

TO: Community Growth Advisory Committee
FROM: Staff & Planning Team
RE: Existing Conditions, Trends and Impacts of House Size
DATE: November 14, 2022

This is the first white paper developed for the committee. Staff would appreciate thoughts and feedback on the format, content and any other suggestions that will help us provide you as the committee needs as you move forward. We know that you will review this data in earnest and we are prepared for questions knowing that we may not have all the answers immediately at hand.

This data is a cumulation of several reports, some have been shared previously as part of the 2020 efforts and some are more detailed and updated data that we will share with you in upcoming meetings. All the data sources are cited or included as appendices.

The purpose of the meeting on Nov 16th is to review the data and combine it with the work you have already done on values, emerging areas of common direction, coupled with the BOCC mission and goals. *This is the most valuable part of your deliberations - determining where community values and land use regulations have a chance to align what you want to see in your community moving forward.*

The topic of house size will open many side issues for discussion related to the land use code regulations and building codes. It will also open considerations for the community at large including our economic welfare.

As you know, all eyes are on your discussion. We appreciate that you are eager to dive into the difficult discussions and make recommendations, however we caution that any decisions you make may trigger unintended consequences such as a rush on building permits for homes that may be larger than what you are recommending. Additionally, no final decisions should be made by the committee until the end of the process in order to ensure that all the recommendations, on various topics, sync with one another in a way that achieves the goals you seek.

We look forward to your questions and a lively discussion as you move forward into the heart of the task at hand.

Existing Conditions, Trends and Impacts of House Size in Unincorporated Pitkin County

Compiled for the Community Growth Advisory Committee
By: Staff and Planning Team

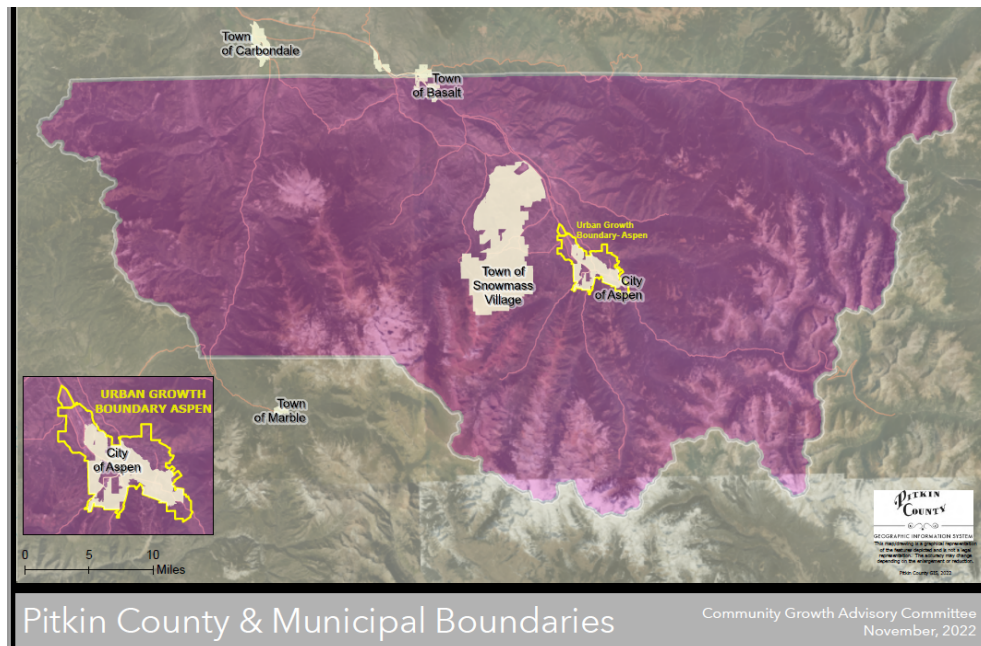
November 2022

I. INTRODUCTION

Pitkin County's Land Use Code has evolved over several decades to create the mix of urban and rural areas that we are all now accustomed to. While this paper will not get into the history and evolution of Pitkin County's Land Use Code, it's important to remember two key items which have shaped unincorporated Pitkin County to what we see it as today.

1. The most common and consistent themes throughout planning efforts dating back to the original effort of Growth Management in the 1970s is to *Preserve, Conserve, and Protect* the existing rural character of Pitkin County. As a result, we see a land use pattern today in which Aspen, Snowmass Village and Basalt are defined growth centers for development and separated from one another by rural and wilderness areas.
2. The remaining parts of unincorporated Pitkin County are overwhelmingly restricted to single family residential homes.

The following map provides an overview of unincorporated Pitkin County, the municipalities and existing Urban Growth Boundary. See Appendix A for the full map.



This white paper seeks to outline the historical data, trends and impacts of single family residential houses in unincorporated Pitkin County as this comprises most of the land use pattern throughout the County and is the area of the most significant growth in the County over the past 20 years. This white paper is organized into three parts:

- a) Existing Conditions and Trends (2010-2020)
- b) Large Homes and their impacts on our Community Values
- c) Discussion

II. EXISTING CONDITIONS AND TRENDS

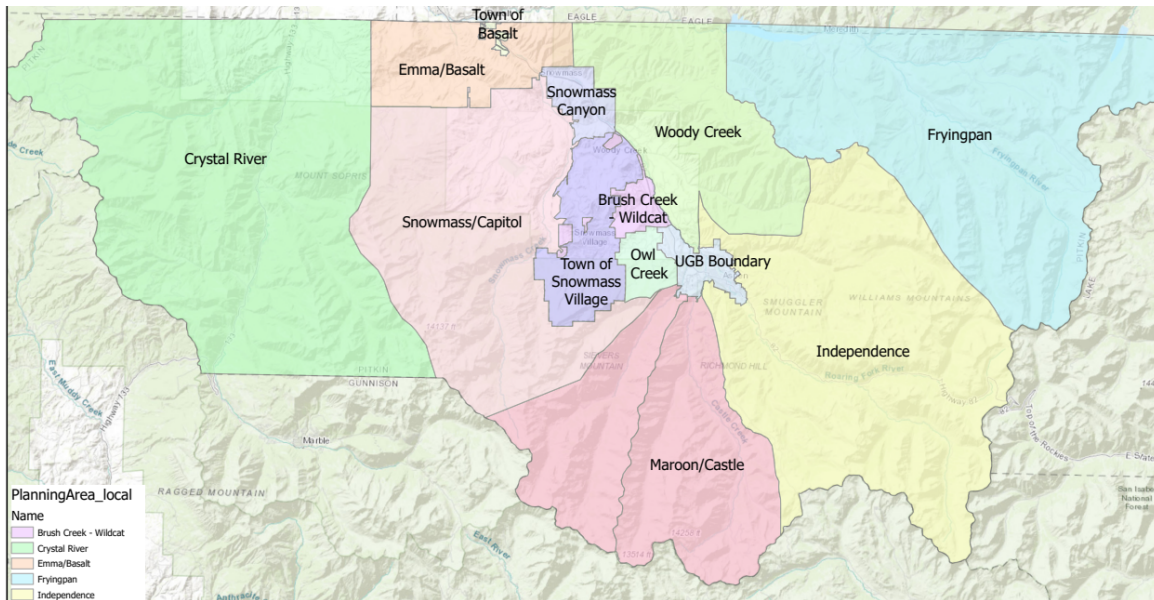
Buildout Summary

The buildout study estimates how much development could occur given the current land use regulations and inventory of approved but unbuilt development. In 2022, the Pitkin County Buildout was updated which includes a total of all parcels and acreage per rural planning area, the maximum number of dwelling units allowed in the planning area under current zoning, and the *likely* number of dwelling units that could be developed. Using 2022 Assessor's data, heated square footage as a proxy for *dwelling units*.

This *likely* buildout is based on historical trends in which approximately only 60% of the maximum buildout potential is actually developed - mostly due to actions within growth management and/or physical/environmental constraints such as steep slopes, floodplain, etc.

The buildout summary is broken into two analyses, one for the Rural areas, and one for the urban growth boundary areas.

Figure 1. Pitkin County Planning Areas



See Appendix B for a full scale map.

Summary for **Rural** Pitkin County Planning Areas (in dwelling units):

- Maximum buildout potential under existing zoning: 3,141
- Existing dwelling units (in Rural Areas): 1,837
- Maximum remaining buildout potential based on zoning: 1,304
- Likely remaining buildout potential: 786

Figure 2: Rural Planning Areas Potential Buildout (2022)

Planning Area			Buildout Analysis (Dwelling Units)						% Built Out		House Size (heated area sq. ft.)	
Name	Parcels	Acres	Maximum Dwelling Units (DU) Allowed by Zoning	Removed due to Conservation	Maximum DU After Accounting for Conservation Actions	Existing Dwelling Units	Maximum Remaining Buildout Potential	Likely Remaining Buildout Potential	Based on Max. potential	Based on Likely potential	Median	Average
Brush Creek - Wildcat	213	4,231	211	3	208	148	60	36	71%	80%	3,304	4,050
Crystal River	717	148,310	1,151	246	905	454	451	271	50%	63%	1,964	2,188
Emma/Basalt	596	21,203	460	100	360	276	84	51	77%	84%	2,196	2,573
Fryingpan	183	108,120	42	25	17	13	4	3	76%	81%	1,275	1,443
Independence	264	112,825	162	52	110	71	39	24	65%	75%	5,041	5,503
Maroon/Castle	583	73,434	263	80	183	114	69	42	62%	73%	3,934	4,605
Owl Creek	65	4,431	129	0	129	48	81	49	37%	49%	7,610	7,398
Snowmass Canyon	266	5,365	108	17	91	46	45	27	51%	63%	1,566	2,051
Snowmass/Capitol	480	80,824	935	266	669	343	326	196	51%	64%	2,800	3,329
Woody Creek	692	45,163	558	89	469	324	145	87	69%	79%	3,292	4,375
TOTALS	4,059	603,906	4,019	878	3,141	1,837	1,304	786	58%	70%	3,298	3,751

Summary for Pitkin County **UGB** Areas (in dwelling units):

- Maximum buildout potential under existing zoning: 915
- Existing dwelling units (in Rural Areas): 558
- Maximum remaining buildout potential based on zoning: 357
- Likely remaining buildout potential: 216

Figure 3: UGB Area Potential Buildout (2022)

UGB Areas			Buildout Analysis (Dwelling Units)						% Built Out		House Size (heated area sq. ft.)	
Name	Parcels	Acres	Maximum Dwelling Units (DU) Allowed by Zoning	Removed due to Conservation	Maximum DU After Accounting for Conservation Actions	Existing Dwelling Units	Maximum Remaining Buildout Potential	Likely Remaining Buildout Potential	Based on Max. potential	Based on Likely potential	Median	Average
Town of Basalt	530	550	41	26	15	1	14	9	7%	10%	1,992	711
Town of Snowmass Vill:	1,959	17,345	34	0	34	3	31	19	9%	14%	2,890	6,737
UGB Boundary	4,551	4,853	922	56	866	554	312	188	64%	75%	2,862	5,162
TOTALS	7,040	22,748	997	82	915	558	357	216	61%	72%		

Existing Dwelling Units by Square Footage

Below is a breakout of the existing dwelling units, by square footage for both the Rural Planning Areas and the UGB areas.

Dwelling Unit By Size	Rural Planning Areas		UGB Areas	
	# of Dwelling Units	% of Dwelling Units (Rural)	# of Dwelling Units	% of Dwelling Units (UGB)
Under 3,000 sq ft	932	53.5%	136	24.4%
3,000 to 6,000 sq ft	579	31.5%	221	39.6%
6,000 to 9,000 sq ft	162	8.8%	115	20.6%
9,000 to 12,000 sq ft	67	3.6%	63	11.3%
12,000 to 15,000 sq ft	36	2.0%	13	2.3%
Over 15,000 sq ft	11	0.6%	10	1.8%

Source: 2022 Assessor's Data & Community Development

In sum, 85% of all homes in Rural unincorporated Pitkin County are 6,000 square feet or smaller, and 276 homes (15%) are greater than 6,000. The average house size in the rural planning areas is 3,751. The median house size in the UGB areas is 4,203.

Permit Data (2017 - 2022)

The following permit data includes the total number of permits issued per year for new builds, additions, remodels and demolitions in Pitkin County from 2017 to 2022 (as of Oct 31, 2022).

Summary of Building Permit Data					
Year	New Builds	Additions	Remodels	Interior demo	Single Family Demo
2017	7	10	21	2	4
2018	19	19	47	9	12
2019	28	10	37	12	13
2020	31	17	71	6	7
2021	21	26	61	6	5
2022	25	17	52	14	10

Source: 2022 Community Development

Definitions:

- Addition - means the adding on to a structure, usually resulting in an increase in floor area.
- Remodel - means the renovation of an existing structure that does not change: (a) the original size or location of the footprint of the structure; (b) the use of the structure; or (c) the floor area of the structure.
- Interior Demo - is typically a demolition within the existing footprint and is only interior walls
- Single Family Demo - is a demolition permit for all detached and attached single family residences.

Surrounding Jurisdictions

For comparison purposes, we asked surrounding jurisdictions their current regulations related to house size, demolitions and pacing of building permits.

Area	Do you have a maximum house size cap?	Do you have a limitation on demolitions/year and other factors such as age of the structure as a priority?	Do you have a max # of building permits/year allowed? What is the system used to determine who gets in?	Are permits divided into categories such as new, remodel, additions, demo?
BASALT	Maximum housing sizes are determined per the allowances of each zone district and other mitigating factors (e.g. steep slopes); however, at no time may any house exceed 5,000 square feet of gross floor area.	Basalt does not have a limitation on demolitions per year nor a priority on its structures for demolition.	Basalt does not currently have a maximum number of allowed yearly building permits.	N/A
ASPEN	No, but we do limit allowable Floor Area (FA) by Zone District. R-6 is 3,240 on a 6000 sf lot, R-15 is 4,500 on a 15,000 sf lot. We exempt most below grade FA, thus, the max gross floor area that you could likely get is double the allowable FA in a given zone.	6 per year and we do not prioritize. First come, First Serve for the 6 annual allotments.	No	No
EAGLE COUNTY	No, the size of a unit (FAR) and lot coverage is based on lot size in many zone districts, but there is no cap in the zone district with the largest lots. Most PUDs have a cap just due to the size of the lots and the allowable FAR, lot coverage,	No, we do not have any limitations on the number of demolitions.	No, we don't limit the number of building permits/year allowed.	Every application gets processed. There was up to a 12 week delay in issuing permits this year, due to the workload.

	and/or approved building envelopes.			
TOWN OF SNOWMASS VILLAGE	<p>House size caps vary by zone district:</p> <p>Lot size: 150,000 sf Max floor area cap: 6,400</p> <p>Lot size: 15,000 and 30,000 sf Max floor area cap: 5,500 sf</p> <p>Lot size: 4,000 and 6,000 sf Max floor area cap: 2,000 and 3,000 sf respectively</p> <p>Lot size: 100 acres Max floor area cap: 12,000sf</p> <p>Basements are allowed up to 15% of max floor area cap</p>	NO	NO	NO

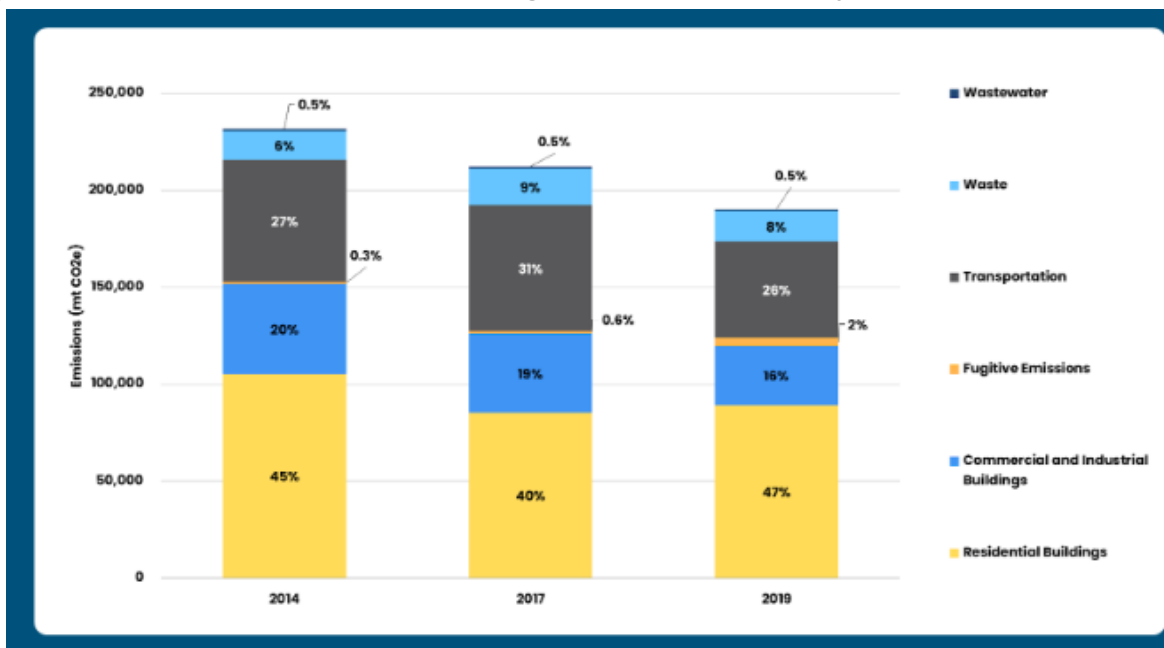
II. IMPACTS OF LARGE HOMES ON COMMUNITY VALUES

The following data outlines the impacts large homes, generally defined as any home over 5,750 square feet, have on the community. Impacts have to do with the energy use of large homes and the additional activity these homes generate, through the construction and maintenance of large homes, the increase in jobs and related vehicle trips to serve the private residences (sometimes at the expense of broader community jobs, such as private chefs) and the incremental material waste that the construction and ongoing maintenance of larger homes create.

Environmental Impacts

Looking at 2019 Greenhouse Gas (GHG) Inventory of unincorporated Pitkin County, emissions from residential buildings are the largest contributor to GHG emissions in unincorporated Pitkin County, accounting for 47% of total 2019 emissions.

Figure 4. Emissions from residential buildings - 2019 GHG Inventory



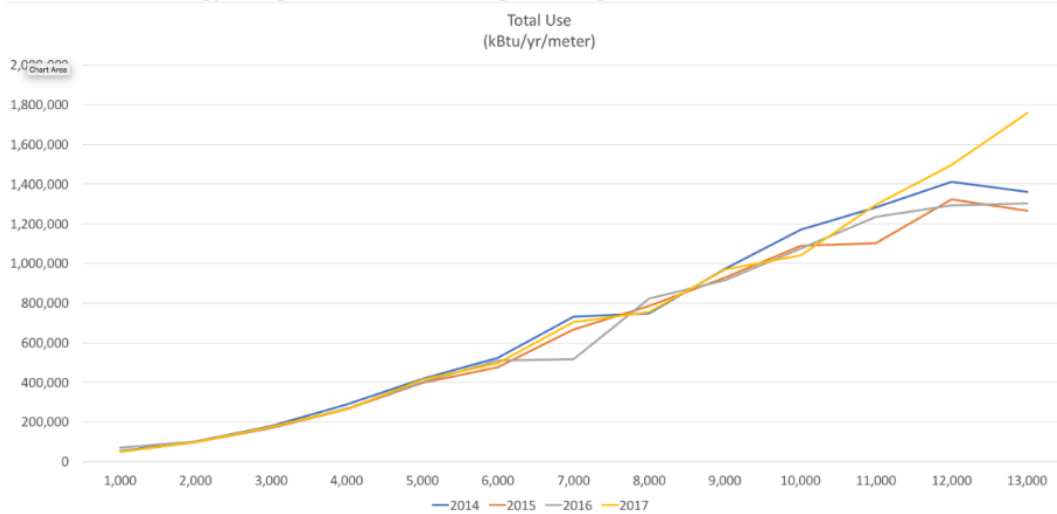
Source: Unincorporated Pitkin County Greenhouse Gas Emissions Summary Report 2019 & 2020, Lotus

While homes larger than 5,750 square feet comprised 13% of the single family housing inventory in unincorporated Pitkin County in 2019, emissions from large home energy use accounted for 43.4% of total Residential Energy Use Emissions in the same year.

Within the residential home energy use segment, large homes tend to use more energy.

In 2019, Resource Engineering Group (REG) completed a study looking at the relationship between home size and energy usage. The study reviewed energy data for nearly 900 homes located in Pitkin County spanning four years (2014 through 2017). This data was provided by the gas and electric utility providers serving Pitkin County, including Holy Cross Energy and Black Hills Energy. Most significantly, this report illustrated the correlation between home size and energy use - i.e., **the larger the home, the greater the energy use intensity**. In general, larger homes use more energy per square foot.

1. Total energy use per service location plotted against home size.



Source: 2018 Pitkin County Energy Use - Utility Data Analysis, REG

As home size increases from 1,000 square feet (the smallest homes studied) to 14,000 square feet, the energy used per square foot more than triples from an average of 34 kBtu/ft²/yr to 105 kBtu/ft²/yr. See figure below.

- Average for homes 1,000 to 5,000 is 46 kBtu/ft²/yr
- Average for homes 5,000 to 14,000 is 95 kBtu/ft²/yr

Counter to assumptions that newer homes are more efficient, the data suggests that newer homes use more energy per square foot. While building codes require new home envelopes to be more efficient, new luxury homes tend to generate increased load from things such as humidification systems, snowmelt systems, roof and gutter melt systems, pools, spas, increased use of complex audio visual and security systems, increased expectations of thermal comfort and therefore higher use of cooling systems, and a liberal use of glass in the high-end residential market. Among the existing housing stock, use of gas for heating (space, pools, snowmelt, etc.) tends to drive energy use today.

4. Total average energy use per square foot of home for each size range

Size (ft ²)	Total Avg kBtu/ft ² /yr				
	2014	2015	2016	2017	AVG
1,001 to 2,000	33	31	43	31	34
2,001 to 3,000	41	39	40	38	40
3,001 to 4,000	53	50	51	52	51
4,001 to 5,000	63	58	59	58	60
5,001 to 6,000	77	73	74	77	75
6,001 to 7,000	81	73	78	77	77
7,001 to 8,000	98	90	70	95	88
8,001 to 9,000	88	92	97	89	91
9,001 to 10,000	102	98	96	102	100
10,001 to 11,000	111	103	102	99	104
11,001 to 12,000	111	96	107	113	107
12,001 to 13,000	113	106	103	120	110
13,001 to 14,000	101	94	97	130	105
average kBtu/ft²/yr of all data					80
average of homes less than 5,000 ft²					46
average of greater than 5,000 ft²					95

Source: 2018 Pitkin County Energy Use - Utility Data Analysis, REG

Construction, Home Management and Operational Emissions of Large Homes

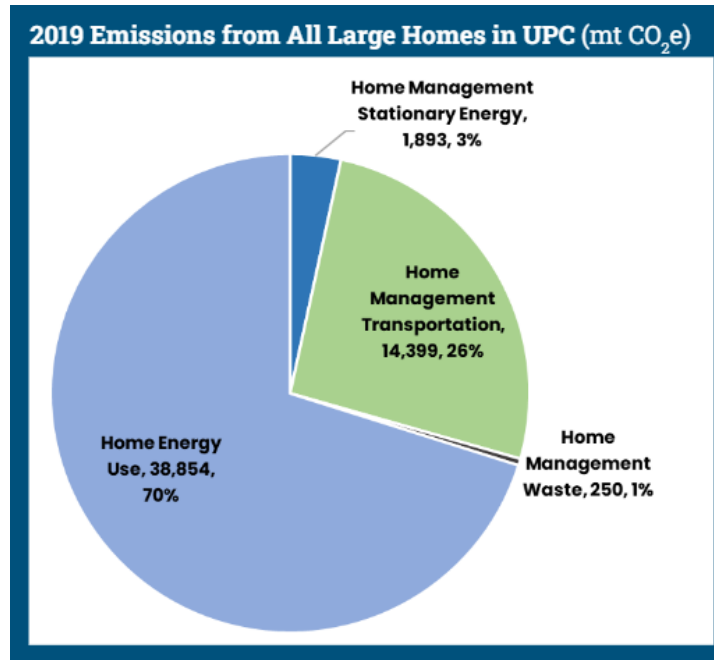
In 2020, Lotus Sustainability interviewed local property and construction managers to determine the impacts of home management on Pitkin County's greenhouse gas emissions. Through a series of interviews, many of the findings from REG's Utility data were corroborated. Local property managers indicated increases in energy use is likely due to additional space heating appliances, audio and visual systems, automated appliances, and recreating amenities such as in-home pools and spas.

Large homes also generate additional activity associated with maintaining the home including contracted services to maintain the lawn in the summer and driveway in the winter, cleaning and servicing the interior of the home year round, and any additional managed services related to the home.

These home maintenance activities generate additional GHG emissions, mostly from the burning of fossil fuels used in equipment to maintain the home, the transportation of contracted workers to and from the homes, and the waste created from the upkeep and maintenance of homes and yards.

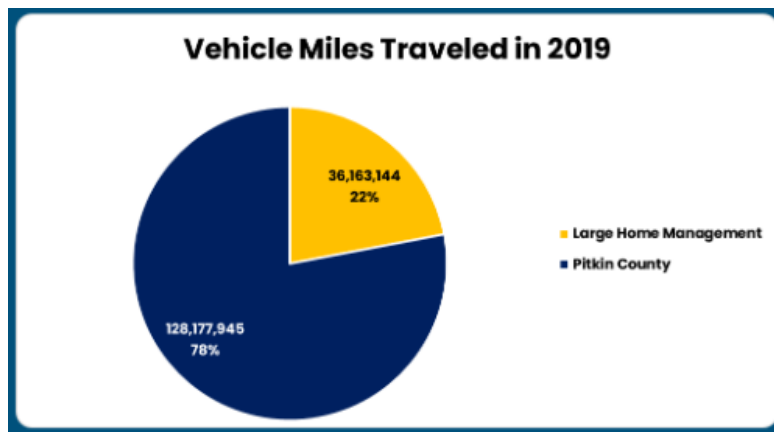
The maintenance of large homes in Unincorporated Pitkin County generated nearly 9% of total 2019 annual GHG emissions. 87% of these home maintenance emissions came from Transportation - i.e., trips by people hired to manage or maintain a home.

Combining the emissions associated with large home energy use and home maintenance activities, large homes account for 29% of Total 2019 GHG Emissions in unincorporated Pitkin County with transportation as the biggest contributor.



Source: Construction, Home Management, and Operational Emissions Report, Lotus Sustainability, 2022.

Vehicle Miles Traveled (VMTs) associated with the maintenance of large homes accounted for 22% of total VMTs countywide in 2019.



Source: Construction, Home Management, and Operational Emissions Report, Lotus Sustainability, 2022.

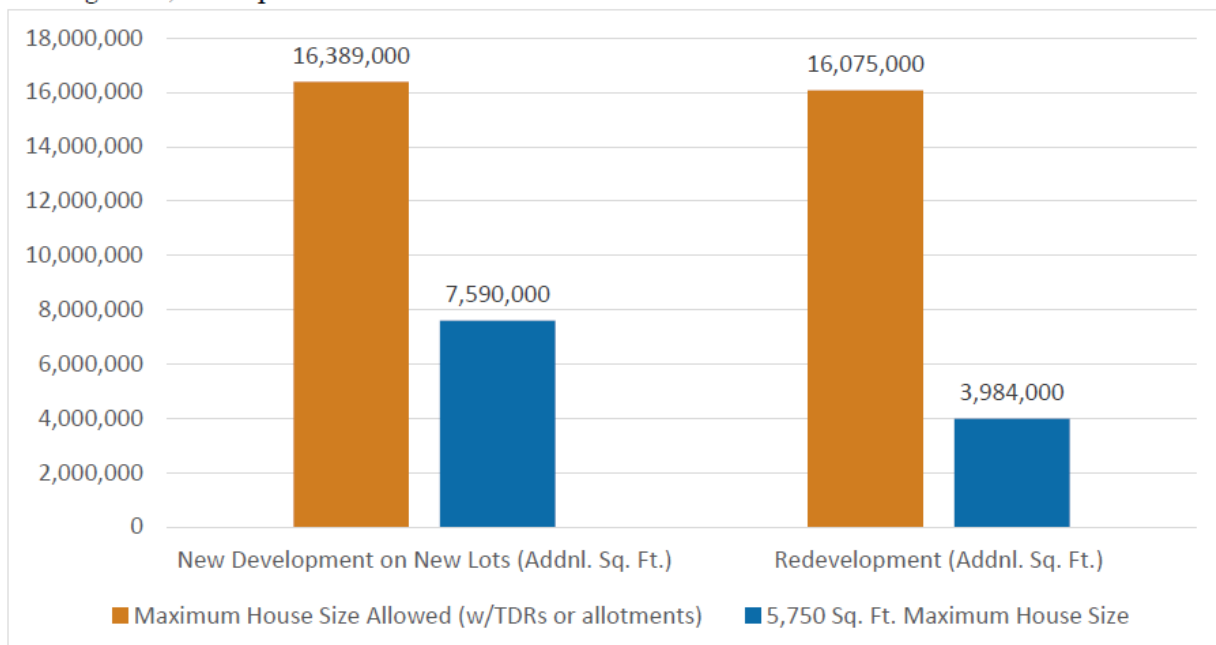
Core Infrastructure Capacity Analysis (July 2018)

County zoning allows up to 15,000 square feet of residential floor area on residential/agricultural parcels in most of the county except for some areas in the Aspen/Pitkin Urban Growth Boundary

and a few rural caucus areas where maximum floor area has been reduced. At the maximum sq. ft. allowed under zoning, the 1,267 new units possible under zoning and the 1,700 potential redevelopment sites could result in an additional 32,464,000 sq. ft. of residential floor area in the unincorporated county at buildout.

If homes are built only up to the 5,750 sq. ft. exemption threshold, new units and redevelopment sites could result in an additional 11,574,000 sq. ft. of residential floor area in the unincorporated county at buildout. This is just over one-third of the sq. ft. that would be possible were homes to be built to the maximum sq. ft. allowed under zoning. Construction related impacts on the landfill are directly linked to the volume (sq. ft.) of construction.

Figure 3 – Unincorporated Residential Sq. Ft. Maximum Allowable House Size Under Zoning vs. 5,750 Sq. Ft. Maximum House Size



Source: 2018 Buildout Study and Core Infrastructure Capacity Analysis, RPI Consulting

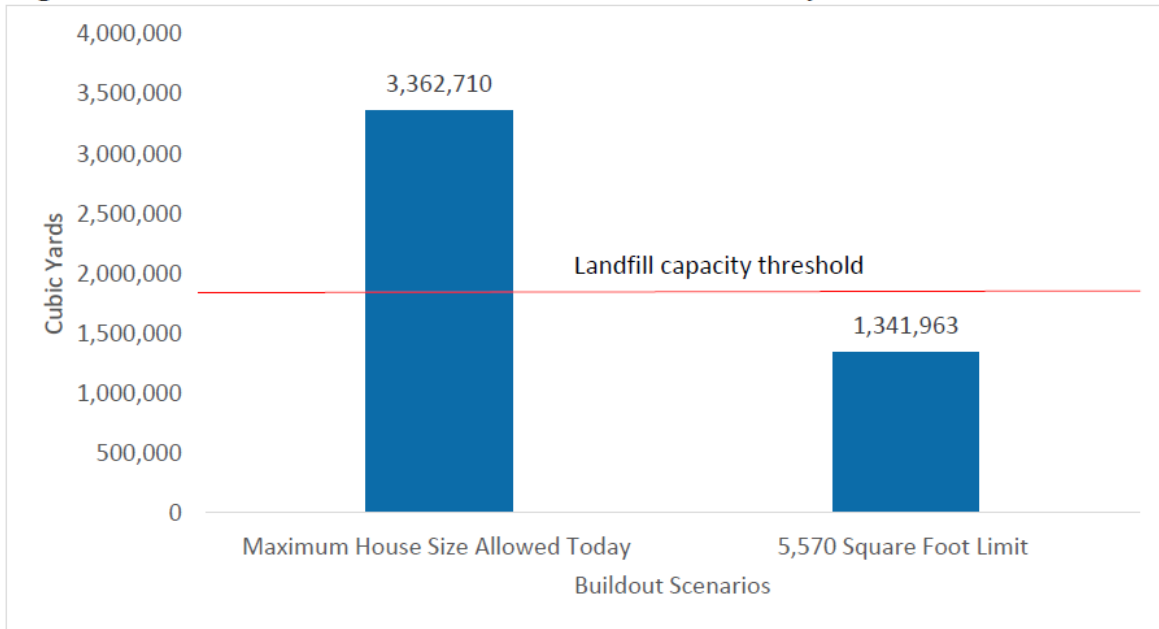
Analysis shows a 68% correlation between the sq. ft. built and total Construction and Demolition (C&D) volumes collected throughout the study period.

Completing the 13.9 million sq. ft. of construction possible with unincorporated county residential units built up to 5,750 sq. ft., will generate an estimated 1.3 million cubic yards of construction-related waste. The 1.3 million cubic yards of solid waste would exceed the landfill’s current remaining capacity.

Completing the 34.8 million sq. ft. of construction possible in the unincorporated county with homes built to the maximum allowed under zoning, and including all buildout in Aspen and Snowmass Village, will generate an estimated 3.4 million cubic yards of construction-related waste (see Figure 27). This 3.4 million cubic yards of solid waste would exceed the landfill’s

current remaining capacity plus the planned 900,000 cubic yard northern expansion by 1.3 million cubic yards.

Figure 29 – Construction-Related Waste Volumes Generated by Buildout Scenarios



Source: 2018 Buildout Study and Core Infrastructure Capacity Analysis, RPI Consulting

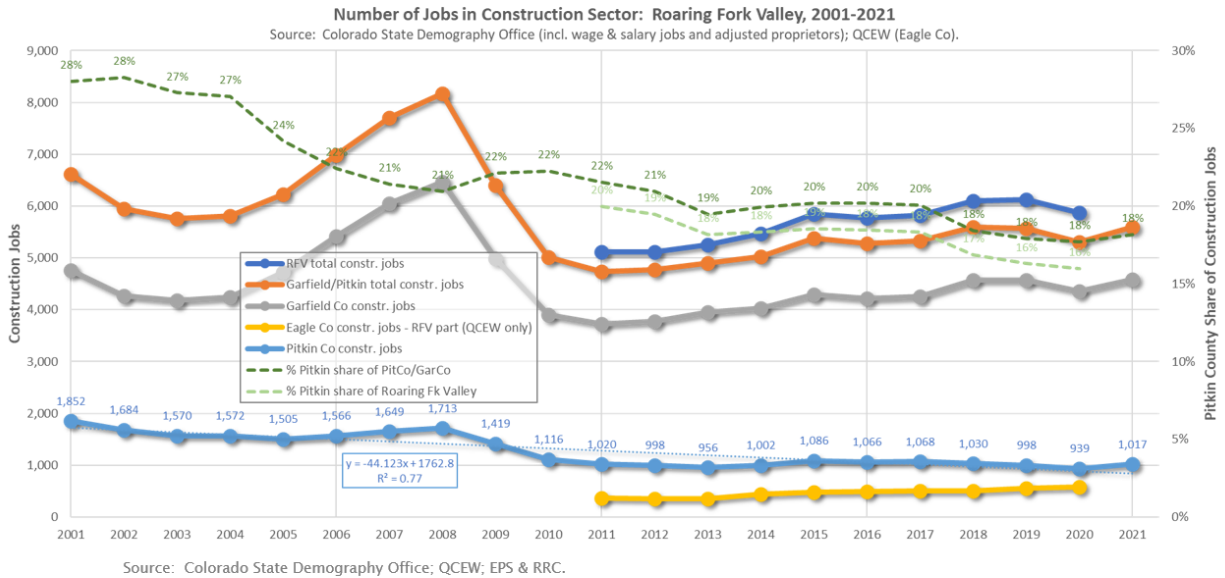
Economic Impacts

Large, luxury homes - and the demands of their residents - may be precipitating a shift in jobs from more traditional roles to those serving private residences and stretching an already stretched labor market.

According to a study completed by EPS in 2021, employment in Pitkin County was flat (0%) from 2015 to 2021 and down 4% from 2019. This may be partially explained by employees and employers leaving the county due to the rising costs of living (particularly those in the construction industry).

For example, the following graph shows that from the year 2000 to 2021, Pitkin County's share of construction jobs between Garfield County and Pitkin County dropped from 28% to 18% suggesting that as more jobs, and employers move down valley to service other areas, so too does the labor force.

RFV CONSTRUCTION JOBS BY EMPLOYER LOCATION, 2001–21



Economic & Planning Systems

EPS PPT Presentation | 5

Source: 2022 Pitkin County Community Composition: Current Trends and Future Challenges, EPS

However, the change in employment may also be due to employees leaving their more traditional jobs for higher-paying roles that serve private residences within the county. These jobs are typically outside of the traditional economic and labor market data points, thus creating a shadow economy that is difficult to track.

As an example, a chef for a local restaurant may leave his/her position to become the private chef for a private residence. The same may be true for personal trainers, maintenance workers, interior designers and others. The result is a stressed workforce with increasingly limited capacity *and capability* to serve the needs of the broader community.

In addition to stretching the labor market, recent analysis for the City of Aspen suggests that as homes get bigger, they generate more employment associated with the construction and operation and maintenance of the home. In 2022, RRC Associates completed an analysis of the employment generation in the residential sector in Aspen. While this study was specific to the City of Aspen, the trends likely apply to unincorporated Pitkin County.

Using the Industry Sector definition for the analysis, two key sectors were evaluated. The construction sector includes general contractors and specialty trades contractors. Industry sectors included in the provision of services to homes include:

Table 7
Industry Sectors Included in Operations/Upkeep Employment Calculations

NAICS code	NAICS description
531110	Lessors of Residential Buildings and Dwellings
531311	Residential Property Managers
5617	Services to Buildings and Dwellings (pest control, landscaping, janitorial, carpet cleaning, etc.)
5616	Selected Investigation and Security Services (security systems, locksmiths)
8114	Selected Personal and Household Goods Repair and Maint.Svcs (appliance repair, reupholstery and furniture repair, etc.)
562111	Solid Waste Collection
722320	Caterers
814110	Private Households
IMPLAN: 61	IMPLAN: Maintenance and repair construction of residential structures

Source: RRC Associates.

Results of the study were as follows:

- Construction employment is estimated to increase at a linear rate of 0.081 employees per 1,000 heated square feet
- Operations and maintenance employment is estimated to grow at a linear rate of 0.103 employees per 1,000 heated square feet
- Total employment is estimated to grow at a linear rate of 0.184 employees per 1,000 heated square feet

Table 1
Estimated Employment Generation Associated with Aspen Free-Market Residential Units

Heated Square Feet	EMPLOYMENT		
	Construction	Operations/Upkeep	Total
1,000	0.081	0.103	0.184
2,000	0.162	0.206	0.368
3,000	0.243	0.309	0.552
4,000	0.324	0.412	0.736
5,000	0.405	0.515	0.920
6,000	0.486	0.618	1.104
7,000	0.567	0.721	1.288
8,000	0.648	0.824	1.472
9,000	0.729	0.927	1.656
10,000	0.810	1.030	1.840
Each add'l 1,000 sqft	0.081	0.103	0.184

Source: 2022 Aspen Residential Employment Generation Study, RRC Associates

Coupled with the regional economic data, the trend continues. The larger the home, the higher the demand is for services, straining an already tight labor market with a limited availability of employees. As a result we are seeing that the servicing of the homes is generating a secondary economy in which the community retail stores, accommodations and restaurants are fighting for the same employees.

III. SUMMARY OF DATA AND TRENDS

The data presented above begins to establish the relationship between the size of a home, the environment and the economy. There are certainly additional relationships between home size and community character, infrastructure utilization etc. that could be further explored and their impacts with other community values.

Impact of Development Based on House Size (2020)

House Size (ft ²)	*1	Annual Energy Use (kBTU) ²	*	Waste Generated in Construction (tons) ³	*	Average Number of Jobs Added Post-Construction (Total FTEs) ⁴	Additional Daily VMIs ⁵
3,250	-	175,994	-	61.75	-	.13	4.41
5,750	77%	407,427	131.5%	109.25	76.92%	.23	7.8
8,250	154%	777,443	341.74%	156.75	153.85%	.76	11.2
10,750	231%	1,092,421	520.71%	204.25	230.77%	.99	14.6
13,250	307%	1,380,895	684.62%	251.75	307.69%	1.22	17.98
15,000	362%	1,421,870	707.9%	285	361.54%	1.38	20.36

¹ All percentages are baselined to 3,250 ft²; i.e. the 10,750 ft² home is 231% larger, uses 520.71% more energy and produces 230.77% more waste during construction than a 3,250 ft² home

² Pitkin County Energy Use - Utility Data Analysis, Resource Engineering Group, August Hasz, P.E., April 2018

³ Pitkin County Solid Waste Center - Construction and Demolition Program - National Standards for C&D

⁴ Affordable Housing Fee Methodology Pitkin County, Rees Consulting, Inc., June 2018

⁵ Transportation Impact Fee Study, RAFTELIS, July 2020

As we think about the future buildout potential within unincorporated Pitkin County, how might we consider home size - and its impacts - as one lever for realigning our land use code with our community values? For example, is there an appetite to limit home size?

There are tradeoffs when considering reducing house size and what level of impact is acceptable to a community. When thinking of tradeoffs keep in mind the community values and goals and how to strike the right balance for the community today. For example:

1. There is some point at which smaller houses tend to have fewer energy impacts which aligns with the 2050 goals of reducing GHG emissions by 90% and there is some point at which homes of a certain size will not be able to be net zero;
2. The construction and home management of the larger homes create a need for more employees, perpetuating the affordable housing crisis and more employees commuting longer distances, accelerating social equity concerns and GHG emissions

However, there are also benefits that the large home economy provides to our community that must be considered.

1. Large homes are part of our wealthy resort character;
2. People who can afford to build large homes provide funding for amenities and institutions in the community.
3. Large homes provide jobs and money that circulates in the valley wide economy.

In other words, what is the right balance to achieve our community values and maintain the community that we all love so dearly and fight so hard to preserve? What are the appropriate tools and mechanisms for delivering the outcomes we desire and how might we apply them? What new tools and mechanisms might we need?

One possible framework for beginning to think about solutions is as follows:

	GMQS / Exemptions	TDRs	Zoning	Permits
Limitation				
Mitigation				
Incentive				

V. APPENDICES

Appendix A: [Pitkin County Map](#)

Appendix B: [Pitkin County Planning Areas](#)

Appendix C: [2022 Buildout Summary](#)

Appendix D: [Unincorporated Pitkin County Greenhouse Gas Emissions Summary 2019 & 2020](#)

Appendix E: [2018 Pitkin County Energy Use - Utility Data Analysis](#)

Appendix F: [2018 Buildout Study and Core Infrastructure Capacity Analysis](#)

Appendix G: [2022 Aspen Residential Employment Generation Study, RRC Associates](#)

Appendix H: [Housing Impact Table](#)

Appendix I: [Summary of GMQS Exemptions, Pitkin County Land Use Code](#)