Revised Report

Economic Value & Community Benefits of Resident Housing Investment

The Economics of Land Use

Prepared for:
Vail Local Housing Authority

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EPS #183136

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Table of Contents

List of Tables

List of Figures

1. Executive Summary

Background

The Town of Vail has made significant financial investments in resident housing over many decades. Such investments are rooted in an awareness that affordability and availability of housing for residents and the workforce benefit the broader Vail economy, business community, the overall community character, and the quality of the guest experience.

One of Vail's more innovation and effective investment strategies has been deed-restriction acquisitions, in which the Town appropriates funds annually to ensure that homes are available for residents and the workforce. A new deed restriction purchase program, called Vail InDEED, was recently created to ensure Vail meets its 2027 Vail Housing 2027 Strategic Plan goal of acquiring 1,000 additional resident housing unit deed restrictions by the year 2027.

In times of competing community investment priorities and alternatives, it is important that the benefits of resident housing investment are quantified and understood by the community and its leadership. For this purpose, the Vail Local Housing Authority (VLHA) contracted with Economic & Planning Systems (EPS) to quantify the economic value and community benefits of resident housing investment on the local economy and community.

Each investment in one resident housing unit generates an annual return as well as provides economic benefit.

#1 - The direct return back to the Town of Vail from an investment of $65,000 in one unit of housing is **$3,239 in the form of local sales tax and revenue for local students**. The annual return on investment to the Town is **5 percent** of the initial investment.

#2 - Nearly **$312,500 is provided from one unit in the form of community benefits, economic value, and opportunity costs** to the community as a whole. This return to the community is more than four times the initial investment by the Town, resulting in **an investment multiplier of 4.81X**.

Metrics

At the root of the Town's resident housing investment policies, deed restricted homes ensure that year-round residents can live and work locally, which ripples through the economy and reinforces the stability of other sectors of the economy. It impacts the character of the community through greater potential civic/resident engagement and presence of school-aged children. It also improves the quality of the guest experience. In this analysis, these and other elements are presented collectively and stated in terms of the following broader metrics:

ECONOMIC VALUE

With an expanded inventory of housing, numerous sectors of the business community benefit, in that a portion of previously unfilled positions become filled. This increased economic activity ripples through the local economy supporting other business-to-business economic activity, as well as new household spending.

The annual economic value of an investment in **100 units of resident housing** ($6.5 million) is:

- **$18.1 million** as a result of an increase in filled positions,
- **$2.6 million** in increased local household spending, and
- **$116,000** in new local sales tax revenue.

COMMUNITY BENEFIT

Maintaining and sustaining a sense of community is fundamental to Vail's economy, its character, and its longevity. The presence of residents enhances the community's vitality and increases the quality of the guest experience. For those benefiting from resident housing, less time on the road may grant them flexibility to volunteer their time or be more engaged in the community. For visitors and guests, fewer unfilled positions means greater attentiveness to customers and a higher-quality guest experience.

The annual community benefits of an investment in **100 units of resident housing** ($6.5 million) include:

- the elimination of over 40,000 commute hours resulting in **$825,000** in the value of time savings,
- a reduction of **845 metric tons of carbon emissions ($MTCO_2e$)**,
- **$207,000** in State of Colorado revenue in the form of back-fill for 26 school-aged children, and
- **$1.2 million** in volunteer labor.

OPPORTUNITY COST

If it did not invest in resident housing, Vail would need to commit potentially greater monetary investments in structured parking and/or transit services. Moreover, not investing in resident housing also perpetuates the annual costs of worker turnover, new-hire training, and lost productivity in the business community.

The annual opportunity cost of an investment in **100 units of resident housing** ($6.5 million) is:

- **$11.3 million** in avoided construction cost for 113 parking spaces and
- **$841,000** in saved costs to businesses for worker turnover, training, and lost productivity.

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2. Methodology

As noted in the introduction, this approach encompasses three main components of economic value and community benefit: the economic value; the community benefits; and the opportunity costs. This section outlines the data and assumptions for the analysis.

Data Sources

A variety of primary and secondary data sources were used in the analysis. Research and interviews also supplemented the quantitative and qualitative elements of the analysis. The following sources were essential to the construction of the methodology:

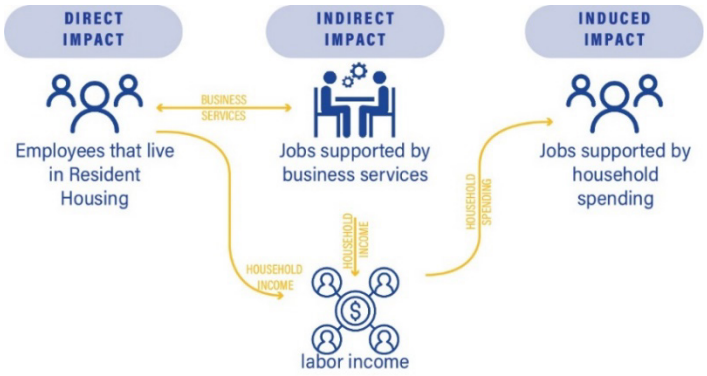
- U.S. Census Longitudinal Employee Household Dynamics. Prevalence of in-commuting workforce to Vail.
- Colorado Department of Labor & Employment, Quarterly Census of Employment & Wages. Number of jobs by industry for Vail.
- Colorado Statewide Nonprofit Industry Survey, 2018. Nonprofit industry jobs in Eagle County's workforce and the rate of per-capita volunteerism.
- U.S. Bureau of Labor Statistics. Value of volunteerism per hour.
- Colorado Department of Transportation. Aggregate vehicle miles travelled (VMT) in Eagle County.
- U.S. Environmental Protection Agency. Calculations for estimating carbon emissions.
- Eagle County Housing Study and Greater Roaring Fork Regional Resident & Employer Survey, 2018. For assumptions regarding rate of carpooling, persons per household, multiple job-holdings.
- IMPLAN. Input-output data for Eagle County at the zip code level.

Types of Economic Impacts

In terms of quantifiable economic contributions, metrics included in this analysis have been run through IMPLAN input-output modeling software. IMPLAN is structured to account for trade flows and industry profiles within the defined economic unit—in this case, the Town of Vail, as represented by the 81657 zip code. This type of modeling generates a trove of information, which when consolidated with other information, can be used to estimate the "multiplier effect" on an initial investment.

Specifically, a multiplier effect is a ratio that characterizes the relationship between the total of successive rounds of spending resulting from an initial investment combined with the initial investment itself. For example, the multiplier in this analysis is calculated as the composite per-unit economic value and community benefit divided by the Town's per-unit investment.

There are also three layers of economic impacts. These layers are defined as they relate to Vail's investment in resident housing:



Economic Impact Terminology

Direct Impacts are the dollar amounts of net new local resident spending and the net new economic activity related to greater number of filled positions. These dollar amounts refer to the first round of spending in an economy.

Indirect Impacts are the dollar amounts associated with the business-to-business relationships, such as the real estate activity, the purchase of equipment, or the demand for professional services such as legal, financial and administrative services that may be procured in the process of meeting demand for a "direct" industry's good or service. These are referred to as the second round of spending.

Induced Impacts are activities resulting from the expenditures made by households of the direct and indirect industry jobs. They are typically retail and service-sector oriented impacts that are created by what is typically referred to as the third round of spending.

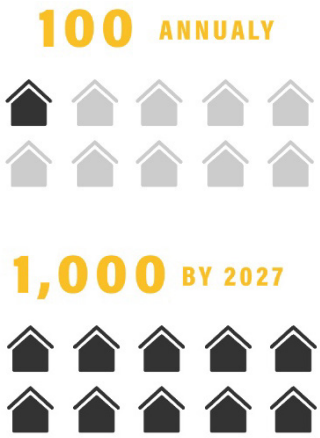
Assumptions

There are two main layers of assumptions in this analysis: 1) the overarching investment goal on which the analysis is based; and 2) the underlying assumptions used to quantify relationships between, for example, the number of persons per housing unit or the rate of carpooling among all in-commuting workers.

Resident Housing Investment

Housing Targets

As previously noted, the premise of this analysis is rooted in the Vail Housing 2027 Strategic Plan adopted goal of acquiring 1,000 additional resident housing unit deed restrictions by the year 2027. The goal means that the Town is targeting, on average, the acquisition of 100 deed restrictions units per year.



Housing Investment

Based on a detailed accounting of the most recent (116) deed restrictions placed on homes in Vail (between January 2017 and May 2019), data which were obtained from the VLHA, the Town invests an average of approximately $65,000 per unit. It is against this core assumption that the metrics of return on investment and the overall investment multiplier are calculated.

Table 1. Vail InDEED Summary

Vail InDEED Program	Units	Price per Deed
2019 (YTD May)	11	$94,618
2018	40	$57,105
2017	65	$65,000
Total	**116**	**$65,327**

Source: Town of Vail; Economic & Planning Systems

Underlying Assumptions

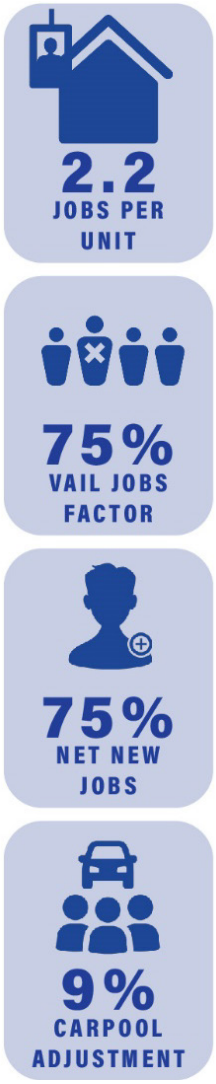
The following are additional assumptions that quantify the relationship between housing units and persons, local job-holdings, net new jobs, and carpooling.

Jobs per Unit. Primary data collected locally and regionally indicate that there is an average of 2.2 jobs per household, meaning that 220 jobs would be represented by 100 households in 100 housing units.

Vail Jobs. As mentioned previously, the Vail InDEED program requires that a property be occupied as a primary residence by individuals who work a minimum of 30 hours per week in Eagle County. Based on an annualized 40-hour work week, this could be approximated as 75 percent of income (and thus, employment) is originated in Eagle County. For purposes of this analysis, it is an aggregated assumption that 75 percent of job-holders in the resident housing units are working in Vail (165 jobs).

Net New Jobs to Economy. The analysis also assumes that 75 percent of these Vail jobs held by occupants of resident housing units are net new to the economy (i.e. that they are filling unfilled positions or enabling employers to add new positions). This means that 124 of the 165 jobs are estimated to be new to economy, whereas the remainder of the 165 would have previously commuted in to their jobs in Vail.

Carpooling. Primary data collected regionally indicates that an average of 9 percent of the total in-commuting workforce carpool.



3. Economic Context

This section of the report provides the economic context including population, housing unit, and employment trends for the Town of Vail in relation to Eagle County as a whole.

Population

Between 2000 and 2017, the Eagle Valley grew by a population of approximately 10,280, which translates to 605 residents per year. Total population reached 45,770 in 2017 (**Table 2**). In 2017, Vail represented approximately 12 percent of the Valley population, but had captured only 9 percent of the Valley's population growth since 2000.

Table 2. Population Trends, Town of Vail Capture

Population Trends 2000-17	2000	2010	2017	Total Δ	% Capture
Avon	5,561	6,447	6,503	942	9%
Eagle	3,032	6,508	6,711	3,679	36%
Eagle-Vail [1]	2,887	2,887	2,887	0	0%
Edwards	8,257	10,266	9,202	945	9%
Gypsum	3,654	6,477	6,926	3,272	32%
Red Cliff	289	267	297	8	0%
Minturn	1,068	1,027	1,141	73	1%
Vail	4,531	5,305	5,425	894	9%
Unincorp. Eagle Valley	6,211	5,283	6,678	467	5%
Eagle Valley	**35,490**	**44,467**	**45,770**	**10,280**	**100%**

[1] Eagle-Vail did not appear on the 2010 decennial census as a CDP.

[2] Eagle Valley is defined as Eagle County less the Roaring Fork Valley (census tract 3.01 block groups 1-3 and tract 3.02 block group 2)

Source: U.S. Census American Community Survey 5-year estimates; Economic & Planning Systems

Housing Units

Growth in housing inventory in Vail outpaced population growth considerably (**Table 3**). By a factor of more than two to one, more than 1,800 housing units were added to the Town's housing unit inventory, indicating that second homeownership comprised a majority of the ownership of the new inventory.

Table 3. Housing Unit Trends, Town of Vail Capture

Housing Unit Trends 2000-17	2000	2010	2017	Total Δ	% Capture
Avon	2,557	3,615	4,052	1,495	17%
Eagle	1,116	2,416	2,251	1,135	13%
Eagle-Vail [1]	1,482	1,482	1,482	0	0%
Edwards	3,953	5,260	5,386	1,433	16%
Gypsum	1,210	2,205	2,275	1,065	12%
Red Cliff	122	141	123	1	0%
Minturn	448	528	542	94	1%
Vail	5,389	7,230	7,210	1,821	21%
Unincorp. Eagle Valley	3,687	5,394	5,492	1,805	20%
Eagle Valley[2]	**16,277**	**22,877**	**23,321**	**8,849**	**100%**

[1] Eagle-Vail did not appear on the 2010 decennial census as a CDP.

[2] Eagle Valley is defined as Eagle County less the Roaring Fork Valley (census tract 3.01 block groups 1-3 and tract 3.02 block group 2)

Source: U.S. Census American Community Survey 5-year estimates; Economic & Planning Systems

Employment

In 2018, Vail had an estimated 8,400 wage and salary jobs (**Table 4**), accounting for 25 percent of the Valley's total employment. Between 2001 and 2018, the Town added close to 1,300 jobs, capturing 30 percent of the Valley's growth. The highest growth area in the valley took place in Avon/Beaver Creek, which captured 44 percent of the Valley's new employment, and (as the definition indicates) includes two distinct commercial nodes of activity.

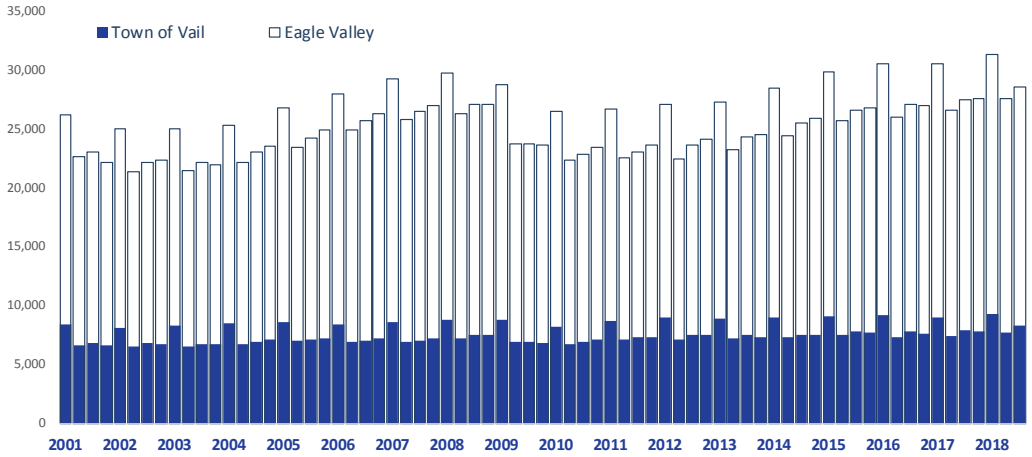
Table 4. Employment Trends, Town of Vail Capture

Employment Trends 2001-18	2001	2010	2018	Total Δ	% Capture
Avon/Beaver Creek	7,571	7,589	9,457	1,886	44%
Eagle	3,424	3,732	4,602	1,178	27%
Eagle-Vail	50	81	110	60	1%
Edwards	3,255	3,155	3,510	255	6%
Gypsum	1,540	1,488	2,477	936	22%
Minturn	520	406	485	-35	-1%
Red Cliff	50	81	110	60	1%
Vail	7,129	7,256	8,416	1,288	30%
Eagle Valley	**23,538**	**23,790**	**29,167**	**4,316**	**100%**

Source: QCEW; Economic & Planning Systems

As shown in the following graphic (**Figure 1**), employment levels in the Town of Vail remained fairly steady over the past two decades. Although employment contracted during the Great Recession (2007-09) for the Eagle Valley, which decreased by 14 percent (a loss of 3,800 jobs), Vail remained relatively steady.

Figure 1. Town of Vail & Eagle Valley Employment Trends



4. Findings

There are two primary measurements of economic value and community benefits estimated in this analysis: 1) return on investment; and 2) investment multiplier.

Return Metrics

The initial investment of $65,000 per unit of resident housing yields magnitudes of more economic value and community benefit than alternatives such as persistent business cost of worker turnover and structured parking.

Return on Investment (ROI)

Although many of the broader metrics of benefit can be considered "returns on investment," an ROI measured from the perspective of the investment of 'public dollars in' and 'public dollars out' captures the two most salient fiscal impacts.

The annual returns on the initial investment are comprised of sales tax revenues flowing back to Vail annually and the State of Colorado's per-unit student back-fill for the school-aged children living in resident housing is approximately $2,000 per year (see the following technical discussion for details on this calculation).

This means that, calculated as a standard investment divided by its returns, the Town's (public) return on investment is 5.0 percent. This aligns on the higher end with typical yields on governmental investment.

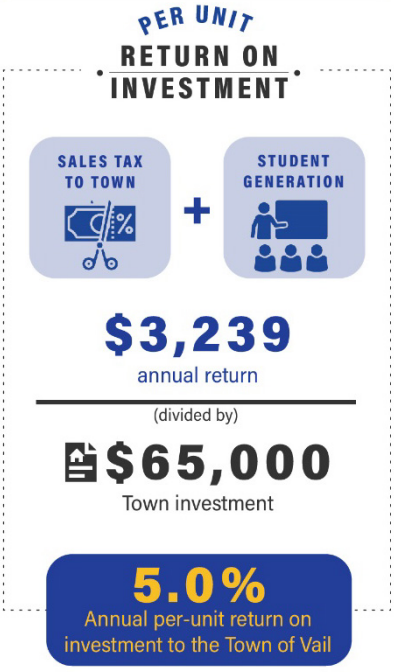


Table 5. Return on Investment

Return on Investment Per-Unit Investment ROI	per-Unit
Returns	
Annual Resident Household Spending Sales Taxes	$1,165
Annual State per-Pupil Apportionment	$2,074
Subtotal Returns	**$3,239**
Investment ROI	
Return	$3,239
Initial Investment	$65,000
ROI	**5.0%**

Source: Economic & Planning Systems

Investment Multiplier

This metric accounts for the economic activity captured by direct, indirect, and induced spending. Examples of components within this metric include: a) the broader economic metrics such as the economic value (which includes taxable spending and the fiscal benefit) to Vail; b) community benefits; and c) the opportunity costs such as investing in parking annually to accommodate a similar level of employment growth as well as the ongoing costs to the business community of worker turnover and lost productivity.

Taking into account each of these components, the net multiplier of the Town's investment at $65,000 per unit is nearly five (5) times at 4.81X. In benefit-cost analysis (BCA), public entities are typically trying to achieve a multiplier of three (3) to five (5) times the initial investment.

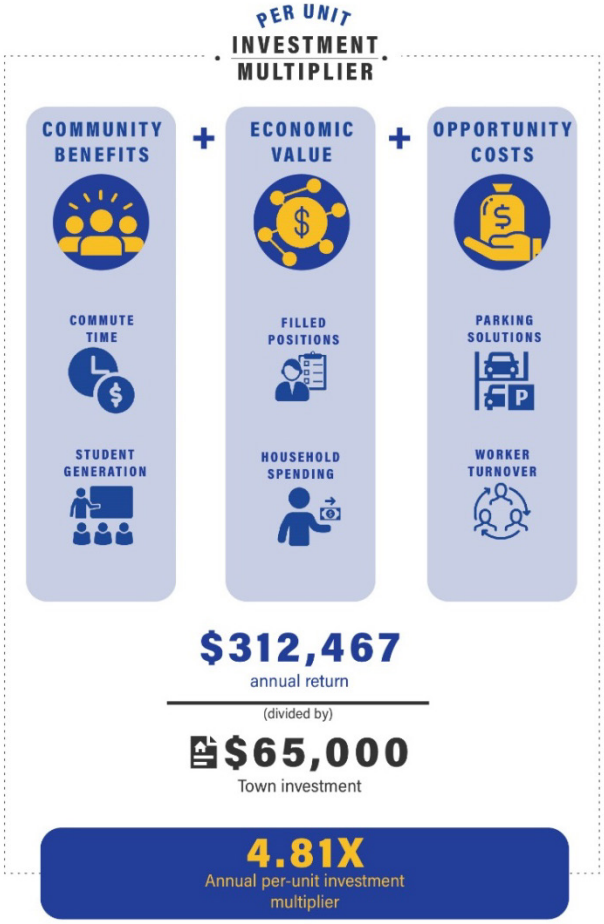


Table 6. Investment Multiplier

Return on Investment Per-Unit Investment Multiplier	per-Unit
Economic Metrics	
Annual Expansion of Economy	$181,122
Annual Net New Resident Household Taxable Spending	$21,174
Annual Sales Tax Revenue Generation	$1,165
Subtotal Economic Metrics (Net) [1]	**$181,122**
Community Benefits	
Annual Household Value of Reduced Commute Time	$8,249
Annual Per-Pupil State Backfill	$2,074
Subtotal Community Metrics	**$10,323**
Opportunity Cost	
Annual Cost of Worker Turnover	-$8,410
Cost of Structured Parking	-$112,613
Subtotal Opportunity Cost Metrics	**-$121,022**
Investment Multiplier	
Composite Return	$312,467
Initial Investment	$65,000
Multiplier	**4.81x**

[Note 1]: The net new resident household taxable spending and associated sales tax revenue generation are displayed for informational purposes; they are, however, theoretically incorporated in the total annual expansion of the economy.

Source: Economic & Planning Systems

Community Benefits

For each unit of resident housing, an estimated 400 hours of time and 950 gallons of gasoline are saved from shorter commutes every year—equating to greater business productivity and an opportunity for residents to give back to their community.

Reduced Commute Times

More than 40,000 annual commuting hours are avoided by an investment in 100 resident housing units. This equates to approximately $825,000 in value of time ($20.40 per hour of intercity travel). It should be noted that this benefit is capitalized within the expanded economy calculations shown earlier and not additive to the investment multiplier estimate.

Table 7. Value of Time

Value of Time Saved not Commuting	Factor	Value
Total Jobs in Resident Housing	2.2	220
Vail Jobs in Resident Housing	75%	165
Estimated Local Job-Cars	**9%**	**150**
Commute Minutes per Year		2,426,101
Commute Hours per Year		40,435
Value of Time for Intercity Travel (2018)		$20.40
Value of Time Saved not Commuting		**$824,874**
Per-Unit		$8,249

Source: LEHD on the Map; U.S. Department of Transportation; Economic & Planning Systems

Reduced Carbon Emissions

The analysis of environmental impact assumes that fewer workers need to commute in to their jobs, decreasing distance traveled and reducing carbon emissions. It further assumes that a greater number of workers will utilize Vail's free public transit.

An analysis of the in-commuter distribution shows that the average one-way distance traveled to Vail is approximately 63 miles (**Table 8**).

Table 8. Reduction in Carbon Emissions

Metric Tons of Carbon Monoxide Equivalency ($MTCO_2e$)	All In-Commuters	Resident Housing In-Commuters
Average Distance Travelled	63.3 miles	29.6 miles
# Commuters	3,276	150
Aggregate Vehicle Miles Travelled (VMT)	414,586	8,882
Agg. VMT / Year	103,646,600	2,220,594
Aggregate $MTCO_2e$	**39,447**	**845**
as % of All In-Commuters		2.1%

Source: LEHD on the Map; Economic & Planning Systems

It is generally assumed that in-commuters living in closer proximity to Vail will account for larger shares of new occupants of resident housing. As such, it was assumed that the average distance traveled by new occupants of resident housing would have traveled 30 miles.

Over the course of a year, this reduction in commute time totals more than 2.2 million miles and represents more than 2 percent of all vehicle miles traveled by in-commuters. As a result, overall carbon emissions are reduced in the Vail Valley by 845 metric tons (2 percent of total estimated Vail in-commuter carbon emissions). It means that in-commuters save more than 95,000 gallons of gasoline per year. This annual savings means that enough energy is saved to charge more than 107 million iPhones, and is equivalent to the air-scrubbing benefits of nearly 14,000 tree seedlings grown for more than 10 years.

Table 9. Environmental Impact

The Environment	Value
Equivalencies of Carbon Emissions	
Emissions Reduction (MTCO2e) from Shorter Commutes	845
Gallons of Gasoline Consumed (equivalent)	95,083
Number of Smartphones Charged (equivalent)	107,747,909
Tree Seedlings Grown for 10 Years (offset)	13,972

Source: U.S. Environmental Protection Agency; Economic & Planning Systems

Volunteerism

In a typical community, a portion of residents volunteer their time to local nonprofits, including the health care industry, arts and entertainment, or other community-oriented and civic services.

Using primary data from a statewide study of the nonprofit industry conducted in 2018, it is estimated that volunteerism among the population in resident housing could be as high as 200 hours per year. This would contribute more than $1.2 million in labor value to the nonprofit community in Vail (at $28.02 per hour of volunteer time).

Table 10. Value of Volunteerism

Value of Volunteerism	Factor	Value
Total Resident Housing Units		100
Jobs per Unit		2.2
Total Jobs in Resident Housing		220
Estimated Volunteer Hours per Year	201 [1]	44,118
Value of Volunteer Time (in CO)		$28.02
Estimated Value of Volunteerism in Vail		**$1,236,200**
Per-Unit		$12,362

[1] Average annual hours of volunteering per year among nonprofits in a group of northwestern Colorado counties.

Source: Independent Sector; 2018 Colorado Nonprofit Survey; Economic & Planning Systems

Schools

An estimated 26 school-aged children are generated by the investment in 100 housing units, for which it is anticipated that the State of Colorado back-fills at a per-pupil rate of $7,945 for Eagle County. This would contribute more than $207,000 in revenues to Eagle County Schools annually.

Table 11. Schools Impact

Student Generation	Total
Town of Vail - Students to Housing Units [1]	0.26
Resident Housing Investment	100
Students Generated	**26**
Per Pupil Revenue (Eagle County Schools)	$7,945
Eagle County School Revenue	**$207,449**
Per-Unit	$2,074

[1] U.S. Census American Community Survey 5-Year Estimates

Source: Economic & Planning Systems

Quality of Guest Experience

There is direct linkage between the quality of the guest experience and the supply of local employees. As part of this study, a range of employers were interviewed across a variety of sectors. Those with a high level of interaction with guests, such as food and beverage or services establishments, noted that they are concerned about their ability to maintain a high quality level of service given limited staffing resources. In the case of one restaurant, it chose to close down seating sections to concentrate the available servers. From its perspective, the loss of revenue is a reasonable tradeoff, given the otherwise slow pace of operations.

Other business owners commented that certain high-demand weeks, where the community is operating at both peak capacity and peak price point, the service can be the slowest. As Vail's customer base evaluates its options, it may consider other destinations that can provide the service expected with Vail's price point. The ability to deliver a high quality guest experience is directly correlated to Vail's competitive position, not only among ski town destinations but also warm weather destinations.

Vail's future economic vitality depends on the ability of businesses to fill positions. There is concern among some business owners about a decline in quality service in the recent past. Unfilled positions and the related service quality decline in Vail may continue without investment in solutions to attract and retain talent. It was also noted that guests are likely to feel more connected to Vail if they interact with employees who live locally, over an extended period of time, who are invested in the community. This type of employee conveys a commitment that resonates with guests and reinforces the premium brand Vail has built over the decades.

Economic Value

Expansion of the Economy due to Filled Positions

The availability of additional homes for residents and the workforce translates to a greater jobs market and fewer unfilled positions. It is estimated that approximately 123 full- and part-time positions would be filled as a result of Vail's resident housing investment (100 units), thereby expanding Vail's economy by an estimated $18.1 million annually (1.2 percent increase).

Table 12. Expansion of Total Spending in Vail Economy

Return on Investment	Ripple Effects (Total Output Expansion)			
Local Business Revenue	Direct	Indirect	Induced	Total
11 Ag, Forestry, Fish & Hunting	$76,853	$698	$267	$77,818
21 Mining	$0	$7,244	$210	$7,454
22 Utilities	$0	$5	$7	$12
23 Construction	$2,838,283	$81,277	$14,527	$2,934,087
31-33 Manufacturing	$0	$4,607	$1,237	$5,844
42 Wholesale Trade	$610,911	$20,786	$7,855	$639,552
44-45 Retail trade	$906,678	$248,706	$259,371	$1,414,755
48-49 Transportation & Warehousing	$0	$79,051	$28,983	$108,034
51 Information	$0	$39,827	$22,752	$62,579
52 Finance & insurance	$459,252	$438,401	$204,832	$1,102,485
53 Real estate & rental	$741,771	$520,976	$397,111	$1,659,858
54 Professional- scientific & tech svcs	$458,698	$283,170	$46,160	$788,028
55 Management of companies	$0	$156,752	$17,180	$173,932
56 Administrative & waste services	$240,281	$87,143	$19,199	$346,623
61 Educational svcs	$237,132	$6,627	$42,498	$286,257
62 Health & social services	$365,213	$3,600	$361,779	$730,592
71 Arts- entertainment & recreation	$890,357	$63,417	$60,260	$1,014,034
72 Accommodation & food services	$2,904,377	$65,913	$172,932	$3,143,222
81 Other services	$2,763,965	$87,711	$102,288	$2,953,964
92 Government	$625,894	$17,191	$19,979	$663,064
93 Non NAICs	$0	$0	$0	$0
Annual Expansion of Economy	**$14,119,665**	**$2,213,102**	**$1,779,427**	**$18,112,194**
Per-Unit	$141,197	$22,131	$17,794	$181,122

Source: Economic & Planning Systems

Resident Household Spending

Local resident households spend more of their income on retail goods and services in Vail than the daily spending patterns of in-commuters. It is estimated that Vail's resident housing investment yields a net new local resident household spending of approximately $2.6 million per year.

Town of Vail Fiscal Benefits

Out of the net new local resident household spending it is estimated that $2.1 million is *taxable* spending, which generates more than $116,000 of sales tax revenues for Vail per year.

Table 13. Expansion of Total Spending in Vail Economy

Return on Investment	Total	Taxable Ann. Tax Rev
Net New Local Spending		5.5%
11 Ag, Forestry, Fish & Hunting	$98	
21 Mining	$145	
22 Utilities	$2	
23 Construction	$12,064	
31-33 Manufacturing	$610	
42 Wholesale Trade	$3,296	
44-45 Retail trade	$1,703,757	$1,703,757 $93,707
48-49 Transportation & Warehousing	$29,821	
51 Information	$10,066	
52 Finance & insurance	$71,120	
53 Real estate & rental	$179,977	
54 Professional- scientific & tech svcs	$56,138	
55 Management of companies	$39,085	
56 Administrative & waste services	$14,980	
61 Educational svcs	$8,384	
62 Health & social services	$57,040	
71 Arts- entertainment & recreation	$12,994	
72 Accommodation & food services	$413,628	$413,628 $22,750
81 Other services	$30,088	
92 Government	$6,318	
93 Non NAICs	$0	
Annual Net New Spending	**$2,649,611**	**$2,117,385 $116,456**
Per-Unit	$26,496	$21,174 $1,165

Source: Economic & Planning Systems

Opportunity Costs

In this analysis, two primary metrics are considered opportunity costs: 1) the Town's alternative of investing in structured parking for in-commuters; and 2) business costs associated with worker turnover, training, and lost productivity. It is acknowledged that another alternative Town investment to structured parking could be enhanced transit services and the capital and operational costs associated with it. For the purposes of simplifying the analysis, structured parking was evaluated as the core alternative.

Every year that Vail does not invest in resident housing and seeks to accommodate or incent economic growth means that either: a) Vail must build parking to accommodate the growing number of in-commuters and guests; or b) Vail's business community must endure perpetual business costs associated with worker turnover, training, and lost productivity.

In the overall analysis, opportunity costs are capitalized into estimates of return (i.e. the investment multiplier calculation) since they represent avoided costs to the economy.

Parking

The first of the opportunity costs relates to the costs of accommodating an expanding in-commuting workforce.

This cost is based on the recent construction of structured parking in Vail at approximately $100,000 per space, but does not include the cost of land.

Table 14. Parking Impact

Opportunity Cost Parking Investment	Factor	Value
Resident Housing Investment		100
Jobs Represented by Housing Investment	2.2	220
Vail Jobs	75%	165
Net New Jobs to Economy	75%	124
New Cars Needing Parking	9%	**113**
TOV Parking Cost per Space		$100,000
TOV Parking Investment Opportunity Cost		**$11,261,250**
Per-Unit		$112,612.50

Source: Economic & Planning Systems

This opportunity cost is further augmented by the fact that this would be an annual cost to Vail if it were to parallel to the goal of investing in 100 units of resident housing per year.

As shown in **Table 14** above, the cost of structured parking for an approximately 113 cars per day (accounting for local/non-local jobs, net new jobs to the economy, and carpooling) would be $11.3 million.

Worker Turnover

If Vail opted to invest in resident housing (not parking), research and analysis indicates that local businesses could reduce their annual costs associated with turnover, job training, and lost productivity by an estimated $840,000 per year.

This estimate reflects the weighted average of annual turnover costs for positions in different industries at different annual wage levels.

Table 15. Worker Turnover Costs

Opportunity Cost Local Business Revenue (Cost Associated with Job Turnover, Loss of Productivity, and Training)	Factor	Value
Resident Housing Investment		100
Jobs Represented by Housing Investment	2.2	220
Vail Jobs	75%	165
Net New Jobs to Economy	75%	**124**
Average annual training cost per jobs that would otherwise "turnover"		$6,796
Annual Business Costs of Turnover, Loss of Productivity, and Training		**$840,959**
Per-Unit		$8,409.59

Source: QCEW; Center for American Progress; Economic & Planning Systems

5. Appendix

Terminology

Area Median Income (AMI) is a metric that identifies the point of a target geography's income distribution at which 50 percent of household earn more and 50 percent earn less. Percentages, such as 60, 80, 100, 120 percent of AMI are typically used to isolate levels of affordability within the distribution of households by income. The source of these data points is the Department of Housing and Urban Development, which defines local AMI annually.

Community Benefit broadly refers to the other quantitative and qualitative benefits, such as: 1) reduction in worker commute time; 2) reduction in carbon emissions resulting from shorter commutes; 3) presence of school aged children; 4) greater community and civic involvement; and 5) enhanced quality of guest experience.

Deed Restriction refers to a covenant in which it is stipulated that a property must be occupied as a primary residence by individuals who work a minimum of 30 hours per week in Eagle County.

Gross Regional Product (GRP) is a measure of regional economic activity that includes employee compensation, business/corporate profits, and local tax revenue generation.

Investment Multiplier is a measure, expressed as a ratio of broader economic returns (as measured by three components in this particular study) to an initial investment. The three components include: 1) the impact on the broader economy; 2) community benefits such as reduction in commute times and carbon emissions, increased volunteerism and presence of school-aged children; and c) the opportunity costs such as Vail alternatively investing in structured parking or enhanced transit service.

Opportunity Cost is the highest price or rate of return an alternative course of action, i.e. an investment, would yield. In this analysis, opportunity costs are characterized as: 1) the cost to provide structured parking, which could also be an alternative to increased transit service investment; and 2) the annual cost of worker turnover to the business community.

Output is a measure of total economic activity, also called "total spending", that characterizes the sum of successive rounds of industry, business-to-business, and household spending. As an example, output in the residential construction industry would be equal to the purchase price of a housing unit.

Quarterly Census of Employment and Wages (QCEW) is the Colorado Department of Labor & Employment's (CDLE) record of employment and wages for all of the state's employers. Records are reported at the individual establishment (i.e. address) level. Individual employer records are protected by confidentiality agreement.

Resident Housing refers to a deed-restricted for-sale or rental housing unit (new construction, rehabilitation, acquisition, or existing). Data to estimate the average per-unit investment were obtained through the VLHA.

Return on Investment (ROI) is an amount, typically expressed as a percentage, earned on an initial investment. The metric is calculated by dividing the initial investment (e.g. in resident housing) by the earnings before interest, debt, and taxes.

Table 16. Daytime Spending

Return on Investment Resident Household Spending (Calculation Part 1)	Input	Value
Resident Housing Investment		100
Jobs Represented by Housing Investment	2.2	220
Vail Jobs	75%	165
Net New Jobs to Economy	75%	124
Number of Previously In-Commuting Job-Holders	(Diff.)	41
Total Daily Spending by In-Commuting Job-Holders (ICSC)		$20
Annual Spending by In-Commuting Job-Holders		**$206,250**

Source: ICSC; Economic & Planning Systems

Table 17. Resident Housing Household Spending

Return on Investment Resident Household Spending (Calculation Part 2)	Value
Resident Housing Investment	100
Resident Households	100
Household Median Income (approximately 80% AMI)	$64,000
Income Spent on Retail (NAICS 44/45)	35%
Gross Income Spent on Retail	$22,400
Aggregate Income	**$2,240,000**
Food Services	$417,325
Retail	$1,822,675

Source: ICSC; Economic & Planning Systems

Table 18. Commute Detail

All Colorado In-Commuters to the Town of Vail, 2015	Distance (Miles)	Commuters
Edwards CDP, CO	14.1 miles	572
Denver city, CO	97.1 miles	295
Avon town, CO	10.0 miles	292
Eagle town, CO	30.3 miles	222
Gypsum town, CO	37.2 miles	198
Minturn town, CO	7.3 miles	125
Leadville city, CO	37.5 miles	97
Leadville North CDP, CO	37.5 miles	84
Aurora city, CO	111.0 miles	74
Colorado Springs city, CO	140.0 miles	68
Boulder city, CO	108.0 miles	67
Lakewood city, CO	92.5 miles	52
Fort Collins city, CO	157.0 miles	45
Glenwood Springs city, CO	60.9 miles	39
Breckenridge town, CO	36.0 miles	37
Highlands Ranch CDP, CO	107.0 miles	37
Centennial city, CO	108.0 miles	32
Red Cliff town, CO	16.0 miles	32
Arvada city, CO	95.0 miles	29
Frisco town, CO	26.5 miles	26
Basalt town, CO	84.0 miles	24
Aspen city, CO	102.0 miles	23
Broomfield city, CO	107.0 miles	23
Carbondale town, CO	73.9 miles	22
Longmont city, CO	130.0 miles	22
Silverthorne town, CO	30.2 miles	21
Westminster city, CO	99.8 miles	21
El Jebel CDP, CO	79.7 miles	20
Grand Junction city, CO	147.0 miles	19
Loveland city, CO	144.0 miles	19
Thornton city, CO	104.0 miles	19
New Castle town, CO	73.1 miles	18
Rifle city, CO	87.5 miles	17
Castle Rock town, CO	123.0 miles	15
Englewood city, CO	101.0 miles	15
Dotsero CDP, CO	42.5 miles	14
Ken Caryl CDP, CO	97.0 miles	14
Parker town, CO	118.0 miles	14
Steamboat Springs city, CO	93.1 miles	14
Craig city, CO	118.0 miles	13
Dakota Ridge CDP, CO	93.8 miles	12
Twin Lakes CDP, CO	57.7 miles	12
Silt town, CO	80.0 miles	11
Columbine CDP, CO	99.4 miles	10
Commerce City city, CO	103.0 miles	10
Dillon town, CO	31.8 miles	10
Littleton city, CO	103.0 miles	10
Other	126.8 miles	411
Average/Total	**63.3 miles**	**3,276**

Source: LEHD on the Map; Economic & Planning Systems