

Appendix E

Assessment of Economic Development Potential



DAVIS-SLC COMMUNITY CONNECTOR STUDY

Assessment of Economic Development Potential

FINAL
August, 2014



ANALYTIC OBJECTIVES

This memorandum documents an economic analysis conducted within the context of the broader *Davis-Salt Lake City Community Connector Analysis*. While the overall study documents and evaluates the proposed transit corridor's ability to address market-serving regional connectivity needs, this economic sub-task is specifically geared towards **assessing the potential for revitalization near stations along the proposed transit corridor**. As defined in the project background, this analysis is intended to answer the question:

- Are there opportunities to support local and regional land use goals or enhance the effectiveness of transit-supportive land use, planning and design strategies along the proposed transit development?

Leland Consulting Group was retained as a sub-consultant to David Evans Associates (DEA) on behalf of the Utah Transit Administration (UTA) to investigate the above and, where appropriate, to provide strategic direction as to how revitalization impacts might be enhanced in support of the project. The analysis of development potential along the corridor is intended to 1) assist in screening alignment and mode alternatives, 2) support a greater understanding of project's benefits, and 3) provide data for a likely future FTA grant application.



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To answer the core economic development question, we first assume that either Enhanced Bus or Bus Rapid Transit (BRT) technologies (referred to elsewhere in the overall study as Alternative A and Alternative B, respectively) may be deployed along a corridor and set of likely station/stop locations stretching from downtown Salt Lake City north to southern portions of Davis County, Utah. Those candidate locations were provided to Leland Consulting Group by UTA and David Evans Associates. Although the exact stop and route placement may be subject to revision, it is assumed that general conclusions relative to expected economic development patterns should hold.

Finally, in the absence of compelling evidence that BRT or enhanced bus transit systems would reliably and predictably impact economic outcomes, we also looked at whether zoning changes in station areas might help to refocus development more efficiently along the corridor. Here the questions become, “**Is corridor zoning and land supply conducive to the levels of population and job growth already projected for the area?**” and, “**If not, could selective rezoning around stations redistribute regional growth into a more transit-supportive pattern?**”

APPROACH

Discussion

The general approach to the research question was one of triangulation – relying on a variety of sources to address the question from different angles, including both qualitative and quantitative evidence. The methodology proceeded in four, largely overlapping steps:

- At the broadest level, we conducted a **review of existing academic and quasi-academic studies** that have attempted to identify and measure *any* impacts of transit on development and related economic indicators, such as land value. Here we attempted to incorporate studies dealing with BRT and enhanced bus modes, but also included suggestive findings from investigations of similar modes (such as light rail or streetcars) with appropriate caveats.
- To this we added a closer look, in the form of **brief case studies**, at a small number of individual BRT and enhanced bus projects in the western U.S. that seemed particularly similar in certain aspects to the proposed Davis-SLC system. Again, the focus was primarily on finding evidence of economic impacts (including any lessons learned about how best to leverage transit-related benefits).
- **Qualitative discussions with stakeholders** provided a valuable perspective to help round out and temper any quantitative/ modeling-based conclusions. This input came in the form of interviews with individuals and small groups such as private sector developers and land owners and, from the public sector, staff from UTA, corridor municipalities, Davis County and Salt Lake City’s Redevelopment Authority.
- We conclude with **quantitative modeling of existing station-area land capacity and potential development scenarios**. Specifically, available WFRC projections for household and employment growth across proposed station areas were examined in light of vacant and underutilized supply of land zoned for development. These quantitative findings are presented using a 2040 end-year time horizon and are summarized across three scenarios: *Baseline* (i.e. no new transit), *Transit with Current Zoning*, and *Transit with Selective Rezoning*.



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Key data sources

Household and employment growth

Underlying growth projections for employment and households along the corridor is based on forecasts prepared by the Wasatch Front Regional Council (WFRC) at the Traffic Analysis Zone (TAZ) level. These TAZs are considered “small area” geographies, comparable to U.S. Census block groups, and are relied upon for regional transportation forecasting. The currently available forecasts and estimates for households cover the years 2007, 2020, 2030 and 2040. For employment, the available dates are 2007, 2011, 2020, 2030 and 2040. In order to set up an analysis stretching from the current year to the 2040 project horizon, LCG calculated a compounded annual average growth rate for households and employment used interpolation to estimate a 2014 level for both.

Though informed by current best practices in objective statistics and demography, small area forecasting (as conducted by planning bodies such as the WFRC) is both inexact and inherently political to some extent. Generally speaking, however, projections aggregated across larger geographies (such as the combined corridor station areas) are expected to be more accurate than those for any particular individual TAZ.

Underutilization, values and related property information

Parcel GIS and related tabular data from the Davis County and Salt Lake County Assessor’s offices was used for property information along the corridor. While a range of different variables were examined throughout the analysis, the most critical values included those for land acreage, improvement square footage (available for Davis County only), total property value, land value, improvement value, exempt status, property land use code and owner name. As discussed later in this report, certain measures such as “underutilization” are calculated estimates prepared by LCG using combinations of this available assessor’s data.

Any assessor data set will typically have some degree of error and case-by-case anomalies (such as *ad hoc* valuation adjustments) included in the mix. While these aberrations can affect estimates and analysis at the individual parcel level, corridor-wide conclusions are generally expected to balance out due to presumed randomness of such error.

Zoning

Where possible, zoning district boundaries were obtained in GIS form from jurisdictions intersecting the proposed station areas¹. Municipalities included Salt Lake City, North Salt Lake, Bountiful, Woods Cross, and West Bountiful. Enclaves of unincorporated Davis County are also represented among station area parcels.

To arrive at estimates of maximum and typical development density of each zone district, LCG consulted published land use and zoning codes from each of the individual jurisdictions. Although zone designations tend to remain fairly stable over time, we also discuss areas where those zoning assumptions are either likely to change already or perhaps *could* be changed to better encourage robust transit-oriented growth patterns.

¹ For West Bountiful and Woods Cross, PDF maps of zoning districts, available from those city’s planning department websites, were hand-digitized by LCG for subsequent GIS analysis.



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Property values and employment associated with new development

A variety of data sources including comparable parcel data and regional construction costs estimates published by RS Means are used to convert expected development quantities from square feet and units to likely dollar values. Industry rules-of-thumb and guidelines from the U.S. Green Building council were combined in calculating new employment arising from projected development of office, retail and industrial properties.



Figure 1: Alternative A - Enhanced Bus

EXISTING CONDITIONS

Before we can model the future, we need to understand what's on the ground today and where the project will be placed in relation to assets, constraints, and opportunities.

Proposed alignments and station areas

The figures here show proposed alignments and station/stop locations for the Enhanced Bus and BRT alternatives, labeled A and B, respectively. As shown on the maps, the two corridor alignments are quite similar in the Davis County portion, differing primarily in their downtown Salt Lake City routes. Terminal stations for both alternatives are envisioned at the Woods Cross FrontRunner commuter rail station (just southwest of Interstate 15 and 500 South) and in downtown Salt Lake City near 400 South and Main Street. Both alternatives traverse the largely north-south route primarily by following U.S. Highway 89.

The chief difference in the two prevailing route options is that while Alternative A follows a diagonal route along Victory Road past the State Capitol building on its way south, Alternative B instead descends into downtown Salt Lake City along 300 West, with stops at 600 North, North Temple and 200 South before turning east to at 200 South to finish in a small loop. Station locations for each option are summarized in a table following the alternative maps.



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Figure 2: Alternative B – BRT



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	Station/Stop	Alternative A (Enhanced Bus)	Alternative B (BRT)
Davis County	Woods Cross FrontRunner terminus (740 S at 800 W)	X	X
	500 S at 400 W	X	X
	600 S (at Main St, Bountiful)	X	X
	1700 S (Renaissance Town Center)	X	X
	2600 S at Main St.	X	X
	3200 S at Main St	X	X
	Center St. at Main St.	X	X
	Eaglewood Village (Eagleridge Dr. at Main/Beck St.)	X	X
Salt Lake City	400 W (at Victory Rd.)	X	X
	600 N at 300 W		X
	600 N (at Victory Rd.)	X	
	State Capitol Building (approx. 450 N at Columbia St.)	X	
	300 N at 400 W		X
	N Temple at 400 W		X
	N Temple at State St.	X	
	400 S (near Main St.)	X	X
	200 S at 400 W		X
	200 S at W Temple		X
	200 S at State St.	X	
	N Temple at Main St.	X	

Proposed Station Locations by Alternative

Sources: UTA, David Evans Associates

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Market Areas and Station Areas

While the Needs Assessment phase of the broader study considered a broad polygonal Study Area encompassing the corridor as a whole (with an even larger Area of Influence stretching north to include the cities of Farmington and Centerville and east to include the entirety of Bountiful), the current economic analysis focuses instead on two primary levels of geography. First, a “**station area**” is defined as including all parcels within one-quarter mile of proposed stops or stations.²

While the quarter-mile station areas are considered to be the locus of any primary station impact, these areas are assumed to be in competition with properties across a somewhat broader “**market area**” for projected growth in households and jobs. One such market area encompasses the corridor surrounding the Davis County portion of the corridor and another surrounds the northern portion of downtown Salt Lake City, as shown in the maps presented here.

Stations areas south of North Temple are excluded from the analysis on the rationale that properties in those areas are more affected by other existing or proposed fixed guideway transit systems (namely LRT or streetcar) than by any prospective new bus-based system.

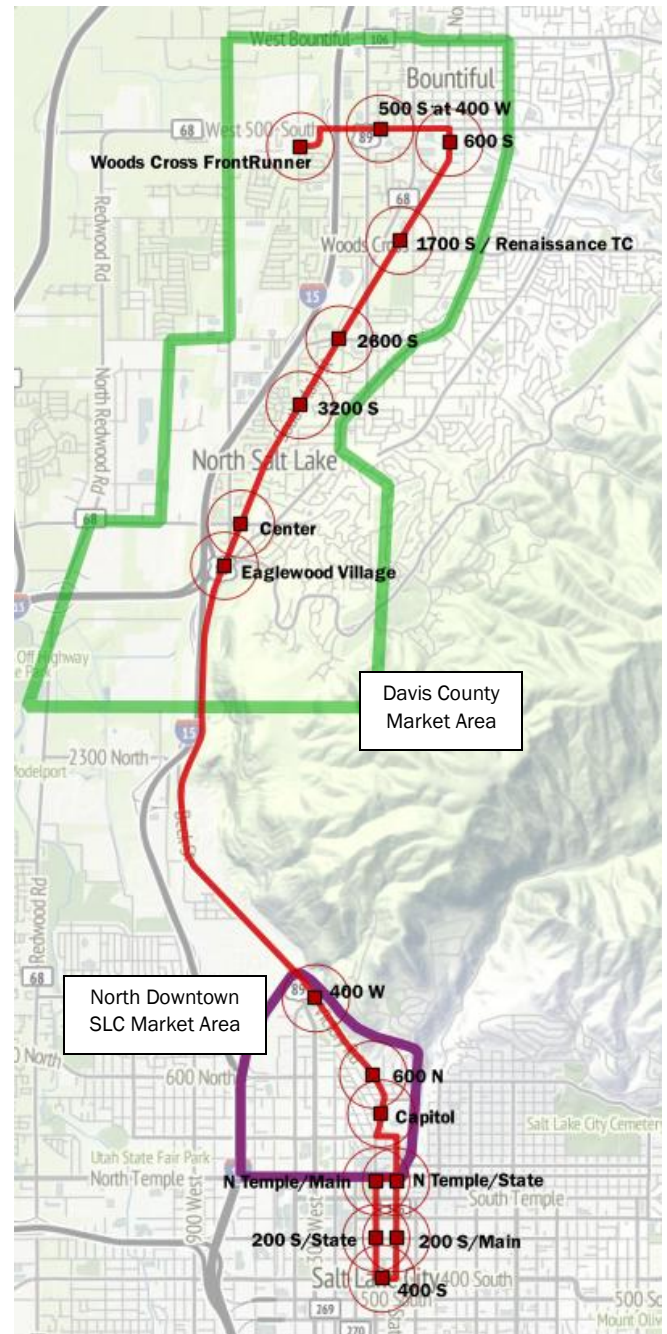


Figure 4: Quarter-mile Station Areas and Market Areas, Alt. A

² While some studies (a clear minority) argue for transit benefits extending as far as one-half mile from stations, this analysis uses the more conservative quarter-mile buffer, which seems to have growing evidence in the transit literature as a threshold of diminishing economic returns, roughly correlated to a convenient walking distance.



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Figure 4: Quarter-mile Station Areas and Market Areas, Alt. B



LAND CAPACITY ANALYSIS

This section looks at the development capacity in those station areas in order to set a baseline. “How much do we have to work with and what could it accommodate?” How we do this: vacant and underutilized (what’s potentially in play and what’s not), zoning (what’s possible with those sites), market conditions/trends (what’s the current pattern of development?).

A key indicator of land utilization is derived from the county assessor’s appraisal of improvement (building) value relative to the total value (building plus land) for that lot. Using the ratio of improvement to land values (referred to here as an I-to-L ratio) we can screen for properties that are likely to be underutilized. Healthy, functioning properties tend to have I-to-L ratios of somewhere in the range of 2.0 to 4.0 or even higher, indicating that improvements have been developed that are worth at least double the land value.

Where this ratio is very low (below 0.1), the land is considered essentially vacant. A major exception includes properties that are fully or partially tax exempt because the owner is a public entity, charitable/religious organization, railroad or utility. Generally, these should be excluded from the pool of redevelopable capacity as they are unlikely to ever see private development³.

For this analysis, we assume I-to-L ratios below 1.0 (where improvements are worth less than the land) suggest underutilized land that may be considered for future redevelopment, provided proper zoning. In downtown Salt Lake City, much of this land capacity includes surface parking lots. Because such lots tend to be cash-flowing land uses in their current state, redevelopment will need to be spurred by the prospect of higher returns for vertical development – typically preceded by rising land prices. Similarly, and more prevalent in Davis County, many older retail properties with large surface parking lots can have I-to-L ratios below 1.0. Those, too, should be seen as resistant to immediate redevelopment but ultimately within the pool of redevelopment capacity when considering a 2040 forecast horizon.

The following map shows I-to-L ratios for developable parcels over 0.2 acres across the proposed station locations (for either alternative). All underutilized parcels within the one-half mile impact area are shown and for each stop a quarter-mile radius is shown to illustrate where any transit impacts would likely be greatest. Red radius lines indicate quarter-mile buffers around Alternative A stops only; blue lines indicate Alternative B stops; purple lines are for stations common to both alternatives.

³ To complicate the analysis, however, some church- and public-owned properties (particularly those controlled by redevelopment authorities and church-affiliated real estate holding bodies) are currently tax-exempt but the land in question may be intended for future sale and development. This analysis has attempted to distinguish between developable and non-developable exempt property where possible, excluding the latter from model inputs.



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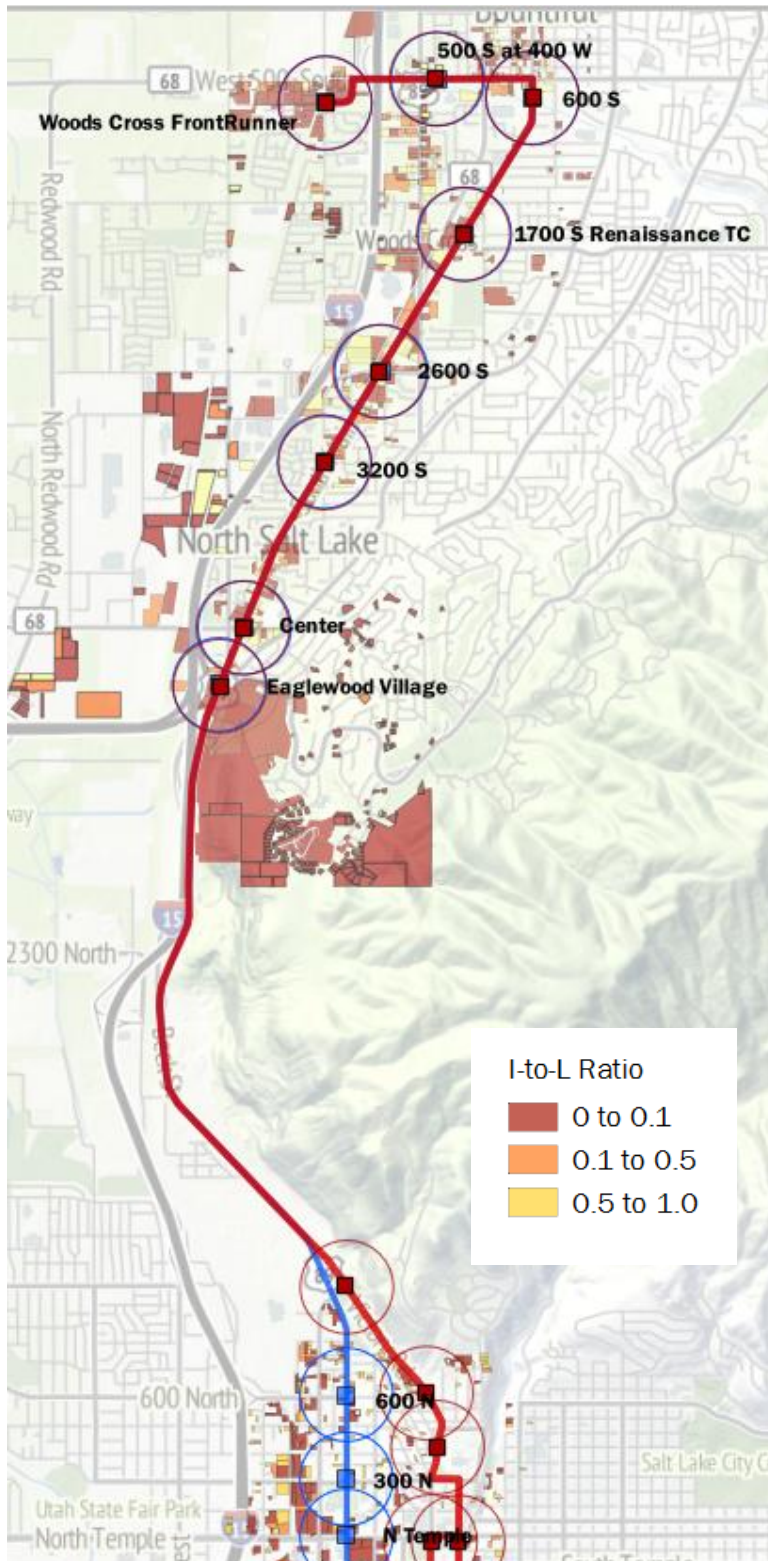


Figure 5: Underutilized Impact Area Parcels - Davis County and North Downtown SLC

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The tables below summarize the acreage of vacant and underutilized land by zoning district along the combined impact area. Results are tabulated separately for Davis County stations and Salt Lake City stations (north of N. Temple only), based on quarter-mile buffer distances.

Underutilized Parcel Acreage by General Zoning (Davis County Portion of Corridor)

Current Zoning (generalized)	Corridor Market Area	1/4 mile Station Areas
Residential - Single Family	286.0	12.7
Residential - Multifamily	12.0	1.9
Downtown (Bountiful)	13.9	4.5
Planned Development (NSL)	114.3	49.7
Commercial	204.9	97.9
Industrial	234.8	20.8
County	3.7	1.8
total acres	869.6	189.3

As shown in the table above there are approximately 189 parcel acres of underutilized land within one-quarter mile of proposed Davis County stops, after excluding undevelopable properties and parcels under 0.2 acres. In the broader market area surrounding the Davis County corridor area, there are nearly 870 underutilized parcel acres⁴.

Within the broader market area for Davis County, only 16 percent of all zoned land capacity is found in zone districts that explicitly encourage multifamily development (multifamily residential, Downtown-Bountiful and Planned Development – North Salt Lake). While these transit-supportive zones are found disproportionately in the quarter-mile station areas, even those areas are zoned primarily for non-residential land uses..

Taken together, commercial zones such as C-1, C-H, C-G, I-1 and other variants take up just under 119 acres (or 63 percent) of the one-quarter mile station area land capacity in Davis County.

Note that parcels in the municipality of West Bountiful account for just six percent of identified development capacity in the Davis County market area portion of the corridor.

⁴ Note that, for Davis County, parcels with improvement values up to 50 percent of the land value (or I-to-L ratios less than 0.5) were considered underutilized, whereas in Salt Lake City, this threshold was more aggressive, with parcels up to I-to-L ratios of 0.99 were considered underutilized. This was intended to reflect likely stronger land value pressures on redevelopment for downtown than for suburban sites.



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Underutilized Parcel Acreage by General Zoning (North Downtown Salt Lake City Portion)

zoning	Total North Downtown SLC Market Area	Alt. A ¼-mi. Station Areas	Alt. B ¼-mi. Station Areas
BP	2.6	2.6	2.6
CB	0.9		0.9
CC	1.0		1.0
CG	0.3		
CN	0.3		
I	1.3		
M-1	10.1		9.9
MU	7.0		6.0
PL	0.4		0.4
R-1-5000	3.4	1.6	
R-1-7000	2.4		
R-2	1.9	1.3	
RMF-35	2.1	1.0	0.6
RMF-45	0.7		
R-MU	5.0	1.7	3.0
SR-1A	18.3	11.0	1.8
SR-3	0.7		
TSA-UC-C	38.7		36.4
TSA-UC-T	29.2		28.8
total	126.3	19.1	91.4

Source: Leland Consulting Group; using GIS parcel data from Davis County Assessor

Underutilized parcels within the overall North Downtown Salt Lake City market area total 126 acres. Within one-quarter mile stations areas, the estimated land supply drops to just 19 acres near Alternative A while Alternative B has over 91 acres.

In general, station areas in Salt Lake City have more mixed use zoning than those in Davis County. Downtown zones (D-1 through D-4) are intended to be potentially heavily mixed, but only found south of N. Temple Road, where station impacts are driven more by rail than potential bus service. “Transit Station Area” zones (TSA-UC-C, etc.), totaling over 36 parcel acres, can be found near proposed BRT stations – well positioned to absorb higher density development in conjunction with new transit.

Within the Alternative A (enhanced bus) station areas, there are 11 acres zoned SR-1, a designation intended to preserve larger lot sizes in historic portions of downtown, but not very compatible with typical transit-supportive density policies.

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Allowable Densities by Zone

Leland Consulting Group examined the zoning regulations in the municipal codes for each of the cities within the Davis County portion of the proposed transit corridor and then for parcels in Salt Lake City. Some jurisdictions are more direct than others in stating the maximum allowable density; so, for consistency across the analysis, we attempted to derive a maximum floor area ratio (FAR) for each non-residential zone and a maximum dwelling units per acre (DU/a) for each residential zone. Results of this code review are summarized in following tables.

Because Davis county parcel data includes information on improvement square footages, we were able to calculate a median and 95th percentile level of FAR for *developed* (i.e. non-underutilized) parcels elsewhere in the corridor for purposes of comparison. Note that theoretical maximum densities are often considerably higher than the highest densities actually found on corridor developed parcels.

Again, the purpose of this analysis is two-fold. First, for the baseline, no-build case, we wish to determine how much of the currently forecasted household and employment growth in the corridor through 2040 will “fit” in our pool of underutilized land (the land capacity) under varying levels of allowable density of construction. Later, informed by case study research and academic literature review findings, the analysis will consider how much additional capacity might be utilized under BRT and Enhanced Bus scenarios.

Typical and Allowable Densities by Zone, Davis County Station Areas

Zone District	max allowed (FAR for comm'l, du/a for residential)		corridor median FAR (for developed parcels with I:L >1.0)	corridor existing max FAR (95th percentile)	Density Notes
<i>non-residential</i>					
C-1	1.2		n/a	n/a	2-stories at 60% lot coverage
C-2	1.2		0.31	0.74	2-stories at 60% lot coverage
CG	2.6		0.34	0.57	65% lot coverage at max 4 stories
C-G	2.6		0.33	2.04	3-story max, with setback and landscape requirements but no specific FAR or lot coverage maximums
CH	2.6		0.16	0.49	65% lot coverage at max 4 stories
C-H	2.6		0.3	0.46	3-story max, with setback and landscape requirements but no specific FAR or lot coverage maximums
CS	1.3		0.23	0.62	65% lot coverage at max 2 stories
DN	2.6		0.36	1	3-story max, with setback and landscape requirements but no specific FAR or lot coverage maximums
H	5.0		0.24	1.82	7-story max, with setback and landscape requirements but no specific FAR or lot coverage maximums
I-1	0.7		0.29	0.44	70% max lot coverage, typically 1-story
L-I			0.08	0.15	100-ft height max, with setback and landscape requirements but no specific FAR or lot coverage maximums



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MD	2.0		0.15	0.49	65% lot coverage at max 3 stories
MG	2.0		0.06	0.06	65% lot coverage at max 3 stories--most appear to be refining operations, with tanks, but no improvement value shown
P			n/a	n/a	unspecified FAR for planned developments-- all corridor P zoning is currently vacant
PO	0.6		n/a	n/a	
PO-N	0.6		0.15	0.23	max. 2,000 sf footprint on minimum 0.25 acre lot
S-1	1.2		0.15	0.31	2-stories at 60% lot coverage
<i>residential</i>	Max Allowed Units/Ac	approx. max allowed FAR			
R1_10	4.4	0.28	0.13	0.34	10,000 min lot size
R1_12	3.6	0.23	0.13	0.23	12,000 sf min lot size
R1-7	6.2	0.26	0.14	0.3	7,000 sf min lot size
R-1-8	5.5	0.25	0.13	0.33	(du/a, based on 8,000 s.f. min lot.)
R-2	8.7	0.32	0.15	0.32	(du/a, based on 10,000 s.f. min duplex lot.)
R-4	4.0	0.26	0.13	0.34	4 units per acre max
RM-13	13.0	0.36	0.13	0.3	13 units per acre max
RM-19	19.0	0.44	0.12	0.27	19 units per acre max
RM-20	20.0	0.46	0.26	0.41	20 units per acre max
RM-25	25.0	0.57	0.09	0.22	25 units per acre max
RM-7	7.0	0.39	0.2	0.34	7 units per acre max

Source: Leland Consulting Group; using parcel data from Davis County assessor and information from municipal zoning codes for cities of Bountiful, North Salt Lake, Woods Cross, and West Bountiful

Density Expectations by Zone, Salt Lake City Station Areas

FAR expectations					DU/a expectations			
zoning	low	medium	high	Pct. residential	low	medium	high	
BP	0.15	0.3	0.5	0%				
CB	0.15	0.3	0.5	50%				
CC	0.3	0.5	1.2	50%	15	30	50	
CG	0.3	0.5	1.2	50%	15	30	50	
CN	0.2	0.5	0.7	0%				
D-1	2	4	8	40%	30	50	80	
D-2	1.2	2	4	50%	25	40	60	
D-3	1.2	2	4	50%	25	40	60	
D-4	1.2	2	4	50%	25	40	60	
GMU	1.2	2	5	70%	30	50	80	
I	0.15	0.3	0.5	0%				
M-1	0.15	0.3	0.5	0%				
MU	0.3	0.5	1.2	50%	15	30	50	

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PL	0.3	0.5	1.2		50%		15	30	50
R-1-5000					100%		3	5	9
R-1-7000					100%		2	4	6
R-2					100%		8	10	15
RMF-35					100%		20	25	35
RMF-45					100%		30	35	45
RMF-75					100%		50	65	75
R-MU					90%		15	30	50
RO	0.4	0.8	2		70%		15	30	50
SR-1A					100%		2	4	6
SR-3					100%		3	5	7
TSA-UC-C	1	2	3		80%		20	40	60
TSA-UC-T	1	2	3		80%		20	40	60
TSA-UN-C	0.3	0.6	1.5		80%		15	25	40
TSA-UN-T	0.3	0.6	1.5		80%		15	25	40
UI	0.3	0.6	1.5		20%		15	25	40

Source: Leland Consulting Group; using parcel data from Salt Lake County Assessor and zoning/land use code from City of Salt Lake City

For Salt Lake City zoning found on underutilized station-area parcels the same review is summarized in the table below. Salt Lake City employs relatively flexible zoning, especially for their downtown area, so statutory maximum densities are difficult to find. Also, the lack of available improvement size data by parcel makes the calculation of median and upper-range corridor FARs not feasible. Instead, we interpret the spirit of the zoning code (including discussion of TOD) and look at existing higher-density examples to produce low, medium and high density *expectations*. Similarly, because so many of the downtown Salt Lake City zones allow unspecified portions of development to be divided across residential and commercial, an estimated “percent residential” column is included based on the consultant’s judgment.

Discussion of Development Momentum

Davis County

The primary study area Davis County municipalities of Bountiful, Woods Cross and North Salt Lake have grown at a robust pace in recent decades (recessionary periods notwithstanding). While much of this growth has taken place in a lower density suburban context in areas outside the study corridor, there are two major recent examples of higher-density development momentum more characteristic of what might be seen in a transit-oriented environment:

Eaglewood Village – North Salt Lake

After some recessionary delays, this 96-acre project completed its first phase in 2013 – a 214-unit apartment project with uncharacteristically urban (for Davis County) look and feel. An additional 17 acres is





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slated for future commercial development and there are 300 more entitled residential units yet to be built.

Five Points/Renaissance Town Center

The once-popular 1950s –era Five Points Mall was demolished in 2003 to make way for the planned Renaissance Town Center. A fitness center and medical office (surgery center) component, together with 3-story structured parking formed the initial core of this New Urbanist foray into suburban Davis County. Development since then has been slower than hoped but appears to be picking up. A 106-unit apartment adjacent to the project broke ground in 2013 and retail components are gradually filling in. The bulk of the former mall site, however, remains to be redeveloped.



Salt Lake City

Downtown Salt Lake City, in general, is the site of considerable ongoing redevelopment activity including, most notably, the City Creek Center mixed use development, which opened in 2012. A \$1.5 billion joint project of Property Reserve, Inc. (the LDS Church's commercial real estate arm) and retail developer Taubman, City Creek Center sits on approximately 20 acres in the heart of downtown, near the proposed connection between the downtown streetcar and the Davis-SLC transit line. Remarkably, the new City Creek project is just four blocks east of the massive Gateway (retail-centric) mixed use project near the west side of downtown. Gateway was just constructed in 2001 and now competes heavily with City Creek across retail, office and residential land uses. The Gateway project would be served by BRT stations from the proposed connector at both North Temple and 200 S. Other corridor station areas in downtown Salt Lake City are also already seeing real estate activity consistent with TOD (some of which, of course, actually is transit-oriented)



Figure 5: City Creek Center entrance

- West Capitol Hill/Marmalade District – 90 acres, library, mixed use (limited ground floor retail, housing above), townhomes, and open space
- 100 South and 400 West – Two potential 400 room hotels
- Royal Wood Office Plaza & Shilo Inn Suites Hotels – Both potential 800 room hotels
- Former Salt Lake City Fleet Block – Part of the RDA's Granary District Project Area
- Broadway Park Lofts – 40 condominiums at 360 West and 300 South



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- Rio Grande District – Wasatch Choices 2040 Catalytic Site
- Plaza at State Street – 200 affordable housing units
- Neumont University – Classrooms, faculty offices, and student apartments

In short, to an even greater extent than communities in south Davis County, Salt Lake City is, without new transit, already seeing considerable levels of redevelopment in areas that would potentially be served by new BRT or enhanced bus stations under consideration.

ANALYSIS OF TOD POTENTIAL

Case Studies

Because of the lack of quantitative data and a standard FTA methodology, case studies provide valuable evidence to inform our assumptions in the model. We briefly summarize a few that are most relevant to the type of system envisioned here and the size of communities that it will traverse. For each case study, we summarize:

- Basic system info (type, location, age)
- Geographic context
- Summary of research on development impacts

After reviewing the assembled case studies, we include a discussion of their strategic relevance to the proposed Davis-SLC corridor. These discussion points are again revisited after consideration of the available academic and quasi-academic research into economic development benefits of BRT. For both approaches, the causal conclusions are more tentative than definitive, but a series of strategic qualitative recommendations is advanced based on the emerging findings.



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Albuquerque Rapid Ride: Case Study on Enhanced Bus

Central Avenue is a major east-west corridor in Albuquerque, supporting over 40% of the city's transit ridership. The Middle Rio Grande Connections study looked at high capacity travel corridors and found the Central Avenue Corridor most suitable for a transit enhancement due to its strong transit demographics and activity centers. Initially light rail was the preferred alternative but enhanced bus (The Rapid Ride Red Line) was seen as a way to prove the market and lay groundwork for other transit options. The plan was to implement the Rapid Ride but continue to work toward light rail. However, the light rail project was tabled when it looked unlikely that they would receive federal funding.



Source: ABQ Journal

Initial success in reducing travel time has actually slowed a bit due to the increased number of riders and boarding times. The city is now exploring a Bus Rapid Transit plan for the corridor.

The Rapid Ride roughly doubled ridership numbers along the corridor, going from 2.5 million in 2004 to over 5 million in 2012. Weekday boardings for the Red Line averaged 61.7 per hour (in service) in 2012.

Albuquerque Project Basics:

Project Name	Rapid Ride (Red Line)
Owner/Operator	ABQ Ride (The City of Albuquerque's Transit Department)
Technology	Enhanced Bus
Year Opened	2004
Length	11 miles
Context	Highly trafficked corridor that connects two major activity centers: Downtown and the University of New Mexico (largest trip generator).
Relationship to other system elements	The Red Line is one of three Rapid Ride bus lines. There is also a network of local bus routes and the Rail Runner Commuter Express. All system elements connect at the main transit station – The Alvarado Transportation Center plus there are additional connections between the three Rapid Ride Lines.
Expansion Plans/Proposals	The City is considering a Bus Rapid Transit plan for the Central Avenue Corridor. with public input and feasibility studies ongoing.

Economic Development Conclusions

As preface, there was not a big push in Albuquerque to sell this as an economic development initiative. The Rapid Ride was seen as a stepping stone towards ultimately implementing either BRT or some form of light rail along the corridor. The Rapid Ride has been credited with expanding the pool of "choice" riders, as opposed to the transit-dependent demographic that dominated bus ridership prior to upgrading with enhanced bus.

The Nob Hill area near the University has done well since the introduction of the Rapid Ride, as has the Downtown core, but it has been seen more as organic redevelopment of retail and not necessarily tied to the system change.

According ABQ Ride, the Rapid Ride has **generated only modest economic development**. The most notable impacts have been several housing developments located near the central transit hub downtown, a new apartment complex that just broke ground a few blocks from one of the Rapid Ride stations, and a major retailer that located next to one of the stations. Implications for the Davis-SLC corridor are mixed: from strictly a transit standpoint, there are few complaints about the benefit-cost equation. Economic development impacts, always difficult to tease out from other context factors, appear quite limited, but could continue to grow if technology and systems are upgraded to BRT or rail.



DAVIS-SLC COMMUNITY CONNECTOR STUDY

Kansas City Main St. MAX Line: Case Study on Enhanced Bus Hybrid

After measures to fund rail-based transit in the city failed, the city turned to bus rapid transit (BRT), where they saw similarities in service potential but didn't have the same capital investment hurdle. The Main Street MAX Line was introduced in 2005 and has been largely successful, with high customer and community satisfaction.



Ridership along Main has increased 80 percent over existing regular bus system. The local Main Street bus route (before the MAX) saw approximately 3,200 riders a day in 2005. To date, the MAX sees 5,840 riders per day. Initially the MAX and the local bus ran along the same route, however the local route was discontinued after a strong preference was shown for the MAX-- people appear willing to walk farther to get to stops that give them the experience and benefits of BRT (such as a 20% travel time improvement). The MAX also helped to stabilize an area of the corridor that had been in decline for nearly 20 years and at the same time boost the image of transit in Kansas City.

Project Basics

Project Name	Main Street MAX Line (plus additional information on Troost Avenue MAX)
Owner/Operator	Kansas City Area Transportation Authority (KCATA)
Technology	Bus Rapid Transit (BRT) – although technically considered “below basic” in terms of BRT services – could also be classified as higher-end enhanced bus
Year Opened	2005
Length	6 miles
Context	Established commercial/strong neighborhood corridor that connects two high density employment centers with mom & pop retail in the midtown section.
Relationship to other system elements	Main Street and Troost Ave MAX BRT lines are part of the city-wide bus system (The Metro) which has 62 routes and 55,000 riders a day. The City is also constructing the first leg of the KC Downtown Streetcar which is slated to open in summer 2015 and will connect with BRT and other system elements. The city is studying 7 possible alignments for the next phase of streetcar; Main Street appears to be a natural fit.
Expansion Plans/Proposals	KCATA put together a regional BRT plan. The next phase is looking at adding a BRT line on the Prospect Corridor, an area with high transit dependency but few activity centers.

Economic Development Conclusions

The Downtown CBD and Midtown have improved since 2005...

- Local officials cite TOD investment of over \$5 billion, corridor-wide
- Increased property values
- Improved image of downtown
- Greater share of “choice” riders
- Several business relocations to the corridor

...but it is difficult to say exactly how much is attributable to BRT. As local downtown boosters have put it, “the stars aligned and one of the stars was BRT”. **Main Street would not be a successful corridor without good transit but other elements have significantly helped** to turn the corridor around as well, including the Community Improvement District, new streetscape plan, façade rebate program, land use plans and design guidelines.



DAVIS-SLC COMMUNITY CONNECTOR STUDY

Fort Collins, Colorado MAX Line: Case Study on Bus Rapid Transit (BRT)

Slated to open in May of 2014, the \$87 million on Fort Collins' Mason Corridor – a primary arterial through this community an hour north of Denver, home to Colorado State University. Conceived in the mid-1990s, the project progressed after a few years to the development stage, securing FTA support, as well as gaining other project funding partners, including the state of Colorado and Colorado State University (CSU), Fort Collins. More so than in Albuquerque or Kansas City, the City of Fort Collins and its downtown boosters are touting the MAX line as part of an explicit strategy to accommodate higher development densities in addition to increasing transportation capacity. Interestingly, the line is already drawing criticism for its likely inability to address congestion issues downtown, while simultaneously being credited for catalyzing a host of redevelopment projects (in advance of opening).



Project Basics

Project Name	City of Fort Collins MAX bus rapid transit line
Owner/Operator	Transfort (the city's bus system operator, runs about 22 bus routes plus paratransit)
Technology	Bus Rapid Transit (BRT) – with concrete fixed guideways along much of the corridor
Year Opened	2014 (anticipated)
Length	5 miles
Context	route between Fort Collins' Old Town and a new transit center nearing completion; strong university/student demographic composition, but also a town with growing visitor and employment base
Relationship to other system elements	Will be integrated into existing city bus system at key points, but fixed concrete guideways will create considerable separation from existing transit and private traffic flows
Expansion Plans/Proposals	Both BRT and commuter rail options for better connecting Fort Collins to the Front Range (Denver/Boulder/Colorado Springs) are actively being considered, but will be several years from realization

Economic Development Conclusions

The Mason Corridor MAX line BRT system, despite being not-yet-operational, is widely considered to be an integral component in a multi-faceted revitalization effort for central Fort Collins. Several notable new and under-construction developments are not only prominently located along the corridor, but are strongly themed to capitalize on excitement related to the new system. An example, pictured here, is the Max Flats development, a 5-story project under construction at a downtown MAX station site with 64 multifamily units and 1,500 square feet of ground floor retail.



According to Transfort, the line's operator, there are more than 20 new real estate projects of varying size in the pipeline along the BRT corridor. The City's Downtown Development Agency is very active in downtown revitalization, employing a number of tools including several Tax Increment Finance districts, a General Improvement District and strong coordination with other planning bodies at the city and university levels. While it is difficult, at still premature, to quantify transit's contribution to the local economy, it certainly appears to be a vital element in the economic development mix for Fort Collins.



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Supplemental Case Information

Because of the similarities between Fort Collins and southern Davis County (Rocky Mountain setting, university proximity, BRT technology), we expanded upon this case study by interviewing economic development officials at the City of Fort Collins. The following is a summary of an interview with Josh Birks, whose title is Economic Health Director with the City (with additional information from his departmental assistant and Redevelopment Specialist, Megan Bolin :

What organizations have been instrumental in working to leverage the MAX line in service of economic development? (please briefly discuss how the roles have differed)

- City – Lead role through the Economic Health Office
- Urban Renewal Authority – Assisting with redevelopment through the use of Tax Increment Financing
- South Fort Collins Business Association – A Business association covering a significant portion of the BRT route. Has helped to spread the word on investments opportunities and the benefits of BRT.
- Downtown Development Authority – Assisting with redevelopment in the downtown portion of the route. Can provide TIF as well.

How have various policy tools, financial mechanisms and other incentives been included in the revitalization mix in FC (including zoning changes, TIF, urban renewal, etc.)?

Primary tool is tax increment financing. The City also created a Transit Oriented Development Overlay District to encourage density and lower parking requirements. Finally, there is a modified style PUD zone district as well in the area. These allow for greater flexibility in development along the route.

In your opinion, how might economic development impacts (thus far) have been different if the mode had been enhanced bus? Streetcar?

Enhanced bus would not likely have generated the same impacts. There needs to be some level of permanency in order to stimulate larger investment. Bus service with the only capital cost being the vehicle and simple stations does not achieve this permanency. Street car would probably have netted a very similar effect.

What specific BRT elements have been good “selling points” for encouraging development risk-taking?

The significant capital investment (\$80+ million) in a fixed guide way has created the sense of permanency. In addition, headway and travel time have been big selling points. So far, ridership is meeting expectations with weekend nights exceeding expectations and requiring additional service.

How important/fortuitous has the national upswing in multifamily residential development been to MAX line TOD successes?

Negligible, actually. So far, the only multifamily housing to be constructed adjacent to the route is Student Housing, which likely would have occurred without the presence of MAX. Perhaps not in the exact location but somewhere adjacent to the University.

Do you sense that there is a second wave of potential transit related redevelopment that is taking a wait-and-see approach? If so, what will be the most important signals of success (ridership targets, general public perception, actual real estate successes, etc.)?



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Yes, I believe that several property owners are taking a wait-and-see approach. Signals of success might include perceived ridership, market response by other property owners, and continued investment in complimentary public improvements.

Have there been certain individual private risk-takers, without which the revitalization momentum might have stalled? (vs. Has the risk been fairly spread around?)

No specific individual risk-takers; more spread around.

Any other important lessons, or things you would have done (or will do) differently?

Acquire property for parking adjacent to stations as part of the initial land purchase. Include more Bike Racks on the buses, we regularly fill up. Start the conversation as an economic development activity not a transit project. This was ultimately the way it got accepted in our community.

Have you begun to quantify private-sector investment along the line? (in terms of development values, s.f. of commercial space, new units, etc.)

Yes, our office tracks all planned, proposed and ongoing development activity in the corridor by way of maps and spreadsheets. As detailed in the table below, there are over 600,000 square feet in new development either recently built or under construction in the City's TOD Overlay zone, including 490 housing units, a new Islamic Center, an Auto Dealership and three mixed-use projects. Addition projects in the *Final Plan* stage alone could add an additional 1.6 million square feet of development and over 1,100 new units.

Fort Collins TOD Overlay Zone Projects

Project Name	Project Status	Use	Units	Square Footage	Parking Spaces
Legacy Senior Residences	Complete	Multifamily	72	76,723	51
Pura Vida	Complete	Multifamily	52	41,238	49
Choice Center (Summit on College)	Complete	Mixed-Use	219	316,654	217
Penny Flats Building 3	Complete	Multifamily	21	17,077	23
Penny Flats Building 4	Complete	Mixed-Use	30	23,959	48
Islamic Center of Fort Collins	Complete	Worship	0	11,600	95
Mitsubishi Motors	Under Construction	Auto Sales	0	6,702	2
Prospect Station	Complete	Mixed-Use	32	51,929	48 (11 off-site)
Max Flats	under Construction	Mixed-Use	64	63,900	64
Foothills Mall Redevelopment	Final Plan	Mixed-Use	800	889,431	5,717
Feeders Supply	Final Plan	Mixed-Use	54	77,717	54
Peck Apartments	Final Plan	Multifamily	6	3,116	8
Carriage House Apartments	Final Plan	Multifamily	54	42,464	58
West Range Fort Collins	Final Plan	Multifamily	15	22,990	39
River District Block One (Encompass)	Final Plan	Mixed-Use	12	36,150	65
Big Deal Four Plex	Final Plan	Multifamily	4	4,948	4

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Canyon Place	Final Plan	Office	0	71,166	0
The District at Campus West	Final Plan	Multifamily	189	461,549	467
Boardwalk Crossing at Mason Street	Final Plan	Office/Dining	0	17,500	53
Scott Plaza	Project Dvlp. Plan	Multifamily	79	97,138	100
Redtail Ponds Supportive Housing	Project Dvlp. Plan	Multifamily	60	45,000 (est.)	36
Meldrum Office Building	Project Dvlp. Plan	Office	0	42,000	6
Old Town Flats	Project Dvlp. Plan	Multifamily	94	78,900	84
401 S Mason Street Mixed-Use	Prelim. Design Review	Mixed-Use	2	20,235	n/a
Penny Flats Major Amendment	Prelim. Design Review	Multifamily	78	62,000	72
Fort Collins Block 32/42 Master Plan	Conceptual Review	Mixed-Use	n/a	n/a	n/a
Aggie Village North Redevelopment	Conceptual Review	Mixed-Use	1,000	408,000	290
Choice Center Parking Garage	Conceptual Review	Parking Garage	0	n/a	450
4628 S Mason Street	Conceptual Review	Office/Retail	0	1,400	6
409 Linden Street Parking	Conceptual Review	Parking	0	0	12
405 Linden Change of Use		Office	0	0 new SF	0 new
First Choice Emergency Medical Care	Conceptual Review	Clinic	0	0 new SF	0 new
619 S Grant Ave Garage Conversion	Conceptual Review	Multifamily	1	n/a	2 new
302 N Meldrum Microbrewery	Conceptual Review	Microbrewery	0	0 new SF	0 new
316 Willow Print Shop	Conceptual Review	Mixed-Use	0	n/a	0 new
1319 Plum Street Plat/Duplex	Conceptual Review	Duplex	2	0 new SF	0 new
609 Shields Mixed-Use	Conceptual Review	Mixed-Use	92	90,180	85
213 Jefferson Street Mixed-Use	Conceptual Review	Mixed-Use	4	12,000	0
Shields & Plum Multifamily	Conceptual Review	Multifamily	21	12,537	n/a
315 N Howes Multifamily	Conceptual Review	Multifamily	78	n/a	Up to 78
1312 S College Ave Dental Clinic/Office	Conceptual Review	Clinic/Office	0	0 new SF	4
243 College Ave Office Building	Conceptual Review	Office	0	30,000 - 60,000	n/a
820 S College Ave Mixed Use	Conceptual Review	Mixed-Use	20	22,942	25
Dunkin Donuts	Conceptual Review	Restaurant	0	2200	



DAVIS-SLC COMMUNITY CONNECTOR STUDY

Cleveland – Healthline

Euclid Avenue is a corridor with a varied history. Known as Millionaires' Row at the beginning of the 1900s it fell on hard times as Cleveland's industrial base declined and by the early 2000s vacant properties spread throughout the corridor. However, because it was a main thoroughfare with high bus ridership and two of the region's major employment centers, Downtown and University Circle (a medical and cultural hub), Euclid was seen as prime for transit. Citing pressing transportation needs, but constrained by technical and financial considerations, the city decided to move forward with BRT (a relatively new technology in the U.S.) but to make it as "rail-like" as possible.



Project Basics:

Project Name	Healthline
Owner/Operator	Greater Cleveland Regional Transit Authority (RTA)
Technology	Bus Rapid Transit (BRT)
Year Opened	2008
Length	9.38 miles (36 stations)
Context	Two major employment centers on either end of the line with a less developed mid-section. (CBD, Cleveland State Univ., the Cleveland Clinic, University Hospital)
Project Cost	\$200 million, including buses, stations, streetscape and roadway improvements
Relationship to other system elements	The Healthline connects with 3 rapid transit (rail) lines, the trolley and local bus routes primarily at Tower City Public Square.

Economic Development

According to the project boosters and Urban Land Institute, the corridor has attracted \$5.8 billion in investment since the BRT line opened in 2008 (\$3.3B for new construction and \$2.5B for building rehab) with a total of more than 110 projects. Joe Calabrese, CEO of Greater Cleveland Regional Transit Authority said he started fielding calls from developers before the Healthline began operating. He says there is new construction happening in areas of Midtown that hadn't seen construction in years. Many developers have said they invested in Euclid Avenue because of the Healthline.

Notable Associated Development and Impacts

- 7.9 million sq. ft. of commercial development
- Over 5,000 housing units
- 13,000 new jobs
- \$62 million generated local taxes



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- *Increase in property values – a 6.2 acre used car lot bought for \$35k in 1984 and valued at \$1.08M in 2012*
- *\$28M Midtown Tech Park – used car dealership turned into 128,000 sq. ft. of incubator space*
- *\$180M Cleveland State University master plan – turned entrances of several buildings towards Euclid to re-connect the campus to the corridor*
- *\$150M – Uptown project - mixed-use development in the center of University Circle*
- *\$500M University Hospital's expansion*
- *\$506M Cleveland Clinic Heart Center*
- *\$350M Cleveland Museum of Art project*
- *\$27M Museum of Contemporary Art*

Changing Demographics

The No. 6 bus, which used to run along Euclid Avenue had a high composition of transit dependent riders. One of the goals of the Healthline was to attract choice riders, which Calabrese says it has done without a doubt. Ridership has increased over 60%, going from 2.6M riders in '08 to over 4.5M in '11.

Economic Development Conclusions

The economic revitalization occurring in Cleveland around the Healthline BRT systems was part of a massive orchestrated effort between private sector players (including the Greater Cleveland Partnership and the downtown-specific Greater Cleveland Alliance) and the public sector. Former County Commissioner George Voinovich (later governor and U.S. Senator) championed the project throughout and is largely credited with securing needed federal funding, including an \$80 million New Starts grant. Both corridor hospitals bought naming rights totaling over \$6 million and participated heavily in corridor planning.

While the BRT line was clearly a centerpiece and rallying point for development efforts, the size and nature of many of the largest projects (particularly hospital and museum expansions) suggest that it was part of a much larger effort.



DAVIS-SLC COMMUNITY CONNECTOR STUDY

Eugene, Oregon Emerald Express (EmX): Case Study on Bus Rapid Transit (BRT)

The Emerald Express (EmX) is a BRT system that serves the Eugene-Springfield metropolitan area in Oregon. The concept of creating a BRT system in the Eugene-Springfield area developed as part of an update to the Eugene-Springfield Transportation System Plan (TransPlan). LTD's goal for the EmX was to create an integrated transit system that is competitive with the automobile. Roughly 60 percent of the EmX route is over exclusive lanes for the EmX, which allows for decreased travel times compared to conventional buses. Since its launch in early 2007, the EmX has experienced high ridership along its pilot route, the Green Line. LTD, who operates the EmX, estimates that 2,700 riders use this service each weekday. The current route connects the central LTD bus stations in Eugene and Springfield using the Franklin Boulevard corridor.



Franklin Avenue EmX was originally intended to run on a dedicated running way for 90 percent of its route. However, in part due to the public input process, which raised concerns over loss of parking and business access, the agency reduced the dedicated portion of the route to 50 percent.

The Green Line's original project cost was \$24 million. Roughly 80% (\$19.2 million) of the project cost was paid through grants from the FTA's New Starts program, and 20% (\$4.8 million) was raised locally.

Project Basics

Project Name	Emerald Express (EmX)
Owner/Operator	LTD
Technology	BRT
Year Opened	2007
Length	4 miles (including 1.6 miles of dedicated running way)
Context	Between Eugene's downtown and university setting and downtown Springfield, OR
Relationship to other system elements	Line replaced a popular bus route; also well integrated with area bike trail infrastructure
Expansion Plans/Proposals	A 7.8-mile extension north to the Gateway Mall and Sacred Heart Medical Center was opened in January 2011. An extension to West Eugene from the current Eugene Station is in planning phases.

Non transit-specific infrastructure investments also included

- Bicycle improvements
- New sidewalks
- Traffic flow and traffic safety improvements
- Landscaping
- Undergrounding of utilities



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Economic Development Conclusions

A 2012 study conducted by the U.S. GAO indicated that \$100 million worth of construction projects were under way downtown near the Franklin EmX line, including a boutique hotel, office space renovations, and expansions to a community college. City officials also said that the University of Oregon is looking to lease space downtown and that there has been developer interest in new student housing. Although these officials expect land values to increase along Franklin Ave., they noted it is hard to measure the extent to which BRT is contributing to the increase.

University of Oregon has supported the EmX by supplying land for the line's running way and recently building a \$250-million arena near one of the stations. (See fig. 13.) Land value analysis conducted by the GAO (U.S.) in Eugene suggest that investments by the university are having a positive impact on land values along the Franklin EmX corridor. Specifically, they found that from 2005 through 2010, assessed land values in downtown Eugene and near the University of Oregon campus have increased at a greater rate than other segments of the Franklin EmX corridor (although no comparison made to non-corridor control).

Key Case Study Takeaways for Davis-SLC

Case studies suggest bus-based systems can go hand-in-hand with revitalization

- Over \$5 billion in corridor-wide private investment along both Cleveland Healthline (BRT) and Kansas City MAX (low-level BRT)
- Eugene, Oregon's EmX BRT credits transit with \$100 million in TOD investments
- Considerable TOD activity along yet-to-open BRT line in Fort Collins, CO (MAX), shows that BRT development, appropriately leveraged, can help attract and concentrate significant redevelopment even in advance of operations.

However, strong consensus that redevelopment impacts are only *partly* related to BRT– each success story has transit as one of *many* revitalization tools

- (zoning strategy, TIF financing, improvement districts, incentives, private sector buy-in, coordinated municipal investments, etc.)

Review of Available Literature

We also reviewed methodologies used and conclusions drawn from other studies designed to investigate economic impacts of transit—particularly BRT and enhanced bus, where possible. These span from published peer-reviewed academic research (almost exclusively focused on rail-based modes) to “white paper” quasi-academic reports, to a range of consultant studies commissioned for specific transit planning efforts.

The state of the industry on this subject, in short, is that no standardized methodology has emerged to tackle this complex question, and that some judicious combination of quantitative and qualitative data should be used to balance the need for hard, generalizable data with the idiosyncratic nature of each new transit setting. Furthermore, while the preponderance of evidence seems to suggest generally positive economic outcomes stemming from new

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transit systems, not much consensus can be found as to expected differences among alternative modes. The following table summarizes some key studies and their major conclusions, along with notes for how those findings may apply to Davis-Salt Lake City.

Summary of Relevant Studies

Study	Year	Study Type, Authors	Mode, Context	Key Findings	Notes, Application to Davis-SLC
Bus Rapid Transit and Economic Development: Case Study of the Eugene-Springfield BRT System	2013	Academic article for <i>Journal of Public Transportation</i> ; by Arthur C. Nelson and five others at the Univ. of Utah Metropolitan Research Center	BRT system in Eugene, OR; 2004 to 2010	In a metropolitan area where employment declined 5% over a 7 year period, census blocks within 0.25 miles of BRT experienced job growth of 10%, with gains across several desirable sectors. Blocks between 0.25 and 0.5 miles from BRT had mixed job growth (flat overall)	BRT appears associated with job growth (especially in certain higher wage sectors), mainly within the quarter-mile impact area. Study didn't examine real estate measures but reasonable to assume some correlation with development. Eugene is more comparable to Davis-SLC than other studies outside the Western U.S.
More Development for Your Transit Dollar: An Analysis of 21 North American Transit Corridors	2013	White paper report for Institute for Transit and Development Policy (ITDP) by Walter Hook et al.; Ford Foundation sponsorship	4 Enhanced Bus lines, 8 BRT lines, 7 light rail systems, 2 streetcar systems (all but 2 in the U.S.)	All studied modes were capable of association with strong TOD activity. Authors cite Cleveland's BRT and Kansas City's Enhanced Bus MAX line as having particularly high ratios of TOD investment to transit capital costs. Other BRT and Enhanced Bus lines were associated with "moderate" or "low" levels of TOD investment. Streetcar systems (Portland and Seattle) generated high levels of TOD but at high cost. Authors suggest that transit mode is actual the third most important factor in TOD success, behind 1) government support for TOD and 2) favorable economic conditions	This gathering of anecdotal tallies of costs and development spending does not include "control" comparisons or independently verifiable data sources (such as parcel or jobs data). Primary takeaway is that much is possible with BRT and Enhanced Bus but the range of outcomes is quite broad. Favorable, proactive TOD policies appear to be most critical element.
Land Use Impacts of Bus Rapid Transit: Phase II – Effects of BRT Station Proximity on Property Values along Boston's Silver Line Washington Street Corridor	2012	White paper study commissioned by FTA, conducted by Victoria Perk et al.	Boston's Silver Line BRT, Washington Street Corridor, 2000 to 2009	Examining condo sale prices and land values before and after the 2002 opening of the Silver Line BRT. In 2000-01, prices were <i>negatively</i> impacted by proximity to Washington St.. By 2008-09, the pattern had reversed, with condos adjacent to BRT stations (and to Washington St.) enjoying a 7.6% price premium over those a quarter-mile away.	First rigorous study of BRT impacts in U.S. context. Well-controlled study, so 7.6% value premium appears believable. Does not address level of development activity, however, or other non-condo land uses. Does not address effects on value beyond ¼ mile from stations. In fact, although station-adjacent condos had a price premium over more distant corridor parcels, the corridor as a whole fared about the same as Metro Boston in condo appreciation. Boston context is considerably more urban than Davis-SLC.



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Study	Year	Study Type, Authors	Mode, Context	Key Findings	Notes, Application to Davis-SLC
BUS RAPID TRANSIT: Projects Improve Transit Service and Can Contribute to Economic Development	2012	Federal GAO report to the Senate banking committee investigating soundness of FTA investments in BRT	BRT-specific	Case-study based approach, but looked at changes in property values along system corridors (although not for control areas). Found U.S.-based BRT systems to be generally lacking in dedicated running ways (relative to international standards), but indicated that such systems appeared to hold promise for economic development	Similar applicability (and similar cases) to other case-study based research.
Columbia Pike Transit Initiative: Comparative Return on Investment Study	2014	Study commissioned by Arlington County, VA; conducted by HR&A advisors, a Washington, DC consulting firm	Streetcar vs. BRT-like Enhanced Bus in Arlington, VA (no system existing currently)	<p>Broad-based review and meta-analysis of existing research on rail and bus-based transit impacts. No original quantitative research, but used questionnaires and original case study research for qualitative input. Concludes in favor of streetcar (over BRT/bus option) for Arlington.</p> <p>In synthesizing available studies (very few for bus/BRT) and qualitative input, authors assume streetcar would have 7-10% value premium over a baseline (no-build) scenario over 10 years.. enhanced bus was assumed to have a 2-4% premium over baseline.</p> <p>In part because of the assumed value premium, development was expected to occur more much more quickly in the streetcar scenario, and slightly faster in the enhanced bus scenario, vs. baseline</p>	<p>Study offers a helpful review of available literature, but conclusions seem overly slanted towards streetcar (especially given the small body of evidence for bus & BRT). Excellent qualitative case study of BRT/enhanced bus hybrid in Kansas City helps to support the conclusion that that economic development successes of that transit system are inseparable from parallel efforts to spur revitalization.</p> <p>That said, HR&A's assumption of 2-4 percent value premiums for properties near enhanced bus seem reasonable, given that the proposed line is close to the BRT end of the service spectrum).</p>

Conclusions from Available Literature and Case Studies

- As a newer transit technology, BRT has a far smaller body of experience to turn to for evidence of economic development impacts, as compared to rail-based systems.
- Enhanced Bus, with somewhat blurred modal distinctions from BRT already, is even less well-studied, with no existing rigorous academic evidence of development impacts.
- Academic studies spanning approximately two decades of rail-based systems are generally consistent in finding positive development impacts for streetcar and LRT modes (although key metrics, degree of impact, and land uses most affected differ widely).
- Emerging quantitative academic research into BRT effects (Nelson et al. 2013, and Perk et al. 2012 are the only real examples in the U.S.) is beginning to suggest positive, if modest, impacts of BRT stations on job growth and condo values



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- A common qualitative thread for all existing BRT and Enhanced Bus research is that transit mode is one of many factors that must come into place to spur economic growth and revitalization.

Qualitative summary of likely BRT and Enhanced Bus impacts in Davis-SLC context

- Salt Lake City has growing savvy in coordinating redevelopment efforts (particularly in the presence of rail transit investments), with a major success unfolding in Sugar House streetcar-based redevelopment example
- Because either BRT or Enhanced Bus would be new to the region, however, Salt Lake City's TOD experience may have somewhat reduced applicability (except, of course, at the potential point of connection with the future streetcar route).
- There is a chance that BRT or Enhanced Bus in downtown Salt Lake City may be perceived as less “sexy” relative to streetcar and LRT, attracting less development interest relative to proposed streetcar station sites.
- Davis County municipalities of North Salt Lake, Bountiful and Woods Cross are less experienced in redevelopment/revitalization– a factor that could dampen the expected impacts of either proposed transit mode here, given that such systems seem to rely heavily on coordinated revitalization efforts to leverage transit investments
- Development in southern Davis County is already showing signs of being capable of more urban-styled development patterns (at Renaissance Town Center in Bountiful and Eaglewood Village in North Salt Lake). While this may point to the corridor's increasing ripeness for TOD-like development, it also suggests that such development may occur even in a baseline/no-new-transit scenario.
- To the extent that a Davis-Salt Lake Community Connection BRT (or even Enhanced Bus) is made to resemble LRT and modern streetcar modes (in terms of perceived permanence, quality, reliability and efficiency of its vehicles, stations and route infrastructure) it should reasonably be able to confer similar, though reduced, benefits on surrounding development.
- In weighing the available evidence and considerations outlined above, LCG assumes that BRT should confer a modest value premium to parcels within one-quarter mile of proposed stations and that development of those parcels will thus be accelerated somewhat versus a baseline no-build scenario.
- The unfolding case study of Fort Collins' new MAX Line BRT lends particularly strong support to the idea that BRT can be a potent tool for economic growth, helping to concentrate meaningful redevelopment activity along a transit corridor even in advance of line operations.

BASELINE (NO-BUILD) GROWTH PROJECTIONS

The market areas surrounding the corridor segments is represented by 24 traffic analysis zones in Davis County and 13 TAZs in north downtown Salt Lake City, as tracked by the WFRC. Together, these TAZs account for over 29,000 jobs and 14,000 households as of 2014.



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While current conditions strongly favor jobs over people in the corridor, the WFRC's projections of future growth call for more added households than jobs. By 2040, Davis County's market area is expected to grow by more than 2,900 households and just under 2,900 employees. Over the same period, the north downtown Salt Lake City market area is expected to add almost 1,000 households and between 500 and 600 jobs.

Projected Growth (2014-2040)

Market Area Traffic Analysis Zones

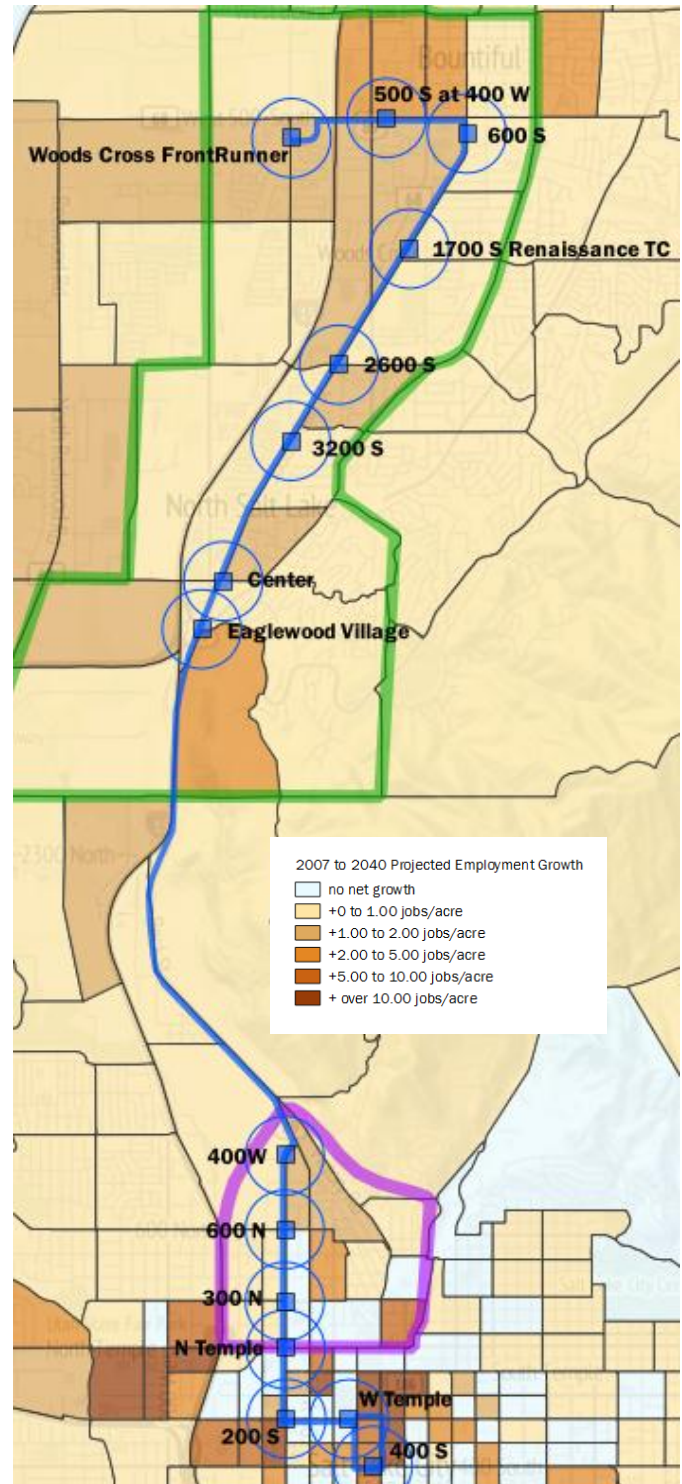
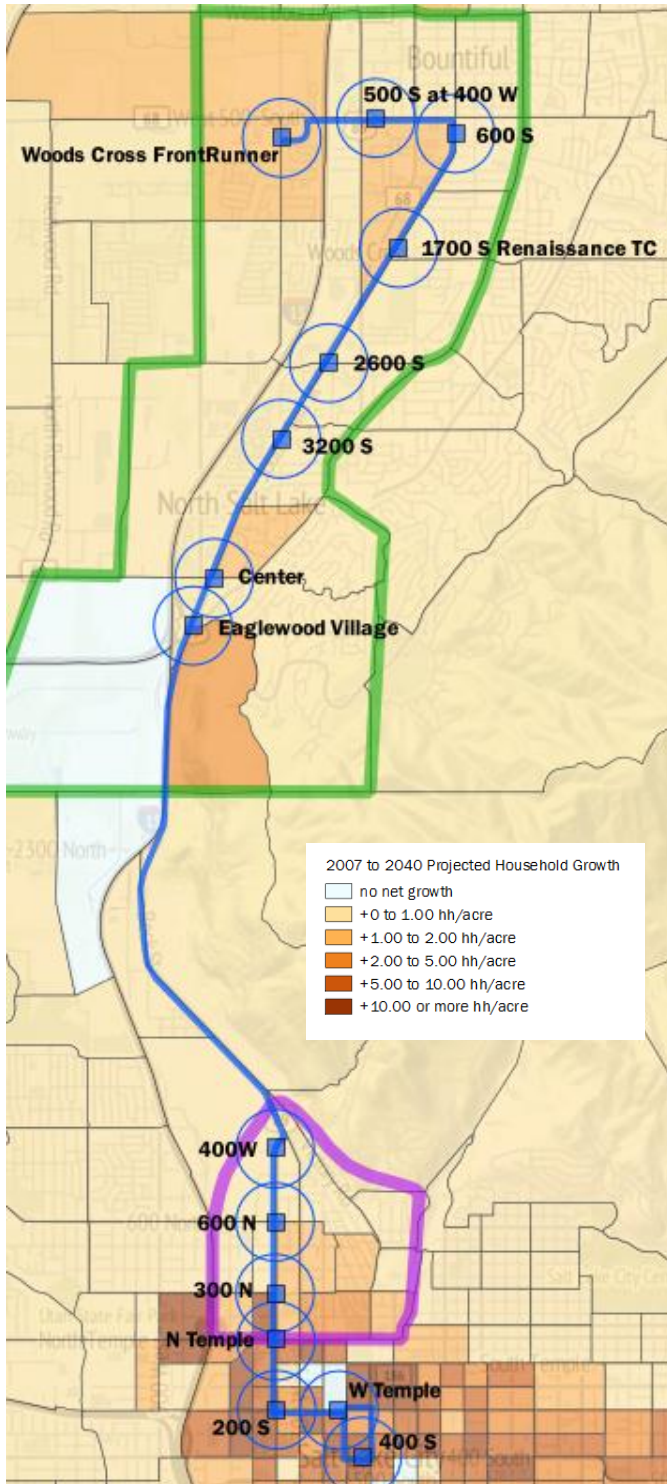
	Bountiful	Davis County	North Salt Lake	West Bountiful	Woods Cross	Davis Market Area Subtotal		North Downtown SLC Market Area
Households (2014 est.)	5,380	340	3,127	276	1,472	10,596		3,689
Employment (2014 est.)	12,664	330	4,331	1,976	4,519	23,819		5,376
Households (2014-2040 projected growth)	976	107	735	381	713	2,912		994
Employment (2014-2040 projected growth)	687	572	782	263	588	2,893		564

The maps on the following page show projected TAZ-level growth in employment and households, expressed as a density (households per acre or jobs per acre). Note that as a density, growth in Davis County appears modest, due to the relative large size of those TAZs. The map for employment shows that, despite overall net projected growth, there is expected to be considerable redistribution of jobs, with pockets of no growth or even moderate job loss near other concentrations of employment intensification (this is especially true for downtown Salt Lake City).



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Projected Growth in Households, Employment (2014-2040)





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Comparison of TAZ-based projections to station-area land capacity

Corridor Land Capacity and Projected Demand – Davis Portion

Low, Medium and High Scenarios

Assumptions related to buildout density in the Davis portion of the corridor are contained in the table below. Three buildout scenarios are given. For the “low” scenario, parcels are assumed to build at densities similar to what is seen elsewhere in the corridor currently (by zone) – a business-as-usual assumption. The “medium” scenario reflects densities closer to what is seen at the higher end of the corridor density spectrum for that zone currently. The “high” scenario approaches the stated maximum densities (where available) or the maximum observed densities currently on the corridor, again by zone. For zones that allow a mix of uses, we must assume a certain percent of future development that will be residential versus commercial. Movement along the spectrum from low to high scenarios will be influenced by a number of factors, including...

- Overall national economy
- Regional economic strength
- Density-supportive local policies
- Positive impacts of proximity to stations transit

Davis Corridor Market Area Density Assumptions and Capacity Acreage

Current Zoning (generalized)	FAR Expectations			Est. Pct. Residential
	low	medium	high	
Residential - Single Family	0.15	0.20	0.30	100%
Residential - Multifamily	0.15	0.25	0.45	100%
Downtown (Bountiful)	0.30	1.00	1.50	60%
Planned Development (NSL)	0.20	0.30	0.40	70%
Commercial	0.20	0.40	0.60	5%
Industrial	0.15	0.20	0.25	0%
County	0.15	0.20	0.25	20%

Current Zoning (generalized)	Capacity Acres	Non-Residential Capacity (s.f.)			Residential Capacity (s.f.)		
		low	medium	high	low	medium	high
Residential - Single Family	286.0	0	0	0	1,868,639	2,491,519	3,737,278
Residential - Multifamily	12.0	0	0	0	78,728	131,214	236,184
Downtown (Bountiful)	13.9	72,562	241,875	362,812	108,844	362,812	544,218
Planned Development (NSL)	114.3	298,636	447,954	597,272	696,817	1,045,226	1,393,634
Commercial	204.9	1,696,046	3,392,092	5,088,139	89,266	178,531	267,797
Industrial	234.8	1,534,293	2,045,724	2,557,155	0	0	0
County	3.7	19,462	25,950	32,437	4,866	6,487	8,109
total acres	869.6	3,621,000	6,153,595	8,637,815	2,847,159	4,215,789	6,187,221



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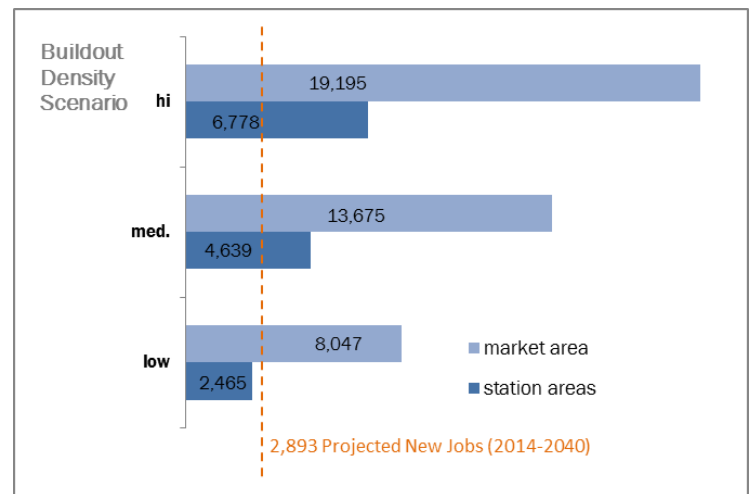
In the Davis County portion of the corridor, vacant and underutilized land within ¼ mile of proposed stations totaled 189 acres, with nearly 870 acres across the surrounding market area (outlined above in green). For the market area, the WFRC projects approximately 2,900 new jobs through 2040. Leland examined existing corridor development patterns and zoning regulations to produce *low*, *medium* and *high* density projections for each zoned, underutilized parcel. Even under very conservative “low” density assumptions for each zone, the market area has ample land to accommodate projected job growth. In fact, all projected market area jobs could fit fairly easily within ¼-mi. station areas alone.

Commercial Land Supply* Relative to Projected Job Growth

Davis County Market Area vs. ¼ Mile Station Areas

*expressed in terms of estimated employment capacity

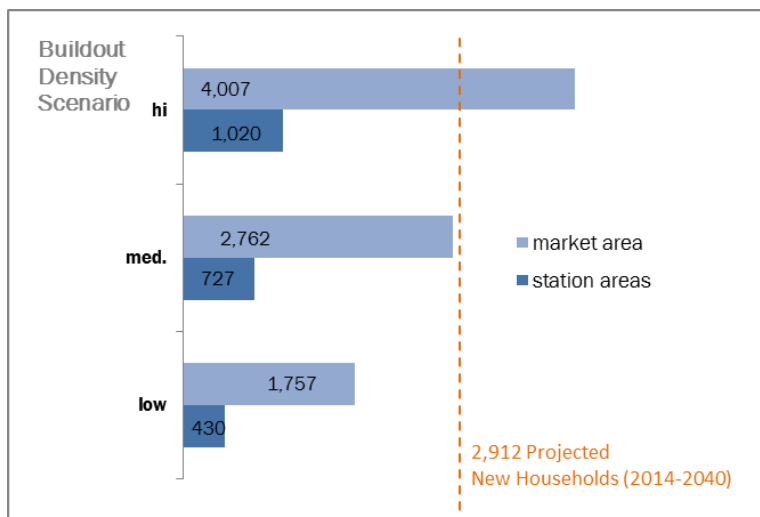
In terms of residential capacity, however, the projected growth in market area households (also approximately 2,900) would require closer to “high” levels of density (close to maximum allowable densities and above maximum *observed* densities) to accommodate within the market area’s land supply as currently zoned. Only a fraction of forecast household growth could fit within ¼-mi. station area land.



Residential Land Supply* Relative to Projected Household Growth

Davis County Market Area vs. ¼ Mile Station Areas

*expressed in terms of housing units





DAVIS-SLC COMMUNITY CONNECTOR STUDY

North Downtown Salt Lake City Market Area Density Assumptions and Capacity Acreage

zoning	acres	FAR expectations				Pct. residential	Unit/acre expectations		
		low	medium	high			low	medium	high
BP	2.6	0.15	0.3	0.5		0%			
CB	0.9	0.15	0.3	0.5		50%			
CC	1.0	0.3	0.5	1.2		50%	15	30	45
CG	0.3	0.3	0.5	1.2		50%	15	30	45
CN	0.3	0.2	0.5	0.7		0%			
I	1.3	0.15	0.3	0.5		0%			
M-1	10.1	0.15	0.3	0.5		0%			
MU	7.0	0.3	0.5	1.2		50%	15	30	45
PL	0.4	0.3	0.5	1.2		50%	15	30	45
R-1-5000	3.4					100%	3	5	9
R-1-7000	2.4					100%	2	4	6
R-2	1.9					100%	8	10	15
RMF-35	2.1					100%	20	25	35
RMF-45	0.7					100%	30	35	45
R-MU	5.0					90%	15	30	45
SR-1A	18.3					100%	4	6	9
SR-3	0.7					100%	4	6	9
TSA-UC-C	38.7	1	2	3		80%	20	35	50
TSA-UC-T	29.2	1	2	3		80%	20	35	50
total	126.3								

Excludes:

parcels where building value exceeds land value

parcels under 0.2 acres

parcels where zoning, ownership or other factor precludes redevelopment (e.g. school or church property, parks, open space, refinery, railroad, etc.)

Salt Lake City, in general, has more mixed-use zoning than municipalities in Davis County. While the municipal code does not, in most cases, clearly specify maximum allowable densities, examples on the ground suggest that higher floor area ratios and dwelling unit per acre are allowed in Salt Lake City. As with Davis County, buildout densities may range along a spectrum based on a number of determining factors (including, potentially, proximity to transit).

As the bar charts below illustrate, the market area surrounding Salt Lake City's north downtown station areas are expected to grow by approximately 560 employees and almost 1,000 households between 2014 and 2040 (symbolized by the dotted yellow line). There is ample underutilized land capacity to absorb the forecast employment growth across the market area. Alternative B station areas (where the vast majority of market area land capacity exists) could easily accommodate this commercial growth, even under lower density assumptions.

Residential growth is somewhat more of a concern. If the market area builds out under a "low" density scenario, relative to what is allowed by zoning, the land capacity is just adequate to absorb the new growth. Transit orientation of new housing is one strategy to encourage density, so that projected growth be more readily (and efficiently) accommodated. As with commercial

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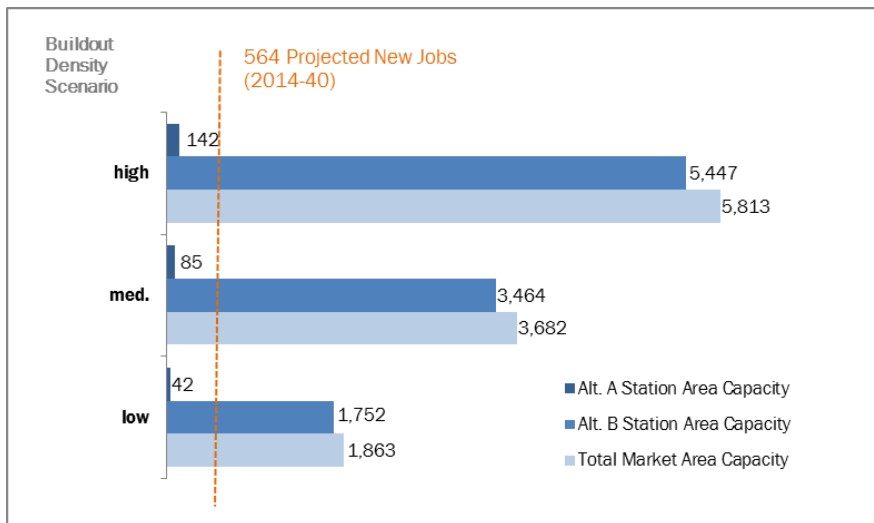
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land, most available residential capacity in the market area is located within one-quarter mile of proposed Alternative B (BRT) stations. Although Alternative A includes important stops from a ridership perspective, those station areas have very little underutilized land capacity to absorb projected commercial or residential growth.

Commercial Land Supply* Relative to Projected Job Growth

North Downtown Salt Lake City Market Area vs. ¼ Mile Station Areas

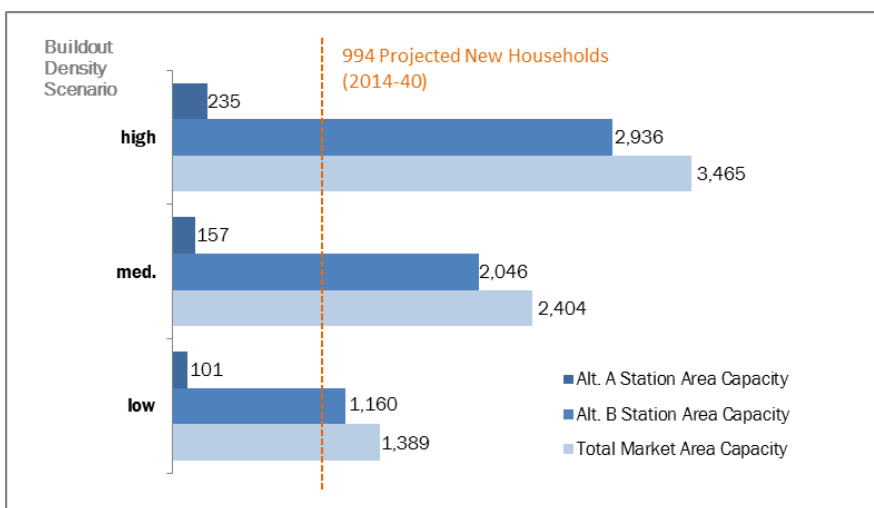
*expressed in terms of estimated employment capacity



Residential Land Supply* Relative to Projected Household Growth

North Downtown Salt Lake City Market Area vs. ¼ Mile Station Areas

*expressed in terms of estimated housing unit capacity





STRATEGIC CONCLUSIONS

A model is just a model without a strategy to ensure that the results are likely. The transit investment is one piece of a larger puzzle. Here are some caveats on the analysis and some strategic steps for consideration.

Strategic Conclusions

- Bus transit has limited impacts on its own. Amenities and streetscape are also very important. A highly amenitized BRT project with high quality and frequent service could have greater impacts than a modest rail project with low-quality service.
- TOD activity along existing and proposed rail-based lines (TRAX LRT, FrontRunner commuter rail, proposed streetcar) may overshadow bus-based efforts on this corridor, particularly in downtown SLC
- Davis corridor zoning and planning may be commercially-skewed that warranted by employment growth projections
- Transit-oriented zoning may help address mismatch between capacity and growth projections by encouraging more efficient residential densities
- Davis County portions of the corridor have been historically committed to auto-oriented projects, including vehicle dealerships and lower density commercial development, so importance of transit and pedestrian-friendly zoning and amenity investments may require education and encouragement from UTA, regional planning bodies and prospective TOD developers
- Development momentum, finally gaining steam in Bountiful and NSL, is actually transit-supportive in character (Renaissance Town Center and Eaglewood Village), which may help pave the way for more coordinated TOD activity moving forward

Potential Response to Station-Area Up-zoning

For commercial land uses, the supply of zoned, underutilized land (much of which is technically “built”, but with lower-value improvements like auto dealerships and storage yards) so outstrips the forecasted growth in employment that **commercial up-zoning alone is unlikely to produce meaningful incentive for real estate density.**

In practice, existing corridor multifamily properties approach allowable maximum densities only in rare cases. Therefore it seems unlikely that the apartment and condo markets would respond to residential up-zoning with increased development density, at least in the near term. However, as Davis County’s corridor market area adds households amid dwindling residential land supply in the coming decades, higher density zoning (particularly coupled with a well-functioning transit system) may become more of an incentive – potentially allowing for some coordinated spatial growth management around station areas.

Other strategic considerations

Some ideas:

- Reach out to and engage the development community. Get them involved now. It can take several years to finance and design a development project and you want them getting ready now so that they’re out of the ground when the system opens.
- Get your financial tools ready. Especially to reduce the cost of structured parking.



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- Think about amenities, streetscape, and the surrounding context. These will help leverage the transit investment.
- Branding and marketing are important. Development along the corridor and at the stations needs to be part of something bigger.

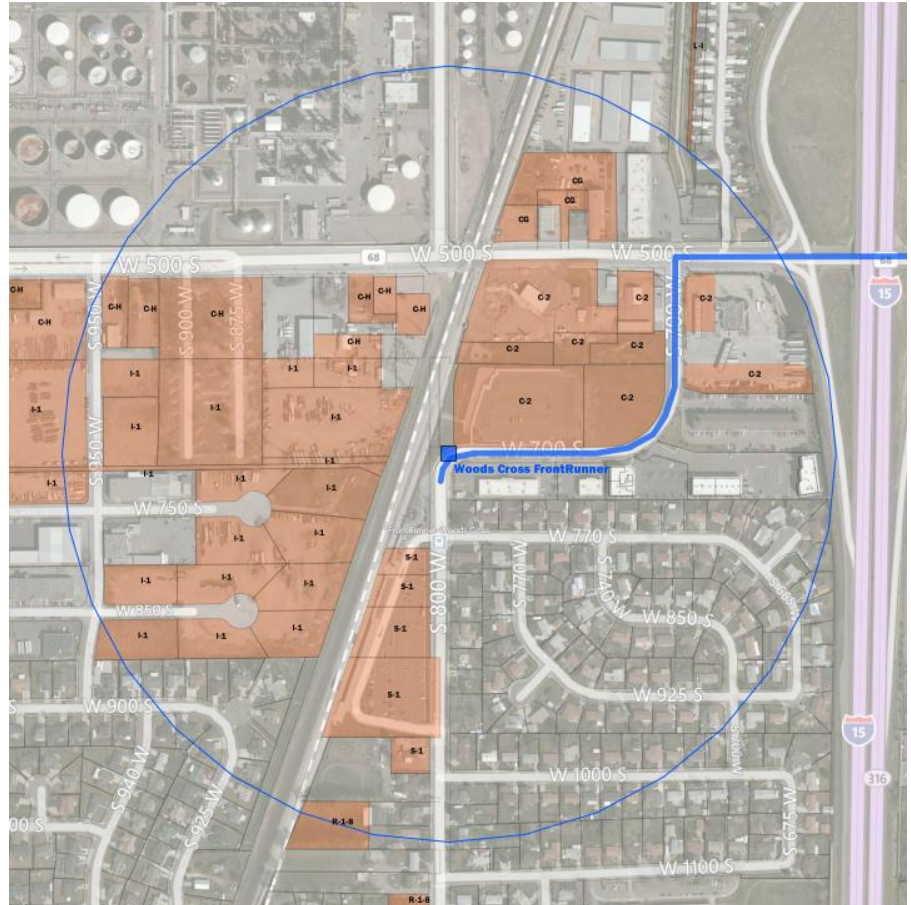


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STATION-BY-STATION FINDINGS AND RECOMMENDATIONS

Woods Cross FrontRunner Terminal

- Land showing as underutilized east of tracks is mostly transit surface parking and unlikely to redevelop even under aggressive scenarios.
- Heavy refining operations north of 500 South probably act as an aesthetic (and possibly environmental) constraint on residential or higher value commercial development north of the station.
- Most land capacity west of tracks is industrial storage yards. Significant redevelopment there may require some municipal investment in buffering against heavier industrial uses (in addition to rezoning from I-2 to commercial or mixed).
- Restricted east-west auto access along tracks may limit redevelopment upside despite ample underutilized land
- The City of Woods Cross is focused on promoting commercial development at its 900-acre Legacy Gateway site, well to the west of the FrontRunner station. While station area development is a secondary concern at the present time, priorities will likely shift in reaction to transit-oriented and transit-supportive successes further south along the line.

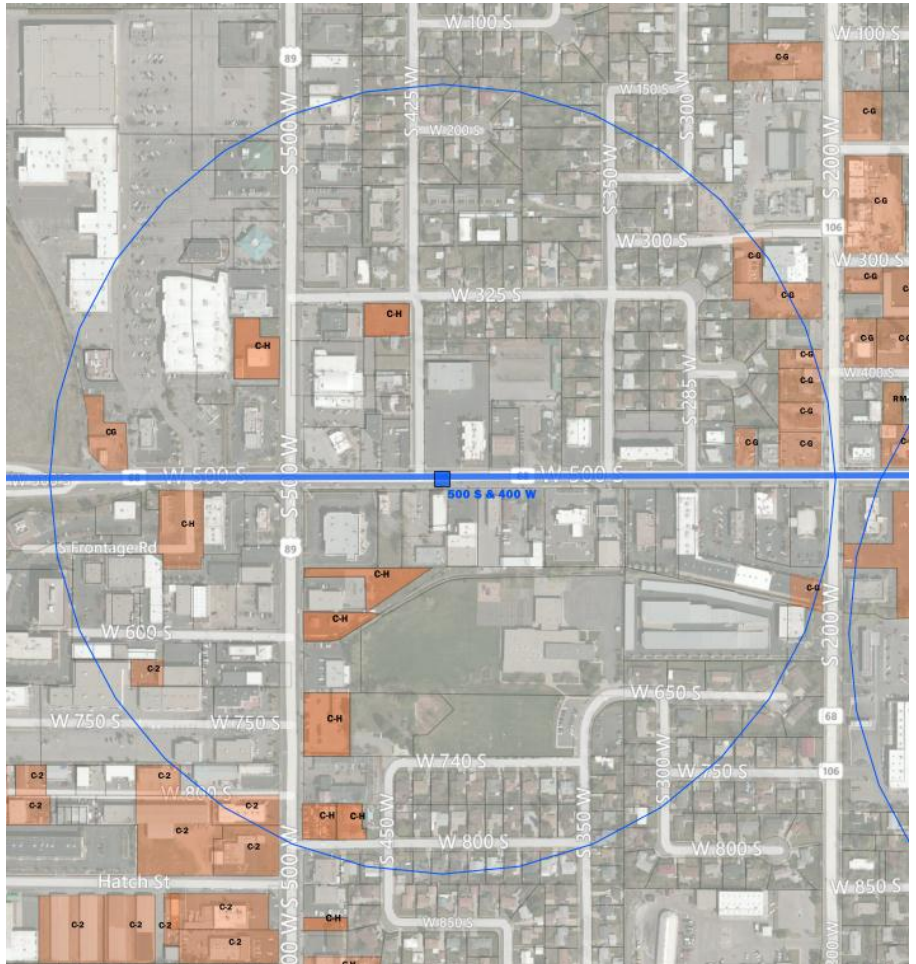




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500 S at 400 W

- Little actual vacant land.
- Station Area underutilized land capacity is primarily auto-oriented, suburban density retail uses.
- Some borderline underutilized parcels (particularly directly north of the proposed station) also appear soft would benefit from redevelopment in mid- to longer term.
- Transit has potential to help re-oriented development to the street, but would need to be coupled with streetscaping.





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600 S at Main St.

- Decent residential densities in immediate station area
- Underutilized parcels north of 500 S may be too physically separated from station area to benefit directly from transit.
- Rite Aid (with large surface lot) just northeast of stop is actually borderline underutilized and probably represents most logical TOD site in long term.
- Linkage to downtown would require substantial investment in improving pedestrian connection across 500 S.
- Opportunity to leverage library as activity-generator in support of transit.





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1700 S / Renaissance Town Center

- One of most promising overall TOD sites in Davis Corridor.
- Transit has potential to further catalyze what is already a positive revitalization effort
- Commercial (C-G) zoning of former mall site may not be as appropriate as a mixed or (a la SLC) transit-specific zoning, given that a higher-density residential component could be part of ultimate highest/best use
- Routing line through middle of development block could possibly add interest/ridership





- Majority of underutilized (and borderline) land in this portion of corridor is in use as auto dealerships and related businesses.
- These land uses contribute to pedestrian unfriendly environment and reduce potential densities around station area.
- Vehicle dealerships in this area are currently a substantial and reliable source of municipal sales tax receipts. Looking into the mid-term and long-term future of the corridor, one challenge will be to ensure that a gradual conversion to more transit-supportive land uses can occur without jeopardizing this important



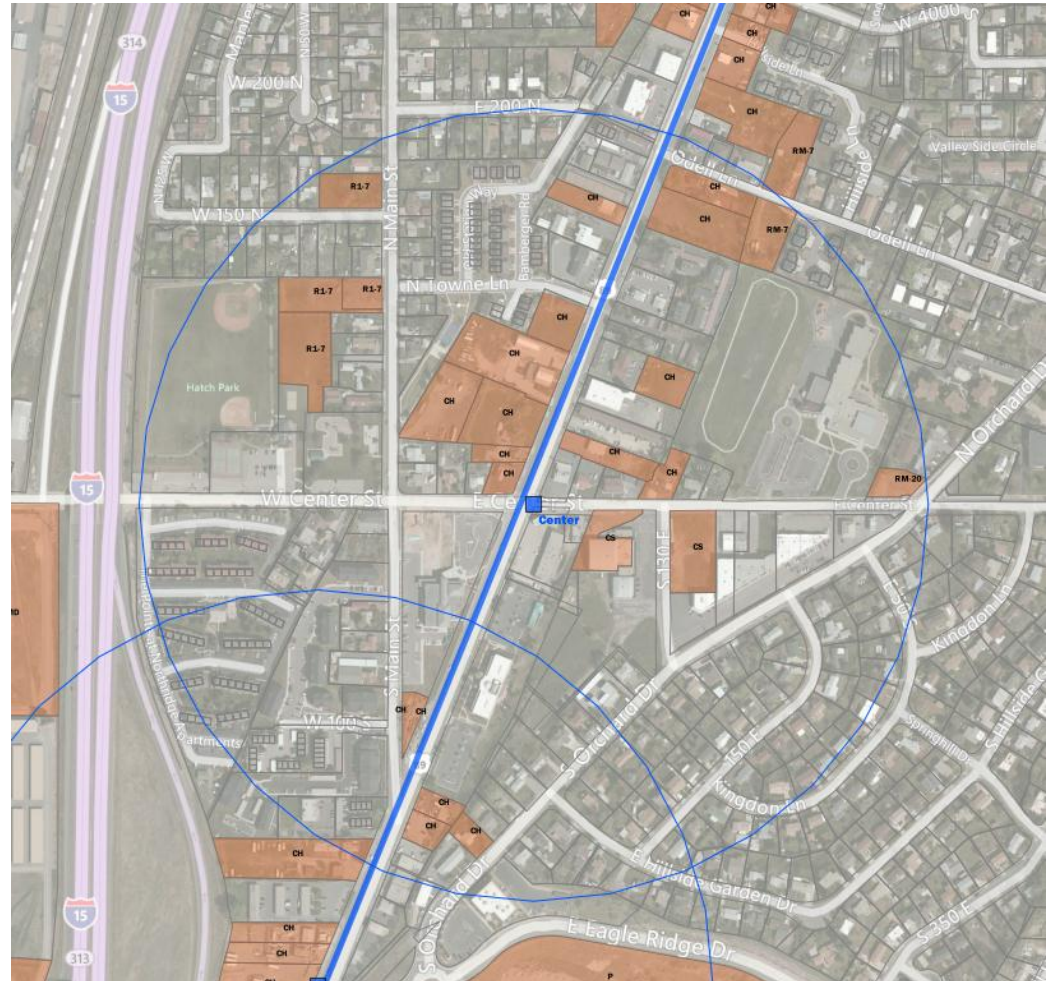


- More dealerships and auto-oriented, lower-density properties make up much of this station area's capacity
- Triangular enclave of unincorporated Davis County south of station presents a potential challenge to planning coordination
- With some assistance in land assembly and a strengthened pedestrian environment, parcels northeast of station (auto pawn and vacant restaurant) may represent TOD revitalization opportunity





- New NSL City Hall facility south of Center St. has potential as activity generator, but currently designed as strictly auto-oriented.
- Some lower density commercial parcels, especially north of Center, may hold redevelopment potential, but may fare better in long run with mixed or transit-oriented zoning, rather than CH.
- Some increase residential density near that station area could help boost ridership.

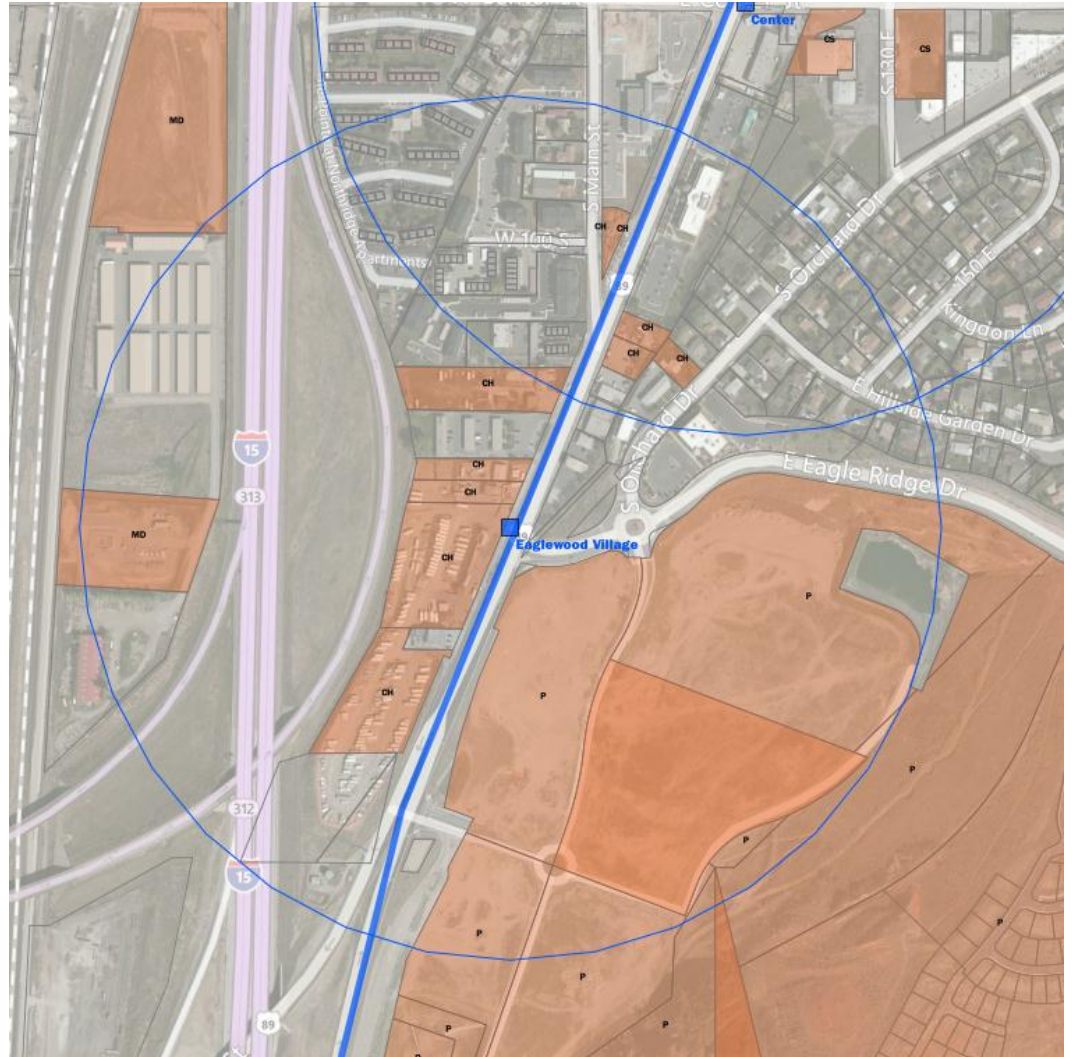




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Eaglewood Village

- Like the Renaissance Town Center area in Bountiful, this project area has overcome a recession-interrupted start to show some attractive higher-density results on the ground.
- Apartment product built in first phase is potentially quite transit-supportive and renewed design coordination could make it transit-oriented over time, particularly with a more robust BRT system.
- Nearby vacant parcels remaining southeast of stop are likely to be retail-heavy commercial, while those further out will be a mix of uses, decreasing in density away from the station area.
- As with 1700 S, consider strong integration of transit through the site as way to boost ridership and enhance property values. Workers living here will need attractive, well-amenitized transit offering to avoid temptation of driving the short distance to downtown Salt Lake City.





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400 W (both alternatives, different stop location)

- The BP-zoned Tesoro parcels west of Beck St. could represent some redevelopment potential for this station, but sloped terrain to the east of Victory likely precludes future development
- Station area placement under Alternative B is somewhat more favorable to transit-oriented development, although still a very industrial setting currently.
- Although not identified as underutilized here, the self storage facility between Beck St. and Victory Rd. (north of the newer North Gateway Park) could be viewed as a long term redevelopment opportunity
- Generally speaking, redevelopment in this area may partly be a function of the long-term viability of existing refinery and related operations. Repurposing of those site would be expected to entail varying degrees of additional development expense due to required clean up.

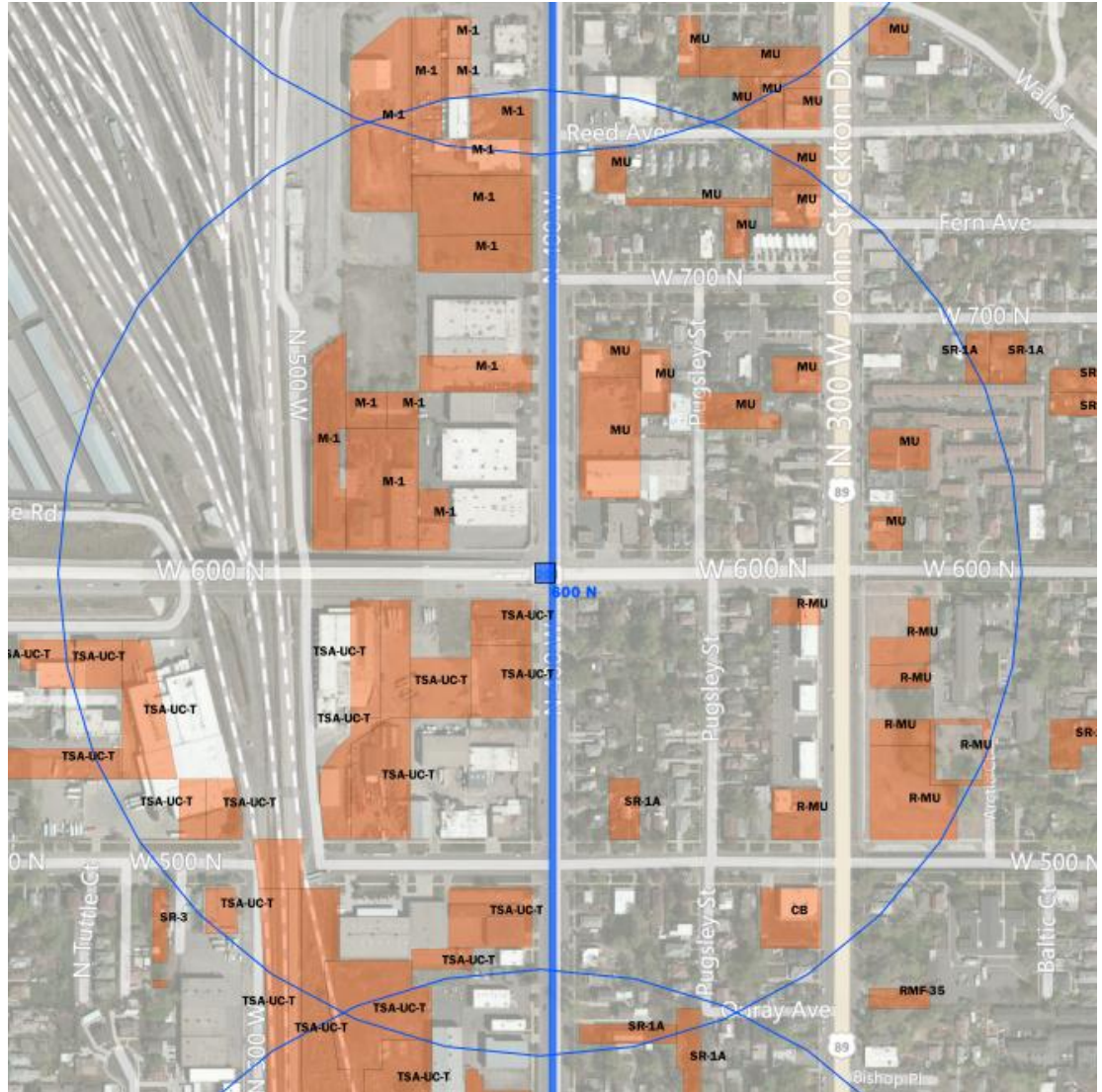




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600 North at 400 W. (Alt. B only)

- Vacant and, especially, underutilized parcels are prevalent in this station area.
- Northwest of the proposed station these tend to be lower density industrial uses with M-1 zoning.
- Transit Station Area zoning can be found in abundance to the southwest of the station site, presenting a strong potential opportunity for higher density redevelopment
- Marmalade Block redevelopment activity southeast of proposed station area, is a sign of strongly transit-supportive momentum (although a bit detached from the 400 W alignment location)..
- Various planned and proposed changes to 300 W. in this area, including bike-pedestrian improvements, angled parking, bulb-outs and an enhanced median, are all potentially transit friendly investments, with potential to spur future transit-supportive development.

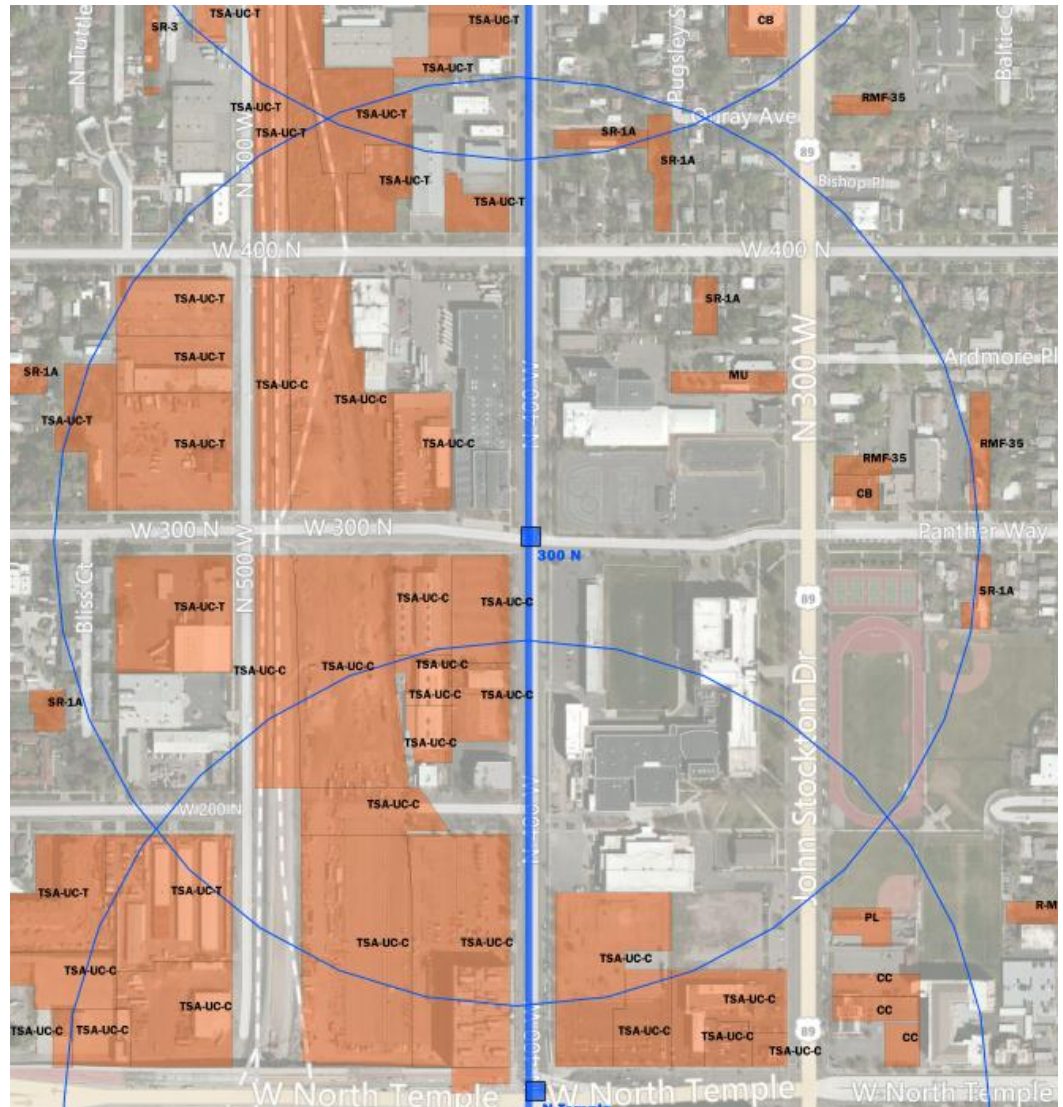




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300 North at 400 W.; and North Temple at 400 W(Alt. B only)

- In terms of sheer acreage and allowable density found along area parcels, the 300 North and North Temple station areas for Alternative B have the best chances for significant revitalization impacts, at least within the Salt Lake City portion of the corridor..
- Opportunity sites are almost entirely west of the 400 W. alignment
- TSA-zoned parcels west of 500 W. are potentially transit-supportive, but probably too far from proposed station locations to be actually transit-oriented.

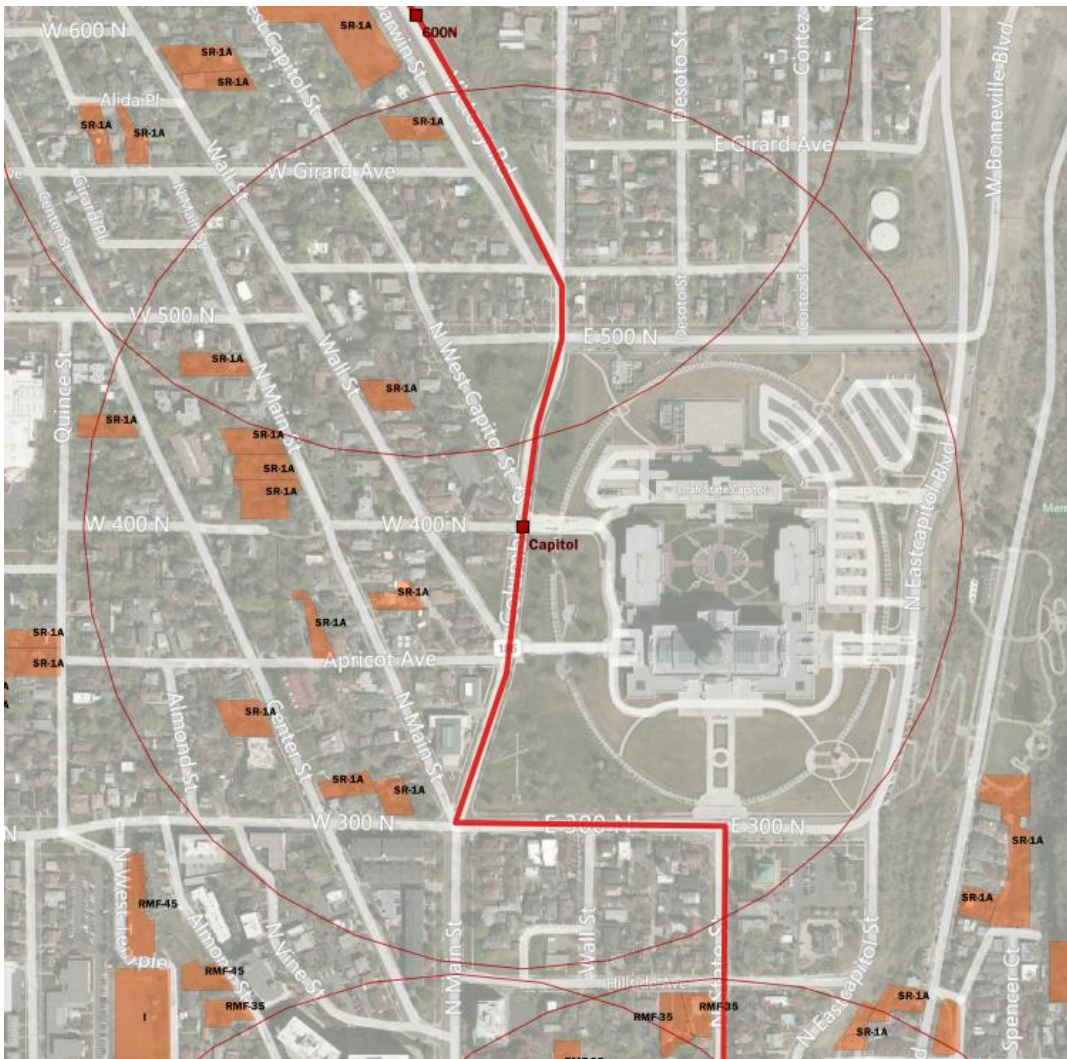




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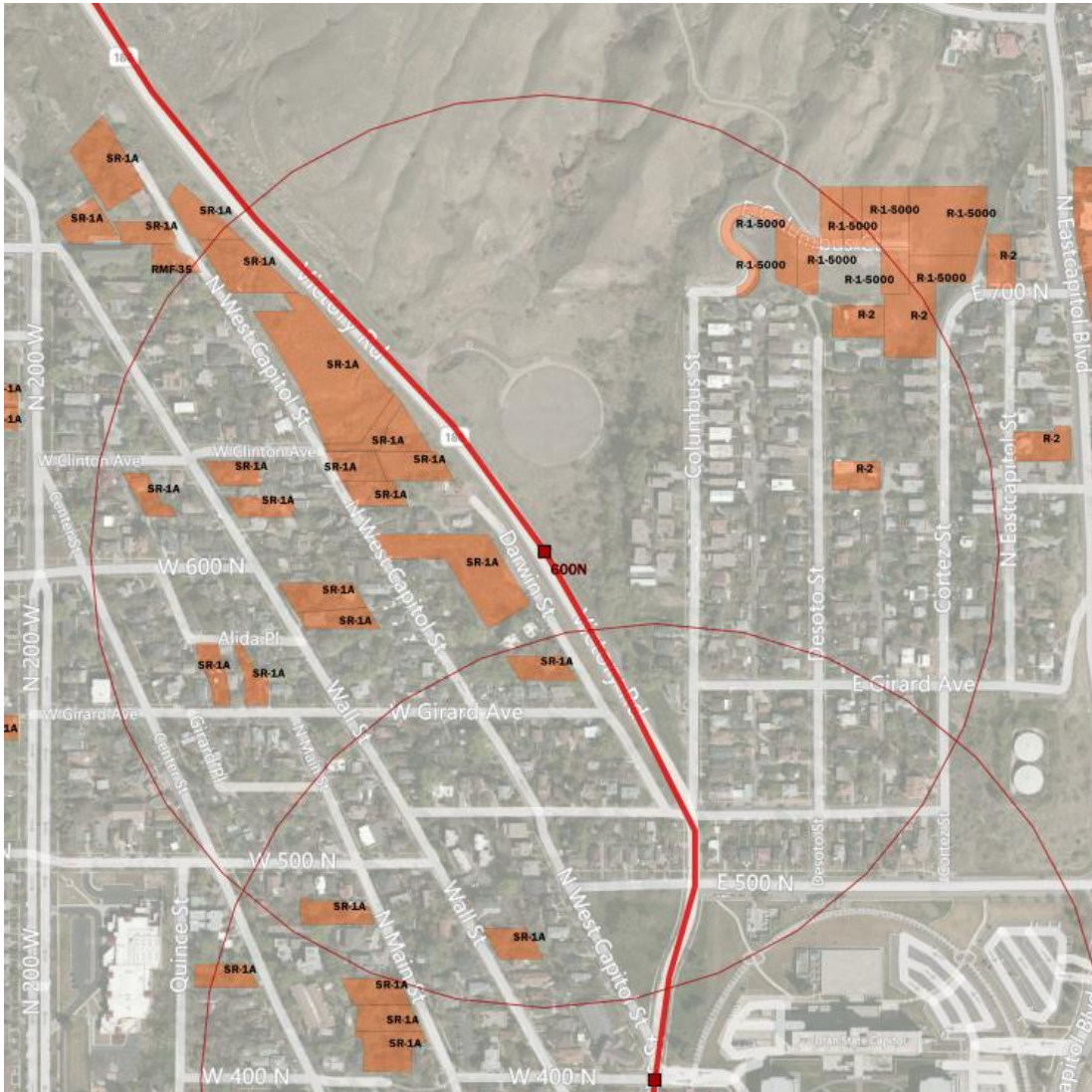
Capitol (Alt. A only)

- SR-1A zoning, the only capacity zoning designation available around this stop, is not conducive to transit oriented development.
- While that zone works to protect the larger lot size characteristic of the historic Capitol Hill neighborhood, selective rezoning could help encourage higher residential density around this station





DAVIS-SLC COMMUNITY CONNECTOR STUDY



600 N at Victory (Alt. A only)

- SR-1A zoning, the only capacity zoning designation available around this stop, is not conducive to transit oriented development.
- While that zone works to protect the larger lot size characteristic of the historic Capitol Hill neighborhood, selective rezoning could help encourage higher residential density around this station



DAVIS-SLC COMMUNITY CONNECTOR STUDY

North Temple, at State and at Main (Alt. A only)

- In terms of existing activity centers and connections to rail based transit, these stations are very important from a ridership standpoint.
- Redevelopment opportunities are scarce, however in this heavily built-out portion of downtown
- Parcels identified as underutilized with multifamily zoning tend to be currently in use as parking or ancillary structures in conjunction with established apartments. As such, they are unlikely to see significant redevelopment without dramatic upward movement in land prices.

