Anchorage 2040 Land Use Plan
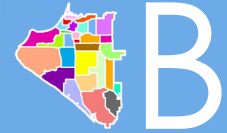
A Supplement to Anchorage 2020 - Anchorage Bowl Comprehensive Plan

Appendix B:
Future Growth and
Land Capacity
Report

For Planning and
Zoning Commission
Recommended Draft 2040
LUP, dated June 5, 2017

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Appendix B-1

Forecast Report

Anchorage Employment & Non-Residential Land Need Forecast to 2040

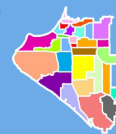# *Anchorage 2040 Land Use Plan*

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Appendix B:
Future Growth and Land Capacity Report

For Planning and Zoning Commission Recommended Draft 2040 LUP, dated June 5, 2017

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ANCHORAGE EMPLOYMENT &

NON-RESIDENTIAL LAND NEED FORECASTS

MUNICIPALITY OF ANCHORAGE LAND USE PLAN MAP UPDATE

Prepared for: Municipality of Anchorage Long Range Planning Division

Prepared by: PNW Economics, LLC

April 19, 2016

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I. Introduction

The Municipality of Anchorage is presently in the process of updating its Land Use Plan Map and related land use policies to prepare the community for economic growth and change over the next 25 years.

Leading up to this effort, the Municipality recently had completed a 2015 Industrial Lands Assessment Update.[1] The report found that over a twenty-year period, the Municipality does not have enough land zoned for industrial uses to accommodate a likely economic growth trajectory for Anchorage.

Since completion of that report, significant and sustained reductions in petroleum prices have created recessionary pressure on the Alaska petroleum industry, as well as State of Alaska fiscal health due to its significant reliance on extraction of the resource.

This memorandum is intended as a technical report providing review of different employment, population, and land need forecasting for Anchorage in light of changing economic circumstances. The report provides new employment scenario forecasts for the Municipality and resulting estimates of land need for the Land Use Plan Map process. In total, six growth scenarios are modeled and compared for Municipality planning purposes.

The report is divided into the following sections:

    I.   **Introduction**

    II.   **Anchorage MSA Population Forecast Considerations**

    III.   **Anchorage MSA Total vs. Wage & Salary Employment**

    IV.   **Oil Industry Recession & Updated Job Forecasting**

    V.   **Self-Employment & Home Business Analysis**

    VI.   **MOA Forecast Methodology Results Comparison**

All content of this report was previously submitted to Municipality of Anchorage Long Range Planning Staff in a series of "white paper" memorandums in February and March of 2016. Findings have been consolidated here into a single technical report.

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[1] http://www.muni.org/Departments/OCPD/Planning/Projects/AnchLandUse/Pages/AnchorageIndustrialLandAssessment.aspx

II. Anchorage MSA Population Forecast Considerations

Introduction

This section is intended as a review and assessment of the use of the 2014 ADOLWD population forecast (2015-2040) for Anchorage and the Mat-Su Borough for the purposes of land use planning. This section is the first in a series of discussions that address the various issues and questions Planning Department staff has requested be addressed in a review of different potential forecasting methodology for the Land Use Map Update.

Findings

The following represent my perspective on the treatment of population forecasting as found in the January 12, 2016 Technical Memorandum "Anchorage and Matanuska-Susitna Borough 2015-2040 Population, Housing and Employment Forecast."

- The characterization of the AKDOLWD population forecasts published in 2014 and the ISER population forecasts published in 2009 was reasonably consistent with my own understanding of both forecasts, the latter I utilized in both the January 2012 Anchorage Commercial Land Assessment and which also informed the Cardno Knik Arm Crossing Socioeconomic Study published in 2014.

- It is important to underscore the fact that the 2009 ISER forecast explicitly modeled the impacts of the Seward/Glenn Highway Connection ("Highway to Highway") project and its very likely direct population effects upon the Mat-Su Borough.

- It is also important to highlight the fact that the 2009 ISER forecast also econometrically modeled a wide variety of different economic variables (average price of oil, etc.) as well as different major economic development and infrastructure projects (Knik Arm Crossing completion, LNG, etc.).

- As the Technical Memorandum mentions, the AKDOLWD population forecast is a demographic cohort-based population forecast. While it also includes migration, it is not as geared as an econometric model would be to reflect major, structural changes to the Anchorage economy or even temporary surges in economic activity with different infrastructure or construction projects.

- To highlight the differences in the forecasts, the Technical Memorandum does a thorough job of discussing the different population levels forecasted, but more so focuses on different population growth rates historically and forecasted by ISER and AKDOLWD.

This is appropriate, but it is also informative to examine how different geographies have experienced actual changes in population historically and how they are projected to experience growth rather in addition to a focus on growth rates. Figure 1 expresses average annual population change for the four major geographies for the Anchorage MSA, the Municipality, the Mat-Su Borough, and the State of Alaska for context. Historical data are reported as well as projected changes for each geography by AKDOLWD.

Figure 1 - Alaska, Anchorage MSA, MOA & MSB Historical & ADOLWD Forecasted Population

| | **Average Annual Population Change** | | | |
	Alaska	**Anchorage MSA**	**Anchorage**	**MSB**
Historical				
1990-1995	10,308	7,123	5,278	1,845
1995-2000	5,070	3,594	1,511	2,083
2000-2005	8,043	6,485	3,375	3,110
2005-2010	8,617	5,759	2,934	2,825
2010-2015	5,479	3,653	1,416	2,237
Projected				
2017-2022	7,212	5,098	2,653	2,446
2022-2027	6,542	4,771	2,289	2,482
2027-2032	5,942	4,434	1,962	2,472
2032-2037	5,626	4,158	1,743	2,415
2037-2042	5,602	3,987	1,657	2,329
Summary				
1990-2015	7,503	5,323	2,903	2,420
2015-2042	6,941	4,893	2,443	2,450

SOURCE: PNW Economics annual average calculations from ADOLWD annual historical and projected (2014) population data (http://laborstats.alaska.gov/pop/popest.htm) and (http://laborstats.alaska.gov/pop/popproj.htm).

- During the previous twenty-five years, 1990 to 2015, the Anchorage MSA added an average of 5,323 new residents annually. 2,903 new residents annually located in Anchorage while 2,420 of which located in the Mat-Su Borough on average. As the table data indicate, over the past 25 years there has certainly been fluctuation in annual average population gains.

- By comparison to historical, annual averages, the AKDOLWD forecasts are conservative. The Anchorage MSA forecast (4,893 new residents annually) falls roughly 10% below historical population growth over the past 25 years, which has included oil price fluctuations and production declines. Additional discussion of oil industry trends for planning context is reserved for later in this report.

Overall, the AKDOLWD population forecast is potentially too conservative for a Base case population forecast if used for the purposes of land use planning to provide an adequate land supply. Although it is of recent vintage, the AKDOLWD forecast is not designed to reflect any specific structural changes in the economy or surges in economic activity and thus population growth due to different economic development initiatives, the key advantage of the methodology of the 2009 ISER forecast.

It is further worth remembering that the 2009 ISER forecast was conducted during the worst of the financial freefall of the national economy at the beginning of the Great Recession. Projections in that

report reflect great uncertainty if not some pessimism about economic performance in Alaska given the broader crash of the U.S. economy.

Recommendations as to Population Forecasting

For informing a Base Case, Low, and High Growth forecast methodology for purposes of land use planning, I would urge Long Range Planning staff to at least consider the following:

- A Base Case population forecast that **at least** matches historical annual population growth over the last 25 years (not necessarily the growth rate but just the average *amount* of growth). Historically realized population growth statewide and in the Anchorage MSA reflects several economic downturns and substantial fluctuations in both oil prices and oil production in Alaska. Historical growth is therefore robust for substantial economic fluctuations. It is also the basis of the current housing affordability crisis in Anchorage as well as growing conflicts between commercial retail development and industrial land capacity, and thus merits being directly reflected in growth and policy formulation moving forward.

- As an alternative, Section VI below provides a suggested population forecast methodology and findings by updating recent econometric studies to account for recent economic conditions. Section VI also compares those findings to the AKDOLWD population forecast.

The AKDOLWD population forecast is of more recent vintage and thus certainly enjoys that chief advantage over directly utilizing forecasts from the 2009 ISER Highway to Highway study. But for long-term land use planning purposes, Long Range Planning staff should consider viewing this forecast as too conservative. Alaska will continue to be a resource-rich state along the rapidly-growing Pacific Rim. And although its impacts are currently uncertain, repeal of the oil export ban in December of 2015 opens Alaskan oil to new and international markets. Section IV below provides a summary review of several long term economic trend factors for Alaska.

To err too conservatively presents risk for Long Range Planning to underestimate housing need and employment land need. This would only serve to exacerbate future realized shortages of growth capacity in Anchorage and corresponding price escalation for both housing and industrial land. Policy considerations would then risk not sufficiently equipping the Municipality for future growth pressures and conflicts over competing uses due to pricing pressures. The dilemma faced by the Municipality regarding overestimating vs. underestimating either land supply or demand and its policy implications is given detailed treatment in Section IV, Figure 6.

Under highly-publicized fluctuations in oil prices, State revenue decline and budget shortfalls, and current economic conditions, it is highly tempting to adopt modest growth forecasts for policy purposes given recently realized job losses and growing general economic pessimism. Unfortunately long-term forecasts that permanently reflect current pessimism and very recent, Great Recession-affected growth underperformance risk under-action by the Municipality on key development capacity policies and actions. In other words, housing price escalation is better handled by over-planning appropriate new housing capacity than under-planning it because of too-modest population forecasts. As the Northrim

Bank economist was recently quoted, "'What's better than panicking is preparing,' in order for businesses to survive the expected downturn, (Northrim Bank economist) Edwards said."[2]

Regarding general methodology for identifying a High and Low Growth scenario definition, adopting the general range of population growth deviation under the ISER 2009 forecast for Low vs. Base and High vs. Base is reasonably similar to the thought process that went into the Knik Arm Crossing Socioeconomic Study. The 2009 ISER study does a very thorough job of detailing numerous economic variables and major economic development projects that affect the outcome of a Low or High growth scenario relative to a Base case.

Having said that, it should be remembered that:

- ISER High Growth assumed the Knik Arm Crossing would be developed;

- ISER Base Growth assumed the Knik Arm Crossing would be developed;

- ISER Low Growth assumed there would be no Knik Arm Crossing;

- ISER made no specific assumptions about MOA/MSB population growth split changes with a Knik Arm Crossing, simply that historical trend would continue.

III. Anchorage MSA Total vs. Wage & Salary Employment

Introduction

This section is intended as a response to Planning Department staff questions regarding use of the 2014 ADOLWD population forecast-driven employment forecast (2015-2040) for Anchorage and the Mat-Su Borough, specifically the issue of land forecasting with total employment vs. wage and salary employment only. Content in this section is from the February 16, 2016 PNW Economics white paper "Anchorage MSA Total vs. Wage/Salary Employment" memorandum.

Total vs. Wage & Salary Employment Considerations

Planning Department staff inquired what the effects would be of forecasting "Total Employment" by industry sector for the MOA planning area as compared to wage and salary/payroll employment only. The former was the emphasis of the January 12, 2015 "Anchorage and Matanuska-Susitna Borough 2015 – 2040 Population, Housing and Employment Forecast." The latter, of course, was the emphasis of methodology for forecasting industrial space and land need in the 2015 Anchorage Industrial Land Assessment Update. The following are my perspective for each major non-residential land use type:

- For industrial space and land demand forecasting, adding sole proprietors, self-employed, or proprietors who do not draw salary would not likely add greater explanatory power and magnitude of space and land demand. In general, non-payroll jobs among industrial-type sectors generally usually do not drive demand for private industrial real estate products. They are more often than not home occupancy businesses that utilize storage, space, and vehicles frequently

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[2] http://www.adn.com/article/20160412/northrim-banks-advice-those-doing-business-alaska-don-t-panic

found at a residential location. These are usually small contractors, small craftsmen and craftswomen, small manufacturers, or others.

- For <u>retail</u> commercial space and land demand forecasting, sole proprietors, self-employed or others that are not wage/salary jobs also exhibit similar home occupancy patterns as industrial non-wage/salary jobs. They also tend to use kiosks in existing commercial retail space, temporary space during events and seasons (such as Fur Rondy, summer tourism, etc.) in addition to home occupancy and selling goods online.

- For <u>office</u> commercial space, there is value in adding sole proprietors and the self-employed as they are more likely to lease or sublease office space or executive office space in addition to home office occupancy in my experience. But home occupancy is still common and thus the additional magnitude of demand for office space would be only partial.

In summary, among the major non-residential land uses, only one of the three exhibits some likely magnitude of dedicated employment space and land usage (office commercial) by sole proprietors, but only a share of such as well as home occupancy based on my experience.

Formal studies of home occupancy rates in different specific sectors could not be identified, but research may uncover just such documents online. However, it would be worth noting that home occupancy rates would likely vary in Anchorage compared to the Lower 48 – and potentially considerably – due to climate, cost per-square-foot of developed space vs. utilizing space in home occupancy, and the extraordinarily high rate of local business ownership due to the geographic isolation of Alaska and Anchorage specifically.

Because the purpose of underlying employment forecasting for AMATS is transportation system modeling, it may likely be a better methodological approach and usage of time to make assumptions about how much home occupancy by sector for non-wage/salary jobs is occurring on residentially-zoned land for purposes of modeling and trip capture.

But short of that – or as a result of identifying home occupancy rates by sector – the land need model that has basically been utilized in both the Commercial Land and Industrial Land studies can be easily adapted to include non-payroll and wage employment.

Again, caution is in order as some rate(s) of home occupancy for the different sectors would need to be researched or just assumed as likely only a small minority of non-wage/salary employment is going to build/own or lease real estate products or drive the need for new real estate production construction.

IV.   Oil Industry Recession & Updated Job Forecasting

Introduction

This section of the report addresses the following as a result of emerging recessionary pressure on Anchorage due to oil price-induced job losses:

- Economic context for the current economic downtown due to low oil prices and resulting State of Alaska fiscal consequences.

- Economic and land need forecasting considerations given risk of overestimating or underestimating long-term growth potential on Anchorage.

- An updated "Hybrid" employment forecast methodology that utilizes the 2015 Anchorage Industrial Lands Assessment Update 'Baseline" employment forecast, but reduces the first five years of growth to reflect recession and recovery.

Content in this section is from the February 16, 2016 PNW Economics white paper "Anchorage MSA Employment Forecast Considerations."

Oil Prices & Economic Context

To provide context for how the Municipality currently considers the short-term and long-term economy for employment forecasting purposes, PNW Economics presents a series of charts of Alaska petroleum industry data for context. Three figures provide the following information:

- Figure 2: 1990-2015 Alaska Oil Production & July 1 Alaska North Slope (ANS) Price Per Barrel

- Figure 3: Medium-Term & Long-Term Alaska Oil Production & Oil Price Forecasts

- Figure 4: Medium-Term & Long-Term (Taxable) Gross Production Value of Alaska Oil

Historical Oil Prices & Production

Figure 2 provides annual Alaska oil production[3] and ANS (West Coast) oil prices per barrel[4] from 1990 to 2015. All data is from standard State of Alaska and federal industry sources. Key points to consider:

- Oil prices did indeed take a serious dip beginning in 2014 to below $30 per barrel recently in 2016;

- Although the oil price drop is problematic for the Alaska economy and the State of Alaska budget, oil prices per barrel are actually down to levels commonly experienced from before 1990 up to roughly 2003.

- The true problem with the State of Alaska budget regarding oil revenues is actually the steady decline in oil production, overwhelmingly on the North Slope. 2015 marked the first year in decades where statewide production fell below 200 million barrels.

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[3] AK DNR Division of Oil & Gas (http://dog.dnr.alaska.gov/Royalty/Production.htm)
[4] U.S. Energy Information Administration
(https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=f005071__3&f=m)

Figure 2 - Historical Alaska Oil Production & Oil Prices (per Barrel), 1990-2015
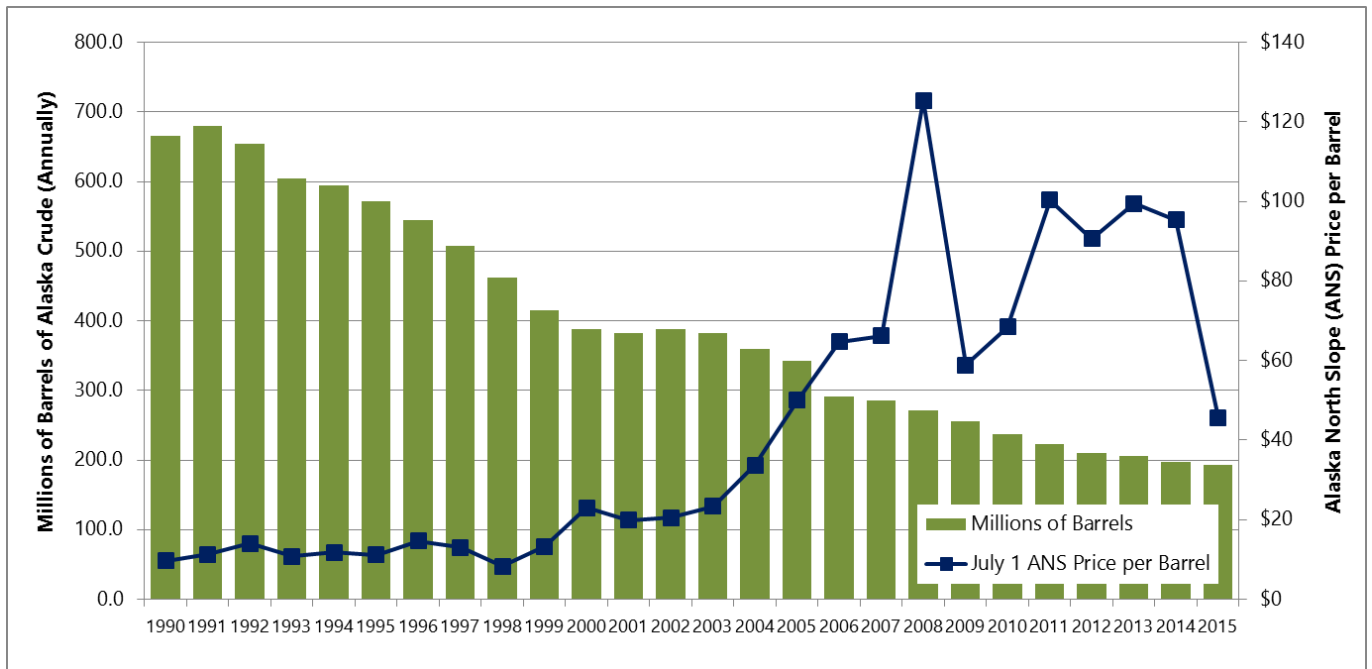
- In other words, the State of Alaska budget was supported by unusually high oil prices for a decade and through the Great Recession, all while actual oil production continued to decline.

Although oil tax revenues are crucial for the State of Alaska budget and based on fluctuating oil prices, the Alaska economy and the Anchorage economy and population continued to grow despite the long-term downward trend in real oil production.

There is no denying that the Anchorage economy is looking at uncertainty with large oil price fluctuations and sizeable oil industry employment within the Anchorage MSA. Employment cuts have been announced and spending reductions by the State have already been announced or are anticipated.

However, the most detailed, one-year economic and population forecast for Anchorage – by the AEDC[5] – expects local employment to contract by merely 1% due to the growth of Anchorage as a statewide health care center and continued growth in Anchorage's tourism sector.

Local population is projected to drop by 2,100, an 0.7% reduction. AEDC goes on to note that although the drop is an unfortunate outcome of oil industry turmoil, the population reduction pales in comparison to the 1987-1988 oil industry crash when Anchorage lost 11,000 residents, or a full 5% of its population.[6]

In other words, despite much uncertainty and gloomy Alaska budget projections and ensuing politics, the Anchorage economy is far more diversified in 2016 than in previous decades. As a result, it is expected to withstand the temporary contraction with far fewer losses than the community did in the late 1980s crash.

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[5] Anchorage Economic Development Corporation 2016 Economic Forecast (http://aedcweb.com/wp-content/uploads/2016/01/2016-AEDC-Economic-Forecast-Report-sponsored-by-BP.pdf)
[6] Ibid.

Oil Prices & Production Consolidated Outlook

PNW Economics reviewed the most recent forecasts of:

- Alaska oil production over the medium-term[7] (2015-2025);

- Alaska oil production over the long-term[8] (2025-2040);

- ANS prices per barrel over the medium-term[9] (2015-2025); and

- Longer-term global oil prices. [10]

Figure 3 presents the following, resulting information:

- Alaska Department of Revenue projections of annual Alaska oil production and ANS price per barrel through 2025;

- U.S. Energy Information Administration long-term percentage change projections for Alaska oil production from 2025 to 2040; and

- OPEC blended average world oil price projections from 2025 to 2040.

Key points to consider:

- All mainstream authorities on Alaska and world oil prices expect prices per barrel to return to roughly $50 per barrel in 2016 and as high as $60 per barrel on average by 2018.

- After 2020, long-term oil demand from sustained growth in Asia and other developing countries is expected to push oil prices significantly higher thereafter, growing upwards of 2%-3% annually through 2040.

- Alaska oil production is expected to very slowly decline through 2020 based on likely production volumes in existing field investments as well as recent, approved new investments within the State.

- After 2020, Alaska oil production from existing investments is expected to dip in a more pronounced manner through 2035, followed by a recovery by 2040 following new production investment that would come from oil price gains due to world demand.

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[7] Alaska Department of Revenue, Revenue Sources Book Fall 2015 (December 30, 2015)
(http://www.tax.alaska.gov/programs/documentviewer/viewer.aspx?1240r)
[8] U.S. Energy Information Administration, Annual Energy Outlook 2015 (April 2015)
(https://www.eia.gov/forecasts/aeo/pdf/0383(2015).pdf)
[9] Alaska Department of Revenue, Revenue Sources Book Fall 2015 (December 30, 2015)
(http://www.tax.alaska.gov/programs/documentviewer/viewer.aspx?1240r)
[10] OPEC, World Oil Outlook 2015 (October 2015)
(http://www.opec.org/opec_web/static_files_project/media/downloads/publications/WOO%202015.pdf)

Figure 3 - Projected Alaska Oil Production & Oil Prices, 2016-2040
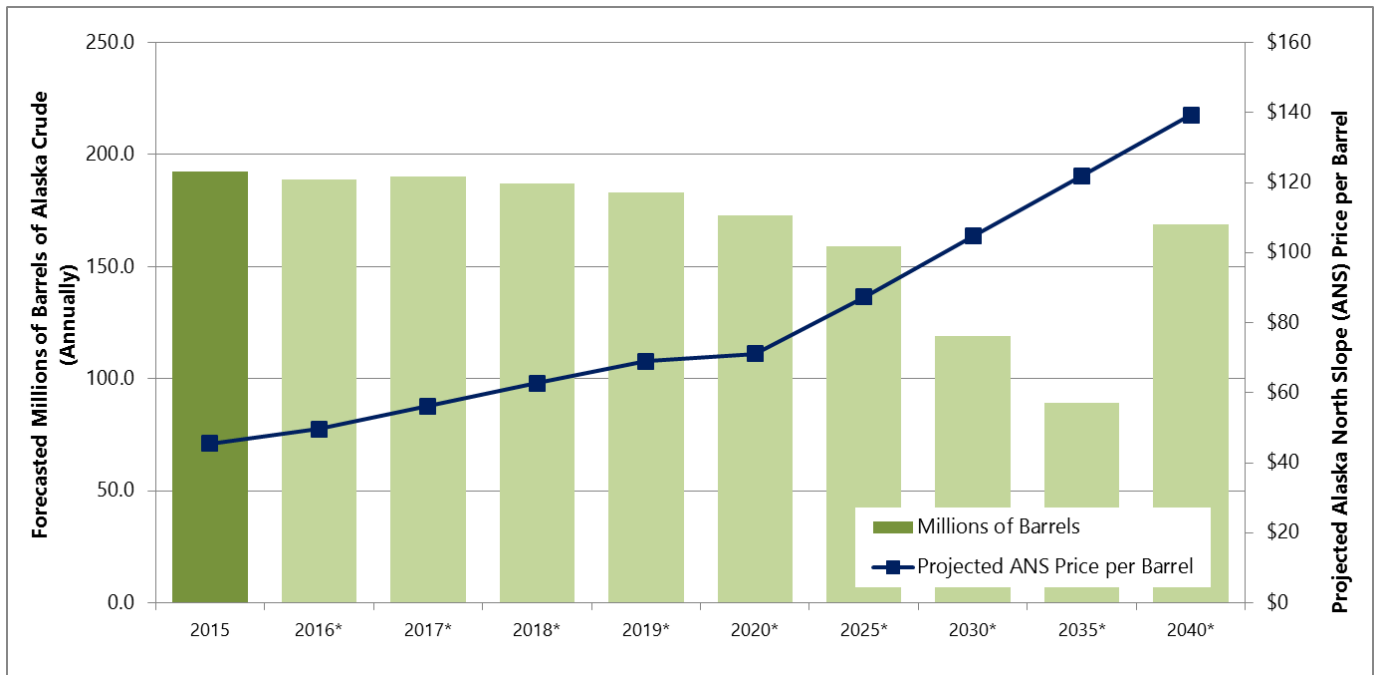
In other words, there are no major fluctuations expected in underlying oil production activity in Alaska through 2020 while oil prices are expected to more than triple over the next five years from current levels.

The key long-term challenge for the Alaskan oil industry and the State, then, is sooner reversal of declining production which OPEC expressly contributes to the fact that "Prudhoe Bay and Kuparuk are both mature fields, requiring significant levels of investments to slow their production decline" over the medium-term.[11]

Any successful policy measures to attract sizeable investment to reverse the trend would represent a spur in economic activity for the State and for Anchorage that would register as a higher job growth scenario from an economic forecasting perspective.

Gross (Taxable) Oil Production Value Forecast

The product of annual, average oil prices and annual, projected oil production within Alaska gives an estimate of the oil-generated resources that would benefit State of Alaska revenues. Figure 4 provides both historical figures for gross production value from 2005 to 2015, as well as projected gross production value as a result of most recent forecasts summarized above.

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[11] Ibid.

Figure 4 - Historical & Projected Gross (Taxable) Alaska Oil Production Value, 2005-2040
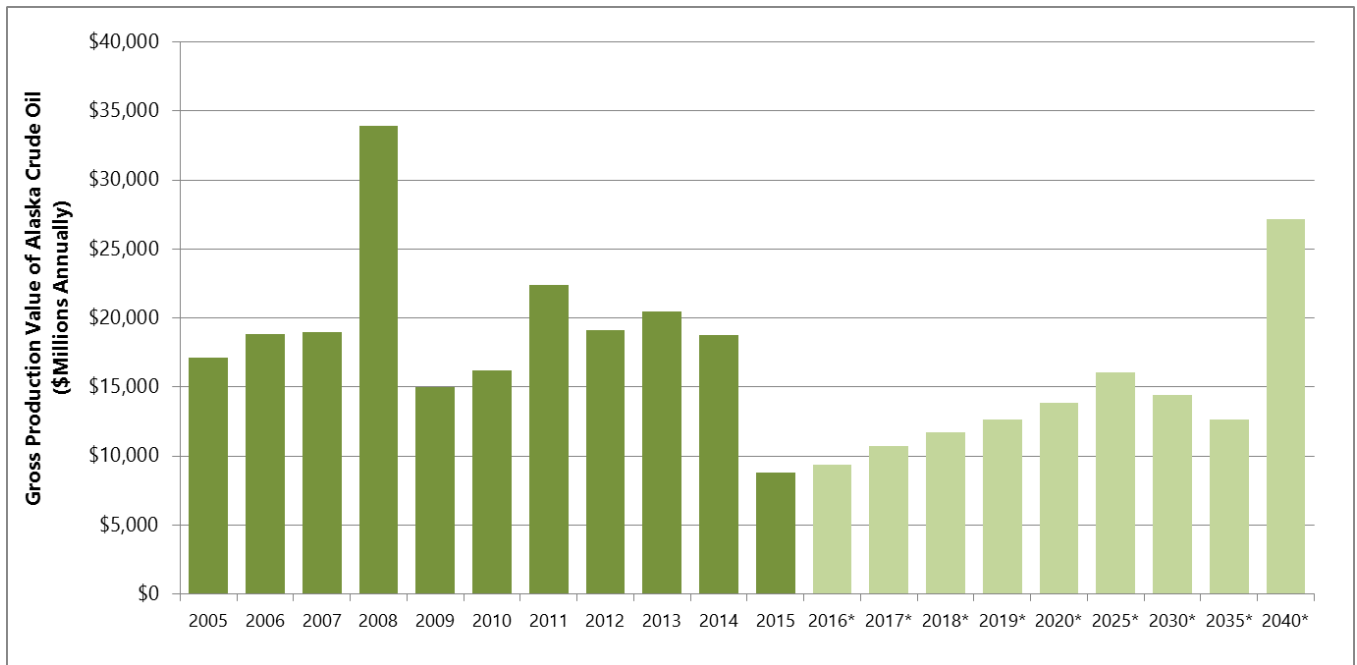
Key points to consider:

- Despite long-term, continued expectations of Alaskan oil production decline, rising oil prices are expected to grow production value to at least the 2009 level by 2025.

- More rapid production decline forecasted from 2025 to 2035 is not saved by continually higher oil prices.

- Very long-term new investment and production, paired with rising oil prices indicates a long wait for significant new taxable resources for the State.

In other words, rising oil prices mitigate some of the long-term State revenue problems, but the true challenge is declining volume of production.

Anchorage Economic Transition (1997-2014)

During documented trend in oil industry performance statewide, along with its impacts in Anchorage, the Municipality economy has undergone structural change that has helped diversified away from singular dependence upon the petroleum sector. Figure 5 provides an analysis of Anchorage industry sector employment and change between 1997, the earliest year of detailed AKDOLWD data publicly available, and 2014.

Comparison of 1997 and 2014 economic data for Anchorage reveals how the local economy grew substantially in both Professional & Business Services and Education & Health Services. Combined, both sectors accounted for a remarkable 66% of Anchorage job growth over the 17-year period according to AKDOLWD data.

- Professional & Business Services includes some administration-level jobs in the petroleum industry, however much of the growth in Anchorage is due to the rapid expansion of many of the state's Native Corporation headquarter and subsidiary management operations based in

Anchorage. The sector added 7,177 jobs and grew from 10% of the local economy to 13% of the local economy.

- Education & Health Services, best represented by the UMed District, added the most jobs during the 17-year period and grew from 9% of the local economy to 16% of the local economy. Anchorage is now far and away the center of health care statewide as a result and has benefited growth in investment by higher education as well.

Figure 5 – MOA Industry Sector Employment Components of Change, 1997-2014

Industry Sector	Employment			Sector Share of Total			'97-'14
	1997	2014	Net	1997 (%)	2014 (%)	Change	AAGR
Agriculture	620	130	(490)	1%	0%	0%	-8.8%
Mining	3,342	3,641	299	3%	2%	0%	0.5%
Construction	6,952	8,263	1,311	6%	5%	0%	1.0%
Manufacturing	1,958	2,076	118	2%	1%	0%	0.3%
Wholesale Trade	5,954	4,714	(1,240)	5%	3%	-2%	-1.4%
Transportation, Warehousing & Utilities	10,167	10,773	606	8%	7%	-1%	0.3%
Retail Trade	15,884	17,836	1,952	13%	12%	-1%	0.7%
Information	2,825	4,012	1,187	2%	3%	0%	2.1%
Financial Activities	6,330	7,925	1,595	5%	5%	0%	1.3%
Professional & Business Services	**12,446**	**19,623**	**7,177**	**10%**	**13%**	**3%**	**2.7%**
Education & Health Services	**11,315**	**24,254**	**12,939**	**9%**	**16%**	**6%**	**4.6%**
Leisure & Hospitality	12,574	16,934	4,360	10%	11%	1%	1.8%
Other Services	5,565	6,047	482	5%	4%	-1%	0.5%
Non-Classified	69	269	200	0%	0%	0%	8.3%
Total Private	*96,001*	*126,497*	*30,496*	*78%*	*82%*	*4%*	*1.6%*
Federal Government	9,954	8,437	(1,517)	8%	5%	-3%	-1.0%
State Government	8,100	10,776	2,676	7%	7%	0%	1.7%
Local Government	8,933	9,326	393	7%	6%	-1%	0.3%
Total Government	*26,987*	*28,539*	*1,552*	*22%*	*18%*	*-4%*	*0.3%*
Total Employment	**122,988**	**155,036**	**32,048**	**100%**	**100%**	**0%**	**1.4%**

SOURCE: AKDOLWD Quarterly Census of Employment & Wages (QCEW) data for the Municipality of Anchorage (http://labor.alaska.gov/research/qcew/qcew.htm). 1997 data in Standard Industrial Classification (SIC) format was converted by PNW Economics by individual sector for comparability to 2014 data in North American Industry Classification System (NAICS) format.

The Mining sector, which includes significant petroleum industry job counts, expanded by at least 299 jobs, but did not grow substantially in its relative role within the Anchorage economy like the above sectors. Likewise, Government employment dropped from 22% of local employment share to 18% despite significant increases in State employment during the period.

In other words, Anchorage's economy has expanded in different directions over the past 17 and more years that indicates greater industry diversity, and as a result, decreasing vulnerability to weakness in one – and still key sector – namely petroleum.

Oil & The Anchorage Economy: Summary

Highly publicized oil price and State budget turmoil aside, the Anchorage economy can be expected to greatly withstand oil industry-related contraction over the short-term, and certainly fare better than in 1987-1988 when the local economy was far more dependent upon the petroleum sector. The Anchorage economy has diversified into sectors that are far less dependent upon oil-related activities over the past 17 years, insulating the local economy from dramatic turmoil that Anchorage weathered nearly 30 years ago.

Oil prices are uniformly projected to snap back over the shorter term and Alaska oil production is continued to see a slow, gradual slide in annual oil production not unlike what it has experienced over the last decade and more.

In short:

- There are reasons to be somewhat pessimistic about the Anchorage economy over the short term as the State changes course fiscally at the very least.

- Long-term pessimism about the Anchorage economy should be viewed as unfounded based on most recent industry information and best, recent forecasting from credible sources.

- Should long-term Alaska oil production decline be reversed by new investment activity, the spur in new development would boost Anchorage economic performance.

PNW Economics, therefore, urges the Municipality of Anchorage to reconsider any predisposition to *dramatically* revise downward its 20-year economic and population forecasts due to perceived long-term weakness in the Alaska oil industry. We find that economic transition as a result of short-term oil price and production problems, along with state employment and spending cuts, will be unavoidable. But significant transition of the local economy into other sectors over the last 17+ years, as well as anticipated oil price recovery over the next two years, position Anchorage for shorter-term economic losses that will likely be a small fraction of losses experienced in the much storied 1987-1988 oil crash, the memory of which understandably seems to inform the more cautious thinking of some.

As a result, a temporary "Low-Growth" scenario may be appropriate for the first one to three years of any new 20-year forecasting conducted by Long-Range Planning staff. But long-term, economic pessimism for Anchorage is unfounded. Further, as will be discussed in the next section, there is policy and real economic hazard associated with too-pessimistic bias to population and employment forecasting in Anchorage's seriously land-constrained urban environment.

Forecasting Growth, Land Demand, Supply Constraint, & Policy Hazard

The ultimate performance of the Anchorage economy over a twenty-year period, with or without short-term uncertainty about the crucial petroleum industry, is obviously yet to be determined. While the Municipality can or should do little to shape the demand drivers for land, Anchorage can affect the available supply of land and related policies that entitle their character of its development for different uses.

Employment and population forecasts are intended to inform how the Municipality plans its buildable land supply. Conservative forecasting would inherently inform a likely lower planned supply of land over

the next twenty years. Alternatively, forecasting higher growth would likely inform a larger planned supply of land during the planning period.

Both can be appropriate, but as the Municipality has greater control of land supply than it does the economic and population growth that drive demand, the difference between forecasted demand and actually *realized* demand for land is what introduces economic risk to well-intended policies. In other words, the central question is: *Is it better to plan for a more optimistic growth path or to plan for a more conservative growth path?* Figure 6 provides a conceptual answer to this question.

Figure 6 - Interaction Between Forecasted Land Demand & Planned Land Supply
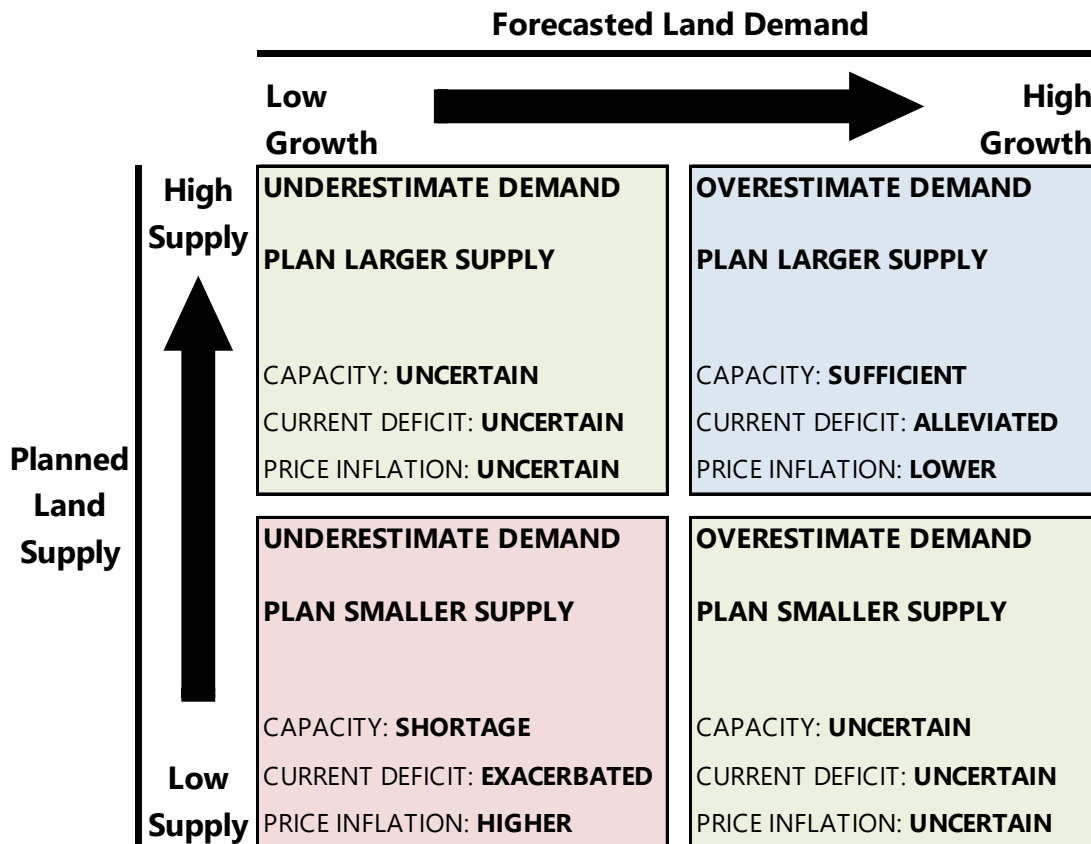
From a land demand perspective, forecasting of need can generally range from a pessimistic/lower growth expectation to an optimistic/higher growth expectation. Based on either bias, the Municipality would see justification for either a lower or a higher supply of buildable land for different uses over the next twenty years.

As Figure 6 demonstrates, there are four possible outcomes from the interaction of land demand and supply. The worst possible outcome from a planning perspective is to both underestimate land need and plan for lower land capacity/supply over the next twenty years. Growth is not fully accommodated, the existing deficit of land supply is exacerbated, and the price of land and resulting uses is guaranteed to inflate even further.

The best economic outcome, on the other hand, is if the Municipality plans a larger supply of land capacity along with forecasting more land need than is realized. Growth is fully accommodated while extra capacity is created to in some measure alleviate current land supply deficits. The result is downward pressure on land cost escalation and the cost escalation of various uses.

Anything in between would have uncertainly positive or negative impacts upon capacity sufficiency and the cost of land, housing, etc. Risks of negative impacts are, therefore, minimized from an economic perspective by planning for higher expectations of growth rather than lower expectations of growth.

Recommended Employment Forecast

After review of prevailing information and forecasts of the Anchorage economy through oil industry turmoil and for the Alaska oil industry itself, as well as considerations for best practice for land supply planning in the face of economic uncertainty, PNW Economics recommends that the Municipality of Anchorage consider the following:

- A short-term low growth forecast for the Anchorage economy lasting no more than five years; and

- A longer-term forecast thereafter that is more consistent with long-term trend and prevents the Municipality from under-planning land capacity, exacerbating existing supply deficits, costs of land, and costs of uses such as housing.

The resulting hybrid forecast approach is expressed in Figure 7 with methodology explained following the figure. PNW Economics estimates that the five-year low growth/recession added between 2015 and 2020 reduces 20-year total employment growth by 3,600 total jobs or 9.4%. Alternatively, the Figure 7 forecast exceeds Base Case total employment growth for the 2015-2040 period expressed in the January 12, 2016 Planning Department Technical Memorandum (Table 23, p. 23) by 8,630 jobs, or 24%.

Figure 7: Hybrid Baseline MOA Employment Forecast: Oil Recession, 2015-2040

Baseline No KAC Bridge Scenario	Self	Payroll	Total	Total Employment					Δ	Δ
Employment Sector	2015	2015	2015	2020	2025	2030	2035	2040	'15-'35	'15-'40
Mining	970	3,400	4,370	4,160	4,290	4,420	4,550	4,680	180	310
Construction	2,960	8,500	11,460	11,640	11,970	12,300	12,630	12,960	1,170	1,500
Manufacturing	0	2,400	2,400	2,400	2,500	2,600	2,700	2,800	300	400
Wholesale Trade	560	4,500	5,060	5,550	5,900	6,250	6,600	6,950	1,540	1,890
Retail Trade	3,710	17,600	21,310	22,000	23,080	24,160	25,240	26,320	3,930	5,010
Transportation, Warehousing & Utilities	1,080	11,800	12,880	13,340	14,070	14,800	15,530	16,260	2,650	3,380
Information	0	3,800	3,800	3,800	3,930	4,060	4,190	4,320	390	520
Financial Activities	0	8,700	8,700	8,700	9,050	9,400	9,750	10,100	1,050	1,400
Professional & Business Services	4,590	19,400	23,990	25,310	27,140	28,970	30,800	32,630	6,810	8,640
Education & Health Services	1,480	24,700	26,180	28,000	30,650	33,300	35,950	38,600	9,770	12,420
Leisure & Hospitality	1,890	16,700	18,590	19,700	21,130	22,560	23,990	25,420	5,400	6,830
Other Services	650	5,800	6,450	6,620	6,900	7,180	7,460	7,740	1,010	1,290
Government	0	30,900	30,900	30,700	30,900	31,100	31,300	31,500	400	600
Total	**17,890**	**158,200**	**176,090**	**181,920**	**191,510**	**201,100**	**210,690**	**220,280**	**34,600**	**44,190**

The "Hybrid" Baseline No KAC forecast in Figure 7 differs from the Baseline No KAC employment forecast in the 2015 Anchorage Industrial Land Needs Assessment Update (Figure 2-12, p.20) in the following ways:

- Adds self-employment and other non-payroll jobs that do not utilize home offices or home business locations to the 2015 base year. Non-payroll jobs added to QCEW[12] jobs in Table 21 of the January 12, 2016 Planning Department Technical Memorandum were adjusted by IRS sole proprietor tax return data[13] by major industry sector to account for the share of self-employed do not claim business home use/home office deductions.

- Assumes Low Growth Scenario job gains between 2015 and 2020 by industry sector as expressed in the 2015 Anchorage Industrial Land Needs Assessment Update (Figure 2-14, p.24). This is intended as an accounting of temporary job losses and slower initial recovery due to current oil industry weakness and State budget difficulties.

- Assumes Baseline No KAC Growth Scenario average annual job gains between 2020 and 2035 by industry sector as expressed in the 2015 Anchorage Industrial Land Needs Assessment Update (Figure 2-12, p.20). This represents a return to reasonably normal, trended growth after a five-year oil industry-induced contraction and recovery.

- Extends average job gains by industry sector estimated for 2020-2035 an additional five years to 2040. This represents additional continuation of trended, baseline growth.

Revised Baseline Industrial Land Demand Forecast

With a "Hybrid Baseline" employment forecast for the Municipality of Anchorage as expressed in Figure 7, it is possible to provide a revised forecast of industrial land demand for Anchorage. Figure 8 provides industrial land need through 2035 and 2040 for the Municipality as a result of the "Hybrid" employment forecast. 20-year land demand is reduced by 73 gross acres to 508.7 acres, or a 12.5% reduction in demand.

Figure 8 - Hybrid Baseline MOA Employment Forecast: Oil Recession, 2015-2040

Baseline No KAC Bridge Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	2015	2035	2040	'15-'35	'15-'40	2015	2035	2040	'15-'35	'15-'40
Mining	1,575.5	1,640.4	1,687.3	64.9	111.8	267.9	256.2	257.1	-11.7	-10.8
Construction	2,969.0	3,272.1	3,357.6	303.1	388.6	445.5	450.9	451.4	5.5	6.0
Manufacturing	4,063.0	4,570.8	4,740.1	507.8	677.1	323.9	334.6	338.6	10.8	14.7
Wholesale Trade	3,401.6	4,436.8	4,672.1	1,035.2	1,270.5	206.6	247.5	254.3	40.9	47.7
Retail Trade	3,194.4	3,783.5	3,945.4	589.1	751.0	271.6	295.5	300.6	23.9	29.0
Transportation, Warehousing & Utilities	15,339.6	18,495.6	19,365.0	3,156.0	4,025.4	2,301.6	2,549.0	2,603.7	247.4	302.1
Information	585.6	645.7	665.8	60.1	80.2	36.4	36.9	37.1	0.5	0.7
Financial Activities	893.8	1,001.7	1,037.7	107.9	143.9	99.1	102.0	103.1	2.9	4.0
Professional & Business Services	4,313.3	5,537.7	5,866.7	1,224.4	1,553.4	478.4	564.1	583.0	85.7	104.7
Education & Health Services	2,616.3	3,592.7	3,857.5	976.4	1,241.2	256.7	323.7	339.1	67.1	82.4
Leisure & Hospitality	1,703.3	2,198.1	2,329.1	494.8	625.8	197.5	234.1	242.0	36.6	44.5
Other Services	3,183.2	3,681.6	3,819.8	498.4	636.6	253.7	269.5	272.8	15.8	19.1
Government	2,232.5	2,261.4	2,275.8	28.9	43.3	237.3	220.8	216.7	-16.5	-20.5
Total	**46,071.1**	**55,118.1**	**57,619.9**	**9,047.0**	**11,548.8**	**5,376.2**	**5,884.9**	**5,999.7**	**508.7**	**623.5**

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[12] Quarterly Census of Employment & Wages, a standard industry sector employment data format. For further details, see note for Figure 5.

[13] https://www.irs.gov/pub/irs-soi/13insumbulsoleprop.pdf

Although this forecast scenario sees reduced industrial land demand, the drop in need does not significantly alter conclusions reached in the 2015 Anchorage Industrial Land Assessment Update. The insufficiency of existing acreage identified as either already explicitly zoned for industrial use, or lands potentially rezoned to industrial use continue to not meet 20-year demand in the Anchorage Bowl, thought the deficit is less pronounced.

AKDOLWD-Driven Industrial Land Demand Forecast

For comparison purposes, the Base Case employment forecast from the January 12, 2016 Planning Department Technical Memorandum was modeled utilizing identical industrial space and land usage assumptions and analysis documented in the 2015 Anchorage Industrial Lands Assessment Update. Results are expressed in Figure 9.

The significantly more conservative nature of the AKDOLWD purely population cohort-driven employment forecast becomes apparent in the industrial land demand estimates in Figure 9. 20-year industrial land demand in the Base Case – which does not explicitly model a recessionary period – is estimated at 301.3 gross acres compared to 508.7 gross acres in Figure 8.

Industrial land demand estimated in Figure 9 results in significant changes to findings of the sufficiency of industrial land in the Anchorage Bowl and Municipality-wide. The results of this scenario indicate that all lands within the Anchorage Bowl currently zoned for industrial use accommodate nearly all 20-year need and only fall short by roughly 26 acres.

Figure 9 - AKDOLWD-Driven Base Case MOA Employment Forecast: 2015-2040

Base Case - AKDOLWD-Driven	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	2015	2035	2040	'15-'35	'15-'40	2015	2035	2040	'15-'35	'15-'40
Mining	1,658.4	1,766.6	1,766.6	108.2	108.2	282.0	275.9	269.2	-6.1	-12.8
Construction	3,406.9	3,611.5	3,632.3	204.6	225.4	511.2	497.7	488.4	-13.5	-22.8
Manufacturing	4,063.0	4,621.6	4,774.0	558.6	711.0	323.9	338.4	341.0	14.5	17.1
Wholesale Trade	3,966.3	4,652.0	4,773.0	685.7	806.7	240.9	259.5	259.8	18.6	18.9
Retail Trade	3,455.3	3,940.9	4,045.9	485.6	590.6	293.8	307.8	308.3	14.0	14.5
Transportation, Warehousing & Utilities	15,589.7	18,090.7	18,721.9	2,501.0	3,132.2	2,339.2	2,493.2	2,517.2	154.0	178.1
Information	585.6	638.0	638.0	52.4	52.4	36.4	36.5	35.6	0.0	-0.9
Financial Activities	893.8	999.7	999.7	105.9	105.9	99.1	101.8	99.3	2.7	0.2
Professional & Business Services	7,700.6	8,784.8	8,977.2	1,084.2	1,276.6	854.0	894.9	892.1	40.8	38.1
Education & Health Services	2,837.2	3,735.6	3,921.4	898.4	1,084.2	278.3	336.6	344.7	58.3	66.4
Leisure & Hospitality	1,817.8	2,241.1	2,314.4	423.3	496.6	210.8	238.7	240.5	27.9	29.7
Other Services	3,276.9	3,642.1	3,681.6	365.2	404.7	261.2	266.7	263.0	5.4	1.8
Government	2,232.5	2,272.2	2,278.7	39.7	46.2	237.3	221.8	217.0	-15.5	-20.3
Total	**51,484.0**	**58,996.8**	**60,524.7**	**7,512.8**	**9,040.7**	**5,968.1**	**6,269.3**	**6,276.1**	**301.3**	**308.0**

Low & High Growth Scenario Deviation Recommendations & Conclusion

In the January 12, 2016 Planning Department Technical Memorandum, for employment forecasting a High Growth scenario and a Low Growth scenario would be estimated assuming:

- High Growth: Base Case average growth rate will be 85% higher; and

- Low Growth: Base Case average growth rate will be reduced by 65%.

Because the purpose of Low and High Growth scenarios are for bracketing potential future growth for policy discussion purposes, there is a somewhat arbitrary nature to what growth rate boosts or reductions are assumed for scenario construction. For all intents and purposes, the 65% reduction/85% boost for the two scenarios could be perfectly appropriate. The driving question these two assumptions should seek to answer is simply:

1. *What if Anchorage grows X% more slowly than we anticipate?*

2. *What if Anchorage grows Y% more quickly than we predict?*

The policy hazard for such forecasting is <u>to choose an inappropriate Baseline or Base Case forecast on which to base a Low and High alternatives to bracket the forecast.</u>

While the population and resulting employment forecasting summarized in the January 12, 2016 Planning Department Technical Memorandum was thoroughly conducted and presents a clear and concise take on population and employment gains through 2040, it is credible for the Municipality to view it alone as too conservative for a Baseline growth forecast for Anchorage, for purposes of estimating land supply needs.

For historical context for different new employment forecasting, Figure 10 compares:

- The Anchorage 2020 employment forecast with actual, realized annual job growth in Anchorage and the Mat-Su Borough (MSB).

- "Hybrid" Baseline and "Base Case" – AKDOLWD annual, average job growth with all of the above.

Figure 10 – Anchorage 2020 Employment Forecast, Realized Growth, and LUPM Update Projections

Actual / Forecast	Source	Average Annual Employment Growth		
		MOA	MSB	Total (MSA)
Annual Average Growth Anchorage 2020 & Actual	Forecast - Anchorage 2020	2,600	368	*2,968*
	Actual - AKDOLWD	1,718	668	*2,385*
Annual Average Growth "Hybrid" Baseline & "Base Case" - AKDOLWD	"Hybrid" Baseline Forecast	**1,768**		
	"Base Case" - AKDOLWD Forecast	**1,415**		

Key findings to consider:

- The Anchorage MSA added jobs each year at a slower pace than projected in the Anchorage 2020 forecast, though unsurprisingly given the speculative nature of "best guess," long-range forecasting.

- Anchorage added jobs slower than projected each year while the MSB grew significantly faster than expected, a likely symptom of Anchorage's declining land supply inventory for all major uses as well as significant housing price differences.

- Moving forward, the "Hybrid" Baseline forecast is similar but slightly higher than realized job growth in Anchorage since 1998 at 1,768 new jobs each year compared to 1,718 actually realized annually.

- The "Hybrid" Baseline forecast represents a 32% reduction in job growth expectations projected in the Anchorage 2020 plan.

- The "Base Case" – AKDOLWD forecast represents 300 fewer Anchorage jobs, or 18% fewer added annually than were realized over the 1998-2015 period (1,415 new jobs projected annually vs. 1,718 realized to 2015).

- Anchorage job growth under the "Base Case" – AKDOLWD forecast is 46% lower than the Anchorage 2020 forecast.

Overall, new forecasts of Anchorage employment growth are significantly lower than projected in the Anchorage 2020 plan, and both are reasonably consistent with or even lower than realized employment expansion from 1998 to 2015. Both methodologies, therefore, have merit in giving Anchorage a more conservative basis for future growth planning given current economic uncertainty with oil industry performance and Anchorage citizen concerns about the economy. The different outcomes of each, however, might best be compared for purposes of bounding potential growth for land use planning instead of either being wholly utilized individually.

V.   Self-Employment & Home Business Analysis

This section of the report is intended as an answer to the question about specifically what share of industry sector self-employment within the MOA would utilize commercially developed employment space (on land primarily zoned for various employment uses) vs. having a work location at home/home office (on land primarily zoned for various residential uses). Content from this section is from the February 28, 2016 PNW Economics white paper "DRAFT Anchorage MOA Self-Employment Not Utilizing Home Office/Work Location."

Figure 11 provides a summary of calculations based on 2011 national IRS data for sole proprietor firms and tax deductions by type.[14]

Figure 11 – MOA Self-Employment Utilizing Space Away from Home/Not On Residential Land

MOA Industry Sectors	IRS (2011) Self-Employment Home Office %		Non-Payroll Jobs	
	At Home Rate	Away Rate	Total	Away From Home
Mining	19.5%	80.5%	1,200	970
Construction	36.4%	63.6%	4,650	2,960
Manufacturing	54.9%	45.1%	0	0
Wholesale Trade	59.9%	40.1%	1,400	560
Retail Trade	32.0%	68.0%	5,450	3,710
Transportation, Warehousing & Utilities	16.0%	84.0%	1,290	1,080
Information	75.7%	24.3%	0	0
Financial Activities	47.7%	52.3%	0	0
Professional & Business Services	80.4%	19.6%	23,430	4,590
Education & Health Services	60.0%	40.0%	3,690	1,480
Leisure & Hospitality	39.8%	60.2%	3,140	1,890
Other Services	22.1%	77.9%	840	650
Government	0.0%	100.0%	0	0
Totals/Averages:		**39.7%**	**45,090**	**17,890**

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[14] https://www.irs.gov/pub/irs-soi/13insumbulsoleprop.pdf

Prepared for: Municipality of Anchorage Long Range Planning Division
Prepared by: PNW Economics, LLC
Anchorage Employment & Non-Residential Land Need Forecasts to 2040

Please note that resulting totals in the far-right column are rounded but also match up with 2015 Self-Employment numbers utilized in each of the "Hybrid" forecasts in previous memorandums. Total Non-Payroll Jobs is directly from the January 12, 2016 Planning Department Technical Memorandum. Again, the home work location/away location split is based on comprehensive 2011 IRS data for national self-employment tax returns with detailed deduction and exemption claims by major NAICS industry classification.

VI. MOA Forecast Methodology Results Comparison

Introduction

This final section provides a follow-up series of employment, population, households and industrial land demand forecasts for the Municipality of Anchorage as a result of all analysis and considerations summarized in the previous sections. The analyses in this section comprise:

- Comparisons between the AKDOLWD-based AMATS employment forecasting conducted for Long Range Planning staff[15] as well as PNW Economics "Hybrid" scenario forecasts.[16]

As a reminder, the revised AKDOLWD-based employment forecasts reflect both payroll and non-payroll (self-employment, etc.) but adjusted for businesses that utilize home/residential business locations rather than commercial locations consistent with IRS sole-proprietor home office/business statistics reported in 2011.

Employment & Population Forecasts

Employment Forecasts Comparison

Figure 12 provides a comprehensive summary of total job growth from 2015 to 2040 for the Municipality of Anchorage under the different growth methodologies and scenarios expressed above. Overall:

- The AKDOLWD-based Base Case scenario and "Hybrid" Baseline forecasts differ by roughly 9,000 jobs added in Anchorage through 2040.

- All forecasts together provide a wide variety of outcomes for Anchorage to consider, varying from as high as 60,730 new jobs in Anchorage by 2040 ("Hybrid" High) to as few as 11,770 new jobs by 2040 ("Hybrid" Low).

- The Low – AKDOLWD scenario sees 16,684 new jobs over the 25-year period (approximately 2,000 *more* new jobs than the initial "Low - AKDOLWD" Scenario).

- The revised "Hybrid" High Growth scenario would see 60,730 new jobs in Anchorage between 2015 and 2040, down from 64,970 in previous draft "Hybrid" results.

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[15] From "MOA Employment Forecast 022916.xls" dated February 29, 2016.

[16] "DRAFT Anchorage MSA Forecast Methodology Results Comparisons" dated February 26, 2016 by PNW Economics, LLC. The memorandum was identified to have calculation errors. Revisions of identified errors are reflected in this report.

- The revised "Hybrid" Low Growth scenario estimates 11,770 new jobs over the next 25 years, up from 8,010 net new jobs in previous draft results.

Figure 12 – MOA "Hybrid" and AKDOLWD-Driven Employment Forecasts

Non-AKDOLWD	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High	176,090	181,920	191,570	205,320	221,070	236,820	60,730	1.2%
Baseline	176,090	181,920	191,510	201,100	210,690	220,280	44,190	0.9%
Low	176,090	176,660	179,460	182,260	185,060	187,860	11,770	0.3%

AKDOLWD-Driven	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High - AKDOLWD	176,090	189,051	200,594	210,569	219,326	228,840	52,750	1.1%
Base Case - AKDOLWD	176,090	184,734	192,433	199,130	205,049	211,474	35,384	0.7%
Low - AKDOLWD	176,090	180,043	183,641	186,830	189,668	192,774	16,684	0.4%

Note: CAGR is Compound Annual Growth Rate.

Figures 13 and 14 on the following pages provide detailed forecasts for employment by sector under the different growth scenarios:

- Figure 13: "Hybrid" Non-AKDOLWD Employment Forecasts including the "Baseline" scenario from the February 26, 2016 PNW Economics, LLC memorandum as well as the "High" and "Low" estimates; and

- Figure 14: Revised AKDOLWD-Driven Employment Forecasts.

Figure 13 – Detailed "Hybrid" MOA Employment Forecast Scenarios, 2015-2040

Baseline Scenario	Self	Payroll	Total	Total Employment					Δ	Δ
Employment Sector	2015	2015	2015	2020	2025	2030	2035	2040	'15-'35	'15-'40
Mining	970	3,400	4,370	4,160	4,290	4,420	4,550	4,680	180	310
Construction	2,960	8,500	11,460	11,640	11,970	12,300	12,630	12,960	1,170	1,500
Manufacturing	0	2,400	2,400	2,400	2,500	2,600	2,700	2,800	300	400
Wholesale Trade	560	4,500	5,060	5,550	5,900	6,250	6,600	6,950	1,540	1,890
Retail Trade	3,710	17,600	21,310	22,000	23,080	24,160	25,240	26,320	3,930	5,010
Transportation, Warehousing & Utilities	1,080	11,800	12,880	13,340	14,070	14,800	15,530	16,260	2,650	3,380
Information	0	3,800	3,800	3,800	3,930	4,060	4,190	4,320	390	520
Financial Activities	0	8,700	8,700	8,700	9,050	9,400	9,750	10,100	1,050	1,400
Professional & Business Services	4,590	19,400	23,990	25,310	27,140	28,970	30,800	32,630	6,810	8,640
Education & Health Services	1,480	24,700	26,180	28,000	30,650	33,300	35,950	38,600	9,770	12,420
Leisure & Hospitality	1,890	16,700	18,590	19,700	21,130	22,560	23,990	25,420	5,400	6,830
Other Services	650	5,800	6,450	6,620	6,900	7,180	7,460	7,740	1,010	1,290
Government	0	30,900	30,900	30,700	30,900	31,100	31,300	31,500	400	600
Total	**17,890**	**158,200**	**176,090**	**181,920**	**191,510**	**201,100**	**210,690**	**220,280**	**34,600**	**44,190**

High Growth Scenario	Self	Payroll	Total	Total Employment					Δ	Δ
Employment Sector	2015	2015	2015	2020	2025	2030	2035	2040	'15-'35	'15-'40
Mining	970	3,400	4,370	4,160	4,660	5,160	5,660	6,160	1,290	1,790
Construction	2,960	8,500	11,460	11,640	12,090	12,540	12,990	13,440	1,530	1,980
Manufacturing	0	2,400	2,400	2,400	2,700	3,000	3,300	3,600	900	1,200
Wholesale Trade	560	4,500	5,060	5,550	5,750	6,250	6,950	7,650	1,890	2,590
Retail Trade	3,710	17,600	21,310	22,000	22,800	24,000	25,300	26,600	3,990	5,290
Transportation, Warehousing & Utilities	1,080	11,800	12,880	13,340	13,940	14,940	16,140	17,340	3,260	4,460
Information	0	3,800	3,800	3,800	4,000	4,300	4,700	5,100	900	1,300
Financial Activities	0	8,700	8,700	8,700	8,900	9,100	9,400	9,700	700	1,000
Professional & Business Services	4,590	19,400	23,990	25,310	26,910	29,110	31,910	34,710	7,920	10,720
Education & Health Services	1,480	24,700	26,180	28,000	30,600	34,300	38,500	42,700	12,320	16,520
Leisure & Hospitality	1,890	16,700	18,590	19,700	21,000	22,600	24,600	26,600	6,010	8,010
Other Services	650	5,800	6,450	6,620	6,820	7,120	7,520	7,920	1,070	1,470
Government	0	30,900	30,900	30,700	31,400	32,900	34,100	35,300	3,200	4,400
Total	**17,890**	**158,200**	**176,090**	**181,920**	**191,570**	**205,320**	**221,070**	**236,820**	**44,980**	**60,730**

Low Growth Scenario	Self	Payroll	Total	Total Employment					Δ	Δ
Employment Sector	2015	2015	2015	2020	2025	2030	2035	2040	'15-'35	'15-40
Mining	970	3,400	4,370	4,160	4,060	3,960	3,860	3,760	-510	-610
Construction	2,960	8,500	11,460	11,200	11,300	11,400	11,500	11,600	40	140
Manufacturing	0	2,400	2,400	2,300	2,330	2,360	2,390	2,420	-10	20
Wholesale Trade	560	4,500	5,060	5,300	5,400	5,500	5,600	5,700	540	640
Retail Trade	3,710	17,600	21,310	21,200	21,500	21,800	22,100	22,400	790	1,090
Transportation, Warehousing & Utilities	1,080	11,800	12,880	12,900	13,130	13,360	13,590	13,820	710	940
Information	0	3,800	3,800	3,700	3,730	3,760	3,790	3,820	-10	20
Financial Activities	0	8,700	8,700	8,400	8,500	8,600	8,700	8,800	0	100
Professional & Business Services	4,590	19,400	23,990	24,400	24,930	25,460	25,990	26,520	2,000	2,530
Education & Health Services	1,480	24,700	26,180	27,000	27,880	28,760	29,640	30,520	3,460	4,340
Leisure & Hospitality	1,890	16,700	18,590	19,000	19,450	19,900	20,350	20,800	1,760	2,210
Other Services	650	5,800	6,450	6,400	6,530	6,660	6,790	6,920	340	470
Government	0	30,900	30,900	30,700	30,720	30,740	30,760	30,780	-140	-120
Total	**17,890**	**158,200**	**176,090**	**176,660**	**179,460**	**182,260**	**185,060**	**187,860**	**8,970**	**11,770**

Figure 14 – Detailed AKDOLWD-Driven MOA Employment Forecast Scenarios, 2015-2040

Base Case Scenario	Total	Total Employment					Δ	Δ
Employment Sector	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**'15-'35**	**'15-'40**
Mining	4,370	4,576	4,583	4,693	4,703	4,720	333	350
Construction	11,460	11,866	11,982	12,078	12,172	12,304	712	844
Manufacturing	2,400	2,509	2,659	2,668	2,769	2,871	369	471
Wholesale Trade	5,060	5,482	5,750	5,853	6,041	6,250	981	1,190
Retail Trade	21,310	22,442	23,158	23,827	24,641	25,449	3,331	4,139
Transportation, Warehousing & Utilities	12,880	13,710	14,173	14,540	15,164	15,758	2,284	2,878
Information	3,800	4,014	4,170	4,185	4,199	4,214	399	414
Financial Activities	8,700	9,123	9,578	9,835	9,870	9,905	1,170	1,205
Professional & Business Services	23,990	24,806	25,954	26,929	27,623	28,890	3,633	4,900
Education & Health Services	26,180	28,302	30,832	33,252	35,343	37,373	9,163	11,193
Leisure & Hospitality	18,590	19,935	21,215	22,441	23,356	24,259	4,766	5,669
Other Services	6,450	6,856	7,014	7,144	7,265	7,373	815	923
Government	30,900	31,112	31,364	31,688	31,902	32,107	1,002	1,207
Total	**176,090**	**184,734**	**192,433**	**199,130**	**205,049**	**211,474**	**28,959**	**35,384**

High Growth Scenario	Total	Total Employment					Δ	Δ
Employment Sector	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**'15-'35**	**'15-'40**
Mining	4,370	4,671	4,673	4,850	4,857	4,875	487	505
Construction	11,460	12,066	12,226	12,343	12,462	12,656	1,002	1,196
Manufacturing	2,400	2,559	2,790	2,800	2,952	3,105	552	705
Wholesale Trade	5,060	5,702	6,104	6,253	6,531	6,833	1,471	1,773
Retail Trade	21,310	23,012	24,075	25,070	26,277	27,487	4,967	6,177
Transportation, Warehousing & Utilities	12,880	14,127	14,819	15,356	16,304	17,187	3,424	4,307
Information	3,800	4,115	4,351	4,367	4,382	4,398	582	598
Financial Activities	8,700	9,344	10,022	10,391	10,428	10,465	1,728	1,765
Professional & Business Services	23,990	25,198	26,925	28,377	29,405	31,262	5,415	7,272
Education & Health Services	26,180	29,393	33,249	36,921	40,096	43,160	13,916	16,980
Leisure & Hospitality	18,590	20,628	22,568	24,413	25,791	27,141	7,201	8,551
Other Services	6,450	7,072	7,297	7,485	7,645	7,816	1,195	1,366
Government	30,900	31,163	31,496	31,942	32,197	32,454	1,297	1,554
Total	**176,090**	**189,051**	**200,594**	**210,569**	**219,326**	**228,840**	**43,236**	**52,750**

Low Growth Scenario	Total	Total Employment					Δ	Δ
Employment Sector	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**'15-'35**	**'15-40**
Mining	4,370	4,462	4,474	4,537	4,550	4,568	180	198
Construction	11,460	11,651	11,724	11,792	11,854	11,933	394	473
Manufacturing	2,400	2,449	2,518	2,527	2,577	2,627	177	227
Wholesale Trade	5,060	5,243	5,369	5,426	5,516	5,611	456	551
Retail Trade	21,310	21,826	22,167	22,494	22,877	23,271	1,567	1,961
Transportation, Warehousing & Utilities	12,880	13,254	13,469	13,656	13,945	14,220	1,065	1,340
Information	3,800	3,894	3,968	3,983	3,997	4,011	197	211
Financial Activities	8,700	8,892	9,105	9,229	9,261	9,295	561	595
Professional & Business Services	23,990	24,385	24,911	25,366	25,710	26,323	1,720	2,333
Education & Health Services	26,180	27,117	28,234	29,294	30,222	31,133	4,042	4,953
Leisure & Hospitality	18,590	19,186	19,767	20,315	20,737	21,152	2,147	2,562
Other Services	6,450	6,630	6,711	6,783	6,845	6,901	395	451
Government	30,900	31,053	31,223	31,426	31,578	31,732	678	832
Total	**176,090**	**180,043**	**183,641**	**186,830**	**189,668**	**192,774**	**13,578**	**16,684**

Prepared for: Municipality of Anchorage Long Range Planning Division
Prepared by: PNW Economics, LLC
Anchorage Employment & Non-Residential Land Need Forecasts to 2040

Population Forecasts Comparison

Figure 15 provides a comprehensive summary of total population growth from 2015 to 2040 for the Municipality of Anchorage under the different growth methodologies and scenarios expressed above. New population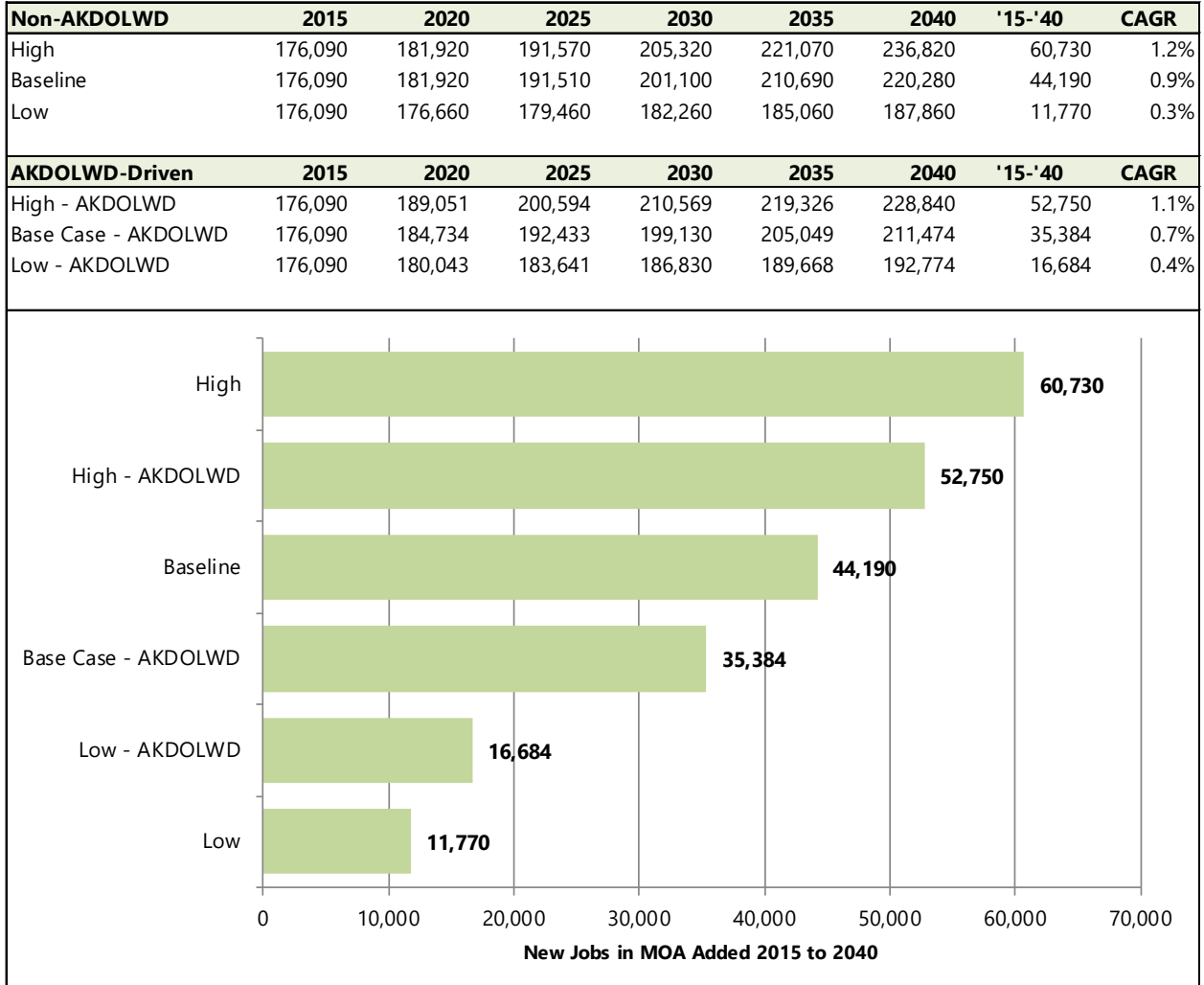 over the next 25 years ranges from as high as 92,089 new residents (Hybrid "High" Scenario) to as few as 9,445 new residents through 2040 (Hybrid "Low" Scenario).

Figure 15 – Summary of MOA Population Forecast Scenarios, "Hybrid" and AKDOLWD-Driven

Non-AKDOLWD	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High	298,034	304,325	319,203	340,897	365,926	388,392	90,358	1.1%
Baseline	298,034	304,426	319,311	334,136	348,951	362,070	64,036	0.8%
Low	298,034	295,723	299,300	302,858	306,468	309,340	11,306	0.1%
AKDOLWD-Driven	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High - AKDOLWD	298,034	316,254	334,240	349,612	363,040	375,304	77,270	0.9%
Base Case - AKDOLW	298,034	309,135	320,850	330,863	339,608	347,596	49,562	0.6%
Low - AKDOLWD	298,034	301,386	306,273	310,451	314,099	317,432	19,398	0.3%

Note: CAGR is Compound Annual Growth Rate.

Household Forecasts Comparison

Figure 16 provides a comprehensive summary of total household growth from 2015 to 2040 for the Municipality of Anchorage under the different growth methodologies and scenarios previously described.

Figure 16 – Summary of MOA Household Forecast Scenarios, "Hybrid" and AKDOLWD-Driven

Non-AKDOLWD	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High	113,028	116,010	122,314	131,315	141,705	151,233	38,205	1.2%
Baseline	113,028	116,062	122,395	128,774	135,221	141,281	28,253	0.9%
Low	113,028	112,773	114,794	116,818	118,886	120,696	7,668	0.3%

AKDOLWD-Driven	2015	2020	2025	2030	2035	2040	'15-'40	CAGR
High - AKDOLWD	113,028	120,557	128,076	134,672	140,587	146,137	33,109	1.0%
Base Case - AKDOLW	113,028	117,857	122,985	127,513	131,600	135,633	22,605	0.7%
Low - AKDOLWD	113,028	114,932	117,468	119,747	121,846	123,853	10,825	0.4%
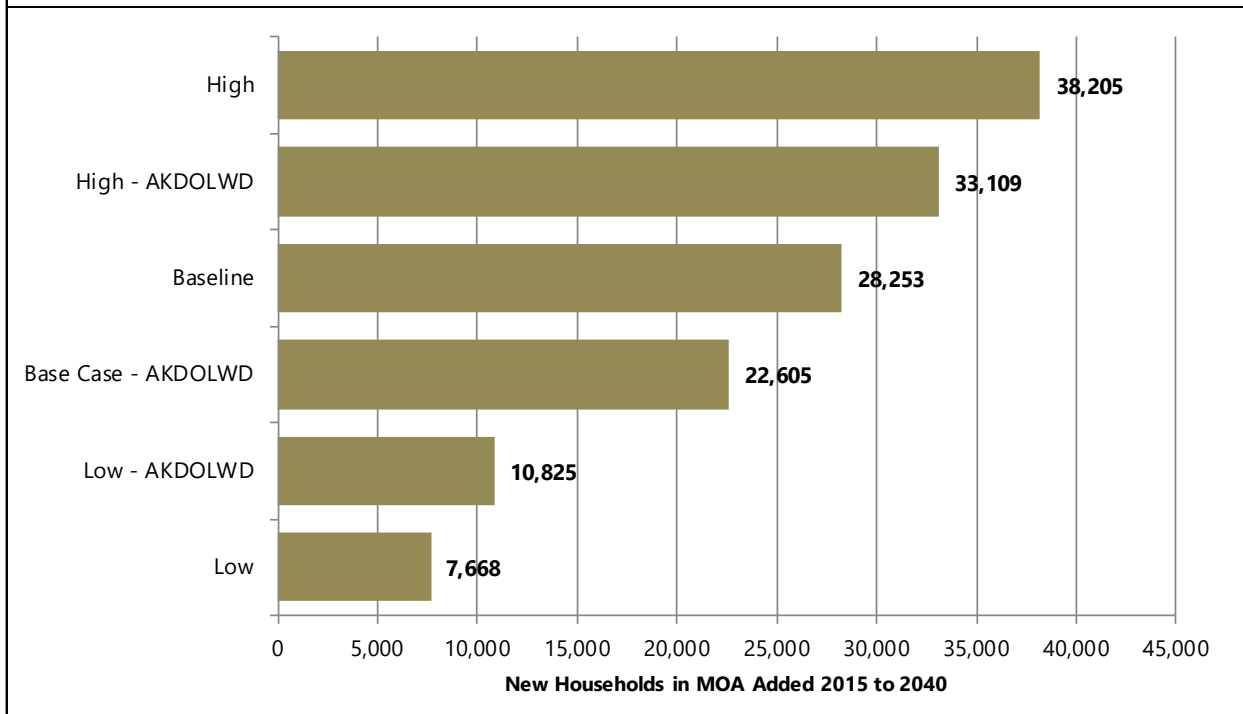
Note: CAGR is Compound Annual Growth Rate.

Non-Residential Land Need Forecasts

Total Non-Residential Land Need

Figure 17 provides a summary estimate of all non-residential land need within the Municipality of Anchorage for both the 2015-2035 and the 2015-2040 time periods. All results reflect both "Hybrid" employment forecasts as well as all three AKDOLWD-based employment forecasts. Detailed analysis for each commercial land use is found immediately following this summary discussion.

The Baseline "Hybrid" forecast indicates a total need for 1,167 acres of non-residential land through 2035 and up to 1,493 gross acres through 2040. Of that, Commercial Land need is estimated at 551 acres through 2035, exceeded only slightly by estimated Industrial Land need of 563 acres.

Figure 17 – Summary of MOA Non-Residential Land Need, 2015-2035 and 2015-2040

2015 - 2035 MOA	Gross Acreage Needed - "Hybrid" Forecasts			Gross Acreage Needed AKDOLWD-Based Forecasts		
	Baseline	High	Low	Base Case	High	Low
Office/Institutional	181.9	226.2	52.4	146.0	199.8	75.3
Retail (Resident & Visitor-Serving)	386.3	470.9	131.6	344.6	448.1	232.2
Lodging	36.6	84.2	17.5	32.3	100.9	21.3
Total Commercial Land Need	*604.9*	*781.3*	*201.5*	*522.9*	*748.8*	*328.9*
Industrial	*562.5*	*836.0*	*230.3*	*403.9*	*731.5*	*200.4*
Total Non-Residential Land Need	**1,167.4**	**1,617.3**	**431.8**	**926.9**	**1,480.4**	**529.3**

2015 - 2040 MOA	Gross Acreage Needed - "Hybrid" Forecasts			Gross Acreage Needed AKDOLWD-Based Forecasts		
	Baseline	High	Low	Base Case	High	Low
Office/Institutional	233.3	307.2	68.6	179.2	245.1	93.1
Retail (Resident & Visitor-Serving)	532.3	661.7	197.2	467.3	588.3	331.6
Lodging	50.5	118.3	26.2	41.9	126.3	30.4
Total Commercial Land Need	*816.1*	*1,087.2*	*291.9*	*688.4*	*959.7*	*455.1*
Industrial	*677.3*	*1,128.1*	*311.0*	*449.0*	*855.0*	*294.3*
Total Non-Residential Land Need	**1,493.4**	**2,215.3**	**602.9**	**1,137.4**	**1,814.7**	**749.4**

In terms of averages for total land need through 2040, the forecasts can be summarized as follows:

- *Baseline/Base Case Forecasts:* The two baseline or base case forecast methodologies predict an average of 563 acres of industrial land need and an average of 752 acres of commercial land need, dominated by retail.

- *High Growth Forecasts:* The two high growth forecast methodologies indicate an average need for 992 acres of industrial land and 1,023 acres of commercial land, again greatly retail land (greater than 50%).

- *Low Growth Forecasts:* Both low growth forecast methodologies predict an average need for 303 acres of industrial land and 374 acres of commercial land, again well over half of that attributable to retail land demand. Baseline land need is 24% lower than 20-year office/institutional estimate of 186.2 gross acres (Figure A, Commercial Land Assessment).

Figure 18 provides a detailed, graphic summary of findings in Figure 17 for each of the different non-residential land need estimates for industrial, retail commercial, office/institutional, and lodging for the Municipality through 2040.

Figure 18 – Comparative MOA Non-Residential Land Need for All Scenarios, 2015-2040

Acres of Gross New Industrial & Commercial Land Demand in the MOA, 2015 to 2040
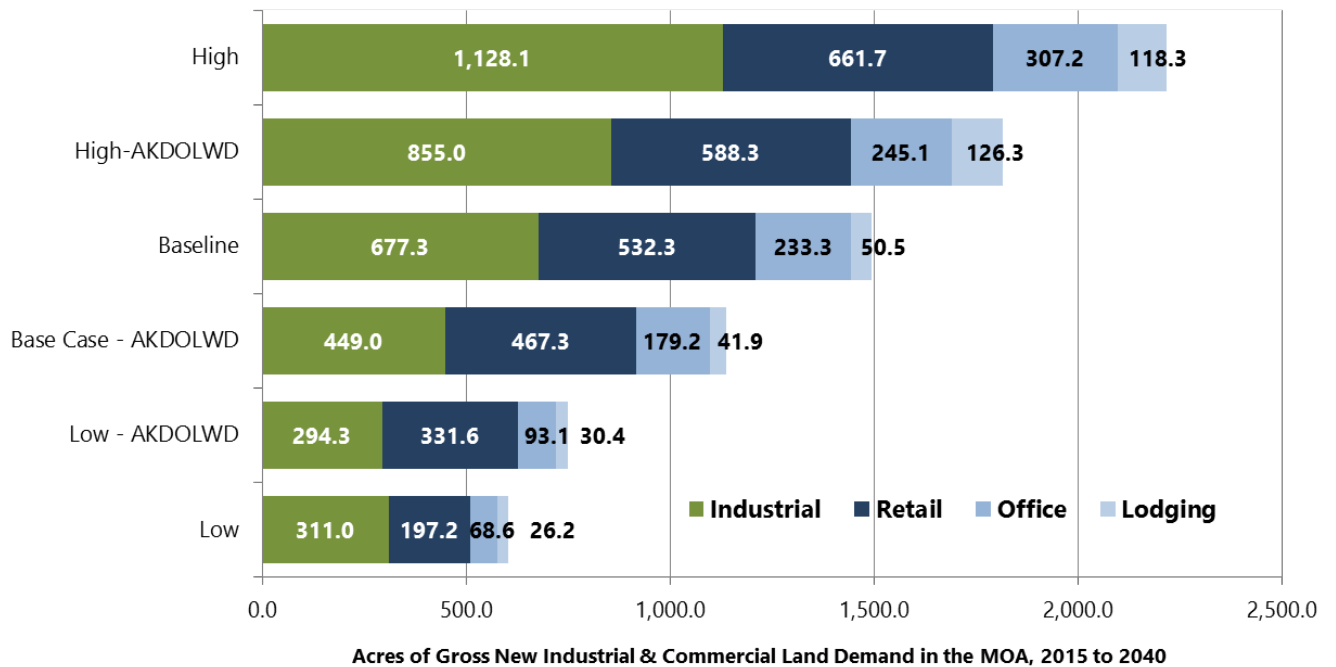
Industrial Land Demand Forecasts

Figure 19 provides a comprehensive summary gross of industrial land acreage required from 2015 to 2040 for MOA employment growth under the different growth methodologies and scenarios expressed above, specifically including the AKDOLWD-based employment forecasts.

AKDOLWD-based forecasts and the High and Low growth "Hybrid" scenarios indicate the following:

- New demand for industrial land through 2040 under the AKDOLWD-based methodology is estimated to be as high 855.0 acres under the "High – AKDOLWD" scenario;

- As few as 294.3 acres of industrial land demand under the "Low – AKDOLWD" scenario.

- As many as 1,128.1 acres of industrial land need through 2040 under the "Hybrid" High growth scenario);

- As few as 311.0 acres of industrial land demand over the next 25 years under the "Hybrid" Low growth scenario.

Figure 19 – Summary of MOA Industrial Land Need, "Hybrid" and AKDOLWD-Driven 2015-2040

Non-AKDOLWD	Industrial Acres Demanded					I-Zoned Supply*	Net Supply by 2040
	2015	2035	2040	'15-35	'15-'40		
High	5,322.4	6,158.4	6,450.5	836.0	1,128.1	419.0	(528.6)
Baseline	5,322.4	5,884.9	5,999.7	562.5	677.3	419.0	(149.9)
Low	5,322.4	5,552.7	5,633.4	230.3	311.0	419.0	157.8

AKDOLWD-Driven	Industrial Acres Demanded					I-Zoned Supply*	Net Supply by 2040
	2015	2035	2040	'15-35	'15-'40		
High - AKDOLWD	5,322.4	6,054.0	6,177.4	731.5	855.0	419.0	(299.2)
Base Case - AKDOLWD	5,322.4	5,726.4	5,771.4	403.9	449.0	419.0	41.9
Low - AKDOLWD	5,322.4	5,522.8	5,616.7	200.4	294.3	419.0	171.8

Acres of Gross New Industrial Land Demand in MOA, 2015 to 2040

* From Figure 4-2, Page 53 of the 2015 Anchorage Industrial Land Assessment Update. Represents I-Zoned land inventory MOA-wide with Continued Use. Excludes Airport and Utilities lands for consistent reconciliation with demand estimates that exclude air, rail, and marine transportation and utilities sectors.

Estimates of 20-year industrial land need along with the 2015 Anchorage Industrial Lands Assessment inventory of I-zoned land within the Municipality (Anchorage Bowl and Chugiak-Eagle River) are provided in Figure 19 to also demonstrate updated industrial land reconciliation now with the AKDOLWD-based forecasts. I-zoned land inventory displayed assumes "Continued Non-Industrial Use of Industrial Land" consistent with the 2015 Anchorage Industrial Lands Assessment Update.[17]

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[17] Assumes that, based on historic trends, 36.5% of industrially zoned buildable land supply in the Anchorage Bowl will be used by non-industrial uses, while in Chugiak-Eagle River, this rate of non-industrial use is 5.5%.

For land supply and demand reconciliation purposes, industrial land demand estimates for each scenario were adjusted downward by 16%, which is the share of total demand attributable to air, rail, and waterborne transportation sector demand and utilities sector demand. Demand growth from these uses, largely air transportation and utilities, are suitable for airport and utilities-designated lands that are not included in the estimate of I-zoned land supply.

Results of the analysis indicate:

- *High – AKDOLWD Scenario*: Under this scenario, I-Zoned acreage within the Municipality (419.0 acres that exclude Airport and Utilities lands) is insufficient for 25-year growth by a deficit of 299 acres.

- *Base Case – AKDOLWD Scenario*: Under this scenario, I-Zoned acreage within the Municipality is barely sufficient for 25-year growth with only 41.9 acres left for growth after 2040.

- *Low – AKDOLWD Scenario*: Under this scenario, I-Zoned acreage within the Municipality is sufficient for 25-year growth with 171.8 remaining for growth after 2040.

- *"Hybrid" High Scenario*: Results indicate the Municipality would have a 528.6-acre deficit of I-zoned land if growth occurred as projected under the High growth scenario through 2040.

- *"Hybrid" Low Scenario*: Results for this industrial land need forecast indicate the Municipality would have 157.8 acres of I-Zoned land by 2040.

Figures 20 and 21 provide detailed industrial land demand forecast for both forecast methodologies and each growth scenario:

- Figure 20: "Hybrid" Non-AKDOLWD Industrial Space and Gross Land Need Forecasts; and

- Figure 21: AKDOLWD-Driven Industrial Space and Gross Land Need Forecasts

Figure 20 –"Hybrid" Scenario MOA Industrial Space & Land Need[18] Forecasts, 2015-2040

Baseline Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	2015	2035	2040	'15-'35	'15-'40	2015	2035	2040	'15-'35	'15-'40
Mining	1,575.5	1,640.4	1,687.3	64.9	111.8	265.2	256.2	257.1	-9.0	-8.1
Construction	2,969.0	3,272.1	3,357.6	303.1	388.6	441.0	450.9	451.4	9.9	10.4
Manufacturing	4,063.0	4,570.8	4,740.1	507.8	677.1	320.6	334.6	338.6	14.0	18.0
Wholesale Trade	3,401.6	4,436.8	4,672.1	1,035.2	1,270.5	204.5	247.5	254.3	43.0	49.7
Retail Trade	3,194.4	3,783.5	3,945.4	589.1	751.0	268.9	295.5	300.6	26.6	31.7
Transportation, Warehousing & Utilities	15,339.6	18,495.6	19,365.0	3,156.0	4,025.4	2,278.6	2,549.0	2,603.7	270.4	325.1
Information	585.6	645.7	665.8	60.1	80.2	36.1	36.9	37.1	0.8	1.0
Financial Activities	893.8	1,001.7	1,037.7	107.9	143.9	98.1	102.0	103.1	3.9	5.0
Professional & Business Services	4,313.3	5,537.7	5,866.7	1,224.4	1,553.4	473.6	564.1	583.0	90.5	109.5
Education & Health Services	2,616.3	3,592.7	3,857.5	976.4	1,241.2	254.1	323.7	339.1	69.6	85.0
Leisure & Hospitality	1,703.3	2,198.1	2,329.1	494.8	625.8	195.5	234.1	242.0	38.6	46.5
Other Services	3,183.2	3,681.6	3,819.8	498.4	636.6	251.2	269.5	272.8	18.3	21.6
Government	2,232.5	2,261.4	2,275.8	28.9	43.3	234.9	220.8	216.7	-14.1	-18.2
Total	**46,071.1**	**55,118.1**	**57,619.9**	**9,047.0**	**11,548.8**	**5,322.4**	**5,884.9**	**5,999.7**	**562.5**	**677.3**

High Growth Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	2015	2035	2040	'15-'35	'15-'40	2015	2035	2040	'15-'35	'15-'40
Mining	1,575.5	2,040.6	2,220.8	465.1	645.3	265.2	315.5	335.0	50.3	69.8
Construction	2,969.0	3,365.4	3,482.0	396.4	513.0	441.0	459.2	463.5	18.1	22.5
Manufacturing	4,063.0	5,586.6	6,094.4	1,523.6	2,031.4	320.6	404.9	431.0	84.3	110.3
Wholesale Trade	3,401.6	4,672.1	5,142.7	1,270.5	1,741.1	204.5	258.0	277.1	53.5	72.6
Retail Trade	3,194.4	3,792.5	3,987.4	598.1	793.0	268.9	293.2	300.8	24.3	31.9
Transportation, Warehousing & Utilities	15,339.6	19,222.1	20,651.2	3,882.5	5,311.6	2,278.6	2,622.6	2,748.9	344.0	470.3
Information	585.6	724.3	786.0	138.7	200.4	36.1	41.0	43.4	4.9	7.3
Financial Activities	893.8	965.8	996.6	72.0	102.8	98.1	97.4	98.1	-0.7	-0.1
Professional & Business Services	4,313.3	5,737.3	6,240.7	1,424.0	1,927.4	473.6	578.6	614.0	105.0	140.4
Education & Health Services	2,616.3	3,847.5	4,267.2	1,231.2	1,650.9	254.1	343.2	371.4	89.1	117.3
Leisure & Hospitality	1,703.3	2,254.0	2,437.2	550.7	733.9	195.5	237.6	250.7	42.1	55.2
Other Services	3,183.2	3,711.2	3,908.6	528.0	725.4	251.2	269.0	276.4	17.8	25.2
Government	2,232.5	2,463.7	2,550.4	231.2	317.9	234.9	238.1	240.5	3.2	5.6
Total	**46,071.1**	**58,383.1**	**60,544.4**	**12,312.0**	**16,694.1**	**5,322.4**	**6,158.4**	**6,450.5**	**836.0**	**1,128.1**

Low Growth Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	2015	2035	2040	'15-'35	'15-'40	2015	2035	2040	'15-'35	'15-'40
Mining	1,575.5	1,391.6	1,355.6	-183.9	-219.9	265.2	234.3	228.2	-31.0	-37.0
Construction	2,969.0	2,979.4	3,005.3	10.4	36.3	441.0	442.6	446.4	1.5	5.4
Manufacturing	4,063.0	4,046.0	4,096.8	-17.0	33.8	320.6	319.3	323.3	-1.3	2.7
Wholesale Trade	3,401.6	3,764.6	3,831.8	363.0	430.2	204.5	226.3	230.4	21.8	25.9
Retail Trade	3,194.4	3,312.8	3,357.8	118.4	163.4	268.9	278.9	282.6	10.0	13.8
Transportation, Warehousing & Utilities	15,339.6	16,185.1	16,459.1	845.5	1,119.5	2,278.6	2,404.2	2,444.9	125.6	166.3
Information	585.6	584.1	588.7	-1.5	3.1	36.1	36.0	36.3	-0.1	0.2
Financial Activities	893.8	893.8	904.1	0.0	10.3	98.1	98.1	99.3	0.0	1.1
Professional & Business Services	4,313.3	4,672.9	4,768.2	359.6	454.9	473.6	513.1	523.5	39.5	49.9
Education & Health Services	2,616.3	2,962.1	3,050.0	345.8	433.7	254.1	287.7	296.2	33.6	42.1
Leisure & Hospitality	1,703.3	1,864.6	1,905.8	161.3	202.5	195.5	214.0	218.8	18.5	23.2
Other Services	3,183.2	3,351.0	3,415.1	167.8	231.9	251.2	264.4	269.5	13.2	18.3
Government	2,232.5	2,222.3	2,223.8	-10.2	-8.7	234.9	233.8	234.0	-1.1	-0.9
Total	**46,071.1**	**48,230.3**	**47,606.5**	**2,159.2**	**2,891.0**	**5,322.4**	**5,552.7**	**5,633.4**	**230.3**	**311.0**

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[18] Roughly 16% of projected land demand is specifically attributable to airport, railroad, marine transportation, and utilities, most of which would be accommodated on airport or utility land as per the 2015 Anchorage Industrial Lands Assessment.

Figure 21 –AKDOLWD-Driven MOA Industrial Space & Land Need[19] Forecasts, 2015-2040

Base Case Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**
Mining	1,575.5	1,695.4	1,701.8	**119.9**	**126.3**	265.2	264.8	259.3	**-0.4**	**-5.9**
Construction	2,969.0	3,153.6	3,187.8	**184.6**	**218.8**	441.0	434.6	428.6	**-6.4**	**-12.4**
Manufacturing	4,063.0	4,688.0	4,859.9	**625.0**	**796.9**	320.6	343.2	347.1	**22.6**	**26.5**
Wholesale Trade	3,401.6	4,061.2	4,201.3	**659.6**	**799.7**	204.5	226.5	228.6	**22.0**	**24.1**
Retail Trade	3,194.4	3,693.8	3,814.9	**499.4**	**620.5**	268.9	288.5	290.7	**19.6**	**21.8**
Transportation, Warehousing & Utilities	15,339.6	18,059.3	18,767.5	**2,719.7**	**3,427.9**	2,278.6	2,488.9	2,523.4	**210.2**	**244.8**
Information	585.6	647.2	649.5	**61.6**	**63.9**	36.1	37.0	36.2	**0.9**	**0.1**
Financial Activities	893.8	1,014.0	1,017.6	**120.2**	**123.8**	98.1	103.3	101.1	**5.2**	**3.0**
Professional & Business Services	4,313.3	4,966.6	5,194.3	**653.3**	**881.0**	473.6	505.9	516.2	**32.3**	**42.6**
Education & Health Services	2,616.3	3,532.0	3,734.8	**915.7**	**1,118.5**	254.1	318.3	328.3	**64.2**	**74.2**
Leisure & Hospitality	1,703.3	2,140.0	2,222.7	**436.7**	**519.4**	195.5	227.9	230.9	**32.4**	**35.4**
Other Services	3,183.2	3,585.3	3,638.7	**402.1**	**455.5**	251.2	262.5	259.9	**11.3**	**8.7**
Government	2,232.5	2,304.8	2,319.7	**72.3**	**87.2**	234.9	225.0	220.9	**-9.9**	**-14.0**
Total	**46,071.1**	**53,541.2**	**55,310.5**	**7,470.1**	**9,239.4**	**5,322.4**	**5,726.4**	**5,771.4**	**403.9**	**449.0**

High Growth Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**
Mining	1,575.5	1,750.9	1,757.5	**175.4**	**182.0**	265.2	270.7	265.1	**5.5**	**-0.1**
Construction	2,969.0	3,228.6	3,278.9	**259.6**	**309.9**	441.0	440.5	436.5	**-0.5**	**-4.6**
Manufacturing	4,063.0	4,997.3	5,256.3	**934.3**	**1,193.3**	320.6	362.2	371.7	**41.6**	**51.1**
Wholesale Trade	3,401.6	4,390.7	4,593.6	**989.1**	**1,192.0**	204.5	242.5	247.5	**38.0**	**43.0**
Retail Trade	3,194.4	3,938.9	4,120.4	**744.5**	**926.0**	268.9	304.5	310.8	**35.6**	**41.9**
Transportation, Warehousing & Utilities	15,339.6	19,417.0	20,469.2	**4,077.4**	**5,129.6**	2,278.6	2,649.2	2,724.6	**370.6**	**446.0**
Information	585.6	675.3	677.7	**89.7**	**92.1**	36.1	38.2	37.4	**2.1**	**1.3**
Financial Activities	893.8	1,071.4	1,075.2	**177.6**	**181.4**	98.1	108.0	105.8	**9.9**	**7.7**
Professional & Business Services	4,313.3	5,286.8	5,620.8	**973.5**	**1,307.5**	473.6	533.1	553.0	**59.6**	**79.4**
Education & Health Services	2,616.3	4,007.0	4,313.2	**1,390.7**	**1,696.9**	254.1	357.5	375.4	**103.4**	**121.3**
Leisure & Hospitality	1,703.3	2,363.1	2,486.8	**659.8**	**783.5**	195.5	249.1	255.8	**53.6**	**60.3**
Other Services	3,183.2	3,773.0	3,857.2	**589.8**	**674.0**	251.2	273.5	272.8	**22.3**	**21.6**
Government	2,232.5	2,326.2	2,344.8	**93.7**	**112.3**	234.9	224.8	221.1	**-10.1**	**-13.8**
Total	**46,071.1**	**57,226.2**	**58,094.1**	**11,155.1**	**13,780.5**	**5,322.4**	**6,054.0**	**6,177.4**	**731.5**	**855.0**

Low Growth Scenario	Industrial Space Need (000s of sq. ft.)					Predicted Land Need (Acres)				
Employment Sector	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**	**2015**	**2035**	**2040**	**'15-'35**	**'15-'40**
Mining	1,575.5	1,640.5	1,646.7	**65.0**	**71.2**	265.2	266.5	267.5	**1.3**	**2.3**
Construction	2,969.0	3,071.0	3,091.6	**102.0**	**122.6**	441.0	440.2	443.2	**-0.8**	**2.1**
Manufacturing	4,063.0	4,361.8	4,446.4	**298.8**	**383.4**	320.6	332.2	338.6	**11.5**	**18.0**
Wholesale Trade	3,401.6	3,708.3	3,771.7	**306.7**	**370.1**	204.5	215.2	218.8	**10.6**	**14.3**
Retail Trade	3,194.4	3,429.3	3,488.4	**234.9**	**294.0**	268.9	278.6	283.4	**9.7**	**14.5**
Transportation, Warehousing & Utilities	15,339.6	16,607.6	16,934.9	**1,268.0**	**1,595.3**	2,278.6	2,380.6	2,427.5	**102.0**	**148.9**
Information	585.6	615.9	618.1	**30.3**	**32.5**	36.1	36.6	36.7	**0.5**	**0.7**
Financial Activities	893.8	951.5	954.9	**57.7**	**61.1**	98.1	100.8	101.2	**2.7**	**3.0**
Professional & Business Services	4,313.3	4,622.5	4,732.7	**309.2**	**419.4**	473.6	489.8	501.4	**16.2**	**27.9**
Education & Health Services	2,616.3	3,020.2	3,111.3	**403.9**	**495.0**	254.1	283.1	291.6	**29.0**	**37.5**
Leisure & Hospitality	1,703.3	1,900.0	1,938.0	**196.7**	**234.7**	195.5	210.5	214.7	**14.9**	**19.2**
Other Services	3,183.2	3,378.3	3,405.8	**195.1**	**222.6**	251.2	257.3	259.4	**6.1**	**8.2**
Government	2,232.5	2,281.4	2,292.6	**48.9**	**60.1**	234.9	231.6	232.8	**-3.3**	**-2.1**
Total	**46,071.1**	**49,588.3**	**48,786.4**	**3,517.2**	**4,362.0**	**5,322.4**	**5,522.8**	**5,616.7**	**200.4**	**294.3**

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[19] See footnote 17.

Office/Institutional Land Demand Forecasts

With AKDOLWD-based employment forecasts as well as "Hybrid" forecasts, a comparison of office/institutional land demand is possible for the Municipality through 2035 and 2040. Figure 22 provides a comparison of office/institutional land demand forecasts for each of the six scenarios.

Results are presented for the standard categories of office space as documented and described in the Commercial Land Assessment. Methodology utilized for the updated "Hybrid" forecasts is also as described in the Commercial Land Assessment.

Overall, office and institutional land need in Anchorage through 2040 ranges from as high as 307.2 acres under the "Hybrid" High growth scenario to as little as 68.6 acres under the "Hybrid" Low growth scenario. The "Hybrid" Baseline growth scenario (233.3 acres) and "High – AKDOLWD" forecast (245.1 acres) show only a difference of roughly 12 acres of 25-year office/institutional land need.

Figure 22 –MOA Office/Institutional Land Need, "Hybrid" & AKDOLWD-Driven 2015-2040

Non-AKDOLWD	Commercial	Business Park	Low Rise	Mid-Rise	High-Rise	'15-'35	'15-'40
High	110.0	58.9	36.7	17.2	3.4	226.2	307.2
Baseline	88.5	47.4	29.5	13.8	2.8	181.9	233.3
Low	25.5	13.6	8.5	4.0	0.8	52.4	68.6
AKDOLWD-Driven	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**'15-'35**	**'15-'40**
High - AKDOLWD	97.2	52.1	32.4	15.2	3.0	199.8	245.1
Base Case - AKDOLWD	71.0	38.0	23.7	11.1	2.2	146.0	179.2
Low - AKDOLWD	36.6	19.6	12.2	5.7	1.1	75.3	93.1
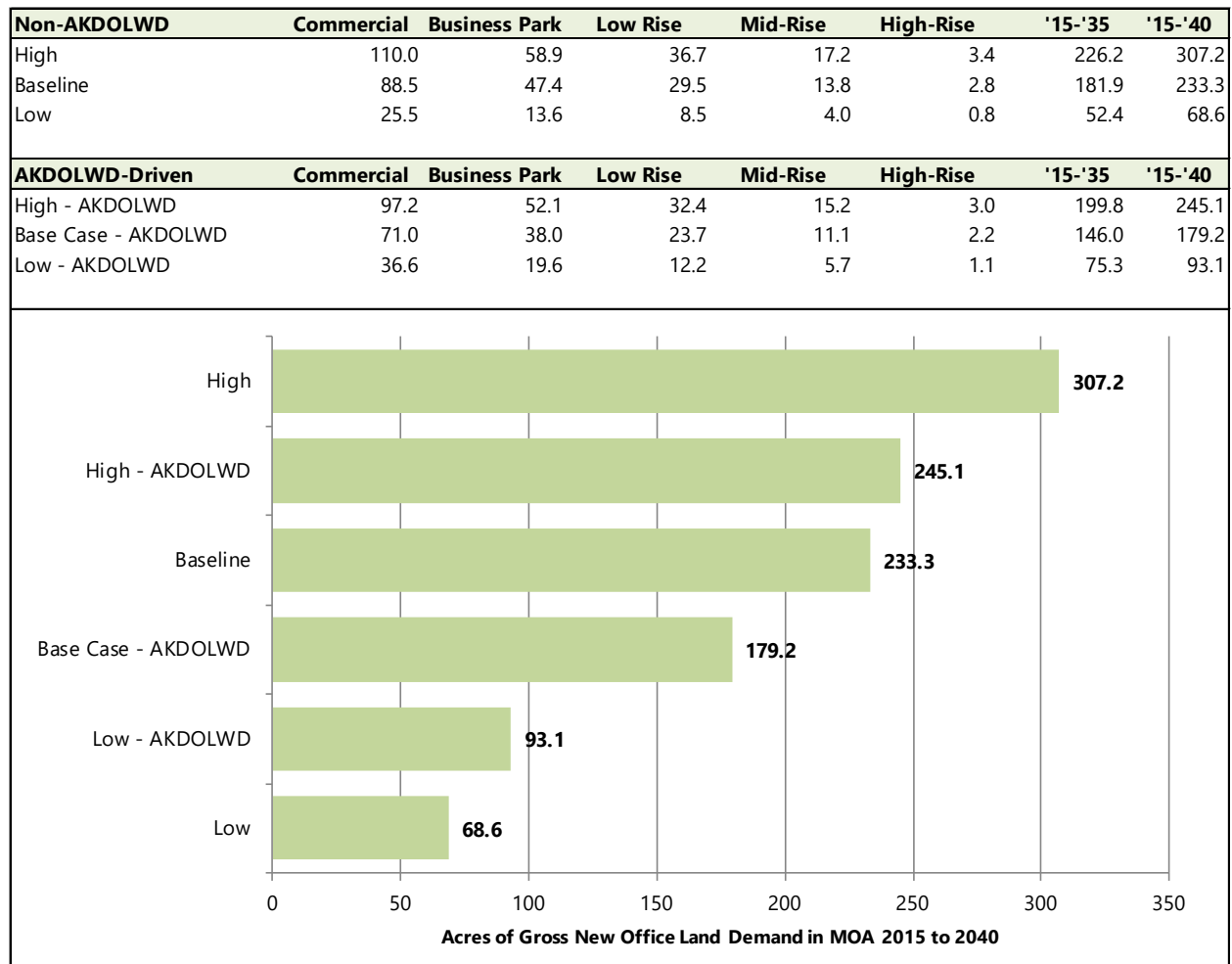
Detailed office/institutional space need, land need, and site count need by general class of office structure type are provided for all six scenarios in the following pages:

- Figure 23 – "Hybrid" MOA Forecast Scenario Office/Institutional Land & Site Need, 2015-2035;

- Figure 24 - "Hybrid" MOA Forecast Scenario Office/Institutional Land & Site Need, 2015-2040;

- Figure 25 – AKDOLWD-Based Forecast Scenario Office/Institutional Land & Site Need, 2015-2035;

- Figure 26 – AKDOLWD-Based Forecast Scenario Office/Institutional Land & Site Need, 2015-2040.

Figure 23 – MOA "Hybrid" Scenario Office/Institutional Land & Site Need, 2015-2035

Baseline Scenario	Office/Institutional Gross Land Need Factors					
20-Year Commercial Office Need Calculation	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	676	507	676	845	676	3,379
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	2,703.2	1,448.1	901.1	422.4	84.5	5,559.2
Gross Acres of Office Land Demand by Type 2/	88.5	47.4	29.5	13.8	2.8	181.9
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	74	14	37	9	1	*135*
High Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	840	630	840	1,050	840	4,201
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	3,360.8	1,800.4	1,120.3	525.1	105.0	6,911.6
Gross Acres of Office Land Demand by Type 2/	110.0	58.9	36.7	17.2	3.4	226.2
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	92	17	46	11	2	*168*
Low Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	195	146	195	243	195	973
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	778.1	416.8	259.4	121.6	24.3	1,600.2
Gross Acres of Office Land Demand by Type 2/	25.5	13.6	8.5	4.0	0.8	52.4
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	21	4	11	3	0	*39*

1/ Based on observed development patterns in Anchorage as well as the prototypical development matrix documented in the 2012 Commercial Land Assessment.

2/ Assumes 70% sufficiency, or 30% of land area dedicated to public facilities.

Figure 24 – MOA "Hybrid" Scenario Office/Institutional Land & Site Need, 2015-2040

Baseline Scenario	Office/Institutional Gross Land Need Factors					
20-Year Commercial Office Need Calculation	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	867	650	867	1,083	867	4,333
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	3,466.2	1,856.9	1,155.4	541.6	108.3	7,128.4
Gross Acres of Office Land Demand by Type 2/	113.4	60.8	37.8	17.7	3.5	233.3
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	95	18	47	12	2	*173*
High Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	1,141	856	1,141	1,426	1,141	5,705
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	4,563.7	2,444.9	1,521.2	713.1	142.6	9,385.6
Gross Acres of Office Land Demand by Type 2/	149.4	80.0	49.8	23.3	4.7	307.2
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	124	24	62	16	2	*228*
Low Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	255	191	255	318	255	1,273
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	1,018.7	545.8	339.6	159.2	31.8	2,095.1
Gross Acres of Office Land Demand by Type 2/	33.3	17.9	11.1	5.2	1.0	68.6
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	28	5	14	3	1	*51*

1/ Based on observed development patterns in Anchorage as well as the prototypical development matrix documented in the 2012 Commercial Land Assessment.

2/ Assumes 70% sufficiency, or 30% of land area dedicated to public facilities.

Figure 25 – MOA AKDOLWD-Based Scenario Office/Institutional Land & Site Need, 2015-2035

Base Case Scenario	Office/Institutional Gross Land Need Factors					
20-Year Commercial Office Need Calculation	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	542	407	542	678	542	2,711
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	2,168.5	1,161.7	722.8	338.8	67.8	4,459.5
Gross Acres of Office Land Demand by Type 2/	71.0	38.0	23.7	11.1	2.2	146.0
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	59	11	30	7	1	*108*
High Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	742	557	742	928	742	3,711
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	2,968.9	1,590.5	989.6	463.9	92.8	6,105.7
Gross Acres of Office Land Demand by Type 2/	97.2	52.1	32.4	15.2	3.0	199.8
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	81	15	40	10	2	*148*
Low Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	280	210	280	350	280	1,399
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	1,119.0	599.5	373.0	174.8	35.0	2,301.3
Gross Acres of Office Land Demand by Type 2/	36.6	19.6	12.2	5.7	1.1	75.3
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	31	6	15	4	1	*56*

1/ Based on observed development patterns in Anchorage as well as the prototypical development matrix documented in the 2012 Commercial Land Assessment.

2/ Assumes 70% sufficiency, or 30% of land area dedicated to public facilities.

Figure 26 – MOA AKDOLWD-Based Scenario Office/Institutional Land & Site Need, 2015-2040

Base Case Scenario	Office/Institutional Gross Land Need Factors					
20-Year Commercial Office Need Calculation	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	666	499	666	832	666	3,328
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	2,662.3	1,426.2	887.4	416.0	83.2	5,475.2
Gross Acres of Office Land Demand by Type 2/	87.1	46.7	29.0	13.6	2.7	179.2
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	73	14	36	9	1	*133*
High Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	910	683	910	1,138	910	4,552
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	3,641.4	1,950.8	1,213.8	569.0	113.8	7,488.7
Gross Acres of Office Land Demand by Type 2/	119.2	63.8	39.7	18.6	3.7	245.1
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	99	19	50	12	2	*182*
Low Growth Scenario	**Office/Institutional Gross Land Need Factors**					
Employment Sector	**Commercial**	**Business Park**	**Low Rise**	**Mid-Rise**	**High-Rise**	**Total**
Typical Office Configuration Distribution 1/	20%	15%	20%	25%	20%	100%
20-Year Office Space (000s SF) Demand by Type	346	259	346	432	346	1,730
Structure Floor Area Ratio (FAR)	0.3	0.4	0.8	2.0	8.0	2.4
Net Square Feet (000s) of Office Land Demand	1,383.7	741.3	461.2	216.2	43.2	2,845.7
Gross Acres of Office Land Demand by Type 2/	45.3	24.3	15.1	7.1	1.4	93.1
Typical Acreage per Site by Office Type 1/	1.2	3.4	0.8	1.5	1.9	1.8
Number of Typical Office Sites Demanded	38	7	19	5	1	*69*

1/ Based on observed development patterns in Anchorage as well as the prototypical development matrix documented in the 2012 Commercial Land Assessment.

2/ Assumes 70% sufficiency, or 30% of land area dedicated to public facilities.

Commercial Retail Land Demand Forecasts

MOA population and household forecasts under both the "Hybrid" and AKDOLWD-based employment forecast methodologies also allow comparisons of retail commercial land demand for the Municipality through 2035 and 2040. Figure 27 provides a comparison of commercial retail land demand forecasts for each of the six scenarios.
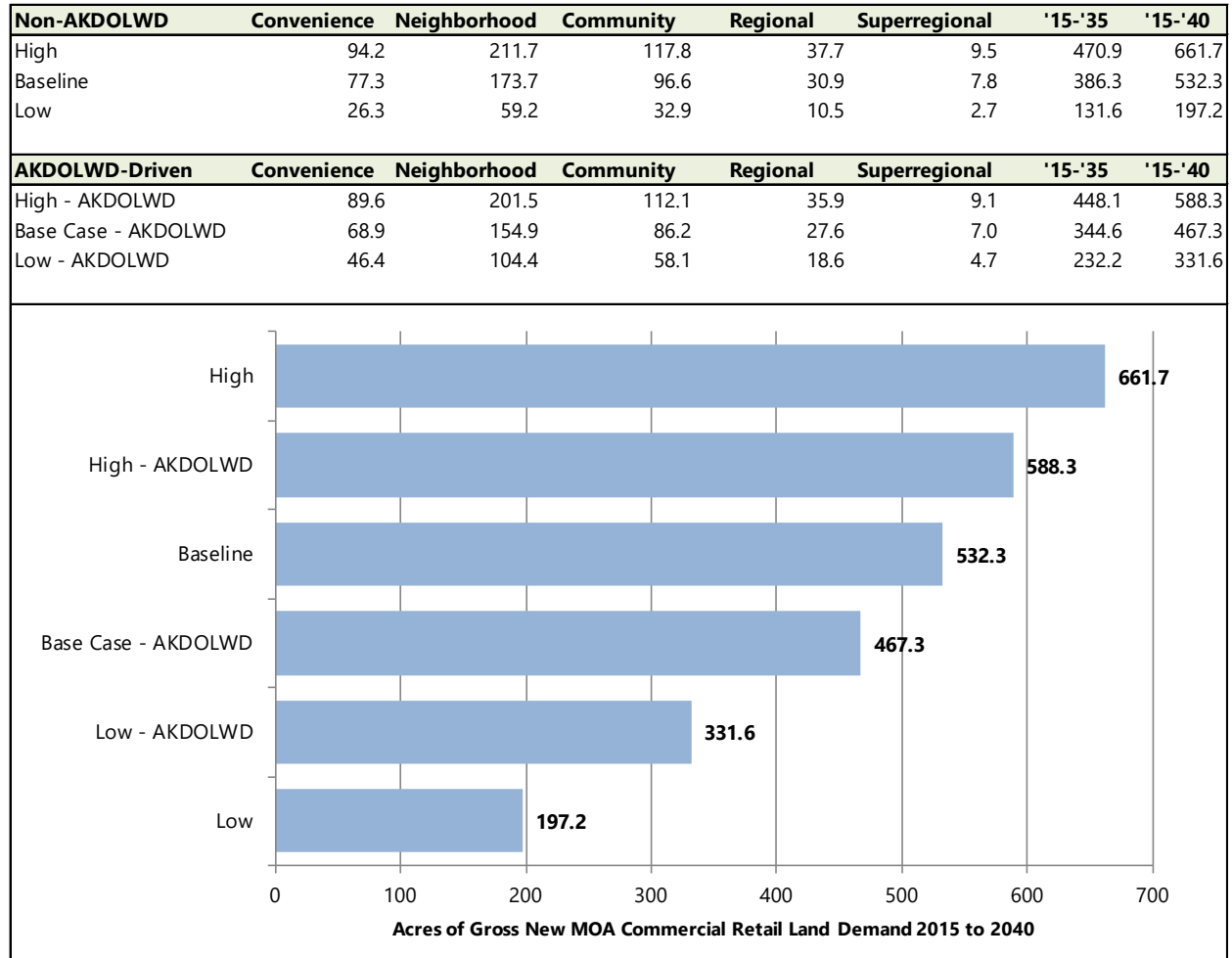
Methodology utilized for estimating retail land need from both household spending and visitor spending, but assuming the updated "Hybrid" forecasts, is also as described in the Commercial Land Assessment. Results are also expressed for all of the MOA as well as demand by Anchorage subarea consistent with Commercial Land Assessment findings and methodology.

Projected retail commercial land need in Anchorage through 2040 ranges from as high as 661.7 acres under the "Hybrid" High growth scenario to as little as 197.2 acres under the "Hybrid" Low growth scenario.

Under all scenarios, based on the methodology laid out in the 2012 Commercial Lands Assessment, land need will be greatest for moderately-scaled retail under the Neighborhood and Community Center configurations. These would be more consistent with retail types that are compatible with infill development, including mixed-use projects. With limited land for large retail development and modest population growth expected annually, major, land-consuming retail projects are not expected to be a

primary driver of retail development for largely built-out Anchorage, with potential exceptions inside the Minnesota Boulevard curve and south "C" Street..

Figure 27 –MOA Commercial Retail Land Need, "Hybrid" & AKDOLWD-Driven Forecasts 2015-2040

Non-AKDOLWD	Convenience	Neighborhood	Community	Regional	Superregional	'15-'35	'15-'40
High	94.2	211.7	117.8	37.7	9.5	470.9	661.7
Baseline	77.3	173.7	96.6	30.9	7.8	386.3	532.3
Low	26.3	59.2	32.9	10.5	2.7	131.6	197.2

AKDOLWD-Driven	Convenience	Neighborhood	Community	Regional	Superregional	'15-'35	'15-'40
High - AKDOLWD	89.6	201.5	112.1	35.9	9.1	448.1	588.3
Base Case - AKDOLWD	68.9	154.9	86.2	27.6	7.0	344.6	467.3
Low - AKDOLWD	46.4	104.4	58.1	18.6	4.7	232.2	331.6

Acres of Gross New MOA Commercial Retail Land Demand 2015 to 2040

Detailed commercial retail land need by scenario, Anchorage submarket, and retail commercial center types are provided for all six scenarios in the following pages:

- Figure 28 – "Hybrid" MOA Forecast Scenario Commercial Retail Land & Site Need, 2015-2035;

- Figure 29 - "Hybrid" MOA Forecast Scenario Commercial Retail Land & Site Need, 2015-2040;

- Figure 30 – AKDOLWD-Based Forecast Scenario Commercial Retail Land & Site Need, 2015-2035;

- Figure 31 – AKDOLWD-Based Forecast Scenario Commercial Retail Land & Site Need, 2015-2040.

Figure 28 – "Hybrid" Forecasts MOA Retail Land Need by Center & Submarket, 2015-2035

Baseline Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	7.3	16.2	9.1	2.9	0.8	*36.2*
Dimond & Vicinity	28.1	63.2	35.1	11.2	2.8	*140.5*
Midtown & Vicinity	17.7	39.8	22.2	7.1	1.8	*88.6*
Northeast	14.8	33.4	18.6	5.9	1.5	*74.2*
South Anchorage	1.9	4.2	2.4	0.8	0.2	*9.4*
Eagle River-Chugiak	7.5	16.8	9.3	3.0	0.8	*37.4*
	77.3	*173.7*	*96.6*	*30.9*	*7.8*	*386.3*

High Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	8.9	19.8	11.0	3.6	0.9	*44.2*
Dimond & Vicinity	34.3	77.0	42.8	13.7	3.4	*171.2*
Midtown & Vicinity	21.6	48.5	27.0	8.6	2.2	*108.0*
Northeast	18.1	40.7	22.7	7.2	1.8	*90.5*
South Anchorage	2.3	5.2	2.9	0.9	0.2	*11.5*
Eagle River-Chugiak	9.1	20.5	11.4	3.7	0.9	*45.5*
	94.2	*211.7*	*117.8*	*37.7*	*9.5*	*470.9*

Low Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	2.5	5.5	3.1	1.0	0.3	*12.3*
Dimond & Vicinity	9.6	21.5	12.0	3.8	1.0	*47.9*
Midtown & Vicinity	6.0	13.6	7.6	2.4	0.6	*30.2*
Northeast	5.0	11.4	6.3	2.0	0.5	*25.3*
South Anchorage	0.6	1.4	0.8	0.3	0.1	*3.2*
Eagle River-Chugiak	2.5	5.7	3.2	1.0	0.3	*12.7*
	26.3	*59.2*	*32.9*	*10.5*	*2.7*	*131.6*

Figure 29 – "Hybrid" Forecasts MOA Retail Land Need by Center & Submarket, 2015-2040

Baseline Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	10.0	22.4	12.5	4.0	1.0	*49.9*
Dimond & Vicinity	38.7	87.1	48.4	15.5	3.9	*193.6*
Midtown & Vicinity	24.4	54.9	30.5	9.7	2.5	*122.1*
Northeast	20.4	46.0	25.6	8.2	2.1	*102.3*
South Anchorage	2.6	5.8	3.2	1.0	0.3	*13.0*
Eagle River-Chugiak	10.3	23.1	12.9	4.2	1.0	*51.5*
	106.5	*239.3*	*133.1*	*42.6*	*10.8*	*532.3*

High Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	12.4	27.8	15.5	5.0	1.3	*62.1*
Dimond & Vicinity	48.2	108.3	60.1	19.2	4.8	*240.6*
Midtown & Vicinity	30.4	68.2	38.0	12.1	3.1	*151.7*
Northeast	25.4	57.2	31.8	10.2	2.6	*127.2*
South Anchorage	3.2	7.3	4.0	1.3	0.3	*16.2*
Eagle River-Chugiak	12.8	28.8	16.0	5.2	1.3	*64.0*
	132.3	*297.5*	*165.5*	*53.0*	*13.4*	*661.7*

Low Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	3.7	8.3	4.6	1.5	0.4	*18.5*
Dimond & Vicinity	14.3	32.3	17.9	5.7	1.4	*71.7*
Midtown & Vicinity	9.1	20.3	11.3	3.6	0.9	*45.2*
Northeast	7.6	17.0	9.5	3.0	0.8	*37.9*
South Anchorage	1.0	2.2	1.2	0.4	0.1	*4.8*
Eagle River-Chugiak	3.8	8.6	4.8	1.5	0.4	*19.1*
	39.4	*88.6*	*49.3*	*15.8*	*4.0*	*197.2*

Figure 30 – AKDOLWD-Based Forecasts MOA Retail Land Need by Center & Submarket, 2015-2035

Base Case Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	6.5	14.5	8.1	2.6	0.7	*32.3*
Dimond & Vicinity	25.1	56.4	31.3	10.0	2.5	*125.3*
Midtown & Vicinity	15.8	35.5	19.8	6.3	1.6	*79.0*
Northeast	13.2	29.8	16.6	5.3	1.3	*66.2*
South Anchorage	1.7	3.8	2.1	0.7	0.2	*8.4*
Eagle River-Chugiak	6.6	15.0	8.3	2.7	0.7	*33.3*
	68.9	*154.9*	*86.2*	*27.6*	*7.0*	*344.6*

High Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	8.4	18.8	10.5	3.4	0.9	*42.0*
Dimond & Vicinity	32.6	73.3	40.7	13.0	3.3	*163.0*
Midtown & Vicinity	20.6	46.2	25.7	8.2	2.1	*102.8*
Northeast	17.2	38.7	21.6	6.9	1.8	*86.1*
South Anchorage	2.2	4.9	2.7	0.9	0.2	*10.9*
Eagle River-Chugiak	8.6	19.5	10.8	3.5	0.9	*43.3*
	89.6	*201.5*	*112.1*	*35.9*	*9.1*	*448.1*

Low Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	4.4	9.8	5.4	1.8	0.5	*21.8*
Dimond & Vicinity	16.9	38.0	21.1	6.7	1.7	*84.4*
Midtown & Vicinity	10.7	23.9	13.3	4.3	1.1	*53.3*
Northeast	8.9	20.1	11.2	3.6	0.9	*44.6*
South Anchorage	1.1	2.6	1.4	0.5	0.1	*5.7*
Eagle River-Chugiak	4.5	10.1	5.6	1.8	0.5	*22.5*
	46.4	*104.4*	*58.1*	*18.6*	*4.7*	*232.2*

Figure 31 – AKDOLWD-Based Forecasts MOA Retail Land Need by Center & Submarket, 2015-2040

Base Case Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	8.8	19.6	11.0	3.5	0.9	*43.8*
Dimond & Vicinity	34.0	76.5	42.4	13.6	3.4	*169.9*
Midtown & Vicinity	21.5	48.2	26.8	8.6	2.2	*107.1*
Northeast	17.9	40.4	22.5	7.2	1.8	*89.8*
South Anchorage	2.3	5.1	2.9	0.9	0.2	*11.4*
Eagle River-Chugiak	9.0	20.3	11.3	3.7	0.9	*45.2*
	93.5	*210.1*	*116.8*	*37.4*	*9.5*	*467.3*

High Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	11.1	24.7	13.8	4.5	1.1	*55.2*
Dimond & Vicinity	42.8	96.3	53.4	17.1	4.3	*213.9*
Midtown & Vicinity	27.0	60.6	33.8	10.8	2.7	*134.9*
Northeast	22.6	50.9	28.3	9.1	2.3	*113.1*
South Anchorage	2.9	6.5	3.6	1.1	0.3	*14.4*
Eagle River-Chugiak	11.3	25.6	14.2	4.6	1.1	*56.9*
	117.7	*264.5*	*147.1*	*47.1*	*11.9*	*588.3*

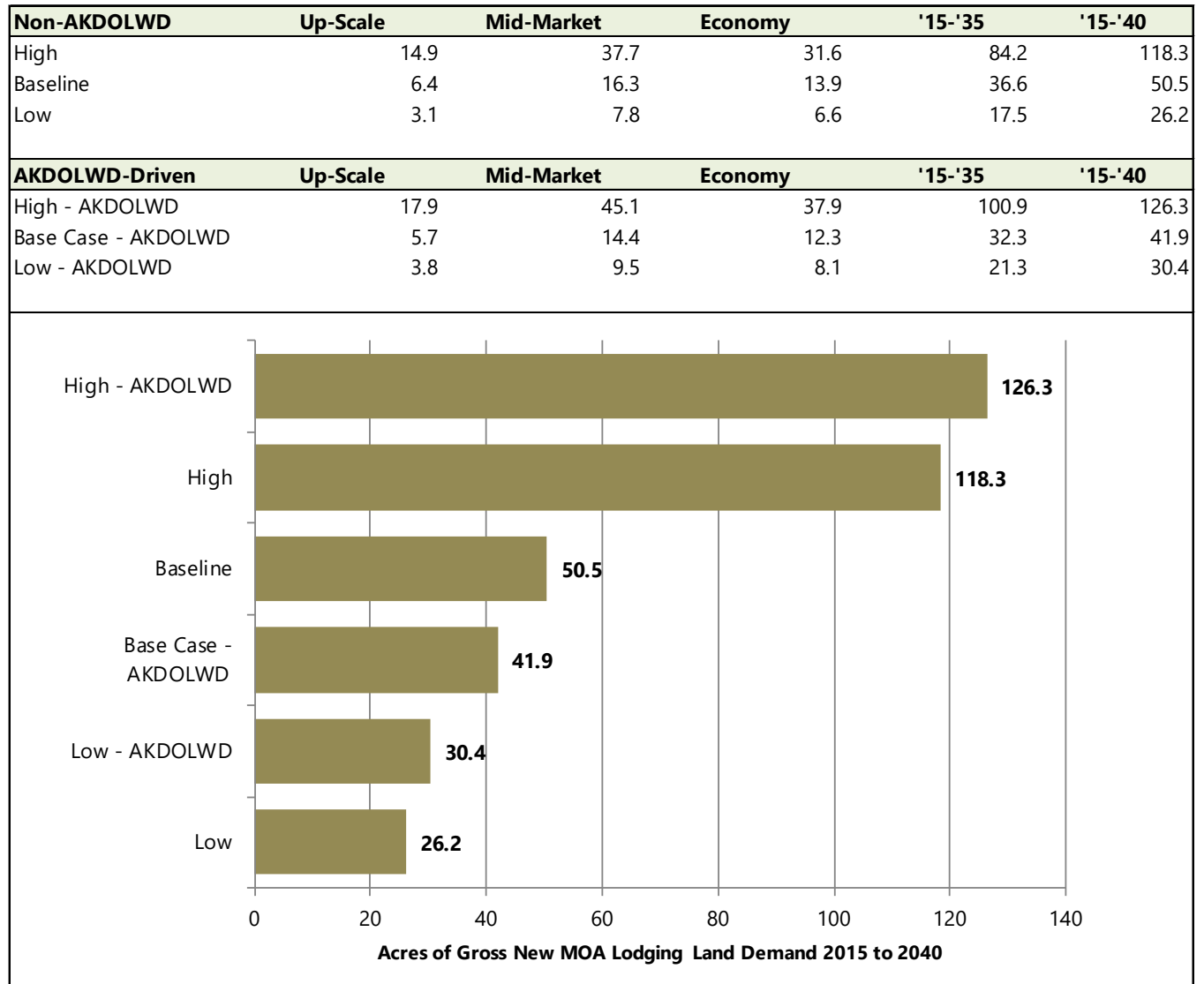| Low Growth Scenario	Commercial Land Demand by Retail Form (Gross Acres)					
	Convenience	Neighborhood	Community	Regional	Superregional	All Retail
Downtown & Vicinity	6.2	13.9	7.8	2.5	0.6	*31.1*
Dimond & Vicinity	24.1	54.2	30.1	9.6	2.4	*120.6*
Midtown & Vicinity	15.2	34.2	19.0	6.1	1.5	*76.0*
Northeast	12.7	28.7	16.0	5.1	1.3	*63.7*
South Anchorage	1.6	3.6	2.0	0.6	0.2	*8.1*
Eagle River-Chugiak	6.4	14.4	8.0	2.6	0.6	*32.1*
	66.3	*149.1*	*82.9*	*26.6*	*6.7*	*331.6*

Detailed Lodging/Hospitality Land Demand Forecasts

The final major category of commercial land need, Lodging/Hospitality, is summarized for the MOA in Figure 32 for both the "Hybrid" and AKDOLWD-based forecasts through 2035 and 2040. As with other categories of commercial land need analysis, methodology utilized for estimating hotel land demand is as detailed in the 2012 Commercial Land Assessment. Results in Figure 32 are also expressed for all of the MOA as well as demand by Anchorage subarea consistent with Commercial Land Assessment findings and methodology.

Projected lodging land need in Anchorage through 2040 ranges from as high as 126.3 acres under the "High-AKDOLWD" High growth scenario to as little as 26.2 acres under the "Hybrid" Low growth scenario.

Both "High" growth scenarios demonstrate significantly more lodging land need than the other growth forecasts. This is primarily due to the much stronger forecast of tourism, as anticipated via Lodging & Hospitality industry growth estimates, for both "High" growth scenarios. The more aggressive forecasts make intuitive sense as attractions and recreation opportunities for visitors from outside of Alaska have little to do with Alaska's oil industry. In fact, weak oil prices usually translate into lower household transportation expense, enabling a greater share of disposable income to be allocated to travel spending.

Figure 32 –MOA Commercial Lodging Land Need, "Hybrid" & AKDOLWD-Driven Forecasts 2015-2040

Non-AKDOLWD	Up-Scale	Mid-Market	Economy	'15-'35	'15-'40
High	14.9	37.7	31.6	84.2	118.3
Baseline	6.4	16.3	13.9	36.6	50.5
Low	3.1	7.8	6.6	17.5	26.2

AKDOLWD-Driven	Up-Scale	Mid-Market	Economy	'15-'35	'15-'40
High - AKDOLWD	17.9	45.1	37.9	100.9	126.3
Base Case - AKDOLWD	5.7	14.4	12.3	32.3	41.9
Low - AKDOLWD	3.8	9.5	8.1	21.3	30.4

Acres of Gross New MOA Lodging Land Demand 2015 to 2040

Detailed commercial lodging land need by scenario, Anchorage submarket, and hotel class types are provided for all six scenarios in the following pages:

- Figure 33 – "Hybrid" MOA Forecast Scenario Lodging Land & Site Need, 2015-2035;

- Figure 34 - "Hybrid" MOA Forecast Scenario Lodging Land & Site Need, 2015-2040;

- Figure 35 – AKDOLWD-Based Forecast Scenario Lodging Land & Site Need, 2015-2035;

- Figure 36 – AKDOLWD-Based Forecast Scenario Lodging Land & Site Need, 2015-2040.

Figure 33 – "Hybrid" Forecasts MOA Lodging Land Need by Hotel Class & Submarket, 2015-2035

Baseline Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	2.7	4.3	4.6	*11.6*
Dimond & Vicinity	1.0	3.7	2.6	*7.4*
Midtown & Vicinity	1.6	5.0	3.9	*10.5*
Northeast	0.6	1.8	1.4	*3.8*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.5	1.5	1.2	*3.2*
Municipality of Anchorage Total Demand:	*6.4*	*16.3*	*13.9*	*36.6*

High Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	6.2	9.8	10.6	*26.6*
Dimond & Vicinity	2.3	8.5	6.0	*16.8*
Midtown & Vicinity	3.8	11.4	9.0	*24.2*
Northeast	1.4	4.0	3.1	*8.5*
South Anchorage	0.1	0.3	0.2	*0.6*
Eagle River-Chugiak	1.1	3.5	2.7	*7.4*
Municipality of Anchorage Total Demand:	*14.9*	*37.7*	*31.6*	*84.2*

Low Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	1.3	2.0	2.2	*5.6*
Dimond & Vicinity	0.5	1.8	1.2	*3.5*
Midtown & Vicinity	0.8	2.4	1.8	*5.0*
Northeast	0.3	0.9	0.7	*1.8*
South Anchorage	0.0	0.1	0.1	*0.1*
Eagle River-Chugiak	0.3	0.7	0.6	*1.6*
Municipality of Anchorage Total Demand:	*3.1*	*7.8*	*6.6*	*17.5*

Figure 34 – "Hybrid" Forecasts MOA Lodging Land Need by Hotel Class & Submarket, 2015-2040

Baseline Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	3.8	5.9	6.4	*16.0*
Dimond & Vicinity	1.4	5.1	3.6	*10.2*
Midtown & Vicinity	2.2	6.9	5.3	*14.4*
Northeast	0.8	2.5	2.0	*5.2*
South Anchorage	0.0	0.1	0.1	*0.3*
Eagle River-Chugiak	0.7	2.1	1.7	*4.4*
Municipality of Anchorage Total Demand:	*8.9*	*22.5*	*19.1*	*50.5*

High Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	8.7	13.8	14.8	*37.4*
Dimond & Vicinity	3.3	11.9	8.4	*23.6*
Midtown & Vicinity	5.3	16.1	12.6	*34.0*
Northeast	1.9	5.7	4.4	*12.0*
South Anchorage	0.1	0.5	0.3	*0.9*
Eagle River-Chugiak	1.6	5.0	3.9	*10.4*
Municipality of Anchorage Total Demand:	*21.0*	*52.9*	*44.4*	*118.3*

Low Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	2.0	3.0	3.3	*8.3*
Dimond & Vicinity	0.7	2.6	1.9	*5.2*
Midtown & Vicinity	1.2	3.5	2.7	*7.5*
Northeast	0.4	1.3	1.0	*2.6*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.4	1.1	0.9	*2.4*
Municipality of Anchorage Total Demand:	*4.6*	*11.7*	*9.9*	*26.2*

Figure 35 – AKDOLWD-Based Forecasts MOA Lodging Land Need by Hotel Class & Submarket, 2015-2035

Base Case Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	2.4	3.8	4.1	*10.3*
Dimond & Vicinity	0.9	3.3	2.3	*6.5*
Midtown & Vicinity	1.4	4.4	3.4	*9.3*
Northeast	0.5	1.6	1.3	*3.3*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.4	1.3	1.1	*2.8*
Municipality of Anchorage Total Demand:	*5.7*	*14.4*	*12.3*	*32.3*

High Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	7.4	11.8	12.7	*31.9*
Dimond & Vicinity	2.8	10.1	7.1	*20.1*
Midtown & Vicinity	4.5	13.7	10.7	*29.0*
Northeast	1.6	4.8	3.8	*10.2*
South Anchorage	0.1	0.4	0.3	*0.8*
Eagle River-Chugiak	1.4	4.3	3.3	*8.9*
Municipality of Anchorage Total Demand:	*17.9*	*45.1*	*37.9*	*100.9*

Low Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	1.6	2.5	2.7	*6.8*
Dimond & Vicinity	0.6	2.2	1.5	*4.2*
Midtown & Vicinity	1.0	2.9	2.2	*6.1*
Northeast	0.3	1.0	0.8	*2.2*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.3	0.9	0.7	*1.9*
Municipality of Anchorage Total Demand:	*3.8*	*9.5*	*8.1*	*21.3*

Figure 36 – AKDOLWD-Based Forecasts MOA Lodging Land Need by Hotel Class & Submarket, 2015-2040

Base Case Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	3.1	4.9	5.3	*13.3*
Dimond & Vicinity	1.2	4.2	3.0	*8.4*
Midtown & Vicinity	1.8	5.7	4.4	*12.0*
Northeast	0.6	2.1	1.6	*4.3*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.5	1.7	1.4	*3.7*
Municipality of Anchorage Total Demand:	*7.3*	*18.7*	*15.9*	*41.9*

High Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	9.3	14.8	15.8	*39.9*
Dimond & Vicinity	3.5	12.7	9.0	*25.2*
Midtown & Vicinity	5.7	17.2	13.4	*36.3*
Northeast	2.1	6.0	4.7	*12.8*
South Anchorage	0.1	0.5	0.4	*1.0*
Eagle River-Chugiak	1.7	5.3	4.1	*11.1*
Municipality of Anchorage Total Demand:	*22.4*	*56.5*	*47.4*	*126.3*

Low Growth Scenario	Commercial Land Demand by Hotel Class (Gross Acres)			
	Upper Scale	Mid-Market	Economy	All Lodging
Downtown & Vicinity	2.3	3.5	3.9	*9.7*
Dimond & Vicinity	0.8	3.1	2.2	*6.0*
Midtown & Vicinity	1.4	4.1	3.2	*8.6*
Northeast	0.5	1.5	1.1	*3.1*
South Anchorage	0.0	0.1	0.1	*0.2*
Eagle River-Chugiak	0.5	1.3	1.0	*2.7*
Municipality of Anchorage Total Demand:	*5.3*	*13.5*	*11.5*	*30.4*

Appendix B-2

AMATS Future Growth Forecast Report

2015 – 2040 Population, Household, and Employment Forecast
Technical Memorandum

Anchorage 2040 Land Use Plan
A Supplement to Anchorage 2020 - Anchorage Bowl Comprehensive Plan

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Anchorage and Matanuska-Susitna Borough

2015 - 2040 Population, Housing and Employment Forecast

PREPARED FOR: Anchorage Bowl Land Use Plan Map Project

PREPARED BY: Municipality of Anchorage Planning Department

DATE: January 12, 2015

1 Introduction

1.1 Project Background

The Land Use Plan Map (LUPM) project is one of the final major implementation projects of the Anchorage 2020 – Anchorage Bowl Comprehensive Plan. While the Comprehensive Plan laid out goals and policies for the future land use and the physical development of the Anchorage Bowl it did not provide a detailed land use plan map which is typically associated with a Comprehensive Plan.

The updated LUPM has two essential objectives:

- Designate the future location and intensity of residential, commercial, industrial, and institutional development throughout the Anchorage Bowl; and,

- Help ensure Anchorage's growing population will have adequate housing, employment, education, and recreation opportunities.

In order to ensure that these objectives are met, there needs to be a good balance between land supply and land demand. The following population, household and employment forecast have been developed to help determine the land use demand component of this equation. If we know what the population and employment growth is, then we can determine how much land is needed in what categories to accommodate it. The LUPM can then be evaluated as to whether or not it meets that demand.

2 Review of Published Forecast

There are two primary sources of population forecast available for Southcentral Alaska, i.e. Institute of Social and Economic Research (ISER) and Alaska Department of Labor and Workforce Development (ADOLWD). Most of the rest of the published forecast utilize these as the basis of their forecast with some added assumptions.

2.1 Economic and Demographic Projections for Alaska and Greater Anchorage (ISER 2009)

The December 2009 study by Scott Goldsmith of the Institute of Social and Economic Research (ISER) is a detailed, econometric population and economic forecast for Alaska, the Municipality of Anchorage, and the Mat-Su Borough. The ISER forecasts have been the primary source of population and employment forecasting for planning purposes within the Municipality of Anchorage for years.

The econometric model developed by ISER is driven by an economic development scenario which is a consistent set of assumptions about levels of future basic industrial activity within the state. The strength of the model lies in the ability to make revisions to reflect changes in economic conditions. The disadvantage is that the model can be out-of-date if it is not updated periodically, especially during times of rapid economic changes.

The 2009 ISER forecast is now almost six years old. While it is not within the scope of this report to conduct a thorough review of the ISER forecast, it does appear that some of the pivotal economic assumptions are in need of revision. For example, the December 2009 report assumed that the price of oil (2009$) would average $95 per bbl. (the November price of North Slope crude oil remained in the 40 dollar a barrel range). Another important assumption involves the development of the North Slope Gas Pipeline which was predicted to become operational in 2019.

The 2009 ISER forecast was used as the basis for the population projections contained in the Anchorage Housing Market Analysis, prepared for the Municipality of Anchorage, February 2012. It was also used in the Municipality of Anchorage Commercial Land Assessment, prepared by Johnson Reid, January 2012 to develop its employment forecasts.

2.2 Alaska Population Projections (2012 – 2042)

The April 2014 study published by the State of Alaska Department of Labor and Workforce Development takes an entirely different approach to forecasting population. The ADOLWD uses a "cohort component" technique, separating the population of each sex into age groups and aging them forward in time, then adding projected births and in-migrants and subtracting projected deaths and out-migrants. It is important to note the ADOLWD population projections do not consider the population effects of potential structural changes to the economy, such as those that might occur with transportation infrastructure development or with large-scale industrial development. For example, the socioeconomic impacts of a Knik Arm crossing or gas line development are not explicitly reflected in the population projections.

The 2014 ADOLWD Report was adopted by AMATS for use in the updated Transportation Demand Model (TDM).[1]   It makes sense for the MOA Planning Department to utilize a

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[1] The TDM is a computer model that forecasts future transportation demand. The main inputs to the TDM are population, household, and employment projections that form the basis for calculating trip productions and attractions. The TDM is an important tool used in the development of the Metropolitan Transportation Plan (MTP). The next update of the MTP will occur in 2016 and will provide a comprehensive list of transportation improvement projects through the year 2040.

single source of forecasts for both transportation planning and land use planning to ensure consistency in their planning efforts.

2.3 Comparison of Published Forecasts

In order to proceed with the Anchorage Bowl Land Use Plan Map project, it is necessary to select which forecast to utilize. This comparison is intended to facilitate that selection process. Table 1 compares the ISER and ADOLWD population forecasts for the region.

Table 1
2035 Population Forecast Comparison

Year	ISER Municipality of Anchorage	ISER Mat–Su Borough	ADOLWD Municipality of Anchorage	ADOLWD Mat–Su Borough
2015	288,800	95,400	306,981	100,767
2020	314,500	117,200	320,839	112,871
2025	333,700	153,600	333,024	125,223
2030	343,100	169,000	343,447	137,602
2035	351,300	170,800	352,500	149,769
2040	NA	NA	360,905	161,581

Source: ADOLWD and ISER

The two population forecasts arrive at very similar estimates of population for the Municipality of Anchorage in 2035 (differing by only 1,200 persons). There is, however, a significant difference in the population estimates for the Mat-Su Borough (with the ISER forecast estimating over 21,000 more people living there in 2035 compared to ADOLWD). It should be noted, however, that the ISER population forecast for 2015 was significantly lower than the 2015 ADOLWD estimates. This is due to the fact that the ISER estimates were developed in 2009 and thus did not have the use of the more up-to-date America Community Survey data that was available to the ADOLWD in 2014.

Table 2
Population Growth Rate Comparisons

Year	ISER Municipality of Anchorage	ISER Mat–Su Borough	ADOLWD Municipality of Anchorage	ADOLWD Mat–Su Borough
2015–2020	1.8%	4.6%	0.9%	2.4%
2020–2025	1.2%	6.2%	0.8%	2.2%
2025–2030	0.6%	2.0%	0.6%	2.0%
2030–2035	0.5%	2.0%	0.5%	1.8%
2035–2040	NA	NA	0.5%	1.6%

Source: ADOLWD and ISER

There are advantages and disadvantages to both types of forecasts. This report recommends using the ADOLWD population forecast as the basis for the Anchorage Bowl Land Use Map project, primarily due to the fact that it is more recent. The ADOLWD forecast also appears to be more in line with the recent slow growth trends which are the result of a number of factors, one of the most important of which is the drop in the price of oil. The ADOLWD population forecast (Table 3) shows growth rates of under 1% for the MOA which is in line with the recent decline in the growth rate of the MOA since 2010 (generally under 1%). The ADOLWD population forecast for the MSB also seems to be in line with the recent slowdown in the growth rate of the MSB since 2010 (around 3% or less). Figure 1 shows the ADOLWD population forecast compared to the historic population growth for the combined MOA and MSB. The forecast appears to be a continuation of the historic trendline. Furthermore, the ADOLWD forecast is already being used by AMATS and the MOA Transportation Planning Division for long-range transportation planning purposes. Land use and transportation planning should be coordinated to the fullest extent possible and at least start with the same population and employment assumptions. Finally, the ADOLWD forecast extends to the year 2040 which is the horizon year for AMATS planning purposes. The ISER projections only extend to 2035 and would have to be extrapolated somehow to align it with the AMATS and LUPM planning horizon.

Figure 1
Population, Anchorage Municipality and Mat-Su Borough, 1970 - 2042

Source: DOLWD Population Estimates (1970 - 2013) and Projections (2012 - 2042).
Population projections adjusted to match 2013 population estimates.
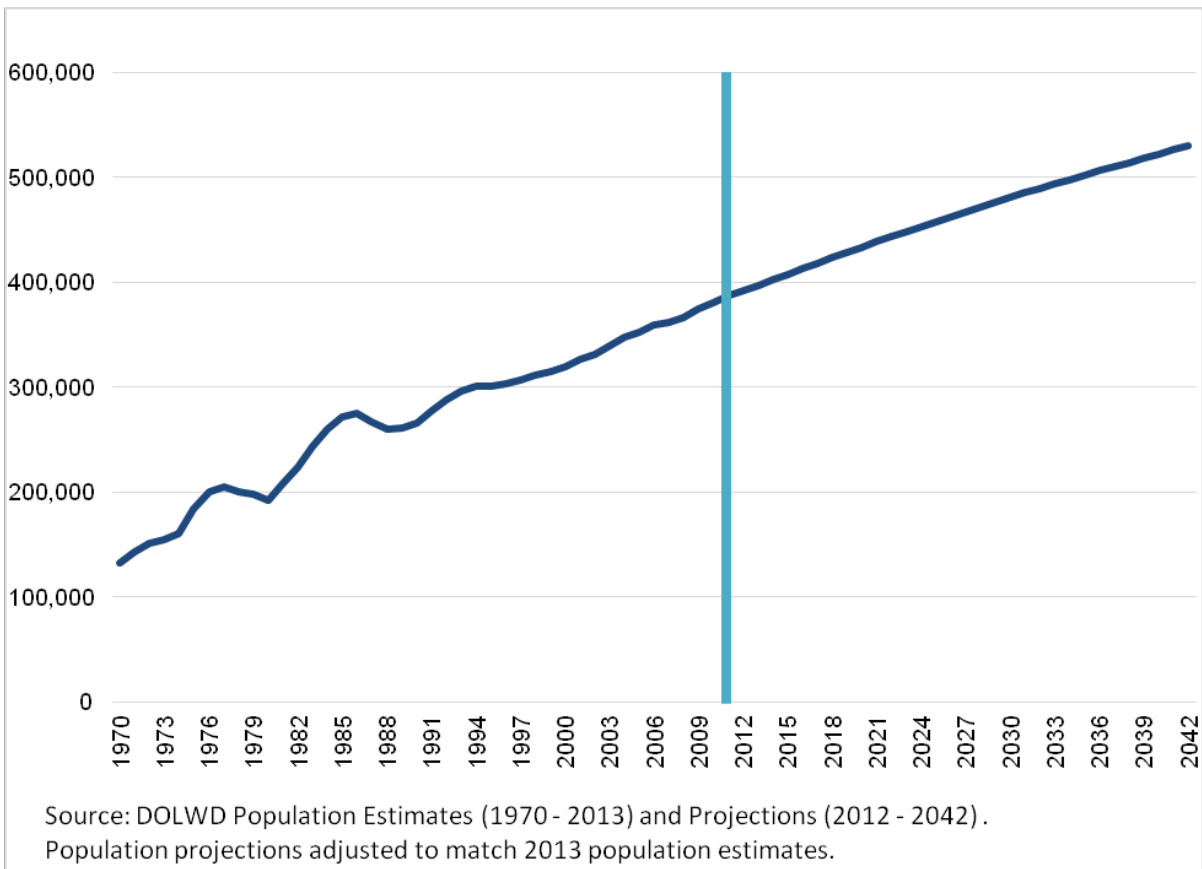
The ISER forecast, on the other hand, shows a fairly strong growth for the MOA of 1.8% between 2015 and 2020 and dropping to 0.5% at the end of the forecast period (2030-2035). The ISER forecast for the MSB also show very strong growth during the early part of the forecast period with growth rates of 4.6% between 2015-2020 and 6.2% between 2020-2025. While this matches the historic growth rates achieved earlier (between 2000-2006), it is substantially higher than the more recent growth rates (between 2007 and 2013). Growth would have to accelerate substantially in the next ten years in order to achieve the growth rates forecast by the 2009 ISER report.

Table 3
Historical Population Growth Rate

Year	Municipality of Anchorage	Mat–Su Borough
2000	0.3%	6.5%
2001	1.7%	4.4%
2002	1.0%	4.4%
2003	1.9%	5.1%
2004	1.7%	4.5%
2005	0.1%	5.4%
2006	1.7%	4.5%
2007	−0.2%	3.6%
2008	0.6%	3.3%
2009	2.2%	2.8%
2010	0.9%	3.4%
2011	1.5%	3.2%
2012	0.8%	2.2%
2013	0.9%	2.4%
2014	−0.08	2.1%

Source: ADOLWD and ISER

2 Population and Household Forecast

2.1 Population

As previously discussed, the population forecast used in this report relies on the 2012-2040 ADOLWD forecast. Table 4 shows the ADOLWD forecast by five year increments. Since the LUPM does not include the Turnagain Arm or Girdwood, this population must be subtracted from the total ADOLWD forecast. The Girdwood-Turnagain Arm population is expected to grow from 2,657 in 2010 to 3,218 in 2040 a 21% increase or around 1% per year.[2]

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[2] McDowell Group, "Technical Memorandum #6, AMATS Travel Model Update: Socioeconomic Projections", prepared for Anchorage Metropolitan Transportation Solutions, 2015.

Table 4
2015-2040 Population Forecast, MOA and Girdwood-Turnagain Arm

Year	ADOLWD MOA Population	Turnagain Arm Population	Net Population
2015	306,981	2,760	304,221
2020	320,839	2,865	317,974
2025	333,024	2,965	330,059
2030	343,447	3,059	340,388
2035	352,500	3,107	349,393
2040	360,905	3,218	357,687

Source: ADOLWD and McDowell Group

A further breakdown of the population forecast between the Anchorage Bowl and Chugiak-Eagle River is needed for the LUPM. The distribution of the population between the Anchorage Bowl and Chugiak-Eagle River has changed over time. Historically Chugiak-Eagle River has been capturing an ever increasing share of the total MOA growth (see Table 5). In 1970, Chugiak-Eagle River accounted for 4.6 percent of the Municipality of Anchorage population, including Girdwood-Turnagain Arm. This increased to 11.2 percent in 1990, 11.49 percent in 2000, and 12.03 percent in 2011. The most recent estimates for 2013 show a slight decline in the Chugiak-Eagle River to 11.98 percent.

The Chugiak-Eagle River (CER) area has its own Comprehensive Plan that is intended to guide development in this subarea of the Municipality of Anchorage. The Plan provides an estimate of the future growth of the area that is expressed as a percentage of the total future MOA population. The Plan estimates that the CER population will continue to grow at a faster rate than the Anchorage Bowl and that it will represent 15% of the total MOA population by 2025 (the planning horizon year for the last adopted CER Comprehensive Plan). Since the 2025 population forecast used by the CER Comprehensive Plan (351,300) is not far off the population forecast used in the new 2040 forecast developed by ADOLWD (358,363) it seems reasonable to retain the use of the 15% CER Comprehensive Plan estimate in this report. Multiplying the 15% rate times the forecasted 2040 MOA population give an estimated Chugiak-Eagle River population estimate of 53,754. Table 6 shows the final 2040 regional population forecast based on the ADOLWD and subarea allocation methodology discussed above.

For the purposes of long-range planning through 2040, the Planning Division estimates that the population of Joint Base Elmendorf-Richardson (JBER) in 2040 will be the same as the population reported in the 2010 Census, or 13,900. This carries forward assumptions of the 2012 Housing Market Analysis, which assumed that the military population on-base would remain stable through 2030. Although JBER is currently in the midst of a process considering potential troop reductions in the near term, it is difficult to predict the size of the military in Anchorage in 2040. The military Base population historically follows a pattern of lows and highs that do not directly relate to trends in the local economy.

Table 5
Historic Chugiak-Eagle River Growth Rate

Year	MOA Pop	Anchorage Bowl	Chugiak–Eagle River Pop	CER Percent of MOA	Percent Share of Growth
1960	82,833	80,604	2,229		
1970	126,385	120,553	5,832	4.6%	8.3%
1980	174,431	161,573	12,858	7.3%	14.6%
1990	226,338	201,014	25,324	11.2%	24.0%
2000	260,300	230,383	29,917	11.5%	13.5%
2010	291,800	256,800	35,000	12%	18.2%

Source: United States Census
Note: Anchorage Bowl includes Girdwood/Turnagain Arm and JBER.

Table 5-a (Table 5 Supplement)
Historical Anchorage Bowl Growth Rate, 1960-2010

Year	MOA Pop	Anchorage Bowl[1]	Anchorage Bowl AAGR	Bowl Percent of MOA Pop.	Percent Share of MOA Growth
1960	82,833	64,226	N/A	77.5%	N/A
1970	126,385	96,852	4.1%	76.6%	74.9%
1980	174,431	143,351	3.9%	82.2%	96.8%
1990	226,338	184,557	2.5%	81.5%	79.4%
2000	260,300	216,179	1.6%	83.0%	93.1%
2010	291,800	240,337	1.1%	82.4%	76.7%

Source: United States Census; ADOLWD

Table 6
Population Forecast, Municipality of Anchorage and Selected Areas
2010 to 2040

	Anchorage Municipality	Anchorage Bowl	Chugiak-Eagle River	JBER	Girdwood - Turnagain Arm
2010	291,800	240,300	35,000	13,900	2,600
2040	361,556	290,687	53,751	13,900	3,218
Change 2010 to 2040					
Number	69,756	50,387	18,751	-	618
Percent	24%	21%	54%	0%	24%
AAGR	0.8%	0.7%	1.8%	0.0%	0.8%
Percent of Muni in 2040	N/A	80.4%	18.5%	3.8%	0.9%

Source: 2010 Decennial Census, MOA Planning Department
Note: AAGR is average annual growth rate
Note: JBER is the Joint Base Elmendorf Richardson
Note: Anchorage Bowl excludes JBER

2.2 Household Size Trends

While the ADOLWD forecast provides population estimates in yearly increments to the year 2042, it does not provide a forecast of the number of households. A forecast of households is essential to the development of the LUPM since the residential land use designations contained in it are based on housing density. Thus, it is necessary to convert population to households in order to provide the needed information to the LUPM.

Forecast of future household size is the key to estimating the number of households. If household size is known then the number of households can be derived by dividing the population estimates by household size. Household size in Anchorage has decreased over time, consistent with State and national trends in the proportion of single-parent households, non-related adult households, and elderly households. The result has been the more rapid growth in the number of households than population. Anchorage's household size decreased from 3.4 persons per household in 1970 to 2.67 persons per household in 2000 and 2.65 in 2010. It is expected that household size will continue to decline in the future but at a slower rate (ISER 2005). Forecast of future household size has typically relied on ISER forecast of population and households. According to the 2009 ISER report the population-to-household ratio is expected to decrease approximately 2.9 percent in the 25 year period between 2010 and 2035.

In order to develop a more accurate household size estimate, however, it is necessary to subtract the persons living in group quarters[3] from the population estimates. In 2013 there were approximately 8,200 persons living in group quarters, almost all of whom were located in the Anchorage Bowl (Source: 2013 5 year ACS data). The 2013 adjusted household size estimates (taking into account the group quarters population) for the Municipality of Anchorage were 2.64 for the MOA, 2.61 for the Anchorage Bowl, and 2.84 for CER. If the household size decreases by 2.9 percent from 2013 to 2040 (i.e., the same rate as the 2009 ISER report projected during the 2010-2035 period) then the 2040 household size for the Anchorage Bowl would be 2.53 and Chugiak-Eagle River would be 2.76.[4]

2.3 Household

The household forecast from 2015 through 2040 are shown in Table 7 below. Anchorage's population estimates include the JBER population (estimated to be 13,500 in 2015. However, it is assumed that the JBER population and household figures will remain the same throughout the forecast period and will therefore not have an effect on the demand for new housing in the rest of the Anchorage Bowl. Table 8 indicates the number of new housing units that will need to be constructed during each 5-year increment. As the table shows, the demand for new housing units is expected to decline over the 25 year period as the growth rate (as forecast by ADOLWD) declines.

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[3] Group quarters, or group housing, is institutional housing in which there are not individual self-sufficient household dwellings. Examples include dormitories, certain assisted living facilities, transitional living, and habilitative care or similar facilities.

[4] The 2012 Housing Market Analysis utilized a very similar methodology as described in this report for household size. It estimates a household size of 2.53 in the Anchorage Bowl and 2.87 for Chugiak-Eagle River in 2030. The higher household size for Chugiak-Eagle (2.87 compared to 2.76 in this study can be primarily attributed to the higher household size starting point used in the Housing Market Analysis. The Housing Market Analysis estimated that the Chugiak-Eagle Rive r household size was 2,93 in 2010 whereas this study estimates that it was only 2,84 in 2013 based on more recent 2013 5 year ACS data. The 2012 Housing study's household size in the Anchorage Bowl is lower for any given year through 2035 than in the present forecast update, because of its starting place of 2.62 persons per household in 2010 is lower than the 2.61 persons per household in 2013 that this forecast update uses.

Table 7
Population and Household Forecast, Anchorage Bowl and Chugiak-Eagle River
2015-2040

Year	Anchorage including JBER Pop	Chugiak–Eagle River Pop	Anchorage including JBER Households	Chugiak–Eagle River Households
2015	258,343	37,496	98,982	13,203
2020	268,288	40,847	103,391	14,467
2025	276,722	44,129	107,265	15,720
2030	283,565	47,298	110,564	16,948
2035	289,222	50,386	113,438	18,162
2040	294,613	52,983	116,241	19,212

Source: ADOLWD and MOA Planning Department
Note: Population excludes Group Quarters and Turnagain Arm/Girdwood

Table 8
Household Growth, Anchorage Bowl and Chugiak-Eagle River
2015-2040

Year	Anchorage Bowl Household Growth	Chugiak-Eagle River Household Growth	Total Household Growth
2015	NA	NA	NA
2020	4,409	1,264	5,672
2025	3,874	1,254	5,128
2030	3,300	1,228	4,528
2035	2,874	1,214	4,087
2040	2,803	1,050	3,853

Source: ADOLWD and MOA Planning Department

2.4 Low/Base/High Population and Household Forecasts

In most planning exercises it makes sense to have a range of scenarios in order to test the sensitivity of the results. In this case it would be helpful to evaluate the LUPM against a Low and High Growth Scenario to test how robust the LUPM is in meeting a variety of growth scenarios. [5] The low growth forecast provides population estimates based on assumptions that the Anchorage MSA will experience lower-than-expected overall economic performance over the long-term (2040). The high growth rate forecast

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[5] Low and high growth scenarios were developed based on assumptions contained in the 2009 ISER forecast. Some of the major assumptions driving the ISER model include: price of oil, North slope oil production, gas pipeline construction, state spending, tourism growth, and federal spending. Changes in these assumptions resulted in low/base/high population and employment forecasts.

incorporates a more aggressive growth rate for the economy in line with some major new economic development initiatives. The low growth case assumes that the base case growth rate will be reduced by 65% and the high growth case assumes that the base case growth rate will increase by 85%. These percent variations reflect those of the 2009 ISER low and high case percent variations from its base case scenario. Table 9 shows the low/base/high populations totals for the MOA[6] and MSB and Table 10 shows the low/base/high split for Anchorage Bowl and Chugiak-Eagle River.

Table 9
Low/Base/High Case Population Forecast, Anchorage Bowl and Chugiak-Eagle River

	Low		Base		High	
	MOA	MSB	MOA	MSB	MOA	MSB
2015	298,034	100,767	295,839	100,767	298,034	100,767
2020	301,386	104,096	309,135	112,871	316,254	127,339
2025	306,273	107,625	320,850	125,223	334,240	153,851
2030	310,451	111,281	330,863	137,602	349,612	179,868
2035	314,099	114,955	339,608	149,769	363,040	205,069
2040	317,432	118,549	347,596	161,581	375,304	229,421
AAGR	0.3%	0.7%	0.7%	2.4%	1.1%	5.1%

Source: ADOLWD and MOA Planning Department

Note: MOA population in Table 9 excludes Turnagain Arm and Population in Group Quarters

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[6] MOA population in Table 9 exludes JBER, Turnagain Arm and Population in Group Quarters

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Table 10
Low/Base/High Case Population Forecast, Anchorage Bowl and Chugiak-Eagle River

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	Low			Base			High		
	Bowl	CER	Total	Bowl	CER	Total	Bowl	CER	Total
2015	260,608	37,426	298,034	258,343	37,496	295,839	260,608	37,426	298,034
2020	262,823	38,533	301,386	268,288	40,847	309,135	273,995	42,259	316,254
2025	266,379	39,894	306,273	276,722	44,129	320,850	286,981	47,259	334,240
2030	269,247	41,204	310,451	283,565	47,298	330,863	297,524	52,088	349,612
2035	271,617	42,482	314,099	289,222	50,386	339,608	306,237	56,803	363,040
2040	273,879	43,553	317,432	294,613	52,983	347,596	314,555	60,749	375,304
AAGR	0.2%	0.7%	0.3%	0.6%	1.7%	0.7%	0.9%	2.5%	1.1%

Source: ADOLWD and MOA Planning Department

Note: Table 10 population excludes JBER, Turnagain Arm and Population in Group Quarters

In Table 11, the Anchorage Bowl and Chugiak-Eagle River population forecast was converted into household forecast for the purpose of the LUPM development.

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Table 11
Low/Base/High Case Household Forecast, Anchorage Bowl and Chugiak-Eagle River
2015-2040

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	Low		Base		High	
Year	Anch Bowl	CER	Anch Bowl	CER	Anch Bowl	CER
2015	99,850	13,178	99,850	13,178	99,850	13,178
2020	101,285	13,647	103,391	14,466	105,590	14,967
2025	103,256	14,212	107,265	15,720	111,241	16,835
2030	104,982	14,765	110,565	16,948	116,007	18,665
2035	106,533	15,313	113,438	18,162	120,112	20,475
2040	108,061	15.792	116,241	19,212	124,109	22,028

Source: ADOLWD and MOA Planning Department

2.5 Impact of Housing Demand on Residential Land Use Demand and Supply

The demand for housing as depicted in Table 8 can not be dealt with in isolation with respect to the supply of land. This is especially true if the supply of appropriately zoned residentially land is constrained. This section will examine the constraints on supply and discuss the impact of this constraint on how the demand may be met

The March 2012 Anchorage Housing Market Analysis provided an estimate of residential supply by structure type based on MOA GIS land use capacity parcel database (see Table 12 below).

The 2012 Anchorage Housing Analysis Study also provided a forecast of the demand for various types of housing based on surveys, historic trends in residential development, and expected future trends[7]. By multiplying the percent housing type demand by the new 2015-2040 total housing demand presented in this report an estimate of housing demand by housing type can be calculated (see Table 13 below).[8]

Table 12
2012 Residential Land Capacity by Housing Type
Anchorage Bowl Chugiak-Eagle River (total)

	Percent of Total	Land Capacity
Large Lot Single-Family	21.2%	3,730
Single-Family	35.4%	6,201
Two-Family/duplex	12.5%	2,186
Townhouse	8.4%	1,475
Multifamily	22.5%	3,944
Total		17,537

Source: 2012 Anchorage Housing Market Analysis, Table 7 and 8.

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[7] The 2012 housing study forecast was based on six main factors shown to affect the amount and type of housing built in communities: population growth and demographics, household purchasing power, housing preference, housing costs, price of housing substitutes (i.e., transportation), and housing policy.

[8] Table 13 essentially updates Table 7 in the 2012 Housing Market Analysis to reflect the new housing demand estimate for the period 2015 – 2040 estimated to be 23,441.

Table 13
2015-2040 Housing Demand Forecast by Housing Type
Anchorage Bowl Chugiak-Eagle River (total)

	Percent of Total	Housing Demand
Large Lot Single-Family	4.8%	1,076
Single-Family	35.6%	7,983
Two-Family/duplex	18.4%	4,126
Townhouse	7.4%	1,660
Multifamily	33.8%	7,580
Total		22,425

Source: 2012 Anchorage Housing Market Analysis, Table 3; MOA Planning Department (2015)

By comparing the supply (Table 12) with the demand (Table 13) an estimate of the land supply sufficiency can be approximated. Table 14 shows a substantial deficit with respect to residential land use supply. The deficit differs substantially, however, depending on the type of housing structure. Large lot single-family housing demand (i.e., generally greater than 1 acre in size) appears to be adequately addressed with an abundant supply of land currently available to meet this demand. On the other hand, all other housing structure types are facing a supply deficit. The land sufficiency findings of Table 14 are similar to the findings of the 2012 Housing Market Analysis.

Table 14
Residential Land Sufficiency by Housing Type
Anchorage Bowl Chugiak-Eagle River (total)

	Land Capacity	Housing Demand	Sufficiency (capacity minus demand)
Large Lot Single-Family	3,730	1,076	2,654
Single-Family	6,201	7,983	-1,782
Two-Family/duplex	2,186	4,126	-1,940
Townhouse	1,475	1,660	-185
Multifamily	3,944	7,580	-3,636
Total	17,537	22,425	-4,888

Source: 2012 Anchorage Housing Market Analysis, Tables 3, 7 and 8

While the 2012 Anchorage Housing Market Analysis used market factors and historic growth rates to allocate the percent share of future housing demand to the Anchorage Bowl and Chugiak-Eagle River, Anchorage's land supply makes it hard to predict where and how this future residential supply deficit will be met. There are three options for accommodating this growth: in the Bowl, in Chugiak-Eagle River, or in the Mat-Su Borough. In general, it is assumed that most of the higher density housing deficit (i.e., two-family, townhouses, and multi-family) will be met through density increases within the Anchorage Bowl. According to the 2006 Chugiak-Eagle River Comprehensive Plan Land Use Map, higher density

housing (greater than 7 units per acre) is limited to the Eagle River core. The Plan further states that multi-family housing is not expected to increase to more than 15% of the overall housing market. In fact, the ratio of multi-family may actually decrease from the current 12% share, depending on development trends in the community over the next 20 years. Similarly, the Mat-Su is also primarily a single-family community and is not expected to substantially increase its proportion of multi-family housing.

This leaves open the question of how the small lot single-family[9] deficit will be dealt with in the future. According to the 2012 Anchorage Housing Market Analysis, the Anchorage Bowl could accommodate single-family housing through re-designation of land from other uses, such as commercial uses or lower-density housing, for single-family housing. The Commercial Land Assessment Study (MOA, Jan. 2012), however, showed a shortage of land for commercial uses. While there is a surplus of capacity for large-lot, single-family housing, the adopted Hillside District Plan limits the extension of public sewer lines. Nevertheless, the Anchorage Housing Market Analysis suggests that it may be reasonable for the MOA to evaluate whether or not there is an "excess" of land designated for non-residential or low-density uses that would be suitable for small lot single-family housing.

Whether Chugiak-Eagle River could actually accommodate development of additional single-family dwelling would depend on a number of factors, such as: the planned infrastructure (e.g., urban wastewater and water service) becoming available as expected, transportation capacity for people living in Chugiak-Eagle River and working in the Anchorage Bowl, and housing market demand. Getting additional single-family growth would depend on coordination with landowners, predominantly Eklutna Inc., to develop their land over the 25-year timeframe. This shift would be encouraged by the likely increase in housing prices in the Anchorage Bowl as demand outstrips supply.

One of the ways that the region has accommodated growth in the past is through households locating in the Mat-Su Borough and commuting to work in Anchorage. If Anchorage does not have enough capacity for single-family growth even more households may choose to locate in the Mat-Su rather than pay higher housing costs in Anchorage or choose a different housing type (if available) in Anchorage. A review of previous studies involving the shift in population and employment between the Municipality of Anchorage and the Matanuska-Susitna Borough as a result of the construction of the Knik Arm Bridge concluded that a relatively small amount of residential, commercial and industrial growth would be siphoned off from the Anchorage Bowl to Mat-Su as a result of the KAC[10]. Moreover, assuming that a significant portion of Anchorage's small lot single-family housing demand will be accommodated in Mat-Su has some problems. Building at urban densities requires urban services (e.g., roads, sanitary sewer, water, schools, fire protection services). Mat-Su may not have sufficient land designated and planned for small lot single-family housing, especially in locations close to the proposed Knik Arm Bridge.

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[9] Small lot single-family is defined as lots that are within the R-1 and R-1A zoning districts but can include lots in Planned Community (PC) districts. In general, these lots are served with public sewer and water and are approximately 6,000 square feet to generally less than 10,000 square feet in size.

[10] Source: "The Knik Arm Crossing and Impact on the Land Use Map Update", prepared by the Municipality of Anchorage Planning Department, November 2015

It seems likely that all three options will be utilized to accommodate regional housing demand. Within the Municipality of Anchorage the supply of small lot single-family land will have to be increased in both the Anchorage Bowl and Chugiak-Eagle River in order to accommodate the increasing demand for small lot single-family housing. While Chugiak-Eagle River has the majority of the vacant land in the MOA it cannot accommodate all of the small lot single-family deficit by itself. If it did the population of Chugiak-Eagle River would have to increase by about 70% to 60,000 persons in 2040. This would require a much more aggressive investment in the Chugiak-Eagle River infrastructure than is currently expected to occur within the 2040 time horizon.

Based on the above discussion, the distribution of future single-family housing growth between the Anchorage Bowl and Chugiak-Eagle River was forecasted to be 47% (Chugiak-Eagle River) and 53% (Anchorage Bowl). The implied assumption for this distribution is that there are substantial and more or less equally complex constraints inhibiting the development of additional single-family housing in both Chugiak-Eagle River and the Anchorage Bowl.[11] The figure also matches the assumptions regarding overall future housing and population growth distribution between the Anchorage Bowl and Chugiak-Eagle River contained in Section 2.1 of this memo. (This was based on the Chugiak-Eagle River Comprehensive Plan assumption that Chugiak-Eagle River population would equal around 15% of the total MOA population.)[12]

The forecast 2040 housing deficits by subareas (i.e., Anchorage Bowl versus Chugiak-Eagle River) are shown in Table 15.

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[11] Specifically, the percentage figures of 53% and 47% allocated to the Bowl and Chugiak-Eagle River, respectively, comes from assigning a proportionately equal share of the overall deficit in single-family housing capacity relative to the amount of demand preference in each place, as forecast in the 2012 Anchorage Housing Analysis.

[12] By comparison, the 2012 Housing Market Analysis forecasted a demand preference for 78% of the needed additional single-family homes to locate in the Bowl and only 22% in Chugiak-Eagle River, based on market factors and historic growth rates alone. Using the updated 2040 growth forecast, the that would translate into a market preference for an additional 6,520 single-family homes in the Bowl. [Calculation: Table 3 from 2012: 6,003 / 7,666 * 100 = 78%. Today: 8,359 * 78% = 6,520.]

Table 15
2040 Residential Land Sufficiency by Housing Type and Subarea

	Anchorage Bowl			Chugiak- Eagle River		
	Capacity	Demand	Sufficiency (capacity minus demand)	Capacity	Demand	Sufficiency (capacity minus demand)
Large Lot Single-Family	2,030	394	1,636	1,700	725	975
Single-Family	3,614[13]	4,444	-829	2,587	3,915	-1,334
Two-Family/duplex	1,272	3,765	-2,493	914	544	370
Townhouse	768	1,586	-818	707	144	563
Multifamily	3,315	7,530	-4,215	629	398	231
Total	11,000			6,537		

Source: 2012 Anchorage Housing Market Analysis ,Tables 7 and 8; MOA Planning Department (2015)

3 Employment Forecast

3.1 Introduction

As previously discussed, the forecast used in this report is based on the 2014 ADOLWD 2012 – 2042 Alaska Population Projections. Since this is a population projection, it is necessary to develop the employment forecasts separately based on population instead of forecasting the employment first and then forecasting population such as is done in the ISER forecasts. As a result, the methodology used to develop this employment forecast is different from what the Municipality has used in previous commercial and industrial and assessment studies.

3.2 Historic Employment Growth

The recent rate of employment growth in the Municipality of Anchorage is reflected in Table 16. Since 2001 the rate of employment growth has varied from a high of 2.2% in 2012 to a low of -0.6 in 2009. The average annual employment growth for Anchorage has been about 1.1% during that time period. The millennium began with a brief burst of oil activity on the North Slope including development of the Alpine and North Star oilfields and construction of a large number of oil modules in the state, including in Anchorage. Then, after a brief slowdown, four years of above average oil prices brought on more sustained levels of growth; by 2005, prices had more than doubled from the 2001 lows. Higher prices were a boon not just to the oil industry but to revenues flowing into the state. Petroleum revenues rose from $2.1 billion in 2003 to a record $11.3 billion in 2008, then remained high through fiscal year 2013. This produced notable increases in the state's operating and capital

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[13] Note: The supply of single-family residential land use capacity in the Anchorage Bowl has shrunk substantially since the Anchorage Housing Market Analysis was published in 2012. Based on the latest 2015 MOA GIS data available there are now only 3,293 small single family lots available for development in the Anchorage Bowl. The entire residential land use inventory will be recalculated in early 2016.

budgets, with Anchorage getting a significant portion of the increase as the state's largest city and the headquarters for many of the state's construction and engineering firms.

Health care and tourism were important sectors contributing to the growth of the Anchorage economy since 2000. Health care was already a large industry, and this fast growth racked up huge numbers. Between 2000 and 2013, health care jobs nearly doubled in Anchorage, from 9,700 to 18,100, and its share of total employment increased from 7 to 12 percent. During that period, health care generated just over a third of all new jobs in Anchorage. The estimated number of visitors to Anchorage broke the million mark during the 2013-14 season, nearly twice the visitors in 1989-90, and a number of new hotels altered the landscape in parts of the city. [14]

The economic outlook has significantly changed since 2013 with the drop in oil prices producing a ripple effect through the economy and forcing the State to reduce its operating and capital budgets. The following employment forecast is more in tune with the slower growth of the past few years than the more robust growth of just a few years ago.

Table 16
Municipality of Anchorage
Historical Employment Growth, 2001-2014

	Employment (1,000)	Percent Change
2001	138.2	
2002	140.8	1.9%
2003	142.3	1.1%
2004	144.1	1.3%
2005	146.6	1.7%
2006	148.3	1.2%
2007	149.8	1.0%
2008	151.9	1.4%
2009	151.0	-0.6%
2010	151.1	0.1%
2011	153.8	1.8%
2012	157.2	2.2%
2013	157.3	0.1%
2014	157.1	-0.1%

Source: Alaska Department of Labor and Workforce Development
Note: Employment is annual average non-farm employment

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[14] "Alaska Economic Trends", December 2014

3.3 Total Labor Force and Labor Force Participation Rates

The first step in the development of the employment forecast is to determine what the future labor force participation rate is expected to be. Labor force is defined as the resident population over 16 years of age that is either employed or seeking employment. The Labor Force Participation Rate (LFPR) is typically defined as the labor force divided by the total population age 16 and above.

While labor force is measured by place of residence, published employment data is measured by location of employment. As a result, the number employed in a region may exceed its labor force due to commuters from outside the community or from seasonal non-resident employment. This is the case in the Anchorage Municipality where total employment in 2013 was 47,000 greater than the resident labor force.[15]

Labor force and population data together indicate the LFPR in both Anchorage and Mat-Su are at or near 25-year lows. The LFPR in Anchorage in 2013 was 66.8 percent, well below the 10-year average of 69.4 percent. Mat-Su's LFPR in 2013 was 60.7 percent, also below the 10-year average of 64.5 percent. LFPRs have been declining in recent years, largely due to an aging population (though ADOLWD research indicates the LFPR in older cohorts has been increasing).

To project the size of the labor force, the 2013 LFPRs for Anchorage Municipality and Mat-Su Borough are applied to projected sub-area populations of residents 16 and over in 2040. While the LFPR has been on a downward trend in recent years (it may continue to decline in the near term as the population continues to age), the 2013 rate is considered a reasonable estimate for purposes of calculating the 2040 labor force projections.[16] The labor force projections contained in Table 17 below are based on the assumption that the labor force participation rate for the MOA will remain at 66.8% and the MSB will remain at 60.7%.

Table 17
Total Labor Force, 2013 Estimate and 2040 Projection

	2013	2040	Growth 2013 - 2040
Municipality of Anchorage	154,125	187,717	22%
Mat-Su Valley	40,370	68,501	70%
Total	194,495	256,218	32%

Source: ADOLWD and McDowell Group.

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[15] Labor force counts are reported by ADOLWD and are available at http://live.laborstats.alaska.gov/labforce/. These data are coupled with ADOLWD population estimates to produce a baseline LFPR.

[16] McDowell Group (2015).

3.4 Total Employment

Past employment projection studies have used different measures of employment. The predominant measure of employment involves the use of wage and payroll jobs as defined by the Alaska Department of Labor and Workforce Development Quarterly Census of Employment and Wages[17]. The QCEW program produces a comprehensive tabulation of employment and wage information for workers covered by State unemployment insurance (UI) laws and Federal workers covered by the Unemployment Compensation for Federal Employees (UCFE) program.

A more comprehensive method of estimating employment includes self-employed or non payroll jobs as well as wage and payroll jobs. Based on the Bureau of Economic Analysis data, the McDowell Group (2014) determined that there were approximately 30,000 self-proprietors working in the Municipality of Anchorage in 2013. This represents about 20% of the total employment. When considering which method to use for estimating employment in this report, it was decided that the more complete estimate of total employment including self-proprietors should be utilized. This is based on the assumption that about 40% of self-proprietors work outside of the home and have a need for office space and other land use requirements that should be reflected in the land use demand used in the development of the LUPM.[18]

In Anchorage and Mat-Su Borough, employment and labor force have had a very strong correlation over the past decade. Because of this correlation, labor force trends are used to guide employment projections. . The ratio of employment (based on U.S. Bureau of Economic Analysis data) to labor force in the Anchorage Municipality was calculated for the period 2001 to 2012 and averaged to obtain a baseline employment to labor force ratio of 128%. The same calculations were performed for the Mat-Su Borough. The resulting ratio of 76% reflects the fact that many of the persons in the Mat-Su Borough labor force work in Anchorage. Therefore, the number of jobs located in the MSB are significantly less than the labor force. The ratio for Anchorage was assumed to rise from 1.28 to 1.30 over the length of the forecast period due to an increase in the number of MSB residents working in Anchorage. In other words Anchorage employment is expected to grow at a slightly faster rate than the population. These figures were then multiplied by the labor force estimates contained in Table 17 to arrive at total employment projections for 2040 (see Table 18 below).

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[17] As an example, the "Anchorage Industrial Land Assessment Update: Volume 1 Employment Land Need and Policy Recommendations", prepared for the Municipality of Anchorage by Cardno, May 2015 uses the wage and payroll method to calculate employment.

[18] Source: PNW Economics

Table 18
Total Employment, 2013 Estimate and 2040 Projection

	2013	2040	Growth 2013-2040
MOA	176,090	211,474	20%
MSB	31,711	53,808	70%
Total	207,801	265,282	28%

Source: MOA Planning Department and McDowell Group.

Overall, employment is projected to grow at an average annual rate of 0.8 percent in the Municipality of Anchorage for the 2015 to 2040 time period and 2.6 percent for the MSB (rates slightly slower than those experienced in the past decade).[19]

3.5 Employment Growth Forecast by Economic Sector

Since different types of employment have different land use requirements total employment needs to be further disaggregated into various employment categories.[20] The ADOLWD QCEW database contains a detailed list of employment categories of employment. Based on the employment categories contained in the QCEW, the 2015 Anchorage Industrial Land Assessment report developed a list of thirteen employment categories which were considered to be accurate predictors of land use demand.

Allocation of the forecast future employment growth by economic sector relied on the 2015-2035 forecast share of growth for each sector contained in the Anchorage Industrial Land Assessment Update: Volume 1, prepared for the Municipality of Anchorage by Cardno (May 2015). [21] According to the Cardno report, health and educational services are expected to grow the fastest of any other sector (accounting for around 28% of the total employment growth with government employment growing the least (accounting for about 1.6% of the total growth (see Table 19).

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[19]From 2001to 2014 the MOA experienced an annual average employment growth rate of 1.1% (see Table 16) while the MSB had a rate of 3.8%. Also note that the 0.7% employment growth rate for the MOA is slightly slower than the 0.9% employment growth rate forecast in the 2015 Anchorage Industrial Land Assessment Update, Volume 1 which was based in part on the 2009 ISER Population and Employment Forecast.

[20] For example, office uses such as professional businesses need less space per employee than large retail box stores since offices are usually multi-story and large retail establishments are generally single-story.

[21] Employment growth by category used Figure 2-13 in the Anchorage Industrial Land Assessment Update, Volume 1. The Cardno report in turn appears to have utilized the AKDOLWD 2012 – 2014 employment forecast to estimate employment growth by category.

Table 19
Municipality of Anchorage
Percentage of Total Employment Growth by Sector
2015-2035

Employment Sector	Percentage Growth
Mining	1.3%
Construction	3.2%
Manufacturing	1.1%
Wholesale	3.8%
Retail	11.3%
Transportation, Warehousing, Utilities	7.5%
Information	1.3%
Financial Services	3.5%
Prof. & Business Services.	19.1%
Education & Health Services	28.0%
Hospitality	15.1%
Other Services	3.0%
Government	1.6%

Source: Figure 2-13, Anchorage Industrial Land Assessment Update, Volume 1.

3.6 Low/Base/High Employment Forecast by Economic Sector

Developing the final employment forecast for the low/base/high scenarios by five-year increments involved several steps.[22] The first step involved estimating the low/base/high total employment by five-year increments. All of the employment estimates were developed using the same employment to labor force ratio methodology discussed in Section 3.4.

Table 20
Low/Base/High Case MOA Employment Forecast

	Low	Base	High
2015	176,090	176,090	176,090
2020	180,043	184,734	189,051
2025	183,641	192,433	200,594

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[22] The low growth case assumes that the base case growth rate will be reduced by 65% and the high growth case assumes that the base case growth rate will increase by 85%.

2030	186,830	199,130	210,569
2035	189,668	205,049	219,326
2040	192,774	211,474	228,840

Source: MOA Planning Department

Second, it was necessary to create a base 2015 estimate of employment by sector. As previously mentioned the QCEW employment only takes into consideration the wage and salary employment. Self proprietors have a different distribution of employment by employment sector which must be taken into account. Fortunately, the BEA also lists employment by employment sector. By subtracting the QCEW employment by sector by the BEA employment by sector it can be determined which sectors the self proprietors belong to. As it turns out almost 50% of the self-proprietors are working in the FIRE and professional services employment sectors. Table 21 shows the difference between the 2015 base year employment by sector using the QCEW data and the 2015 base year employment using total employment including total self-proprietors.

Table 21
Base 2015 MOA Employment by Sector

	QCEW	Total Employment
Mining	3,400	4,600
Construction	8,500	13,150
Manufacturing	2,400	2,400
Wholesale	4,500	5,900
Retail	17,600	23,050
Transportation, Warehousing, Utilities	11,800	13,090
Information	3,800	3,800
Financial Services	8,700	8,700
Prof. & Business Services	19,400	42,830
Education & Health Services	24,700	28,390
Hospitality	16,700	19,840
Other Services	5,800	6,640
Government	30,900	30,900
	158,200	203,290

Source: ADOLWD and McDowell Group.

The final step involved growing the employment sectors by multiplying the percentage share of growth of each economic sector for each 5 year interval (as established in the

Industrial Land Assessment[23]) by the total employment growth for the same period (see Table 20). Table 20, 21 and 22 present the results of these calculations in five-year increments.

Table 22
Low Case MOA Employment Forecast
2015-2040

Employment Sector	2015	2020	2025	2030	2035	2040	'15-'40
Mining	4,370	4,462	4,474	4,537	4,550	4,568	198
Construction	11,460	11,651	11,724	11,792	11,854	11,933	473
Manufacturing	2,400	2,449	2,518	2,527	2,577	2,627	227
Wholesale	5,060	5,243	5,369	5,426	5,516	5,611	551
Retail	21,310	21,826	22,167	22,494	22,877	23,271	1,961
Transportation, Warehousing, Util.	12,880	13,254	13,469	13,656	13,945	14,220	1,340
Information	3,800	3,894	3,968	3,983	3,997	4,011	211
Financial Services	8,700	8,892	9,105	9,229	9,261	9,295	595
Prof. & Business Services	23,990	24,385	24,911	25,366	25,710	26,323	2,333
Education & Health Services	26,180	27,117	28,234	29,294	30,222	31,133	4,953
Hospitality	18,590	19,186	19,767	20,315	20,737	21,152	2,562
Other Services	6,450	6,630	6,711	6,783	6,845	6,901	451
Government	30,900	31,053	31,223	31,426	31,578	31,732	832
Total Employment	176,090	180,043	183,641	186,830	189,668	192,774	16,684

Source: MOA Planning Department.

Table 23
Base Case MOA Employment Forecast
2015-2040

Employment Sector	2015	2020	2025	2030	2035	2040	'15-'40
Mining	4,370	4,576	4,583	4,693	4,703	4,720	350
Construction	11,460	11,866	11,982	12,078	12,172	12,304	844
Manufacturing	2,400	2,509	2,659	2,668	2,769	2,871	471
Wholesale	5,060	5,482	5,750	5,853	6,041	6,250	1,190
Retail	21,310	22,442	23,158	23,827	24,641	25,449	4,139
Transportation, Warehousing, Util.	12,880	13,710	14,173	14,540	15,164	15,758	2,878
Information	3,800	4,014	4,170	4,185	4,199	4,214	414
Financial Services	8,700	9,123	9,578	9,835	9,870	9,905	1,205
Prof. & Business Services	23,990	24,806	25,954	26,929	27,623	28,890	4,900

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[23] This memo uses the Industrial Land Assessment's 2030-2035 assignment of share-of-growth by sector for the 2035-2040 5-year interval.

Employment Sector							
Education & Health Services	26,180	28,302	30,832	33,252	35,343	37,373	11,193
Hospitality	18,590	19,935	21,215	22,441	23,356	24,259	5,669
Other Services	6,450	6,856	7,014	7,144	7,265	7,373	923
Government	30,900	31,112	31,364	31,688	31,902	32,107	1,207
Total Employment	176,090	184,734	192,433	199,130	205,049	211,474	35,384

Source: MOA Planning Department.

Table 24
High Case MOA Employment Forecast
2015-2040

Employment Sector	2015	2020	2025	2030	2035	2040	'15-'40
Mining	4,370	4,671	4,673	4,850	4,857	4,875	505
Construction	11,460	12,066	12,226	12,343	12,462	12,656	1,196
Manufacturing	2,400	2,559	2,790	2,800	2,952	3,105	705
Wholesale	5,060	5,702	6,104	6,253	6,531	6,833	1,773
Retail	21,310	23,012	24,075	25,070	26,277	27,487	6,177
Transportation, Warehousing, Utilities	12,880	14,127	14,819	15,356	16,304	17,187	4,307
Information	3,800	4,115	4,351	4,367	4,382	4,398	598
Financial Services	8,700	9,344	10,022	10,391	10,428	10,465	1,765
Prof. & Business Services	23,990	25,198	26,925	28,377	29,405	31,262	7,272
Education & Health Services	26,180	29,393	33,249	36,921	40,096	43,160	16,980
Hospitality	18,590	20,628	22,568	24,413	25,791	27,141	8,551
Other Services	6,450	7,072	7,297	7,485	7,645	7,816	1,366
Government	30,900	31,163	31,496	31,942	32,197	32,454	1,554
Total Employment	176,090	189,051	200,594	210,569	219,326	228,840	52,750

Source: MOA Planning Department.

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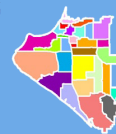
Appendix B-3

Redevelopment Report

2000-2015 Land Use Redevelopment Trends and Analysis
Technical Memorandum

Anchorage 2040 Land Use Plan

A Supplement to Anchorage 2020 - Anchorage Bowl Comprehensive Plan

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Anchorage Bowl

2000 - 2015 Land Use Redevelopment Trends and Analysis

PREPARED FOR: Anchorage Bowl Land Use Plan Map Project

PREPARED BY: Municipality of Anchorage Planning Department

DATE: July 22, 2016

1 Introduction

1.1 Project Background

The Land Use Plan Map (LUPM) project is one of the final major projects to help implement the Anchorage 2020 – Anchorage Bowl Comprehensive Plan. While the Comprehensive Plan laid out goals and policies for the future land use and the physical development of the Anchorage Bowl it did not provide a detailed land use plan map which is typically associated with a Comprehensive Plan.

The updated LUPM has two essential objectives:

- Designate the future location and intensity of residential, commercial, industrial, and institutional development throughout the Anchorage Bowl; and,

- Help ensure Anchorage's growing population will have adequate housing, employment, education, and recreation opportunities.

In order to ensure that these objectives are met, there needs to be a good balance between land supply and land demand. Previous technical reports published as a part of the LUPM project dealt with the land demand side of this equation. The supply side of the equation is equally important. There are several parts to the supply side. In the past, the majority of the land use supply was provided by vacant land. As a result, the amount of redevelopment activity has remained at a relatively low rate (see table 1). Furthermore, it appears that the amount of redevelopment activity has actually decreased since 2006. [1] As the vacant land supply is used, it has become increasingly common to utilize land that has already experienced some type of development. Land redevelopment is expected to be a more important part of the land supply in the future.

The first part of this report provides background information and analysis of what type and where redevelopment has occurred in the past 15 years. It is based on the Municipality of Anchorage CAMA data provided by the Property Appraisal Department. The CAMA database contains information on all of the parcels within the Municipality of Anchorage

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[1] The decrease in absolute redevelopment projects is probably due to the overall drop in the number of building permits since 2006.

(MOA). MOA GIS staff extracted information on all parcels in the CAMA database which had an effective year built from 2000 to 2015 in all Anchorage Bowl zoning districts except for single family zoning districts. Planning staff then used current aerial photos overlaid on the parcel layer in order to determine which parcels were developed from vacant land and which were developed on parcels with existing land uses. A total of 520 parcels were identified as redeveloped since 2000 in this manner.

The second part of this report involves the use of this historic information to predict, to the degree possible, where redevelopment is likely to occur in the future.   Predictive criteria will be identified which can then be applied to the existing CAMA database to identity potentially redevelopable parcels. The intent of this exercise is to enhance the Municipality of Anchorage's ability to analyze not only the capacity of the vacant land supply but also to add the capability a to analyze the capacity of the redevelopable land supply.

Table 1
Residential Redevelopment Activity 2000-2015
Number of Redevelopment Parcels

Year	Commercial	Industrial	Residential	Total
2000	10	4	9	23
2001	5	4	7	16
2002	5	6	21	32
2003	4	5	15	24
2004	10	9	27	46
2005	6	7	49	62
2006	8	10	49	67
2007	7	6	20	33
2008	5	4	14	23
2009	4	0	19	23
2010	6	4	32	42
2011	3	7	8	18
2012	7	6	15	28
2013	3	2	18	23
2014	9	2	24	35
2015	9	2	14	25
Total	101	78	341	520

Source: MOA Planning Department

The following sections divides the analysis of the historic redevelopment activity into three classes: residential, commercial and industrial.

2 Residential Redevelopment

2.1 Historic Residential Redevelopment Patterns

A substantial amount of new housing units have resulted from redevelopment. According to Table 2, a total of 1,260 housing units have been developed on previously developed parcels since 2000. This represents about 26 percent of the total number of all housing units and 37 percent of all multi-family housing units that have been built since 2000. The redevelopment activity involving housing is not evenly distributed around the Anchorage Bowl. Almost half of the housing units resulting from redevelopment are located in the northeast part of the Bowl. As expected, few redeveloped housing units are located in the southwest and southeast since the majority of the residential land in these subareas are zoned for single-family use, and these areas are more recently developed parts of the city.[2]

Table 2
Residential Redevelopment 2000-2015

Subarea	Number of New Redeveloped Housing Units	Number of Housing Units Demolished by Redevelopment	Net Redeveloped Housing Units
Central	235	116	119
Northeast	624	724	−100
Northwest	354	385	−31
Southwest	47	41	6
Southeast	0	0	0
Total	1,260	1,266	−6

Source: MOA Planning Department

While the amount of housing units resulting from redevelopment is significant, there was actually a small net decrease in housing units resulting from this type of activity of 6 housing units. The reasons for the decrease in the absolute number of housing units due to redevelopment is primarily due to two factors. First, a significant amount of housing units have been removed from the housing stock as a result of the redevelopment of mobile home parks. The largest example involved the Centerpoint redevelopment. Centerpoint, is a major office development located in Midtown west of C Street between 36th Ave. and 40th Ave,[3] sits on the site of a former mobile home park which originally contained around 189 units. The redevelopment of the Muldoon Town Center located on the southwest corner of Muldoon Rd. and DeBarr Rd. also involved a former mobile home park. About half of the site, which originally contained about 220 mobile homes, was developed as the new Begich

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[2] Single-family zoned districts were not included in this analysis since it was assumed that there would be no net change in the number of units resulting from redevelopment of a single-family house. In other words redevelopment in these zones involve replacing one single-family house with another single-family house.

[3] Various phases of Centerpoint were built between 2001 and 2009.

Junior High School. The rest of the site is being developed as a mix of commercial and residential with about 83 total housing units shown as built in 2015. While additional housing units will be built on this site in the future, the total net housing loss will be substantial. The third major mobile home park redevelopment is occurring on a large parcel located on the northeast corner of Boniface Pkwy. and DeBarr Rd. Providence Hospital has developed an extended care and rehabilitative care facility on this parcel which has currently displaced around 115 housing units. Thus, since 2000, about 524 housing units have been lost from conversion of mobile home parks to commercial uses while only 83 new housing units have been added to replace them for a net loss of 441 housing units. The mobile home to commercial land use conversion account for almost all of the residential to commercial housing loss (a total of 526 from 2000 to 2015). On the other hand, very little land has been converted from commercial or industrial use to residential land uses with only 91 total units added under this scenario. It should be noted however that all of these conversions occurred on residentially zoned parcels.

The second factor which contributed to the low net new housing units resulting from redevelopment involves the activity of Cook Inlet Housing Authority (CIHA) in the Mountain View neighborhood. CIHA has done extensive work redeveloping substandard housing in Mountain View. The net effect of this redevelopment, however, has been to reduce the existing housing supply (the vast majority of their projects involve the construction of single-family houses).[4] As a result, there were about 166 houses built on redeveloped land in Mountain View between 2000 and 2015 compared to about 241 housing units which were demolished on 122 lots.

2.2 Factors Contributing to the Likelihood of Residential Redevelopment

The question remains, what factors contribute to the likelihood of residential to residential redevelopment. For this part of the analysis, only residentially zoned parcels that experienced a net increase in the number of dwelling units were examined. Those residential redevelopments that resulted in an increase in the number of units shared the following characteristics:

Age of Housing – All of the housing that was replaced through redevelopment was older than 1966. The oldest house replaced through redevelopment was 1938.

Grade of Housing Structure – Redeveloped housing units were generally rated grade D or worse according to the MOA Assessors Office. Grade D is described as buildings in fair condition.

Building to Land Value Ratio – The appraised value of all of the houses redeveloped between 2000 and 2015 was less that 3 times the value of the land. This is substantially higher than previously assumed and may indicate that the MOA may have underestimated the potential supply of redeveloped land in its previous studies/analyses.

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[4] The net effect of all housing development in Mountain View is generally housing neutral since some previously vacant land has also been developed. In other words the overall number of housing units in Mountain View has remained about the same since 2000.

A methodology was developed utilizing the results of the above analysis of historic redevelopment activities (see Appendix A). This methodology was applied to the existing CAMA database to create a subset of residentially zoned properties which are considered redevelopable in the Anchorage Bowl. (Note to Tom: should we add a section on the results of the application of the methodology with data on the number of housing units by type that could be constructed through redevelopment?)

2 Commercial Redevelopment

There was substantially less commercial redevelopment activity between 2000 and 2015 than residential redevelopment. The analysis conducted by the MOA Planning Department identified approximately 79 commercial redevelopment projects of which about one-third occurred in the Downtown core.[5] Redevelopment of commercial land tends to be more complicated than residential redevelopment. Commercial redevelopment often tends to involve more than one parcel of land. Almost half of the cases of commercial redevelopment involve a resubdivision of multiple parcels into a single parcel sometimes involving an adjoining parcel of vacant land. This makes it a little more difficult to identify future commercial redevelopment sites since an individual parcel which might not seem to be a candidate for redevelopment when considered as a stand alone project becomes feasible when it is adjacent to a vacant parcel which can be resubdivided and combined with the developed parcel.

Factors which have been associated with commercial redevelopment in the past (2000-2015) are listed below:

Age of Building – The vast majority of commercial sites (92.5%) that have been redeveloped since 2000 have contained structures that were built before 1980 (73 out of 79). The oldest structure to be redeveloped commercially was built in 1922.

 Grade of Structure – Redeveloped commercial properties are generally of higher grade than redeveloped housing units with about 90% of them grade C or worse and about half of them grade D or worse according to the MOA Assessors Office. Grade C is described as buildings in average condition and a grade D building is considered to be in fair condition   There seems to be some correlation between the grade of a building and whether or not it is on a road with high traffic volume. Of those commercially redeveloped properties with a grade of C or better, 71% were located on streets with a high traffic volume. This makes sense since commercial property developers generally seek sites with a high volume of pass-by traffic. Redeveloped commercial properties with a grade of D or worse are not as picky with only around one-third located on high traffic volume streets.

Building to Land Value Ratio – The appraised value of all of commercially redeveloped properties in downtown is generally higher than those outside of the downtown area. A total of 4 out of 20 commercially redeveloped properties in downtown had a building to land value ratio greater than 2 (i.e., the value of the building is two times value of the land).

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[5] Note that the number of commercial redevelopment projects is less than the number of parcels identified as commercial redevelopment in Table 1 due to the resubdivision of multiple parcels into a single redevelopment project parcel.

Outside of the downtown area this number dropped to only 3 out of 54. In other words 94.5% of all commercially redeveloped properties outside of the CBD had a building to land ratio of less than 2.

Existing Use of the Property – The largest source of properties that were redeveloped as commercial involved commercially zoned properties that were for some reason or another first developed as residential. In total 40% of commercially redeveloped properties previously contained residential uses.

2 Industrial Redevelopment

Between 2000 and 2015, there were about 53 redevelopment projects involving industrially zoned land (I-1 and I-2) less than the 79 involving commercially zoned land. The majority of redevelopment occurring in industrially zoned land took place in the I-1 zoning district (over 75%). None of this redevelopment resulted in an industrial land use. This is not surprising since both the I-1 and I-2 allow commercial land uses besides industrial land uses.

Many of the redevelopment projects occurring on industrially zoned properties (25%) also involved a resubdivision of multiple parcels. Once again, this may or may not have involved an adjacent parcel of vacant land.

Factors which have been associated with commercial redevelopment in the past (2000-2015) are listed below:

Age of Building – The vast majority of industrial sites (88%) that have been redeveloped since 2000 have contained structures that were built before 1980 . Grade of Structure – Redeveloped industrial properties are almost all of grade C or worse (96%) with about 40% grade C.

Building to Land Value Ratio – The appraised value of all of industrially redeveloped properties generally had a building to land ratio of less than 1.

3 Redevelopment Suitability Methodologies

3.1 Residential Redevelopment Suitability Methodology

Based on an analysis of historic residentially redeveloped properties (2000 through 2015), the following methodology was used to identify currently underdeveloped Anchorage Bowl residential properties that are most likely to be redeveloped in the future.

Step 1: Select all of the following developed residentially zoned properties that have a building to land value ratio of 3:1 (R-2M, R-3, R-4, and R-5).

Step 2: Use the CAMA grade factor variable of D or worse to further filter the database developed in Step 1.

Step 3: Use the CAMA year built variable of 1970 or older to further filter the database developed in Step 2.

Step 4: Calculate the potential increase in residential units that could be achieved from a future redeveloped property subtracting the potential units that could be built on the property based on the zoning district and the historical achieved densities from existing residential units on the property. Delete all parcels from the database developed in Step 3 that do not have a positive redevelopment potential. In other words, the parcel must be able to be redeveloped with more housing units than currently exist on the property.

Step 5: Map and review the parcel database resulting from Steps 1-4 with planning experts to determine the reasonableness of this methodology. Remove parcels that do not seem to make sense as potential redevelopable properties and add lots which may have been missed based on the screening methodology.

Step 6: Calculate the total potential number of additional housing units that could be developed using this final database. Reassess if this number seems reasonable or if it needs to be adjusted.

3.2 Commercial Redevelopment Suitability Methodology

Based on an analysis of historic commercially zoned redeveloped properties (2000 through 2015), the following methodology was developed to identify currently underdeveloped Anchorage Bowl residential properties that are most likely to be redeveloped in the future.

Step 1: Select all existing residential land uses which contain a 4-plex or less and are within commercial zoning districts. (Note: Retain this as part of the final commercial redevelopable database.)

Step 2: Select all of the following developed downtown zoned properties that have a building to land value ratio of 3:1 or less (B-2A, B-2B, and B-2C). Note that all commercial parking lots have at least some building value according to the Assessor's Office. As a result, it is not necessary to account for the commercial parking lots separately.

Step 3: Select all of the following commercially zoned properties that have a building to land value ratio of 2:1 or less (RO, B-1A, B-1B, B-3).

Step 4: Filter the database developed in Step 3 above, using the following criteria: (1) parcels that have a building grade of C, have a traffic code of 1 (high) and have a FAR of less than 0.2 and (2) parcels that have a building grade of D or worse regardless of the traffic code. Note that this filter is not applied to downtown since it is assumed to have uniformly good access.[6]

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[6] Note: a FAR of 0.2 is assumed to be underdeveloped outside of the downtown zoning districts since a typical retail outlet with parking is on average over 0.2 FAR.) Thus, even if a retail establishment with a FAR over 0.2 is redeveloped it is likely that it will not add to the existing square footage of available commercial space.

Step 5: Use the CAMA effective year variable of 1980 or older to further filter the database developed in Steps 2 and 4. Although this is not the same as the original year built, an effective data later than the year built shows that there has been an effort to extend the useful life of the building.

Step 6: Map and review the parcel database resulting from Steps 1 and 5 with planning experts to determine the reasonableness of this methodology. Remove parcels that do not seem to make sense as potential redevelopable properties and add parcels that might have been overlooked.

3.3 Industrial Redevelopment Suitability Methodology

Based on an analysis of historic commercially zoned redeveloped properties (2000 through 2015), the following methodology was used to identify currently underdeveloped Anchorage Bowl residential properties that are most likely to be redeveloped in the future.

Step 1: Select all existing residential land uses which contain a 4-plex or less and are within industrial zoning districts I-1 and I-2.

Step 2: Select all of the following industrially zoned properties that have a building to land value ratio of 1:1 or less.

Step 3: Filter the database developed in Step 2 above, using the following criteria for buildings with an effective year of 1980 or less.

Step 4: Filter database developed in Step 3 for building grade C or worse.

Step 5: Map and review the parcel database resulting from Steps 1 and 4 with planning experts to determine the reasonableness of this methodology. Remove parcels that do not seem to make sense as potential redevelopable properties.

Step 6: Compare the selected lots to the Anchorage Industrial Land Assessment Volume II (2015) selection of potentially redevelopable lots, which benefited from extensive fieldwork observations and interviews by the Planning Department staff field team. Reconcile differences to determine final set of potentially redevelopable lots.