other regions of the country. It is becoming more common in Lower 48 cities to retain and promote urban manufacturing, distribution, and industrial service enterprises as an economic development strategy. More cities today perceive that they lose economic resiliency if they lose their production, distribution, and repair uses to other communities. Because industrial jobs take place in workplaces that require space in the city, these cities have found that the use of land, and the supply and location of land, is essential for retaining these uses in the local land use economy. However, for Anchorage, what is the extent and character of industrial uses in Anchorage, and what is the “right” supply of industrial land to

³ STEM is the science, technology, engineering, and math fields.

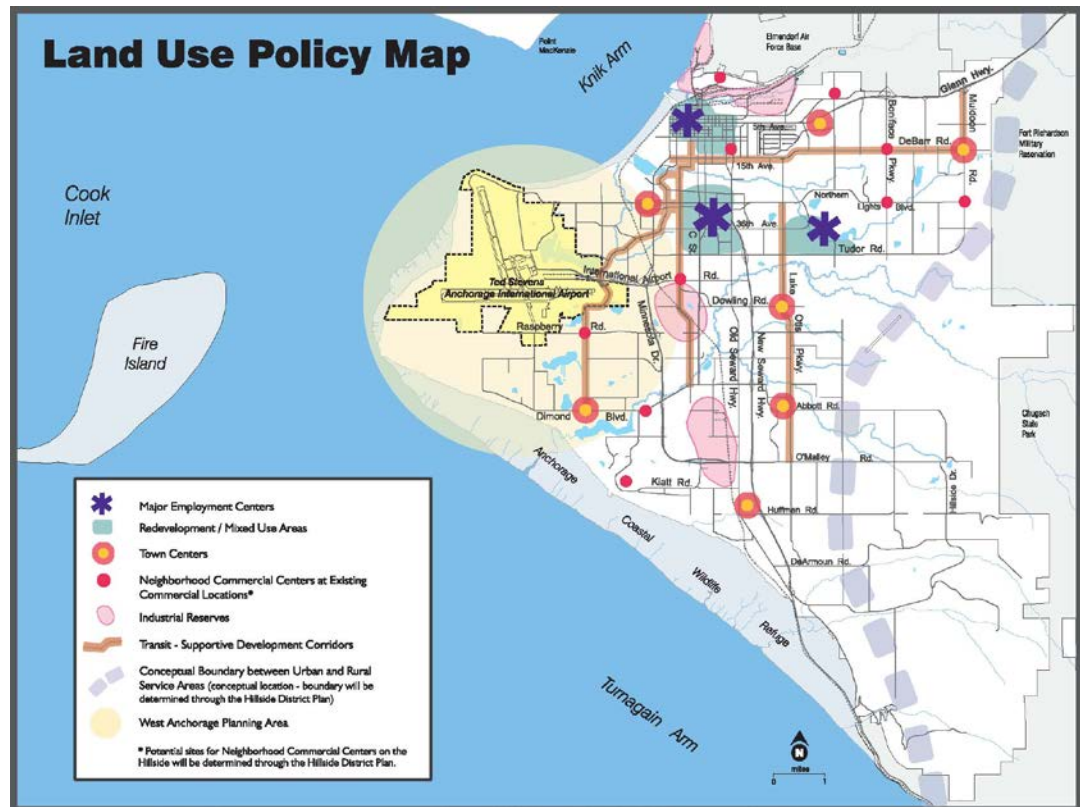
drive and support its growth? How suitable are lands in Chugiak-Eagle River as a place for relocation or expansion of important industrial sectors?

This inventory attempts to help readers understand what uses comprise Anchorage's industrial sector, some of their locational needs, and their remaining land supply – all in context of the pressures to convert the use of industrial parcels to commercial or residential uses. This can lead to determining their functions in the local land use economy. It is also a prerequisite to identifying which industrial uses in Anchorage are its key economic driver industries (aka its “traded sectors”). Understanding the makeup of the industrial land use economy and the status of its land supply can inform municipal land use planning decisions about how to allocate and balance lands among various activities. These decisions may affect how many industrial enterprises grow or disappear, or stay or relocate outside the Municipality.

The Municipality regulates land use to avoid mixing incompatible uses, and protect important uses that have a hard time competing for land and real estate. Its policies and regulations have for decades promoted and protected specific uses. There are specific zoning districts designed to allocate space for office, institutional, and residential uses. There are districts which protect retail commercial centers from industrial uses. However, until recently, there were no equivalent zoning districts designed exclusively to meet the needs of industrial uses. This is because Anchorage's industrial zoning, rather than being exclusive, has been hierarchical: allowing other uses considered less intensive than industrial activities. As a result, office, retail, and residential developers have over the years been allowed to compete for development rights to the remaining industrially zoned land supply. This has become a problem for industrial enterprises, as pressure from other uses has grown stronger in context of the declining vacant land supply. Commercial pressure is often very localized to a particular area. It is stronger in some industrially zoned areas established through areawide rezonings in the 1970s and early 1980s without advance land use planning. Some poorly located industrial zones have proved more conducive to retail commercial use. As a result, industrial users experience a lower effective supply of industrial land, and an increased speculative value of remaining industrial lands which increases overall development costs among industrial users.

In 2001 the Municipality adopted the *Anchorage 2020 – Anchorage Bowl Comprehensive Plan* (Anchorage 2020). *Anchorage 2020* identified goals for industrial development and retention and called for protecting “Industrial Reserves” that are strategically located in relation to the Port, Railroad, and International Airport. It considered the potential for an expansion of air-freight distribution users into a global logistics industry in and around the Airport. It articulated the community desire to maintain a strong and diversified industrial economic base, and resolve conflicts between adjacent industrial and residential land uses.

Map 2. Anchorage 2020 Land Use Policy Map⁴



In 2006 the Municipality also updated its Comprehensive Plan for Chugiak-Eagle River. The *Chugiak-Eagle River Comprehensive Plan Update* calls for ensuring an adequate supply of land in suitable locations for commercial and industrial development that is compatible with community needs and resources. The Chugiak-Eagle River Plan calls for industrial land in these locations to be protected from non-industrial uses. It stated the need for industrial lands to have access to adequate utilities and services, access to major transportation systems, and buffering from adjoining incompatible uses.

In 2013 the Municipality adopted new land use regulations that would place some limits on incompatible uses in the Light Industrial District (I-1), and reserving the Heavy Industrial District (I-2) more exclusively for industrial uses. Restrictions on non-industrial use of industrial lands are intended to result in a more predictable and sustained supply of industrial land. It would be expected to result in a lower speculative value of many industrial lands and contribute to a lower overall development cost among industrial users than would occur otherwise. It would help retain an industrial land base for the long run, over successive economic cycles, particularly during peak periods in the commercial market.

⁴ Map 2 is an excerpt from *Anchorage 2020 – Anchorage Bowl Comprehensive Plan*, page 50.

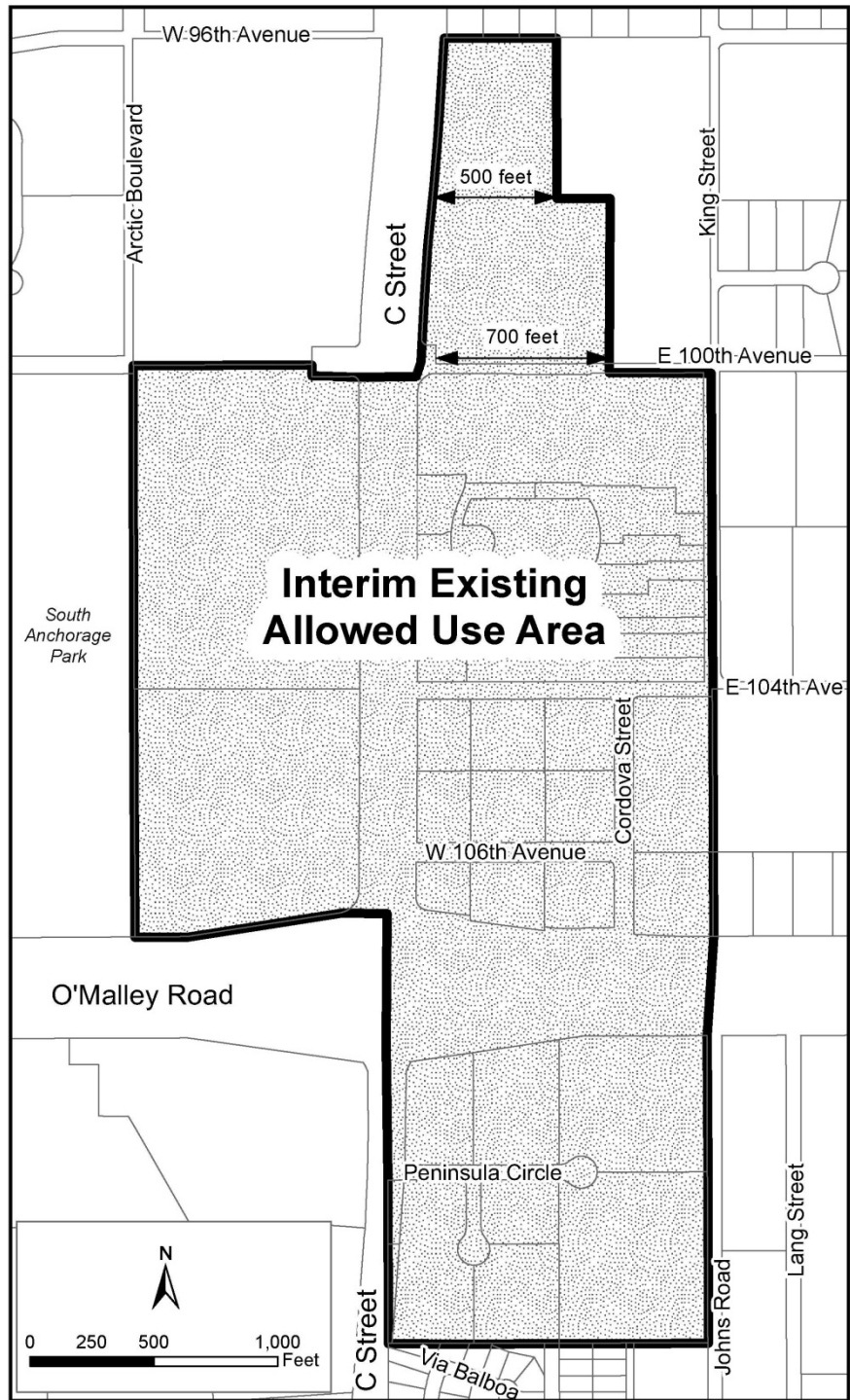
However, the Municipality has taken a “soft” approach to implementing the new regulations. Development applicants are given the choice to apply under the old (previous) Title 21 land use code until January 1, 2016. In addition, an interim provision in the new code allows developments in the I-2 district to include the same range of non-industrial land uses allowed in the more permissive I-1 district. Furthermore, in the new code, I-2 zoned lands along the south C Street corridor remain subject to old land use regulations as an interim measure until a land use plan map for the area can be adopted. This area along C Street, designated as an “interim existing allowed use area,” includes some of the last remaining large undeveloped tracts of industrially zoned lands in the Bowl and falls within one of the *Anchorage 2020* “Industrial Reserves.” However, this area has also experienced commercial big box retail development. The “soft” implementation approach in the new I-2 zone is intended to remain in effect until adoption of area-specific or citywide land use plans.

Anchorage 2020 recognized that scattered industrial areas outside of strategically located “Industrial Reserves” may be redeveloped to other uses. It states that some industrially zoned areas located within or adjacent to commercial centers could be encouraged to redevelop to commercial or residential uses in accordance with area-specific planning. A land use planning process is intended to determine which areas currently zoned industrial may be re-classified to commercial or other use.

Therefore, until such land use planning occurs, the Municipality is holding off from fully implementing the new Title 21 land use restrictions on incompatible uses within the industrial zoning districts. Some existing industrially zoned areas should be re-classified and encouraged to rezone to commercial use, in order for these areas to continue to develop in a commercial manner under the new Title 21 regulations.

A revised and updated *Anchorage Bowl Land Use Plan* (LUP) map element of the Comprehensive Plan is anticipated to come forward through a public planning process beginning in 2015. A previous draft LUP underwent public comment and review by the municipal Planning and Zoning Commission in 2006, during the rewrite of Title 21. The newly revised LUP will use updated information on current trends to address the challenges of providing the “right” balance of appropriately located residential, commercial, and industrial development to meet the city’s needs.

Map 3. Interim Existing Allowed Use Area in the I-2 District⁵



⁵ Map 3 is an excerpt from Anchorage Municipal Code (AMC) Title 21, Section 21.04.050C., I-2 District.

The Industrial Land Assessment update, including Volume I and this Volume II inventory of industrial lands, is intended to help answer land use planning decisions such as:

- Is the industrial zoned land base adequate to sustain forecasted long-term economic growth, and if not then to what extent is it not adequate?
- To what extent should the existing industrial land base in the Bowl and elsewhere in the Municipality be retained, reduced, or expanded?
- What types of areas are most strategic for industrial retention, and what areas should encourage development or redevelopment to residential or commercial use?
- What restrictions, if any, should be placed on various individual non-industrial uses within the remaining industrial I-1 and I-2 zoning districts? What allowances should there be for compatible or supportive non-industrial uses?
- What incentives, exceptions, programs, or other assistance should the Municipality consider to support industrial uses?

Land use planning decisions regarding the industrial lands will occur in context of competing needs, goals, and priorities. Recent land assessments completed in 2012 have documented areawide and local deficits in the needed land supply for residential and commercial uses. This report is one more piece of information to help inform that discussion.

Definition of Industrial Activities

Land use planning for industrial development requires an understanding of what is “industrial” and the predominant types and characteristics of contemporary industrial activity in the community. The remainder of section 2 defines and characterizes modern industrial uses, in relation to prevailing local industrial activities.

One way of conceptualizing contemporary industry is to augment the general term “industrial” with the more descriptive phrase “**production, distribution, and repair**” (PDR). PDR describes the activities of making, maintaining and moving goods and equipment. This shift in language by some cities, as documented by the economic development planning field in a recent report published by the American Planning Association (APA)⁶, reflects the differences between modern industry from its historical, smokestack-laden predecessors. Its emphasis on “lighter” (e.g., less dirty, noisy, or bulky) forms of industry seems applicable to Anchorage’s predominant forms of activity. According to the APA, the phrase PDR also delineates a finer-grained approach to planning that recognizes that industry is more than just manufacturing. It is also goods handling and transportation, repair and other services. In fact, distribution and other activities characterize Anchorage’s industrial economy to a greater degree relative to manufacturing, than in some other cities. Lastly, according to the APA, PDR suggests possibilities for more contextual and integrative land use planning among various activities.

Production is the broadest of the three industrial use categories. In many cities, it is mainly manufacturing (of both durable and nondurable goods). However, it also includes power generation and construction contracting enterprises, which are prevalent in Anchorage.

Nationally, the trend in urban manufacturing in general has evolved toward small and medium-sized enterprises (SMEs), which are recognized for their disproportionate contribution to jobs and innovation, and economic growth. Both advanced manufacturing and more traditional manufactures are adopting new production techniques that are often less impactful on adjoining land uses. Nationally, urban SME manufacturers value proximity to customers, suppliers, and contractors supporting shorter production runs on smaller numbers of specialized goods. While manufacturing is not dominant among the industrial activities in Anchorage, this inventory has found it to be more prevalent than municipal planners anticipated. Along with other uses such as construction contracting and power generation, it makes “Production” the most extensive of the three PDR categories of industrial land uses in the Municipality (other than the major public transportation facilities including the Airport, Port and Railroad).

⁶ Planners Advisory Service Report 577: Sustainable Industrial Development (American Planning Association, 2014).

“Production” Examples in Anchorage: Unique Machine



“Production” Examples in Anchorage: Yummy Chummies



Distribution is the second PDR sector. Distribution industries include wholesale activities, ground freight trucking, small-scale delivery services, taxi, towing, and other transportation services, and warehousing. Distribution also includes the major regional transportation facility hubs including the Port, Airports, and Alaska Railroad which comprise the dominant industrial-type use in Anchorage.

In many cities distribution activities serve as support to the local producers. However, in Anchorage’s industrial economy, distribution takes on an outsized presence. This reflects the city’s function as a transportation hub and center of support services for production activity (e.g., natural resource extraction) that takes place mostly elsewhere in Alaska or the world. While warehousing alone is not one of the dominant industrial uses in Anchorage due to characteristics of the local supply chain, wholesalers and ground transportation and freight services make the local distribution firms one of the largest industrial land users in the Municipality. Distribution firms also support other sectors of the local

economy. Other firms need paper, auto repair shops need a supply of parts, and metal fabricators need materials and supplies, etc.

“Distribution”: Trucking freight company in South Anchorage



Repair comprises the third PDR sector. Repair activities are integral to the industrial economy and share land use characteristics and needs with the production and distribution enterprises. They often require industrial spaces with open storage yards. Repair uses work closely with both production and distribution establishments, sometimes locating nearby. Repair uses may combine production, installation, distribution, and repair. Typical goods subject to repair services include vehicles, equipment, and furniture. For the purposes of this study, building and property maintenance firms are also included in the repair category. Vehicle salvage, solid waste management, and snow disposal are also included. Repair uses also benefit from proximity to local retail markets. These services support the needs of non-industrial businesses and residents.

Truck repair co-located next to freight companies in Central Anchorage



Table 1 lists the common industrial economic sectors in Anchorage, using North American Industrial Classification System (NAICS) categories, arranged according to the conceptualization of PDR. A complete inventory of current industrial use by sector, and quantified in terms of amount of acreage used in the study area, appears in Section 4.

Table 1. PDR Industrial Classifications Common to Anchorage

	Industry Type	NAICS Code
Production	Metal fabrication	332
	Nonmetallic mineral products	327, 212
	Woodwork, furniture, paper and printing	321, 322, 323, 337
	Food and beverage products	311, 312
	Plastics, rubber, and foam products	326
	Sign fabrication	339
	Heavy construction contractors	237
	Special trade contractors	238
	Machinery related contractors	237, 238
	Electric power utilities	221
Distribution	Truck and freight transportation services	484, 487, 488
	Towing and other ground transportation services	485, 488, 492
	Wholesale – durable goods	423
	Wholesale – nondurable goods	424
	Warehousing	493
	Postal services	491
	Airport operations	481, 488
	Rail transportation	482, 488
	Marine port and harbor operations	483, 488
	Waste management	562
	Snow disposal	562
Repair	Vehicle salvage	562
	General automotive repair	811
	Automobile services and minor repair	811
	Heavy truck and trailer repair	811
	Equipment and machinery repair	811

The production, distribution, and repair categories represent a broad range of business types. Their space and infrastructure needs can therefore vary. However, most industrial uses in general share a common set of characteristics and needs. For example, industrial uses need much more space, to account for the materials and goods that are undergoing storage, distribution, repair, and fabrication. While these needs vary in degree depending on the use, they are indicated by the economic development planning field as common concerns in the industrial business community, as follows on the next page.

Characteristic Needs of PDR Uses:⁷

- Accessibility to customers, suppliers, workers, and road networks. Adjoining port, airport, and rail facilities are also of primary importance for some (but not all) types and scales of industry.
- Affordable, low rents per square foot, where land values, development costs, regulations, and other factors help avoid displacement by higher-rent uses.
- Clustering of similar industries and supplier and service networks. Repair firms, for example, need to be located near the equipment, vehicle, and furniture markets that they serve. These include both business-to-business (B2B) relationships and retail customers.
- Separation or buffering from residential neighborhood housing and other incompatible uses, and avoidance of traffic impacts to and from other uses.
- Buildings, facilities, and operating conditions that differ from retail, office, or mixed-use – such as a more flexible building space, larger rooms, wider floor plates, low-rise or single-story buildings, higher ceilings, and service bays – where vehicles can easily load, unload, or enter.
- Site characteristics including adequate parcel size with space for freight vehicle and equipment maneuvering and parking, and storage; and/or for outdoor storage and material handling.
- Also, while not reported in the general literature source cited for this list, local consultations affirm the need for access to power, heat, and communications utilities. For some industries, and more intensive industrial uses in general, access to urban water and wastewater services is also important.

Some emerging industrial-type uses may have different criteria for choosing buildings and sites than those listed above. Some urban production may blur the lines between office and production space, and prefer a location near downtown or commercial centers more than single-story low-rise industrial environments, because the urban location is appealing due to its proximity to customers or amenities. Space requirements may also be reduced by adoption of modern production technologies.

Several non-industrial retail, customer service, professional and technical service, and real estate service activities in Anchorage share some physical characteristics with industrial uses, although they are not industrial PDR

⁷ Source: Planners Advisory Service Report 577: Sustainable Industrial Development (American Planning Association, 2014).

functions. These include, for example, retail sales of automobile and heavy goods, mini-storage facilities and outdoor storage space rentals. Some of these uses are space intensive, and occupy a significant share of the industrial land base; however, they do not function as industrial production, distribution, or repair activities.

Professional services uses, sometimes located in office-warehouse facilities, provide technical engineering or environmental services to industrial related enterprises.