

Wasatch Front 2050

Market-Driven Growth Scenario

Prepared for Envision Utah | Salt Lake City, Utah | March 20, 2014

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Background and Objectives

- In 2004-5, Envision Utah, the Wasatch Front Regional Council (WFRC) and Mountainland Association of Governments (MAG) engaged the public to create the Wasatch Choices 2040 vision, which was later updated to become the Wasatch Choice for 2040. "WC2040" outlined nine growth principles and a vision map, which includes ranges of envisioned densities for various development centers along the Wasatch Front. In 2013, WFRC and MAG set out to update their regional transportation plans by creating multiple land use development scenarios, each of which are consistent with the ranges of densities included in the WC2040 vision map. Prior to adopting a preferred scenario, however, WFRC and MAG each desired to incorporate foreseeable market trends and dynamics, as well as buildable land supply. In addition, other entities, such as the Central Utah Water Conservancy District, desire to understand likely future growth trends in order to plan infrastructure investments.
- Together, these entities came together to hire RCLCO to produce a market-driven growth scenario that demonstrates how the Wasatch Front Region would likely grow and develop based on:
 - land availability,
 - market dynamics, and
 - long term consumer and demographic trends.
- The quantitative result of this analysis is a projection of real estate demand by decade and by submarket, through 2050—a summary of which is shown on pages 14-16 of this report and in more detail in the appendix.
- This scenario speaks specifically to how the region would likely develop from the perspective of the real estate market. While there are additional factors that can influence how a region grows, we are confident that the market is ultimately the predominant force. Policymakers therefore benefit from understanding market impacts, as their goals are likely best (most effectively, least expensively) accomplished by leveraging these market forces.

Farmland Reserve Inc



Overview: Regional Economy

The Wasatch Front region emerged from the economic recession both earlier and likely in better overall condition than most other parts of the country. It boasts well-performing, robust economic sectors that are experiencing strong momentum.

Utah's economy possesses significant advantages that support continuing economic growth, including its young population, a highly educated workforce, low corporate tax rates, low energy costs, and relatively low business costs. These factors, coupled with the state's strong economic development engine, have proven successful at recruiting and new employers to the region and growing those already present.

1st in best states for Business
1st in "Most Liveable Future State"
5th in the nation in the State Technology and Science Index Scores
13th in the ranking of Top Aspirational Cities

Source: Forbes 2012; MSN Money; Milken Institute 2010; Kotkin Aspirational Cities Index

	Metropolitan Statistical Areas (MSAs)					
	Salt Lake City	Albuquerque	Boise	Denver	Las Vegas	Phoenix
2012 Employment Growth	3.0%	-0.1%	2.1%	2.5%	0.8%	2.5%
January 2013 Unemployment Rate	5.3%	7.2%	7.0%	7.4%	10.2%	7.2%
2012 to 2017 Total Employment Growth	13.8%	7.2%	13.6%	13.0%	14.0%	13.9%
2000 to 2012 Total Employment Growth	13.2%	-0.1%	14.5%	2.5%	16.7%	11.2%
2000 to 2012 Employment Growth Standard Deviation	2.7%	2.5%	3.4%	2.3%	4.6%	3.7%
RANKINGS (Lowest Score is the "Best")						
2012 Employment Growth	1	6	4	3	5	2
January 2013 Unemployment Rate	1	3	2	5	6	3
2012 to 2017 Total Employment Growth	3	6	4	5	1	2
2000 to 2012 Total Employment Growth	3	6	2	5	1	4
2000 to 2012 Employment Growth Standard Deviation	3	2	4	1	6	5
Sum of Rankings	11	23	16	19	19	16
Rank	1	6	2	4	4	2

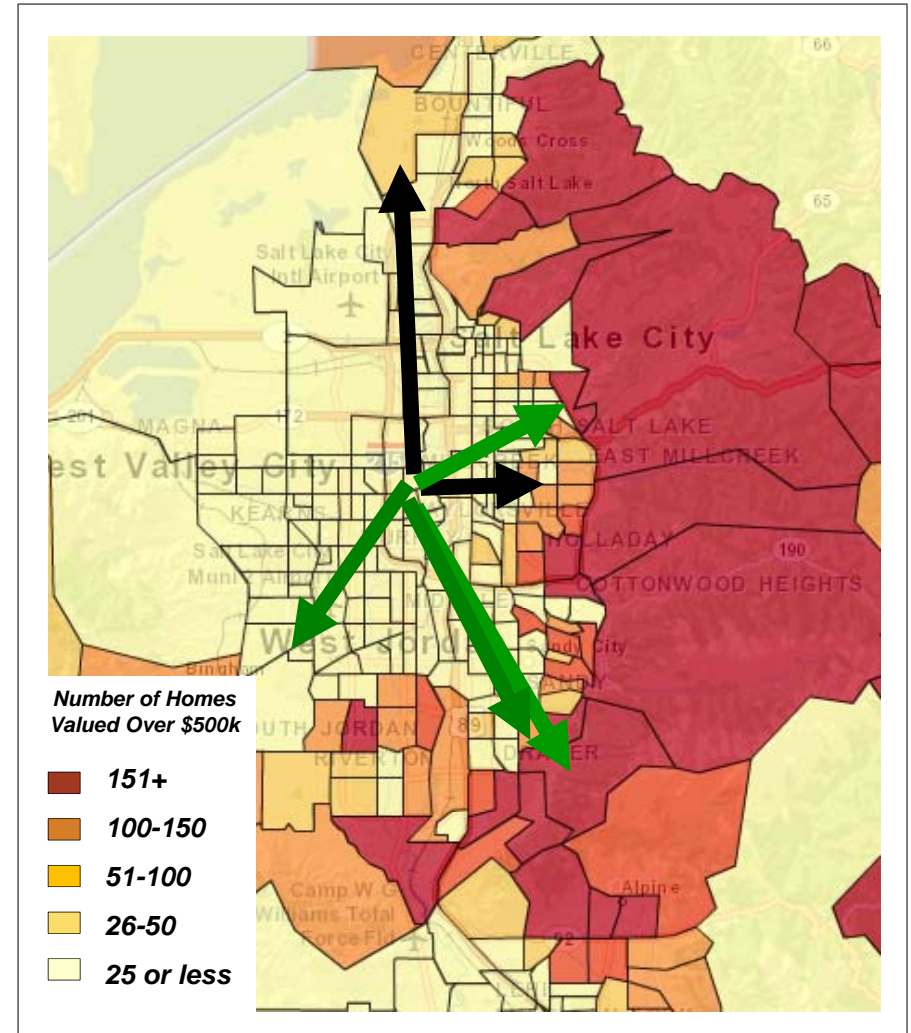
Source: Moody's Analytics; BLS; RCLCO.



Overview: Metropolitan Development Trends

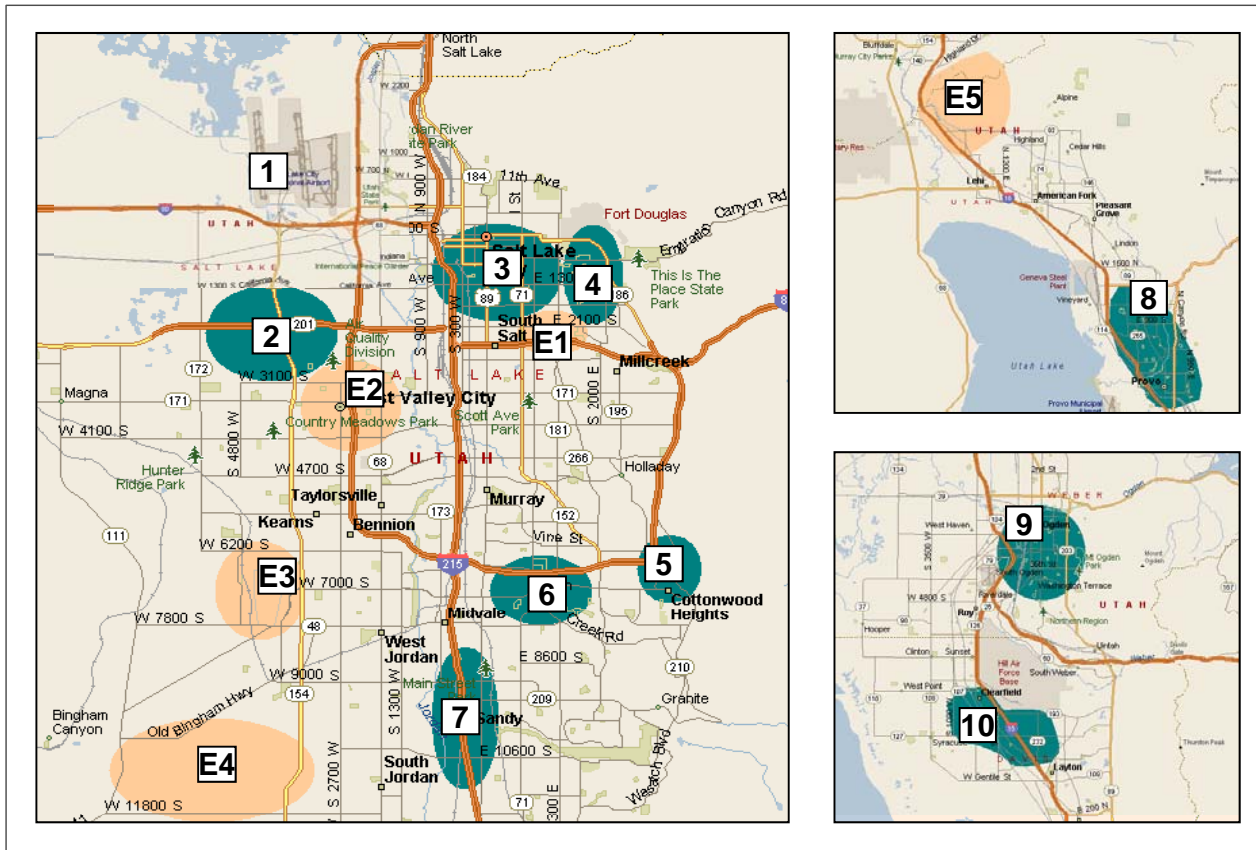
While metropolitan areas have many unique attributes that distinguish one region from another, nearly every region demonstrates striking similarities with regard to how they develop from a real estate perspective. These patterns underlie our metropolitan growth analysis and include the following:

- The “Favored Quarter:” the primary path of growth in the region from the original central business district (CBD) contains the majority of new housing, receives the vast majority of new spending for infrastructure, and is where 80% of commercial real estate activity and job growth takes place (until geographic or land constraints intervene).
 - In the Wasatch Front, the predominant favored quarter of growth originally emanated north and east from Temple Square in Salt Lake City, but has been forced to rotate gradually to the southeast to accommodate growth due to steep topography. The majority of new high-value housing continues to follow the base of the mountains, with most recent activity occurring in Draper, Riverton, Herriman and South Jordan, as well as around the “Point of the Mountain” into Lehi and Highland/Alpine.
 - Each Wasatch Front county has its own secondary path of growth emerging from the original predominant pioneer settlements (Provo in Utah County, Bountiful in Davis County, and Ogden in Weber County). Each of these growth corridors moved east toward the Wasatch Mountains, generally in the direction of Salt Lake City.
 - Recent decades have witnessed convergence of these original growth corridors into regional growth patterns as more and more land is developed, particularly within the narrow buildable areas between the Wasatch and Oquirrh Mountains and Great Salt Lake. For example, rather than containing its own unique paths of growth, Davis County has essentially become a growth corridor for commuters to Salt Lake County. We have more recently observed the same regional convergence in Utah County, as moderately-priced single-family housing development shifts to there from Salt Lake County, along with new high-paying jobs.
 - In fact, we argue that the primary regional questions and challenges facing the Wasatch Front in coming decades will address the shrinking supply of buildable land in Salt Lake County and the increasing complexity of regional growth as formerly distinct growth paths converge. An increasingly land-constrained Salt Lake County will almost certainly drive rising land values and higher density development, asking households to compromise on either their housing or commute preferences, and/or to stretch their incomes.



Overview: Metropolitan Development Trends

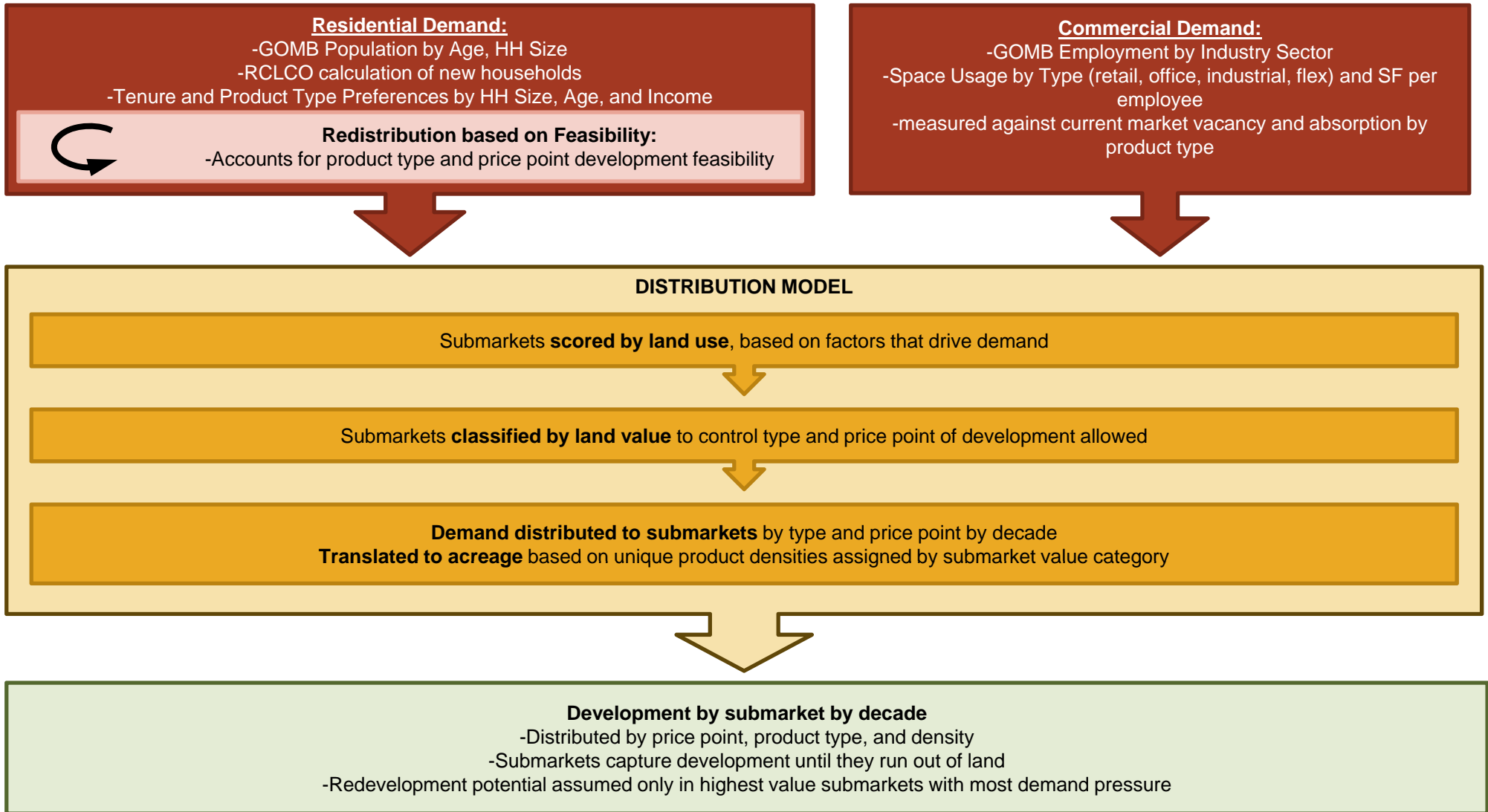
- o “Cores:” Economic activity clusters in employment cores that are evidenced in generational rings emanating from the central city in the favored direction(s) of growth.
 - Each new generation of job cores exhibit similarities in their character and location. In many regions with geographic barriers, such as mountains, which prohibit growth from continuing endlessly, the current development trend has seen additional densification in 2nd and 3rd generation cores that have mass transit and are capable of adding high density housing.
 - In 2008, RCLCO conducted its most recent “Metro Cores” analysis for the Wasatch Front and identified existing and emerging job cores in the region, as shown on the map below. Though they consume relatively small amounts of land, these metro cores have significant regional impacts—on housing values and development, commuting patterns and infrastructure, etc.—and therefore are the inception point around which we organize our understanding of the region. The previously identified job cores, as well as geographic boundaries, infrastructure, and existing land use, land values, and densities, informed our division of the region into growth areas, or submarkets, for this analysis, as shown on the page 7 below.



KEY	EXISTING CORE	GEN.
1	Intern Cntr/NW Quad/Airport	3rd
2	201/California Ave	5th
3	Downtown SLC	1st
4	Univ of Utah	3rd
5	Cottonwood	5th
6	Ft Union	3rd
7	Sandy	5th
8	Provo/BYU	1st
9	Layton Hills	5th
10	Ogden Downtown	1st
KEY	EMERGING CORE	GEN.
E1	Sugarhouse	2nd
E2	West Valley City	4th
E3	Jordan Landing	5th
E4	Daybreak	5th
E5	Thanksgiving Point	5th



Methodology

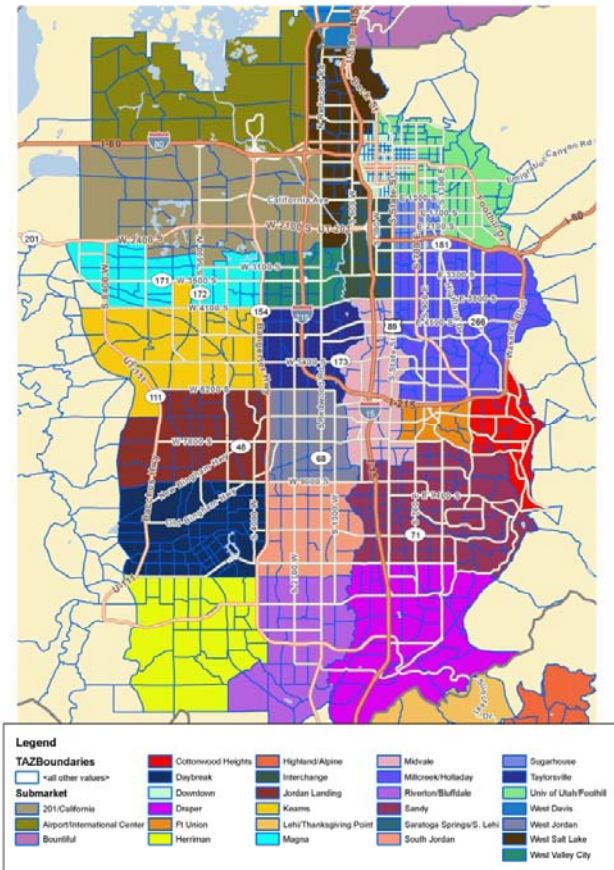


Source: RCLCO

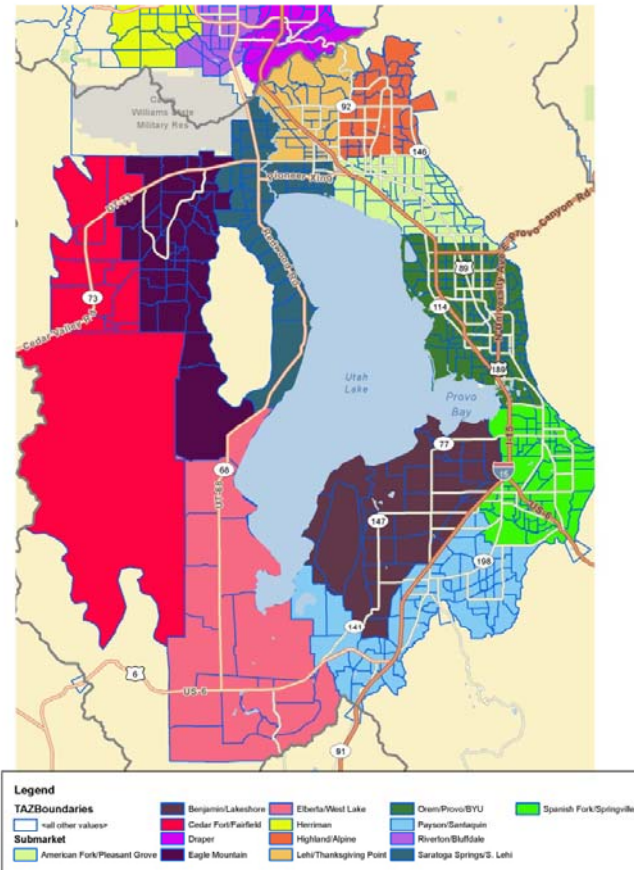
Methodology

RCLCO divided the Wasatch Front into 42 submarkets based on geographical constraints, typical submarket designations by brokers, approximate land values, and current land uses, and scored each submarket for each real estate category. The scores derive from the factors that drive demand for each type of real estate. Using GIS, Fregonese Associates analyzed parcel-based data that allowed RCLCO to classify each submarket by land value to control the types, price points, and densities of development anticipated to be feasible, and to understand how much vacant land, and likely redevelopable acreage, was available to accommodate new growth in each submarket. The model then distributed demand to submarkets by decade, translating units/SF to acreage based on unique product densities assigned by submarket value category, until they exhaust their available land. Please see page 10 of this report for more detail on submarket scoring, Exhibit I-2 in the Appendix for more detailed submarket maps, and Exhibit I-1 for an in-depth explanation of the methodology summarized on the following pages of this report.

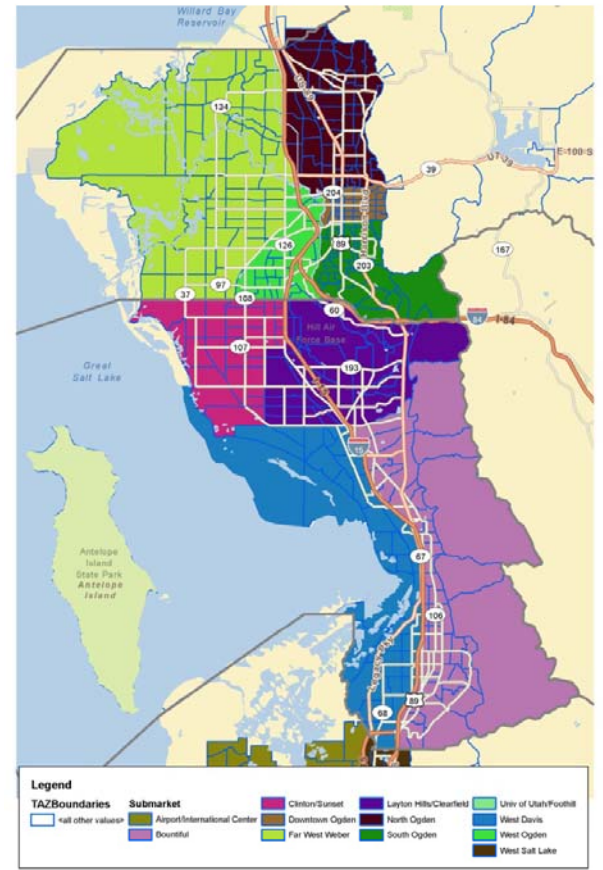
Salt Lake County Submarkets



Utah County Submarkets



Davis County and Weber County Submarkets

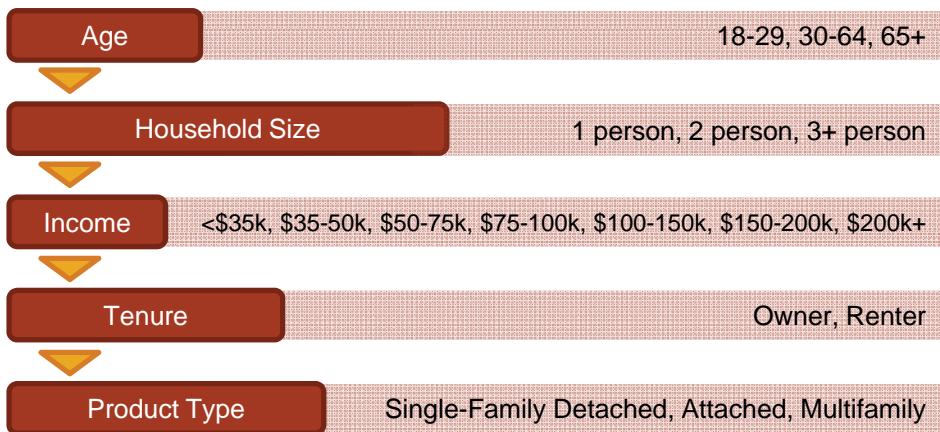


Methodology

RCLCO approaches real estate demand from a “bottom up” perspective, meaning that the future trends we project are the cumulative effect of detailed analysis about likely behavior and choices of individual households, based on type and demonstrated behavior, rather than a “top down” approach that trends assumed high-level outcomes and applies those to the projected growth.

On the residential side, RCLCO projected future housing demand based on GOMB’s population, population by age, and household size projections for each of the four counties in the Wasatch Front. Using this information, RCLCO calculated new households by decade and segmented this growth by age and household size. Using today’s income distribution for each of these household type segments (which we assume to remain constant based on long-term trends), we then applied the tenure (owner v. renter) and product type behavior unique to each segment based on age, size, and income. In this analysis, shifts in the overall residential product distribution (single-family, townhome, multifamily, etc.) in the broader market result from demographic shifts in age and household size, rather than from any changes in behavior or preference. Research by RCLCO and other sources have repeatedly suggested that changes in housing product mixes result more from these long-term, and much more predictable, demographic shifts than from changing preferences, which are very difficult to project with accuracy. ¹

Housing Demand Methodology



Source: RCLCO

The one modification to this approach addressed housing products that are no longer feasible from a development perspective. The primary culprit here is single-family housing valued less than \$210,000, or affordable to households that earn less than \$50,000/year. Today, many households at these incomes live in single-family housing, though housing developers cannot typically supply new housing at prices affordable to them. We therefore redistributed lower value units to describe “development feasible” housing demand for the region. Single-family detached housing demand for prices between \$140,000 and \$210,000 was moved to new townhomes, and we assume that any demand below \$140,000 will be provided by the resale market.

Potential concerns about the accuracy of GOMB data have not been factored into this analysis. As projected population growth by age and household size are the two independent variables driving the demographic analysis and regional housing demand, any modifications to these projections could produce a substantial shift in the type, value, or location of growth within the region. These concerns include:

- Population by age: The GOMB-projected birth rate tails off dramatically in the 2020-2030 range, which is the timeframe in which Gen Y is most likely in its prime childbearing years. This impacts both household size and future household formation.
- Household size: The average household size is projected to decrease dramatically through 2030, at a rate significantly faster than the national average. While *family* sizes are decreasing in the Wasatch Front, the region’s *household* size has remained relatively consistent over the past 20 years and there is little evidence to support why it would begin to decrease so rapidly.
- Data inconsistency: Projections for population and age are relatively congruous, though aggressive, through 2030; however, from 2030 to 2050 the projections follow a seemingly disparate trend from the previous two decades. For example, annual new household growth increases each year until 2030, at which point the annual growth declines by approximately 5,000 households in 2031 and continues to decrease each year thereafter. It is unclear why growth would change so dramatically at this inflection point.

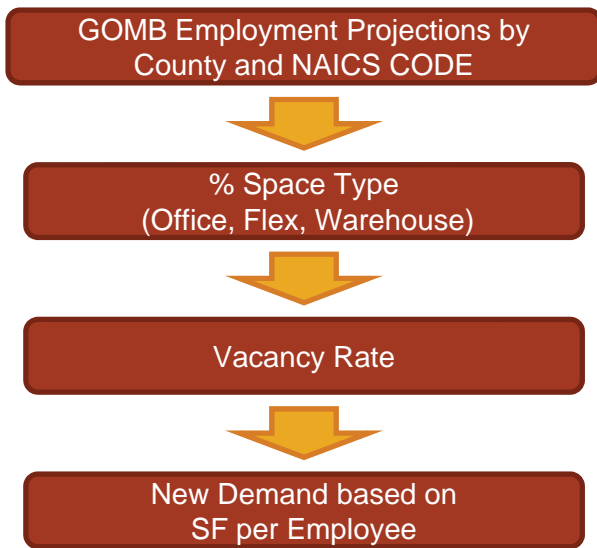
^{1/} Based on stated preference of active buyers for single-family detached housing in the National Association of Realtors Annual Survey.



Methodology

For employment-driven growth, RCLCO projected office, warehouse, and flex space demand based on GOMB's employment by industry sector projections. Based on typical space efficiency by real estate type (SF per employee) and observations of how (what types?, how much?) each industry segment employs commercial real estate, we translated these employment projections to square feet of absorption for each product type. We then applied these projections against current market vacancies to project *new* real estate demand for each space type.

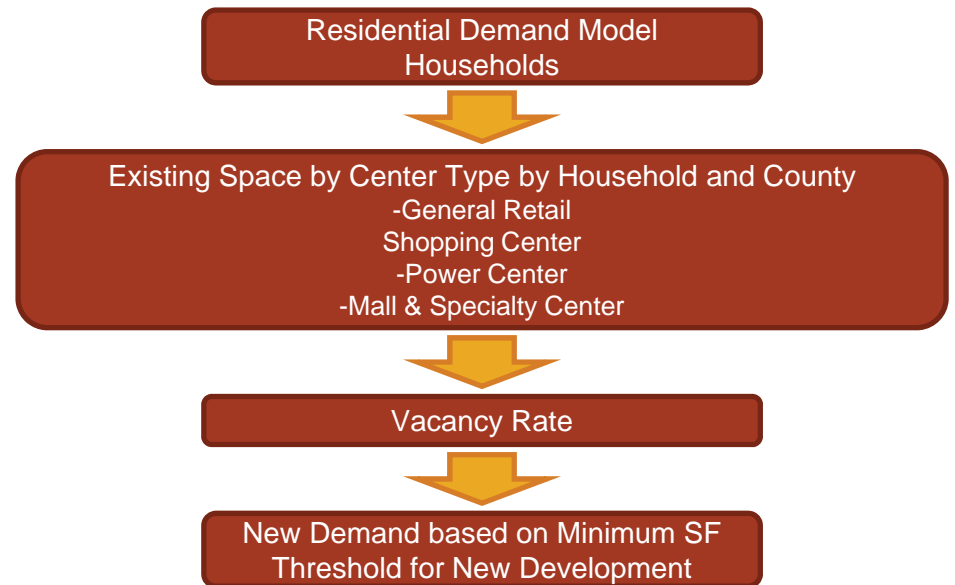
Employment Demand Methodology



Source: RCLCO

For retail, RCLCO projected future demand by center type based on the demonstrated SF per household in the current market and then accounted for current market vacancy and the necessary amount of demand to support the typical new retail center size for each type.

Retail Demand Methodology



Source: RCLCO

Methodology

To understand where new housing and commercial development is likely to locate within the region over the next four decades, RCLCO scored and compared each submarket based on the primary demand factors that typically influence a household or employer’s location decision. These scores were updated each decade to demonstrate the impact of improved transportation, and new jobs and housing, on a submarket’s desirability. More detail on how each submarket scored by decade can be found in the analytical appendix, Section II.

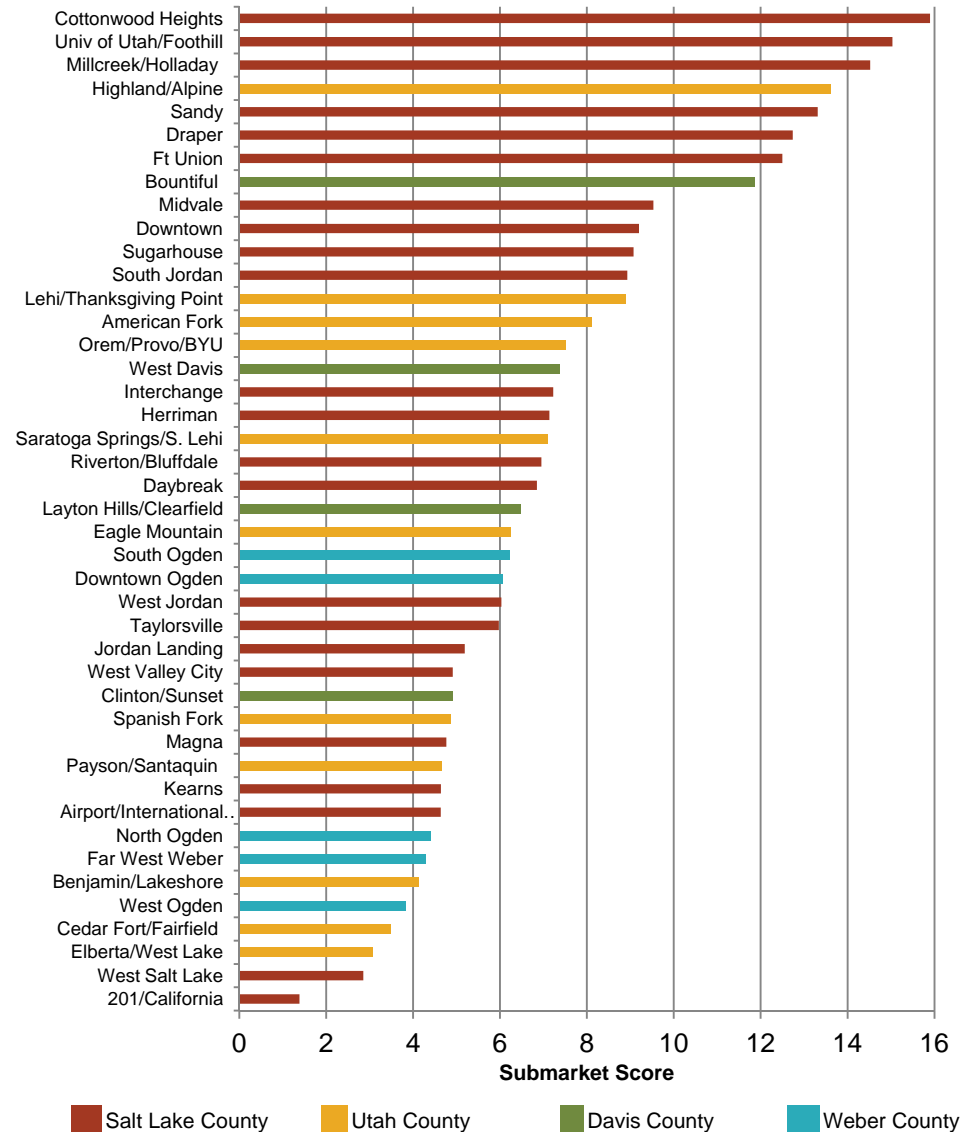
To illustrate the scoring process, the demand factors and weighting used to score submarkets for residential are shown in the chart below:

Demand Factor	Weight
Proximity to Favored Quarter	30%
Median Home Value	20%
Access to Employment	20%
Per Capita Income	15%
Household to Jobs Ratio	7.5%
Total Households	7.5%
Interstate Access	5%
Transit Access	5%
Total Occupied Warehouse Development	-10%
Sum of Factor Weights	100%

Importantly, as submarkets build out, this analysis limits the scoring analysis to only those submarkets that can capture development in a particular timeframe based on land availability and product type restrictions (as indicated by land value).

The comparison of residential submarket scores on the right illustrates the relative competitiveness of each submarket in the region. Although Salt Lake County submarkets may be the most attractive for new development in 2013, there are many northern Utah County submarkets that are also very competitive (while being much more affordable to consumers). Much of this competitiveness is influenced by desirable housing and strong access to jobs (both by interstate and transit).

Comparison of Residential Submarket Scores, 2013



Source: RCLCO

Results and Outcomes: Demographics

The Wasatch Front region needs to accommodate demand for 670,000 residential units and 120,000,000 square feet of commercial space through 2050.

This results in the development of approximately 130,000 acres (90% residential, 10% commercial), plus an additional 20,000 to 30,000 acres of public, civic, and recreational space (city buildings, churches, parks, schools, etc.).

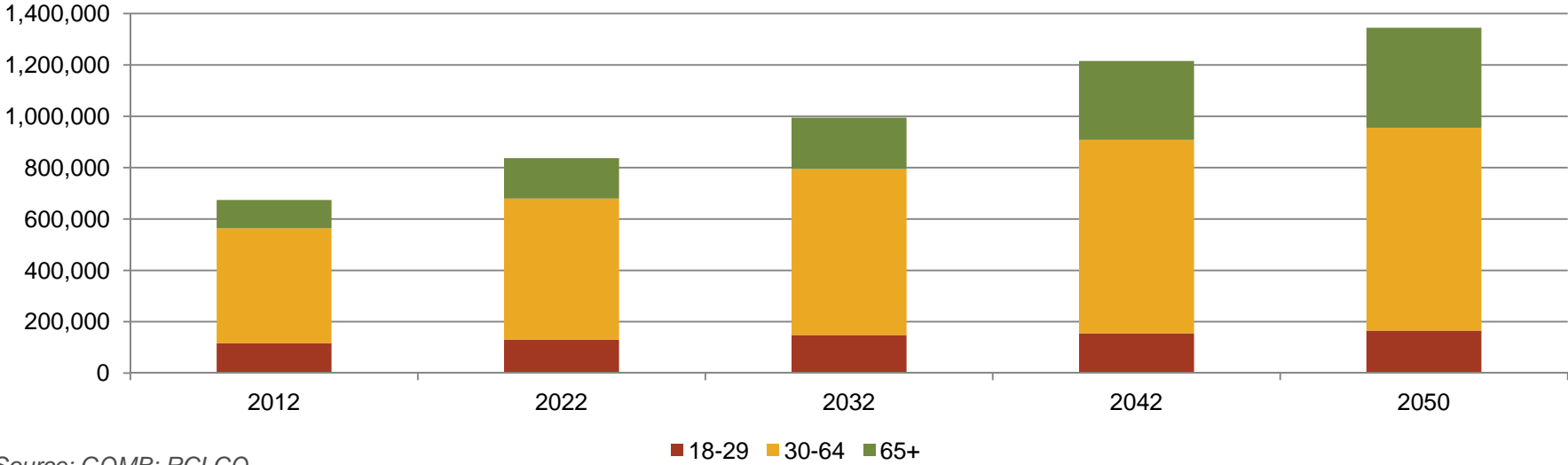
The bulk of household growth over the next 40 years will be in households aged 30-64, as the region’s currently largest demographic cohort, Gen Y, continues to age. Gen Y’s impacts have already been clearly evidenced by the recent growth of multifamily development, but the housing impact will likely shift towards lower density housing as this demographic begins to transition into the “family” life stage around 2020.

The continued aging of the large “baby boomer” generation also drives strong growth in the “seniors” age group as well.

The Wasatch Front has historically demonstrated unique demographics, particularly larger than average household sizes, due to the predominance of members of The Church of Jesus Christ of Latter-day Saints, which emphasizes the importance of marriage and family. This is a defining demographic characteristic of the region and has had a meaningful impact on housing demand.

Despite beginning from a very different starting point, the region has nevertheless mirrored the national trend of shrinking family sizes due to later marriage and child bearing, having fewer children, etc. RCLCO’s analysis intends to evaluate how these trends, as projected by GOMB, impact future real estate demand and development, and how these impact the region’s growth patterns.

Total Households by Age by Decade in Wasatch Front, UT 2010-2050



Source: GOMB; RCLCO



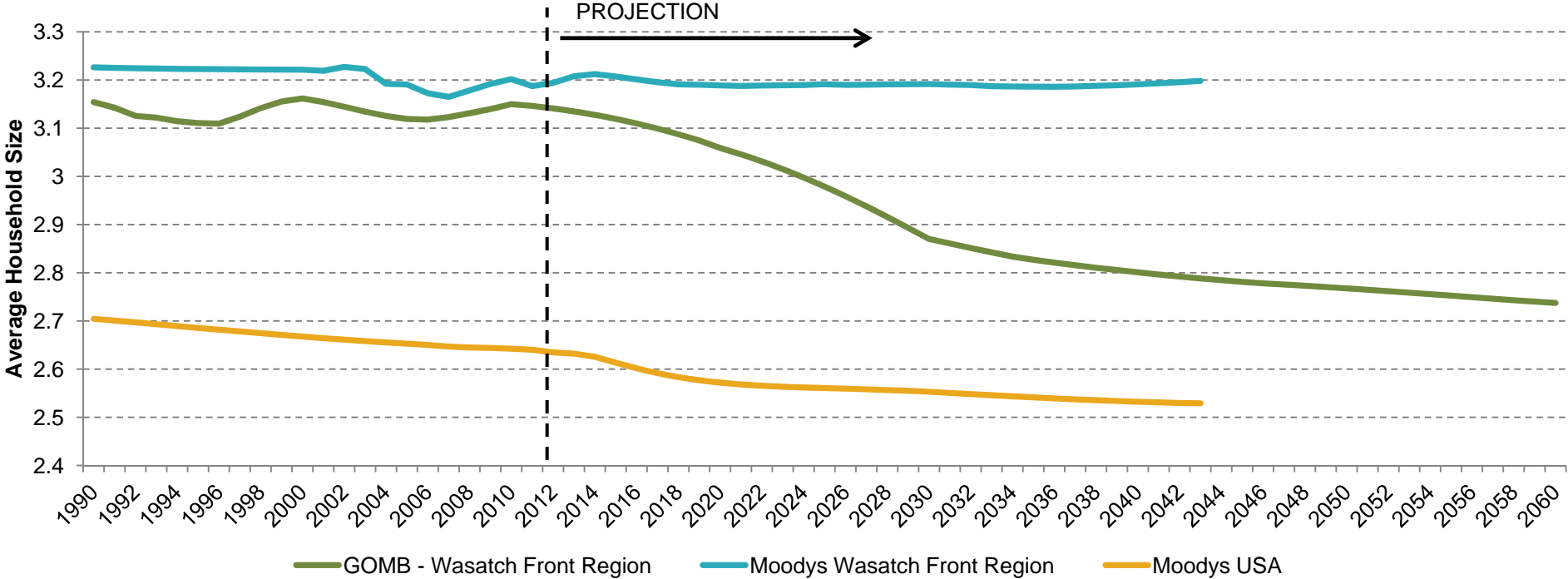
Results and Outcomes: Demographics

Household size, according to GOMB, averages 3.15 people for the Wasatch Front Region today, compared to the national average of 2.65. GOMB household size for the region is projected to decrease to 2.87 by 2030. This reflects a significantly faster rate of decline than what demographers project for household sizes nationally through 2030. After 2030, GOMB's projected rate of decline is projected to slow significantly, though household sizes would remain significantly above the national average (approximately 10-12% above) of 2.55 in 2030.

long-term rate of decline assumed in the GOMB projections. It is also critical to note the difference between the long-term household size trend in the Wasatch Front, which shows that average household size essentially stayed even from 1990 to 2012. We therefore recommend revisiting these assumptions, as they have material impact on the housing demand projection for the Wasatch Front (e.g., the larger the average household size, the greater the demand would be for lower density housing).

RCLCO's analysis employs the GOMB household size assumptions, though we recognize unexplained disparities between the near- and

Average Household Size, Wasatch Front Region, Utah, and U.S. National Average 1990–2050



Source: GOMB; Moody's Economy.com

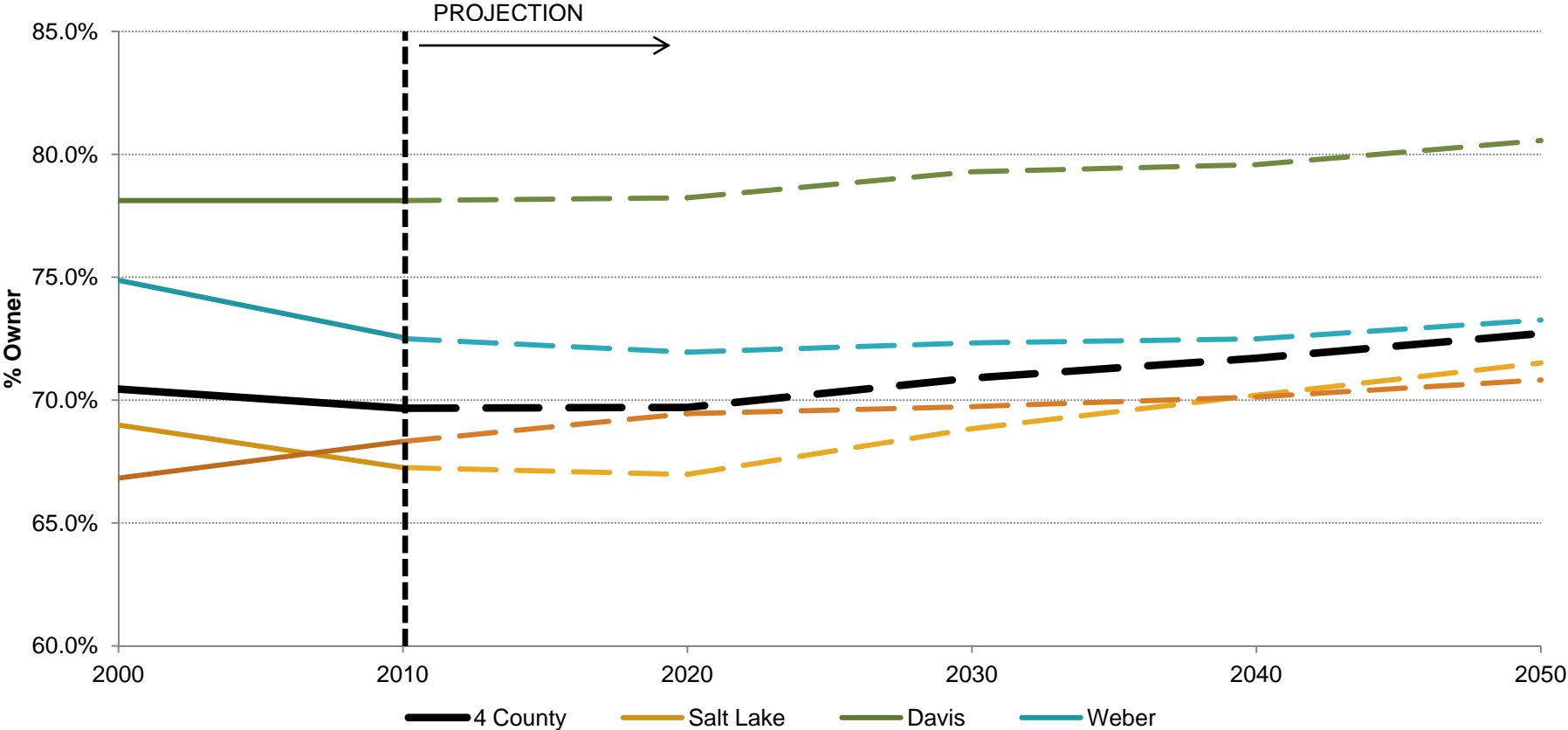


Results and Outcomes: Demographics

Tenure, the choice to own or rent, is driven primarily by life stage and affordability. The ownership rate in the Wasatch Front has shifted cyclically since 1970, and is currently 70%. Assuming equivalent housing affordability in the future, we project homeownership to gradually increase to 72% by 2030.

This increase in ownership is primarily a result of the household growth trends described on page 10 of this report. Many of today's current renters are younger households (under age 30) who comprise the bulk of household growth over the next two decades. As these renter households move into the "family" lifestage over the next 10 years, they are increasingly likely to transition to homeownership.

Ownership Rate by Decade by County and Wasatch Front Average 1990–2050



Source: GOMB; RCLCO; U.S. Census



Results and Outcomes: Demographics

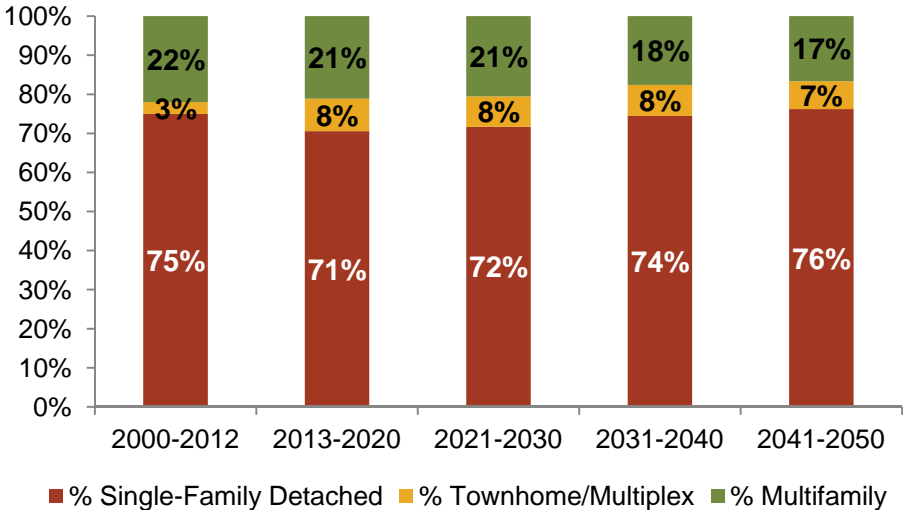
Single-family detached (“SFD”) homes remain predominant in the Wasatch Front, and we are confident this is driven by housing preference.¹ If the market were capable of providing units according to the existing behavior of households of similar household size, age, and income, approximately 73% of future housing development would continue to be SFD. This compares to SFD’s share of 75% of new housing units over the past decade, as reported by the U.S. Census.

However, accounting for the affordability and land development constraints already evidenced in the market, we project SFD’s share of future housing development to potentially decline to 66% of new home construction, with townhomes and other attached products increasing from an 8% share to a 15% share of future development. Especially in

high-value submarkets, the lot size of these single-family homes will also shrink, increasing the density of single-family product provided by the market. Unless the market is forced to accept even higher densities to remain affordable, multifamily product likely remains a consistent 19% share of future development.

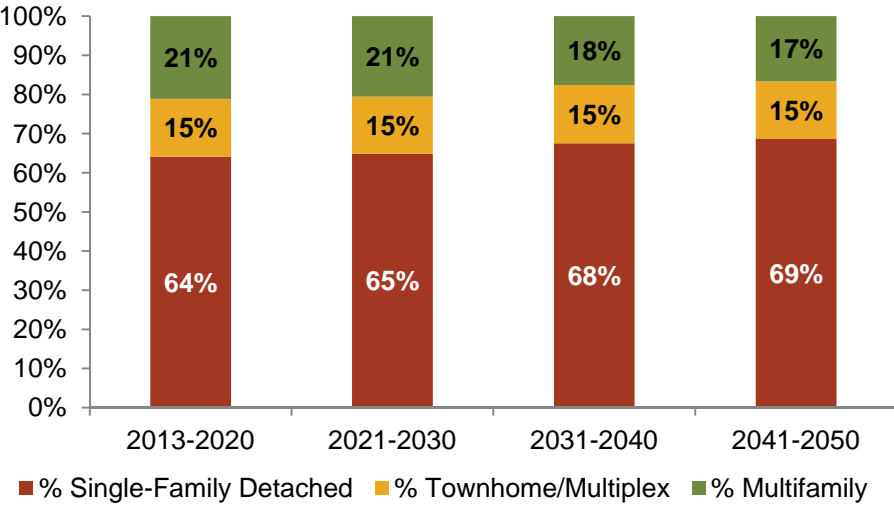
This projected demand by housing type relies to some degree on public land use policies that would allow higher density and attached development. To the extent that municipal zoning restricts development of higher density residential, the breakdown of future residential could look similar to past trends, either (or both) pushing new single family development “further out” or decreasing affordability.

Historical and Projected Housing Type Preference, Wasatch Front Region, 2000–2050



Source: U.S. Census PUMS Data 2009-2011; RCLCO

Projected Housing Type Preference Accounting for Affordability, Wasatch Front Region, 2000–2050



Source: RCLCO

^{1/} Based on RCLCO analysis of stated preference of active buyers for single-family detached housing in the National Association of Realtors “National Community Preference Survey” 2011; “Characteristics of Homebuyers” in National Association of Homebuilder’s 2001 American Housing Survey (AHS).



Results and Outcomes: Housing and Job Growth by Submarket

RCLCO projected household and employment growth in each submarket as described in the methodology on page 7 of this report and Exhibit I-1 in the appendix.

The following pages and the table below detail the quantitative results of this analysis, the broader implications of which are further described on the remaining pages of this report.

New Housing and Commercial Development by Submarket by Decade 2013–2050

	NEW HOUSING (UNITS)				NEW COMMERCIAL DEVELOPMENT (SF)			
	2013-2020	2021-2030	2031-2040	2041-2050	2013-2020	2021-2030	2031-2040	2041-2050
Salt Lake County	47,100	72,100	46,200	28,800	15.1 M	17.8 M	14.6 M	12.0 M
Airport/International Center	824	1,038	912	3,295	2,170,515	2,336,932	2,537,629	3,788,170
201/California	246	295	255	921	2,178,398	2,345,565	2,522,891	3,536,735
West Valley City	784	0	0	0	201,213	0	0	0
Magna	2,282	273	0	0	213,068	21,487	0	0
Taylorsville	1,772	0	0	0	161,308	0	0	0
Kearns	2,222	3,556	0	0	138,151	217,574	0	0
West Jordan	1,383	0	0	0	210,698	0	0	0
Jordan Landing	2,486	7,995	8,925	308	404,116	500,817	928,780	27,807
Daybreak	6,629	10,567	11,771	13,599	372,082	841,903	1,166,358	1,158,756
Herriman	3,419	11,012	12,236	863	339,634	426,704	1,004,237	60,820
South Jordan	1,909	3,378	3,426	306	436,918	632,637	966,699	91,479
Riverton/Bluffdale	3,330	10,625	217	0	388,975	674,148	24,615	0
Draper	2,723	4,849	4,953	9,500	702,423	1,006,668	1,609,801	3,299,549
Sandy	2,846	5,063	345	0	739,323	1,260,556	126,231	0
Midvale	2,037	3,613	1,955	0	589,968	1,173,262	932,718	0
Ft Union	538	0	0	0	124,272	0	0	0
Cottonwood Heights	1,598	0	0	0	400,542	0	0	0
Interchange	4,296	5,698	519	0	1,442,337	2,055,696	234,684	0
West Salt Lake	1,089	0	0	0	852,193	0	0	0
Downtown	426	671	508	20	1,177,501	2,102,713	2,322,002	100,605
Sugarhouse	420	573	0	0	449,188	685,002	0	0
Univ of Utah/Foothill	696	1,096	146	0	723,368	1,098,060	214,195	0
Millcreek/Holladay	3,104	1,841	0	0	693,215	399,040	0	0

Source: RCLCO

Results and Outcomes: Housing and Job Growth by Submarket

*New Housing Units and Commercial Square Feet by Submarket by Decade
2013–2050*

	NEW HOUSING (UNITS)				NEW COMMERCIAL DEVELOPMENT (SF)			
	2013-2020	2021-2030	2031-2040	2041-2050	2013-2020	2021-2030	2031-2040	2041-2050
Utah County	42,600	83,300	89,600	127,200	5.4 M	9.1 M	11.5 M	15.6 M
Cedar Fort/Fairfield	1,558	4,070	5,925	8,596	92,016	174,689	291,081	669,932
Eagle Mountain	2,905	7,149	10,489	15,361	192,650	291,243	548,938	1,334,375
Saratoga Springs/S. Lehi	3,370	7,940	11,592	40,978	358,416	531,986	919,535	2,092,726
Lehi/Thanksgiving Point	8,117	13,790	3,534	6,757	928,185	1,803,269	2,037,264	2,717,466
Highland/Alpine	3,184	5,221	5,296	10,160	575,558	902,709	1,339,441	2,668,484
American Fork	7,649	12,695	9,481	0	812,354	1,538,658	1,252,979	0
Orem/Provo/BYU	7,320	11,745	13,191	1,381	1,125,580	2,059,278	2,677,471	1,034,583
Spanish Fork	2,772	5,678	8,279	12,156	541,383	581,554	746,269	1,538,644
Payson/Santaquin	2,236	5,455	7,933	11,613	376,357	523,663	689,972	1,423,971
Elberta/West Lake	1,522	4,756	6,929	10,065	102,244	232,422	405,949	907,957
Benjamin/Lakeshore	1,949	4,845	7,001	10,180	333,950	485,318	620,976	1,241,702
Davis County	20,100	28,000	27,600	1,500	2.9 M	2.9 M	3.0 M	0.1 M
Bountiful	10,537	3,354	0	0	975,400	401,993	0	0
West Davis	3,304	11,375	12,581	3	727,349	1,006,632	1,653,667	380
Layton Hills/Clearfield	3,843	7,587	6,708	0	810,716	1,072,734	801,743	0
Clinton/Sunset	2,429	5,732	8,309	1,506	378,981	380,874	555,770	102,262
Weber County	8,900	14,400	14,800	14,900	2.7 M	2.7 M	2.3 M	3.4 M
South Ogden	2,935	1,484	0	0	466,800	146,174	0	0
West Ogden	1,719	2,834	0	0	809,432	735,287	0	0
Downtown Ogden	0	0	0	0	557,833	840,650	1,024,495	1,883,543
Far West Weber	2,110	4,996	7,280	10,650	278,401	319,958	449,989	996,796
North Ogden	2,090	5,131	7,459	4,237	598,435	694,244	850,821	518,657

Source: RCLCO

Results and Outcomes: Land Development by Submarket

Land Developed by Submarket by Decade
2013–2050

	ACRES DEVELOPED			
	2013-2020	2021-2030	2031-2040	2041-2050
Salt Lake County	8,724	9,830	6,604	4,062
Airport/International Center	183	204	214	381
201/California	166	183	196	296
West Valley City	244	0	0	0
Magna	686	78	0	0
Taylorsville	209	0	0	0
Kearns	663	1,007	0	0
West Jordan	421	0	0	0
Jordan Landing	762	1,081	1,275	42
Daybreak	781	1,447	1,679	1,871
Herriman	1,031	1,472	1,731	118
South Jordan	230	410	405	39
Riverton/Bluffdale	1,006	1,438	32	0
Draper	335	597	604	1,309
Sandy	347	632	44	0
Midvale	250	465	261	0
Ft Union	64	0	0	0
Cottonwood Heights	195	0	0	0
Interchange	271	372	38	0
West Salt Lake	381	0	0	0
Downtown	54	103	111	5
Sugarhouse	26	41	0	0
Univ of Utah/Foothill	47	77	14	0
Millcreek/Holladay	371	224	0	0

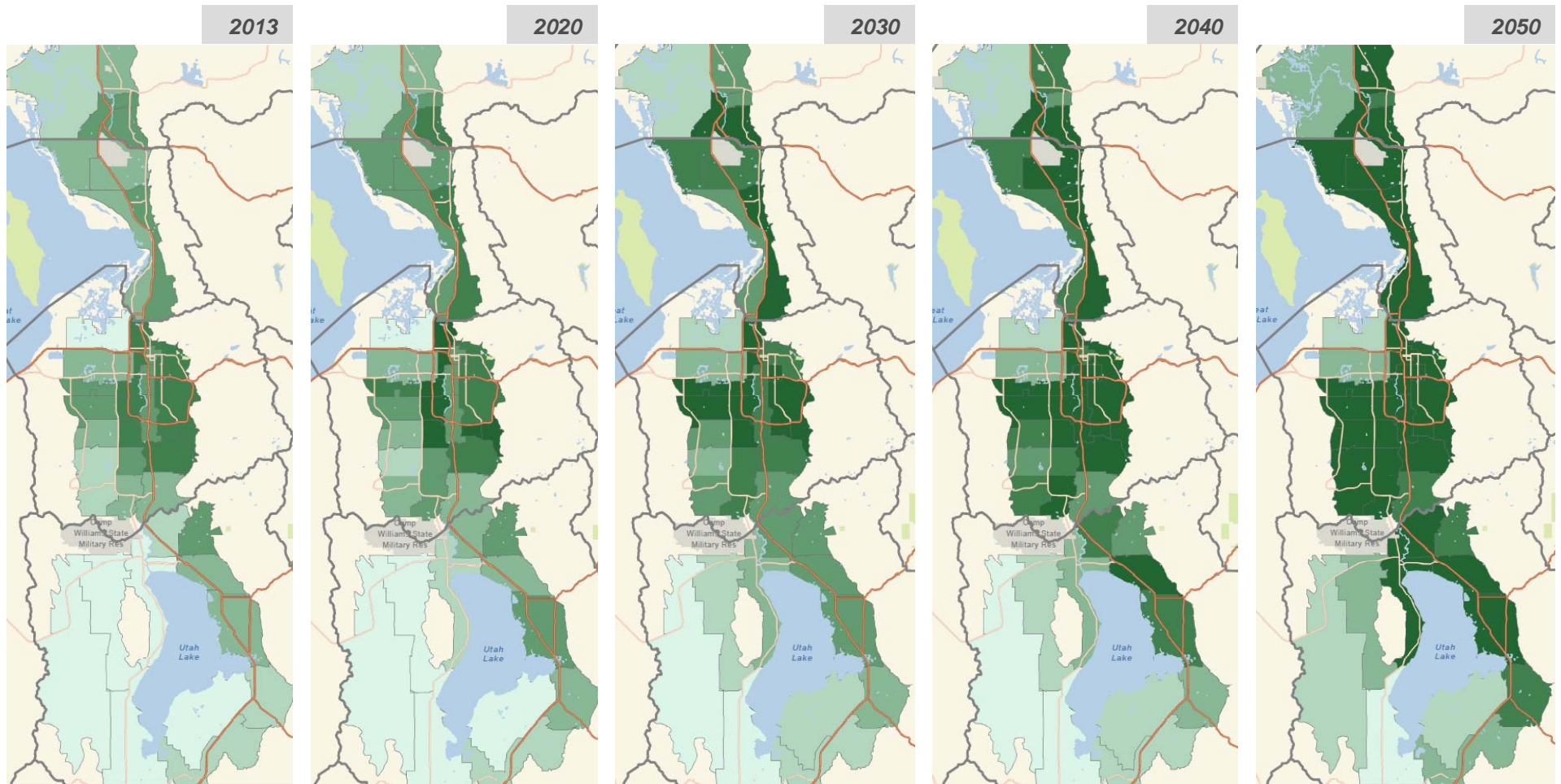
	ACRES DEVELOPED			
	2013-2020	2021-2030	2031-2040	2041-2050
Utah County	7,979	17,353	18,873	27,233
Cedar Fort/Fairfield	464	1,145	1,605	2,594
Eagle Mountain	868	2,010	2,846	4,649
Saratoga Springs/S. Lehi	1,017	2,248	1,634	4,409
Lehi/Thanksgiving Point	976	1,940	499	593
Highland/Alpine	331	638	632	1,355
American Fork	941	1,778	1,430	0
Orem/Provo/BYU	914	1,691	1,982	218
Spanish Fork	730	1,623	2,269	3,714
Payson/Santaquin	685	1,556	2,173	3,544
Elberta/West Lake	455	1,340	1,883	3,049
Benjamin/Lakeshore	597	1,384	1,919	3,107
Davis County	4,009	5,841	3,993	205
Bountiful	1,250	466	0	0
West Davis	1,024	1,562	1,826	0
Layton Hills/Clearfield	992	2,190	1,004	0
Clinton/Sunset	743	1,622	1,163	205
Weber County	2,799	4,223	4,113	4,568
South Ogden	896	425	0	0
West Ogden	563	845	0	0
Downtown Ogden	40	62	75	136
Far West Weber	641	1,413	1,980	3,227
North Ogden	658	1,479	2,058	1,205

Pink fill indicates submarket is "built out" (has no remaining meaningful buildable land supply)

Source: RCLCO

Results and Outcomes: Land Developed by Submarket

Percentage of Land Developed (Acres) by Submarket by Decade



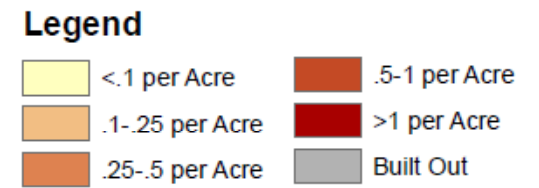
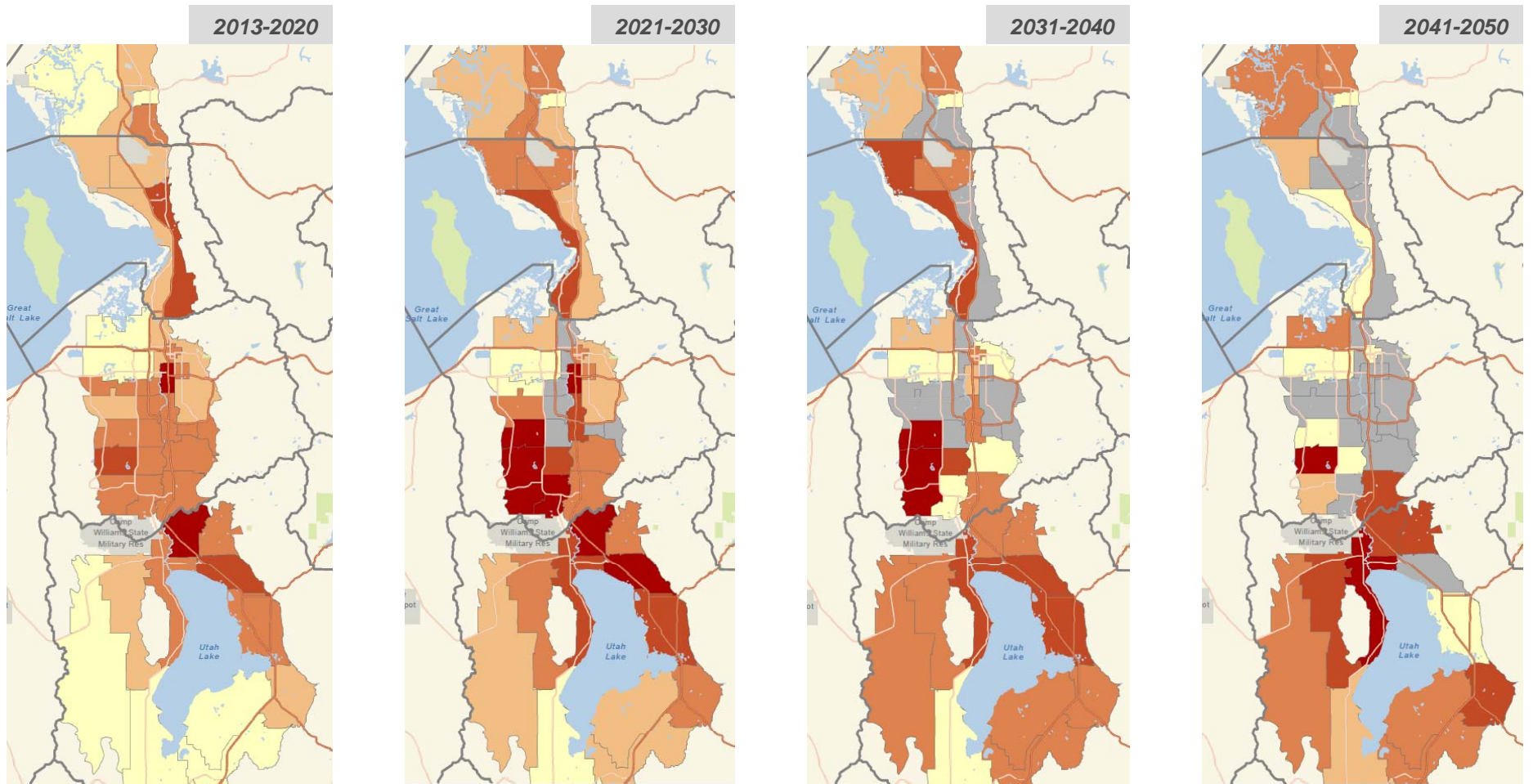
Legend

- Built Out
- >90% Developed
- 75-90% Developed
- 50-75% Developed
- 25-50% Developed
- <25% Developed

Source: RCLCO

Results and Outcomes: Household Growth Rate by Submarket

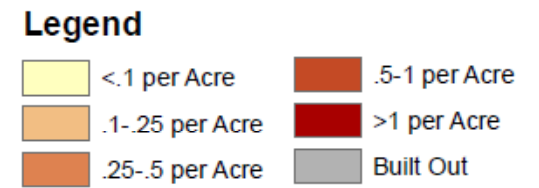
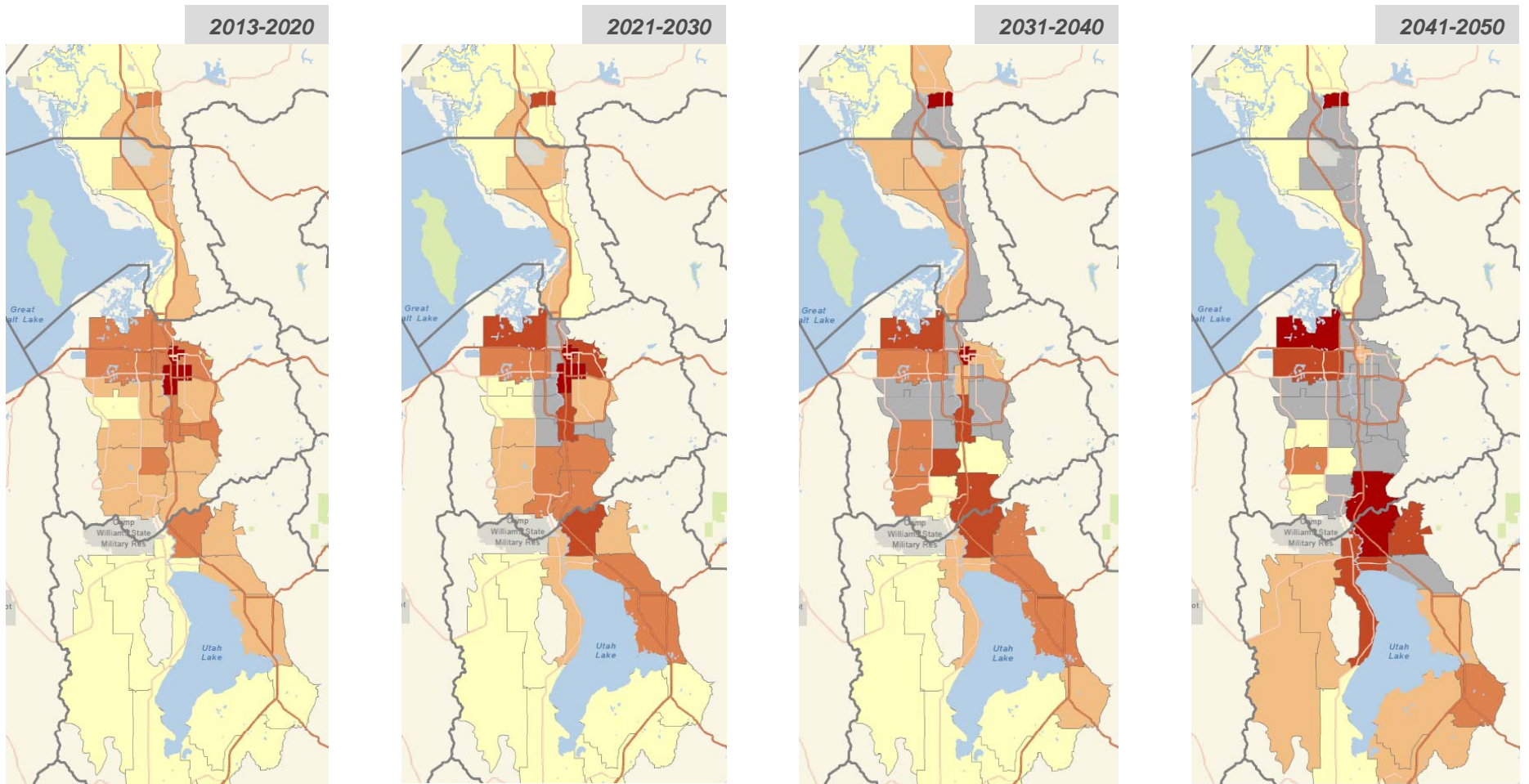
Household Growth by Submarket by Decade, Normalized to Submarket Land Area



Source: RCLCO

Results and Outcomes: Employment Growth Rate by Submarket

Employment Growth by Submarket by Decade, Normalized to Submarket Land Area



Source: RCLCO

Results and Outcomes: Redevelopment

Redevelopment of existing buildings and parcels will be increasingly important to the region in the future, having significant impacts on the development and character of many submarkets and neighborhoods. From a “macro” standpoint, redevelopment likely has a minimal impact on overall land consumption and direction of growth, as it primarily occurs in built-out, very desirable submarkets and can only accommodate high-density product types.

Using GIS parcel-data analysis, RCLCO and Fregonese Associates roughly estimate that the Wasatch Front has a “pool” of redevelopable land of approximately 2,500 acres.¹

RCLCO estimates that the 2,500 acres of “redevelopable” land could absorb approximately 15% of projected residential demand through 2050, potentially doubling recent trends (WFRC analysis indicates that 7-10% of housing units have likely been built on redeveloped land over the past five years). This redevelopment represents 1% of the 293,000 total estimated “developable” acres in the region, or 2% of the 130,000 acres our analysis projects to be developed by residential and commercial uses through 2050.

Redevelopment typically only accommodates higher density and higher value residential and commercial development, as it involves converting lower value (often lower density or intensity) real estate into higher value (and higher density or intensity) real estate. While redevelopment accounts for a very small percentage of land consumption, it has the potential to accommodate a large portion of demand for high-density units, primarily multifamily and townhomes.

Further, from a household’s perspective, the choice to live in a marginally less desirable, denser housing type, such as a townhome, must be balanced either by superior access to work and improved amenities, or significantly lower housing costs. As, without public subsidies, redeveloped residential sites can generally only deliver

moderate- to high-value housing, redevelopment primarily takes place in more desirable submarkets that can command premium pricing and support high densities.

Our analysis therefore assumes that only a handful of submarkets (West Valley City, Sandy, Midvale, Ft Union, Draper, Interchange, Downtown, Sugarhouse, University of Utah/Foothill, Millcreek/Holladay, Orem/Provo/BYU, Bountiful, West Davis, and Downtown Ogden) have substantial redevelopment potential.

While many of these submarkets have already begun to experience small-scale redevelopment activity, our analysis also indicates submarkets with potentially untapped redevelopment opportunities. Additional detail regarding these markets is included on the next page:

- Interchange
- Sandy
- Provo/Orem
- Bountiful

Note, moreover, that redevelopment land will also accommodate commercial real estate demand, diminishing its potential to absorb more residential demand.

Redevelopment Sensitivity Table
(% of Units Built on Redeveloped Land)
2012–2050

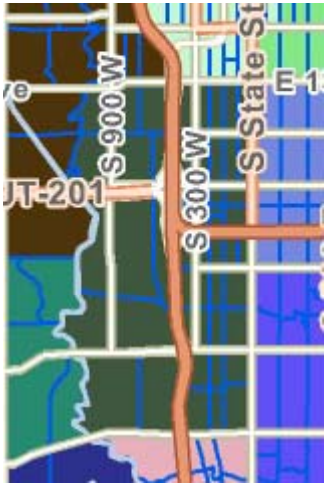
		Residential Density Assumption (units/acre)			
		20	30	40	50
Acres Redeveloped	3,500	10.5%	15.7%	21.0%	26.2%
	3,000	9.0%	13.5%	18.0%	22.5%
	2,500	7.5%	11.2%	15.0%	18.7%
	2,000	6.0%	9.0%	12.0%	15.0%
	1,500	4.5%	6.7%	9.0%	11.2%

^{1/} RCLCO and Fregonese Associates defined redevelopable land as parcels that are at least 1 acre, currently built as a non-SF residential use, with a structure more than 30 years old, and that are at least 200 feet deep.



Results and Outcomes: Redevelopment

INTERCHANGE

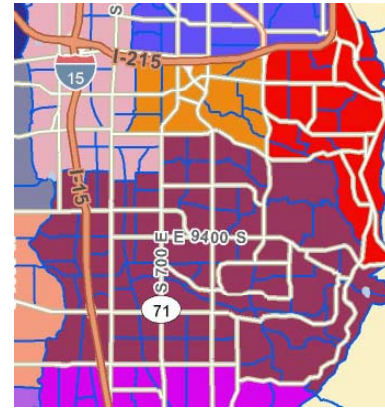


	2012-2050
Vacant Acres Built	212
Redeveloped Acres	469
Redevelopment as % of Land Consumption	69%

Total New Housing Units Built:
10,513 units

Units Accommodated Through Redevelopment:
6,000-9,000 units or
60-85% of total new units

SANDY



	2012-2050
Vacant Acres Built	733
Redeveloped Acres	290
Redevelopment as % of Land Consumption	28%

Total New Housing Units Built:
8,250 units

Units Accommodated Through Redevelopment:
3,000-4,000 units or
40-50% of total new units

PROVO / OREM

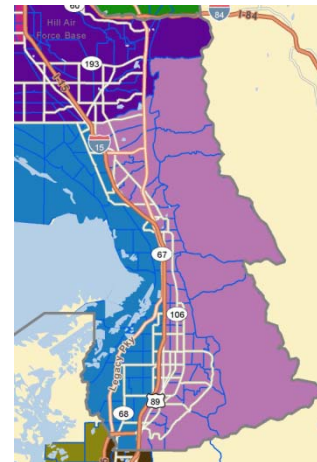


	2012-2050
Vacant Acres Built	4,606
Redeveloped Acres ¹	200
Redevelopment as % of Land Consumption	5%

Total New Housing Units Built:
33,620 units

Units Accommodated Through Redevelopment:
3,200-6,400 units or
10-15% of total new units

BOUNTIFUL



	2012-2050
Vacant Acres Built	1,416
Redeveloped Acres	300
Redevelopment as % of Land Consumption	17%

Total New Housing Units Built:
13,890 units

Units Accommodated Through Redevelopment:
4,800-7,200 units or
35-52% of total new units

^{1/} Parcel data in Utah County does not include year built, a necessary factor to estimate redevelopable land. Redevelopable acres in Provo/Orem were manually added to model by RCLCO based on similar markets.

Implications

Assuming the reliability of the GOMB projections, three variables in the analysis have the greatest impact on development patterns:

Household Income/Affordability: Based upon comparisons between the breakdowns of Wasatch Front household incomes and both new and resale home prices, it is clear that many, but not all, households pay significantly less for their housing than they would otherwise could. The most basic measure of housing affordability is the housing payment to income ratio, and most housing experts agree that it should remain below 30% for the housing to be considered affordable.

Our demand analysis translates household income into feasible home price by employing the mortgage to income ratios described in the table below (which are based on observed patterns in the Wasatch Front). We hold these affordability assumptions constant going forward. The

Mortgage Income / Affordability

Income Range	Mortgage – Income Ratio		Implied Home Price Range
	Age 18-64 (30 Year Mortgage)	Age 65+ (15 Year Mortgage)	
<\$50K	34%	31%	\$140,000-\$213,000
50K-75K	25%	23%	\$213,000-\$241,000
75K-100K	21%	18%	\$241,000-\$262,000
100K-150K	18%	16%	\$262,000-\$345,000
150K-200K	17.5%-18%	15%	\$345,000-\$457,000
200K+	17.5%-18%	15%	\$457,000 and up

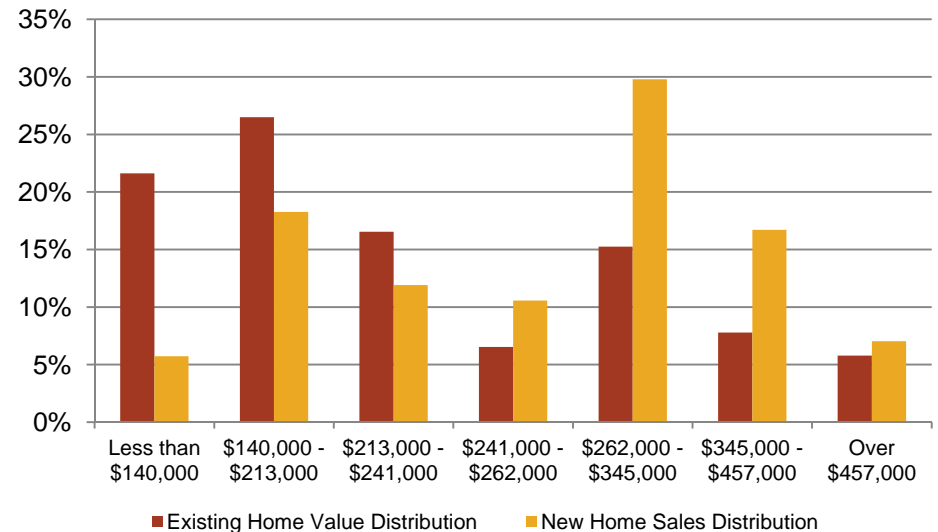
Down Payment %		
All Incomes	10%	50%

Source: RCLCO

result is a housing market through 2050 that maintains the same level of affordability overall (though not by specific submarket) for the Wasatch Front. It is plausible, however, that either or both household incomes increase or decrease and/or the percentage that households are willing/able to spend on housing increases or decreases. *Please see Exhibit II-29 in the Appendix for additional detail.*

These variables have a significant impact on regional growth patterns and build-out, as they are a primary factor in determining where and in what type of housing households prefer to live. For example, in practical terms, either higher average household incomes or greater willingness/ability of households to spend more on their housing *increases* demand in Salt Lake County for all types of housing; the opposite direction likely pushes greater portions of demand to the surrounding counties.

Comparison of Existing Home Values to New Home Sales by Price Distribution; Wasatch Front Region, 2012



Source: U.S. Census 2009-2011; Realquest Transaction Records



Implications

Submarket Land Value: Based on high level review of housing and commercial real estate values for both existing properties and land, we classified each submarket by value, from Very Low to Very High. As the table below shows, we further prescribed the types of real estate uses likely to be developed in each value category. It is important to note that this analysis intends to generate accurate results at the “macro” level, and not predict every type of development that does and will occur in the Wasatch Front (as we know that there will be exceptions to every rule).

These assumptions, though based on high level quantitative analysis, are in the end qualitative, and have a significant impact on the region's

development. Reclassifying submarkets effectively redefines the type and quantity of demand that can go there. For example, reclassifying certain submarkets in Salt Lake County from medium value to low value (which may not be analytically warranted) would lead Salt Lake County to develop more quickly than shown in the market scenario. Careful attention should therefore be paid to submarket value characterizations.

Please refer to the exhibits in Section V of the Appendix for detail on how each submarket was categorized by decade.

Submarket Land Value – Housing Type by Land Value Category

Wasatch Front Region (4 County Total)		VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
Residential						
1	SFD: \$210,000-\$240,000		X			
2	SFD: \$240,000-\$260,000		X	X		
3	SFD: \$260,000-\$345,000		X	X		
4	SFD: \$345,000-\$457,000			X	X	
5	SFD: Over \$457,000			X	X	
6	TH: \$140,000-\$210,000			X		
7	TH: \$210,000-\$260,000			X		
8	TH: Over \$260,000				X	
9	For-Sale MF: \$140,000-\$210,000			X		
10	For-Sale MF: \$210,000-\$260,000			X		
11	For-Sale MF: \$260,000-\$345,000				X	X
12	For-Sale MF: Over \$345,000				X	X
13	For-Rent MF: \$700-\$900	X		X		
14	For-Rent MF: \$900-\$1,000			X	X	
15	For-Rent MF: \$1,000-\$1,200			X	X	X
16	For-Rent MF: \$1,200-\$1,400			X	X	X
17	For-Rent MF: Over \$1,400			X	X	X

Source: Fregonese Associates; RCLCO



Implications

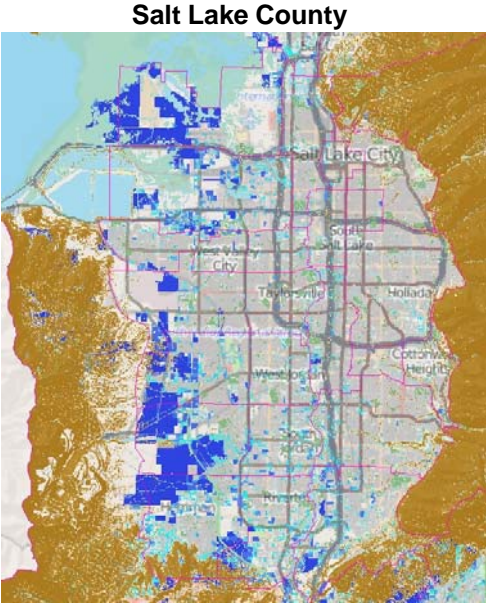
Available Land: Based upon analysis of GIS parcel data by Fregonese Associates, we identified vacant land parcels in the region that are available to accommodate future growth in each submarket. As demonstrated in the maps below, where dark purple indicates larger parcels of available land, Utah County has by far the most land available for development. *Please see Exhibit V-15 in the appendix for detail on the vacant land by submarket.*

Our analysis indicates that the region requires 130,000 acres to accommodate new growth through 2050, yet Salt Lake County, which has received the bulk of historical growth, only has about 35,800 vacant acres remaining. This total excludes Kennecott Land's approximately 40,000 acre land holding that the company plans to continue mining for at least the next 40 years. With these acres included, Salt Lake County would be significantly less land constrained in its growth.

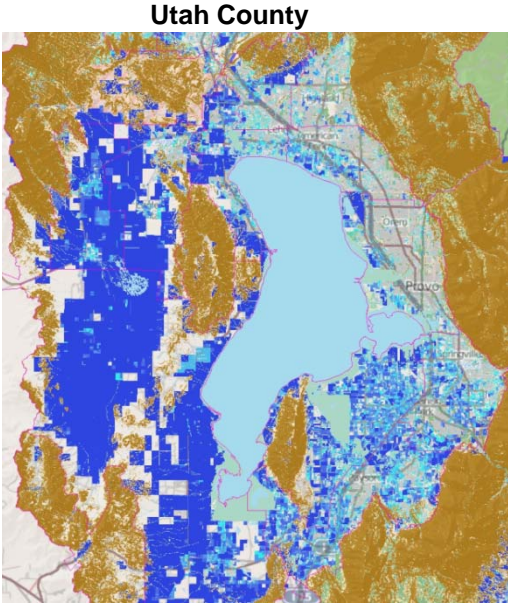
These acreage totals determine how much land is allowed to be developed in each submarket, and coupled with the value categories that prescribe development densities, effectively control how many new housing units can be accommodated in each submarket and in each county.

RCLCO's growth analysis is the first to integrate land availability to this level of detail, and therefore is the only one to our knowledge that incorporates the impact of land scarcity in Salt Lake County on the Wasatch Front region's future growth.

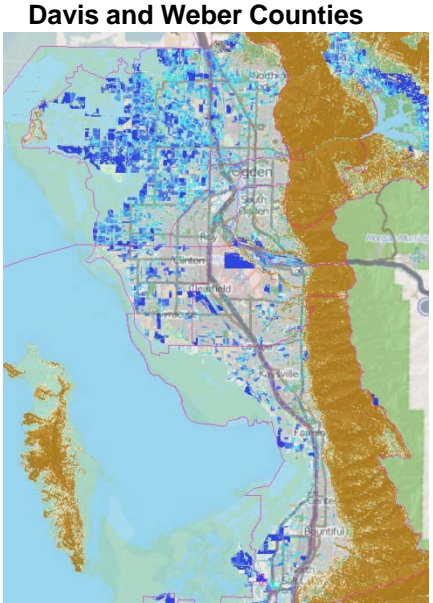
Buildable Land Supply, 2012



Salt Lake County: 35,890 acres



Utah County: 210,400 acres



**Weber County: 33,980 acres
Davis County: 13,660 acres**

Source: Fregonese Associates; RCLCO



Implications

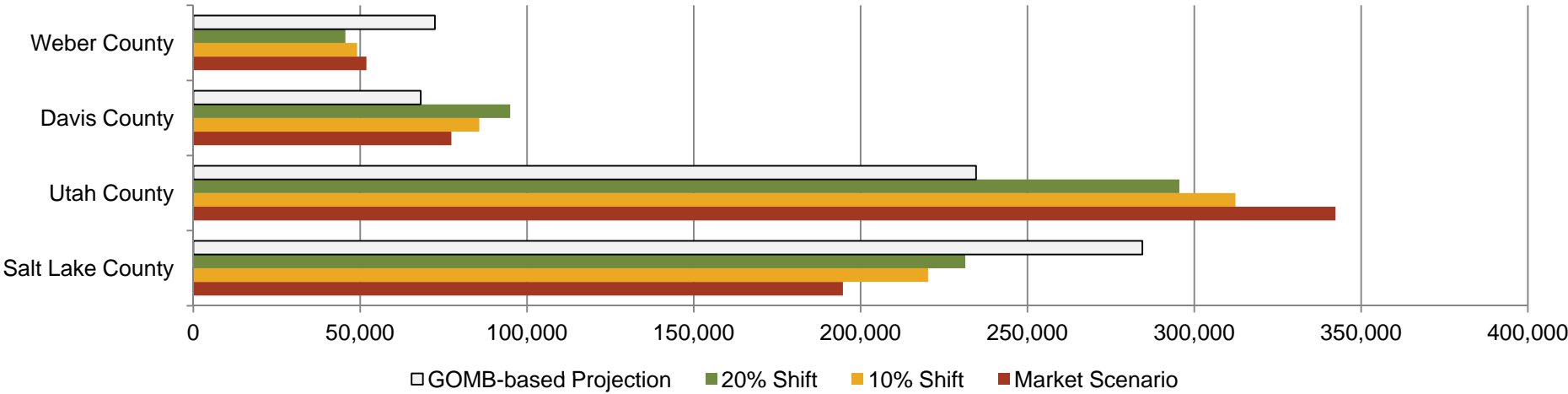
Two variables that are often debated, but which we find to have little relative impact on the broad regional trends, despite their potential importance in relation to other regional variables such as air quality and transportation, include:

- Redevelopment's share of total development (see discussion on pages 21-22 of this report)
- Housing preference shifts: RCLCO tested the impact of shifting housing preferences using a sensitivity table (shown below). The market scenario shows the "base case:" housing units by decade and type that RCLCO's analysis demonstrates as most likely. The "10% scenario" assumes, before accounting for affordability, that 10% of households that would have chosen SFD may prefer a TH, and 10% of households previously choosing a TH would prefer MF. The "20% scenario" demonstrates an even greater preference shift using the same logic. This sensitivity analysis demonstrates how the three scenarios—in which either 65%, 55%, or 51% of future development is SFD—would consume land differently.

By County	Acres Consumed in Market Scenario				Total Acres
	2013-2020	2021-2030	2031-2040	2041-2050	
Salt Lake County	8,724	9,830	6,604	4,062	29,220
Utah County	7,979	17,353	18,873	27,233	71,438
Davis County	4,009	5,841	3,993	205	14,048
Weber County	2,799	4,223	4,113	4,568	15,704

New Households by County, Assuming Preference Shifts 2012–2050

Market Scenario: RCLCO's demand analysis of household preferences
 10% Scenario: 10% of SFD demand shifts to TH; 10% of TH demand shifts to MF
 20% Scenario: 20% of SFD demand shifts to TH; 10% of TH demand shifts to MF



Source: RCLCO



Implications

Both the market and sensitivity scenarios demonstrate that if the land can accommodate it, single-family housing will continue to dominate the residential market. However, limited land remains in Salt Lake County to accommodate moderately-priced single-family development., which is why the market-driven scenario pushes more development into neighboring counties, particularly Utah County.

If Salt Lake County were to accommodate the growth that GOMB is currently projecting, we must assume the following real estate development assumptions given the available land supply:

- o Increase housing density from an average of 6.0 units per acre to 9.0-10.0 units per acre;
- o Shift from 69% SFD development in 2000-2012 to 58% SFD development in 2013-2020 to 43% SFD development by 2040;

- o Increased land value across all submarkets, and residential development (beyond multifamily) occurring in submarkets such as Airport/International Center and 201/California that today are primarily industrial.

In order for these assumptions to occur, this scenario would require shifting demonstrated market demand through stringent public policies or regulations that are not currently in place, such as regional growth boundaries and/or significantly higher permitting or utility fees that make greenfield development less feasible. This scenario also results in decreased housing affordability: a 10% average value increase, to \$300,000, for housing that is likely less desirable (higher density) than what households would have otherwise been able to occupy.

Comparison of Market-Driven Growth Scenario to GOMB County-Constrained Totals 2012–2050

County	Household Growth				Total	Population Growth				Total
	2013-2020	2021-2030	2031-2040	2041-2050		2013-2020	2021-2030	2031-2040	2041-2050	
GOMB Projections w/ RCLCO Assumptions										
Salt Lake County	53,594	90,095	74,351	66,391	284,431	122,201	159,806	167,332	151,569	600,908
Utah County	37,776	60,549	67,977	68,296	234,599	125,276	164,537	186,727	196,867	673,407
Davis County	14,489	21,171	15,996	16,488	68,144	39,166	34,965	34,459	39,272	147,862
Weber County	10,479	21,413	19,697	20,814	72,402	23,764	42,054	48,532	49,690	164,040
Market-Driven Scenario										
Salt Lake County	47,061	72,143	46,168	28,811	194,183	106,166	149,638	98,040	58,566	412,410
Utah County	42,582	83,345	89,649	127,247	342,823	99,185	206,785	227,189	313,098	846,257
Davis County	20,113	28,049	27,597	1,510	77,269	47,636	69,461	60,920	3,276	181,293
Weber County	8,854	14,445	14,739	14,887	52,925	25,322	41,314	42,153	42,577	151,366

Source: GOMB; RCLCO



Implications

We therefore argue that it is more likely that rapid “suburban” growth occurs elsewhere, particularly Utah County, where plentiful low value land with reasonable job proximity is still available. There are 209,000 acres of vacant land available in Utah County in 2013, only 34% (55,000 acres) of which we project to be consumed through 2050. Of this, 52,000 acres are used for SFD residential development, representing 54% of the total land consumed in the Wasatch Front through 2050 for single-family detached housing.

This scenario is the most likely outcome for the region for the following reasons:

- The Wasatch Front does not, and is not likely to, have a policy mechanism to prevent growth from spilling into lower value land in surrounding counties;
- Significant employment and commercial real estate growth in south Salt Lake and north Utah Counties make it ever more feasible and affordable to commute from rapidly growing, low cost areas in Utah County. The region can expect new job cores to emerge in this area, especially in access-rich locations along I-15 and near rail stations. This continuing shift of employers following households (their labor force) should be an important consideration in the debate on affordability and the combined cost of housing and transportation.
- Though Wasatch Front household sizes may continue to shrink, the predominant demographic shift during the coming decades—Gen Y reaching its family bearing and rearing years—will boost demand for attainably priced, lower density housing.

The cost of providing water to northern Utah County remains an important challenge. The feasibility of delivering water for all of the projected new development in Utah County may dictate or limit the total units capable of being developed, either because of housing unit caps or very high permit or utility fees. As discussed, RCLCO’s scenario focused on projecting where the market would likely live and work regardless of water supply challenges, which have been solved in the past by investment in infrastructure and conservation, and maybe solved in the future in similar ways. The region must address this issue, but this analysis should be primarily useful in showing the region where it may need to plan to deliver water in the future, if feasible.

Implications

Job Cores: The region can expect new job cores to emerge in south and southwest Salt Lake County and northern Utah County, especially in access-rich locations along I-15 and near rail stations. This continuing shift of employers following households (their labor force) should be an important consideration in the debate on affordability and the combined cost of housing and transportation.

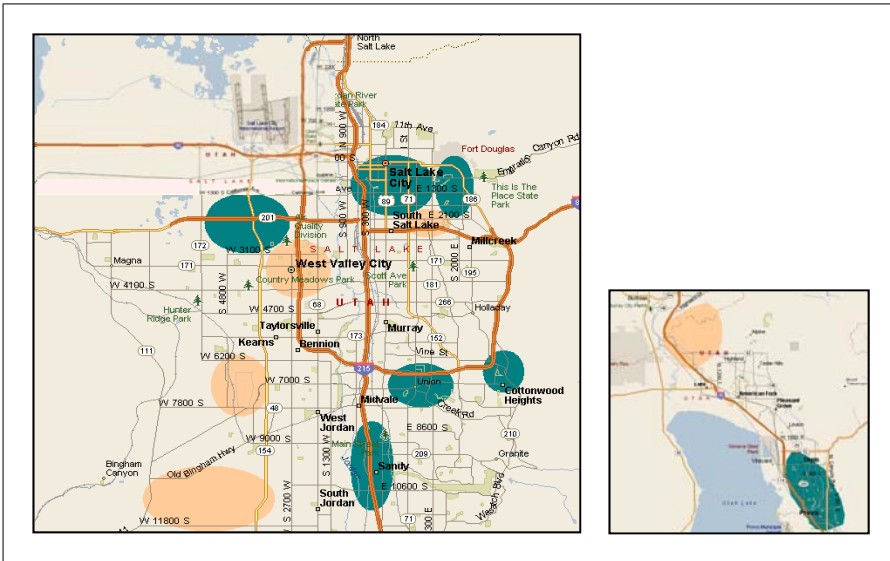
Impact of Transit: A critical factor in understanding how job cores are likely to distribute within a region is transportation access—both interstate and rail. The region’s rapidly-growing rail system, TRAX and Frontrunner, will play an integral role in the development of these cores going forward, especially as knowledge-based industries face stiff competition to attract and retain younger, highly-educated employees

and see transit accessibility as an additional amenity to offer employees.

Though this analysis does not distribute development below the submarket level to particular parcels, and therefore cannot say exactly how much development occurs within a half-mile of transit stations, it overwhelmingly demonstrates the market’s growing appetite to locate near transit:

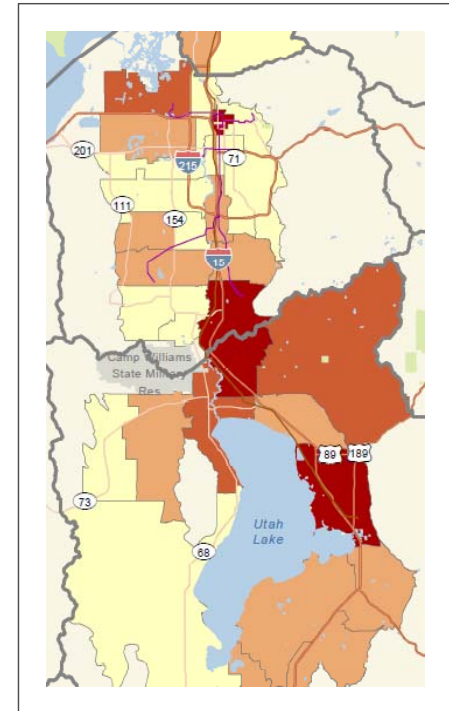
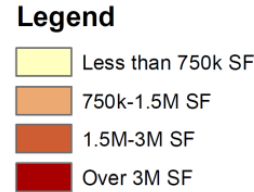
- Nearly 60% of future office development (SF) is projected to occur in submarkets with rail transit access.
- Approximately 45% of residential development (80% of multifamily units) are projected in submarkets with rail transit access.

Map of Job Cores 2008



Source: RCLCO

New Office SF Developed 2012–2050



Implications

Additional factors that may influence growth, but are not market-driven or forecastable variables, have the potential to impact and shift growth in ways that RCLCO's market scenario cannot project:

- Economic development “elephants,” including very large new employers who land in a submarket and immediately impact real estate demand and infrastructure needs.
- Water supply and infrastructure, in which the physical and financial constraints may simply be too great to allow growth to occur where the market might otherwise go.
- Impact of other counties, especially Tooele, which likely accommodates some of Salt Lake County's “overflow” households, as well.
- Demographic or psychographic composition of migrating households, which will likely differ from the existing demographic composition of the Wasatch Front, and may have different housing and neighborhood preferences due to educational attainment, income, access to/appetite for credit, etc.
- Kennecott's land reserve, which we currently assume to be “off limits” to development for the duration of this analysis, but which has been considered developable in the past.

Critical Assumptions

Our conclusions are based on our analysis of the information available from our own sources and from the client as of the date of this report. We assume that the information is correct, complete, and reliable.

We made certain assumptions about the future performance of the global, national, and local economy and real estate market, and on other factors similarly outside either our control or that of the client. We analyzed trends and the information available to us in drawing these conclusions. However, given the fluid and dynamic nature of the economy and real estate markets, as well as the uncertainty surrounding particularly the near-term future, it is critical to monitor the economy and markets continuously and to revisit the aforementioned conclusions periodically to ensure that they are reflective of changing market conditions.

We assume that the economy and real estate markets will grow at a stable and moderate rate to 2020 and beyond. However, stable and moderate growth patterns are historically not sustainable over extended periods of time, the economy is cyclical, and real estate markets are typically highly sensitive to business cycles. Further, it is very difficult to predict when an economic and real estate upturn will end.

With the above in mind, we assume that the long term average absorption rates and price changes will be as projected, realizing that most of the time performance will be either above or below said average rates.

Our analysis does not consider the potential impact of future economic shocks on the national and/or local economy, and does not consider the potential benefits from major "booms" that may occur. Similarly, the analysis does not reflect the residual impact on the real estate market and the competitive environment of such a shock or boom. Also, it is important to note that it is difficult to predict changing consumer and market psychology.

As such, we recommend the close monitoring of the economy and the marketplace, and updating this analysis as appropriate.

Further, the project and investment economics should be "stress tested" to ensure that potential fluctuations in revenue and cost assumptions resulting from alternative scenarios regarding the economy and real estate market conditions will not cause failure.

In addition, we assume that the following will occur in accordance with current expectations:

- Economic, employment, and household growth.
- Other forecasts of trends and demographic and economic patterns, including consumer confidence levels.
- The cost of development and construction.
- Tax laws (i.e., property and income tax rates, deductibility of mortgage interest, and so forth).
- Availability and cost of capital and mortgage financing for real estate developers, owners and buyers.
- Competitive projects will be developed as planned (active and future) and that a reasonable stream of supply offerings will satisfy real estate demand.
- Major public works projects occur and are completed as planned.

Should any of the above change, this analysis should be updated, with the conclusions reviewed accordingly (and possibly revised).

General Limiting Conditions

Reasonable efforts have been made to ensure that the data contained in this study reflect accurate and timely information and are believed to be reliable. This study is based on estimates, assumptions, and other information developed by RCLCO from its independent research effort, general knowledge of the industry, and consultations with the client and its representatives. No responsibility is assumed for inaccuracies in reporting by the client, its agent, and representatives or in any other data source used in preparing or presenting this study. This report is based on information that to our knowledge was current as of the date of this report, and RCLCO has not undertaken any update of its research effort since such date.

Our report may contain prospective financial information, estimates, or opinions that represent our view of reasonable expectations at a particular time, but such information, estimates, or opinions are not offered as predictions or assurances that a particular level of income or profit will be achieved, that particular events will occur, or that a particular price will be offered or accepted. Actual results achieved during the period covered by our prospective financial analysis may vary from those described in our report, and the variations may be material. Therefore, no warranty or representation is made by RCLCO that any of the projected values or results contained in this study will be achieved.

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Appendix: Supporting Exhibits
