Town Council
Monday, February 9, 2026
4:00 PM
Regular Meeting
130 Kearns Road
Town Council Chambers
Snowmass Village, CO 81615
You can watch the meeting live online on our website at tosv.com.

Agenda

1. **Call to Order**

2. **Roll Call**

3. **Proclamations and Presentations**

4. **Public Comment**

   This section is set aside for the Town Council to LISTEN to comments by the public regarding items that do not otherwise appear on this agenda. Generally, the Town Council will not discuss the issue and will not take an official action under this section of the agenda. (Five Minute Time Limit)

5. **Consent Agenda**

   These are items where all conditions or requirements have been agreed to or met prior to the time they come before the Council for final action. A Single Public Hearing will be opened for all items on the Consent Agenda. These items will be approved by a single motion of the Council. The Mayor will ask if there is anyone present who has objection to such procedure as to certain items. Members of the Council may also ask that an item be removed from the consent section and fully discussed. All items not removed from the consent section will then be approved. A member of the Council may vote no on specific items without asking that they be removed from the consent section for full discussion. Any item that is removed from the consent agenda will be placed on the regular agenda.

   5.A. 2025 Draft Agendas

6. **Public Hearings - Quasi-Judicial Hearings**

   Public Hearings are the formal opportunity for the Town Council to LISTEN to the public regarding the issue at hand. For land use hearings the Council is required to act in a quasi-judicial capacity. When acting as a quasi-judicial body, the Council is acting in much the same capacity as a judge would act in a court of law. Under these circumstances, the judicial or quasi-judicial must limit its consideration to matters which are placed into evidence and are part of the public record. The Council must base their decision on the law and the evidence presented at the hearing.

7. **Policy/Legislative Public Hearings**

8. **Administrative Reports**

   8.A. 2025 Employee Survey Results — Review and Presentation

   8.B. Mall Transit Center Discussion

8.C. 2025 We-cycle expansion and Micro Transit Recap

8.D. Village Shuttle Zero Emission Bus Transition Plan

9. Town Council Reports and Actions

Reports and Updates

9.A. Resolution RE Thive Snowmass

10. Adjournment

2026 DRAFT Agenda Overview

- Regular Meetings begin at 4:00 p.m. unless otherwise noted
- Work Sessions begin at 4:00 p.m. and aim to end at 6:00 p.m.
- The dates on which agenda items are listed are only a best approximation. Agenda items are added to this list as they arise. Agenda items may well be moved to different meeting dates. Agendas are generally not finalized until the Thursday prior to the meeting.
- In addition to agenda items, this document also lists expected absences of Town Council members. In compliance with section 2-49 of the municipal code, once the consent agenda is approved, the absences noted will be considered to have received the prior approval necessary of the majority of the Council for members to be absent from meetings.

Topic to incorporate:

- Add spring clean up/annual trash pickup to a future workshop agenda.
- Discussion RE gas vs electric mowers and leaf blowers
- E-Bikes safety issues

Monday Feb 2 – Regular Meeting (Fridstein out)

- Thrive not just survive discussion
- Skittles Discussion
- Fire Mitigation Ordinance discussion

Monday February 9 – ~~Work Session~~ – Change to REGULAR MEETING

- Review Employee Survey Presentation
- Mall Transit Station Roundtable
- Zero Emission Transition Plan
- Recap of we-cycle and micro transit
- Reso regarding Thrive Snowmass

Tuesday Feb 17 – Regular Meeting (CANCEL)

Monday March 2 – Regular Meeting

- Snowmass Village Community Foundation's Pre-Sketch review of the Daly Lane parcel
- 2nd reading - - an Ordinance approving an amended and restated consolidated comprehensive sign plan for the Snowmass Village Mall and Gateway buildings.
- 2nd reading - - an Ordinance approving an amended and restated consolidated comprehensive sign plan for the Timbermill and Aspen SkiCO tenant.
- Reso designating High Impact Events & Construction restrictions (before April 1st each year)

Monday March 9 – Work Session

- CC4CA update Presentation
- **You**thzone yearly update
-

Monday March 16 – Regular Meeting

- Reso for CGRB recommendations and distribution of funds
- Adopt Grant Criteria for 2026-27 grant Cycle
- Ritz Carlton (Viewline) Hotel Pre Sketch Meeting
- SWSD Update Presentation

2026 DRAFT Agenda Overview

Monday April 6 – Regular Meeting

- Summer event overview April?
- Town Attorney Update
- Ord—1st reading – building code AND Wildfire Resiliency code
-

Monday April 13 – Work Session

Monday April 20 – Regular Meeting

- Ord—2nd reading – building code AND Wildfire Resiliency code
- 2026 to 2030 Pitkin County Age-Friendly Initiative Presentation– Dr. Chad Federwitz
-

Monday May 4 – Regular Meeting

Monday May 11 – Work Session

Monday May 18– Regular Meeting

Monday June 1 – Regular Meeting

- Senator & Rep Visit?
- Exec Session – personnel – performance reviews
- November Election discussion

Monday June 8 – Work Session

-

Monday June 15 – Regular Meeting

- Exec Session – personnel – Performance reviews

Monday July 6 – Regular Meeting

- Election Reso Auth to participate & IGA with Pitkin -or July 20 (has to be 100 days before election)
-

Monday July 13 – Work Session

Monday July 20 – Regular Meeting

Monday Aug 3 – Regular Meeting

- Town Attorney Update
- Election Resolution – Ballot Language or Aug 17th

Monday Aug 10 – Work Session

Monday Aug 17 – Regular Meeting

- EOTC Budget/work plan – Linda DuPriest

Tuesday Sept 8 – Regular Meeting

2026 DRAFT Agenda Overview

- Reso in support of – ballot
-

Monday Sept 14 – Work Session

~~**Monday Sept 21 – Regular Meeting**~~ **(Yom Kipper) Move**
Tues Sept 22 – Regular Meeting

-

Monday Oct 5 – Regular Meeting

- Budget
- Town Attorney Update
- B & C application & appointment procedure update
-

Monday Oct 12 – Work Session

- Budget

Monday Oct 19 – Regular Meeting

- Budget – Comments from FAB

Wednesday Nov 4 – Regular Meeting – due to election day

- GID Meeting - Adopting the GID Budget
- Budget Adoption
-

Tuesday Nov 9 – Work Session

Monday Nov 16 – Regular Meeting

- Swear in New TC members and Mayor
- B & C Applications

Monday Dec 7– Regular Meeting

- Reso RE 2025 Meeting Dates
- Reso on Delinquent Solid Waste / Trash
- B & C Interviews

Monday Dec 14 – Special Meeting

- **GID Meeting – set Mill Levy**
- B & C Interviews/Discussion

Monday Dec 21 – Regular Meeting

- B & C Resolution appointing new Members

Topics for Work Sessions or Other Meetings Requested by Town Council Members

- Schedule Updates will all of the Town Boards to review priorities and current initiatives.

2026 DRAFT Agenda Overview

- EAB
- FAB
- PTRAB
- POSTR
- Tourism – quarterly updates
- Grants – Recent Awards; Review of Criteria; Purpose, etc.
- SAAB
- Planning

Town of Snowmass Village

Agenda Item Summary

DATE OF MEETING:

February 9, 2026

AGENDA ITEM:

Review the 2025 Employee Survey Results

PRESENTED BY:

Talita Garcia, HR Director

BACKGROUND:

The Town of Snowmass Village conducts an employee survey every one to two years. Attached are the results of the survey that concluded in the 4th quarter of 2025. We kept the same number of question as 2023 and 2024 keeping the survey concise for employee convenience while allowing ample room for valuable opinions. Approximately 65 completed surveys were received.

The results showed no major surprises or significant changes from previous years. However, the feedback remains valuable and continues to inform discussions on key topics of interest to staff. Employee committee representatives are actively contributing by brainstorming and sharing insights to further explore these areas.

Additionally, as in 2023 and 2024, Stay Interviews were offered to all employees, with four completed as of February 5, 2026. These interviews serve as a proactive tool to address concerns, understand job satisfaction drivers, and enhance overall engagement.

The results of the employee survey are attached. This survey and the stay interviews remain as critical components necessary to foster an environment where every employee's voice is heard.

FINANCIAL IMPACT:

There is no direct fiscal impact to the is survey, but it does help guide where and how we make investments in Town Staff.

APPLICABILITY TO COUNCIL GOALS & OBJECTIVES:

The Town Council has identified “Recruiting & Retaining high quality staff” as a critical component of the Village’s success.

COUNCIL OPTIONS:

This item is intended for informational purposes. No action is necessary.

STAFF RECOMMENDATION:

No action is necessary.
Staff recommends simply acknowledging the results of the 2025 Employee Survey.

ATTACHMENTS:

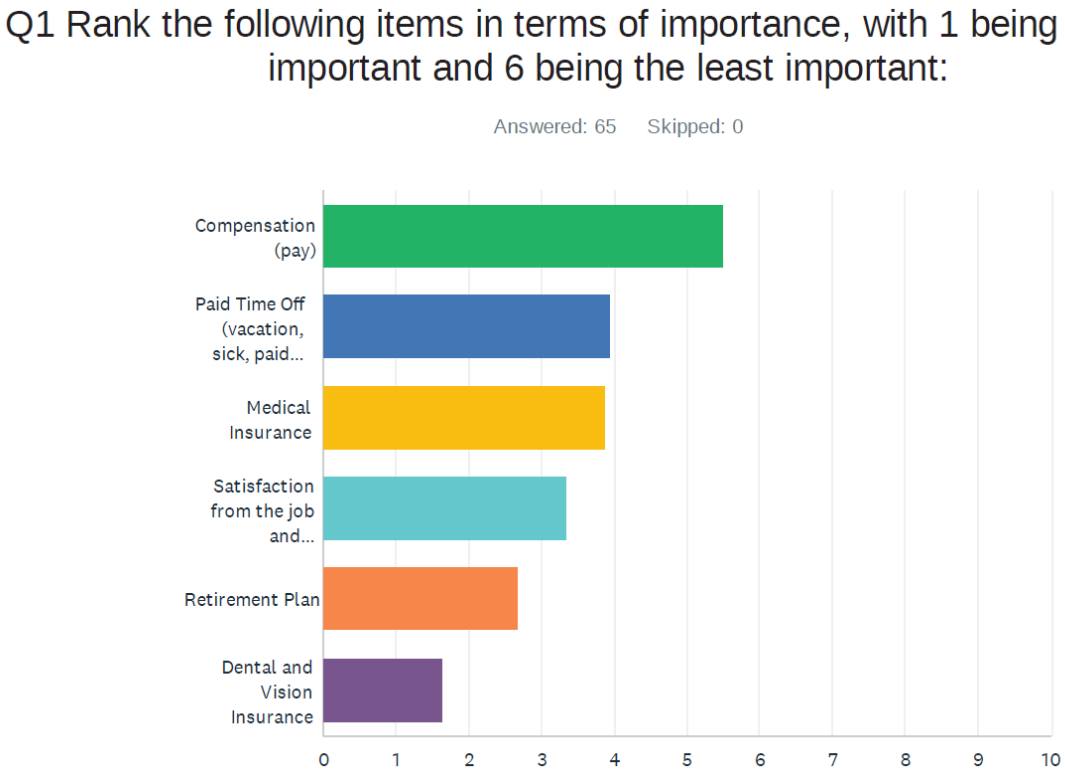
1. 2025 Employee Survey Results
2. Comparison of 2025, 2024 and 2023 survey results

2025 Employee Survey

2025		2024			
Total Responses:	75	Total Responses:	73	Total Responses:	62
Complete Responses:	65	Complete Responses:	69	Complete Responses:	62
Total Employees:	201	Total Employees:	198	Total Employees:	190
Full Time Year Round:	111	Full Time Year Round:	120	Full Time Year Round:	115
Full Time Seasonal:	18	Full Time Seasonal:	14	Full Time Seasonal:	14
Part-Time:	61	Part-Time:	64	Part-Time:	61

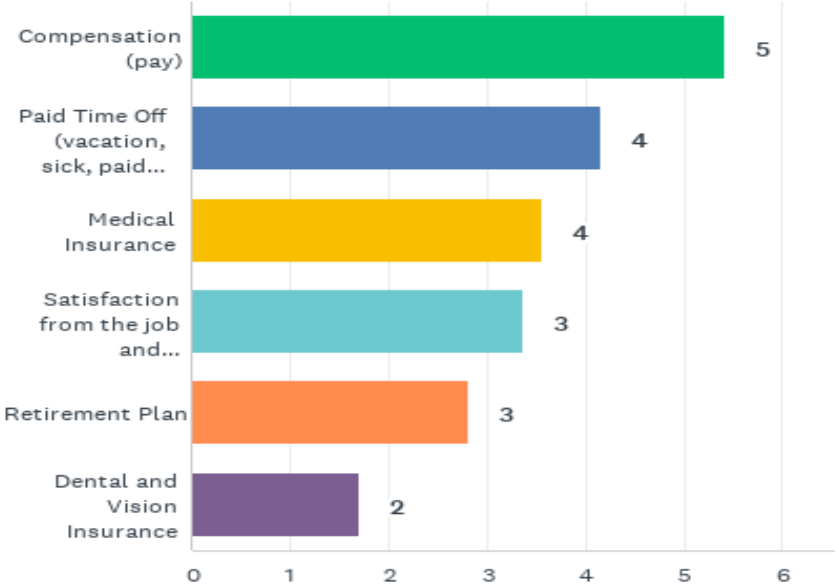
Q1: Rank the following items in terms of importance, with 1 being the most important and 6 being the least important:

2025

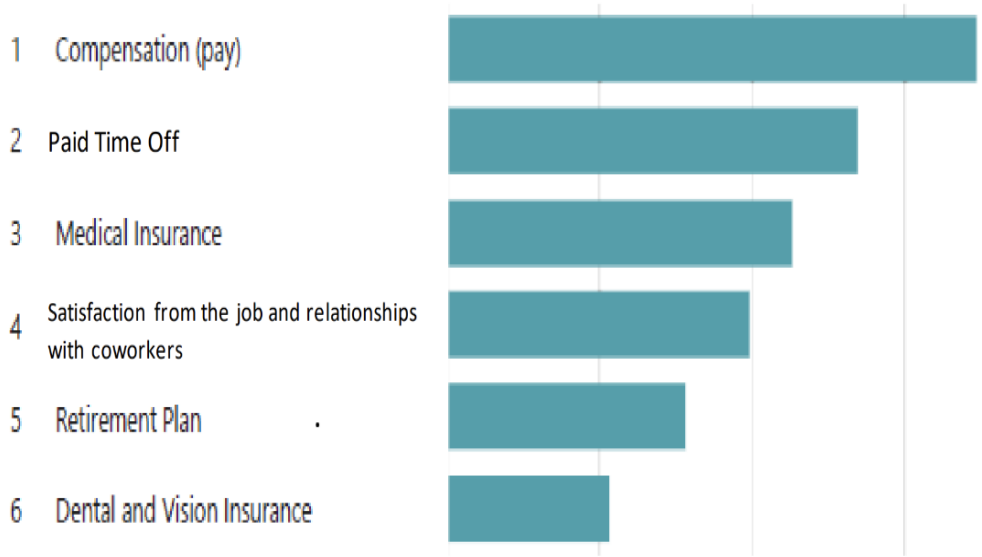


Q1: Rank the following items in terms of importance, with 1 being the most important and 6 being the least important:

2024



2023

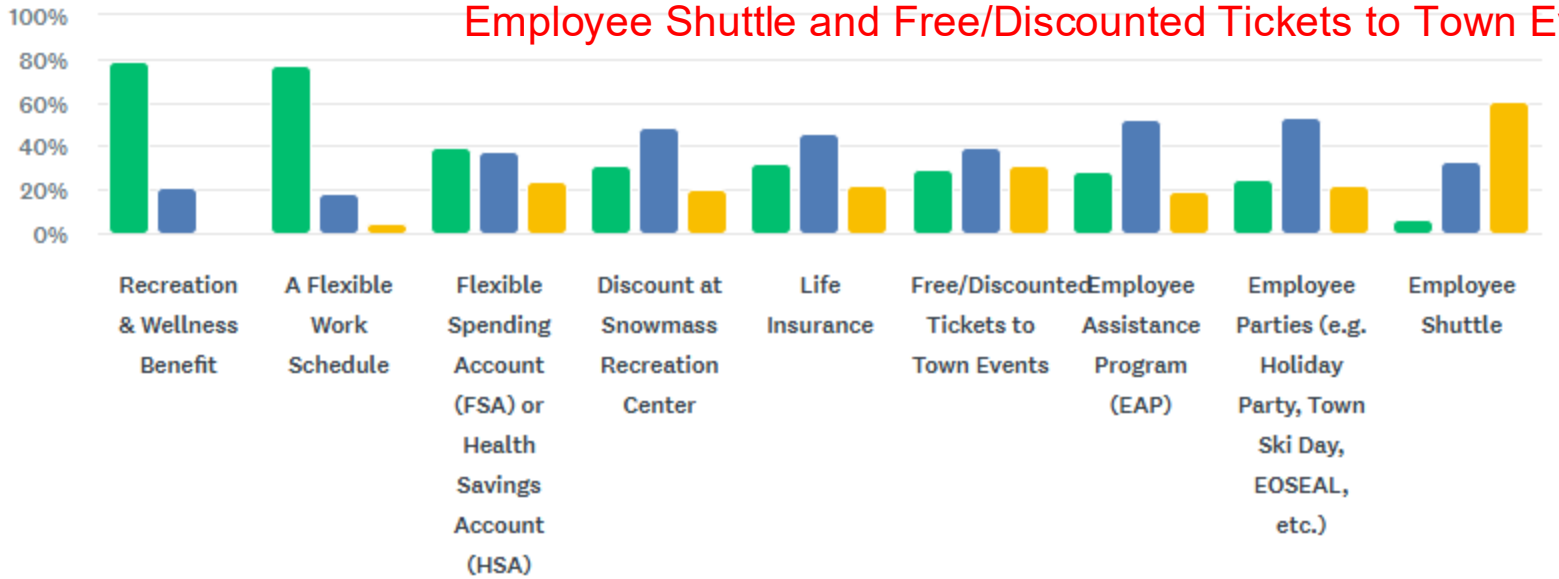


Q2: Please rate the following benefits in terms of importance, indicating whether they are very important, somewhat important, or not so important to you:

2025

Highest:
Flexible Work Schedule and Rec Benefit

Lowest:
Employee Shuttle and Free/Discounted Tickets to Town Events



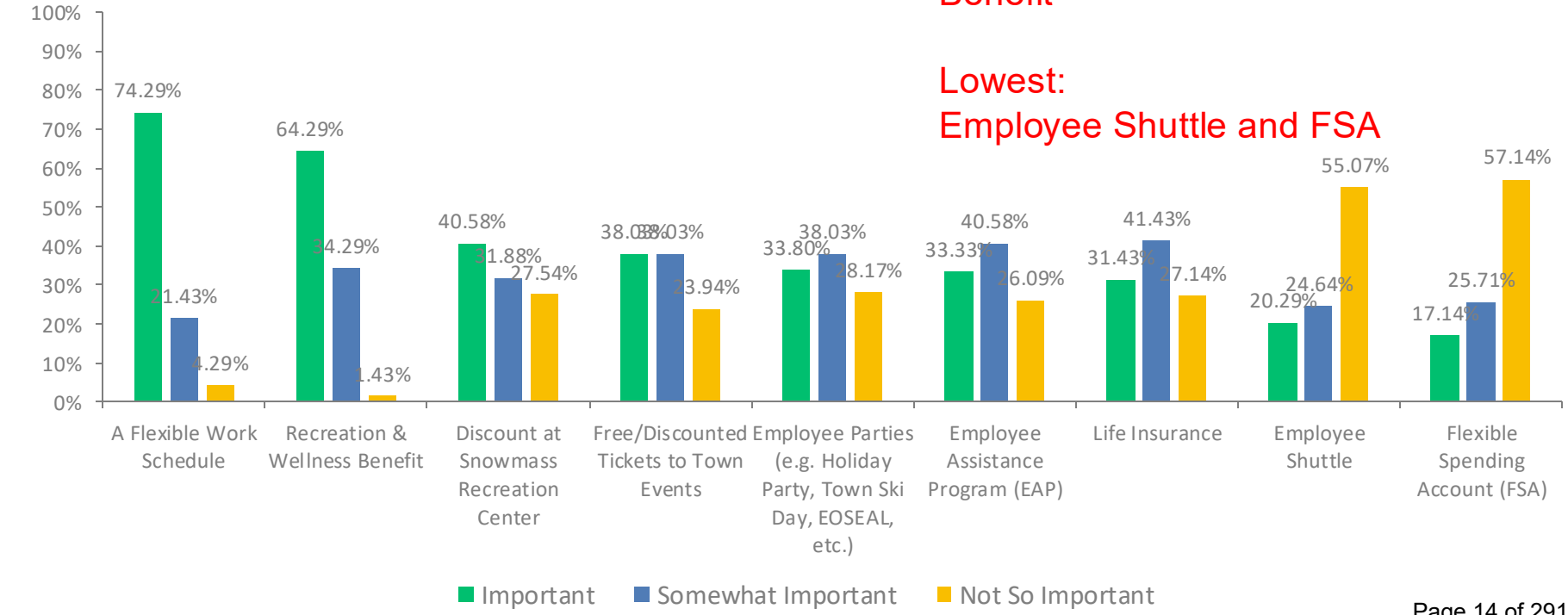
Q2: Please rate the following benefits in terms of importance, indicating whether they are very important, somewhat important, or not so important to you:

2024

Answered: 73 Skipped: 0

Highest:
Flexible Work Schedule and Rec Benefit

Lowest:
Employee Shuttle and FSA



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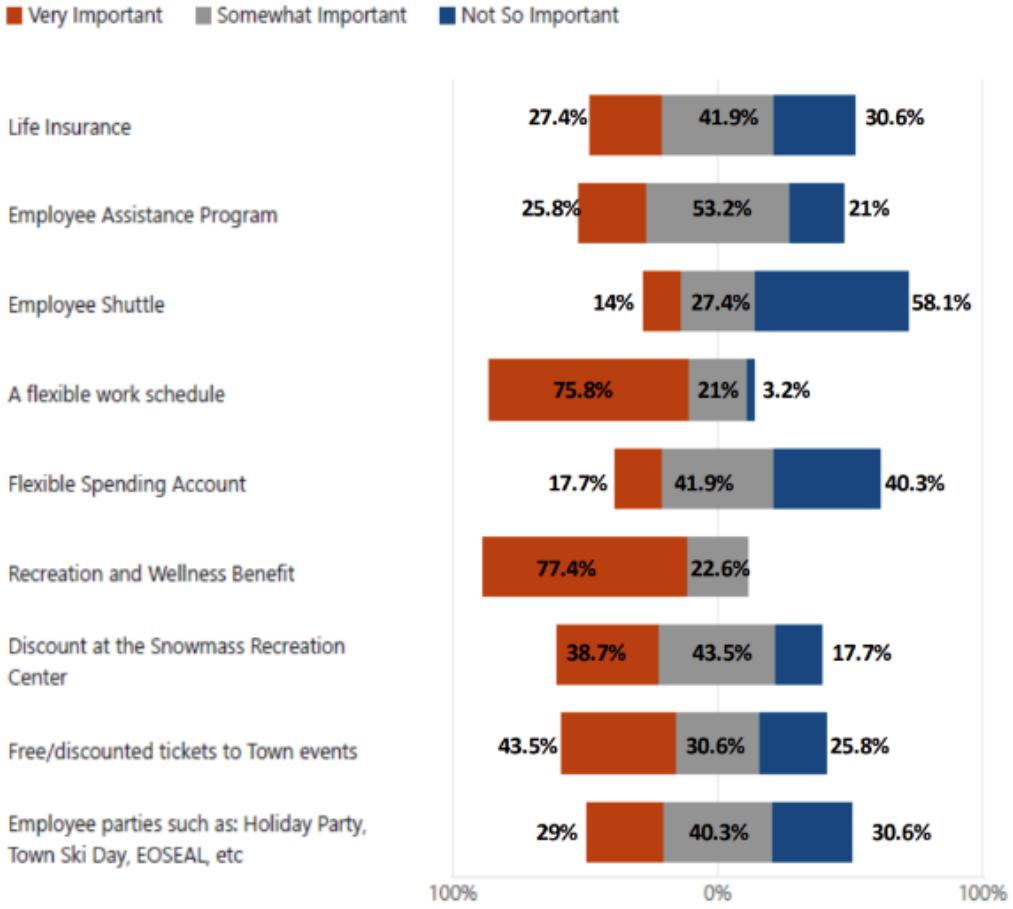


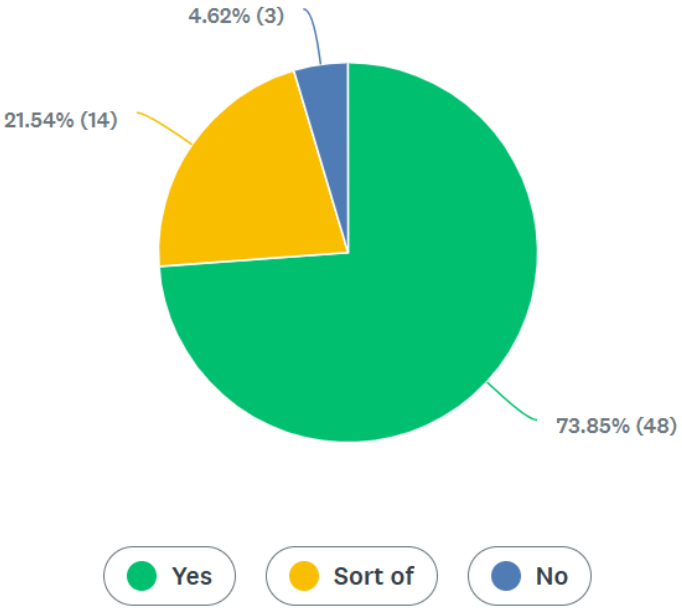
2023

Highest:
Flexible Work Schedule and Rec Benefit

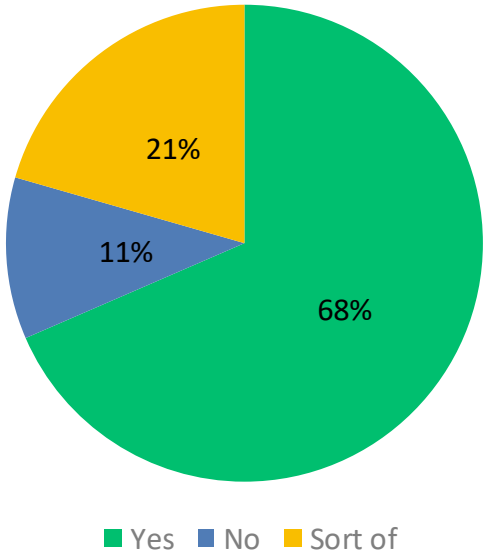
Lowest:
Employee Shuttle and FSA

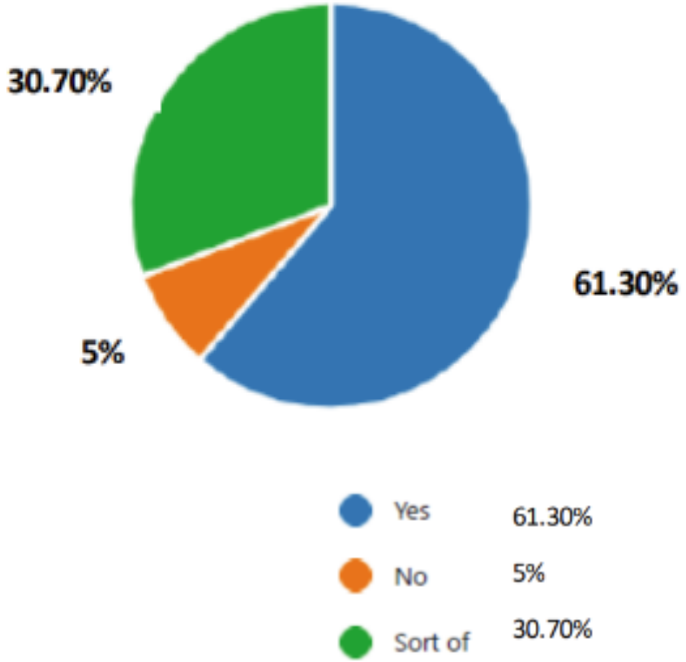
Q3: Do you currently have reliable, reasonably close, affordable housing?

2025

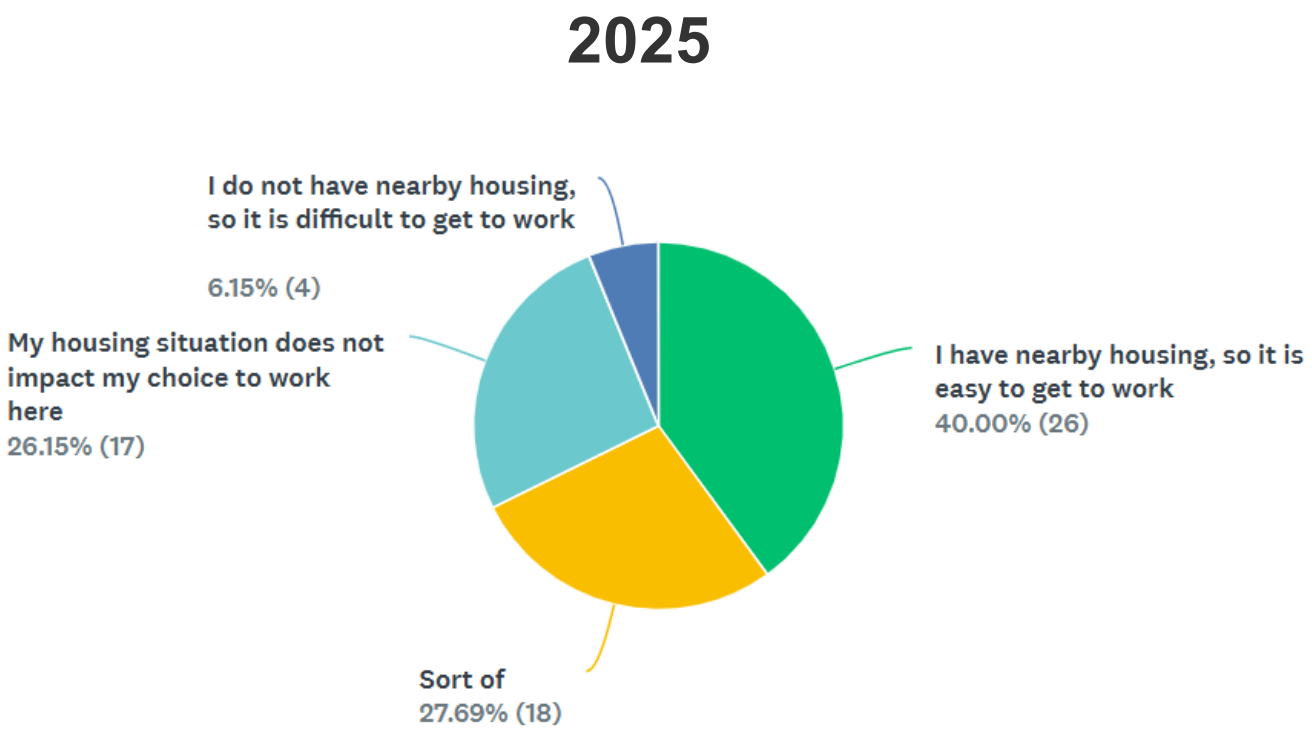


2024



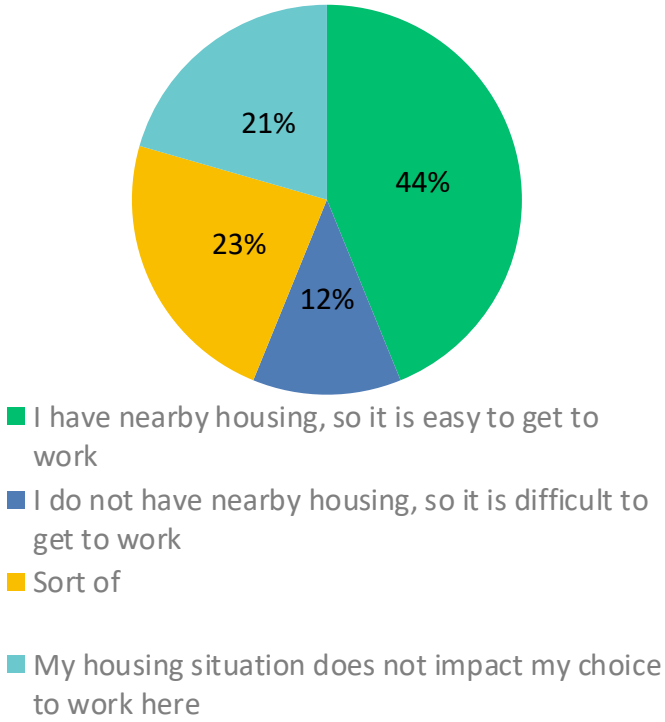


Q4: Does your housing situation impact or could it impact your employment at the Town of Snowmass Village?

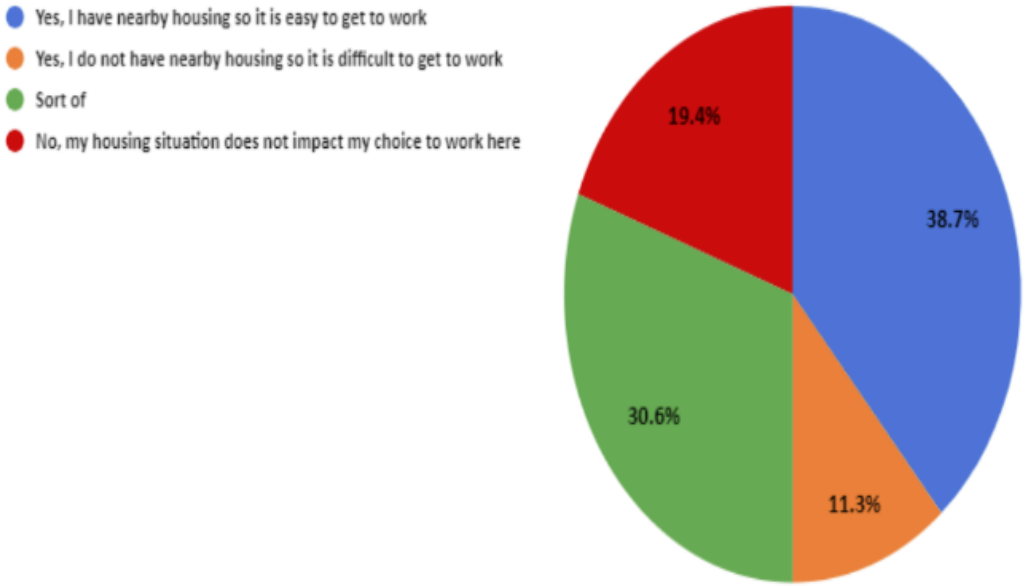


Q4: Does your housing situation impact or could it impact your employment at the Town of Snowmass Village?

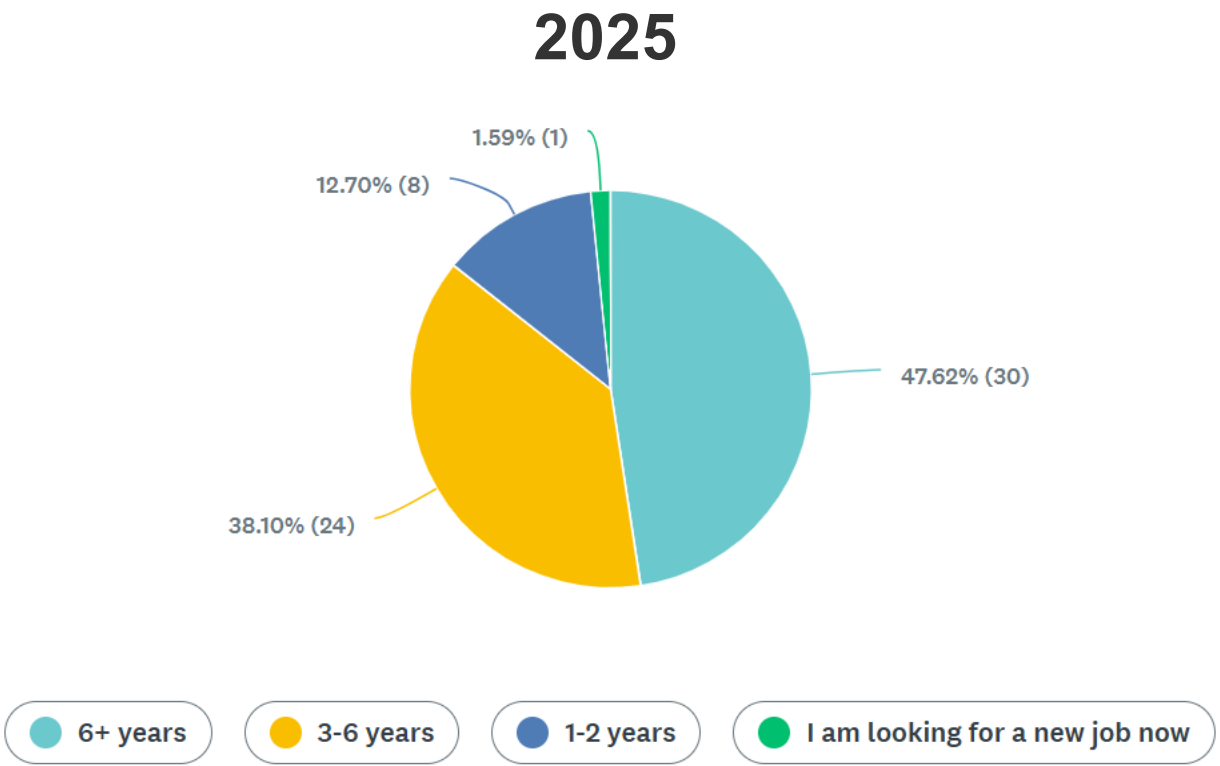
2023



2024

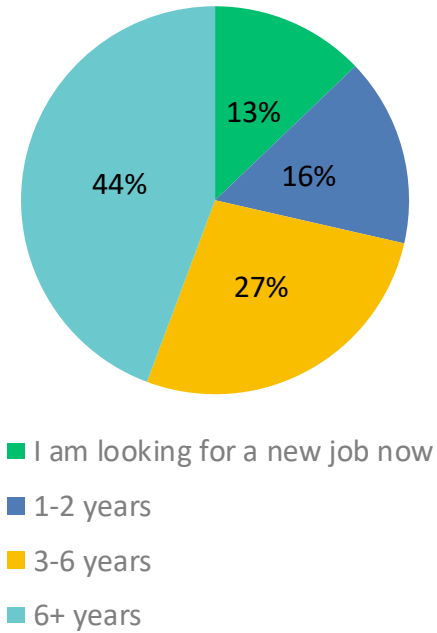


Q6: How long do you predict you will keep working for the Town of Snowmass Village?

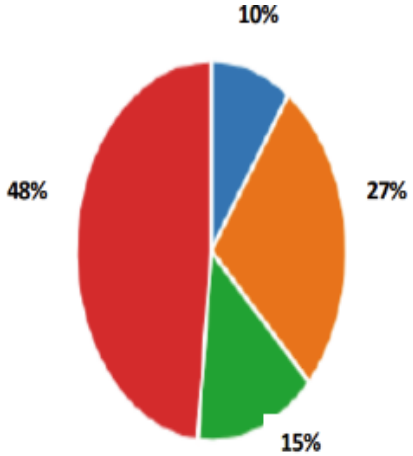


Q6: How long do you predict you will keep working for the Town of Snowmass Village?

2023

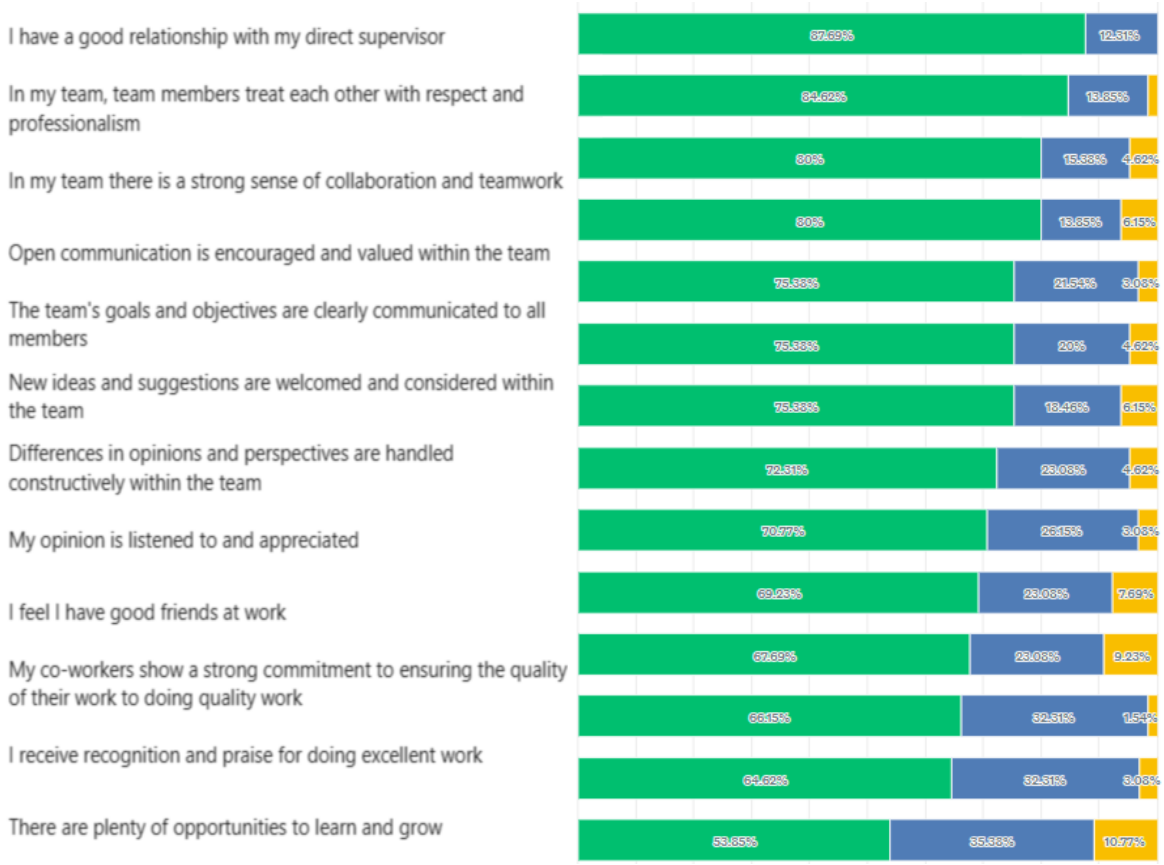


2024



Q8: Analyze the statements below and use the scale to identify your experience with the elements in your team:

2025



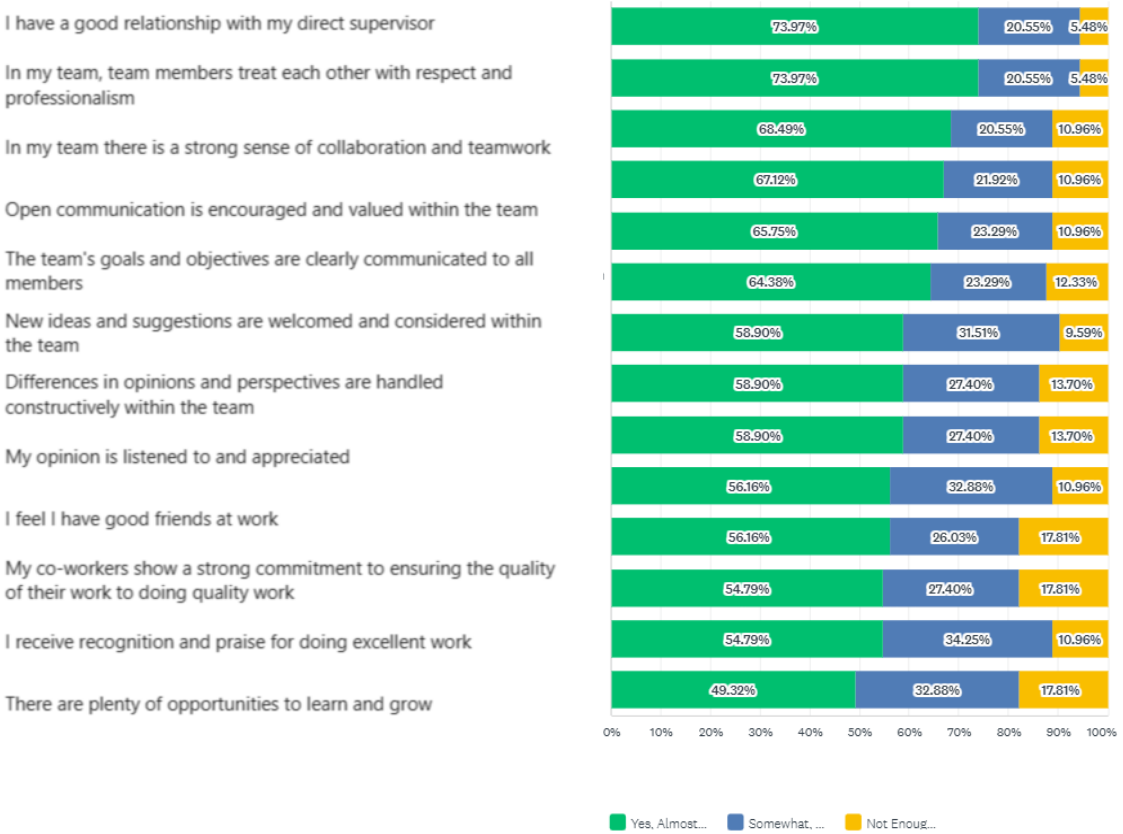
Q8: Analyze the statements below and use the scale to identify your experience with the elements in your team:

2025

	YES, ALMOST ALWAYS	SOMEWHAT, MOST OF THE TIME. IT IS OK	NOT ENOUGH, THIS NEEDS TO IMPROVE	TOTAL
I feel physically safe while performing my job duties	87.69% 57	12.31% 8	0.00% 0	65
I have a good relationship with my direct supervisor	84.62% 55	13.85% 9	1.54% 1	65
Open communication is encouraged and valued within the team	80.00% 52	13.85% 9	6.15% 4	65
I feel included and respected as a valued member of my team	80.00% 52	15.38% 10	4.62% 3	65
In my team, team members treat each other with respect and professionalism	75.38% 49	18.46% 12	6.15% 4	65
In my team there is a strong sense of collaboration and teamwork	75.38% 49	20.00% 13	4.62% 3	65
New ideas and suggestions are welcomed and considered within the team	75.38% 49	21.54% 14	3.08% 2	65
My opinion is listened to and appreciated	72.31% 47	23.08% 15	4.62% 3	65
Differences in opinions and perspectives are handled constructively within the team	70.77% 46	26.15% 17	3.08% 2	65
I feel I have good friends at work	69.23% 45	23.08% 15	7.69% 5	65
There are plenty of opportunities to learn and grow	67.69% 44	23.08% 15	9.23% 6	65
My co-workers show a strong commitment to ensuring the quality of their work to doing quality work	66.15% 43	32.31% 21	1.54% 1	65
The team's goals and objectives are clearly communicated to all members	64.62% 42	32.31% 21	3.08% 2	65
I receive recognition and praise for doing excellent work	53.85% 35	35.38% 23	10.77% 7	65

Q8: Analyze the statements below and use the scale to identify your experience with the elements in your team:

2024

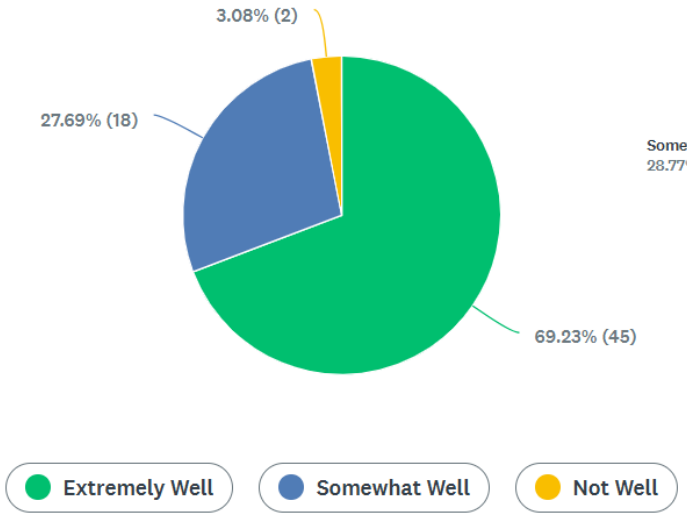


2023

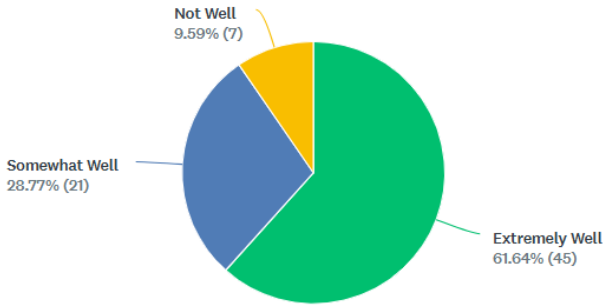
Yes, almost always
Somewhat, most of the time. It is OK.
Not enough, this needs to improve
I have a good relationship with my direct supervisor
In my team, team members treat each other with respect and professionalism
In my team there is a strong sense of collaboration and teamwork
Open communication is encouraged and valued within the team
The team's goals and objectives are clearly communicated to all members
New ideas and suggestions are welcomed and considered within the team
Differences in opinions and perspectives are handled constructively within the team
My opinion is listened to and appreciated
I feel I have good friends at work
My co-workers show a strong commitment to ensuring the quality of their work to doing quality work
I receive recognition and praise for doing excellent work
There are plenty of opportunities to learn and grow
100%
0%
100%

Q9: How well do you feel supported in your role at the Town of Snowmass Village?

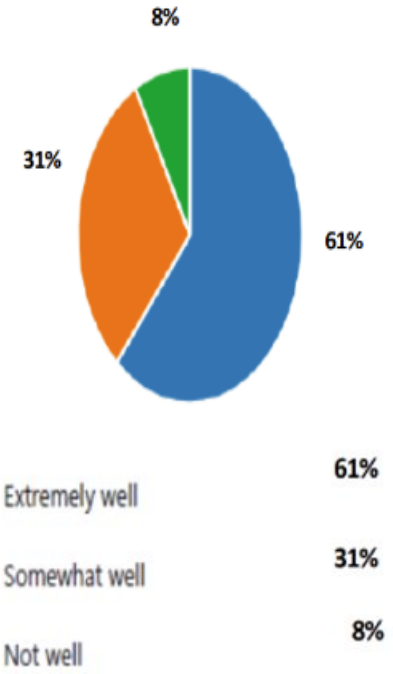
2023



2024

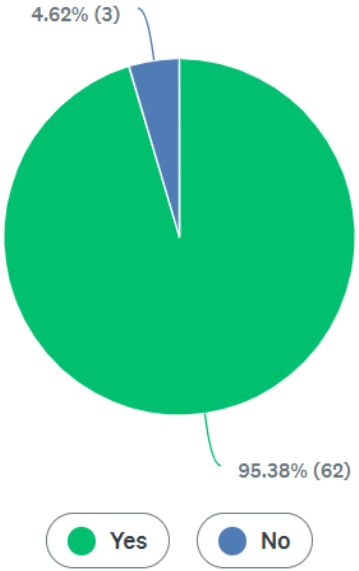


2025

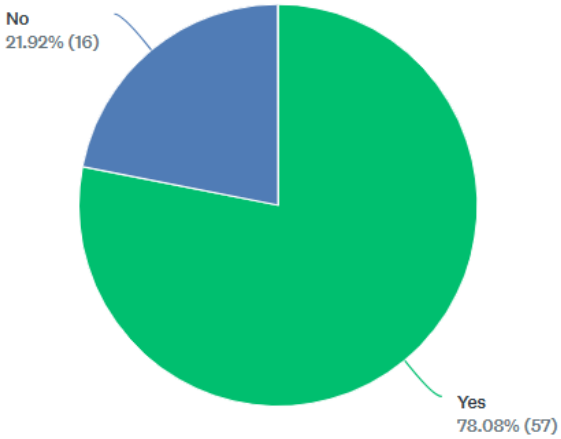


Q10: Do you believe you have the necessary resources and tools to effectively perform your job?

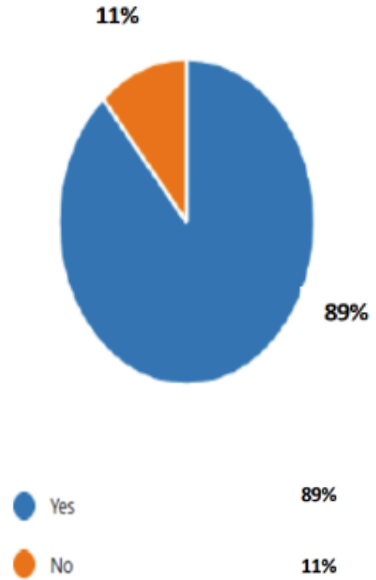
2025



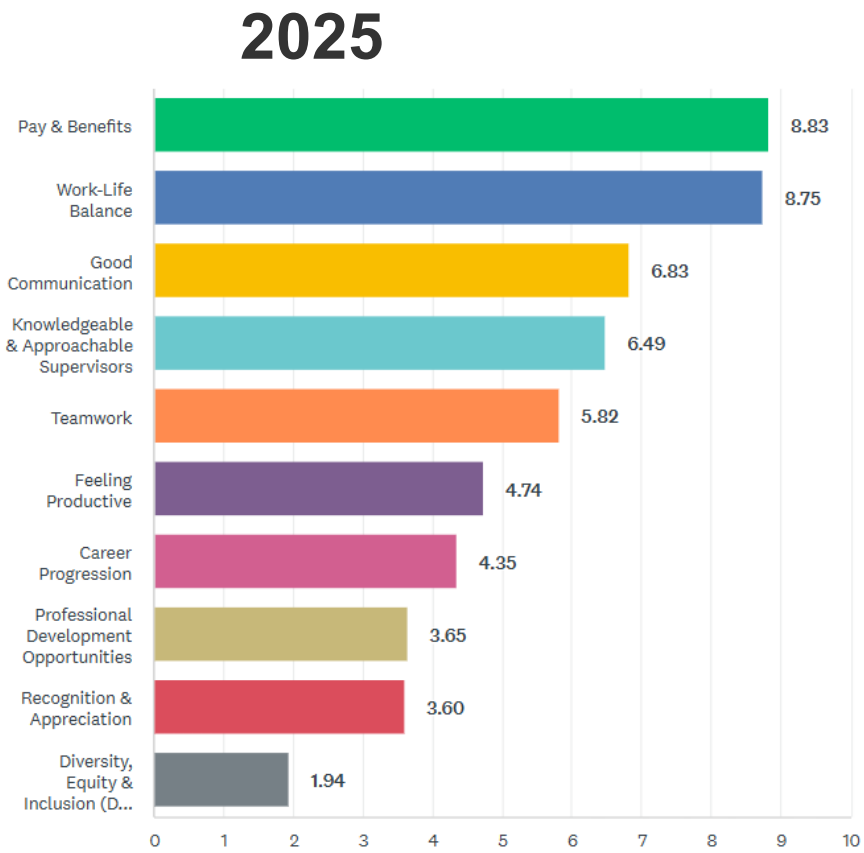
2024



2023



Q13: Please rank the following elements in order of importance, with 1 being the most important and 10 being the least important:



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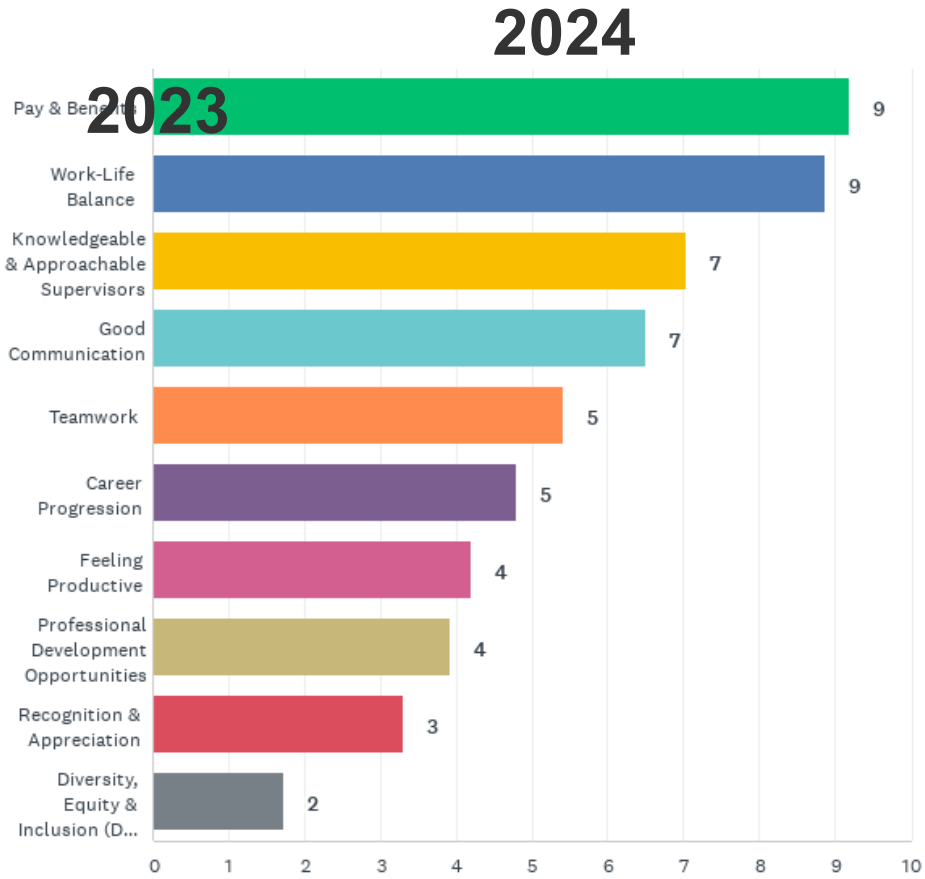
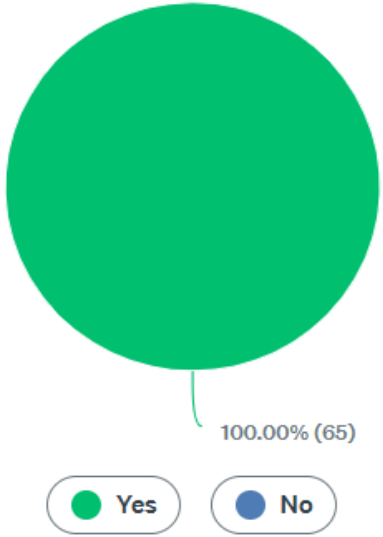


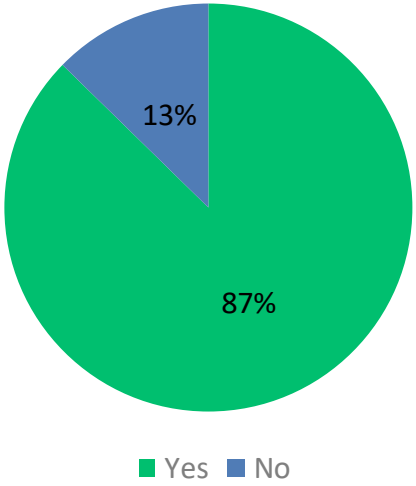
Q15: Would you recommend the Town of Snowmass Village to a friend or family member as good workplace?

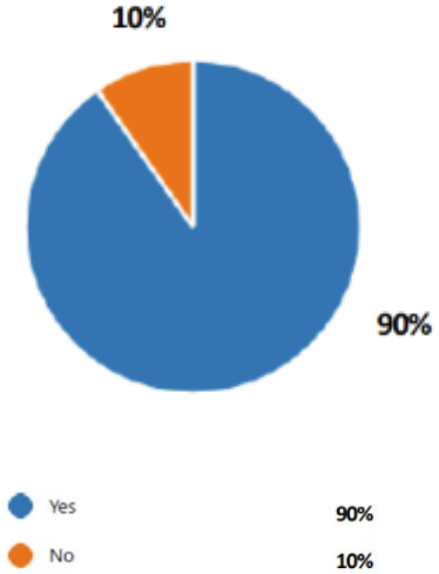
2025

2023



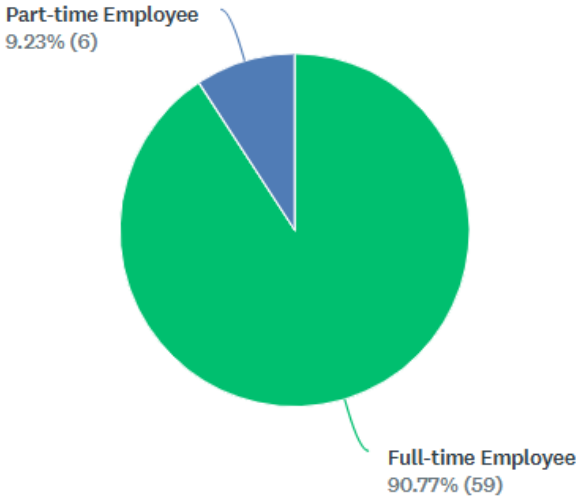
2024



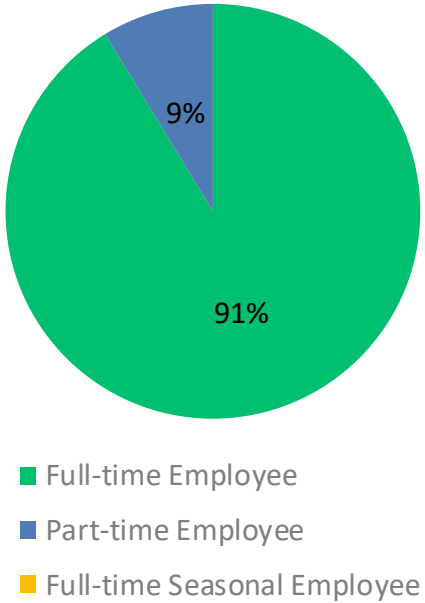


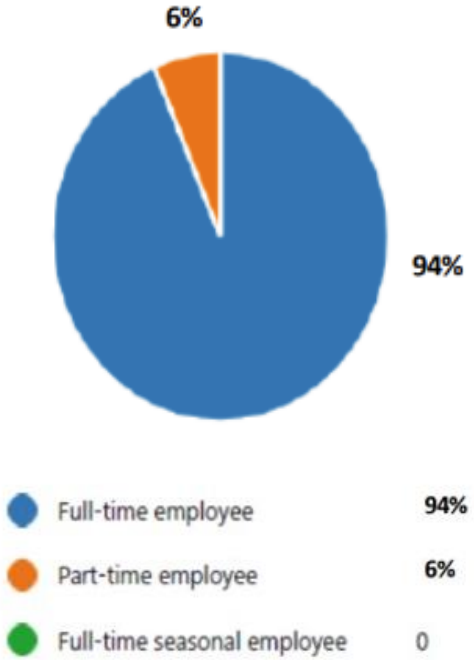
Q17: What is your current employment status?

2025



2024

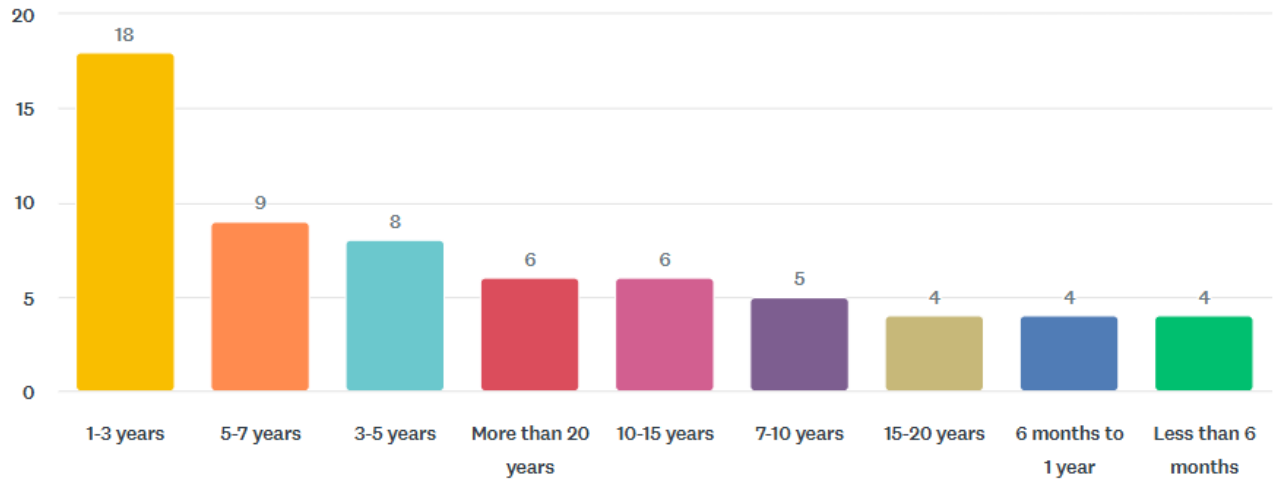




Q18: How long have you been working at the Town?

2025

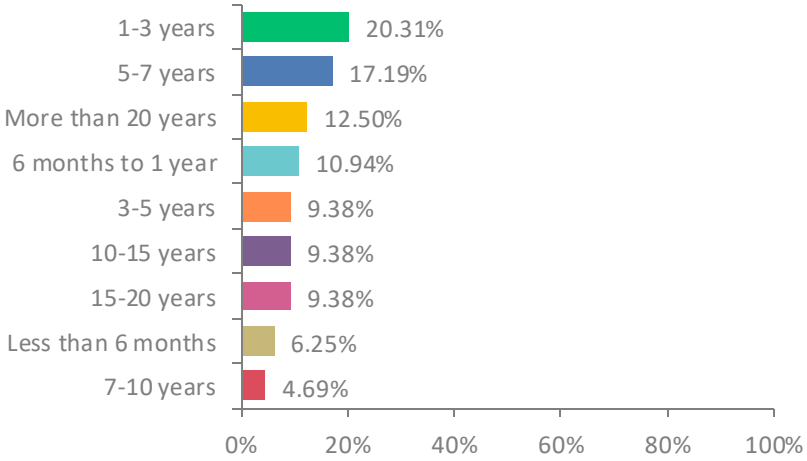
Answered: 64 Skipped: 1



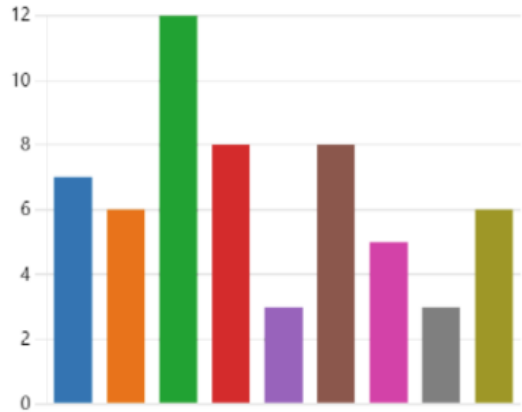
Q18: How long have you been working at the Town?

2024

2023

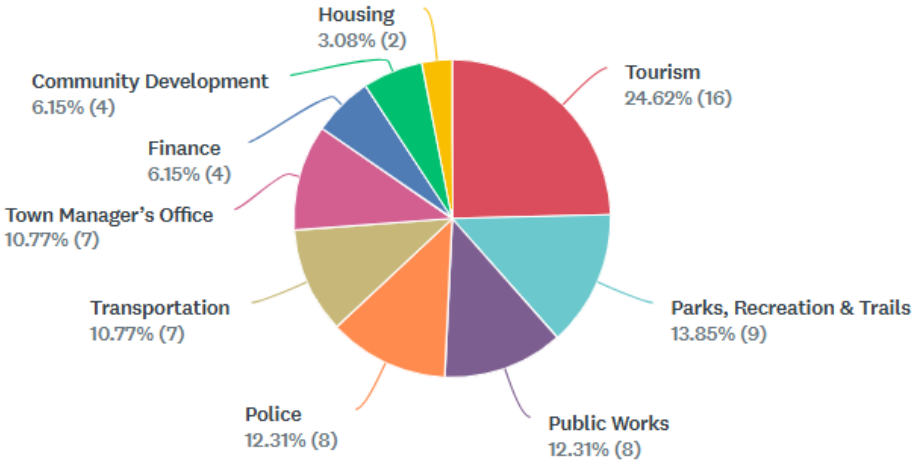


Less than 6 months	7
6 months to 1 year	6
1 to 3 years	12
3 to 5 years	8
5 to 7 years	3
7 to 10 years	8
10 to 15 years	5
15 to 20 years	3
More than 20 years	6



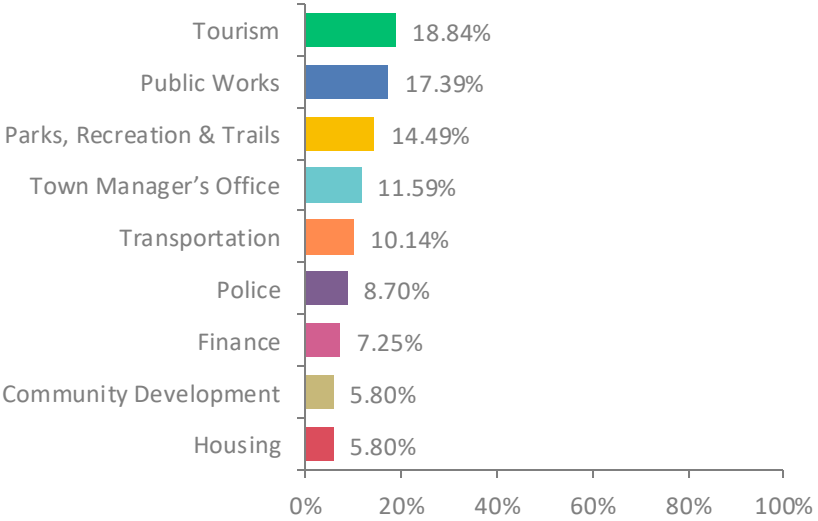
Q19: In which department do you work?

2025

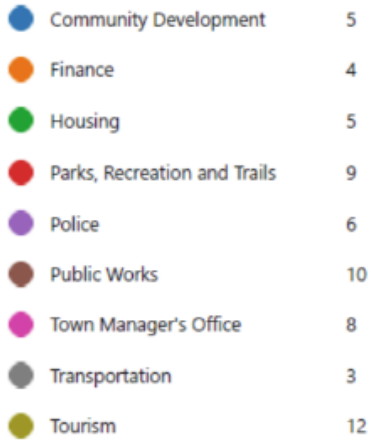


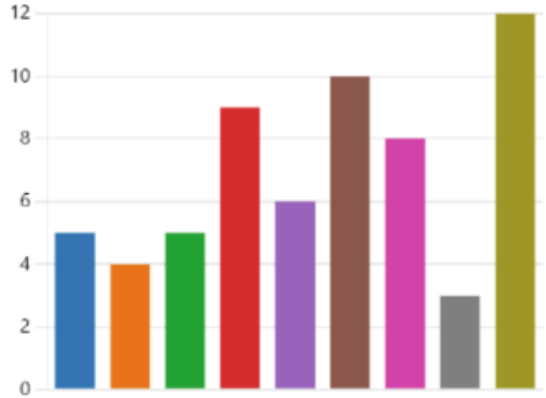
Q19: In which department do you work?

2024



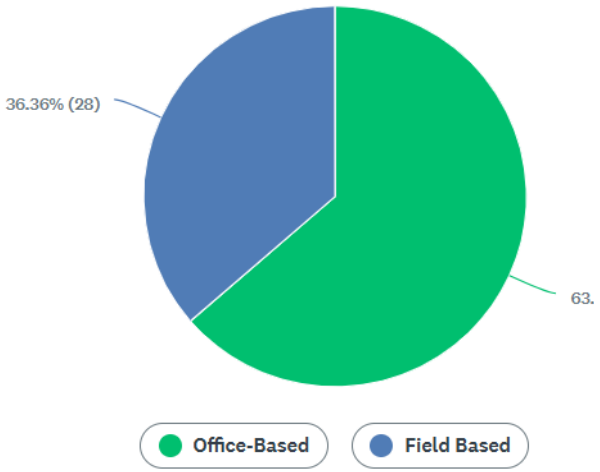
2023



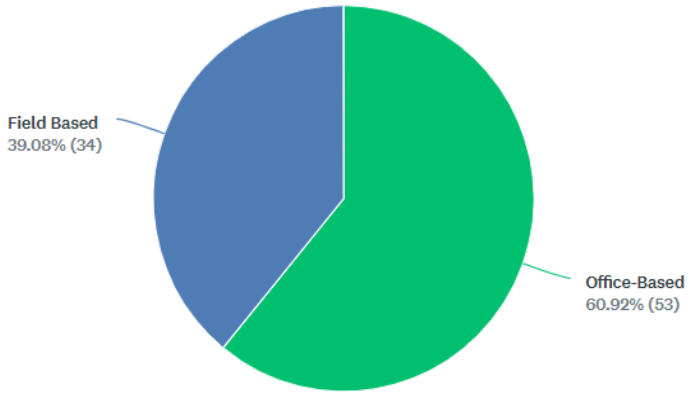


Q20: How would you categorize your role?

2025



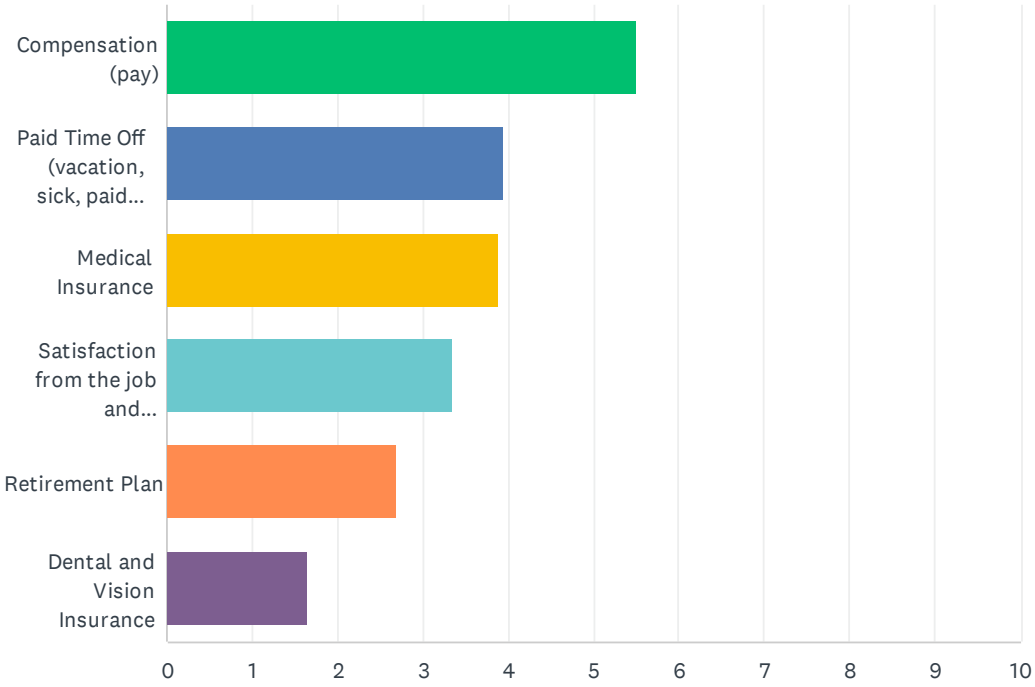
2024



2023

Q1 Rank the following items in terms of importance, with 1 being the most important and 6 being the least important:

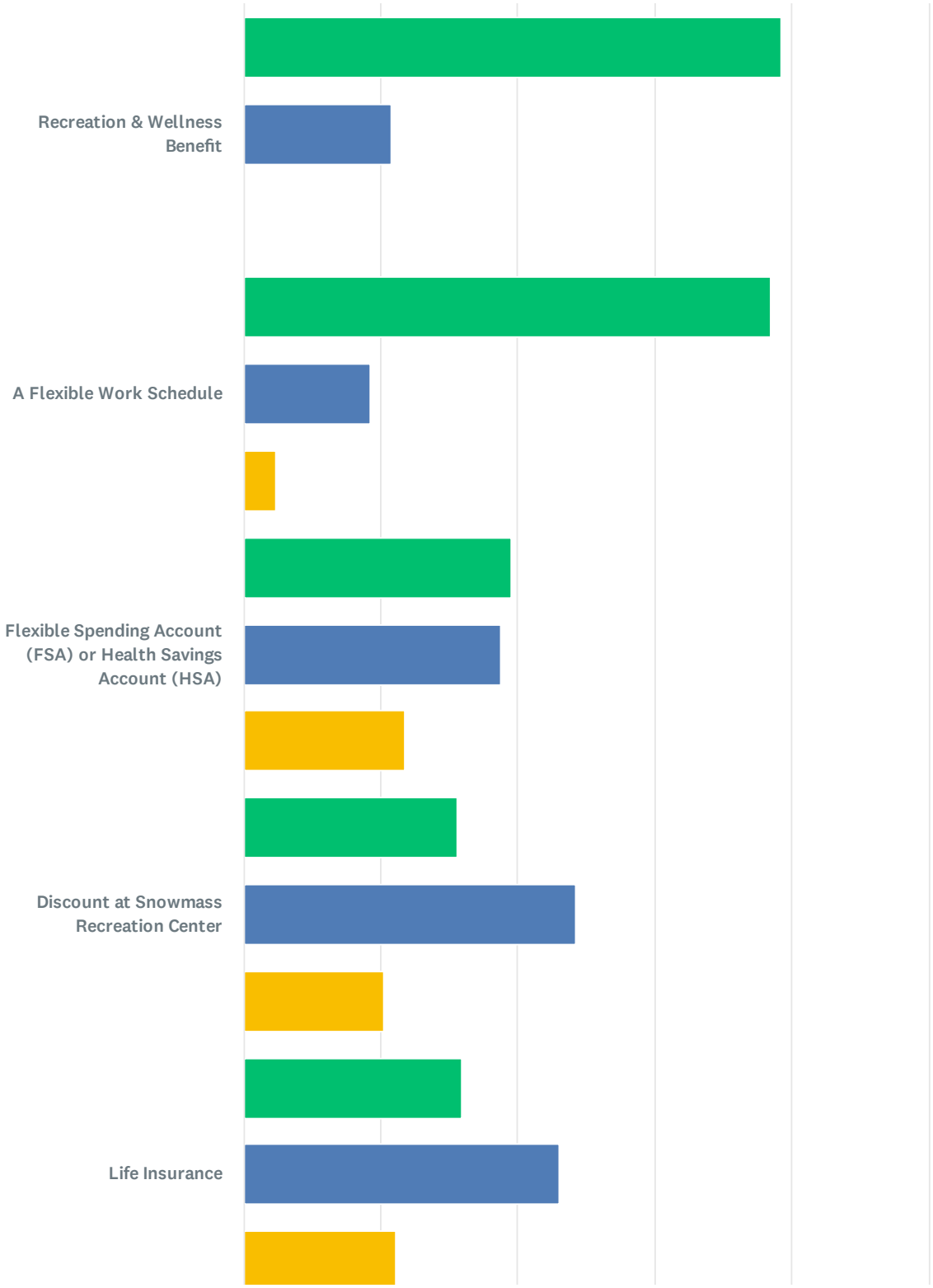
Answered: 65 Skipped: 0



	1	2	3	4	5	6	TOTAL	SCORE
Compensation (pay)	67.69% 44	20.00% 13	9.23% 6	1.54% 1	1.54% 1	0.00% 0	65	5.51
Paid Time Off (vacation, sick, paid holidays, parental leave)	6.15% 4	35.38% 23	26.15% 17	16.92% 11	10.77% 7	4.62% 3	65	3.95
Medical Insurance	4.62% 3	20.00% 13	41.54% 27	26.15% 17	7.69% 5	0.00% 0	65	3.88
Satisfaction from the job and relationships with coworkers	21.54% 14	16.92% 11	9.23% 6	10.77% 7	9.23% 6	32.31% 21	65	3.34
Retirement Plan	0.00% 0	7.69% 5	10.77% 7	33.85% 22	36.92% 24	10.77% 7	65	2.68
Dental and Vision Insurance	0.00% 0	0.00% 0	3.08% 2	10.77% 7	33.85% 22	52.31% 34	65	1.65

Q2 Please rate the following benefits in terms of importance, indicating whether they are very important, somewhat important, or not so important to you:

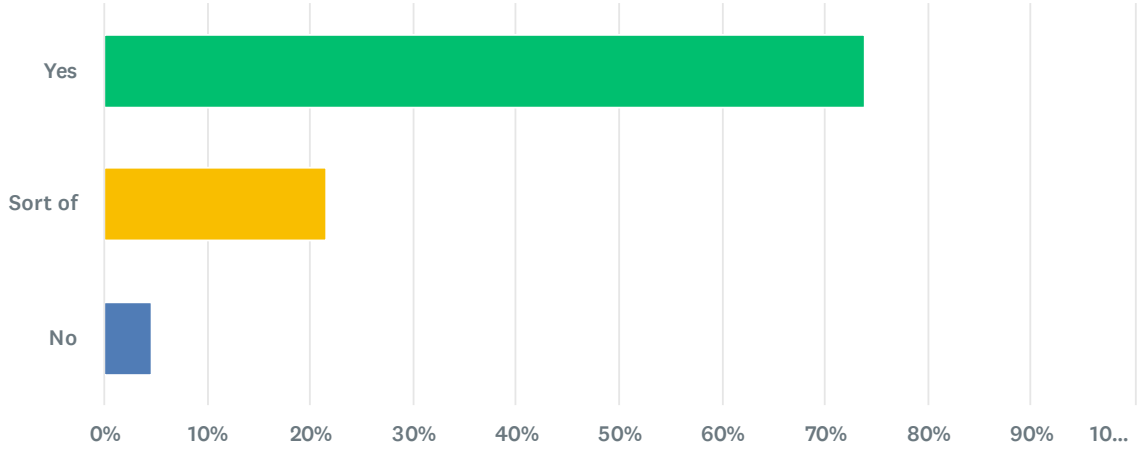
Answered: 65 Skipped: 0



	IMPORTANT	SOMEWHAT IMPORTANT	NOT SO IMPORTANT	TOTAL
Recreation & Wellness Benefit	78.46% 51	21.54% 14	0.00% 0	65
A Flexible Work Schedule	76.92% 50	18.46% 12	4.62% 3	65
Flexible Spending Account (FSA) or Health Savings Account (HSA)	39.06% 25	37.50% 24	23.44% 15	64
Life Insurance	31.75% 20	46.03% 29	22.22% 14	63
Discount at Snowmass Recreation Center	31.25% 20	48.44% 31	20.31% 13	64
Free/Discounted Tickets to Town Events	29.69% 19	39.06% 25	31.25% 20	64
Employee Assistance Program (EAP)	28.57% 18	52.38% 33	19.05% 12	63
Employee Parties (e.g. Holiday Party, Town Ski Day, EOSEAL, etc.)	25.00% 16	53.13% 34	21.88% 14	64
Employee Shuttle	6.35% 4	33.33% 21	60.32% 38	63

Q3 Do you currently have reliable, reasonably close, affordable housing?

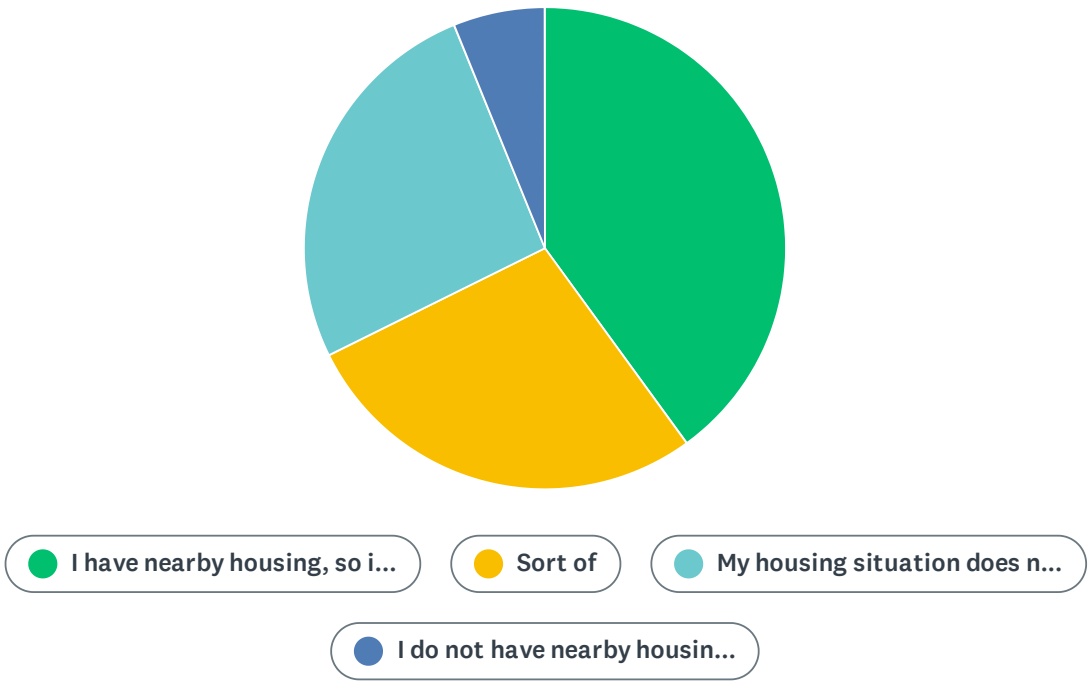
Answered: 65 Skipped: 0



Answer Choices	Percentage	Responses
Yes	73.85%	48
Sort of	21.54%	14
No	4.62%	3
Total		**65**

Q4 Does your housing situation impact or could it impact your employment at the Town of Snowmass Village?

Answered: 65 Skipped: 0



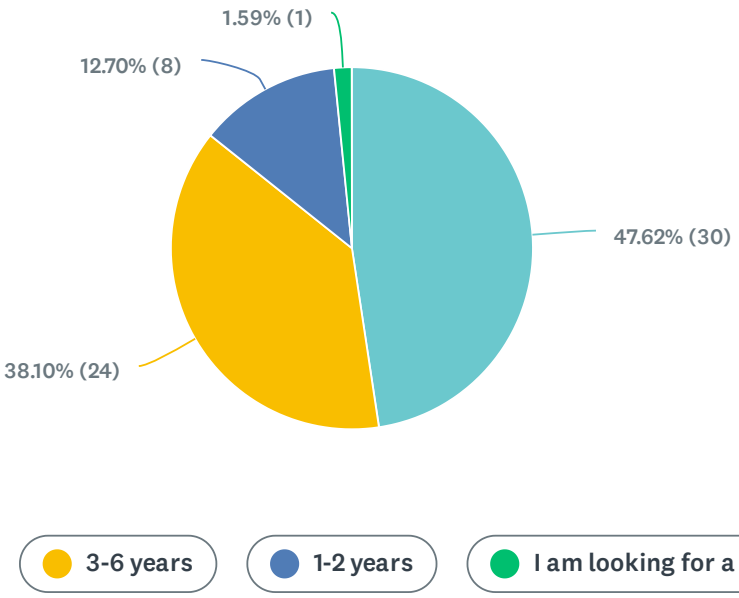
Answer Choices	Percentage	Responses
I have nearby housing, so it is easy to get to work	40.00%	26
Sort of	27.69%	18
My housing situation does not impact my choice to work here	26.15%	17
I do not have nearby housing, so it is difficult to get to work	6.15%	4
Total		**65**

Q5 If you answered "Sort of" on the previous question, please share more details:

Answered: 23 Skipped: 42

Q6 How long do you predict you will keep working for the Town of Snowmass Village?

Answered: 63 Skipped: 2



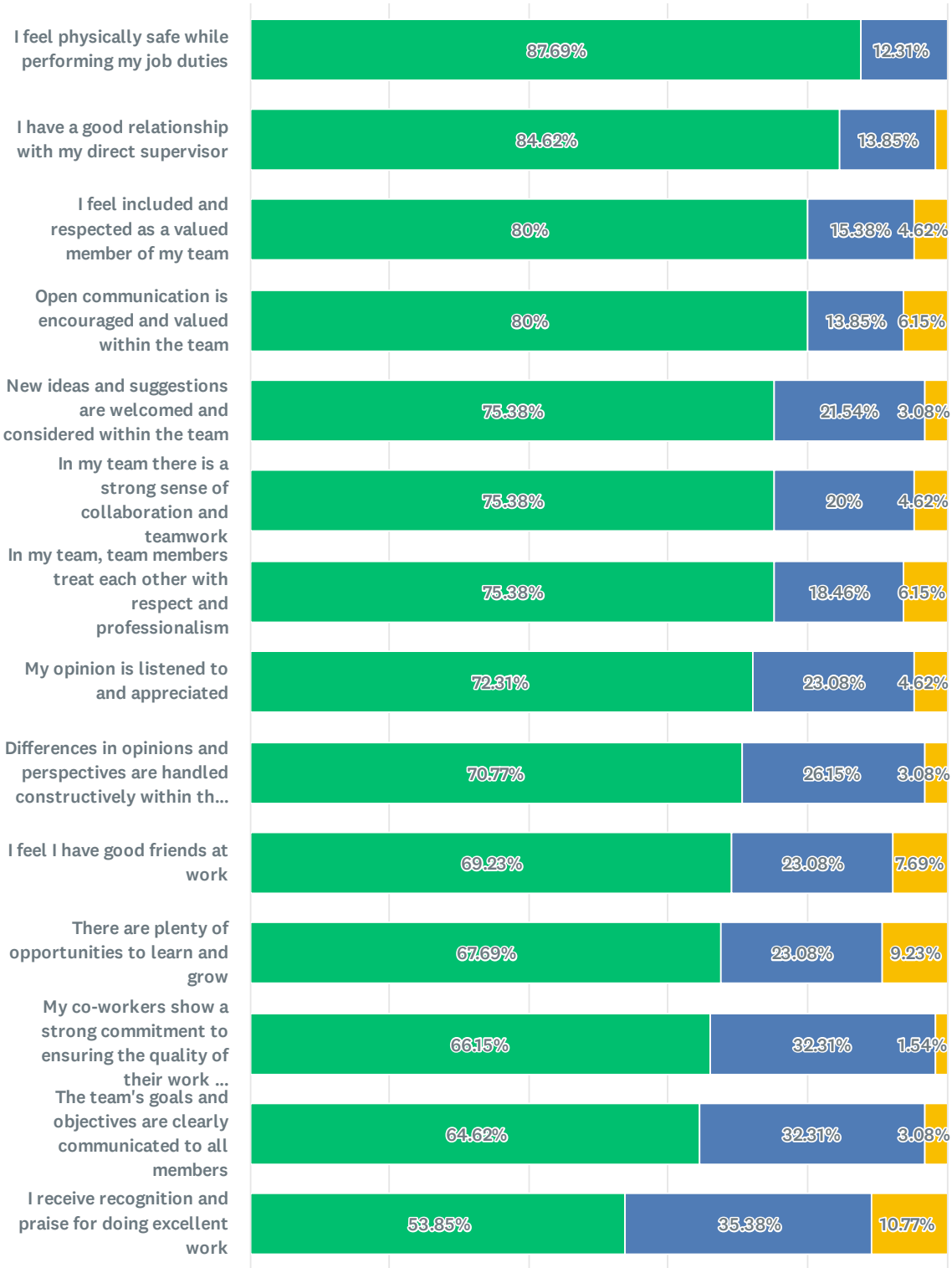
Answer Choices	Percentage	Responses
6+ years	47.62%	30
3-6 years	38.10%	24
1-2 years	12.70%	8
I am looking for a new job now	1.59%	1
Total		**63**

Q7 If you have any further details or thoughts related to the previous question, please feel free to share them here.

Answered: 12 Skipped: 53

Q8 Analyze the statements below and use the scale to identify your experience with the elements in your team:

Answered: 65 Skipped: 0

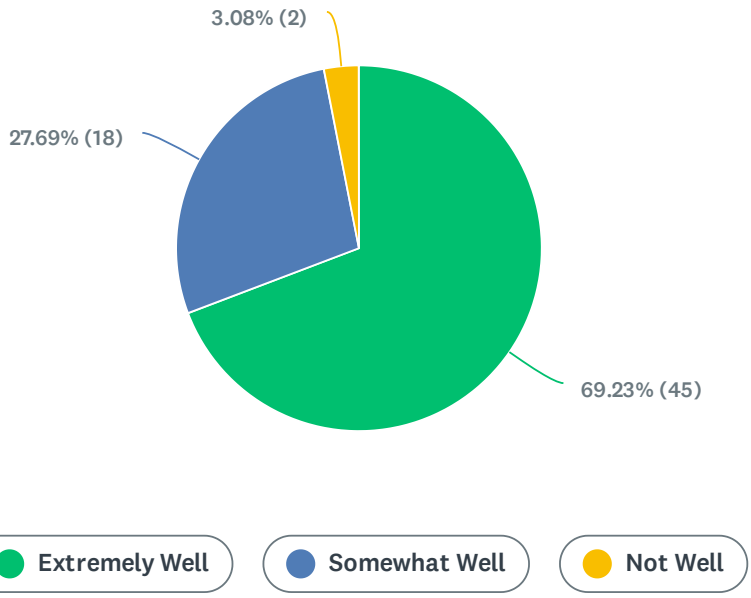


Collapse

	YES, ALMOST ALWAYS	SOMEWHAT, MOST OF THE TIME. IT IS OK	NOT ENOUGH, THIS NEEDS TO IMPROVE	TOTAL
I feel physically safe while performing my job duties	87.69% 57	12.31% 8	0.00% 0	65
I have a good relationship with my direct supervisor	84.62% 55	13.85% 9	1.54% 1	65
Open communication is encouraged and valued within the team	80.00% 52	13.85% 9	6.15% 4	65
I feel included and respected as a valued member of my team	80.00% 52	15.38% 10	4.62% 3	65
In my team, team members treat each other with respect and professionalism	75.38% 49	18.46% 12	6.15% 4	65
In my team there is a strong sense of collaboration and teamwork	75.38% 49	20.00% 13	4.62% 3	65
New ideas and suggestions are welcomed and considered within the team	75.38% 49	21.54% 14	3.08% 2	65
My opinion is listened to and appreciated	72.31% 47	23.08% 15	4.62% 3	65
Differences in opinions and perspectives are handled constructively within the team	70.77% 46	26.15% 17	3.08% 2	65
I feel I have good friends at work	69.23% 45	23.08% 15	7.69% 5	65
There are plenty of opportunities to learn and grow	67.69% 44	23.08% 15	9.23% 6	65
My co-workers show a strong commitment to ensuring the quality of their work to doing quality work	66.15% 43	32.31% 21	1.54% 1	65
The team's goals and objectives are clearly communicated to all members	64.62% 42	32.31% 21	3.08% 2	65
I receive recognition and praise for doing excellent work	53.85% 35	35.38% 23	10.77% 7	65

Q9 How well do you feel supported in your role at the Town of Snowmass Village?

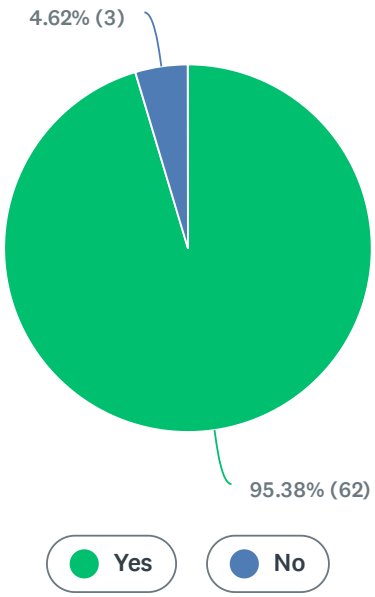
Answered: 65 Skipped: 0



Answer Choices	Percentage	Responses
Extremely Well	69.23%	45
Somewhat Well	27.69%	18
Not Well	3.08%	2
Total		**65**

Q10 Do you believe you have the necessary resources and tools to effectively perform your job?

Answered: 65 Skipped: 0



Answer Choices	Percentage	Responses
Yes	95.38%	62
No	4.62%	3
Total		**65**

Q11 If your response to the previous question was 'No,' kindly provide any additional information or details regarding your experience.

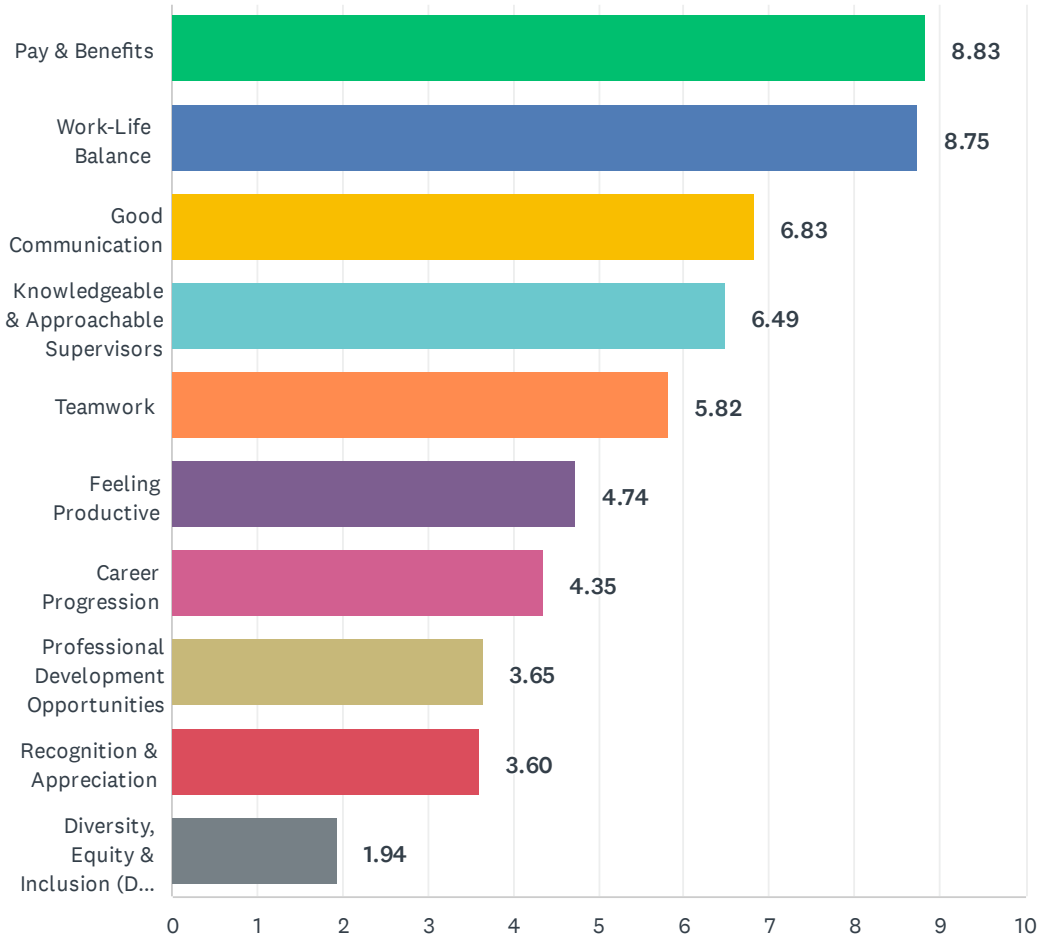
Answered: 3 Skipped: 62

Q12 Please share any additional feedback or comments you have about your supervisor or team.

Answered: 9 Skipped: 56

Q13 Please rank the following elements in order of importance, with 1 being the most important and 10 being the least important:

Answered: 65 Skipped: 0



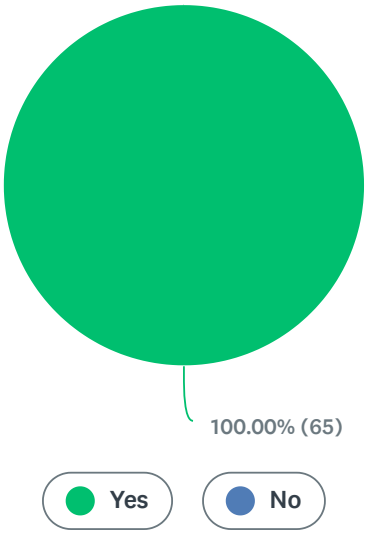
	1	2	3	4	5	6	7	8	9	10	TOTAL
Pay & Benefits	36.92% 24	41.54% 27	7.69% 5	6.15% 4	3.08% 2	0.00% 0	3.08% 2	1.54% 1	0.00% 0	0.00% 0	65
Work-Life Balance	47.69% 31	30.77% 20	3.08% 2	4.62% 3	7.69% 5	1.54% 1	1.54% 1	0.00% 0	1.54% 1	1.54% 1	65
Good Communication	4.62% 3	9.23% 6	23.08% 15	26.15% 17	12.31% 8	16.92% 11	4.62% 3	3.08% 2	0.00% 0	0.00% 0	65
Knowledgeable & Approachable Supervisors	4.62% 3	4.62% 3	23.08% 15	20.00% 13	20.00% 13	16.92% 11	4.62% 3	1.54% 1	4.62% 3	0.00% 0	65
Teamwork	0.00% 0	3.08% 2	12.31% 8	21.54% 14	30.77% 20	9.23% 6	9.23% 6	9.23% 6	4.62% 3	0.00% 0	65
Feeling Productive	4.62% 3	4.62% 3	13.85% 9	6.15% 4	4.62% 3	13.85% 9	9.23% 6	16.92% 11	21.54% 14	4.62% 3	65
Career Progression	0.00% 0	4.62% 3	9.23% 6	4.62% 3	4.62% 3	15.38% 10	18.46% 12	29.23% 19	7.69% 5	6.15% 4	65
Professional Development Opportunities	0.00% 0	0.00% 0	4.62% 3	6.15% 4	1.54% 1	10.77% 7	29.23% 19	13.85% 9	29.23% 19	4.62% 3	65
Recognition & Appreciation	0.00% 0	1.54% 1	3.08% 2	4.62% 3	15.38% 10	12.31% 8	13.85% 9	7.69% 5	15.38% 10	26.15% 17	65
Diversity, Equity & Inclusion (DEI) Initiatives	1.54% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	3.08% 2	6.15% 4	16.92% 11	15.38% 10	56.92% 37	65

Q14 What do you like about the culture of working at the Town of Snowmass Village?

Answered: 43 Skipped: 22

Q15 Would you recommend the Town of Snowmass Village to a friend or family member as good workplace?

Answered: 65 Skipped: 0



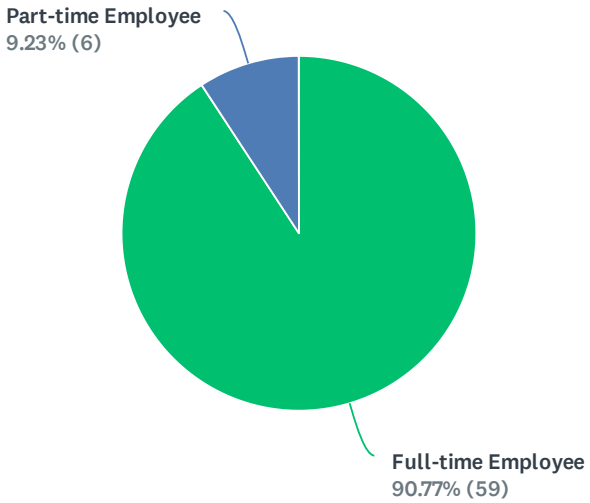
Answer Choices	Percentage	Responses
Yes	100.00%	65
No	0%	0
Total		**65**

Q16 Please share any additional feedback or comments you have about your department or the Town of Snowmass Village work environment.

Answered: 7 Skipped: 58

Q17 What is your current employment status?

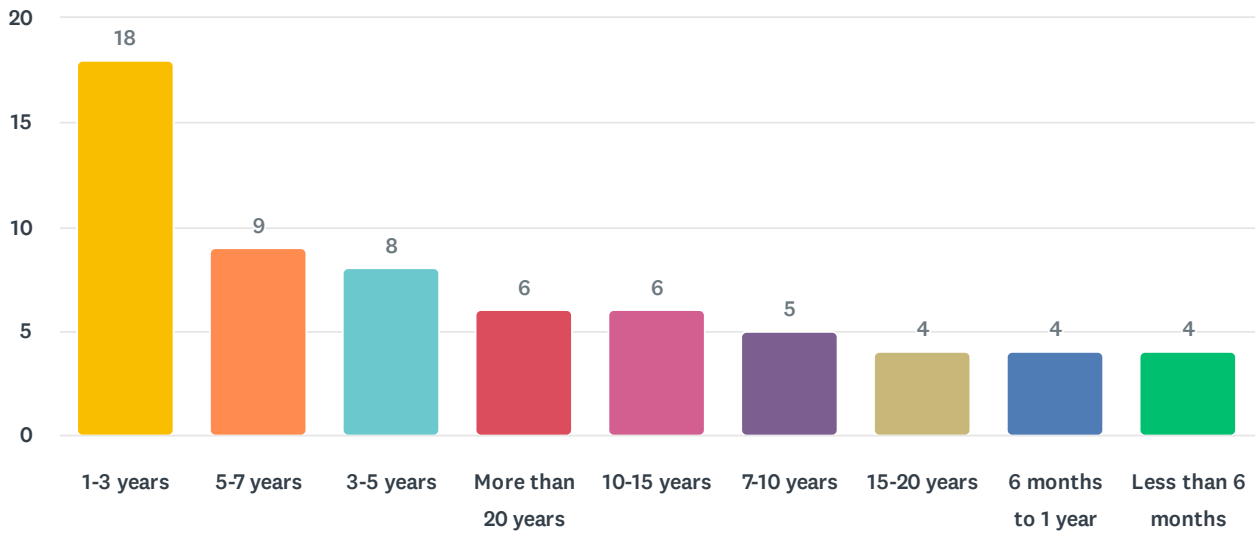
Answered: 65 Skipped: 0



Answer Choices	Percentage	Responses
Full-time Employee	90.77%	59
Part-time Employee	9.23%	6
Full-time Seasonal Employee	0%	0
Total		**65**

Q18 How long have you been working at the Town?

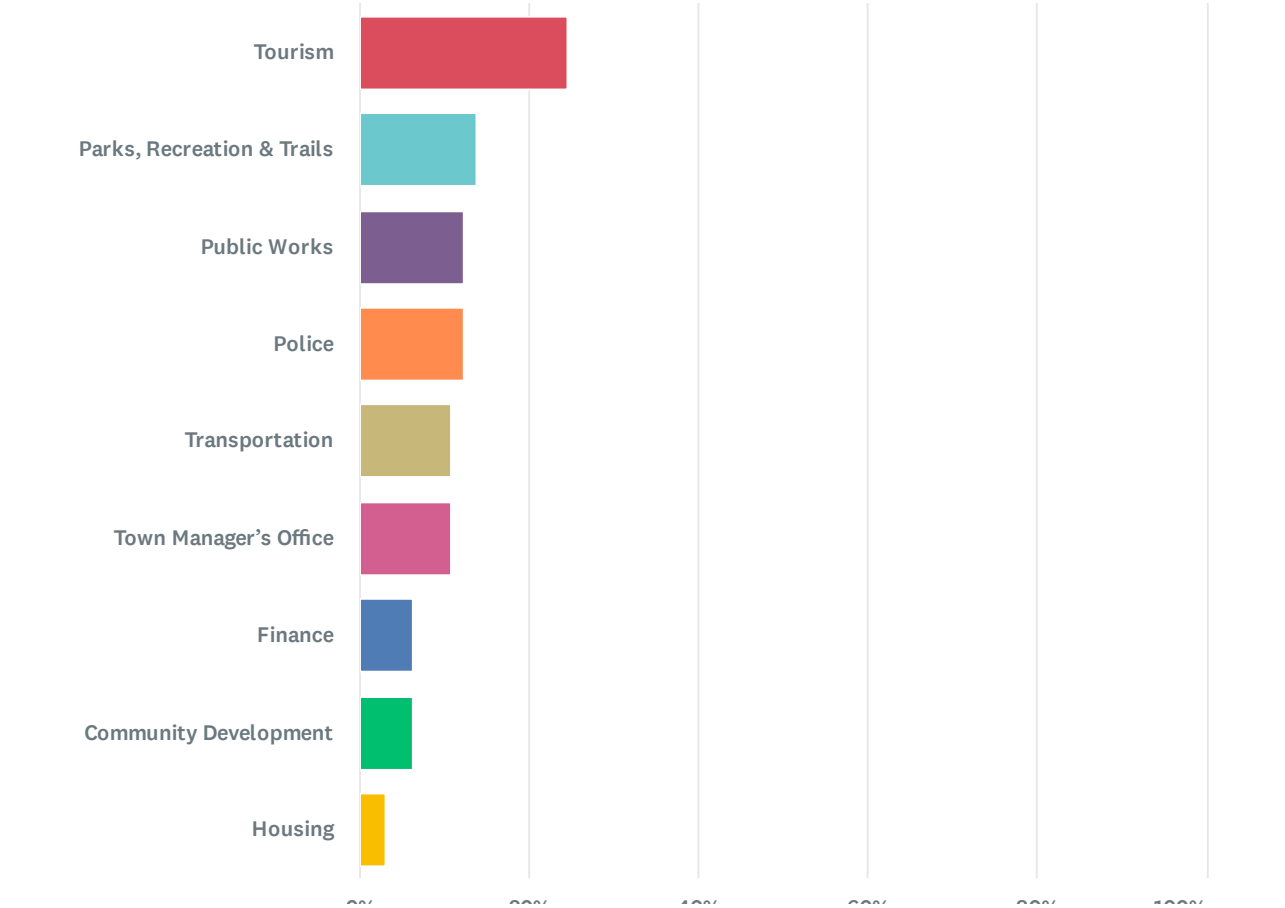
Answered: 64 Skipped: 1



Answer Choices	Percentage	Responses
1-3 years	28.13%	18
5-7 years	14.06%	9
3-5 years	12.50%	8
More than 20 years	9.38%	6
10-15 years	9.38%	6
7-10 years	7.81%	5
15-20 years	6.25%	4
6 months to 1 year	6.25%	4
Less than 6 months	6.25%	4
Total		**64**

Q19 In which department do you work?

Answered: 65 Skipped: 0

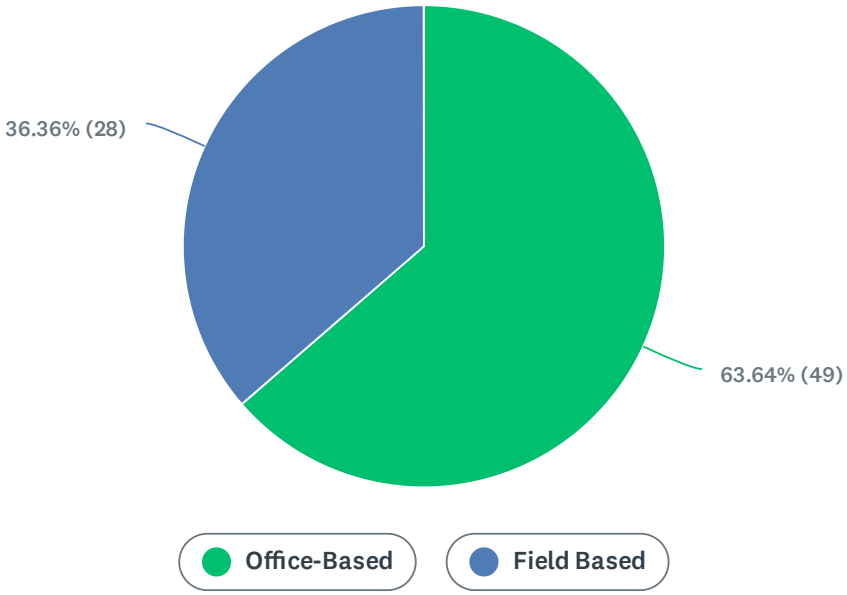


Answer Choices	Percentage	Responses
Tourism	24.62%	16
Parks, Recreation & Trails	13.85%	9
Public Works	12.31%	8
Police	12.31%	8
Transportation	10.77%	7
Town Manager's Office	10.77%	7
Total		**65**

Answer Choices	Percentage	Responses
Finance	6.15%	4
Community Development	6.15%	4
Housing	3.08%	2
Total		**65**

Q20 How would you categorize your role?

Answered: 65 Skipped: 0



Answer Choices	Percentage	Responses
Office-Based	63.64%	49
Field Based	36.36%	28
Total		**77**

Town of Snowmass Village

Agenda Item Summary

DATE OF MEETING:
February 9, 2026

AGENDA ITEM:
Mall Transit Center Discussion

PRESENTED BY:
Sam Guarino, Transportation Director
Clint Kinney, Town Manager
Alex Jauch, SEH

BACKGROUND:

The need for a Mall Transit Center that incorporates both the regional and local transit systems at a single location and provides a high-quality sense of welcome to the community has been recognized since at least 1984 when the first feasibility study on a combined transit center was completed. In the years following, a number of efforts to design and construct a transit center at the Mall were undertaken, resulting in (literally) dozens of designs and varying levels of progress.

In the fall of 2018, an RFP for a feasibility study on the construction of a combined transit center was issued, leading to the selection of S.E.H. as the design firm in December of 2018.

The project was designed to achieve the following goals that were set and approved by the Town Council:

1) Improved capacity, operational efficiency, and flexibility for both the Village Shuttle and RFTA to meet the increased demand that has been generated.
2) Relocation of the local bus service to the same platform as the regional service making the systems easier to use and function more seamlessly together. This would help the Village Shuttle function better as a feeder service (First/Last Mile) to the regional system and remove local trips from the regional service in peak periods.
3) Improve the pedestrian experience by making the Transit Center a flat surface, at grade with the mall to improve access and eliminate the need for people arriving to climb stairs or move across uneven terrain. Additionally, this would serve to create improved ADA access to the commercial core.
4) A public building that will provide restrooms for transit passengers, guest services, and transit department offices.
5) Relocation existing short term parking spaces (87 spaces) impacted by the new design below the transit deck thereby removing dangerous vehicle and pedestrian conflicts that now happen on Lower Carriage Way and Daly Lane, as well as helping to reduce skier drop off traffic that currently occurs in the roadway.

6) Creation of pedestrian way-finding improvements that better identify the local and regional services and their destinations.
7) Better manage storm water impacts to Brush Creek.
8) Design a Transit Center that is as compact and in keeping with local character as possible while still meeting the other stated goals and operational requirements.

In addition to meeting these goals, the project was intended to meet 6 of the 9 Strategic Initiatives in the Comprehensive Plan including:

- Promote environmental and economic sustainability and resiliency.
- Focus on improved access and safety to make Snowmass Village more walkable and bikeable.
- Continue to improve the multi-modal connections between Base Village, the Mall, and the Center.
- Manage parking and transit to encourage efficient, effective, and sustainable mobility choices.
- Focus new development and/or redevelopment within the identified CPAs.
- Encourage the update and renovation of older buildings Village-wide.

In 2019, following multiple meetings with Town Council, Mall stakeholders, RFTA, Aspen SkiCo, Town staff, and S.E.H. the design options were narrowed down and ultimately "option 5" was chosen as the preferred option in November of 2019. This option placed RFTA and the Village Shuttle on a single deck, with bus loading and unloading occurring on an island, maintaining the turning radius so that RFTA buses could travel downhill on Carriage Way, and maintaining/ improving the availability of parking for the Mall.

In December of 2019 the effort to fund, design, and construct the project began with the Intermountain Transportation Planning Region (IMTPR) naming the project as the #1 multimodal project in the region. In 2020, the Town was awarded a significant MMOF grant to design the proposed facility. S.E.H. was selected as the design firm for the project in February of 2021 and (Federally required) Environmental Protection analyses and equity assessments were done in the following months.

In 2021 and 2022 grants were secured from the IMTPR, CDOT, and FTA at a total of more than $20 million to help fund the project construction. Following continued input, during January of 2022 the footprint of the project was reduced significantly to better fit the context of the area; this removed a central two-story building that would have housed transportation and parking offices and reduced the number of available loading and unloading bays by 2. This reduced project was submitted for land use review.

After multiple meetings and further alterations, the planning commission felt the 2022 Project was not in keeping with the Comprehensive Plan and voted to recommend denial of the project 6-1. The project was subsequently withdrawn by staff in April of 2023 prior to the Council beginning its formal land use review. In their recommended denial the Planning Commission listed the following as their findings:

- The project size is inconsistent with the Towns Comprehensive Plan framework of "Just Big Enough" and other aspects of the character of development.

- The Planning Commission has concerns with the lack of pedestrian safety with the central platform and that the design requires pedestrians must cross in front of buses.

- The Planning Commission has concerns with the negative impact of the construction (time/duration) on the town and the mall.

- The Planning Commission has concerns with the negative visual impact on the surrounding area. The project is too big in scale and mass.

- The parking garage is not a welcoming arrival to Snowmass Village for guests.

- The project should be done in conjunction with the redevelopment of the mall in order to improve compatibility.

- The Planning Commission has concerns with the pedestrian safety on the public roads around the garage and the lack of adequate setbacks/landscaping in these areas.

- The Planning Commission has concerns with the parking arrangement in the garage and concerns for access and maneuverability in and around the garage which makes for unsafe driving and pedestrian experience.

In June 2023, the Town Council directed staff to develop a proposal for a simple and cost-effective solution(s) at both the RFTA Depot and Daly Lane Village Shuttle Depot. These incremental alternative solutions were to have lower construction impact and lower cost than the proposed 2022 Project. These improvements were presented to Town Council in February of 2024, and again in March of 2024, along with a re-examination of the goals for the project.

On April 1st, 2024, Council directed staff to additionally develop a basic feasibility study on a novel two level transit center design along with 2 other design ideas and to prepare rough order of magnitude costs estimates for these designs. This new idea would have RFTA on the top deck and the Village Shuttle on the lower deck and was expected to better meet the mass and scale concerns of the Planning Commission and avoid the "island" design of the 2022 Plan. On June 17th, 2024, Council directed staff to create materials and a strategy to begin a public outreach campaign to gather feedback on possible next steps to move the two-level idea forward, with a focus on either moving forward with a phased approach that would bring a short-term improvement as phase 1 and a larger improvement in phase 2. Or begin designing a larger project, without a short-term solution in mind.

On July 15th, 2024, Council directed staff to examine feasibility of another novel transit center design that involves construction of the incremental design to improve the RFTA depot, as well as using the existing lot 6 space to provide an improved transit depot for the Village Shuttle.

At the October 14, 2024, Council meeting, the Town Council decided not to move forward with a public outreach effort at that time. The Council decided to wait until after the November election to receive public input.

On December 9, 2024, the Town Council continued their discussion on the Mall Transit Center. Following the discussion, the Council directed to have the design firm SEH continue forward with the two-level design, and begin the evaluation of maintaining existing grant funds (and finding other funding opportunities).

On January 21, 2025, a conceptual design with a two-level parking garage on the site of the current Lot 5 was presented to the Council with a cost estimation of approximately $58 million. Due to the challenges presented by the cost of the project, staff was asked to eliminate the garage component to reduce the overall cost. This revised design that removed the parking garage was shown on February 3, 2025. The revised projected cost was $44 million and was estimated to require 40 months of construction.

On February 18th, 2025, Council directed staff to discontinue pursuit of a $13.5 million federal grant due to federally required timing and financial commitment issues. It was determined that the time needed to refine the design, find additional funding sources, generate potential public private partnerships, and garner sufficient public feedback was too short.

On March 3rd, 2025, Council directed staff to prepare a proposed timeline outlining a continued effort to construct a transit center at the Snowmass Mall. This proposed timeline is designed to serve as a potential road map to take this project forward utilizing Federal and State grant funds.

During the summer of 2025 staff worked with S.E.H. to develop a phased approach that would allow construction of the RFTA depot improvements (whenever approved by Council) without precluding or necessitating additional work to construct Phase 2 of the two-level project in the future. Equally important, this design work has created enough information to (eventually) submit for sizeable Federal capital grants when/if those programs are funded again. The completed analysis shows that Phase 1 can be constructed in such a manner that it is a stand alone project, and would not require any significant reconstruction or changes when Phase 2 moves forward. And, as stated previously, there is enough information developed to eventually continue forward with large scale grant requests from the federal and state governments.

During the 2026 capital budget discussions in October of last year, it was decided to forgo construction in 2026. However, Council did approve funding to continue design of the transit center anticipating construction in a future year.

DISCUSSION:

Staff has worked with S.E.H. to create a proposed, phased approach, for improvements at the RFTA depot as a first phase, with preparation for an eventual larger two-level transit center. These improvements would add a bathroom facility to the RFTA depot, improve the staircase from Lot 6 to the Mall, flatten the end of the mall so that it connects more seamlessly to the RFTA depot, add office/tourist information space, and increase the number of RFTA bays along the curb by one (for a total of 3).

The proposed first phase could be completed outside of the winter season with RFTA still operating out of the Mall.

Meanwhile, stakeholder and community discussions about the design, coordination with the adjacent property owners, and community input for a two-level future transit center can continue to take place. This would continue the effort to move forward design efforts, funding efforts and eventually construct a shared multimodal transit facility on the site.

Alex Jauch will be present at the meeting to present the proposed improvements to the RFTA depot and demonstrate how they could be seamlessly incorporated into a future Two-Level design, without the need for major reconstruction.

Dwayne Romero will be present to provide input from the business community on these potential next steps for the project.

FINANCIAL IMPACT:

Currently, the Town has $6 million of EOTC funding available for this project, along with $3 million of TOSV capital funding.

Construction of the phase 1 project (staircase, flattening, bathroom, increased RFTA curb space) is currently estimated at approximately $3 million. The future, phase 2 complete project has been estimated at between $48-$60 million depending on amount of parking replaced.

COUNCIL OPTIONS:

This is a discussion item only, staff is seeking direction on next steps.

STAFF RECOMMENDATION:

It is the recommendation of Staff, that the Council:

Give staff direction to continue forward with the phased approach for this project. This would yield benefits to RFTA and Mall users in the short term while simultaneously preparing for the future 2-level solution to be implemented.

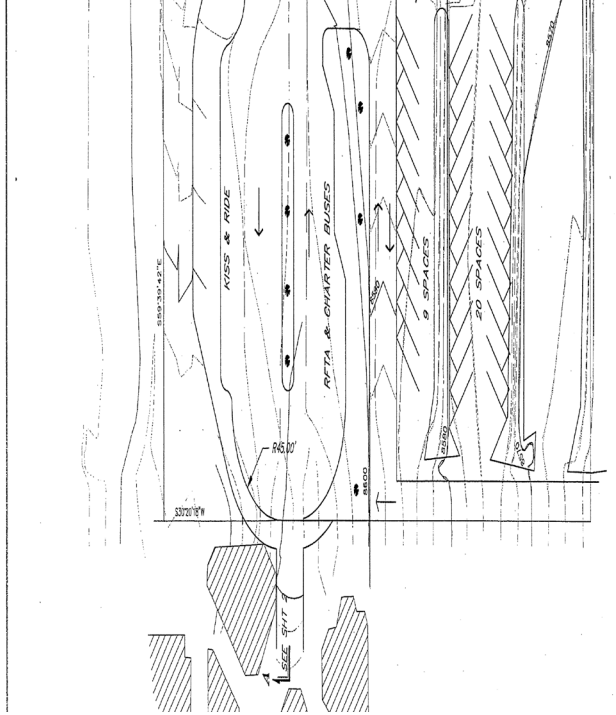
ATTACHMENTS:

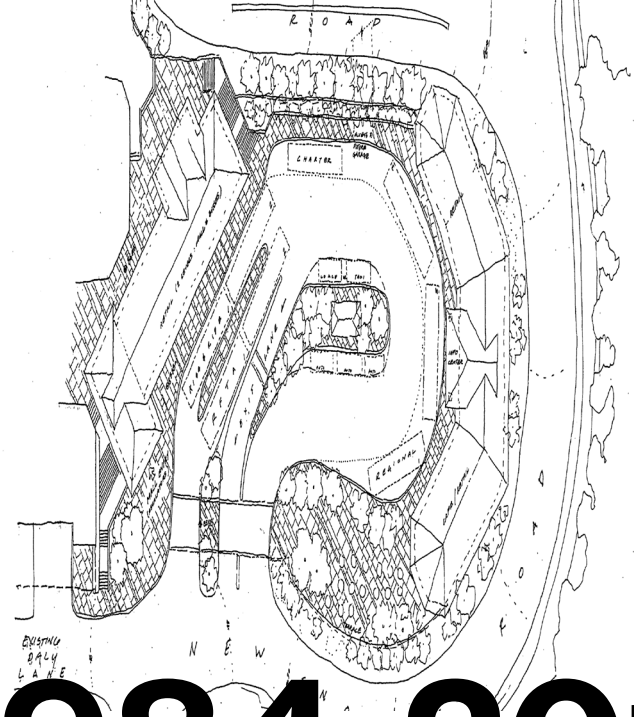
1. Brief History of Snowmass Mall Transit Center
2. 2026-02-04_TOSV-RFTA Improvements Town Council Submittal
3. 2025-10-08 TOSV Transit Center - Option A and C Detailed Cost Estimate
4. 2025-10-08_TOSV Town Council Submittal-Cost-Schedule
5. Transit Center Designs 1984-2025

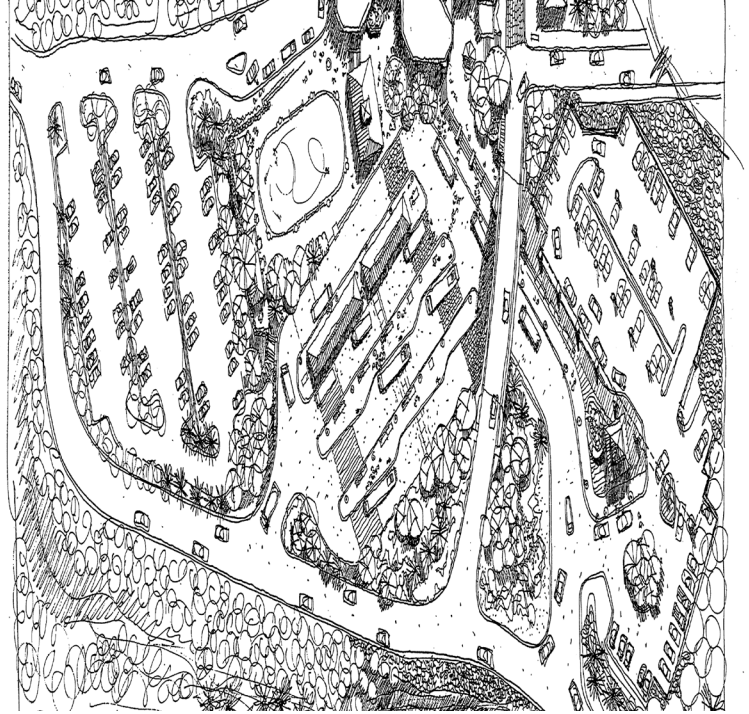
Brief History of Snowmass Mall Bus Transit Center

Town Council

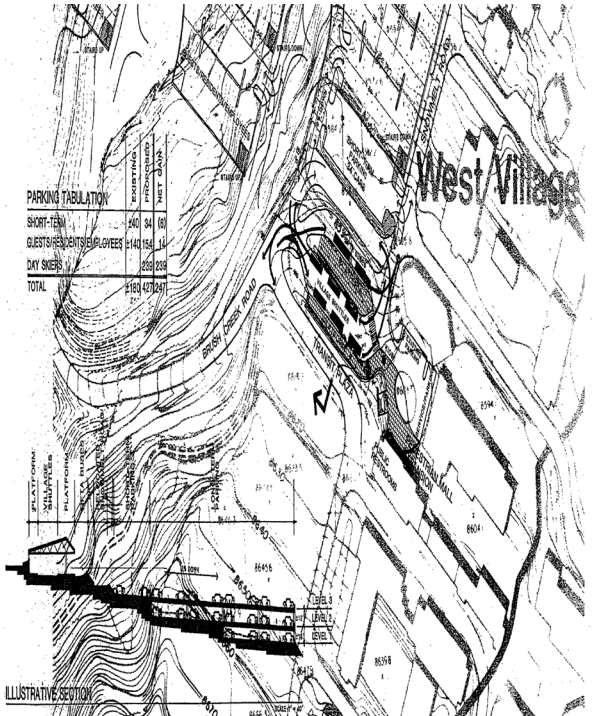
February 9, 2026







1984-2019



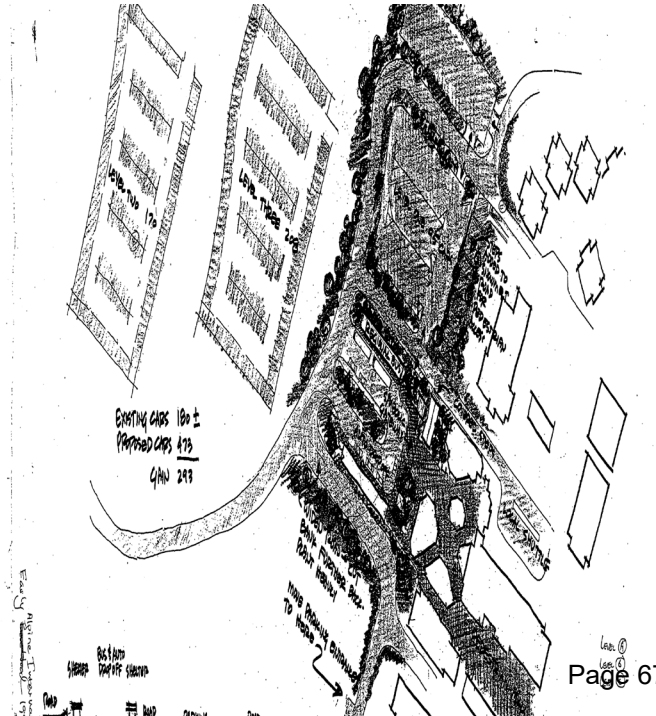
MALL TRANSIT PL

SNOWMASS TRANSPORTATION CENTI

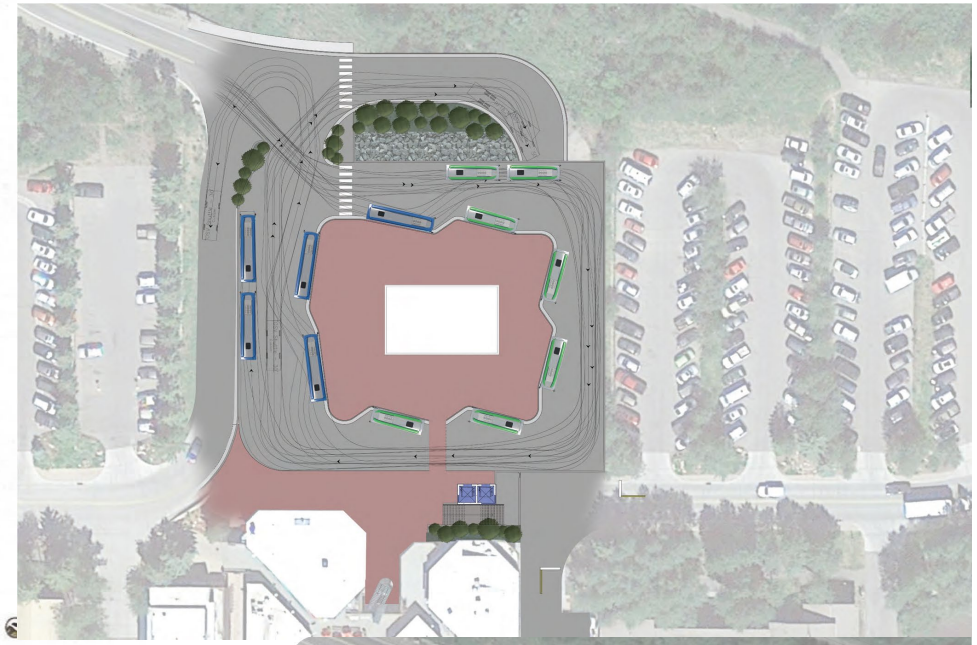
SNOWMASS VILLAGE
TOWN OF SNOWMASS VILLAGE, COLORADO

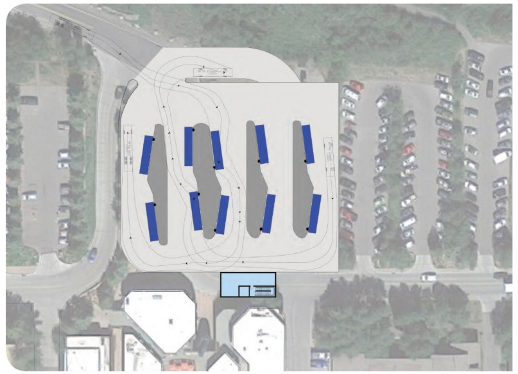
ROSALÍ REMMEN CARES
PLANNING, URBAN DESIGN AND RESEARCH

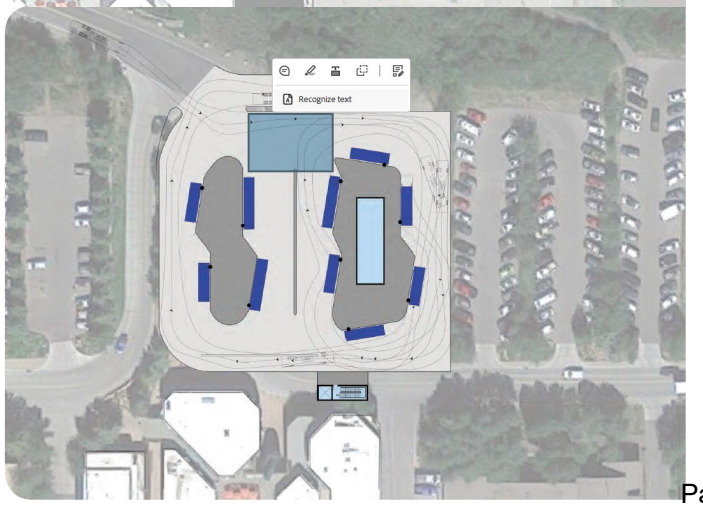
TDA COLORADO INC



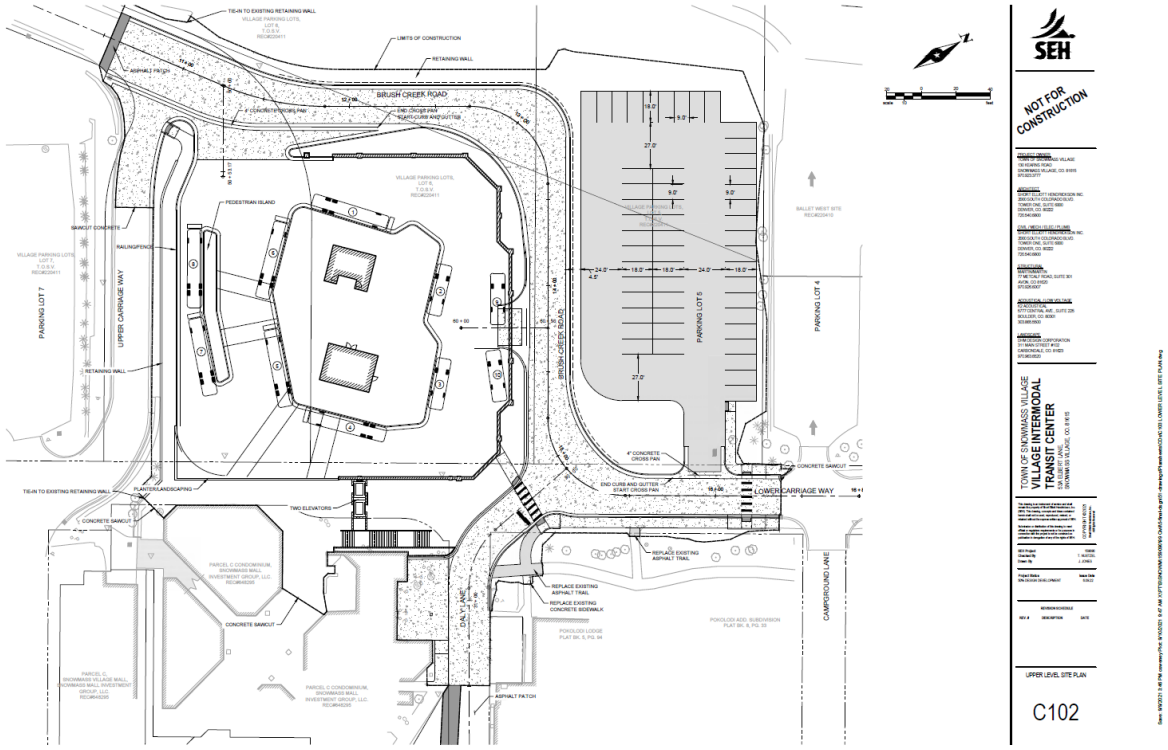
2019 Feasibility Study

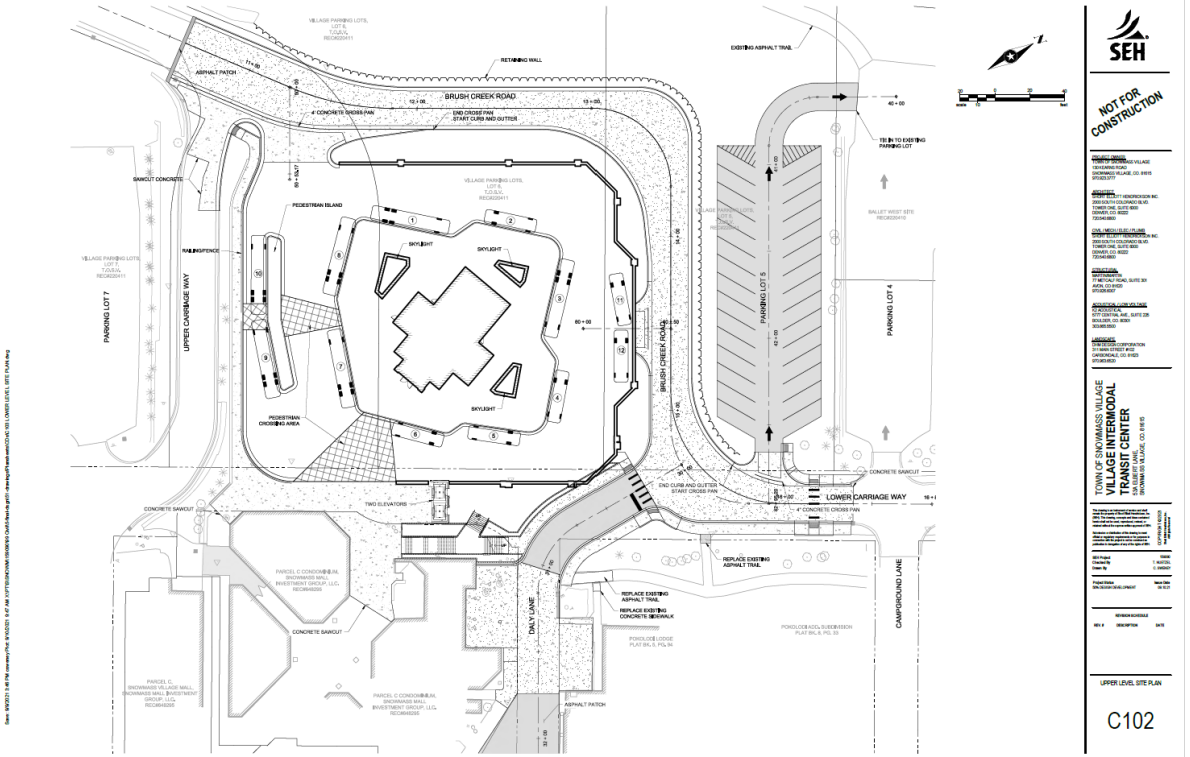




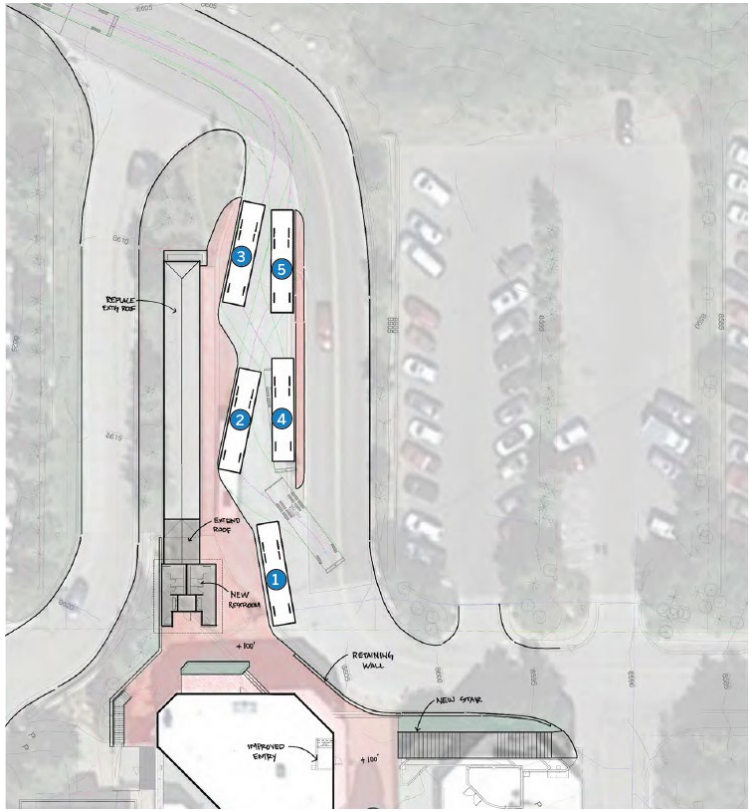


2021-2022 Design





2024-2025 Design Effort

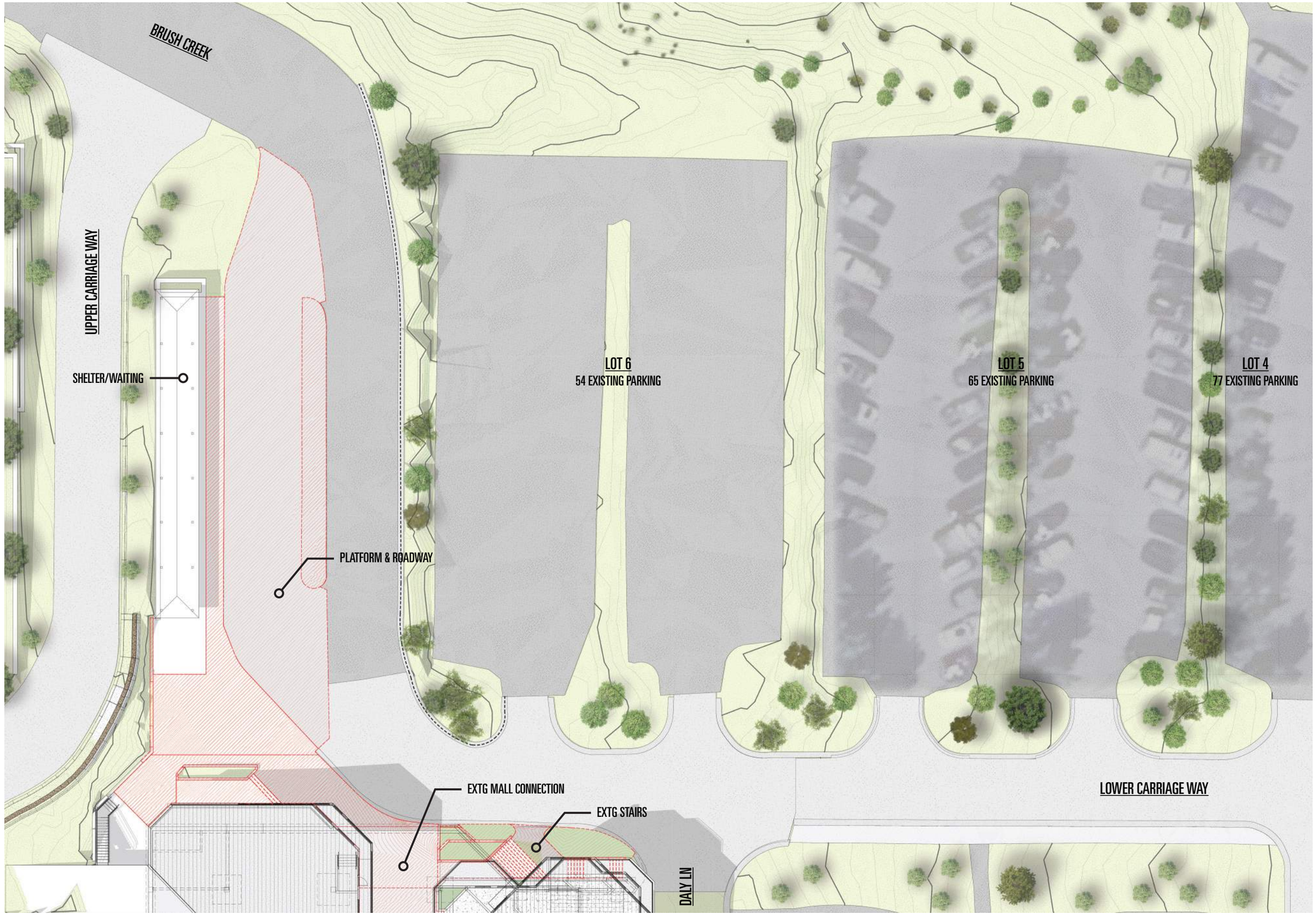


TOWN OF SNOWMASS VILLAGE

SNOWMASS MALL TRANSIT CENTER

RFTA BUS STOP IMPROVEMENTS

FEBRUARY 9, 2026



PHASE 1

UPPER LEVEL

Demolition

BUS OPERATIONS

- EXTG SHELTER TO REMAIN
- EXTG STAIRS TO BE REMOVED
- EXTG PLATFORM & ROADWAY TO BE REMOVED
- EXTG MALL CONNECTION / INCLINE ENTRY REGRADED

PHASE 1

UPPER LEVEL

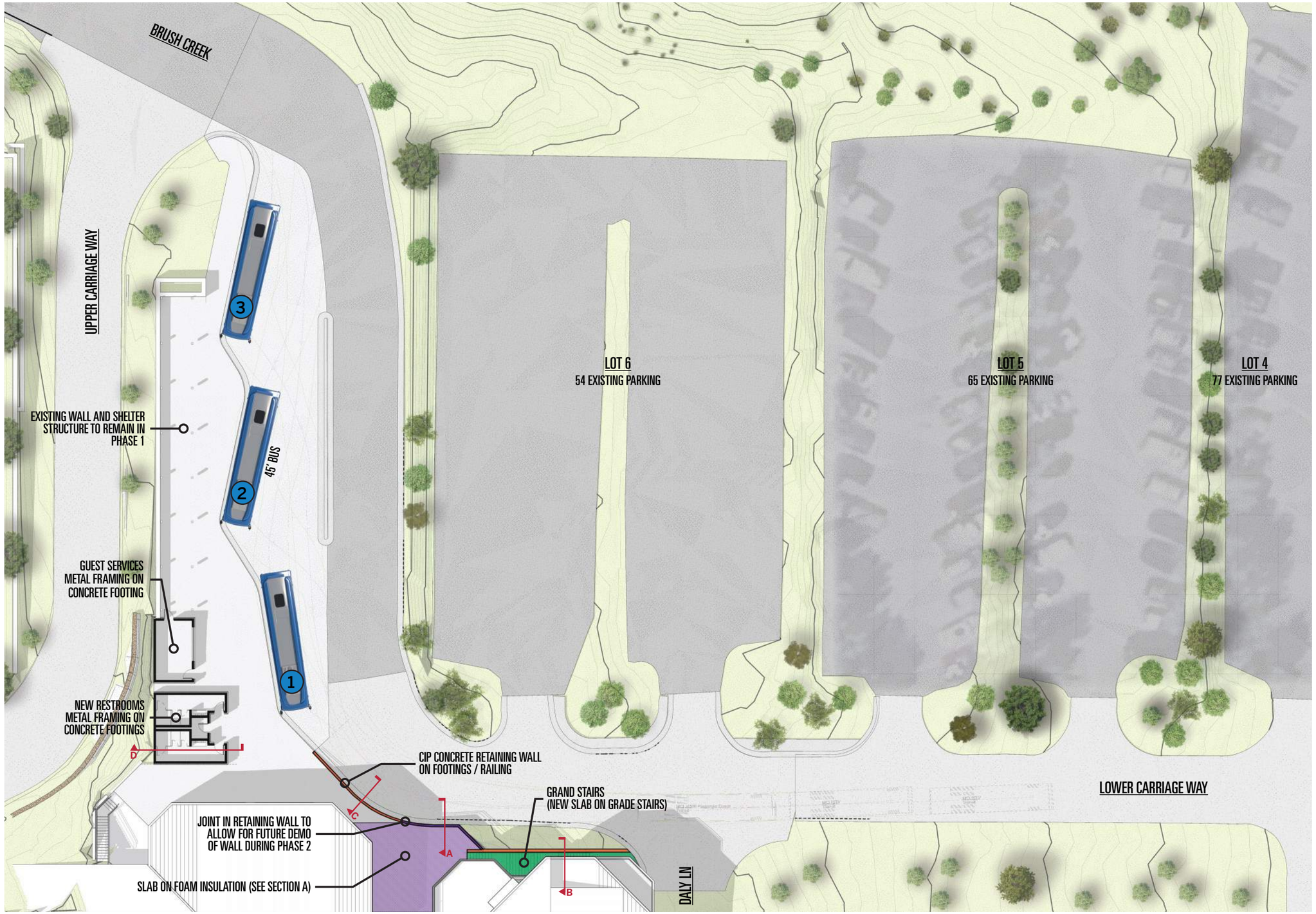
New Construction

BUS OPERATIONS

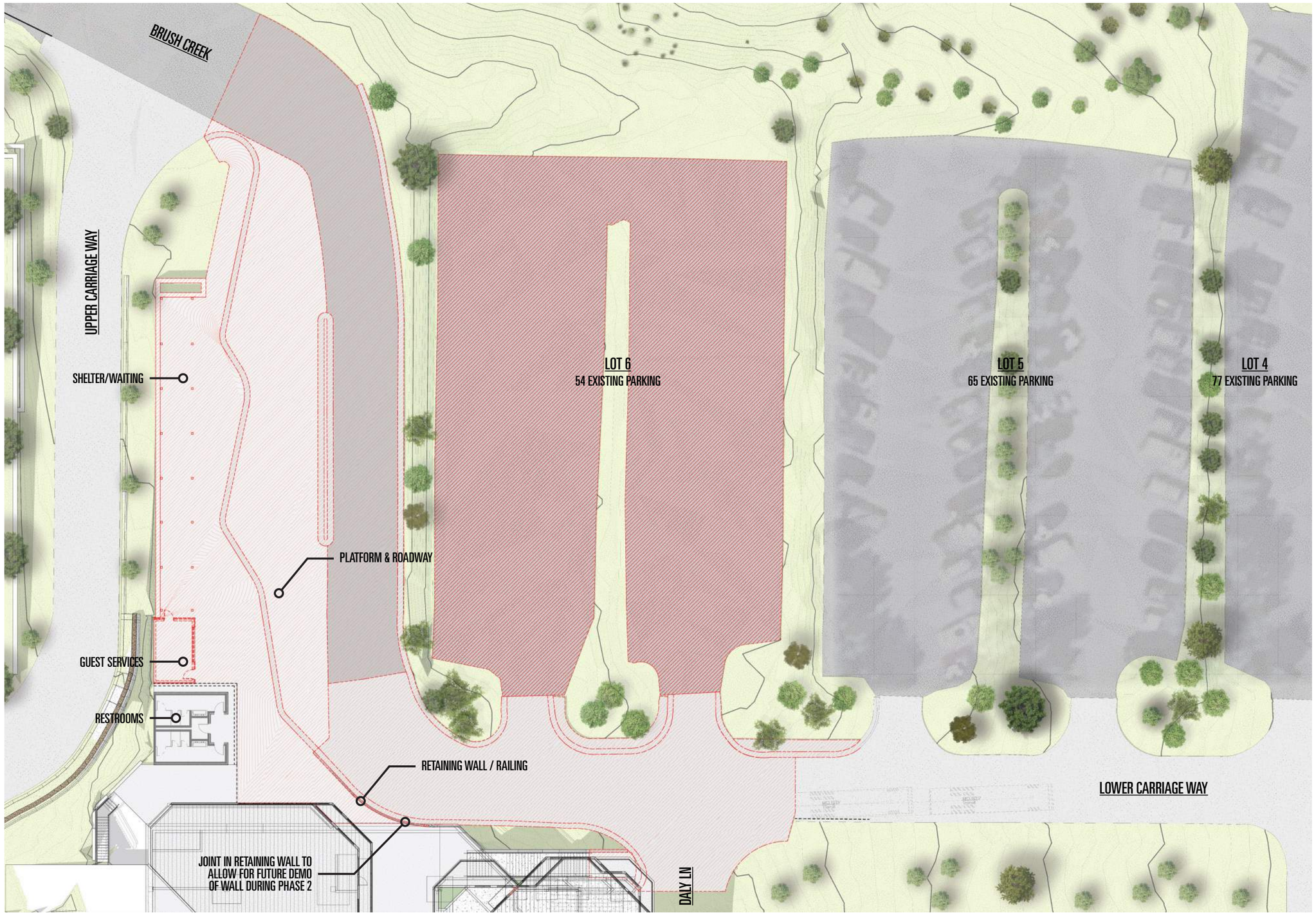
- (2) 40' RFTA LOADING/ UNLOADING
- (1) 45' RFTA LOADING/ UNLOADING

TRANSIT STATION

- GUEST SERVICES
- PUBLIC RESTROOMS



PHASE 2
UPPER LEVEL
Demolition



BUS OPERATIONS

- PHASE 1 RESTROOM TO REMAIN
- EXTG SHELTER TO BE REMOVED
- PHASE 1 GUEST SERVICES TO BE REMOVED
- PORTION OF PHASE 1 RETAINING WALL TO BE REMOVED
- PHASE 1 PLATFORM & ROADWAY TO BE REMOVED
- ELIMINATION OF 54 EXTG LOT 6 PARKING SPACES

PHASE 2

UPPER LEVEL

New Construction

BUS OPERATIONS

- (3) 40’ RFTA LOADING/ UNLOADING
- (2) 45’ RFTA LOADING/ UNLOADING
- (1) 40’ STAGING

TRANSIT STATION

- NEW DRIVER BREAK
- NEW GUEST SERVICES
- EXTG PUBLIC RESTROOMS

PHASE 2
LOWER LEVEL

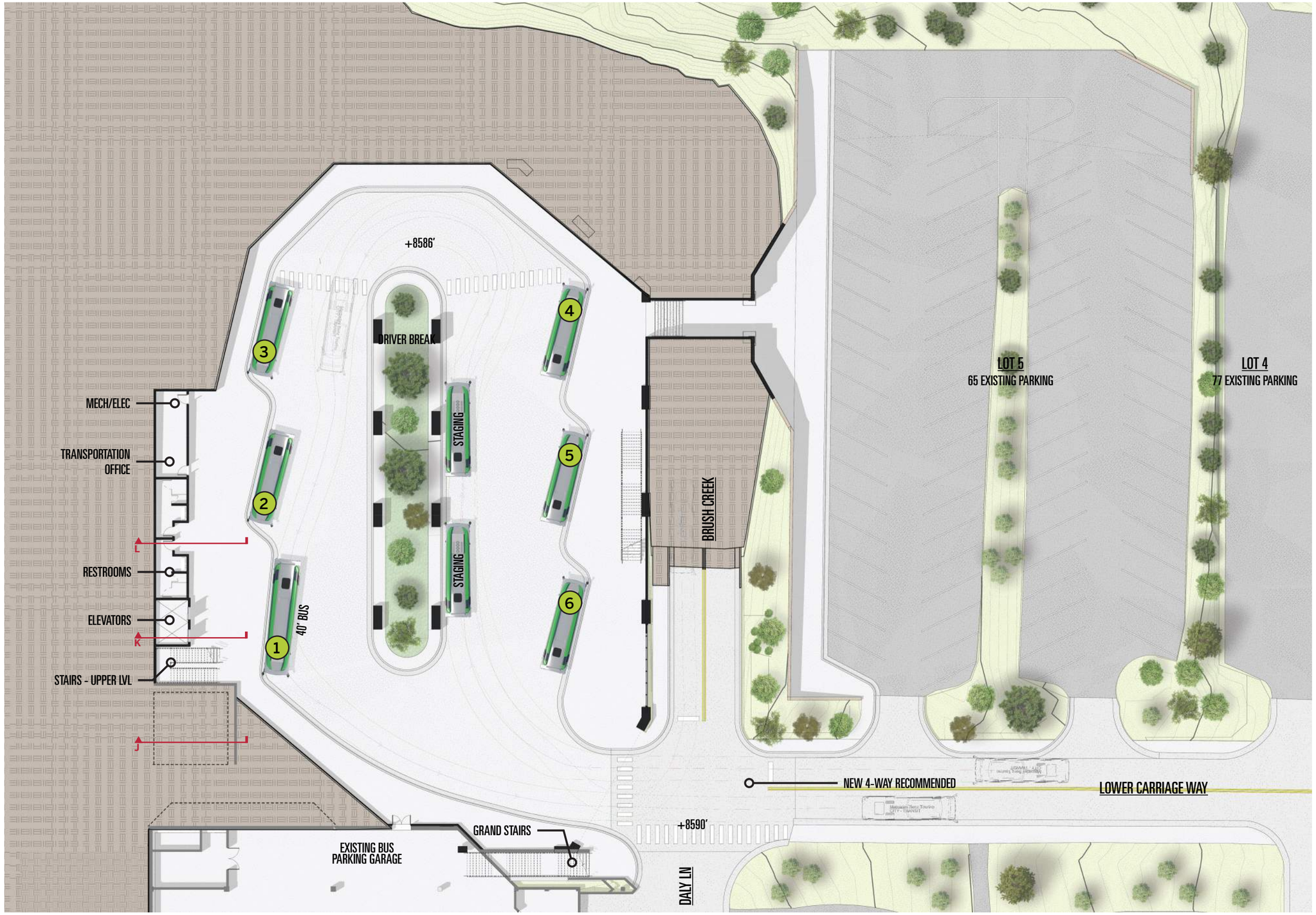
New Construction

BUS OPERATIONS

- *(1) 40' TOSV LOADING/ UNLOADING*
- *(2) 30' TOSV LOADING/ UNLOADING*
- *(2) 30' STAGING*

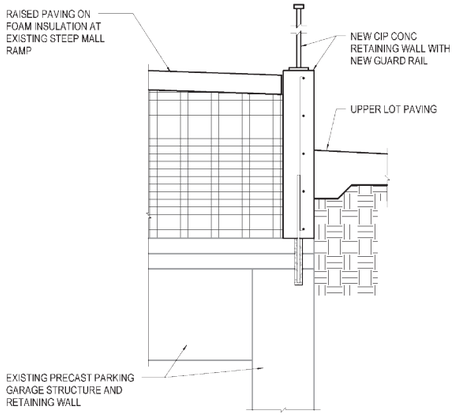
TRANSIT STATION

- *NEW DRIVER BREAK*
- *NEW TRANSPORTATION OFFICE*
- *NEW PUBLIC RESTROOMS*

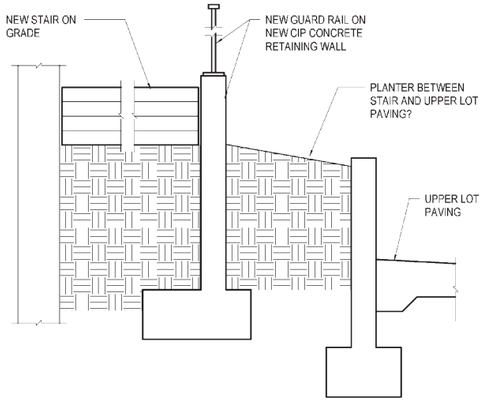


STRUCTURAL SECTIONS

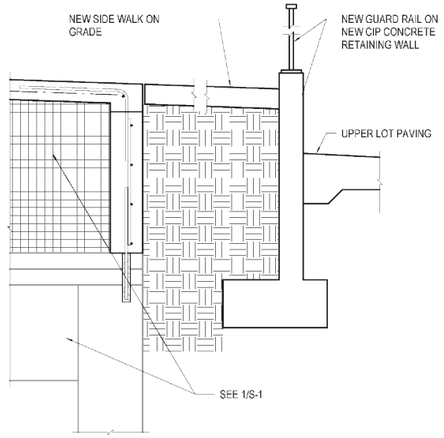
New Construction



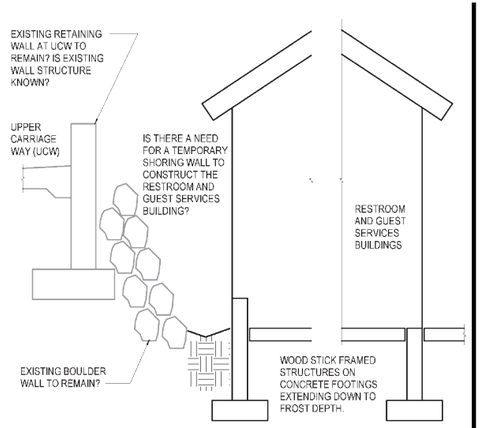
DETAIL A



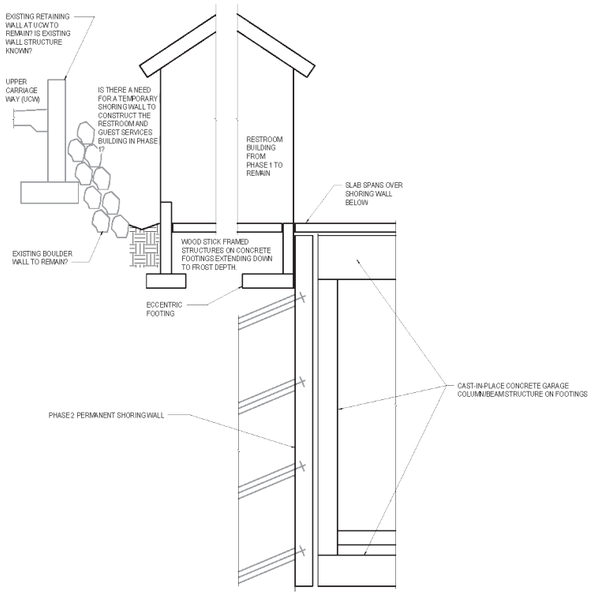
DETAIL B



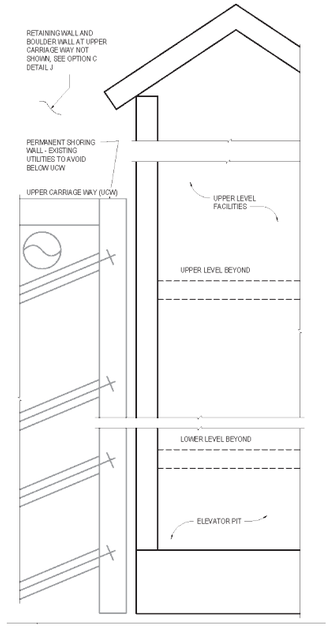
DETAIL C



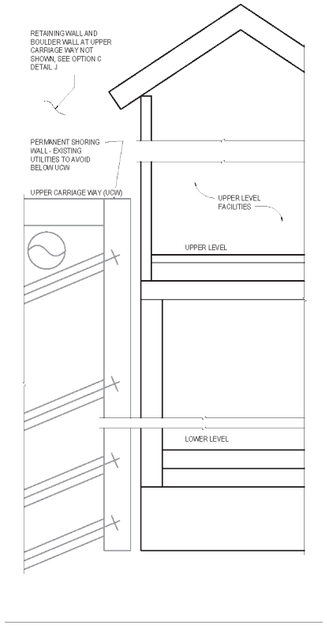
DETAIL D



DETAIL J



DETAIL K



DETAIL L

SOUTHWEST VIEW FROM UPPER PLATFORM

TRANSIT STATION

A. Red board and batten siding, similar to Town Park Station and Town Hall

B. Horizontal planking with wood texture and natural color, similar to Town Hall

C. Natural wood composite soffit with column brackets similar to Town Hall

COST SUMMARY - PHASE 1 (RFTA IMPROVEMENTS)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 1 - Construction (Option A)	$225.21	12,850	$2,893,954
TOTAL	**$340.18**	**12,850**	**$2,893,954**

COST SUMMARY - PHASE 1 + SHORING (RFTA IMPROVEMENTS)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 1 - Construction (Option A)	$225.21	12,850	$2,893,954
Added Shoring to Phase 1 (Option C)[1]	$114.97	12,850	$1,477,334
TOTAL	**$340.18**	**12,850**	**$4,371,288**

COST SUMMARY - PHASE 2 (FULL TRANSIT CENTER BUILDOUT)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 2 - January 2025 Estimate	$611.93	72,916	$44,619,726
Added Shoring to Phase 1 (Option C)[2]	$137.96	12,850	$1,772,800
Demo of Impacted Phase 1 Items	-	-	$23,190
TOTAL	**$636.56**	**72,916**	**$46,415,716**

1. Shoring is provided during Phase 1.
2. Shoring is provided during Phase 2 and not Phase 1.

Town of Snowmass Transit Center
Snowmass Village, CO
Concept

Project # 24-00135.00
08/22/25

SUMMARY

Element	Area	Cost / SF	Total
Option A	12,850	$214.35	$2,754,461
Total Estimated Construction Cost Option A (Today's $$)	**12,850**	**$214.35**	**$2,754,461**
Escalation to MOC, 09/30/26	5.06%		$139,493
Total Estimated Construction Cost Option A (Escalated $$)	**12,850**	**$225.21**	**$2,893,954**
Option C			$1,406,125
Total Estimated Construction Cost Option C (Today's $$)	**12,850**	**$109.43**	**$1,406,125**
Escalation to MOC, 09/30/26	5.06%		$71,210
Total Estimated Construction Cost Option C (Escalated $$)	**12,850**	**$114.97**	**$1,477,334**
Total Estimate Construction Cost Option A & Option C (Escalated $$)	**12,850**	**$340.18**	**$4,371,288**

COST SUMMARY

New Construction

PHASE 1 (OPTION A)

The estimate is for improvements for the RFTA stops, including new bus platforms, new restroom, new guest services, new retaining wall/railing, raising of mall area at Incline, and new grand staircase.

ADDITIONAL SHORING

To complete the full buildout of the Transit Center, Phase 2, additional shoring will be needed to reduced demolition of existing elements within Phase 1. That additional shoring can be added during Phase 1 or prior to deep excavation of Phase 2.

PHASE 2

These numbers are utilizing previous estimate provided to the Town in January of 2025.

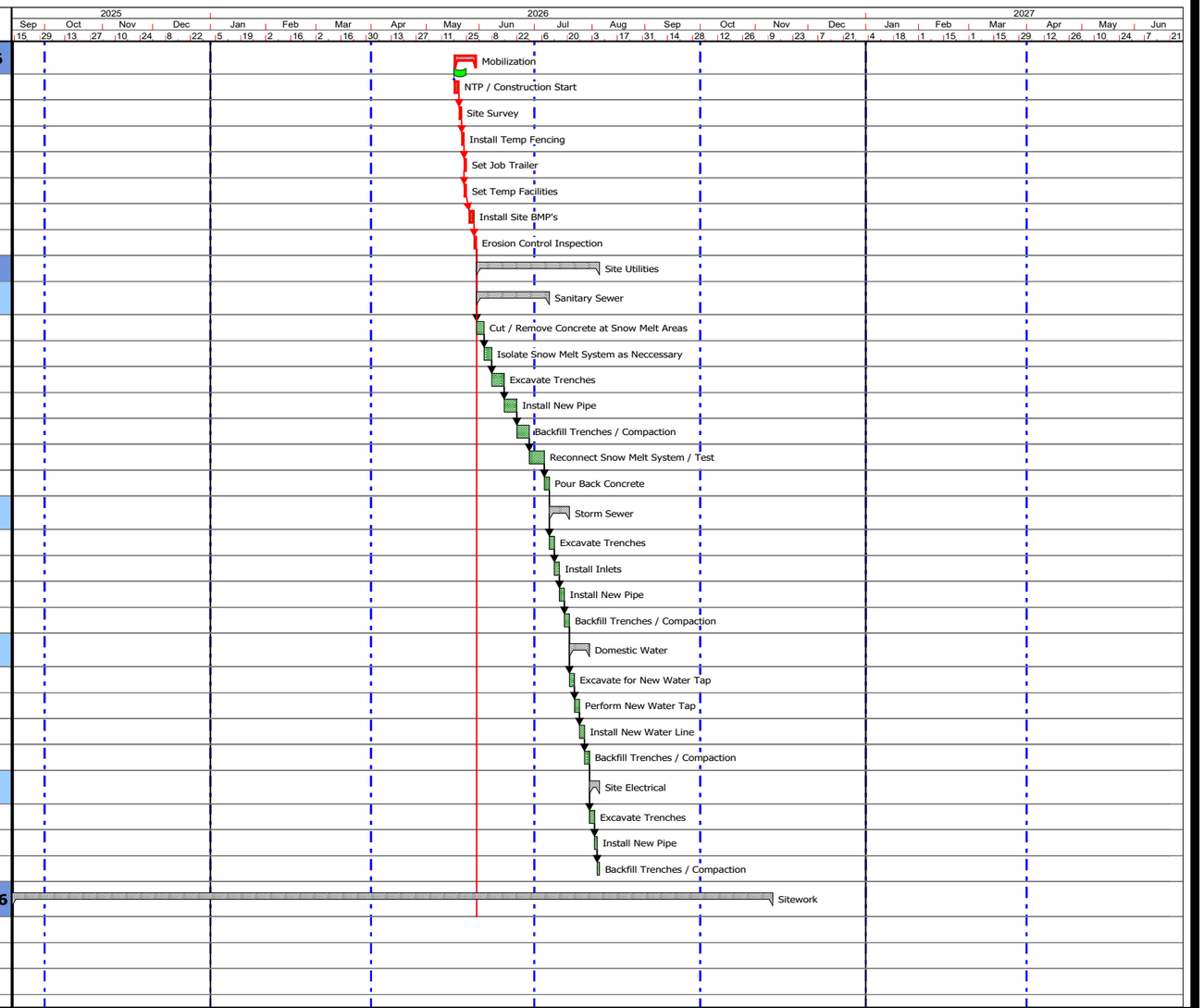
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
1	**Mobilization**	**8d**	**5/18/2026**	**5/28/2026**
2	NTP / Construction Start	2d	5/18/2026 *	5/19/2026
3	Site Survey	1d	5/20/2026	5/20/2026
4	Install Temp Fencing	1d	5/21/2026	5/21/2026
5	Set Job Trailer	1d	5/22/2026	5/22/2026
6	Set Temp Facilities	1d	5/22/2026	5/22/2026
7	Install Site BMP's	2d	5/26/2026	5/27/2026
8	Erosion Control Inspection	1d	5/28/2026	5/28/2026
9	**Site Utilities**	**48d**	**5/29/2026**	**8/5/2026**
10	**Sanitary Sewer**	**29d**	**5/29/2026**	**7/8/2026**
11	Cut / Remove Concrete at Snow Melt Areas	3d	5/29/2026	6/2/2026
12	Isolate Snow Melt System as Neccessary	3d	6/3/2026	6/5/2026
13	Excavate Trenches	5d	6/8/2026	6/12/2026
14	Install New Pipe	5d	6/15/2026	6/19/2026
15	Backfill Trenches / Compaction	5d	6/22/2026	6/26/2026
16	Reconnect Snow Melt System / Test	5d	6/29/2026	7/6/2026
17	Pour Back Concrete	2d	7/7/2026	7/8/2026
18	**Storm Sewer**	**8d**	**7/9/2026**	**7/20/2026**
19	Excavate Trenches	2d	7/9/2026	7/10/2026
20	Install Inlets	2d	7/13/2026	7/14/2026
21	Install New Pipe	2d	7/15/2026	7/16/2026
22	Backfill Trenches / Compaction	2d	7/17/2026	7/20/2026
23	**Domestic Water**	**8d**	**7/21/2026**	**7/30/2026**
24	Excavate for New Water Tap	2d	7/21/2026	7/22/2026
25	Perform New Water Tap	2d	7/23/2026	7/24/2026
26	Install New Water Line	2d	7/27/2026	7/28/2026
27	Backfill Trenches / Compaction	2d	7/29/2026	7/30/2026
28	**Site Electrical**	**4d**	**7/31/2026**	**8/5/2026**
29	Excavate Trenches	2d	7/31/2026	8/3/2026
30	Install New Pipe	1d	8/4/2026	8/4/2026
31	Backfill Trenches / Compaction	1d	8/5/2026	8/5/2026
32	**Sitework**	**296d**	**9/12/2025**	**11/10/2026**



Report Date: 9/12/2025 | Revision No. A | Notes: Comment - Chart Properties

Project Ref. P:\1-CURRENT BIDS\Snowmass\Snowmass TC Phase A CPM.pp

Planned by Powerproject

SCHEDULE SUMMARY

New Construction

PHASE 1 (OPTION A)

The following schedule for Phase 1 has an estimated start of May 2026 and completion of March 2027. However, site work and building structure will be completd by November 2026, making RFTA bus stops opperational at that time.

ADDITIONAL SHORING

It is anticipated that including the Additional Shoring in Phase 1, will not allow the RFTA bus stops to be opperational until January 2027.

Alternate schedule provided as an additional document.

SEH

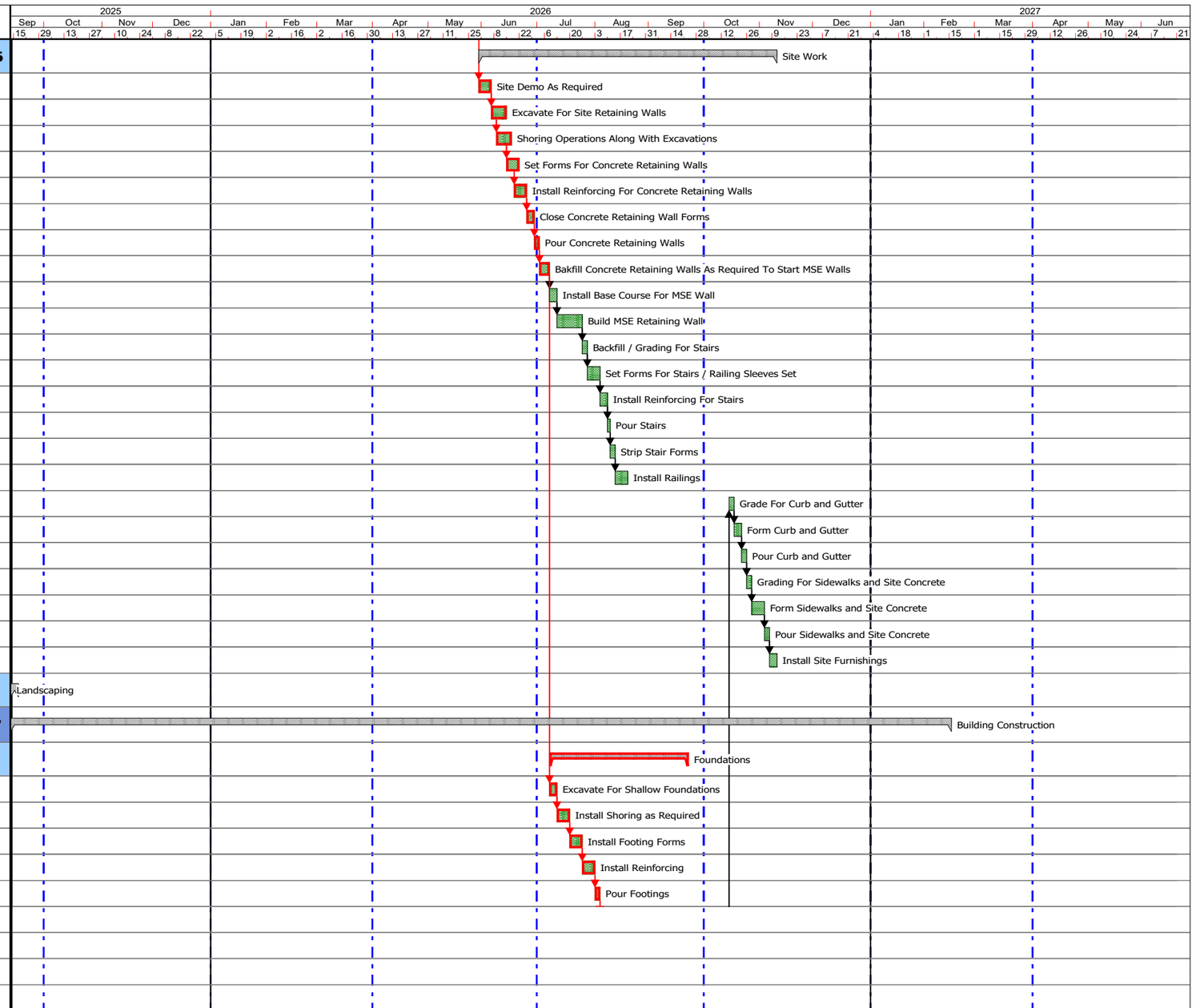
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
33	**Site Work**	**118d**	**5/29/2026**	**11/10/2026**
34	Site Demo As Required	5d	5/29/2026	6/4/2026
35	Excavate For Site Retaining Walls	6d	6/5/2026	6/12/2026
36	Shoring Operations Along With Excavations	6d	6/9/2026	6/16/2026
37	Set Forms For Concrete Retaining Walls	5d	6/15/2026	6/19/2026
38	Install Reinforcing For Concrete Retaining Walls	5d	6/18/2026	6/24/2026
39	Close Concrete Retaining Wall Forms	3d	6/25/2026	6/29/2026
40	Pour Concrete Retaining Walls	2d	6/30/2026	7/1/2026
41	Bakfill Concrete Retaining Walls As Required To Start MSE Walls	3d	7/2/2026	7/7/2026
42	Install Base Course For MSE Wall	3d	7/8/2026	7/10/2026
43	Build MSE Retaining Wall	10d	7/13/2026	7/24/2026
44	Backfill / Grading For Stairs	2d	7/27/2026	7/28/2026
45	Set Forms For Stairs / Railing Sleeves Set	5d	7/29/2026	8/4/2026
46	Install Reinforcing For Stairs	3d	8/5/2026	8/7/2026
47	Pour Stairs	1d	8/10/2026	8/10/2026
48	Strip Stair Forms	2d	8/11/2026	8/12/2026
49	Install Railings	5d	8/13/2026	8/19/2026
50	Grade For Curb and Gutter	2d	10/15/2026	10/16/2026
51	Form Curb and Gutter	3d	10/19/2026	10/21/2026
52	Pour Curb and Gutter	2d	10/22/2026	10/23/2026
53	Grading For Sidewalks and Site Concrete	2d	10/26/2026	10/27/2026
54	Form Sidewalks and Site Concrete	5d	10/28/2026	11/3/2026
55	Pour Sidewalks and Site Concrete	2d	11/4/2026	11/5/2026
56	Install Site Furnishings	3d	11/6/2026	11/10/2026
57	**Landscaping**		**9/12/2025**	**9/12/2025**
58	**Building Construction**	**361d**	**9/12/2025**	**2/15/2027**
59	**Foundations**	**54d**	**7/8/2026**	**9/22/2026**
60	Excavate For Shallow Foundations	3d	7/8/2026	7/10/2026
61	Install Shoring as Required	5d	7/13/2026	7/17/2026
62	Install Footing Forms	5d	7/20/2026	7/24/2026
63	Install Reinforcing	5d	7/27/2026	7/31/2026
64	Pour Footings	2d	8/3/2026	8/4/2026



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Project Ref. P:\1-CURRENT BIDS\Snowmass\Snowmass TC Phase A CPM.pp

Planned by Powerproject

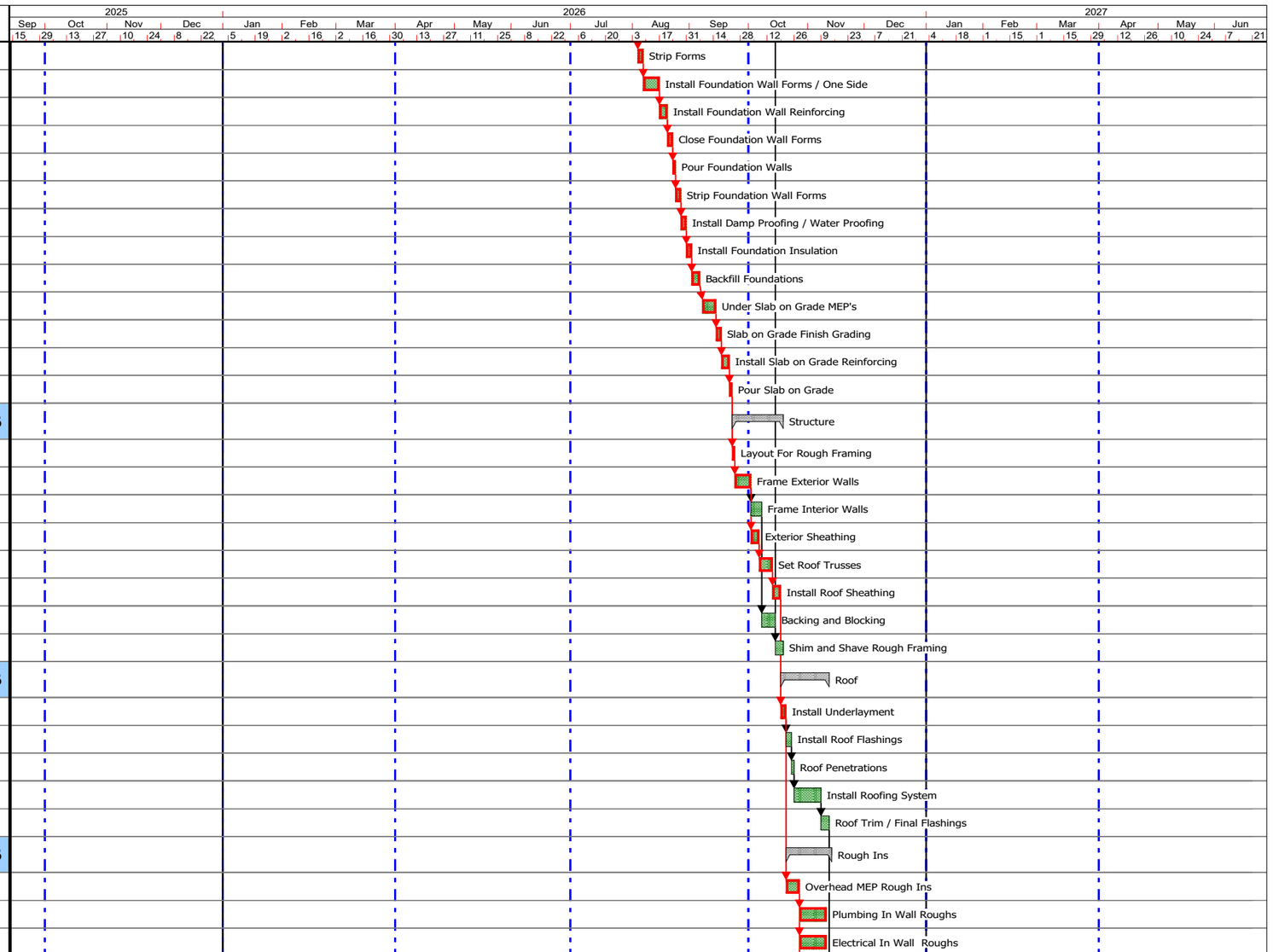
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
65	Strip Forms	2d	8/5/2026	8/6/2026
66	Install Foundation Wall Forms / One Side	6d	8/7/2026	8/14/2026
67	Install Foundation Wall Reinforcing	3d	8/17/2026	8/19/2026
68	Close Foundation Wall Forms	2d	8/20/2026	8/21/2026
69	Pour Foundation Walls	1d	8/24/2026	8/24/2026
70	Strip Foundation Wall Forms	2d	8/25/2026	8/26/2026
71	Install Damp Proofing / Water Proofing	2d	8/27/2026	8/28/2026
72	Install Foundation Insulation	2d	8/31/2026	9/1/2026
73	Backfill Foundations	3d	9/2/2026	9/4/2026
74	Under Slab on Grade MEP's	5d	9/8/2026	9/14/2026
75	Slab on Grade Finish Grading	2d	9/15/2026	9/16/2026
76	Install Slab on Grade Reinforcing	3d	9/17/2026	9/21/2026
77	Pour Slab on Grade	1d	9/22/2026	9/22/2026
78	**Structure**	**19d**	**9/23/2026**	**10/19/2026**
79	Layout For Rough Framing	1d	9/23/2026	9/23/2026
80	Frame Exterior Walls	6d	9/24/2026	10/1/2026
81	Frame Interior Walls	4d	10/2/2026	10/7/2026
82	Exterior Sheathing	3d	10/2/2026	10/6/2026
83	Set Roof Trusses	5d	10/7/2026	10/13/2026
84	Install Roof Sheathing	3d	10/14/2026	10/16/2026
85	Backing and Blocking	5d	10/8/2026	10/14/2026
86	Shim and Shave Rough Framing	3d	10/15/2026	10/19/2026
87	**Roof**	**18d**	**10/19/2026**	**11/11/2026**
88	Install Underlayment	2d	10/19/2026	10/20/2026
89	Install Roof Flashings	2d	10/21/2026	10/22/2026
90	Roof Penetrations	1d	10/23/2026	10/23/2026
91	Install Roofing System	10d	10/26/2026	11/6/2026
92	Roof Trim / Final Flashings	3d	11/9/2026	11/11/2026
93	**Rough Ins**	**17d**	**10/21/2026**	**11/12/2026**
94	Overhead MEP Rough Ins	5d	10/21/2026	10/27/2026
95	Plumbing In Wall Roughs	10d	10/28/2026	11/10/2026
96	Electrical In Wall Roughs	10d	10/28/2026	11/10/2026



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SEH

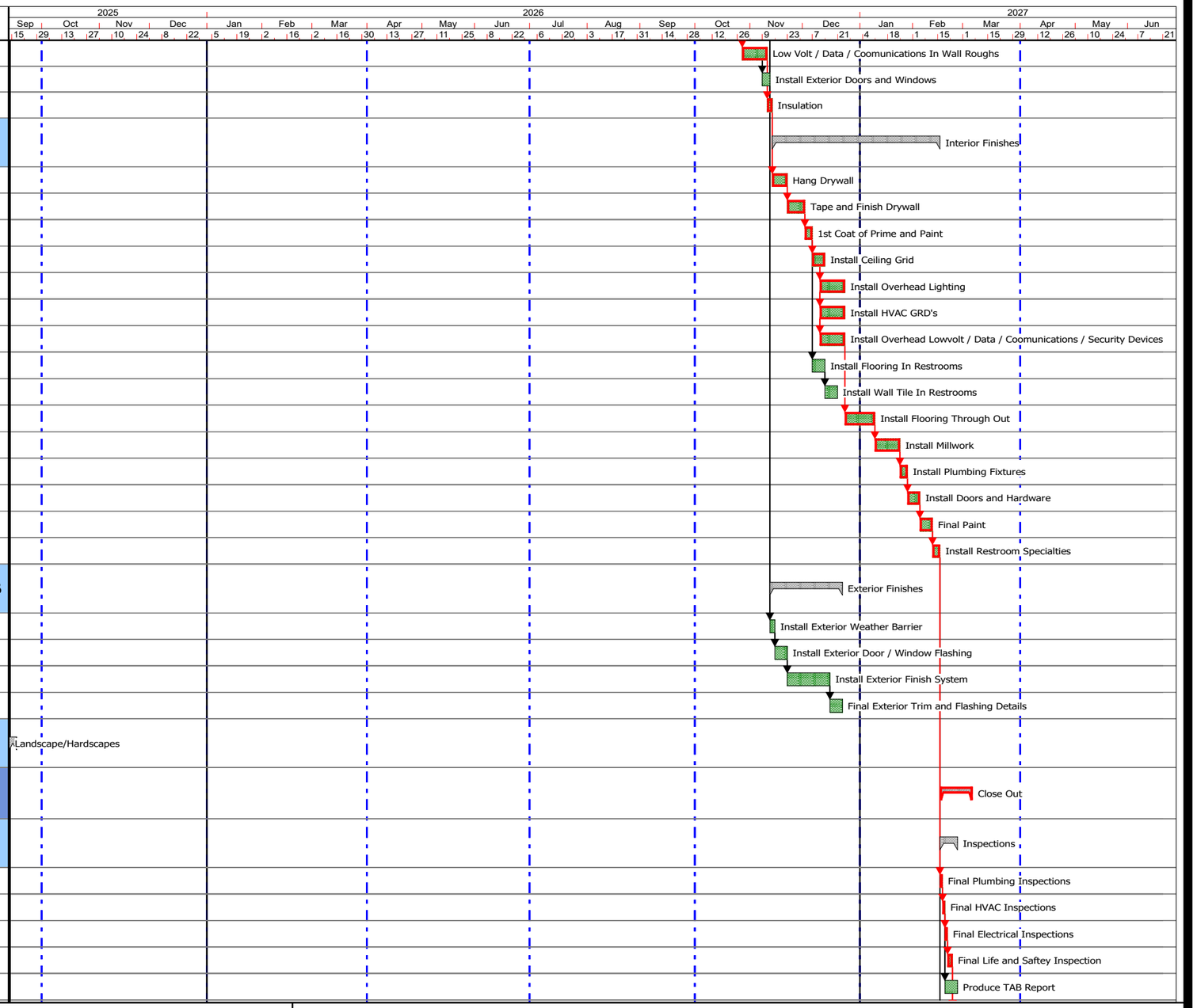
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
97	Low Volt / Data / Coomunications In Wall Roughs	10d	10/28/2026	11/10/2026
98	Install Exterior Doors and Windows	3d	11/9/2026	11/11/2026
99	Insulation	2d	11/11/2026	11/12/2026
100	**Interior Finishes**	**63d**	**11/13/2026**	**2/15/2027**
101	Hang Drywall	6d	11/13/2026	11/20/2026
102	Tape and Finish Drywall	5d	11/23/2026	12/1/2026
103	1st Coat of Prime and Paint	3d	12/2/2026	12/4/2026
104	Install Ceiling Grid	5d	12/7/2026	12/11/2026
105	Install Overhead Lighting	10d	12/10/2026	12/23/2026
106	Install HVAC GRD's	10d	12/10/2026	12/23/2026
107	Install Overhead Lowvolt / Data / Coomunications / Security Devices	10d	12/10/2026	12/23/2026
108	Install Flooring In Restrooms	5d	12/7/2026	12/11/2026
109	Install Wall Tile In Restrooms	5d	12/14/2026	12/18/2026
110	Install Flooring Through Out	10d	12/24/2026	1/8/2027
111	Install Millwork	10d	1/11/2027	1/22/2027
112	Install Plumbing Fixtures	3d	1/25/2027	1/27/2027
113	Install Doors and Hardware	5d	1/28/2027	2/3/2027
114	Final Paint	5d	2/4/2027	2/10/2027
115	Install Restroom Specialties	3d	2/11/2027	2/15/2027
116	**Exterior Finishes**	**27d**	**11/12/2026**	**12/22/2026**
117	Install Exterior Weather Barrier	2d	11/12/2026	11/13/2026
118	Install Exterior Door / Window Flashing	5d	11/16/2026	11/20/2026
119	Install Exterior Finish System	15d	11/23/2026	12/15/2026
120	Final Exterior Trim and Flashing Details	5d	12/16/2026	12/22/2026
121	**Landscape/Hardscapes**		**9/12/2025**	**9/12/2025**
122	**Close Out**	**13d**	**2/16/2027**	**3/4/2027**
123	**Inspections**	**7d**	**2/16/2027**	**2/24/2027**
124	Final Plumbing Inspections	1d	2/16/2027	2/16/2027
125	Final HVAC Inspections	1d	2/17/2027	2/17/2027
126	Final Electrical Inspections	1d	2/18/2027	2/18/2027
127	Final Life and Saftey Inspection	2d	2/19/2027	2/22/2027
128	Produce TAB Report	5d	2/18/2027	2/24/2027



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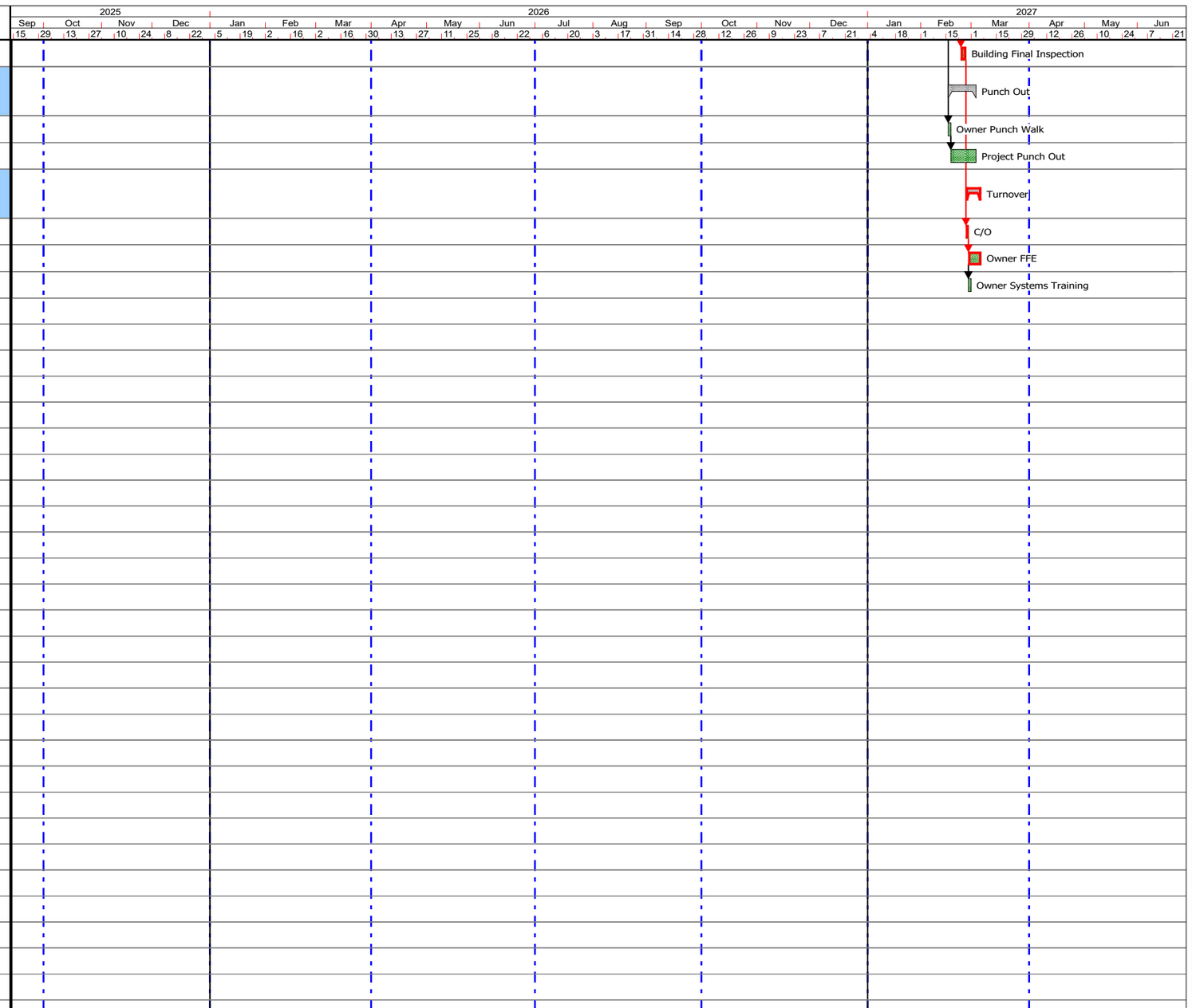
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
129	Building Final Inspection	2d	2/23/2027	2/24/2027
130	**Punch Out**	**11d**	**2/16/2027**	**3/2/2027**
131	Owner Punch Walk	1d	2/16/2027	2/16/2027
132	Project Punch Out	10d	2/17/2027	3/2/2027
133	**Turnover**	**6d**	**2/25/2027**	**3/4/2027**
134	C/O	1d	2/25/2027	2/25/2027
135	Owner FFE	5d	2/26/2027	3/4/2027
136	Owner Systems Training	1d	2/26/2027	2/26/2027



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Planned by Powerproject

TOWN OF SNOWMASS VILLAGE

SNOWMASS MALL TRANSIT CENTER

RFTA Improvements - Cost/Schedule Summary

OCTOBER 08, 2025

COST SUMMARY - PHASE 1 (RFTA IMPROVEMENTS)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 1 - Construction (Option A)	$225.21	12,850	$2,893,954
TOTAL	**$340.18**	**12,850**	**$2,893,954**

COST SUMMARY - PHASE 1 + SHORING (RFTA IMPROVEMENTS)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 1 - Construction (Option A)	$225.21	12,850	$2,893,954
Added Shoring to Phase 1 (Option C)[1]	$114.97	12,850	$1,477,334
TOTAL	**$340.18**	**12,850**	**$4,371,288**

COST SUMMARY - PHASE 2 (FULL TRANSIT CENTER BUILDOUT)			
DESCRIPTION	COST/SF	SQ. FT.	SUB-TOTAL
Phase 2 - January 2025 Estimate	$611.93	72,916	$44,619,726
Added Shoring to Phase 1 (Option C)[2]	$137.96	12,850	$1,772,800
Demo of Impacted Phase 1 Items	-	-	$23,190
TOTAL	**$636.56**	**72,916**	**$46,415,716**

1. Shoring is provided during Phase 1.
2. Shoring is provided during Phase 2 and not Phase 1.

Town of Snowmass Transit Center
Snowmass Village, CO
Concept

Project # 24-00135.00
08/22/25

SUMMARY

Element	Area	Cost / SF	Total
Option A	12,850	$214.35	$2,754,461
Total Estimated Construction Cost Option A (Today's $$)	**12,850**	**$214.35**	**$2,754,461**
Escalation to MOC, 09/30/26	5.06%		$139,493
Total Estimated Construction Cost Option A (Escalated $$)	**12,850**	**$225.21**	**$2,893,954**
Option C			$1,406,125
Total Estimated Construction Cost Option C (Today's $$)	**12,850**	**$109.43**	**$1,406,125**
Escalation to MOC, 09/30/26	5.06%		$71,210
Total Estimated Construction Cost Option C (Escalated $$)	**12,850**	**$114.97**	**$1,477,334**
Total Estimate Construction Cost Option A & Option C (Escalated $$)	**12,850**	**$340.18**	**$4,371,288**

COST SUMMARY

New Construction

PHASE 1 (OPTION A)

The estimate is for improvements for the RFTA stops, including new bus platforms, new restroom, new guest services, new retaining wall/railing, raising of mall area at Incline, and new grand staircase.

ADDITIONAL SHORING

To complete the full buildout of the Transit Center, Phase 2, additional shoring will be needed to reduced demolition of existing elements within Phase 1. That additional shoring can be added during Phase 1 or prior to deep excavation of Phase 2.

PHASE 2

These numbers are utilizing previous estimate provided to the Town in January of 2025.

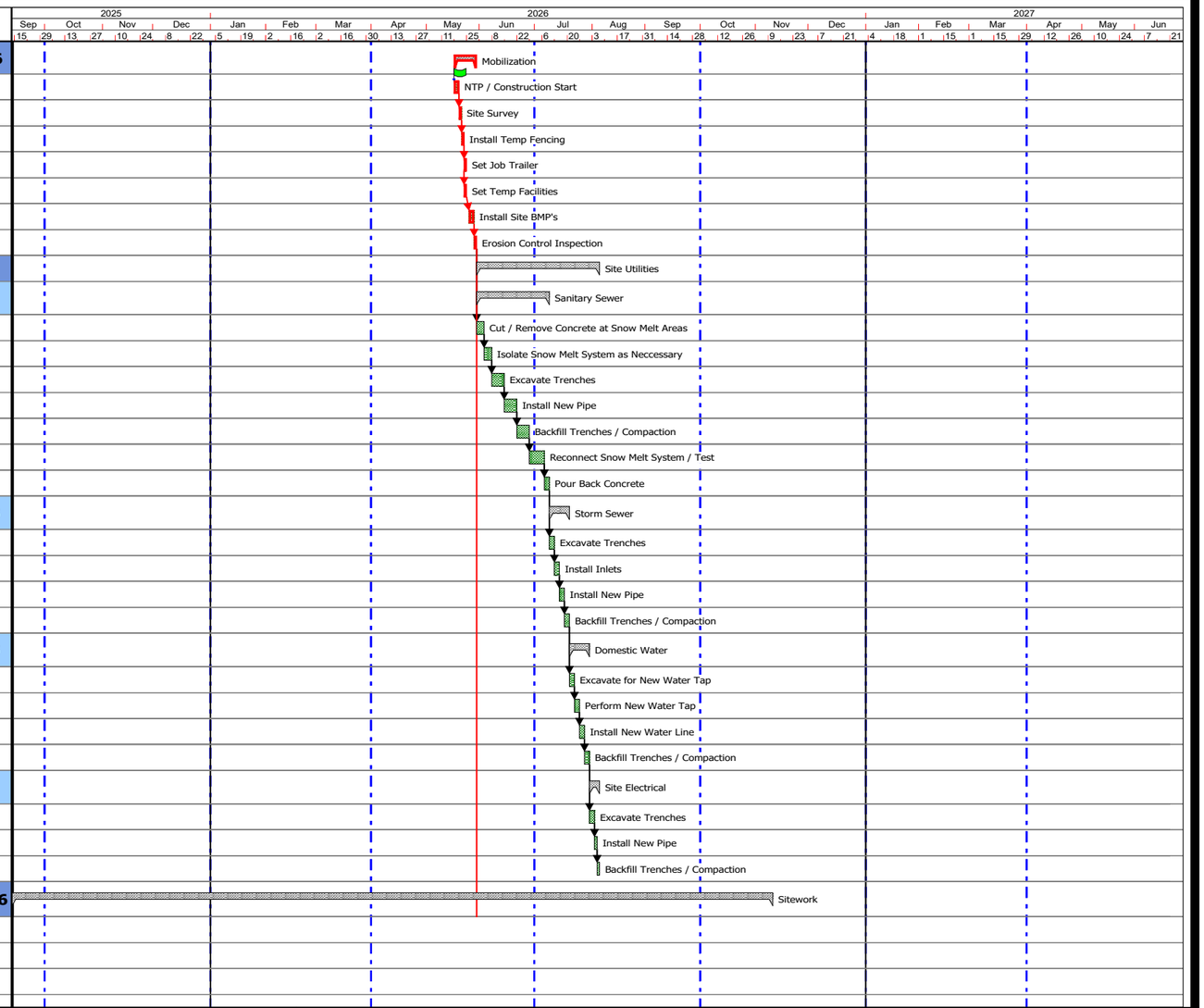
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
1	**Mobilization**	**8d**	**5/18/2026**	**5/28/2026**
2	NTP / Construction Start	2d	5/18/2026 *	5/19/2026
3	Site Survey	1d	5/20/2026	5/20/2026
4	Install Temp Fencing	1d	5/21/2026	5/21/2026
5	Set Job Trailer	1d	5/22/2026	5/22/2026
6	Set Temp Facilities	1d	5/22/2026	5/22/2026
7	Install Site BMP's	2d	5/26/2026	5/27/2026
8	Erosion Control Inspection	1d	5/28/2026	5/28/2026
9	**Site Utilities**	**48d**	**5/29/2026**	**8/5/2026**
10	**Sanitary Sewer**	**29d**	**5/29/2026**	**7/8/2026**
11	Cut / Remove Concrete at Snow Melt Areas	3d	5/29/2026	6/2/2026
12	Isolate Snow Melt System as Neccessary	3d	6/3/2026	6/5/2026
13	Excavate Trenches	5d	6/8/2026	6/12/2026
14	Install New Pipe	5d	6/15/2026	6/19/2026
15	Backfill Trenches / Compaction	5d	6/22/2026	6/26/2026
16	Reconnect Snow Melt System / Test	5d	6/29/2026	7/6/2026
17	Pour Back Concrete	2d	7/7/2026	7/8/2026
18	**Storm Sewer**	**8d**	**7/9/2026**	**7/20/2026**
19	Excavate Trenches	2d	7/9/2026	7/10/2026
20	Install Inlets	2d	7/13/2026	7/14/2026
21	Install New Pipe	2d	7/15/2026	7/16/2026
22	Backfill Trenches / Compaction	2d	7/17/2026	7/20/2026
23	**Domestic Water**	**8d**	**7/21/2026**	**7/30/2026**
24	Excavate for New Water Tap	2d	7/21/2026	7/22/2026
25	Perform New Water Tap	2d	7/23/2026	7/24/2026
26	Install New Water Line	2d	7/27/2026	7/28/2026
27	Backfill Trenches / Compaction	2d	7/29/2026	7/30/2026
28	**Site Electrical**	**4d**	**7/31/2026**	**8/5/2026**
29	Excavate Trenches	2d	7/31/2026	8/3/2026
30	Install New Pipe	1d	8/4/2026	8/4/2026
31	Backfill Trenches / Compaction	1d	8/5/2026	8/5/2026
32	**Sitework**	**296d**	**9/12/2025**	**11/10/2026**



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Planned by Powerproject

SCHEDULE SUMMARY

New Construction

PHASE 1 (OPTION A)

The following schedule for Phase 1 has an estimated start of May 2026 and completion of March 2027. However, site work and building structure will be completd by November 2026, making RFTA bus stops opperational at that time.

ADDITIONAL SHORING

It is anticipated that including the Additional Shoring in Phase 1, will not allow the RFTA bus stops to be opperational until January 2027.

Alternate schedule provided as an additional document.

SEH

A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
33	**Site Work**	**118d**	**5/29/2026**	**11/10/2026**
34	Site Demo As Required	5d	5/29/2026	6/4/2026
35	Excavate For Site Retaining Walls	6d	6/5/2026	6/12/2026
36	Shoring Operations Along With Excavations	6d	6/9/2026	6/16/2026
37	Set Forms For Concrete Retaining Walls	5d	6/15/2026	6/19/2026
38	Install Reinforcing For Concrete Retaining Walls	5d	6/18/2026	6/24/2026
39	Close Concrete Retaining Wall Forms	3d	6/25/2026	6/29/2026
40	Pour Concrete Retaining Walls	2d	6/30/2026	7/1/2026
41	Bakfill Concrete Retaining Walls As Required To Start MSE Walls	3d	7/2/2026	7/7/2026
42	Install Base Course For MSE Wall	3d	7/8/2026	7/10/2026
43	Build MSE Retaining Wall	10d	7/13/2026	7/24/2026
44	Backfill / Grading For Stairs	2d	7/27/2026	7/28/2026
45	Set Forms For Stairs / Railing Sleeves Set	5d	7/29/2026	8/4/2026
46	Install Reinforcing For Stairs	3d	8/5/2026	8/7/2026
47	Pour Stairs	1d	8/10/2026	8/10/2026
48	Strip Stair Forms	2d	8/11/2026	8/12/2026
49	Install Railings	5d	8/13/2026	8/19/2026
50	Grade For Curb and Gutter	2d	10/15/2026	10/16/2026
51	Form Curb and Gutter	3d	10/19/2026	10/21/2026
52	Pour Curb and Gutter	2d	10/22/2026	10/23/2026
53	Grading For Sidewalks and Site Concrete	2d	10/26/2026	10/27/2026
54	Form Sidewalks and Site Concrete	5d	10/28/2026	11/3/2026
55	Pour Sidewalks and Site Concrete	2d	11/4/2026	11/5/2026
56	Install Site Furnishings	3d	11/6/2026	11/10/2026
57	**Landscaping**		**9/12/2025**	**9/12/2025**
58	**Building Construction**	**361d**	**9/12/2025**	**2/15/2027**
59	**Foundations**	**54d**	**7/8/2026**	**9/22/2026**
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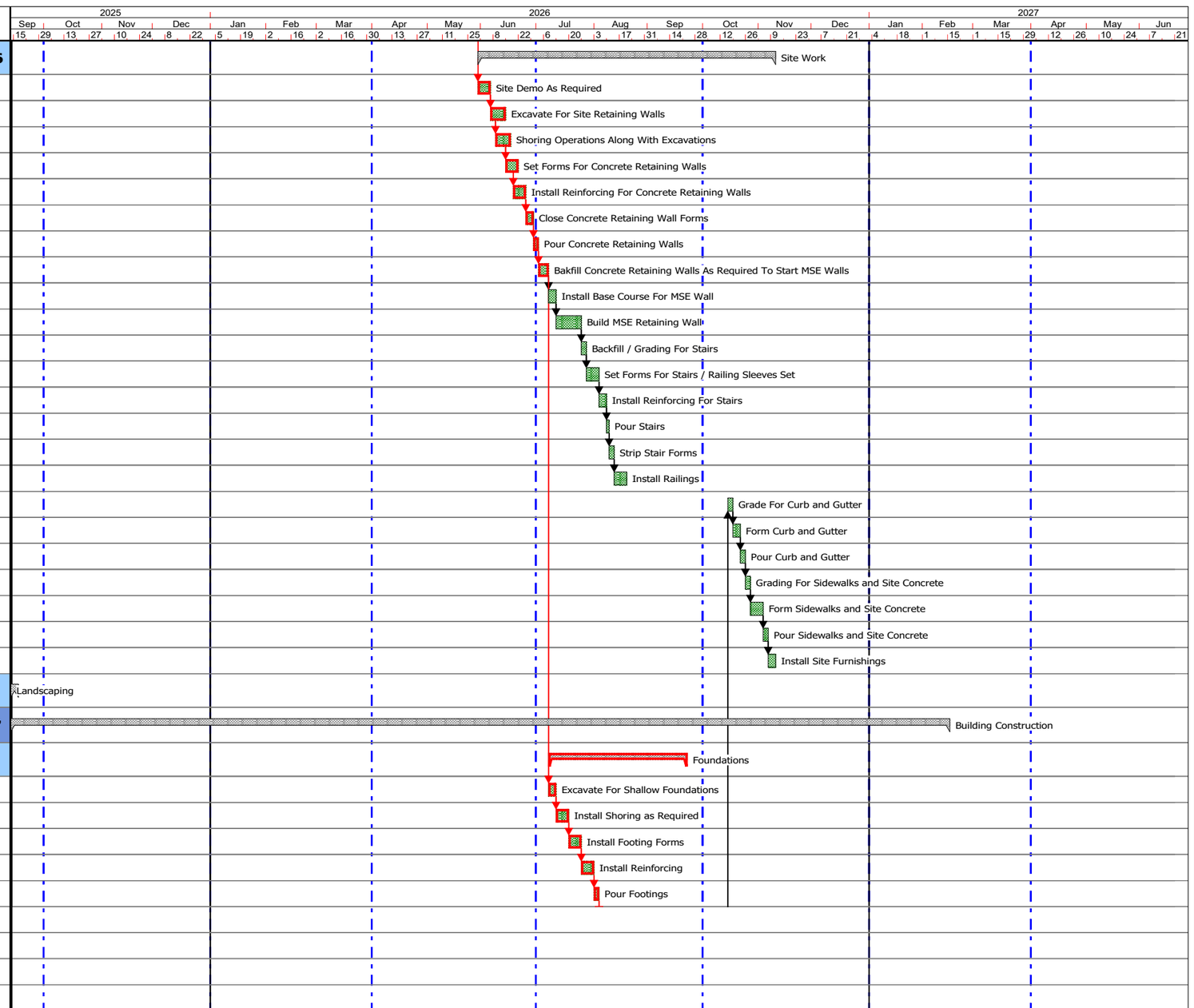
61	Install Shoring as Required	5d	7/13/2026	7/17/2026
62	Install Footing Forms	5d	7/20/2026	7/24/2026
63	Install Reinforcing	5d	7/27/2026	7/31/2026
64	Pour Footings	2d	8/3/2026	8/4/2026



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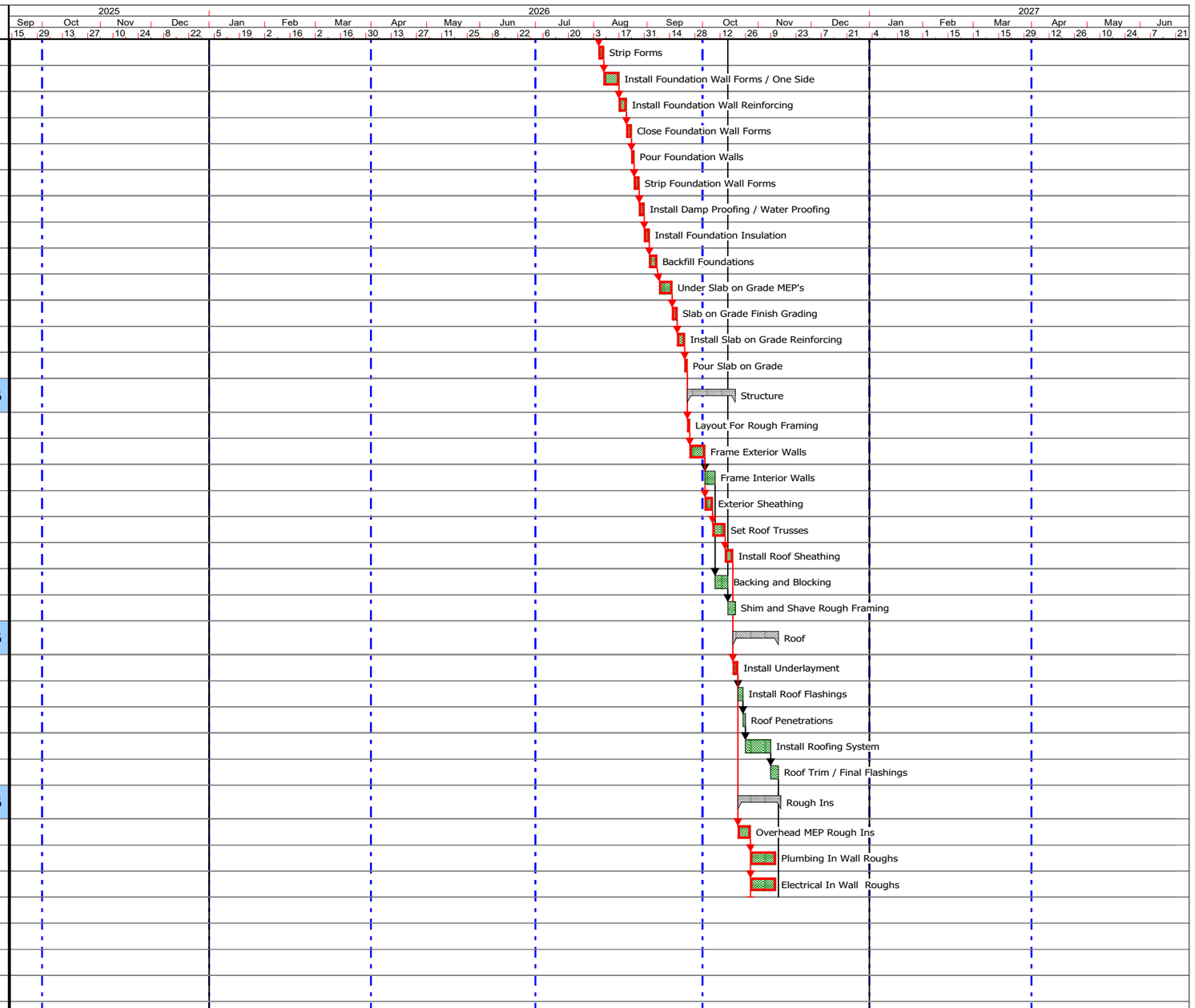
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
65	Strip Forms	2d	8/5/2026	8/6/2026
66	Install Foundation Wall Forms / One Side	6d	8/7/2026	8/14/2026
67	Install Foundation Wall Reinforcing	3d	8/17/2026	8/19/2026
68	Close Foundation Wall Forms	2d	8/20/2026	8/21/2026
69	Pour Foundation Walls	1d	8/24/2026	8/24/2026
70	Strip Foundation Wall Forms	2d	8/25/2026	8/26/2026
71	Install Damp Proofing / Water Proofing	2d	8/27/2026	8/28/2026
72	Install Foundation Insulation	2d	8/31/2026	9/1/2026
73	Backfill Foundations	3d	9/2/2026	9/4/2026
74	Under Slab on Grade MEP's	5d	9/8/2026	9/14/2026
75	Slab on Grade Finish Grading	2d	9/15/2026	9/16/2026
76	Install Slab on Grade Reinforcing	3d	9/17/2026	9/21/2026
77	Pour Slab on Grade	1d	9/22/2026	9/22/2026
78	**Structure**	**19d**	**9/23/2026**	**10/19/2026**
79	Layout For Rough Framing	1d	9/23/2026	9/23/2026
80	Frame Exterior Walls	6d	9/24/2026	10/1/2026
81	Frame Interior Walls	4d	10/2/2026	10/7/2026
82	Exterior Sheathing	3d	10/2/2026	10/6/2026
83	Set Roof Trusses	5d	10/7/2026	10/13/2026
84	Install Roof Sheathing	3d	10/14/2026	10/16/2026
85	Backing and Blocking	5d	10/8/2026	10/14/2026
86	Shim and Shave Rough Framing	3d	10/15/2026	10/19/2026
87	**Roof**	**18d**	**10/19/2026**	**11/11/2026**
88	Install Underlayment	2d	10/19/2026	10/20/2026
89	Install Roof Flashings	2d	10/21/2026	10/22/2026
90	Roof Penetrations	1d	10/23/2026	10/23/2026
91	Install Roofing System	10d	10/26/2026	11/6/2026
92	Roof Trim / Final Flashings	3d	11/9/2026	11/11/2026
93	**Rough Ins**	**17d**	**10/21/2026**	**11/12/2026**
94	Overhead MEP Rough Ins	5d	10/21/2026	10/27/2026
95	Plumbing In Wall Roughs	10d	10/28/2026	11/10/2026
96	Electrical In Wall Roughs	10d	10/28/2026	11/10/2026



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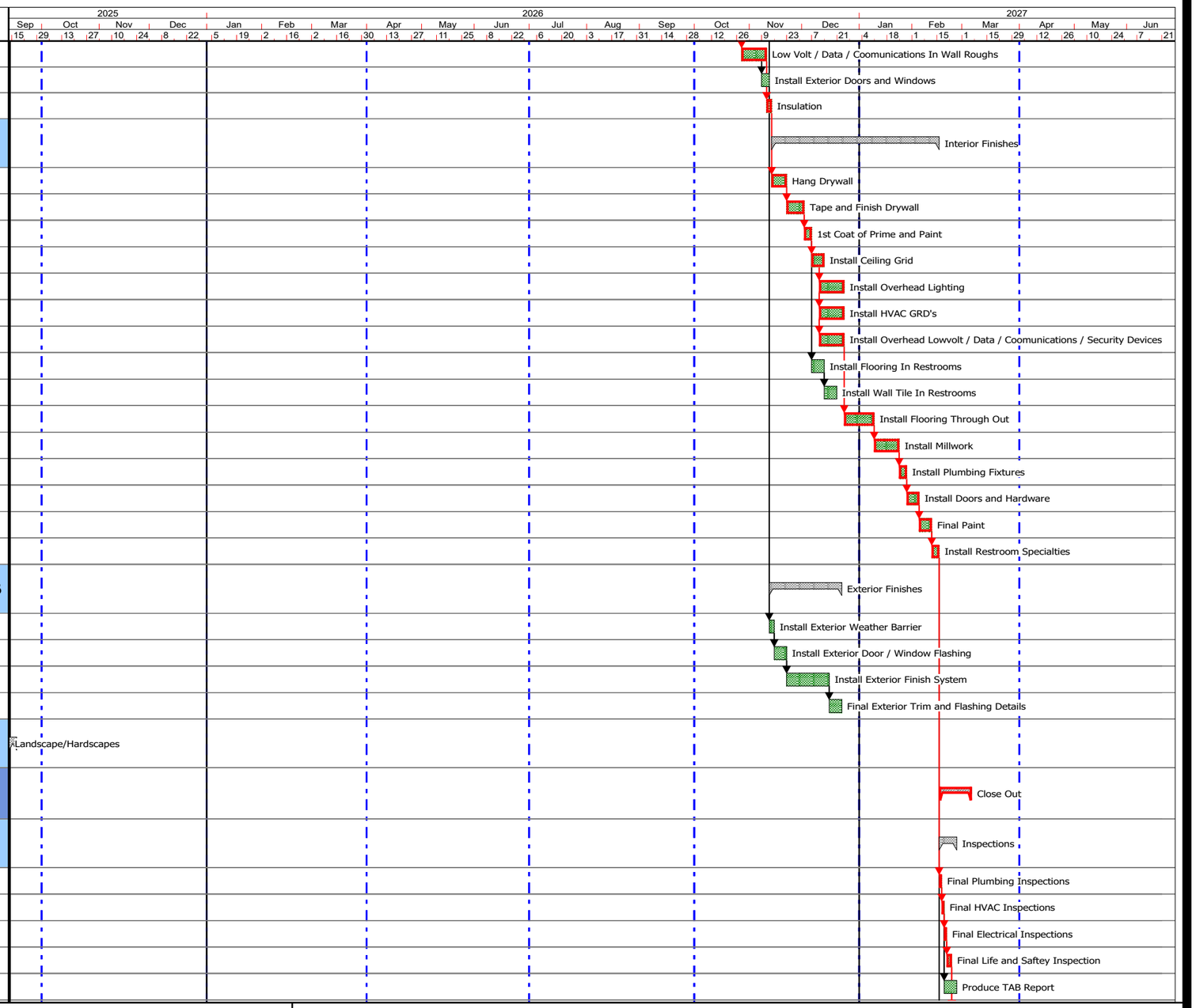
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
97	Low Volt / Data / Coomunications In Wall Roughs	10d	10/28/2026	11/10/2026
98	Install Exterior Doors and Windows	3d	11/9/2026	11/11/2026
99	Insulation	2d	11/11/2026	11/12/2026
100	**Interior Finishes**	**63d**	**11/13/2026**	**2/15/2027**
101	Hang Drywall	6d	11/13/2026	11/20/2026
102	Tape and Finish Drywall	5d	11/23/2026	12/1/2026
103	1st Coat of Prime and Paint	3d	12/2/2026	12/4/2026
104	Install Ceiling Grid	5d	12/7/2026	12/11/2026
105	Install Overhead Lighting	10d	12/10/2026	12/23/2026
106	Install HVAC GRD's	10d	12/10/2026	12/23/2026
107	Install Overhead Lowvolt / Data / Coomunications / Security Devices	10d	12/10/2026	12/23/2026
108	Install Flooring In Restrooms	5d	12/7/2026	12/11/2026
109	Install Wall Tile In Restrooms	5d	12/14/2026	12/18/2026
110	Install Flooring Through Out	10d	12/24/2026	1/8/2027
111	Install Millwork	10d	1/11/2027	1/22/2027
112	Install Plumbing Fixtures	3d	1/25/2027	1/27/2027
113	Install Doors and Hardware	5d	1/28/2027	2/3/2027
114	Final Paint	5d	2/4/2027	2/10/2027
115	Install Restroom Specialties	3d	2/11/2027	2/15/2027
116	**Exterior Finishes**	**27d**	**11/12/2026**	**12/22/2026**
117	Install Exterior Weather Barrier	2d	11/12/2026	11/13/2026
118	Install Exterior Door / Window Flashing	5d	11/16/2026	11/20/2026
119	Install Exterior Finish System	15d	11/23/2026	12/15/2026
120	Final Exterior Trim and Flashing Details	5d	12/16/2026	12/22/2026
121	**Landscape/Hardscapes**		**9/12/2025**	**9/12/2025**
122	**Close Out**	**13d**	**2/16/2027**	**3/4/2027**
123	**Inspections**	**7d**	**2/16/2027**	**2/24/2027**
124	Final Plumbing Inspections	1d	2/16/2027	2/16/2027
125	Final HVAC Inspections	1d	2/17/2027	2/17/2027
126	Final Electrical Inspections	1d	2/18/2027	2/18/2027
127	Final Life and Saftey Inspection	2d	2/19/2027	2/22/2027
128	Produce TAB Report	5d	2/18/2027	2/24/2027



Report Date: 9/12/2025 | Revision No. A | Notes: Comment - Chart Properties

Project Ref. P:\1-CURRENT BIDS\Snowmass\Snowmass TC Phase A CPM.pp

Planned by Powerproject

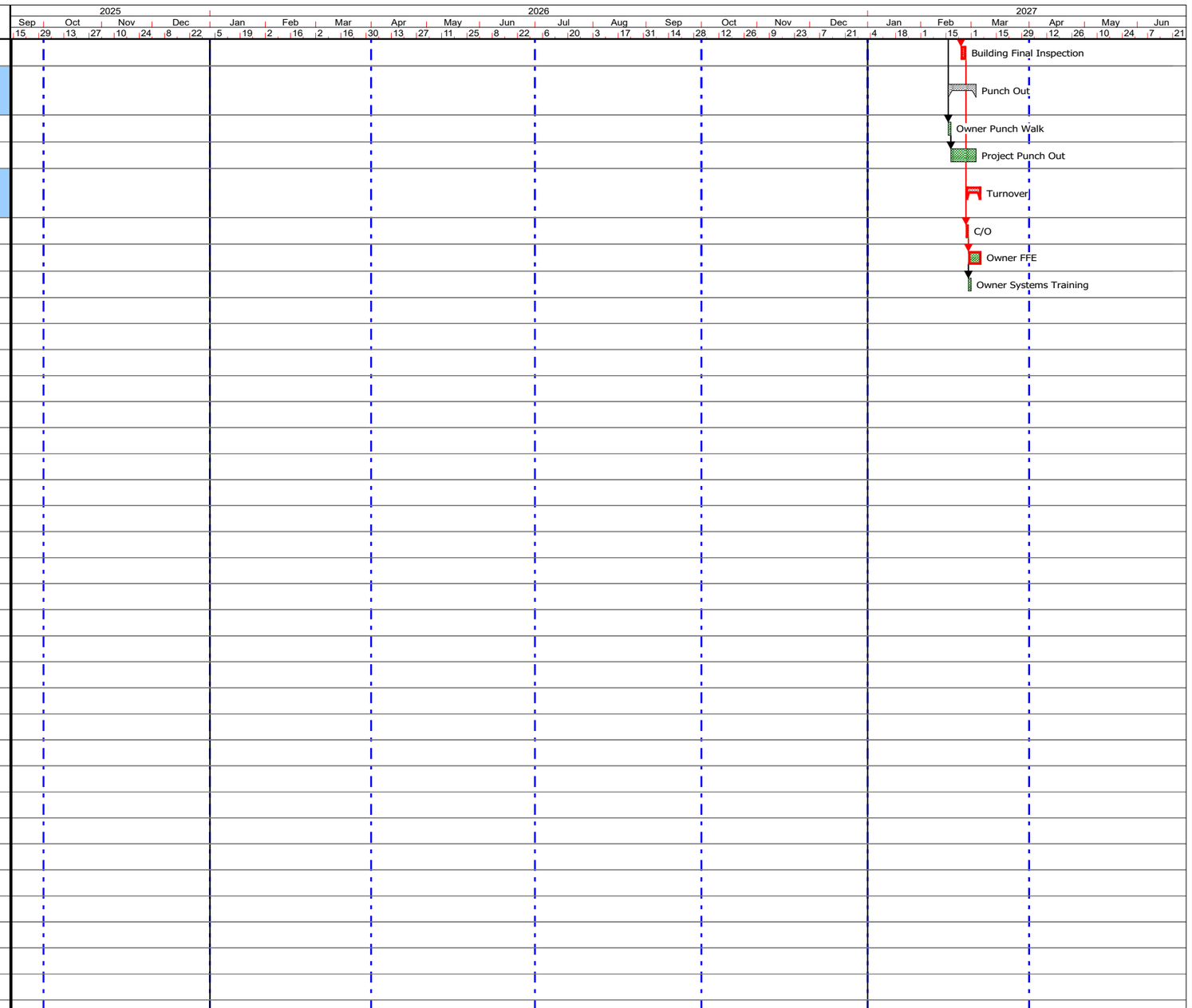
A. D. Miller
Building on Higher Ground

Snowmass TC Phase A

10/6/2025

Sean Leahey

Line	Name	Duration	Start	Finish
129	Building Final Inspection	2d	2/23/2027	2/24/2027
130	**Punch Out**	**11d**	**2/16/2027**	**3/2/2027**
131	Owner Punch Walk	1d	2/16/2027	2/16/2027
132	Project Punch Out	10d	2/17/2027	3/2/2027
133	**Turnover**	**6d**	**2/25/2027**	**3/4/2027**
134	C/O	1d	2/25/2027	2/25/2027
135	Owner FFE	5d	2/26/2027	3/4/2027
136	Owner Systems Training	1d	2/26/2027	2/26/2027



Report Date: 9/12/2025 | Revision No. A | Notes: Comment - Chart Properties

Project Ref. P:\1-CURRENT BIDS\Snowmass\Snowmass TC Phase A CPM.pp

Planned by Powerproject

Town of Snowmass Transit Center

Concept

August 22, 2025

CUMMING GROUP

CUMMING GROUP| Denver
88 Inverness Circle East, Building G, Suite 101 • Englewood • Colorado • 80112
cumming-group.com
Phone: 303-771-0396

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EXECUTIVE SUMMARY

1.1 Introduction

This estimate has been prepared, pursuant to an agreement between SEH and Cumming, for the purpose of establishing a probable cost of construction at the concept stage.

The project scope encompasses site improvements on Carriage Way, as well as the construction of a new 880 sf building that includes restrooms & a guest services area. Option C includes a permanent shoring system to support the future parking garage.

1.2 Project Schedule

	Start	Finish	Duration
Construction	Apr-26	Apr-27	12 months

1.3 Key Assumptions & Exclusions

This document should be read in association with Appendix 1 which outlines approach and cost management methodology. Key assumptions & exclusions include:

Key Assumptions

- CM@Risk
- Single Phase Construction
- **Anticipated Construction Start Date April 2026**
- **Anticipated Construction Duration of 12 Months**

Key Exclusions

- Project Soft Costs
- Night & Weekend Work
- Removal / Relocation of Site Furnishings / Specialties
- Third Party Testing and Inspections
- Building Permit Plan & Check Fees
- 2 Story Garage Or Work Outside Bus Drop Off
- Option B

SUMMARY

Element	Area	Cost / SF	Total
Option A	12,850	$214.35	$2,754,461
Total Estimated Construction Cost Option A (Today's $$)	**12,850**	**$214.35**	**$2,754,461**
Escalation to MOC, 09/30/26	5.06%		$139,493
Total Estimated Construction Cost Option A (Escalated $$)	**12,850**	**$225.21**	**$2,893,954**

Option C			$1,406,125
Total Estimated Construction Cost Option C (Today's $$)	**12,850**	**$109.43**	**$1,406,125**
Escalation to MOC, 09/30/26	5.06%		$71,210
Total Estimated Construction Cost Option C (Escalated $$)	**12,850**	**$114.97**	**$1,477,334**

Total Estimate Construction Cost Option A & Option C (Escalated $$)	**12,850**	**$340.18**	**$4,371,288**

SUMMARY MATRIX

		Option A 12,850 SF		Option C 12,850 SF		Overall Totals	
Element		**Total**	**Cost/SF**	**Total**	**Cost/SF**	**Total**	**Cost/SF**
01 General Requirements		$12,850	$1.00			$12,850	$1.00
02 Existing Conditions		$77,301	$6.02			$77,301	$6.02
03 Concrete		$43,952	$3.42			$43,952	$3.42
04 Masonry		$105,760	$8.23			$105,760	$8.23
05 Metals		$83,490	$6.50			$83,490	$6.50
06 Wood, Plastics, And Composites		$92,395	$7.19			$92,395	$7.19
07 Thermal And Moisture Protection		$114,432	$8.91			$114,432	$8.91
08 Openings		$33,990	$2.65			$33,990	$2.65
09 Finishes		$63,768	$4.96			$63,768	$4.96
10 Specialties		$23,211	$1.81			$23,211	$1.81
11 Equipment							
12 Furnishings							
13 Special Construction							
14 Conveying Systems							
21 Fire Suppression		$8,400	$0.65			$8,400	$0.65
22 Plumbing		$104,890	$8.16			$104,890	$8.16
23 HVAC		$45,950	$3.58			$45,950	$3.58
25 Integrated Automation		$8,400	$0.65			$8,400	$0.65
26 Electrical		$58,550	$4.56			$58,550	$4.56
27 Communications		$5,880	$0.46			$5,880	$0.46
28 Electrical Safety And Security		$12,600	$0.98			$12,600	$0.98
31 Earthwork		$134,675	$10.48	$783,300		$917,975	$71.44
32 Exterior Improvements		$570,392	$44.39	$33,936		$604,328	$47.03
33 Utilities							
Subtotal Cost		$1,600,885	$124.58	$817,236	$63.60	$2,418,121	$188.18
General Conditions	14.2%	$226,525	$17.63	$115,639	$9.00	$342,164	$26.63
General Requirements	5.8%	$105,076	$8.18	$53,640	$4.17	$158,716	$12.35
Bonds & Insurance	8.5%	$42,515	$3.31	$21,703	$1.69	$64,218	$5.00
Contractor's Fee	5.0%	$98,750	$7.68	$50,411	$3.92	$149,161	$11.61
Design Contingency	15.0%	$311,063	$24.21	$158,794	$12.36	$469,857	$36.56
Construction Contingency	5.0%	$119,241	$9.28	$60,871	$4.74	$180,112	$14.02
Architect / Engineer Fees	10.0%	$250,406	$19.49	$127,830	$9.95	$378,235	$29.43
Escalation to MOC, 09/30/26	5.1%	See Summary		See Summary		See Summary	
Total Estimated Construction Cost		**$2,754,461**	**$214.35**	**$1,406,125**	**$109.43**	**$4,160,585**	**$323.78**

SCHEDULE OF AREAS AND CONTROL QUANTITIES

Schedule of Areas	Option A + C	SF
Building and Site	12,850	12,850

Option A

SUMMARY - OPTION A

Element			Total	Cost / SF
02	Existing Conditions		$77,301	$6.02
03	Concrete		$43,952	$3.42
04	Masonry		$105,760	$8.23
05	Metals		$83,490	$6.50
06	Wood, Plastics, And Composites		$92,395	$7.19
07	Thermal And Moisture Protection		$114,432	$8.91
08	Openings		$33,990	$2.65
09	Finishes		$63,768	$4.96
10	Specialties		$23,211	$1.81
11	Equipment			
12	Furnishings			
13	Special Construction			
14	Conveying Systems			
21	Fire Suppression		$8,400	$0.65
22	Plumbing		$104,890	$8.16
23	HVAC		$45,950	$3.58
25	Integrated Automation		$8,400	$0.65
26	Electrical		$58,550	$4.56
27	Communications		$5,880	$0.46
28	Electrical Safety And Security		$12,600	$0.98
31	Earthwork		$134,675	$10.48
32	Exterior Improvements		$570,392	$44.39
	Subtotal		$1,600,885	$124.58
	General Conditions	14.15%	$226,525	$17.63
	Subtotal		$1,827,411	$142.21
	General Requirements	5.75%	$105,076	$8.18
	Subtotal		$1,932,487	$150.39
	Bonds & Insurance	2.20%	$42,515	$3.31
	Subtotal		$1,975,002	$153.70
	Contractor's Fee	5.00%	$98,750	$7.68
	Subtotal		$2,073,752	$161.38
	Design Contingency	15.00%	$311,063	$24.21
	Subtotal		$2,384,814	$185.59
	Construction Contingency	5.00%	$119,241	$9.28
	Subtotal		$2,504,055	$194.87
	Architect / Engineer Fees	10.00%	$250,406	$19.49
	Subtotal		$2,754,461	$214.35
	Escalation to MOC, 09/30/26		*See Summary*	*See Summary*
TOTAL ESTIMATED CONSTRUCTION COST			**$2,754,461**	**$214.35**

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
01 General Requirements				
Final Cleaning	12,850	gsf	$1.00	$12,850
Total - General Requirements				**$12,850**
02 Existing Conditions				
Demolition				
Protect existing, allowance	12,850	sf	$0.10	$1,285
Sawcut and remove asphalt	5,295	sf	$1.40	$7,413
Sawcut and remove brick	812	sf	$9.50	$7,714
Sawcut and remove concrete sidewalks, assume 5" thick	5,574	sf	$3.50	$19,509
Remove street light bases	4	ea	$700.00	$2,800
Remove curb & gutter	560	lf	$25.00	$14,000
Remove fence	60	lf	$10.00	$600
Remove signs	2	ea	$150.00	$300
Remove landscaping	660	sf	$0.50	$330
Remove concrete steps	250	lf	$19.20	$4,800
Remove planter walls	155	lf	$70.00	$10,850
Remove stairs railings	48	lf	$25.00	$1,200
Removal & relocation of site specialties				*Not Included*
Miscellaneous Demolition, Allowance	1	ls	$6,500.00	$6,500
Total - Existing Conditions				**$77,301**
03 Concrete				
Concrete Foundations				
Continuous footing				
Concrete	9	cy	$395.00	$3,555
Formwork	240	sf	$14.50	$3,480
Reinforcement	672	lbs	$1.50	$1,008
Excavation	26	cy	$35.00	$910
Backfill	18	cy	$30.00	$540
Haul surplus	8	cy	$45.00	$360
Stem wall				
Concrete	16	cy	$410.00	$6,560
Formwork	933	sf	$14.50	$13,529
Reinforcement	1,612	lbs	$1.50	$2,418
Backfill	25	cy	$30.00	$750
Concrete Slab on Grade				
Concrete	16	cy	$350.00	$5,600
Formwork	171	lf	$11.00	$1,881
Welded wire mesh	880	sf	$1.20	$1,056

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
Sand base, 4"	880	sf	$1.00	$880
Vapor barrier	880	sf	$0.72	$634
Finish to slab on grade	880	sf	$0.90	$792
Total - Concrete				**$43,952**
04 Masonry				
Stone				
Stone veneer, assume 75% of building enclosure walls	1,297	sf	$80.00	$103,760
Precast trim, allowance	1	ls	$2,000.00	$2,000
Total - Masonry				**$105,760**
05 Metals				
Structural Steel				
Roof framing allowance, assume 10 psf at guest services	2	tn	$10,000.00	$23,500
Roof framing allowance, assume 10 psf at restrooms	4	tn	$10,000.00	$35,600
Metal decking, allowance	1,222	sf	$10.00	$12,220
Miscellaneous Metals				
Bollards, assuming	8	ea	$1,200.00	$9,600
Miscellaneous metals, allowance	12,850	gsf	$0.20	$2,570
Total - Metals				**$83,490**
06 Wood, Plastics, And Composites				
Rough Carpentry				
Exterior wall sheathing	1,664	sf	$5.00	$8,318
Roof sheathing	1,222	sf	$5.00	$6,110
Backing / blocking	1	ls	$1,500.00	$1,500
Finish Carpentry				
Cementitious board & batten siding, Hardi-board - assume 20% of building enclosure walls	367	sf	$35.00	$12,828
Wall framing, soffits, fascia, timbers	1	ls	$50,000.00	$50,000
Millwork				
Guest services cabinets	18	lf	$440.00	$7,920
Vanity units	13	lf	$440.00	$5,720
Total - Wood, Plastics, And Composites				**$92,395**

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
07 Thermal And Moisture Protection				
Waterproofing				
Rigid insulation, 2"	716	sf	$5.00	$3,580
Thermal Protection				
Thermal batt insulation, exterior wall	1,664	sf	$2.00	$3,327
Sound batt insulation, interior wall	520	sf	$2.00	$1,040
Rigid insulation, exterior wall	1,664	sf	$4.20	$6,987
Weather Barriers				
Air & vapor barrier, fluid-applied membrane, exterior wall	1,664	sf	$8.00	$13,308
Membrane Roofing System				
PVC, mechanical fastened, 60 mil	1,222	sf	$45.00	$54,990
High temp ice & water shield				*Included*
Backside of perimeter wall, 30"				*Included*
Metal flashings				*Included*
Sofit, allowance	312	sf	$100.00	$31,200
Expansion Joints, Allowance				*Assume Not Required*
Total - Thermal And Moisture Protection				**$114,432**
08 Openings				
Exterior Doors				
Single HM door in HM frame incl. hardware	5	ea	$2,750.00	$13,750
Exterior Glazing				
Exterior glazing at guest services	78	sf	$160.00	$12,480
Exterior glazing at restroom, assuming 5%	49	sf	$160.00	$7,760
Total - Openings				**$33,990**
09 Finishes				
Exterior Walls				*w/ Division 06*
Gypsum board				
Gypsum board, interior of exterior	1,664	sf	$5.00	$8,318
Interior Partitions				
Metal studs				
3 5/8"	520	sf	$13.00	$6,760
Gypsum board				
5/8" gypsum board, finished	1,040	sf	$5.00	$5,200
Floor Finishes				
Guest services flooring	326	sf	$5.00	$1,630
Restroom flooring	514	sf	$40.00	$20,560
Rubber base	253	lf	$4.00	$1,012

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
Ceiling Finishes				
Guest services	326	sf	$15.00	$4,890
Restroom	514	sf	$15.00	$7,710
Painting & Coating				
Paint gypsum board walls	1,004	sf	$1.32	$1,325
Epoxy paint in restrooms	1,700	sf	$3.36	$5,712
Paint doors and frames, per leaf	5	ea	$130.36	$652
Total - Finishes				**$63,768**
10 Specialties				
Signage				
Code-compliant signage	840	sf	$1.00	$840
Dimensional letter signage, allowance	1	ls	$5,000.00	$5,000
Restroom Specialties				
ADA stall	2	ea	$1,200.00	$2,400
Standard stall	4	ea	$1,000.00	$4,000
Hand dryers	2	ea	$1,200.00	$2,400
Mirror	20	sf	$38.40	$768
Grab bars	6	ea	$219.02	$1,314
Coat hook	6	ea	$31.82	$191
Paper towel dispenser combo unit, recessed	2	ea	$407.44	$815
Sanitary napkin disposal	3	ea	$203.72	$611
Seat cover dispenser	6	ea	$152.34	$914
Soap dispenser	4	ea	$104.02	$416
Toilet paper dispenser	6	ea	$90.32	$542
Baby changing station	2	ea	$1,500.00	$3,000
Total - Specialties				**$23,211**
11 Equipment				*No Work Anticipated*
Total - Equipment				
12 Furnishings				*No Work Anticipated*
Total - Furnishings				
13 Special Construction				*No Work Anticipated*
Total - Special Construction				

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
14 Conveying Systems				*No Work Anticipated*
Total - Conveying Systems				
21 Fire Suppression				
Fire Suppression				
Guest Services	326	sf	$10.00	$3,260
Restroom	514	sf	$10.00	$5,140
Total - Fire Suppression				**$8,400**
22 Plumbing				
Plumbing				
Guest Services	326	sf	$15.00	$4,890
Restroom	514	sf	$194.55	$100,000
Total - Plumbing				**$104,890**
23 HVAC				
HVAC				
Guest Services	326	sf	$70.00	$22,820
Restroom	514	sf	$45.00	$23,130
Total - HVAC				**$45,950**
25 Integrated Automation				
Controls				
Guest Services	326	sf	$10.00	$3,260
Restroom	514	sf	$10.00	$5,140
Total - Integrated Automation				**$8,400**

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
26 Electrical				
Electrical				
Guest Services	326	sf	$85.00	$27,710
Restroom	514	sf	$60.00	$30,840
Total - Electrical				**$58,550**
27 Communications				
Communications				
Guest Services	326	sf	$7.00	$2,282
Restroom	514	sf	$7.00	$3,598
Total - Communications				**$5,880**
28 Electrical Safety And Security				
Electrical Safety & Security				
Guest Services	326	sf	$15.00	$4,890
Restroom	514	sf	$15.00	$7,710
Total - Electrical Safety And Security				**$12,600**
31 Earthwork				
Site Preparation				
Mobilization / demobilization	1	ls	$25,000.00	$25,000
Construction surveying, allowance	12,850	sf	$1.50	$19,275
Shoring, allowance				*See Option C*
Temporary dewatering, allowance				*Excluded*
Protect trees				*See Div. 02*
Traffic control, allowance	1	ls	$25,000.00	$25,000
Site Earthwork, Allowance	12,850	gsf	$3.00	$38,550
Parking Lot 5				*Existing to Remain*
Erosion Control, Allowance	12,850	gsf	$1.00	$12,850
Regrading existing mall connection / incline, allowance	1,400	sf	$10.00	$14,000
Total - Earthwork				**$134,675**

DETAIL ELEMENTS - OPTION A

Element	Quantity	Unit	Unit Cost	Total
32 Exterior Improvements				
Bases, Ballast, and Paving				
Asphalt paving				
Asphalt patch	1	ls	$7,000.00	$7,000
Concrete paving				
Heavy duty concrete, 9", roadways	5,310	sf	$25.00	$132,750
Patch and repair carriage way double road	1	ls	$10,000.00	$10,000
Curbs, gutters, sidewalks				
Curb and gutter	400	lf	$42.00	$16,800
Colored concrete sidewalk, 5"	4,112	sf	$22.20	$91,286
Landing	56	sf	$22.20	$1,243
Steps	122	lf	$76.20	$9,296
Foam insulation, premium	903	sf	$4.00	$3,612
Site Joint Sealants, Allowance	12,850	gsf	$0.25	$3,213
Site Improvements				
Guardrail	121	lf	$365.00	$44,165
Signage and wayfinding, allowance	1	ls	$2,500.00	$2,500
Bike / ski racks	3	ea	$1,000.00	$3,000
Pedestrian seating / benches, allowance	1	ls	$5,000.00	$5,000
Irrigation and Landscaping				
Landscape, between stair and upper lot paving	407	sf	$3.15	$1,282
Irrigation and landscaping, allowance	1	ls	$15,000.00	$15,000
Site Structures				
Planter retaining wall along stairs, assume average height 4'-0"	62	lf	$450.00	$27,900
Continuous footing	62	lf	$350.00	$21,700
Drainage mat	248	sf	$5.00	$1,240
Stairs retaining wall & footing, assume average height of 4'-6"	92	lf	$520.00	$47,840
Continuous footing	92	lf	$350.00	$32,200
Drainage mat	414	sf	$5.00	$2,070
Retaining wall alongside of stairs, assume average height of 4'-6"	50	lf	$520.00	$26,000
Continuous footing	50	lf	$350.00	$17,500
Drainage mat	225	sf	$5.00	$1,125
Stairs retaining wall, assume average height of 5'-6"	30	lf	$844.80	$25,344
Continuous footing	50	lf	$350.00	$17,500
Dowels	1	ls	$3,000.00	$3,000
Drainage mat	165	sf	$5.00	$825
Total - Exterior Improvements				**$570,392**
33 Utilities				*No Work Anticipated*
Total - Utilities				

Option C

SUMMARY - OPTION C

Element		Total	Cost / SF
02 Existing Conditions			
03 Concrete			
04 Masonry			
05 Metals			
06 Wood, Plastics, And Composites			
07 Thermal And Moisture Protection			
08 Openings			
09 Finishes			
10 Specialties			
11 Equipment			
12 Furnishings			
13 Special Construction			
14 Conveying Systems			
21 Fire Suppression			
22 Plumbing			
23 HVAC			
25 Integrated Automation			
26 Electrical			
27 Communications			
28 Electrical Safety And Security			
31 Earthwork		$783,300	$60.96
32 Exterior Improvements		$33,936	$2.64
Subtotal		$817,236	$63.60
General Conditions	14.15%	$115,639	$9.00
Subtotal		$932,875	$72.60
General Requirements	5.75%	$53,640	$4.17
Subtotal		$986,515	$76.77
Bonds & Insurance	2.20%	$21,703	$1.69
Subtotal		$1,008,219	$78.46
Contractor's Fee	5.00%	$50,411	$3.92
Subtotal		$1,058,629	$82.38
Design Contingency	15.00%	$158,794	$12.36
Subtotal		$1,217,424	$94.74
Construction Contingency	5.00%	$60,871	$4.74
Subtotal		$1,278,295	$99.48
Architect / Engineer Fees	10.00%	$127,830	$9.95
Subtotal		$1,406,125	$109.43
Escalation to MOC, 09/30/26		*See Summary*	*See Summary*
TOTAL ESTIMATED CONSTRUCTION COST		**$1,406,125**	**$109.43**

DETAIL ELEMENTS - OPTION C

Element	Quantity	Unit	Unit Cost	Total
31 Earthwork				
Driller Pier Soldier Pile Shoring System, Allowance	2,611	sf	$300.00	$783,300
Concrete wall				
Concrete	97	cy		*Included Above*
Formwork	5,221	sf		*Included Above*
Reinforcement	20,885	lbs		*Included Above*
Waterproofing	2,611	sf		*Included Above*
Insulation	2,611	sf		*Included Above*
Lagging	2,611	sf		*Included Above*
Soldier pile steel	636	vlf		*Included Above*
Caissons	636	vlf		*Included Above*
Excavation & Backfill	483	cy		*Included Above*
Total - Earthwork				**$783,300**
32 Exterior Improvements				
Site Structures				
Planter retaining wall along stairs, assume average height 4'-0"	42	lf	$450.00	$18,900
Continuous footing	42	lf	$330.00	$13,860
Drainage mat	168	sf	$7.00	$1,176
Total - Exterior Improvements				**$33,936**

APPENDIX 1 - APPROACH & METHODOLOGY

Basis of Estimate

- 2022.07.25 TOSV Transit Center 06.22.2022 50% DD - Dtl Est
- 2022.07.25 TOSV Transit Center 50% DD CES (NEW DESIGN)
- 2025-07-15 TOSV - SOW Exhibit 1_Concept Design MM Markups
- Rev TOSV Transit Center- RAN Logistics & Phasing - 2023.02.08 - preliminary
- TOSV Transit Center Client Draft Concept Estimate - 40 MO ROM With Design Additions
- TOSV Transit Center Client Draft Concept Estimate Rev2 - 40 MO - June 2024

Estimate Format

A component cost classification format has been used for the preparation of this estimate. It classifies costs by building system / element.

Cost Mark Ups

The following % mark ups have been included in each design option:

- General Conditions (14.15% on direct costs)
- General Requirements (5.75% compound)
- Bonds & Insurance (8.50% compound)
- Contractor's Fee (5.00% compound)
- Design Contingency (15.00% compound)
- Construction Contingency (5.00% compound)
- Architect / Engineer Fees (10.00% compound)
- Escalation to MOC, 09/30/26 (5.06% compound)

Escalation

All subcontract prices herein are reflective of current bid prices. Escalation has been included on the summary level to the stated mid point of construction.

Design Contingency

An allowance of 15.00% for undeveloped design details has been included in this estimate. As the design of each system is further developed, details which historically increase cost become apparent and must be incorporated into the estimate while decreasing the % burden.

Construction Contingency

It is prudent for all program budgets to include an allowance for change orders which occur during the construction phase. These change orders normally increase the cost of the project. It is recommended that a 5.00% construction contingency is carried in this respect.

Construction Schedule

Costs included herein have been based upon a construction period of 12 months. Any costs for excessive overtime to meet accelerated schedule milestone dates are not included in this estimate.

Bid Conditions

This estimate has been based upon competitive bid situations (minimum of 3 bidders) for all items of subcontracted work.

Basis For Quantities

Wherever possible, this estimate has been based upon the actual measurement of different items of work. For the remaining items, parametric measurements were used in conjunction with other projects of a similar nature.

APPENDIX 1 - APPROACH & METHODOLOGY

Basis for Unit Costs

Unit costs as contained herein are based on current bid prices in Snowmass Village, CO. Sub overheads and profit are included in each line item unit cost. Their overhead and profit covers each sub's cost for labor burden, materials, and equipment, sales taxes, field overhead, home office overhead, and profit. The general contractor's overhead is shown separately on the master summary.

Sources for Pricing

This estimate was prepared by a team of qualified cost consultants experienced in estimating construction costs at all stages of design. These consultants have used pricing data from Cumming's database for renovation construction, updated to reflect current conditions in Snowmass Village, CO.

Items Affecting Cost Estimate

Items which may change the estimated construction cost include, but are not limited to:
- Modifications to the scope of work included in this estimate.
- Unforeseen sub-surface conditions.
- Restrictive technical specifications or excessive contract conditions.
- Any specified item of material or product that cannot be obtained from 3 sources.
- Any other non-competitive bid situations.
- Bids delayed beyond the projected schedule.

Statement of Probable Cost

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This estimate is made on the basis of the experience, qualifications, and best judgement of a professional consultant familiar with the construction industry. Cumming, however, cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

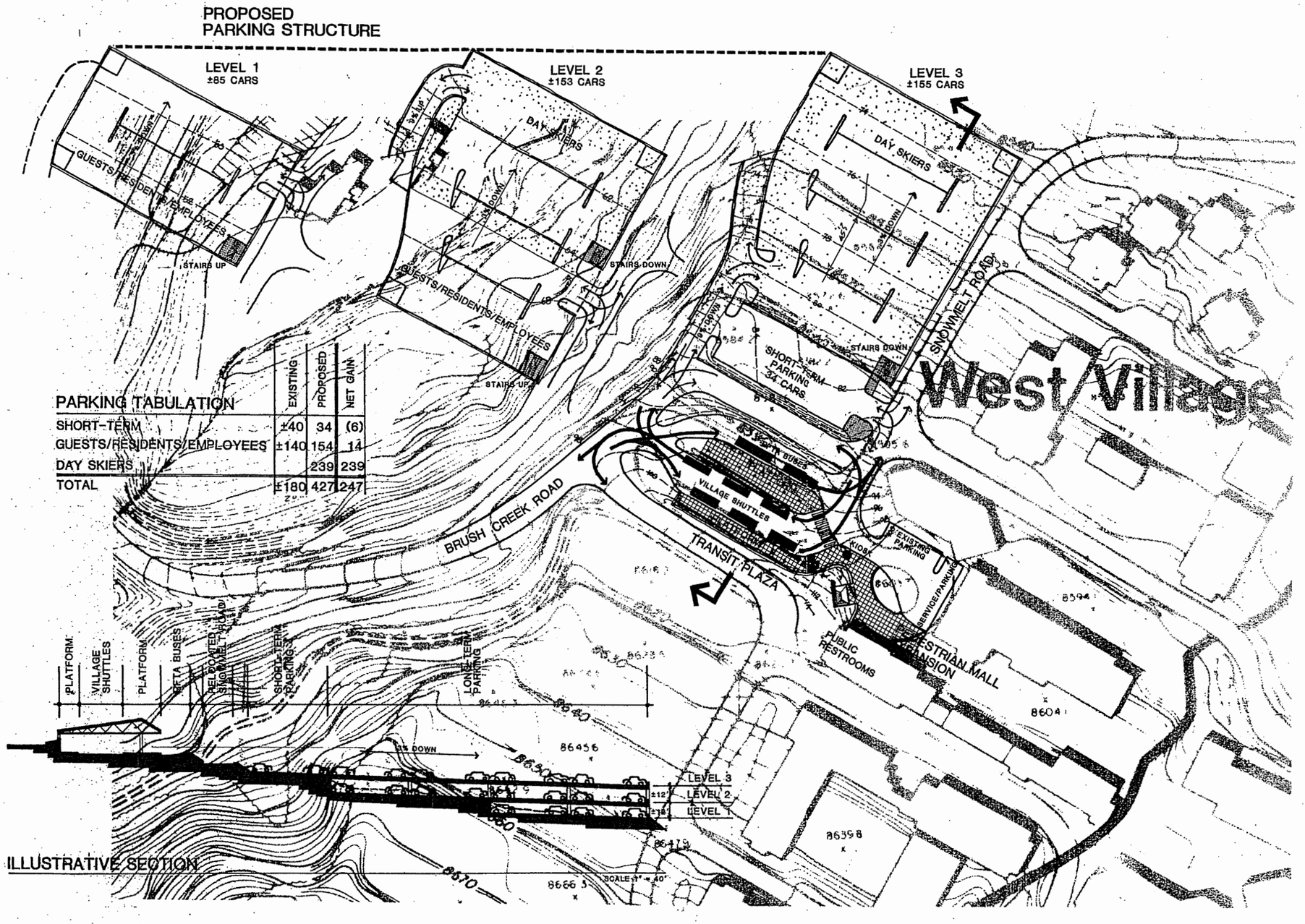
Cumming's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.

Pricing reflects probable construction costs obtainable in the project locality on the target dates specified and is a determination of fair market value for the construction of this project. The estimate is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all sub and general contractors with a range of 3 - 4 bidders for all items of work. Experience and research indicates that a fewer number of bidders may result in higher bids. Conversely, an increased number of bidders may result in more competitive bid day responses.

Recommendations

Cumming recommends that the Owner and the Architect carefully review this entire document to ensure it reflects their design intent. Requests for modifications of any apparent errors or omissions to this document must be made to Cumming within ten days of receipt of this estimate. Otherwise, it will be assumed that its contents have been reviewed and accepted. If the project is over budget or there are unresolved budget issues, alternate systems / schemes should be evaluated before proceeding into further design phases.

It is recommended that there are preparations of further cost estimates throughout design by Cumming to determine overall cost changes since the preparation of this preliminary estimate. These future estimates will have detailed breakdowns indicating materials by type, kind, and size, priced by their respective units of measure.



PARKING TABULATION	EXISTING	PROPOSED	NET GAIN
SHORT-TERM	±40	34	(6)
GUESTS/RESIDENTS/EMPLOYEES	±140	154	14
DAY SKIERS		239	239
TOTAL	±180	427	247

MALL TRANSIT PLAZA

SNOWMASS TRANSPORTATION CENTER STUDY

TOWN OF SNOWMASS VILLAGE
SNOWMASS VILLAGE, COLORADO

ROSALL REMMEN CARES
PLANNING, URBAN DESIGN AND RESEARCH
1426 PEARL STREET MALL
BOULDER, COLORADO 80302
(303) 449 8556

IN CONJUNCTION WITH
TDA COLORADO INC
1155 SHERMAN STREET DENVER, CO. 80203

0 25 50 100

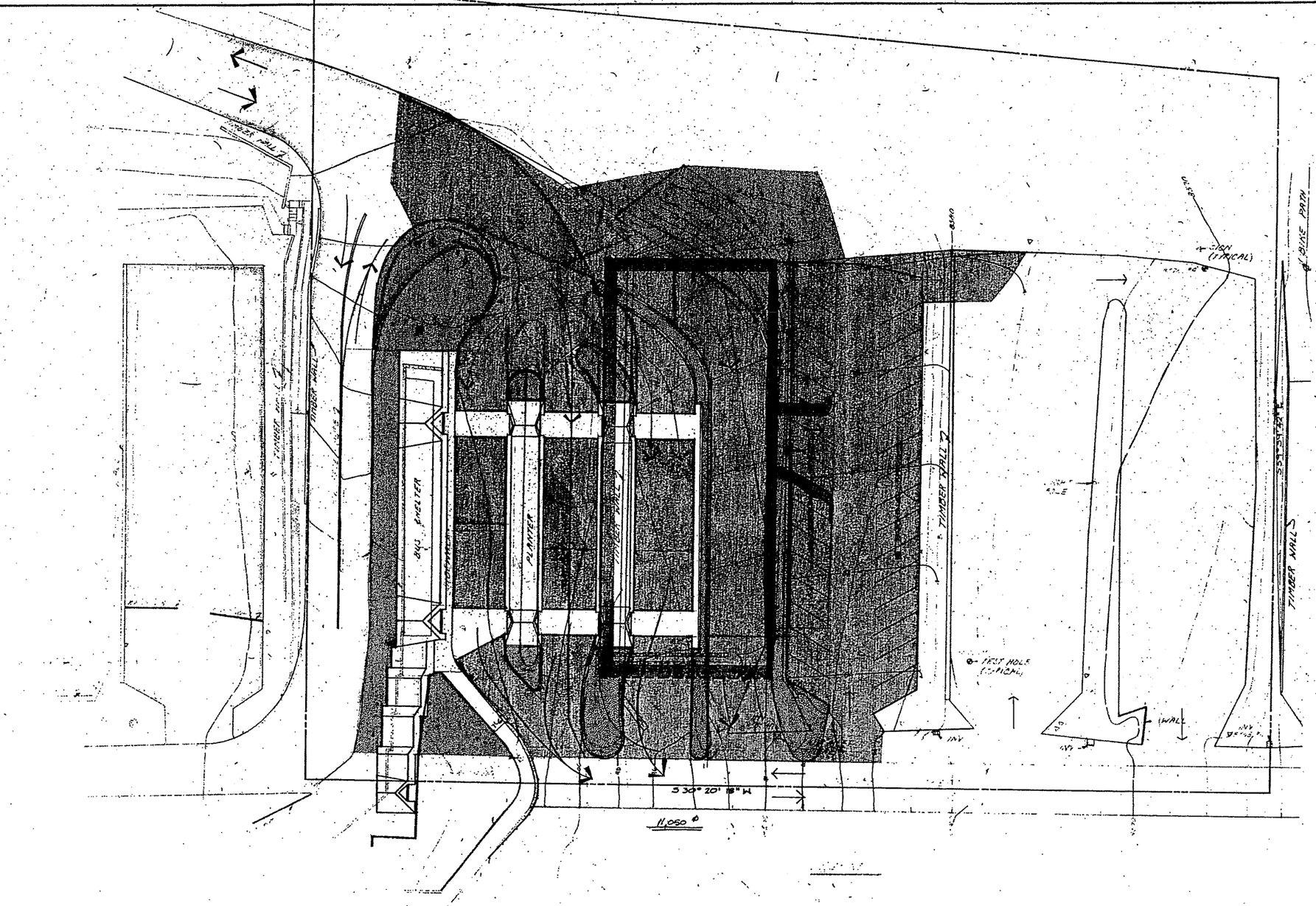
DRAWN BY	DATE	REVISIONS
P. REMMEN	4-20-1984	
CHECKED BY	PROJECT #	
P. REMMEN	136-00	

LAND COVERAGE

ASPHALT & CONCRETE		71,910 ft²
GREEN AREA		43,720 ft²
TOTAL LAND AREA		115,630 ft²

BUILDINGS

ROOF AREA	REROOFED EXISTING	3345 ft²
	CENTER ISLANDS	2950 ft²
ENCLOSED SPACE	INFORMATION	225 ft²
	RESTROOM	525 ft²



SCALE: 1"=20'

SCHMUESER & ASSOCIATES
ENGINEERS & CONSTRUCTORS

date	revisions	by
6/1/85	1-27-85 UNDERGROUND UTILITIES	BS

benedict sutherland fallin incorporated
1280 ute avenue aspen, co. 81611 303/925-3481

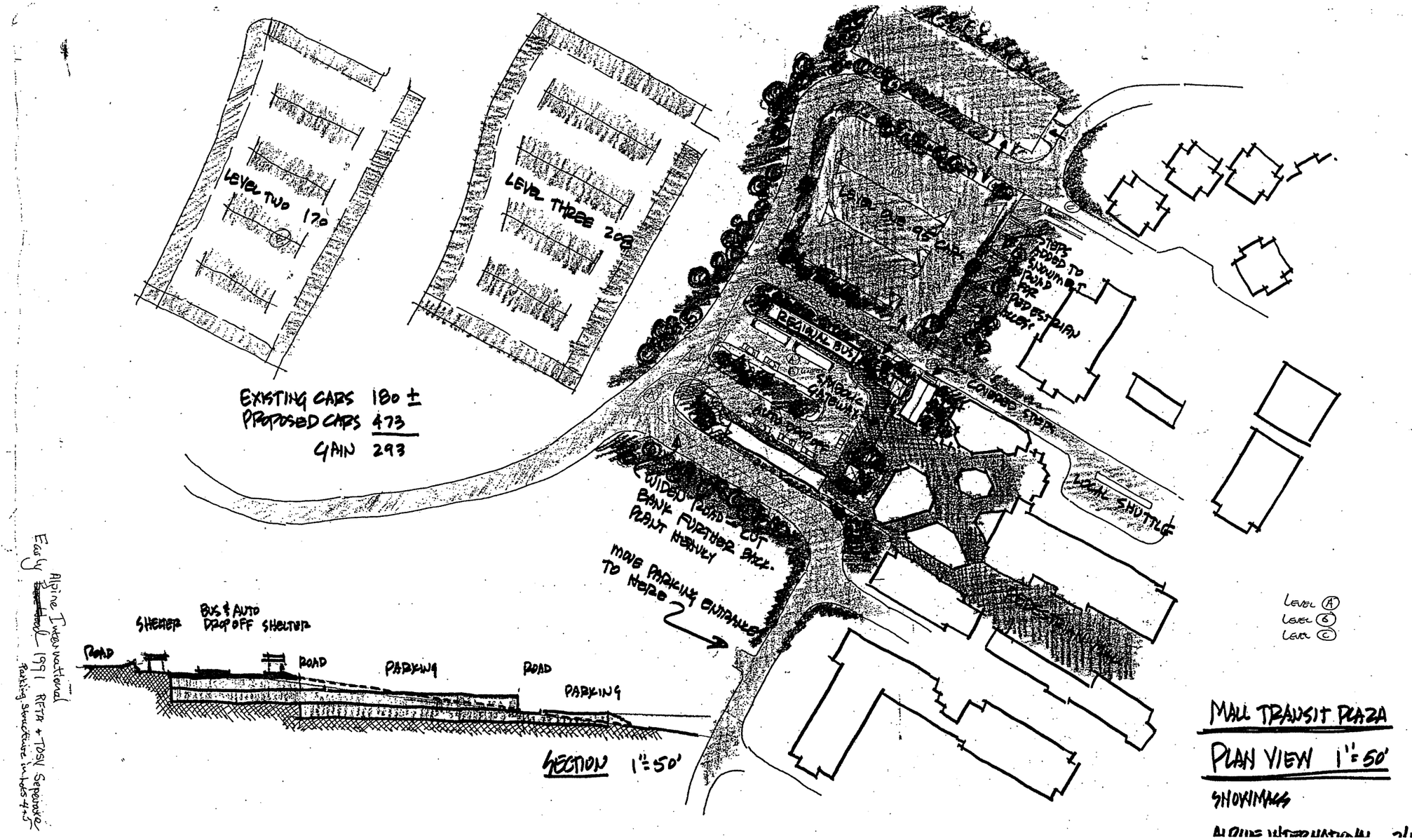
STAGE – 2 SITE PLAN

SNOWMASS TRANSIT PLAZA

job	85-04A
date	5-31-85
drwn	WB
chkd	BKS

1

91 sheets



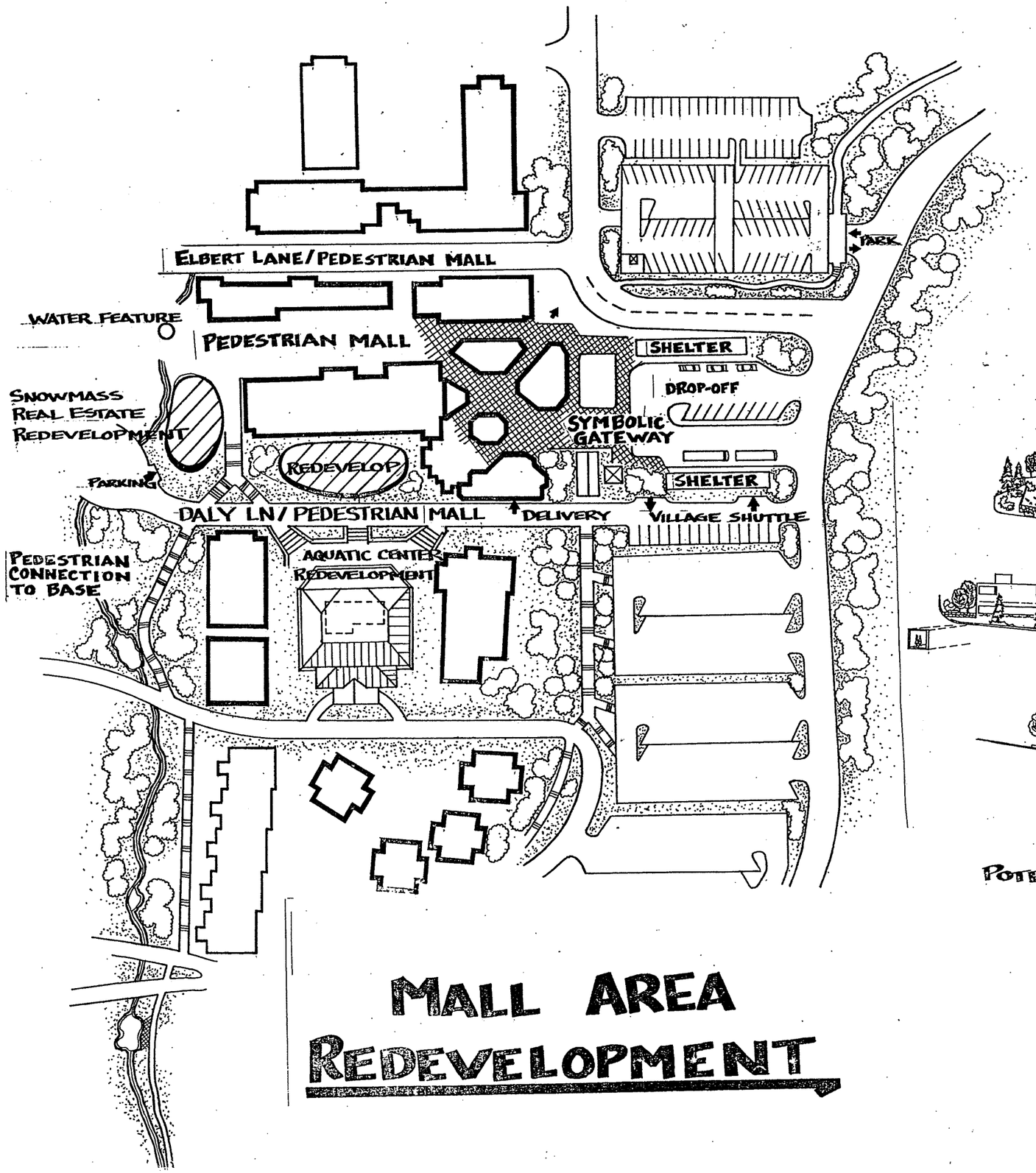
SECTION 1"=50'

MALL TRANSIT PLAZA

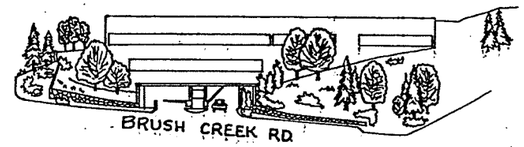
PLAN VIEW 1"=50'

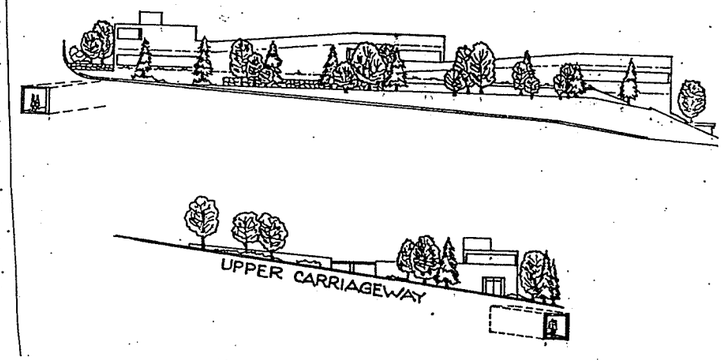
SNOWMASS

Alpine Intersectional Early [illegible] 1991 RFTA + TDSN Separate Parking Structure in Lots 4+5



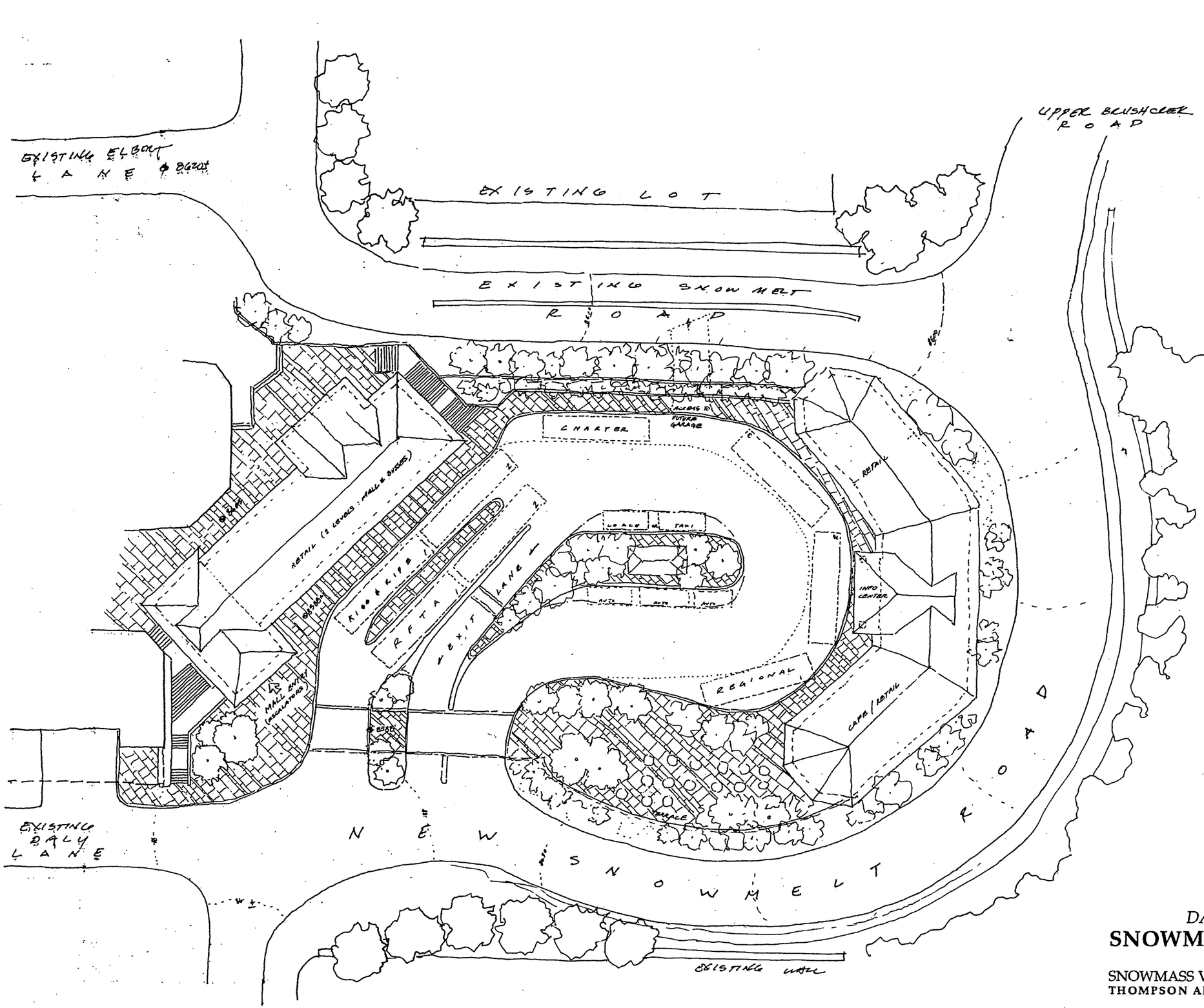
MALL AREA REDEVELOPMENT





POTENTIAL ADDITIONAL PARKING

Mall Parking Structure & Plaza on Elbert
Cuddeback - 1992



DALY LANE LEVEL **SCHEME A**

SNOWMASS GATEWAY PROJECT

SNOWMASS VILLAGE, COLORADO 1"=16'

THOMPSON AND WOOD 14 STORY STREET CAMBRIDGE, MA 02138

EXISTING ALLEY LANE

EXISTING UPPER SNOWMELT ROAD

UPPER BRUSH CREEK ROAD

EXISTING LOT

EXISTING SNOWMELT ROAD

8610

8600

8590

8580

617

605

607

604

603

COACH

TAXI

CHARTER

PITA

REGIONAL

BUS EXIT

UP

ENTRY/EXIT TO PARKING

EXISTING DALY LANE

NEW SNOWMELT ROAD

EXISTING WALL

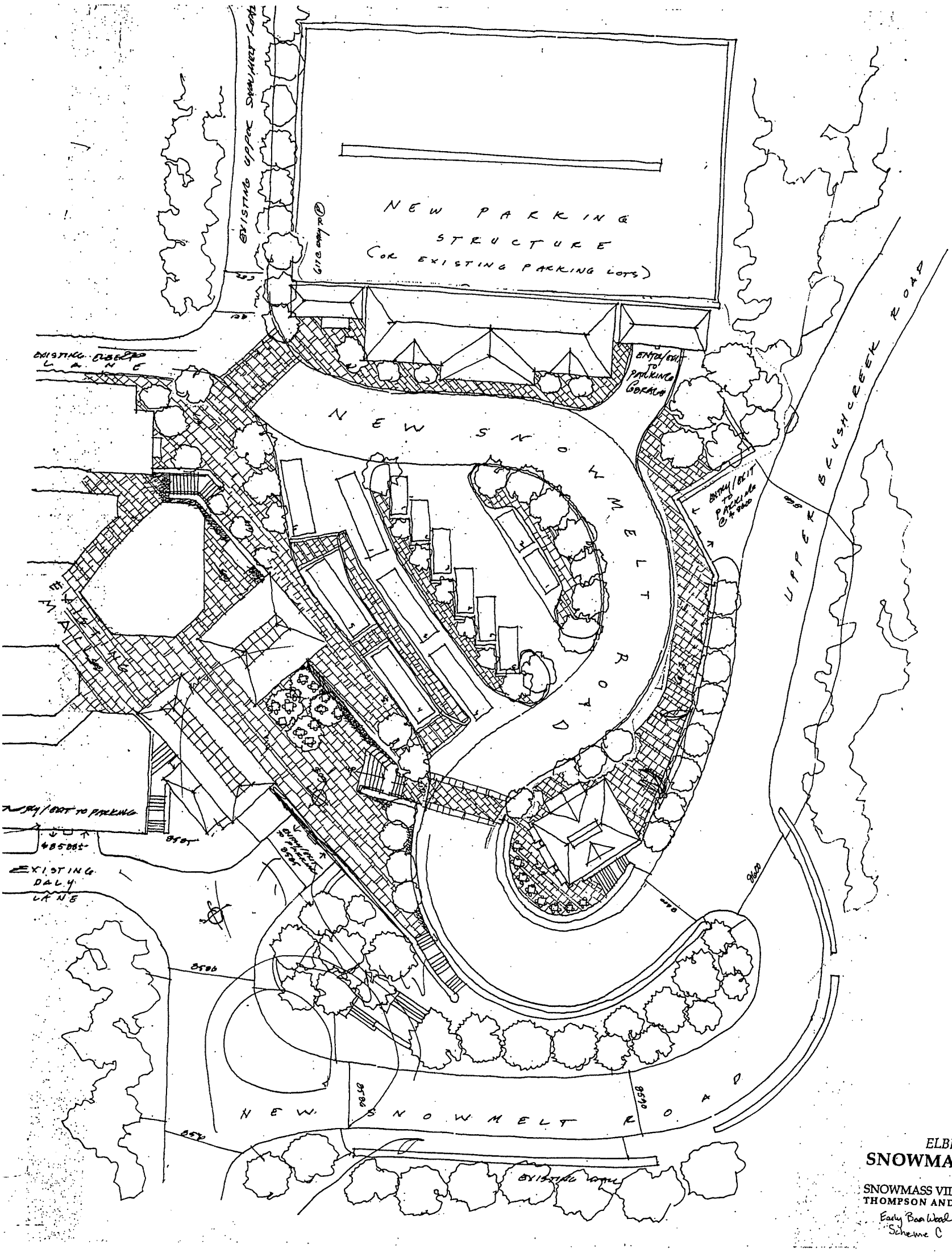
MALL LEVEL **SCHEME B**

SNOWMASS GATEWAY PROJECT

SNOWMASS VILLAGE, COLORADO 1"=16'

THOMPSON-AND WOOD 14 STORY STREET CAMBRIDGE, MA 02138

SK-6



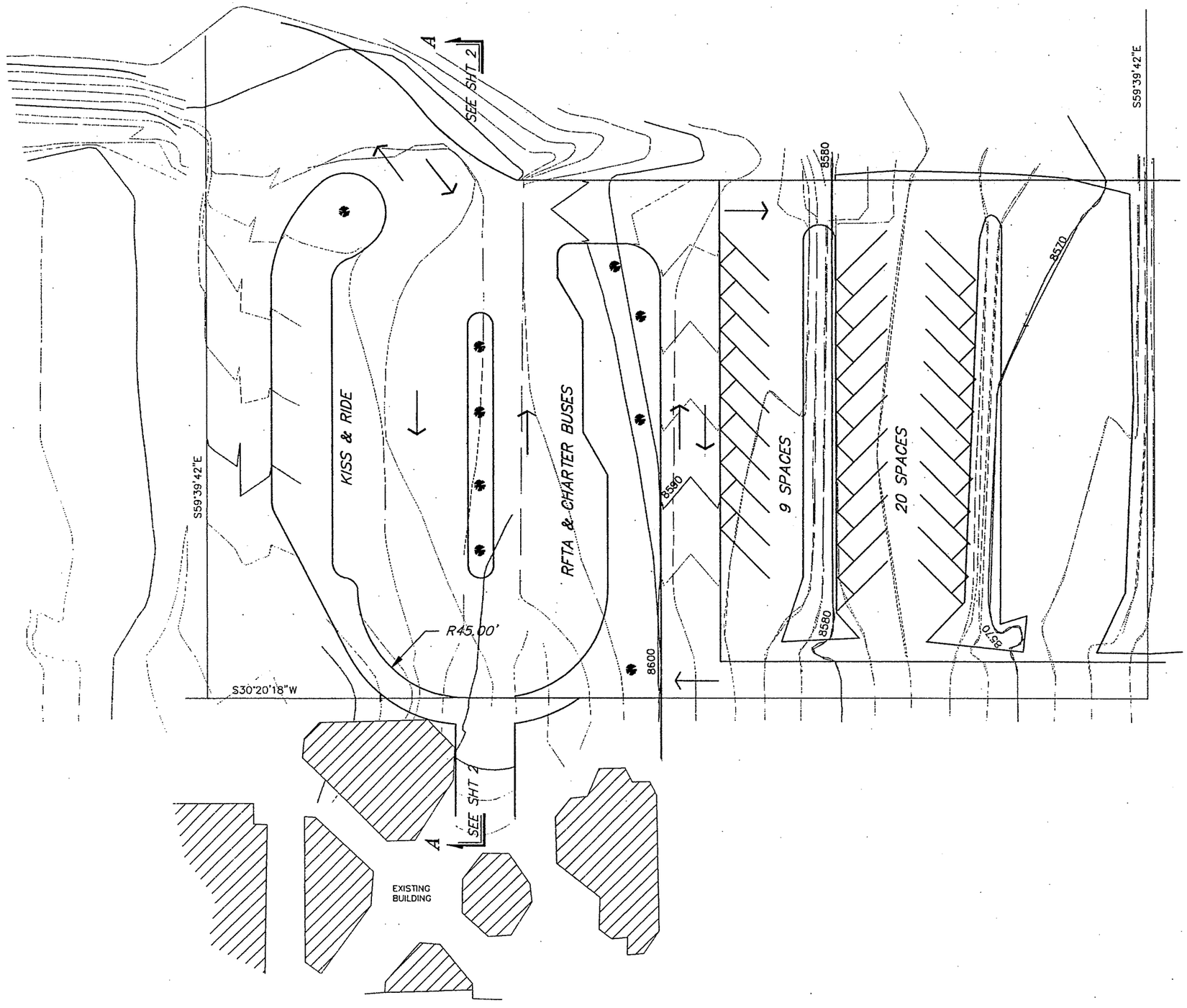
ELBERT LANE LEVEL **SCHEME C**

SNOWMASS GATEWAY PROJECT

SNOWMASS VILLAGE, COLORADO 1"=16'

THOMPSON AND WOOD 14 STORY STREET CAMBRIDGE, MA 02138

Early Boa Wood 1993-94
Scheme C



SCHMUESER GORDON MEYER ENGINEERS SURVEYORS	SCHMUESER GORDON MEYER INC. 1001 GRAND AVENUE, SUITE 2-E GLENWOOD SPRINGS, COLORADO 81601 (303) 945-1004 (FAX.) 945-5948 ASPEN, COLORADO (303) 925-6727	TOWN OF SNOWMASS VILLAGE	TRANSIT PLAZA MALL ACCESS

NUMBER	REVISION	DATE	BY

Job No.	93040A
Drawn by:	BP
Date:	04/27/93
Appr. by:	
File:	GRAD_PLN

1 OF 2

THOMPSON WOOD

SITE PLAN

MALL LEVEL · 8605a

SQUAMISH GATEWAY

PROJECT · 9208

1"=20' Feb 1999

PHASE I

EXISTING SQUAMMET ROAD

EXISTING RETAINING WALL

COACH / TENNIS

ISLAND BUS LOOP

EXISTING TURNAROUND

NEW TREES

DALY LANE

DN RAMP EL +8592 RAMP UP

49 SPACES / EL +8592

MALL @ +8605

VERTICAL DATE BANNER

SERVICE

LOWER BUS LOOP (CONTINUED)

PARK KING

ONEWAY

TOSV #1

TOSV #2

SHELTER

DROP OFF

EL. 8584 GIANT ELEVATOR BIG CUBE

RPTA #2

RPTA #1

STAIRS

PARKING LOT

TOSV - PICK UP

EXISTING PARKING

THOMPSON & WOOD

SITE PLAN
ROOF PLAN
SWAN MOSS GATEWAY
PROJECT. 9705
1"=20' Feb 1997

PHASE II

EXISTING TURNAROUND

EXISTING BUILDING

NEW BUILDING SITE

NEW SITE FOR EXTERIOR USE

SOUTH SIDE

RETAIL

EXISTING BUILDING

49 SPACES / EL +8572

RAMP

RAMP

NEW TREES

ELBERT LANE

DALY LANE

BUILT STREET IMPROVEMENTS

ICE SKATING RINK

SKATING PAVILION (ROOF)

EXISTING SNOW MELT BOILER

RESTAURANT PAVILION

COOLIDGE INN

± 100 ROOMS

HOTEL

± 100 ROOMS

RESTAURANT

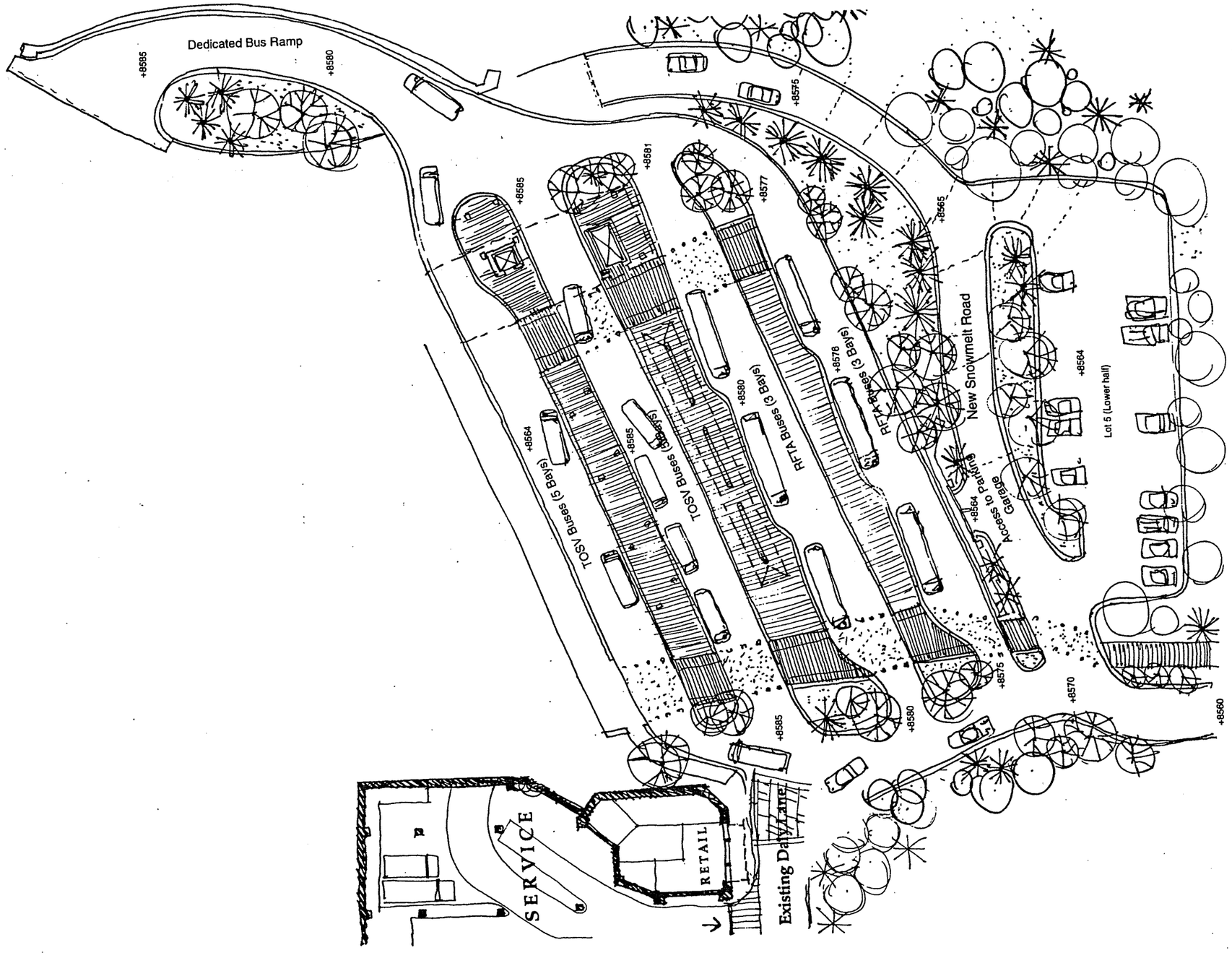
BUS DROPOFF EL.8582±

PARKING LOT

EXISTING PARKING

Transit Facility - Daly Lane Level (+8582)

Scale: 1"=20'-0"

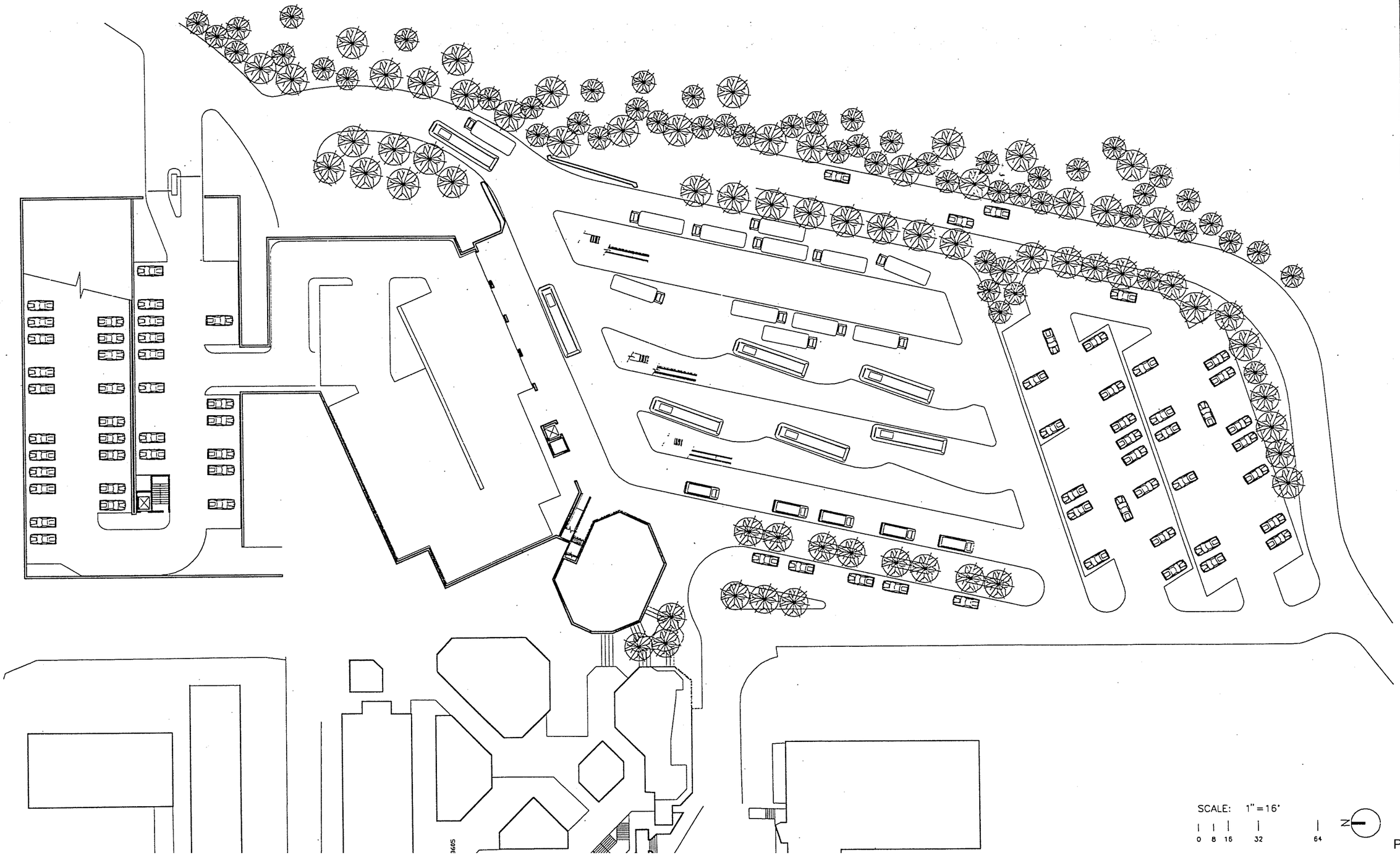


Iteration II

April 3, 1996

prepared for:
Snowmass Partnership and
Town of Snowmass Village (TOSV)

prepared by:
THOMPSON NELSON WOOD INC.
policywest
KIMLEY - HORN AND ASSOCIATES, INC.



368 Congress Street
Boston, MA 02210
617.728.3536 phone
617.728.3535 fax

419-A Espanola Way
Miami Beach, FL 33139
305.672.9475 phone
305.672.8475 fax

WOOD AND ZAPATA, INC
architecture | master planning | urban design

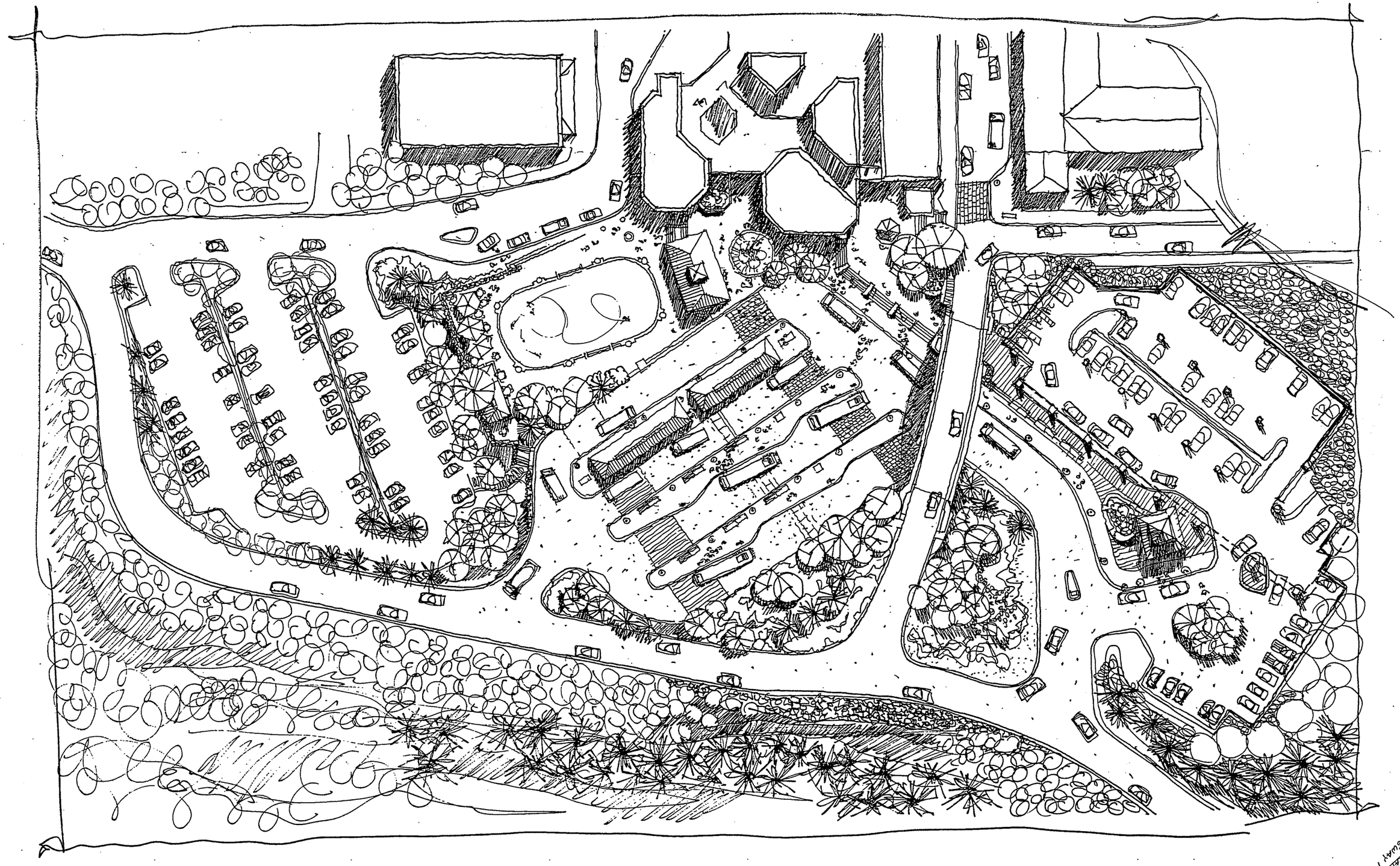
DATE	BY	REVISIONS COMMENTS

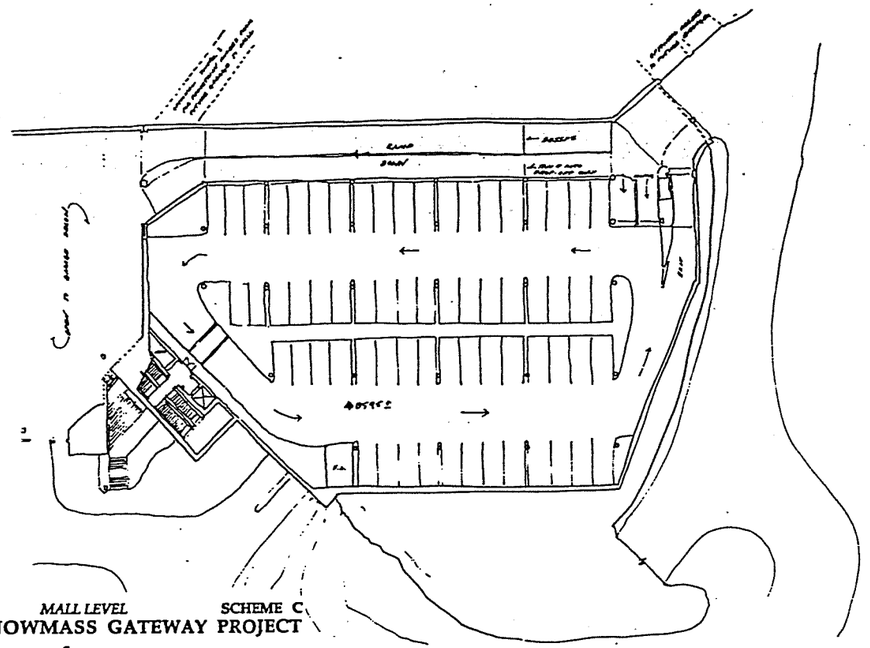
DESIGNED BY:
BW,AM
DRAWN BY:
AM
DATE:
June 1996

Snowmass Transit Facility
Transit Level

JOB NO.
DWG. Transit
Snowmass Trolley
FOR: Town of Snowmass

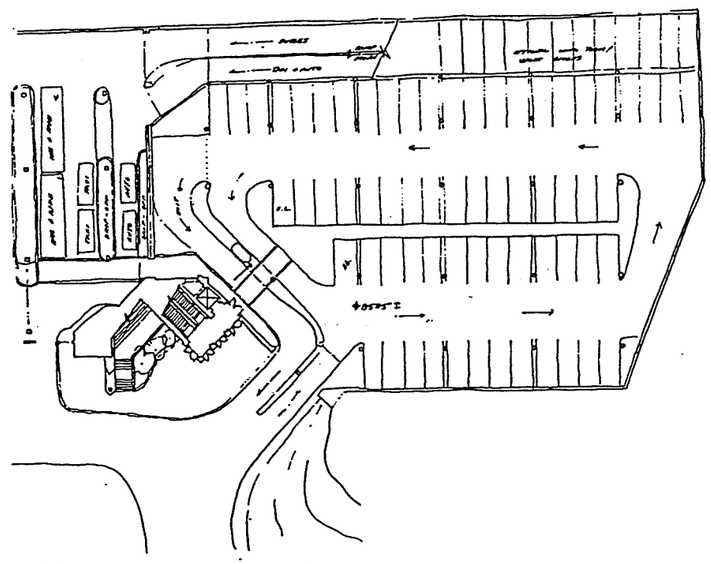
SHEET 1





MALL LEVEL SCHEME C
SNOWMASS GATEWAY PROJECT

SNOWMASS VILLAGE, COLORADO 1"=16'
THOMPSON AND WOOD 14 STORY STREET CAMBRIDGE, MA 02138



DALY LANE LEVEL SCHEME C
SNOWMASS GATEWAY PROJECT

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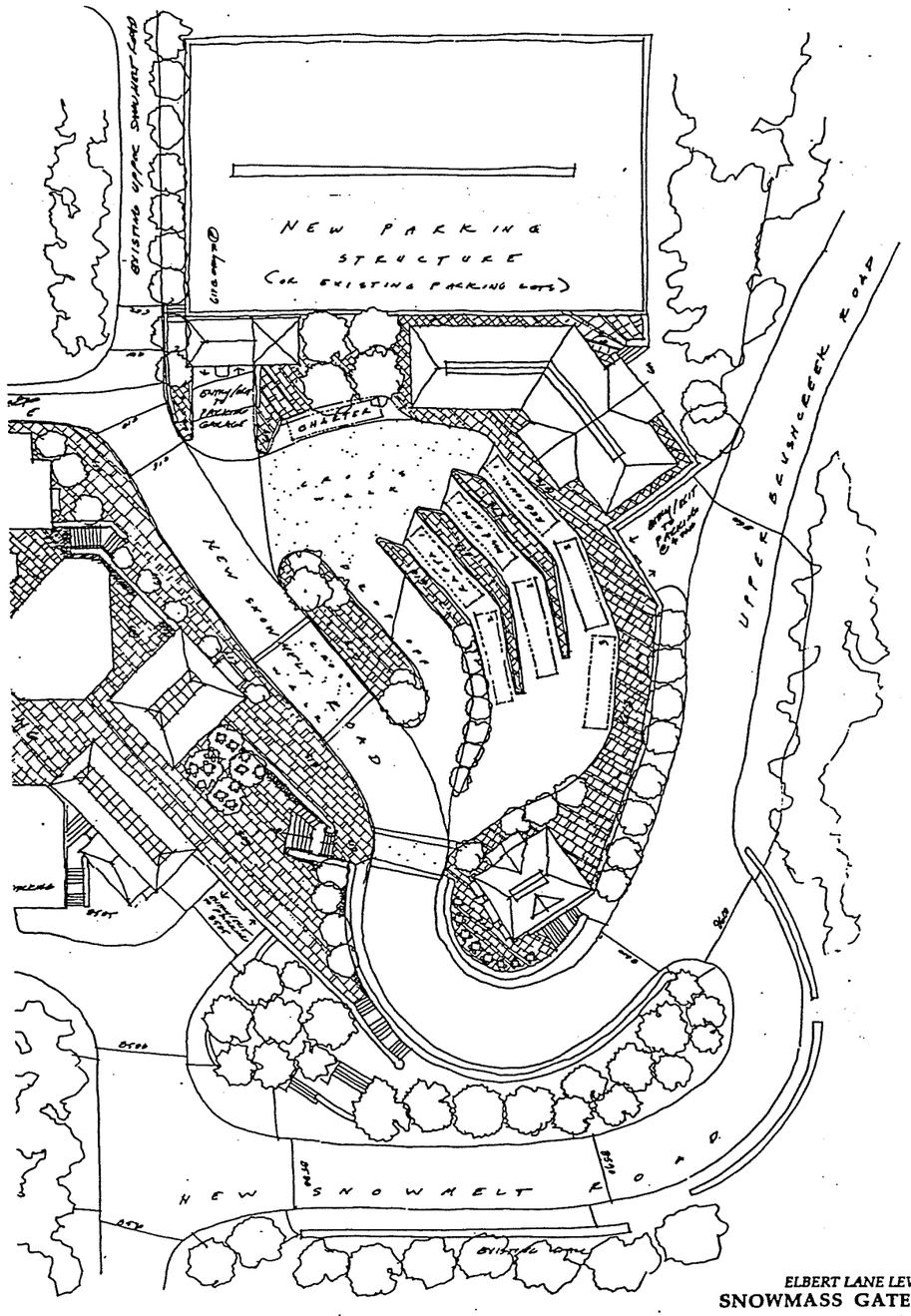
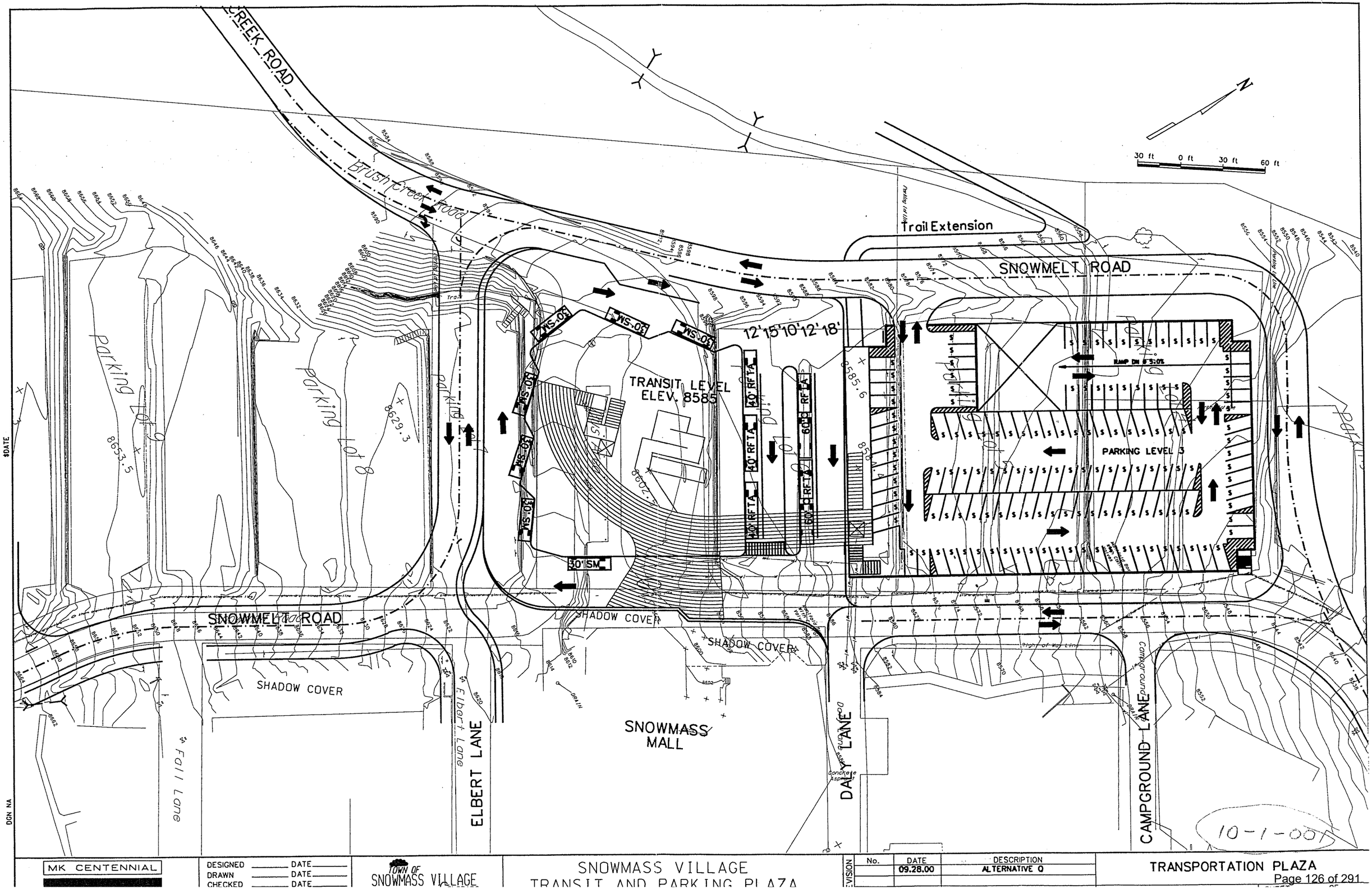


ELBERT LANE LEVEL SCHEME C
SNOWMASS GATEWAY PROJECT

SNOWMASS VILLAGE, COLORADO 1"=16'
THOMPSON AND WOOD 14 STORY STREET CAMBRIDGE, MA 02138



$DATE

DGN NA

10-1-00

MK CENTENNIAL	DESIGNED ____ DATE ____ DRAWN ____ DATE ____ CHECKED ____ DATE ____	TOWN OF SNOWMASS VILLAGE	SNOWMASS VILLAGE TRANSIT AND PARKING PLAZA

REVISION	No.	DATE	DESCRIPTION
		09.28.00	ALTERNATIVE Q

TRANSPORTATION PLAZA

Snowmass Mountain Village Redevelopment Master Plan

FLETCHER DEVELOPMENT COMPANY CHAFFIN AND LIGHT AND ASSOCIATES

DESIGNWORKSHOP
120 E. Main Street
Aspen, CO 81611
(970) 925-8354

1"=50'-0" 0 50 100 NORTH

scale 0 30 60 120

22 march 2006

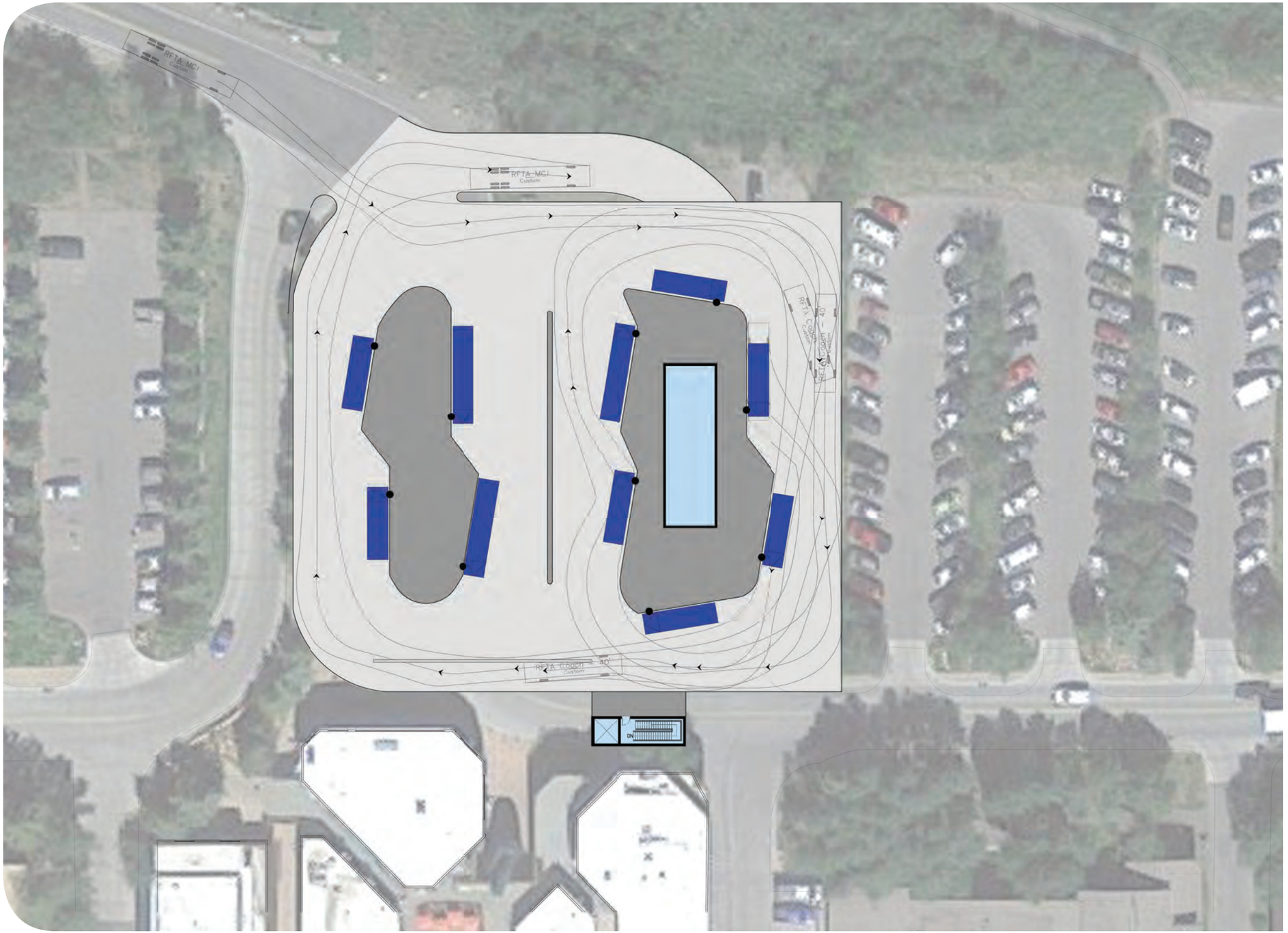
bluegreen

www.bluegreenaspen.com
300 south spring street | suite 202 | aspen, colorado 81611 | t 970 429 7499 | f 970 429 9499

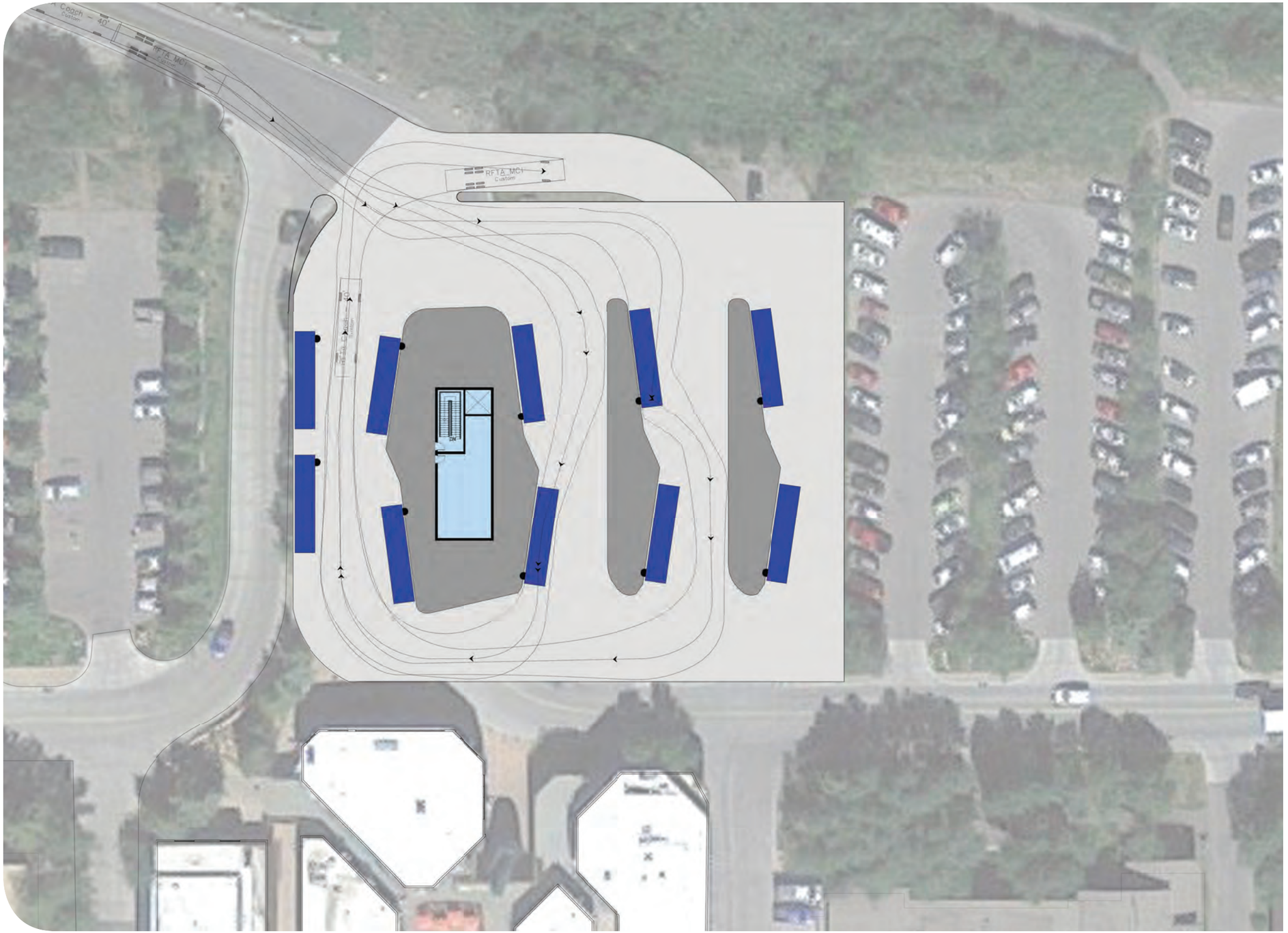
scenario 4

west village revitalization

town of snowmass village | colorado



OPTION 1
UPPER LEVEL



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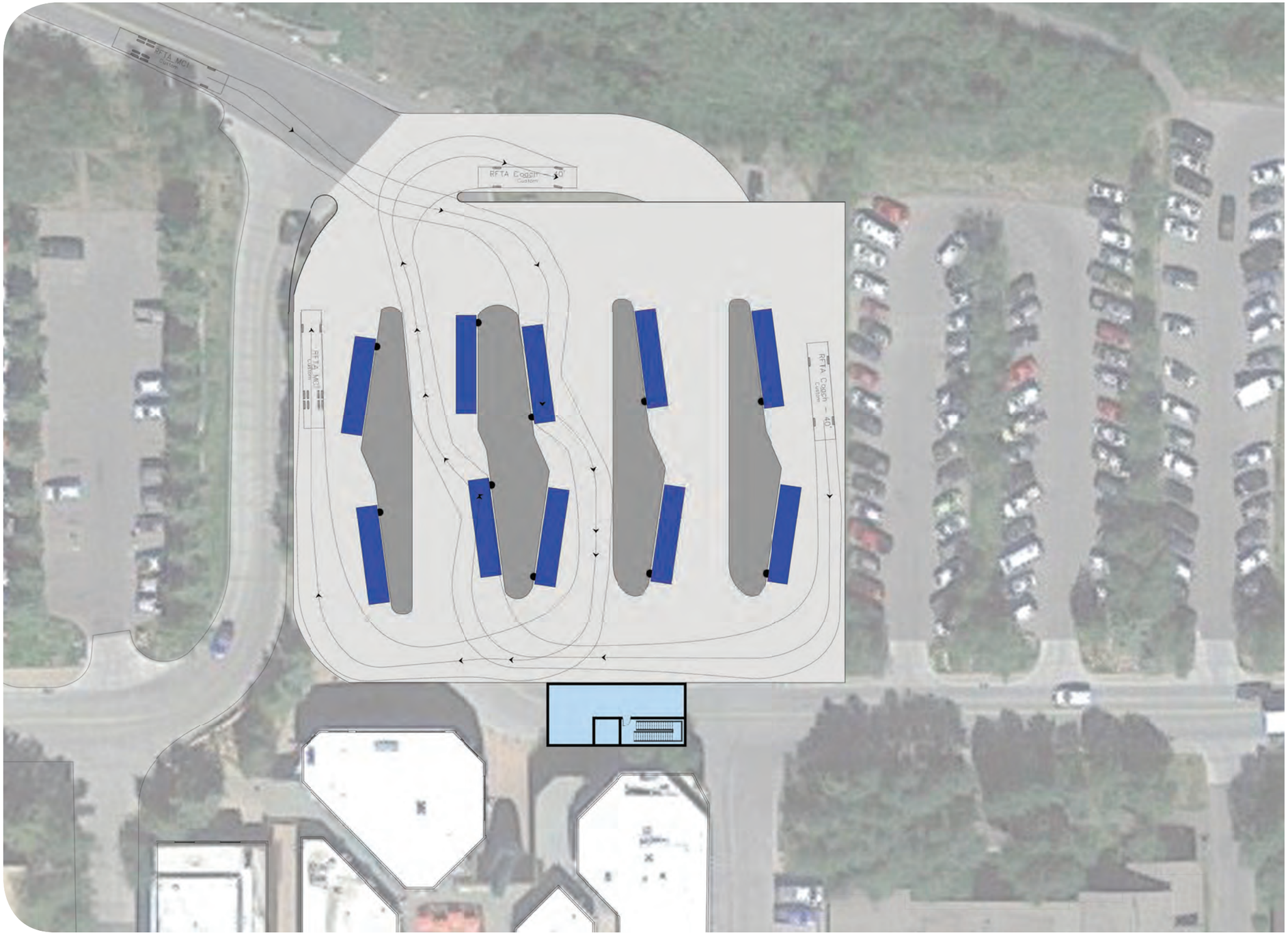
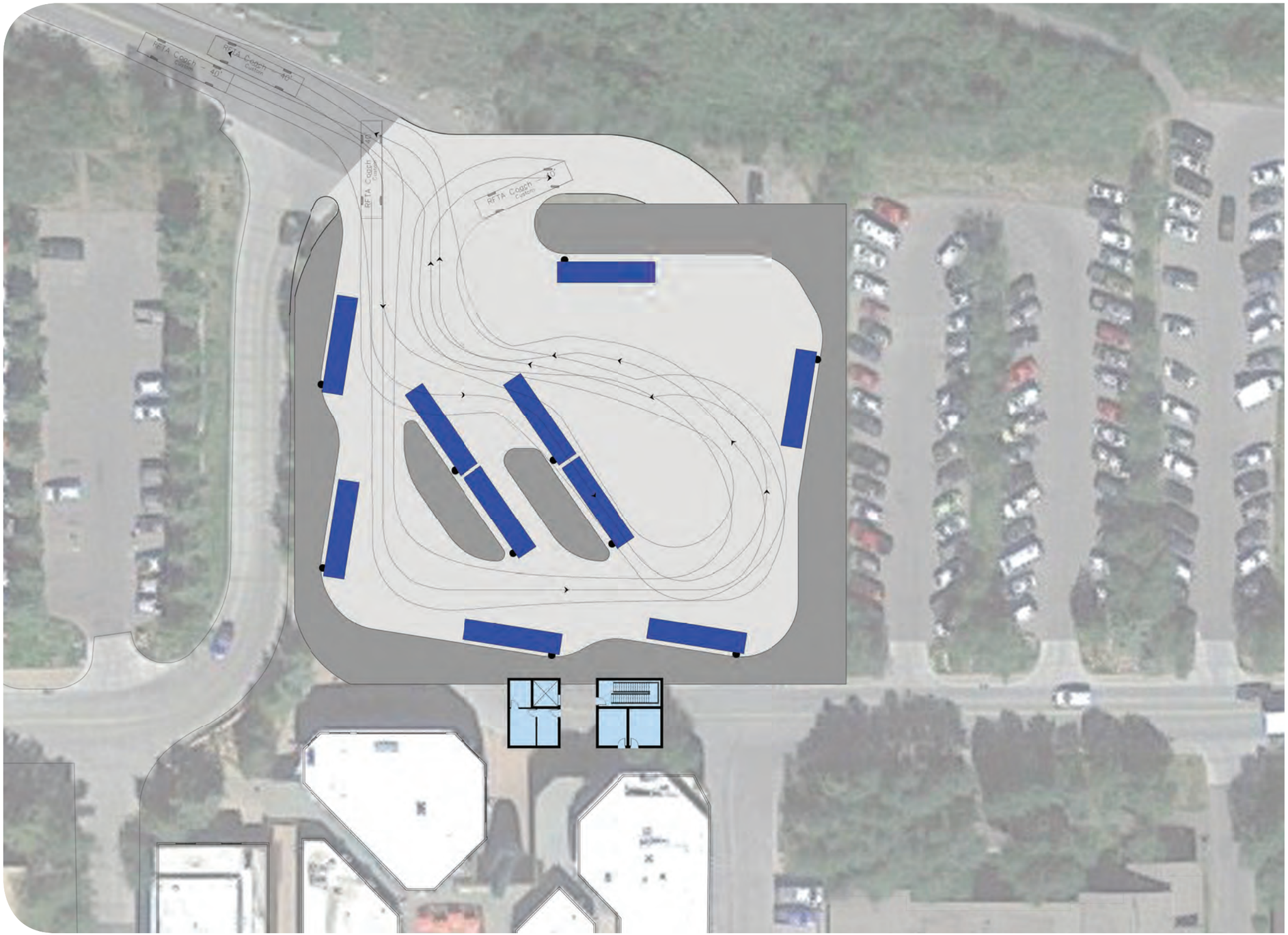
UPPER LEVEL



OPTION 3
UPPER LEVEL



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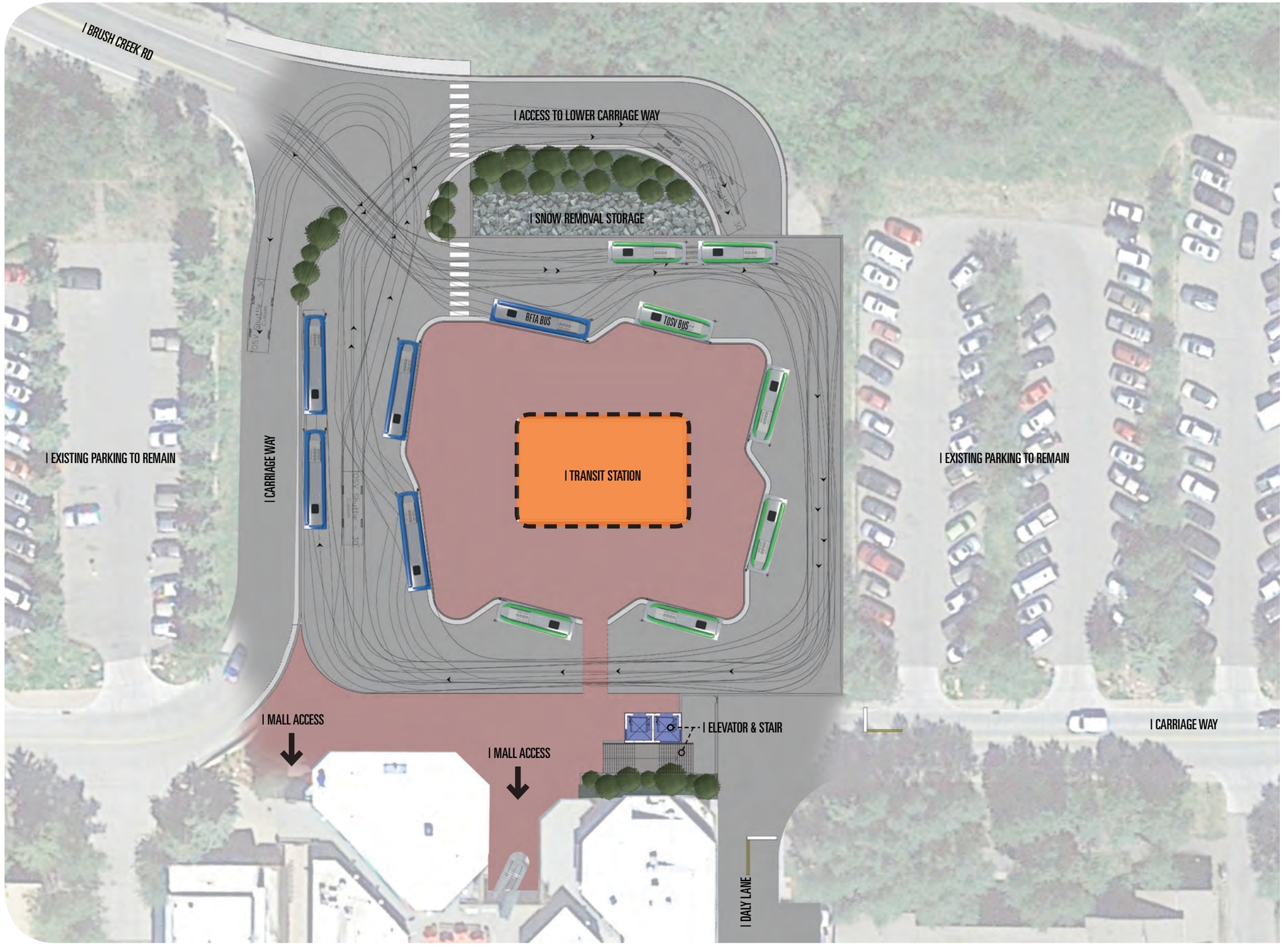


OPTION 1
UPPER LEVEL

Bus Operations

- SINGLE BUS PLATFORM
- (5) TOSV SHUTTLE LOADING/UNLOADING
- (2) TOSV SHUTTLE STAGING
- (3) RFTA BUS LOADING/UNLOADING
- (2) RFTA BUS STAGING

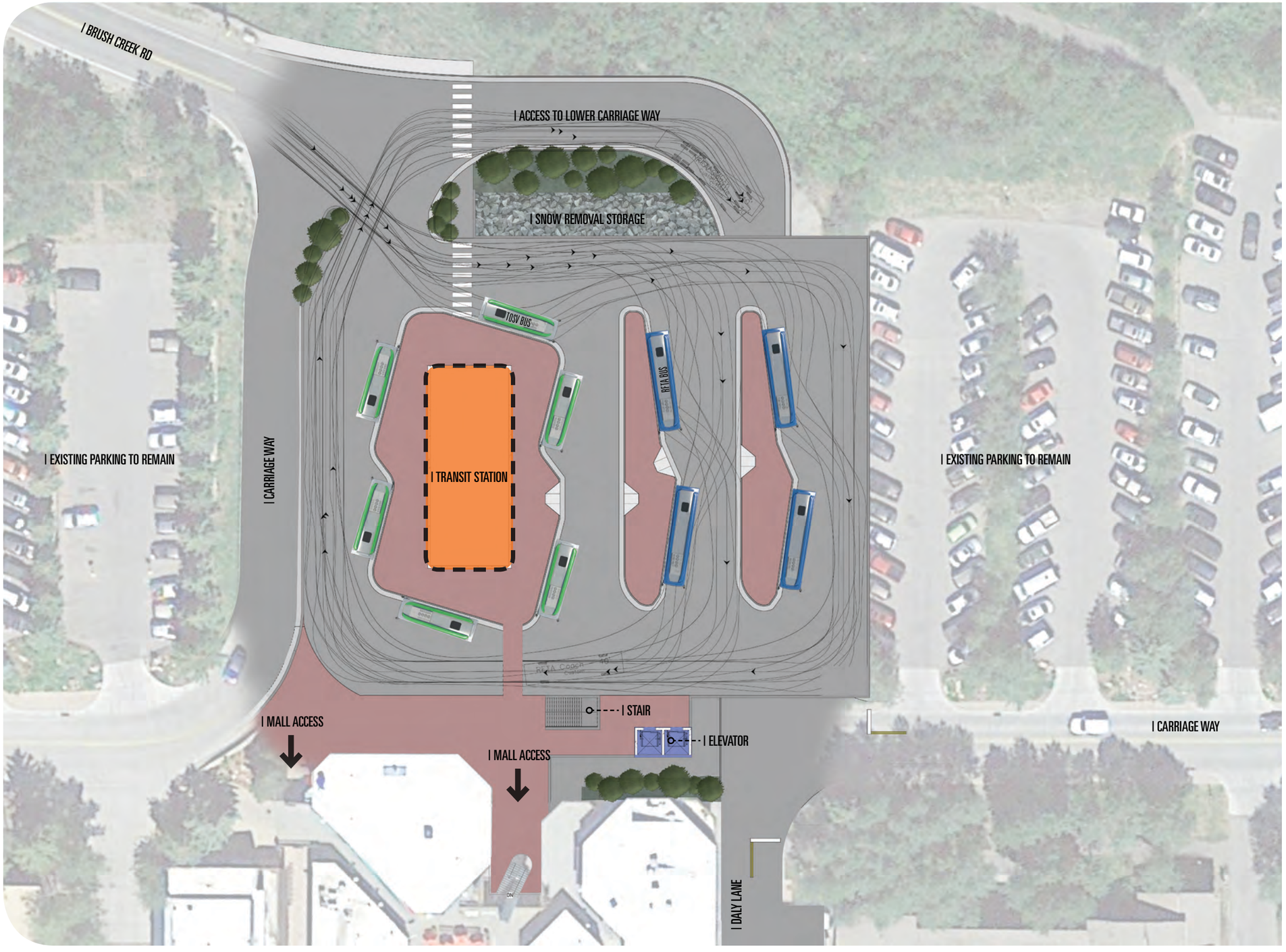
Transit Station

- 40,800 SF TRANSIT PLATFORM
- 2,600 SF COMBINED TRANSIT STATION
  - DRIVER LOUNGE
  - RFTA DISPATCH
  - SKIER SERVICES
  - PUBLIC RESTROOMS

Additional Design Elements

- FREIGHT & PASSENGER ELEVATORS
- DIRECT UPPER/LOWER MALL ACCESS

SEH DHM DESIGN Town of SNOWMASS Village



OPTION 2
UPPER LEVEL

Bus Operations

- THREE BUS PLATFORMS
- (6) TOSV SHUTTLE LOADING/UNLOADING
- (4) RFTA BUS LOADING/UNLOADING

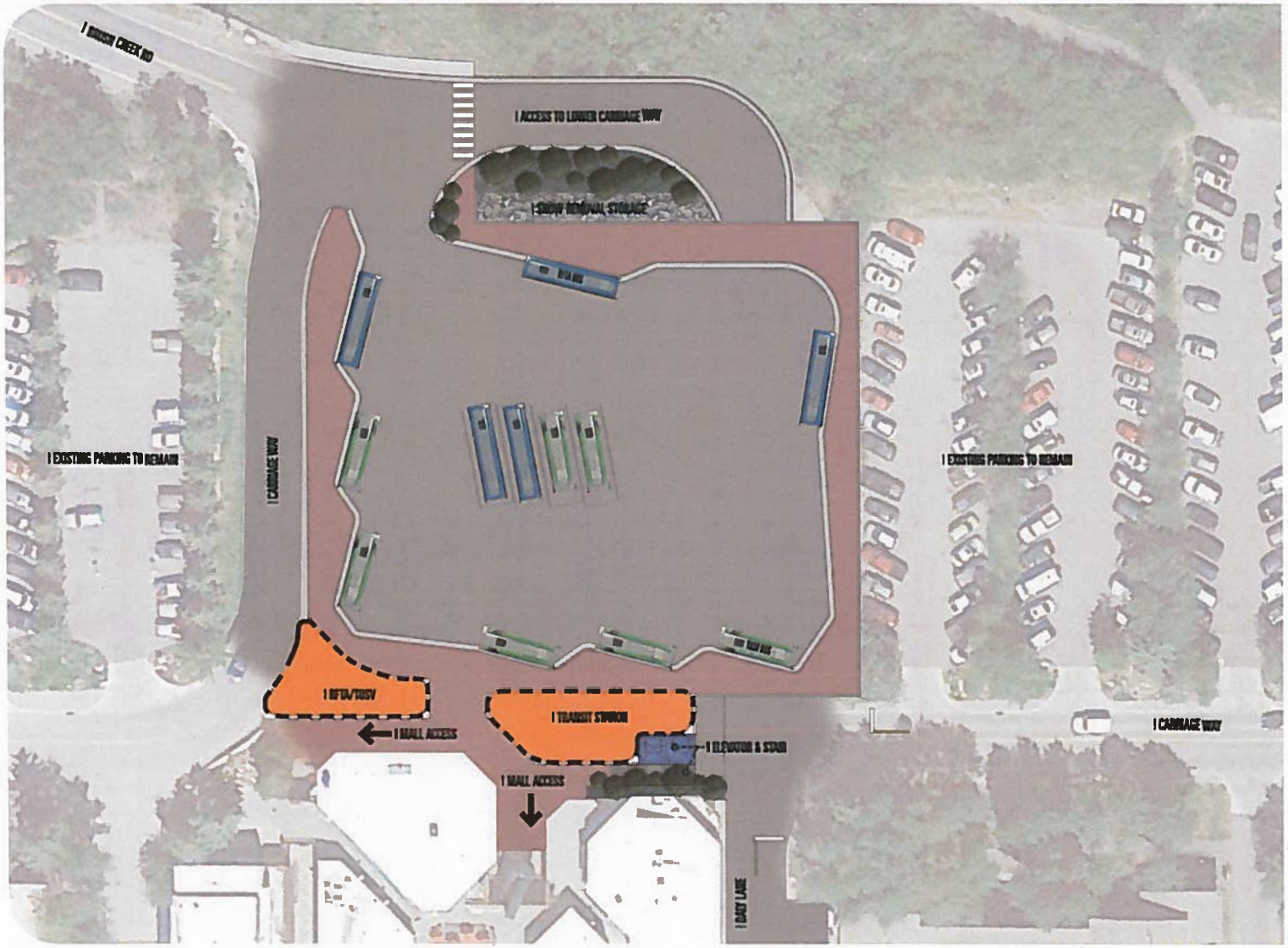
Transit Station

- 42,500 SF TRANSIT PLATFORM
- 2,600 SF COMBINED TRANSIT STATION
  - DRIVER LOUNGE
  - RFTA DISPATCH
  - SKIER SERVICES
  - PUBLIC RESTROOMS

Additional Design Elements

- FREIGHT & PASSENGER ELEVATORS
- DIRECT UPPER/LOWER MALL ACCESS

SEH DHM DESIGN Town of SNOWMASS Village



OPTION 3
UPPER LEVEL

Bus Operations

- PERIMETER PEDESTRIAN CIRCULATION
- (5) TOSV SHUTTLE LOADING/UNLOADING
- (2) TOSV SHUTTLE STAGING
- (3) RFTA BUS LOADING/UNLOADING
- (2) RFTA BUS STAGING

Transit Station

- 1,800 SF TRANSIT STATION
  - SKIER SERVICES
  - PUBLIC RESTROOMS
- 800 SF RFTA/TOSV
  - DRIVER LOUNGE
  - RFTA DISPATCH

Additional Design Elements

- FREIGHT & PASSENGER ELEVATORS
- DIRECT UPPER/LOWER MALL ACCESS

SEH DHM DESIGN Town of SNOWMASS Village

VILLAGE PARKING LOTS, LOT 6, T.O.S.V. REC#220411

RETAINING WALL

ASPHALT PATCH

11 + 00

50 + 00

BRUSH CREEK ROAD

12 + 00

13 + 00

4' CONCRETE CROSS PAN

END CROSS PAN
START CURB AND GUTTER

50 + 53.17

SAWCUT CONCRETE

VILLAGE PARKING LOTS, LOT 6, T.O.S.V. REC#220411

PEDESTRIAN ISLAND

RAILING/FENCE

VILLAGE PARKING LOTS, LOT 7, T.O.S.V. REC#220411

PARKING LOT 7

UPPER CARRIAGE WAY

SKYLIGHT

SKYLIGHT

SKYLIGHT

1 2 3 4 5 6 7 8 9 10 11 12

60 + 00

60 + 50

14 + 00

BRUSH CREEK ROAD

15 + 00

PEDESTRIAN CROSSING AREA

TWO ELEVATORS

CONCRETE SAWCUT

PARCEL C CONDOMINIUM, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295

CONCRETE SAWCUT

PARCEL C, SNOWMASS VILLAGE MALL, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295

PARCEL C CONDOMINIUM, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295

ASPHALT PATCH

32 + 00

DALY LANE

9 + 00

REPLACE EXISTING ASPHALT TRAIL

REPLACE EXISTING CONCRETE SIDEWALK

POKOLODI LODGE PLAT BK. 5, PG. 94

POKOLODI ADD. SUBDIVISION PLAT BK. 8, PG. 33

CAMPGROUND LANE

REPLACE EXISTING ASPHALT TRAIL

EXISTING ASPHALT TRAIL

40 + 00

TIE IN TO EXISTING PARKING LOT

VILLAGE PARKING LOTS, LOT 5, T.O.S.V. REC#220411

41 + 00

PARKING LOT 5

42 + 00

BALLET WEST SITE REC#220410

PARKING LOT 4

30' 00

END CURB AND GUTTER
START CROSS PAN

CONCRETE SAWCUT

95.20

16 + 00

LOWER CARRIAGE WAY

4" CONCRETE CROSS PAN

16 + 8

20 0 20 40
scale 10 feet

NOT FOR CONSTRUCTION

PROJECT OWNER
TOWN OF SNOWMASS VILLAGE
130 KEARNS ROAD
SNOWMASS VILLAGE, CO. 81615
970.923.3777

ARCHITECT
SHORT ELLIOTT HENDRICKSON INC.
2000 SOUTH COLORADO BLVD.
TOWER ONE, SUITE 6000
DENVER, CO. 80222
720.540.6800

CIVIL / MECH / ELEC / PLUMB
SHORT ELLIOTT HENDRICKSON INC.
2000 SOUTH COLORADO BLVD.
TOWER ONE, SUITE 6000
DENVER, CO. 80222
720.540.6800

STRUCTURAL
MARTIN/MARTIN
77 METCALF ROAD, SUITE 301
AVON, CO 81620
970.926.6007

ACOUSTICAL / LOW VOLTAGE
K2 ACOUSTICAL
5777 CENTRAL AVE., SUITE 225
BOULDER, CO. 80301
303.865.5500

LANDSCAPE
DHM DESIGN CORPORATION
311 MAIN STREET #102
CARBONDALE, CO. 81623
970.963.6520

TOWN OF SNOWMASS VILLAGE
VILLAGE INTERMODAL TRANSIT CENTER
53A ELBERT LANE,
SNOWMASS VILLAGE, CO. 81615

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SEH Project	159090
Checked By	T. NUETZEL
Drawn By	C. SWENEY

Project Status	Issue Date
50% DESIGN DEVELOPMENT	09.10.21

REVISION SCHEDULE

REV. #	DESCRIPTION	DATE

UPPER LEVEL SITE PLAN

C102

Save: 9/9/2021 3:46 PM csweney Plot: 9/10/2021 9:47 AM X:\PT\SNOWM\159090099 Civil\5-final-dsgn\51-drawings\Plansheets\CDs\C103 LOWER LEVEL SITE PLAN.dwg

TIE-IN TO EXISTING RETAINING WALL
VILLAGE PARKING LOTS, LOT 6, T.O.S.V. REC#220411
LIMITS OF CONSTRUCTION
RETAINING WALL
ASPHALT PATCH
11 + 00
50 + 00
BRUSH CREEK ROAD
12 + 00
4' CONCRETE CROSS PAN
END CROSS PAN
START CURB AND GUTTER
13 + 00
50 + 53.17
VILLAGE PARKING LOTS, LOT 6, T.O.S.V. REC#220411
PEDESTRIAN ISLAND
SAWCUT CONCRETE
RAILING/FENCE
VILLAGE PARKING LOTS, LOT 7, T.O.S.V. REC#220411
PARKING LOT 7
UPPER CARRIAGE WAY
RETAINING WALL
60 + 00
60 + 50
14 + 00
BRUSH CREEK ROAD
18.0'
9.0'
27.0'
9.0'
9.0'
VILLAGE PARKING LOTS, LOT 5, T.O.S.V. REC#220411
24.0'
18.0'
18.0'
24.0'
18.0'
4.5'
PARKING LOT 5
PARKING LOT 4
27.0'
BALLET WEST SITE REC#220410
20 0 20 40
scale 10 feet
15 + 00
30 + 00
4" CONCRETE CROSS PAN
CONCRETE SAWCUT
END CURB AND GUTTER
START CROSS PAN
16 + 00
LOWER CARRIAGE WAY
16 + 00
TIE-IN TO EXISTING RETAINING WALL
PLANTER/LANDSCAPING
TWO ELEVATORS
CONCRETE SAWCUT
PARCEL C CONDOMINIUM, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295
REPLACE EXISTING ASPHALT TRAIL
REPLACE EXISTING ASPHALT TRAIL
REPLACE EXISTING CONCRETE SIDEWALK
DALY LANE
31 + 00
CONCRETE SAWCUT
POKOLODI LODGE PLAT BK. 5, PG. 94
POKOLODI ADD. SUBDIVISION PLAT BK. 8, PG. 33
CAMPGROUND LANE
PARCEL C, SNOWMASS VILLAGE MALL, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295
PARCEL C CONDOMINIUM, SNOWMASS MALL INVESTMENT GROUP, LLC. REC#648295
ASPHALT PATCH

Save: 6/7/2022 5:36 PM jjones Plot: 6/21/2022 6:22 PM X:\PT\S\SNOWM\159090099 Civil\5-final-dsgn\51-drawings\Plansheets\CDs\C103 LOWER LEVEL SITE PLAN.dwg

SEH

NOT FOR CONSTRUCTION

PROJECT OWNER
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130 KEARNS ROAD
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SEH Project	159090
Checked By	T. NUETZEL
Drawn By	J. JONES

Project Status	Issue Date
50% DESIGN DEVELOPMENT	6.09.22

REVISION SCHEDULE

REV. #	DESCRIPTION	DATE

UPPER LEVEL SITE PLAN

C102

NEW CARRIAGE WAY

EL+8605'

+EL. 8690

+EL. 8590

RFTA 48' BUS

SKYLIGHT TO BELOW

BUS SHELTER

INACTIVE BUS

RFTA PASSENGER LINK

INACTIVE BUS

30'

24'

24'

30'

EDGE OF RFTA PLATFORM

LOT 6" (BELOW)

UPPER CARRIAGE WAY

+EL. 8587

ELEVATORS

ELEV+8609

R = 45'

+EL. 8590

CARRIAGE WAY
+EL 8580

+EL 8570

+EL. 8560

EXIST'G BLDG

+8610

EXIST'G BLDG

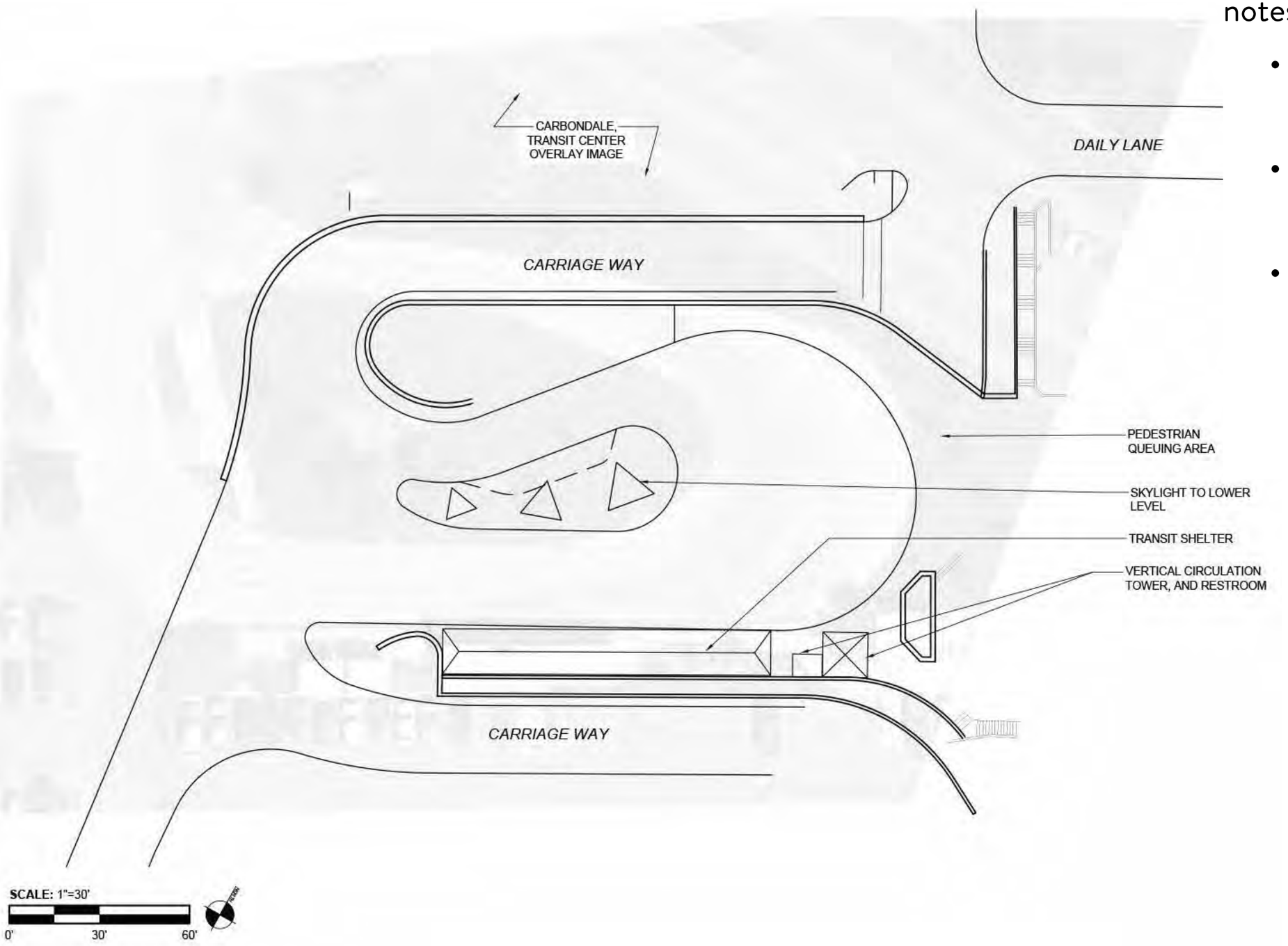
DN

DALY LN

MAU + RFTA LEVEL PLAN

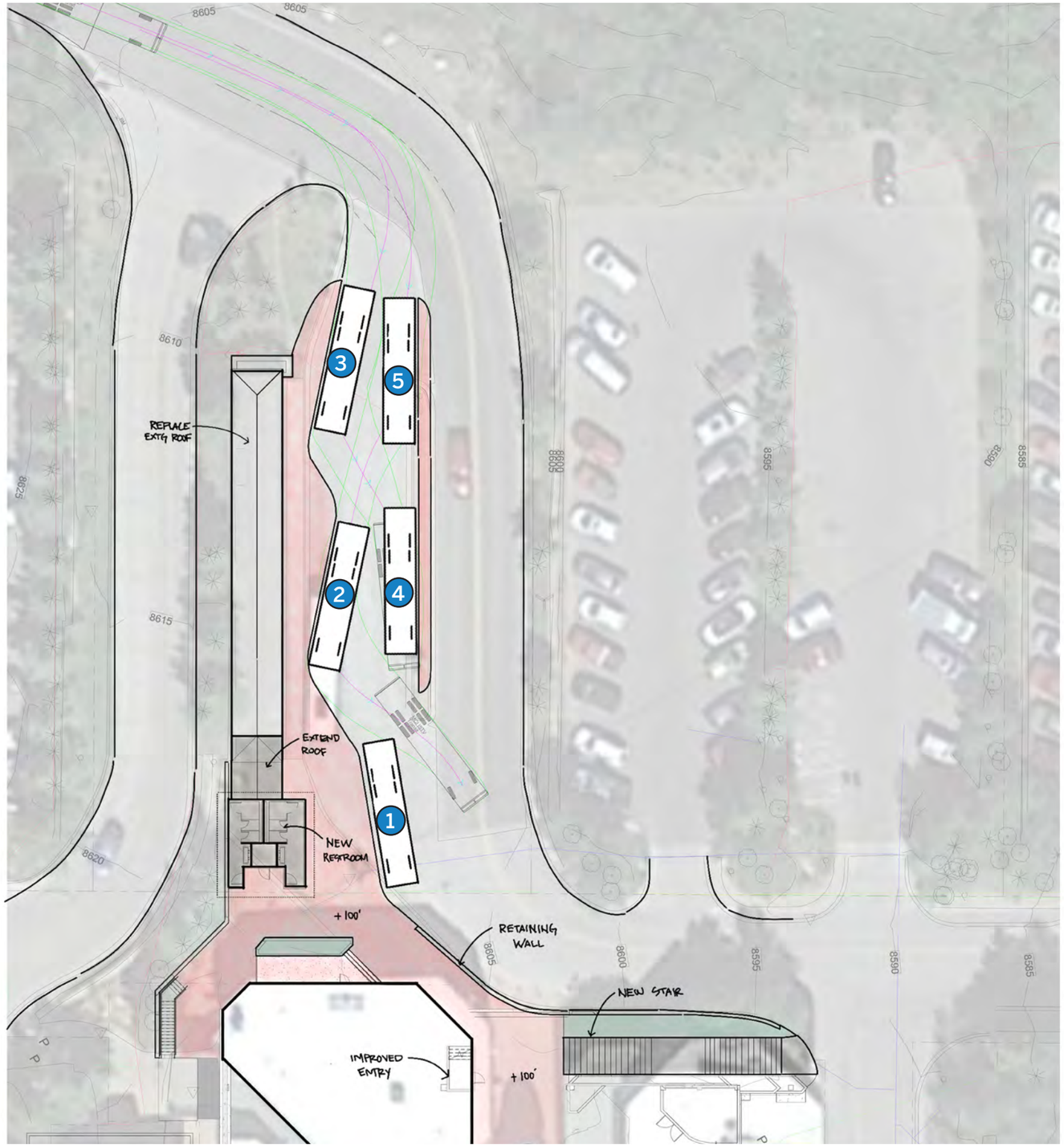
0 30' 60

NOTE: LOCATION + DIMENSIONS OF EXISTING FEATURES ARE APPROXIMATE



notes

- the aerial photo underneath is the Carbondale park& ride
- linework on the top shows a reconfigured drop-off
- quick test of viability, feasibility, and overall scale



RFTA TRANSIT

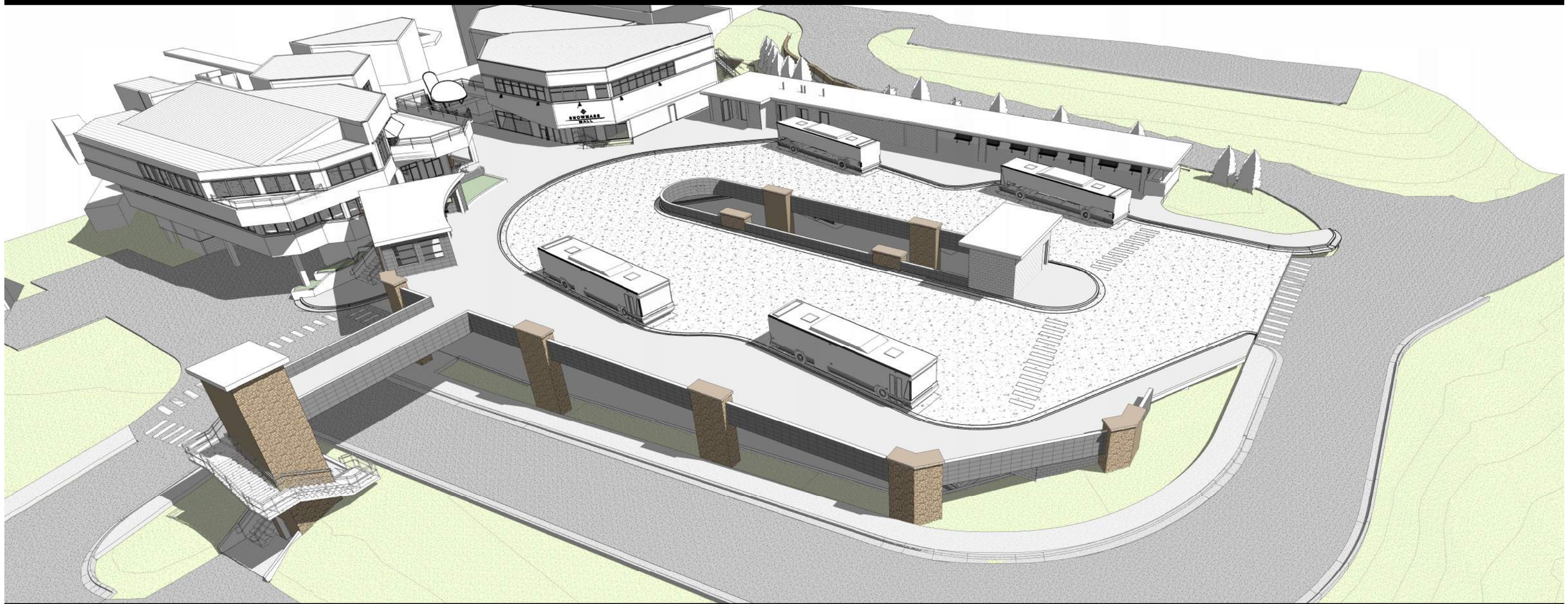
CONCEPT PLAN

- (3) Independent 40 foot Bus Bays
- (2) Additional Staging Bays, if necessary.
- Bay 4 - If in use, Bay 3 will not be able to leave. Bay 4 can pull into Bay 1 after their departure. Bay 2 can still operate independently.
- Bay 5 - If in use, Bay 3 will not be able to leave. Bay 5 can pull into Bay 2 or Bay 1 after their departure.
- New Public Restroom
- Extension of existing canopy cover
- Saw-tooth bus bays to allow for additional queuing space
- New retaining wall to restrict access to/from Lower Carriage Way
- New Grand Stair access to Daly Lane
- Improved Entry to Incline due to more accessible access to Mall from Transit Station

TOWN OF SNOWMASS VILLAGE

SNOWMASS MALL TRANSIT CENTER

Town Council Alternative Design



JUNE 17, 2024

SEH

TOWN OF SNOWMASS VILLAGE

SNOWMASS MALL TRANSIT CENTER

Updated Concept Approach

JANUARY 21, 2025

SEH

Town of Snowmass Village

Agenda Item Summary

DATE OF MEETING:

February 9, 2026

AGENDA ITEM:

2025 WE-cycle expansion and Micro Transit Recap

PRESENTED BY:

Sam Guarino, Transportation Director

BACKGROUND:

In 2025 the Transportation department undertook two major mobility projects. The first was, in conjunction with WE-cycle and Roaring Fork Transportation Authority (RFTA) an expansion from two bikeshare stations with 15 traditional pedal bikes to a system with 11 bikeshare stations and nearly 100 e-bikes. This project brought the Town into alignment with other RFTA jurisdictions in the valley as far as bike share access and was the result of four years of coordination and planning.

The second was a pilot expanded demand response, or micro transit, program that expanded the Village Shuttle's service area to include all public paved roads and trailheads. This project was supported by a Colorado Department of Transportation (CDOT) grant, which provided the opportunity through the Ozone Season Transit Grant program to undertake this expansion or "pilot" program.

DISCUSSION:

The WE-cycle expansion opened in late May of 2025 and, unsurprisingly, resulted in a large increase in utilization of the system (over 500%). Trips between Commons and Town Park remained the largest driver of ridership, given the connection provided to transit and the established ridership on the route. Snowmass Mall, Snowmass Center, the Recreation Center, and Creekside stations all saw considerable usage. The station at Mountain View saw noticeably low ridership and is targeted for improvements to drive better ridership in the future.

Despite the increase in ridership of nearly 20k rides on WE-cycle from May-October over the previous year, the Village Shuttle ridership also increased during this time. Indicating a synergetic effect between the two systems rather than a competition. Much of this may be due to topography, as there was a clear downhill trend in WE-cycle usage and a clear uphill trend in Village Shuttle usage. However, since there was an addition in users for both systems, it can be assumed that many of these users would have otherwise utilized a personal vehicle.

The expanded demand response service took place in concert with Village Shuttle's summer season service (June 2nd-September 21st). The service was met with widespread positivity from both the public and the Village Shuttle drivers. The service saw over two thousand riders during the summer season or approximately 18 per day. There was a positive trend in utilization throughout the season, indicating riders needed time to learn about and get familiar with the new service.

The service, while supported by grant funding, did prove to be expensive to operate at nearly $40k per month. There are a few reasons for this that could be addressed in the future to help bring costs down. With the short timeframe to plan the service, and the current fleet of vehicles too large to perform this type of service, the decision was made to lease smaller Ford Transit vans. Procuring vans as a capital expense in the future would be more financially efficient in the long run. Also, wait times for rides on the service were very short (less than 4 minutes on average). A future service could likely be performed with less available vehicles, driving down the cost per ride.

FINANCIAL IMPACT:

None at this time as this is a discussion item only. The 2026 budget does include an additional WE-cycle station for this summer. To be implemented in the future the expanded demand response system would require the purchase of more Ford Transit type vans (2 are currently planned, but at least three would be needed) as well as increased operational funding for additional drivers. At this time staff is investigating the possibility of using funding through the SB230 formula grant program to fund this service.

APPLICABILITY TO COUNCIL GOALS & OBJECTIVES:

These two projects apply to a number of council goals and objectives, including but not necessarily limited to:

- Preserve and protect open spaces and our environment to ensure that nature is and remains the dominate feature on the landscape.
- Promote environmental and economic sustainability and resiliency.
- Focus on improved access and safety to make Snowmass Village more walkable and bikeable.

- Continue to improve the multi-modal connections between Base Village, the Mall, and the Center.
- Manage parking and transit to encourage efficient, effective, and sustainable mobility choices.

COUNCIL OPTIONS:

Discussion item only.

STAFF RECOMMENDATION:

Discussion item only

ATTACHMENTS:

1. Micro Transit and WE-cycle Recap
2. Snowmass 2025 WE-cycle Stats
3. June O-D 2025
4. July O-D 2025
5. August O-D 2025

2025 WE-cycle and Micro Transit Recap

Town Council

February 9, 2026

2025 WE-cycle Expansion

Launch of two station, 15 bike system

- Quickly became most popular route in Valley

Additional station planned in 2026.

2020 — 2025 — 2026

Launch of additional 9 stations with 80 more bikes

- First all E-bike WE-cycle system
- Ridership has soared to 175+ rides per day
- Art in Motion

2025 WE-cycle Expansion

- **Planning**
  - Began in 2021 with 5 station pilot program
  - In 2023 concept changed to a larger expansion
  - In 2024 site selection and preparation
- **Installation and Launch**
  - Spring of 2025 saw the arrival and installation of new stations
  - Expanded system fully launched in late May 2025.
- **Fully E-Bike System**
  - The Snowmass Village fleet is the first in the WE-cycle valley-wide system to be 100% E-bike.
  - Four of the 11 stations are solar powered, one is plugged into the grid

Ridership

- Up 512% over 2024
- Commons – Town Park most popular route system ride every month (opposite direction second most popular
- Nearly 2k unique riders rode over 22k miles
- Strong Downhill Trend
- Snowmass Mall, Center, Creekside most popular new stations
- Mountain View station lags behind
- Village Shuttle Ridership boosted (up 8% May-October, 13% for summer months)
- 50% of Village Shuttle ridership survey utilized WE-cycle (20% utilized multiple times a week)

Total Rides	2,179	4,873	5,558	5,113	3,697	2,856	24,276
Average Rides Per Day	69	162	179	165	123	92	135
Busiest Day	May 30th (103)	June 26th (242)	July 10th (229)	August 6th (209)	September 14th (157)	October 1st (162)	June 26th (242)
Busiest Route (trips)	Commons - TPS (189)	Commons - TPS (699)	Commons - TPS (952)	Commons - TPS (912)	Commons - TPS (874)	Commons - TPS (594)	Commons - TPS (699)
Unique Riders	362	708	796	728	498	388	1,928
Distance Travelled (miles)	2,782	5,106	5,096	4,481	2,810	2,206	22,391
CO2 Offset (lbs)	2,037	4,641	8,293	4,870	3,521	2,720	22,391
Accidents Reported	2	1	0	1	0	0	4

WE-cycle plans for summer of 2026 and beyond

- **New station for 2026**
  - Daly Townhomes
  - Will serve as a connection for users of Owl and Brush bus stop
  - Final location yet to be determined
- **Mountain View Station Re-evaluation**
  - Information campaign for residents
  - Possible new site selection
- **Future Planning**
  - Continued monitoring of ridership, stations, and feedback
  - Goal to power 100% of stations
  - New developments
  - EV charging at solar stations

2025 Expanded Demand Response (Micro Transit)

- **Planning**
  - Ozone Season Transit Grant application submitted in March 2025 Approved in April 2025
  - Three Ford Transit vans leased
  - Three summer seasonal employees hired
  - Village Shuttle App designed for this use case
- **Launch**
  - Expanded Demand Response launched June 2nd, 2025
  - Information distributed through Ozone Season marketing campaign, press releases, newsletters, printed materials, etc.
- **Operations**
  - Service offered seven days a week from 6:45 am – 12:00 am.
  - Served all paved public roads and trailheads within Snowmass Village
  - Did not overlap with existing fixed routes
  - Allowed for improved Route #4 service from Town Park Station
  - Two to Four demand response vehicles on duty at all times

Ridership, Performance, and Feedback

- Over 2k riders on expanded service
  - Approximately 18 per day
  - Increased every month
- Overall Ridership up 6% year over year
- Average wait 3.7 minutes
- Average Driver Rating 4.96 out of 5
- Average Ride Distance .92 miles
- Only 12% of rides shared
- 75% of survey respondents found the service Extremely or Very Valuable. Only 4% “not at all valuable”.
- Additional associated costs were approximately $39,900 per month

- Feedback overwhelmingly positive
  - “The expansion of routes with the new vans is awesome! Thanks for the ride!”
  - “I love the new pilot program, thank you!”
  - “Dave is awesome! I love the new service this summer, so thankful & relieved that you guys can drive us straight from Snowmass club to our house on Sinclair now, verse having to change buses.”
  - “Love the extended route! Living here from out of town and I’ve got no car- this was an awesome option and David was great!”
  - “Mark and all the drivers have been great! This is a wonderful service and one of the reasons we come back to Snowmass!”
  - “Love the request service SO much- thank you!”

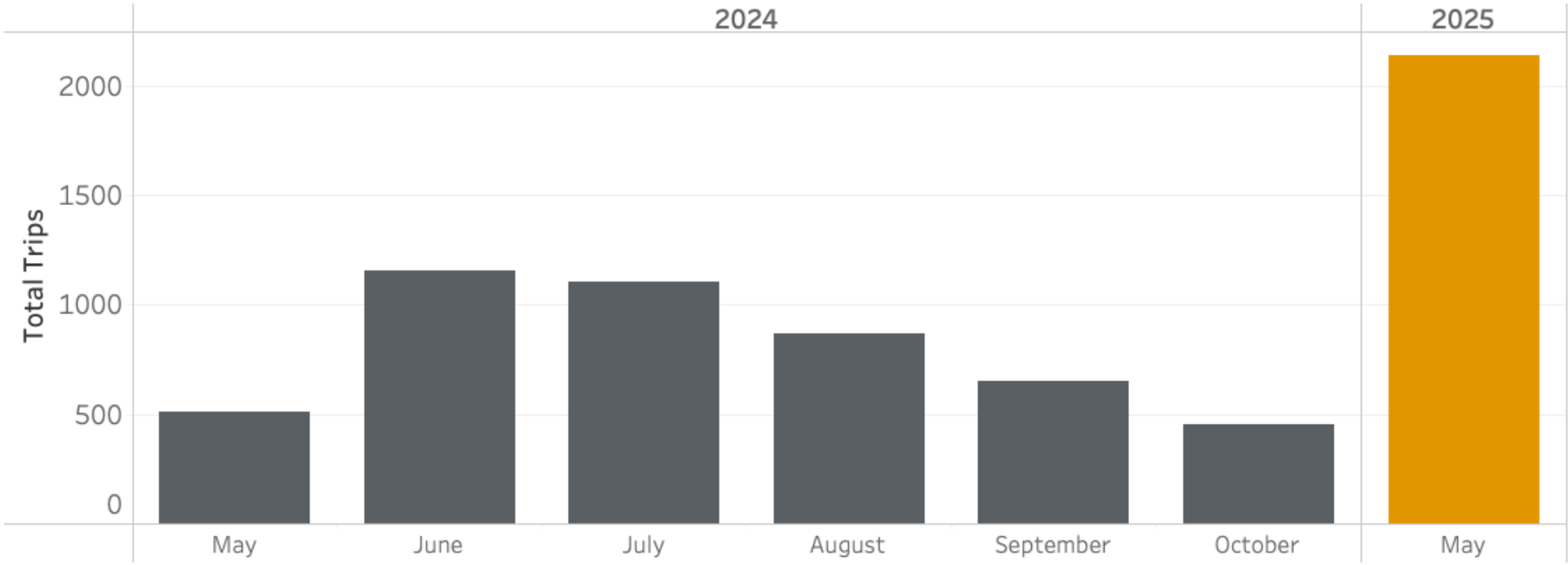
Lessons Learned and Potential Next Steps

- Feedback from Public and Operators very positive
- If service is to continue, funding will be a challenge
  - Very expensive on a cost per rider basis
  - Currently no grant opportunity for this summer
  - SB230 funding
    - Formula funds for expanded service operations and capital
  - Operational efficiency
    - 3.7-minute average response times leaves room for decreased service levels and in turn increased percentage of shared rides
    - Owned vehicles, rather than leased, would reduce capital costs in the long term
- More public outreach/information may boost ridership
  - 15% of survey respondents had not heard of the service
  - Ridership trends should continue to increase over time as people get familiar with service
- Van purchases already underway
- Potential to serve future developments
- SB230 deferred comprehensive operational analysis (COA) submitted

2025 SNOWMASS SYSTEM STATS

Service Overview	May
Number of Stations	11
Number of Docks	199
Total Bikes in Service	88
Pedal Bikes in Service	0
E-Bikes in Service	88
Ridership	
Total Rides	2,139
Average Rides Per Day	69
Total Pedal Bike Rides	0
Total E-bike Rides	2,139
% of Total Trips to/from BRT and Major RFTA Stops	80.60%
Unique Riders	362
Median Ride Duration, Minutes	7.73
Busiest Day, Trips - Date	103 Trips - May 30
Median Ride Distance, Miles	0.96
Estimated Total Distance Traveled, Miles	2,782
% of Trips in 30-Min Free Ride Period	98.55%
Estimated Carbon Offset by Rides, Lbs CO2	2,037
Operations	
Total Bike Repairs Completed	7
Number of Bikes Rebalanced	504
Local Operations Staff Hours (in field)	134
Station Batteries Exchanged	0
Bike & Dock Unavailability	
Average Bike Unavailability, Minutes per Station per Day	11.22
Average Dock Unavailability, Minutes per Station per Day	0.23
Station with Most Frequent Availability Shortages	Snowmass Mall
Safety	
Rider Accidents Reported	2
Instances of Equipment Damage	2
Staff Injuries Reported	0

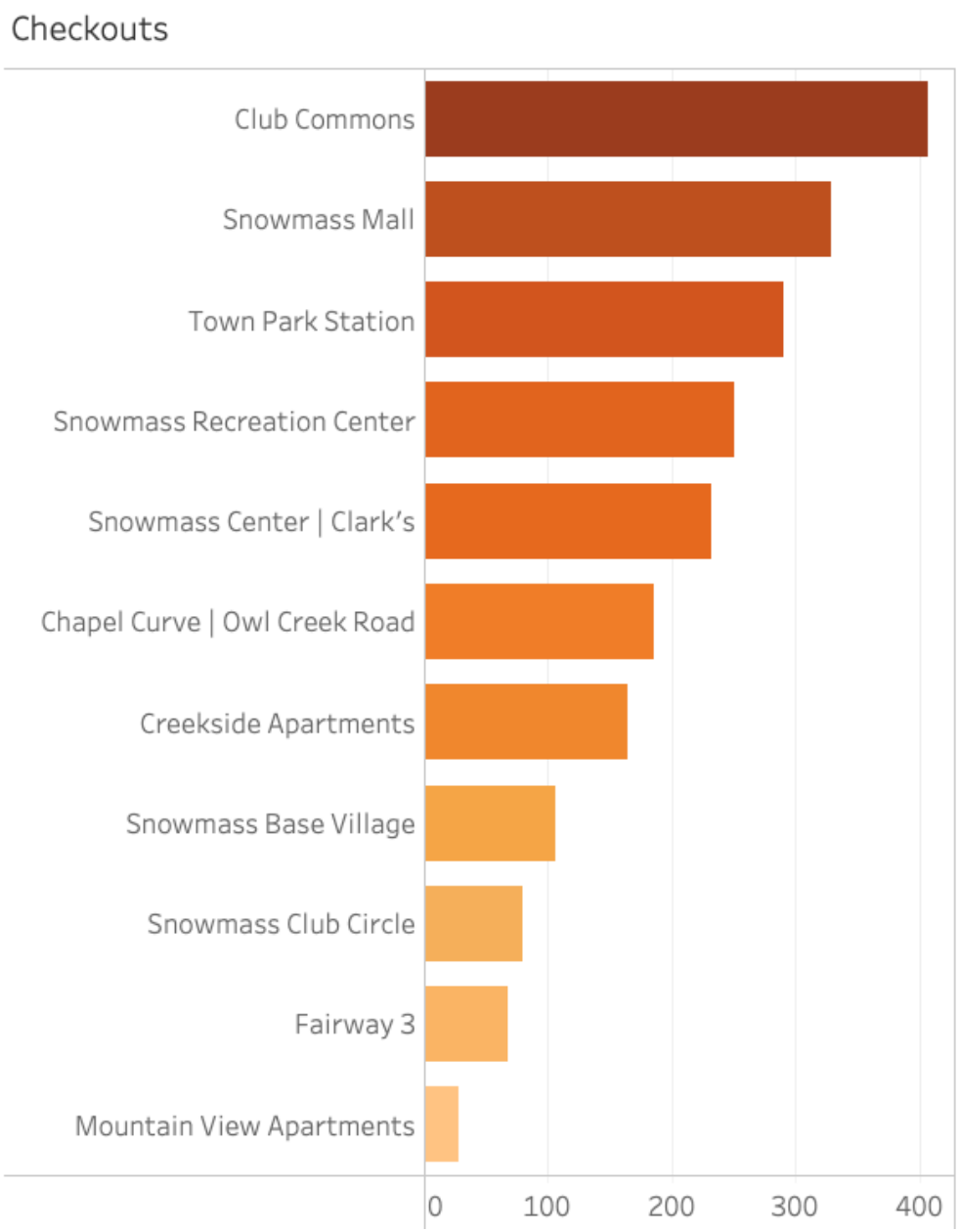
SNOWMASS RIDERSHIP BY MONTH

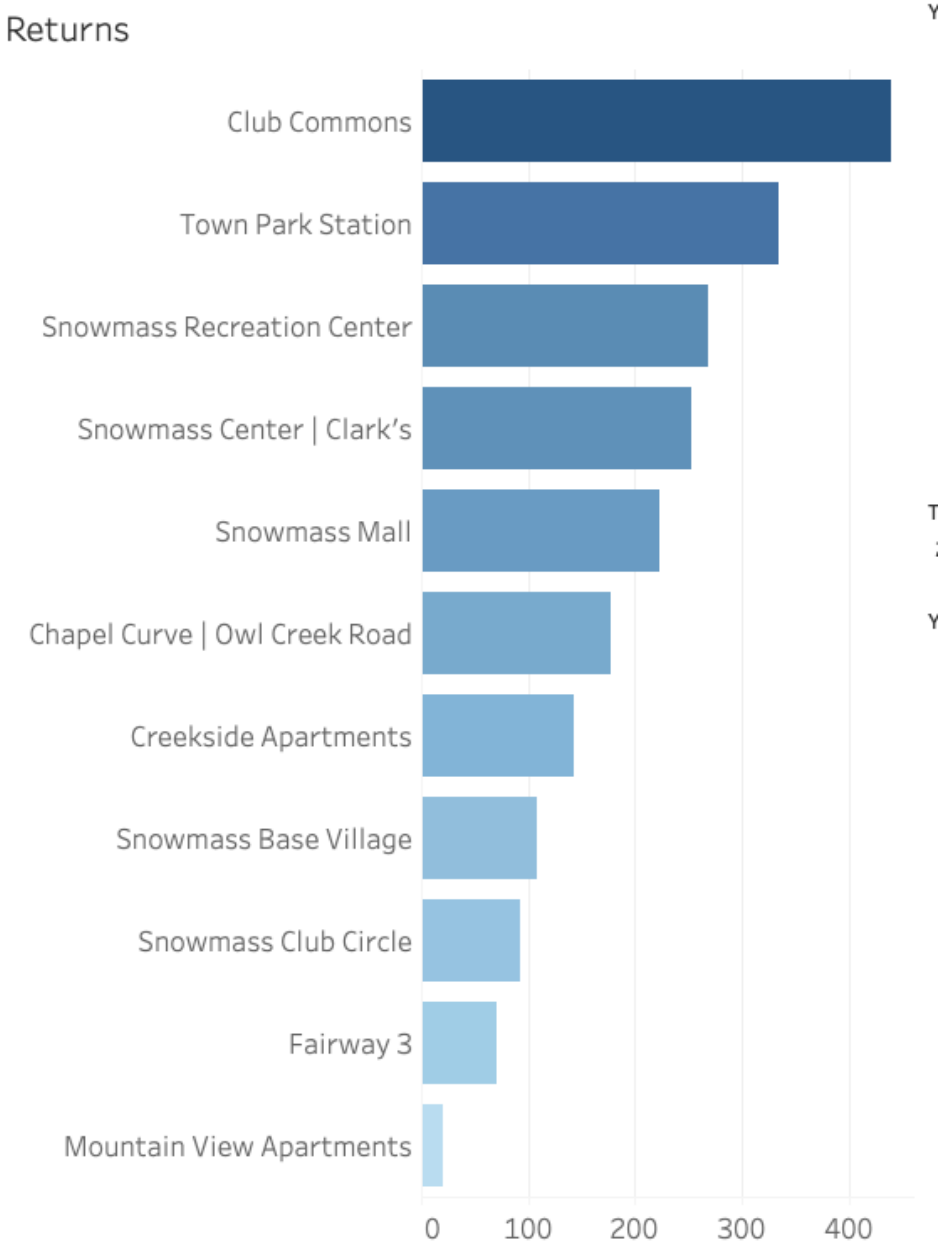


Snowmass Ridership Notes

- On May 5, 2025, an expanded system was launched in Snowmass Village. This expansion includes the installation of nine new stations for a total of 11 stations, 199 docking points, and 96 electric bikes. The service saw 2,139 trips in its first 25 days.
- Largely due to an established ridership trend, the Club Commons and Town Park Stations remain the most popular stations in the first month and this connection once again became one of the most popular routes system-wide. For new stations locations, Snowmass Mall, Snowmass Recreation Center, and Snowmass Center were the most utilized.
- The station at Mountain View Apartments seems to have a slower uptake relative to the other 10 locations. We continue to monitor all locations for these trends and are working on outreach plans to help spread the word about the service availability in this area.

SNOWMASS - MAY STATION RIDERSHIP

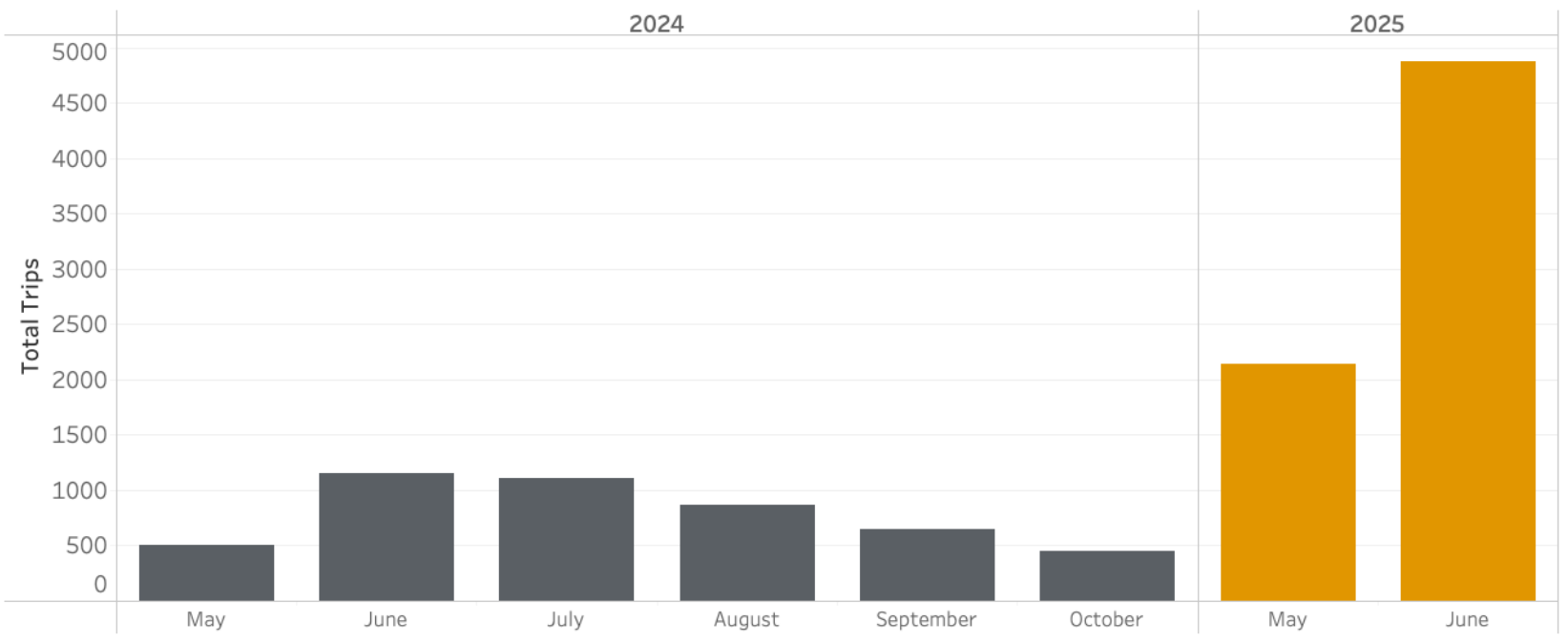




2025 SNOWMASS SYSTEM STATS

Service Overview	May	June	2025 Total
Number of Stations	11	11	**11**
Number of Docks	199	199	**199**
Total Bikes in Service	88	83	**88**
Pedal Bikes in Service	0	0	**0**
E-Bikes in Service	88	83	**88**
Ridership			
Total Rides	2,139	4,873	**7,012**
Average Rides Per Day	69	162	**123**
Total Pedal Bike Rides	0	0	**0**
Total E-bike Rides	2,139	4,873	**7,012**
% of Total Trips to/from BRT and Major RFTA Stops	80.60%	85.76%	**84.18%**
Unique Riders	362	708	**878**
Median Ride Duration, Minutes	7.73	5.08	**6.41**
Busiest Day, Trips - Date	103 Trips - May 30	242 Trips - June 26th	**242 - June 26th**
Median Ride Distance, Miles	0.96	0.63	**0.80**
Estimated Total Distance Traveled, Miles	2,782	5,016	**7,798**
% of Trips in 30-Min Free Ride Period	98.55%	99.75%	**98.55%**
Estimated Carbon Offset by Rides, Lbs CO2	2,037	4,641	**6678**
Operations			
Total Bike Repairs Completed	7	14	**21**
Number of Bikes Rebalanced	504	881	**1,385**
Local Operations Staff Hours (in field)	134	164	**298**
Station Batteries Exchanged	0	0	**0**
Bike & Dock Unavailability			
Average Bike Unavailability, Minutes per Station per Day	11.22	43.95	**27.59**
Average Dock Unavailability, Minutes per Station per Day	0.23	16.32	**8.28**
Station with Most Frequent Availability Shortages	Snowmass Mall	Town Park Station	**Town Park Station**
Safety			
Rider Accidents Reported	2	1	**3**
Instances of Equipment Damage	2	1	**3**
Staff Injuries Reported	0	0	**0**

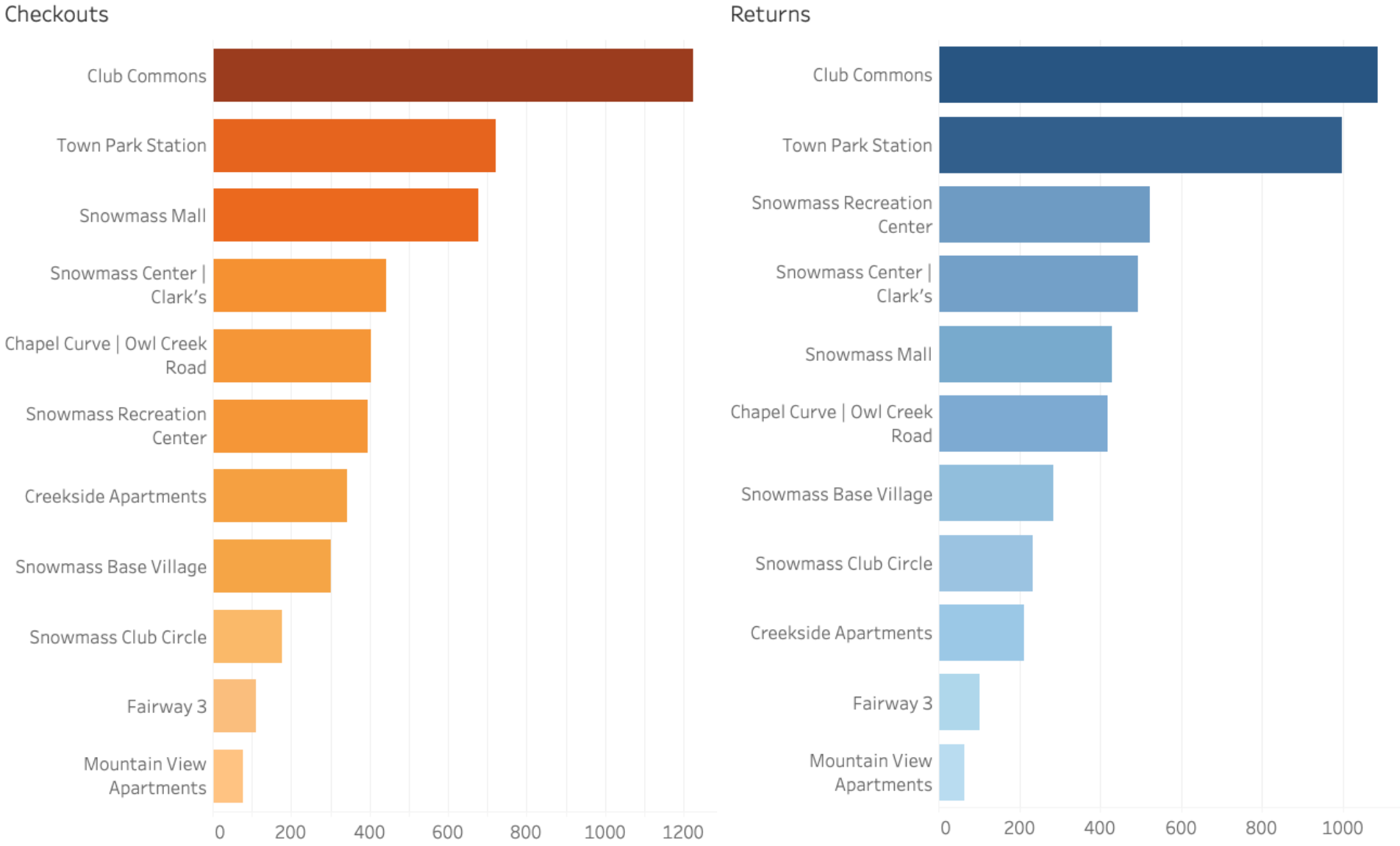
SNOWMASS RIDERSHIP BY MONTH



Snowmass Ridership Notes

- Expanded bikeshare service in Snowmass has generated significant ridership in its first two months, with over 7,000 trips taken by 878 unique individuals. Notably, the route from Club Commons to Town Park Station is now the busiest regional route, reflecting the continued popularity of short trips to and from RFTA bus service.
- Safety continues to be a concern with at least 3 rider crashes in the first two months of service in 2025. Topography is likely a contributing factor due to riders travelling at speeds that are not advisable. The inside of each bike basket features safe-riding messaging and WE-cycle continues to reiterate safe riding through its communications and messaging.
- Ridership from Snowmass to Aspen has proven to be popular with 66 trips so far this year, or more than one per day. This one-way trend decreases the total bike availability for the Snowmass System and needs to be managed regularly by redeploying bikes back up to Snowmass which puts strain on the WE-cycle Operations Team. Notably, only one-third of these inter-system trips exceeded 30 minutes.

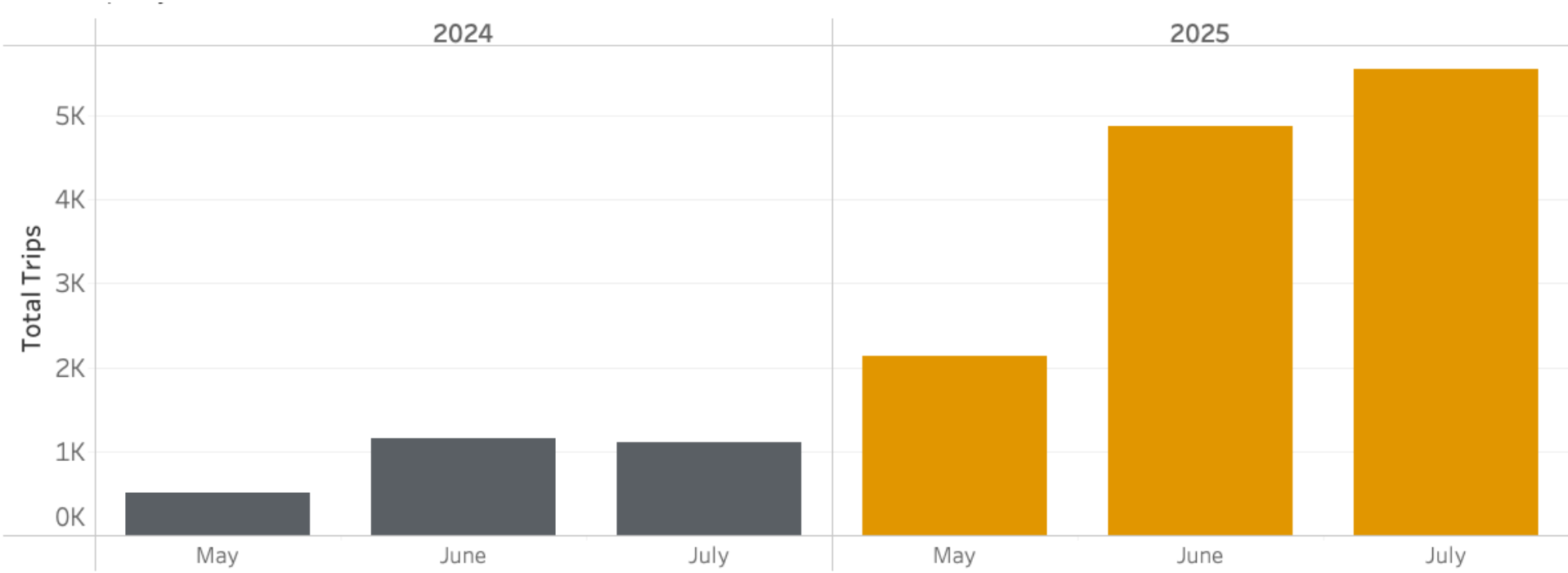
SNOWMASS - JUNE STATION RIDERSHIP



2025 SNOWMASS SYSTEM STATS

Service Overview	May	June	July	2025 Total
Number of Stations	11	11	11	**11**
Number of Docks	199	199	199	**199**
Total Bikes in Service	88	83	83	**88**
Pedal Bikes in Service	0	0	83	**83**
E-Bikes in Service	88	83	0	**88**
Ridership				
Total Rides	2,139	4,873	5,558	**12,570**
Average Rides Per Day	69	162	179	**221**
Total Pedal Bike Rides	0	0	0	**0**
Total E-bike Rides	2,139	4,873	5,558	**12,570**
% of Total Trips to/from BRT and Major RFTA Stops	80.60%	85.76%	84.96%	**84.53%**
Unique Riders	362	708	796	**1,322**
Median Ride Duration, Minutes	7.73	5.08	3.90	**5.57**
Busiest Day, Trips - Date	103 Trips - May 30	242 Trips - June 26th	229 Trips - July 10	**242 - June 26th**
Median Ride Distance, Miles	0.96	0.63	0.48	**0.69**
Estimated Total Distance Traveled, Miles	2,782	5,016	5,096	**12,894**
% of Trips in 30-Min Free Ride Period	98.55%	99.75%	98.76%	**98.55%**
Estimated Carbon Offset by Rides, Lbs CO2	2,037	4,641	5,293	**11,972**
Operations				
Total Bike Repairs Completed	7	14	26	**47**
Number of Bikes Rebalanced	504	881	798	**2,183**
Local Operations Staff Hours (in field)	134	164	192	**490**
Station Batteries Exchanged	0	0	0	**0**
Bike & Dock Unavailability				
Average Bike Unavailability, Minutes per Station per Day	11.22	43.95	65.14	**40.11**
Average Dock Unavailability, Minutes per Station per Day	0.23	16.32	28.70	**15.09**
Station with Most Frequent Availability Shortages	Snowmass Mall	Town Park Station	Snowmass Mall	**Town Park Station**
Safety				
Rider Accidents Reported	2	1	0	**3**
Instances of Equipment Damage	2	1	0	**3**
Staff Injuries Reported	0	0	0	**0**

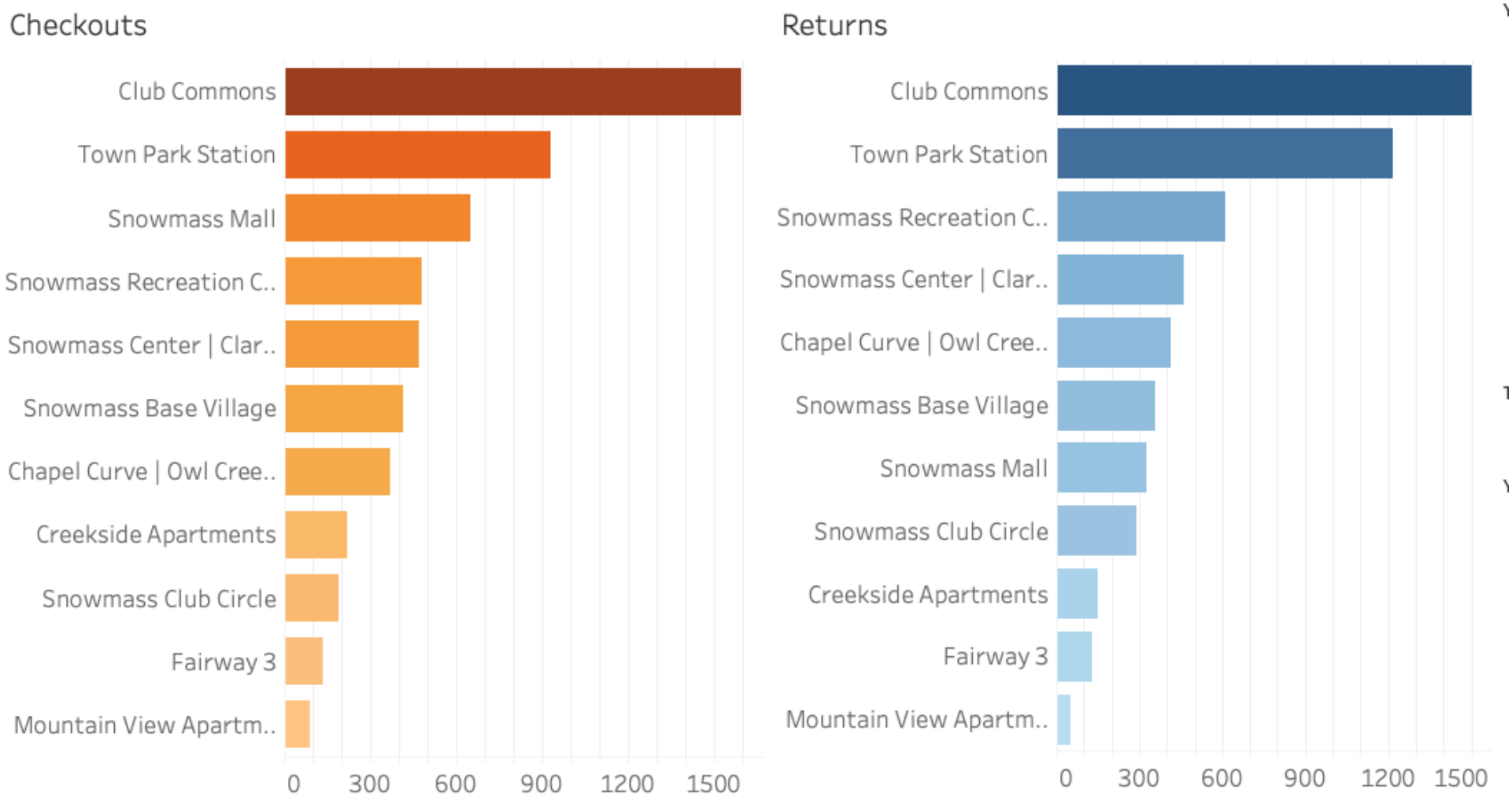
SNOWMASS RIDERSHIP BY MONTH



Snowmass Ridership Notes

- Total ridership in Snowmass continued to grow in July to a total of 5,558 trips from 796 unique riders.
- In May and June, there were multiple rider incidents resulting in individuals seeking medical care for crashes. We are happy to report there were no further reported crashes in the month of July. WE-cycle continues to message the importance of safe and conservative riding to all users.
- In July, there were 65 trips from Snowmass to Aspen, demonstrating continued popularity of this longer journey. By contrast, only 24 trips made the return. Many of these riders appear to be using Owl Creek Rd and returning a bike to the Buttermilk BRT station to reset their 30-minute trip timer.
- A downhill ridership trend continues to be popular. In July, the Snowmass Mall station had roughly 50% more bike checkouts than returns. WE-cycle has adjusted rebalancing operations slightly to try to adapt to this trend.

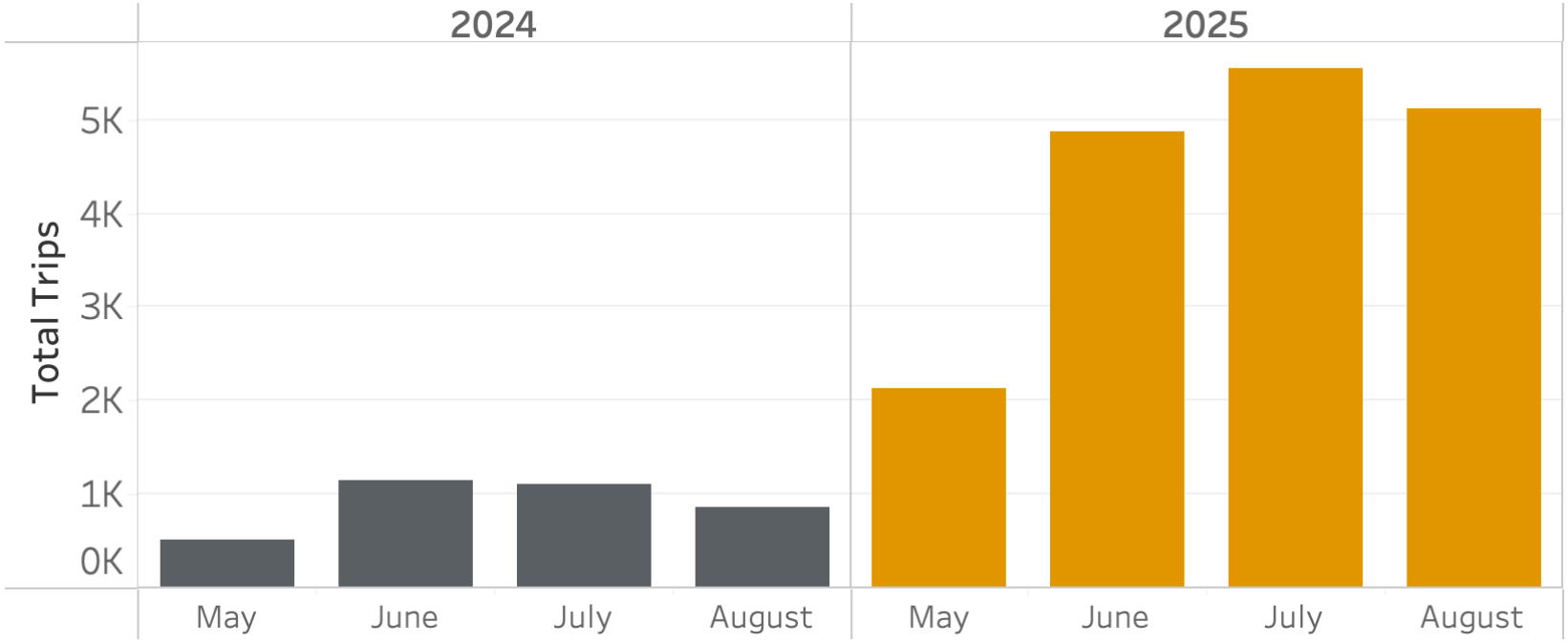
SNOWMASS - JULY STATION RIDERSHIP



2025 SNOWMASS SYSTEM STATS

Service Overview	June	July	August	2025 Total
Number of Stations	11	11	11	**11**
Number of Docks	199	199	199	**199**
Total Bikes in Service	83	83	84	**88**
Pedal Bikes in Service	0	0	0	**0**
E-Bikes in Service	83	83	84	**88**
Ridership				
Total Rides	4,873	5,558	5,113	**17,683**
Average Rides Per Day	162	179	165	**149**
Total Pedal Bike Rides	0	0	0	**0**
Total E-bike Rides	4,873	5,558	5,113	**17,683**
% of Total Trips to/from BRT and Major RFTA Stops	85.76%	84.96%	87.09%	**85.27%**
Unique Riders	708	796	728	**1,731**
Median Ride Duration, Minutes	5.08	3.90	3.82	**5.13**
Busiest Day, Trips - Date	242 Trips - June 26th	229 Trips - July 10	209 Trips - August 6th	**242 - June 26th**
Median Ride Distance, Miles	0.63	0.48	0.47	**0.64**
Estimated Total Distance Traveled, Miles	5,016	5,096	4,481	**17,375**
% of Trips in 30-Min Free Ride Period	99.75%	98.76%	99.06%	**98.55%**
Estimated Carbon Offset by Rides, Lbs CO2	4,641	5,293	4,870	**16,841**
Operations				
Total Bike Repairs Completed	14	26	18	**65**
Number of Bikes Rebalanced	881	798	907	**3,090**
Local Operations Staff Hours (in field)	164	192	158	**648**
Station Batteries Exchanged	0	0	1	**1**
Bike & Dock Unavailability				
Average Bike Unavailability, Minutes per Station per Day	43.95	65.14	54.29	**43.65**
Average Dock Unavailability, Minutes per Station per Day	16.32	28.70	34.10	**19.84**
Station with Most Frequent Availability Shortages	Town Park Station	Snowmass Mall	Town Park Station	**Town Park Station**
Safety				
Rider Accidents Reported	1	0	1	**4**
Instances of Equipment Damage	1	0	1	**4**
Staff Injuries Reported	0	0	0	**0**

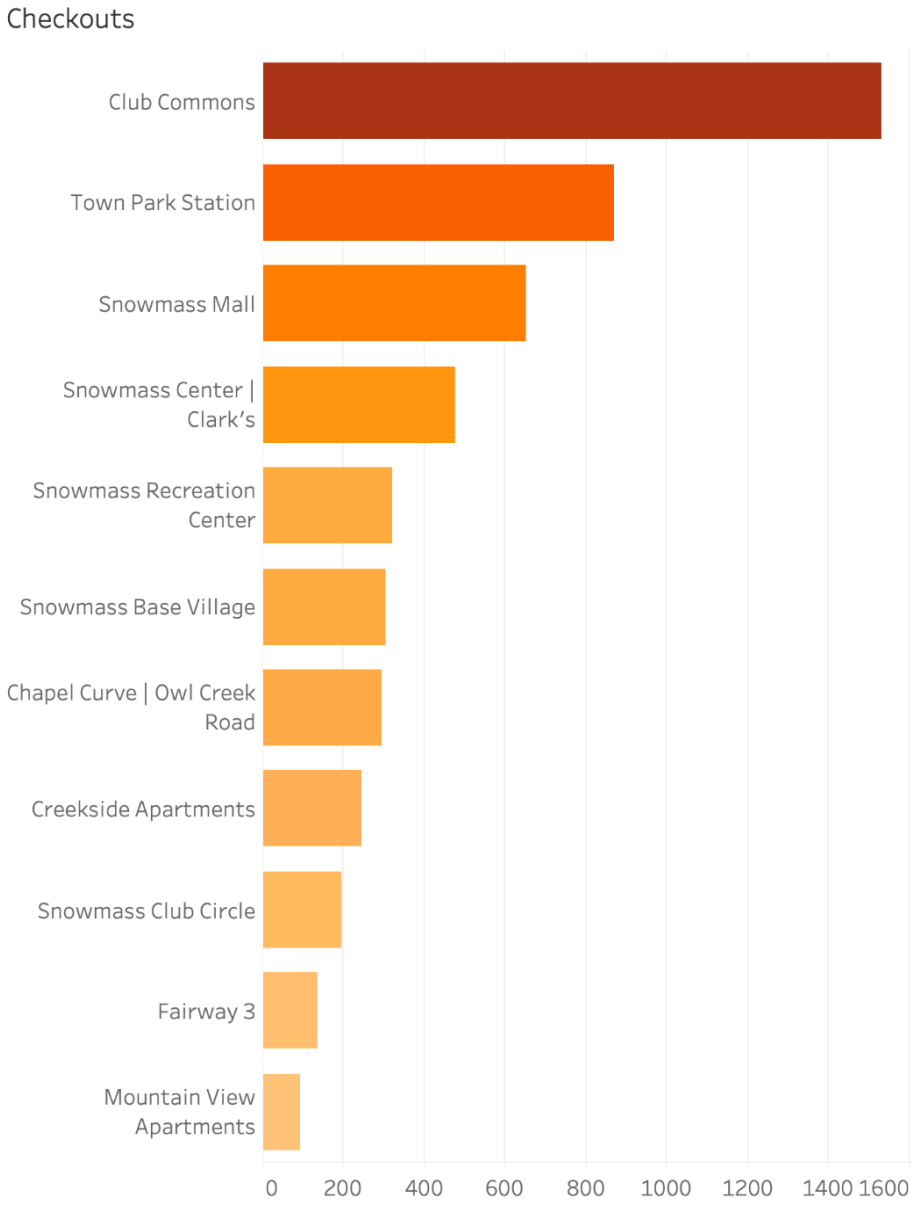
SNOWMASS VILLAGE RIDERSHIP BY MONTH

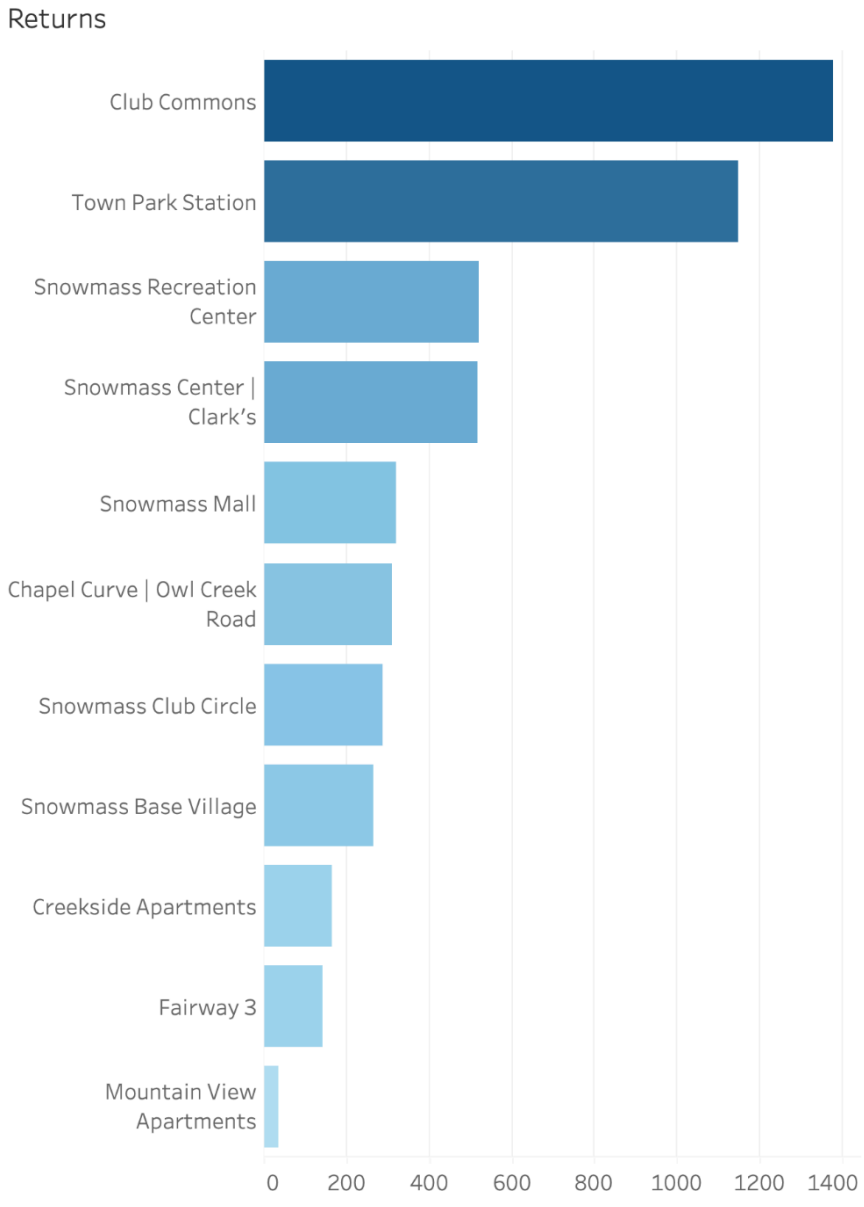


Snowmass Village Ridership Notes

- Snowmass Village ridership has been stable and consistent throughout the first summer of the expanded system's operations. The trend this year has been roughly 5,000 trips per month from over 700 unique riders, August was no exception.
- Despite being a new service area, Snowmass Village riders appear to be using WE-cycle as intended for short connections. The median ride time was under four minutes and fewer than 1% of trips exceeded the 30-minute free ride period.
- During the final weekend of August, JAS Labor Day Experience takes over the Town Park area of Snowmass Village. Due to significant impacts to bike routes, transit options, and other services in the area, WE-cycle made a difficult decision to close the Town Park and Snowmass Recreation Center stations from Friday August 28th to Monday September 1st. Print and digital notices were put up ahead of time to notify riders. Other stations in Snowmass Village were not impacted by this closure.

SNOWMASS VILLAGE - AUGUST STATION RIDERSHIP

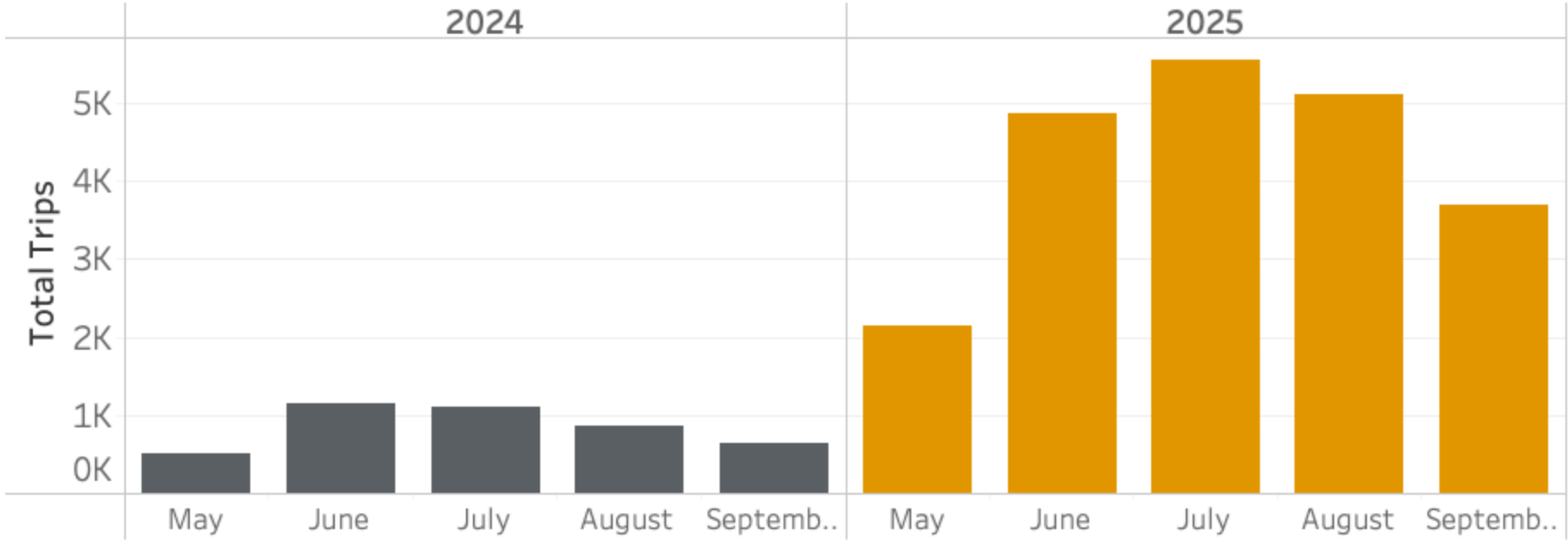




2025 SNOWMASS SYSTEM STATS

Service Overview	July	August	September	2025 Total
Number of Stations	11	11	11	**11**
Number of Docks	199	199	30	**199**
Total Bikes in Service	83	84	85	**88**
Pedal Bikes in Service	0	0	0	**0**
E-Bikes in Service	83	84	85	**88**
Ridership				
Total Rides	5,558	5,113	3,697	**21,380**
Average Rides Per Day	179	165	123	**143**
Total Pedal Bike Rides	0	0	0	**0**
Total E-bike Rides	5,558	5,113	3,697	**21,380**
% of Total Trips to/from BRT and Major RFTA Stops	84.96%	87.09%	87.26%	**85.61%**
Unique Riders	796	728	498	**1,817**
Median Ride Duration, Minutes	3.90	3.82	3.13	**4.73**
Busiest Day, Trips - Date	229 Trips - July 10	209 Trips - August 6th	157 Trips - September 14	**242 - June 26th**
Median Ride Distance, Miles	0.48	0.47	0.39	**0.59**
Estimated Total Distance Traveled, Miles	5,096	4,481	2,810	**20,185**
% of Trips in 30-Min Free Ride Period	98.76%	99.06%	99.62%	**98.55%**
Estimated Carbon Offset by Rides, Lbs CO2	5,293	4,870	3,521	**20,362**
Operations				
Total Bike Repairs Completed	26	18	9	**74**
Number of Bikes Rebalanced	798	907	615	**3,705**
Local Operations Staff Hours (in field)	192	158	112.8	**761**
Station Batteries Exchanged	0	1	0	**1**
Bike & Dock Unavailability				
Average Bike Unavailability, Minutes per Station per Day	65.14	54.29	42.54	**43.43**
Average Dock Unavailability, Minutes per Station per Day	28.70	34.10	10.17	**17.91**
Station with Most Frequent Availability Shortages	Snowmass Mall	Town Park Station	Town Park Station	**Town Park Station**
Safety				
Rider Accidents Reported	0	1	0	**4**
Instances of Equipment Damage	0	1	0	**4**
Staff Injuries Reported	0	0	0	**0**

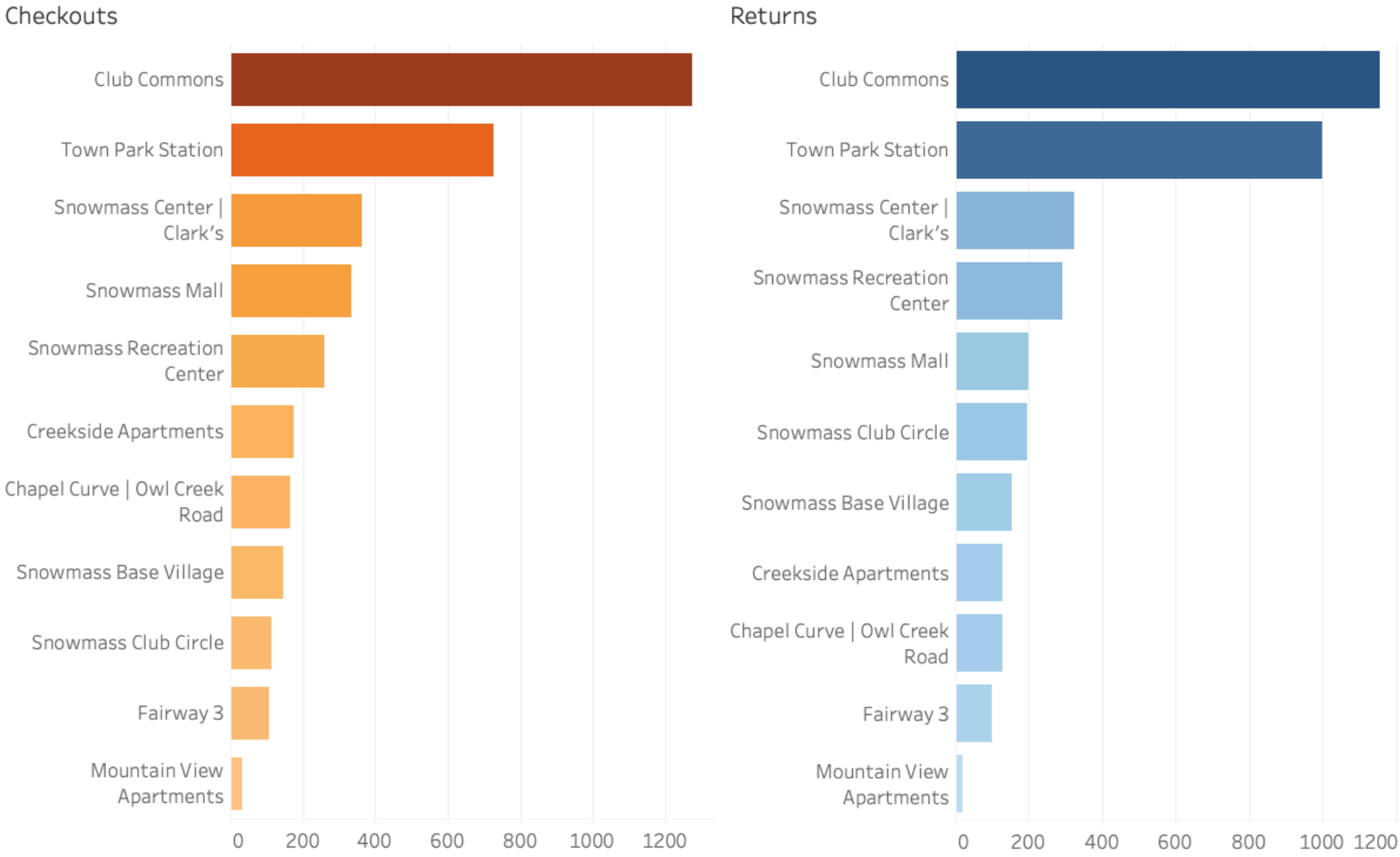
SNOWMASS VILLAGE RIDERSHIP BY MONTH



Snowmass Village Ridership Notes

- Ridership in Snowmass Village is following regional trends of a slowdown in September.
- Ridership between Club Commons and Town Park Station has consistently been one of the busiest routes all summer. This connection has an established trend from the past several years which may contribute to its significant popularity when compared to the rest of the Snowmass System.
- Mountain View Apartments Station continues to underperform compared to other stations. WE-cycle and the Town of Snowmass Village are actively discussing outreach or other opportunities to improve adoption in this location.

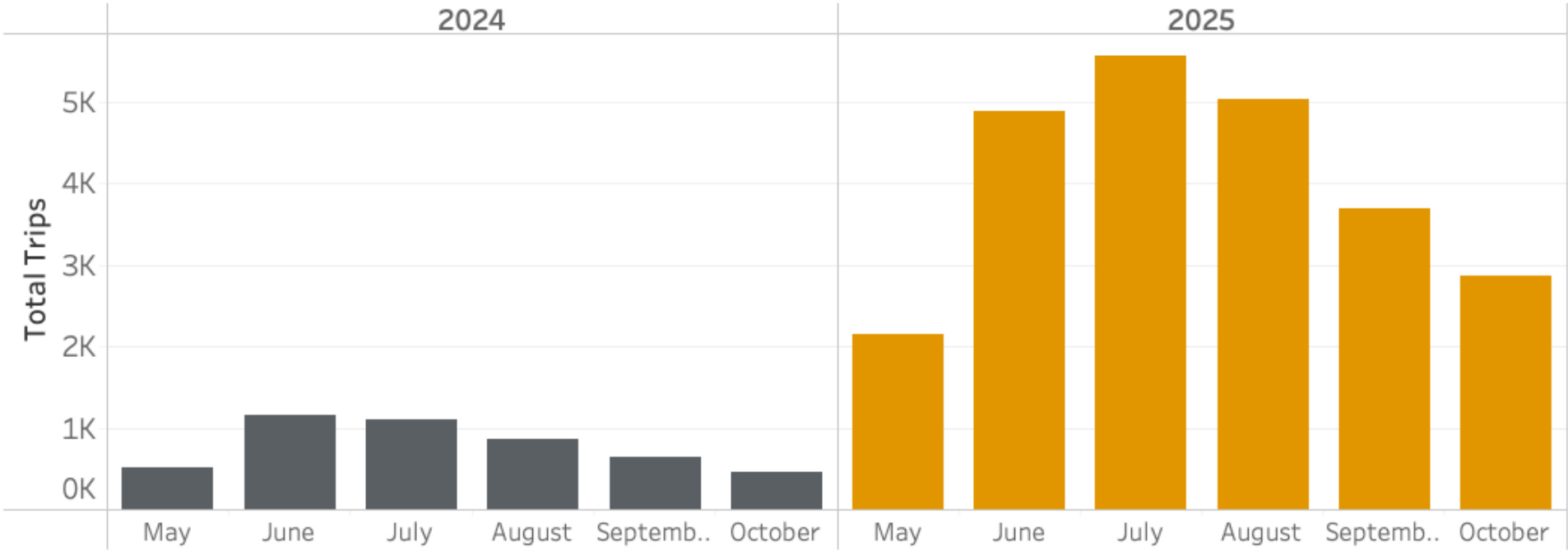
SNOWMASS VILLAGE - SEPTEMBER STATION RIDERSHIP



2025 SNOWMASS SYSTEM STATS

Service Overview	August	September	October	2025 Total
Number of Stations	11	11	11	**11**
Number of Docks	199	199	199	**199**
Total Bikes in Service	84	85	83	**88**
Pedal Bikes in Service	0	0	0	**0**
E-Bikes in Service	84	85	83	**88**
Ridership				
Total Rides	5,113	3,697	2,856	**24,236**
Average Rides Per Day	165	123	92	**135**
Total Pedal Bike Rides	0	0	-	**0**
Total E-bike Rides	5,113	3,697	2,856	**24,236**
% of Total Trips to/from BRT and Major RFTA Stops	87.09%	87.26%	84.45%	**85.48%**
Unique Riders	728	498	388	**1,928**
Median Ride Duration, Minutes	3.82	3.13	3.07	**4.46**
Busiest Day, Trips - Date	209 Trips - August 6th	157 Trips - September 14	162 Trips - October 1	**242 - June 26th**
Median Ride Distance, Miles	0.47	0.39	0.38	**0.55**
Estimated Total Distance Traveled, Miles	4,481	2,810	2,206	**22,391**
% of Trips in 30-Min Free Ride Period	99.06%	99.62%	99.79%	**99.26%**
Estimated Carbon Offset by Rides, Lbs CO2	4,870	3,521	2,720	**23,082**
Operations				
Total Bike Repairs Completed	18	9	18	**92**
Number of Bikes Rebalanced	907	615	583	**4,288**
Local Operations Staff Hours (in field)	158	112.8	130.2	**891**
Station Batteries Exchanged	1	0	1	**2**
Bike & Dock Unavailability				
Average Bike Unavailability, Minutes per Station per Day	54.29	42.54	23.07	**40.04**
Average Dock Unavailability, Minutes per Station per Day	34.10	10.17	4.06	**15.60**
Station with Most Frequent Availability Shortages	Town Park Station	Town Park Station	Town Park Station	**Town Park Station**
Safety				
Rider Accidents Reported	1	0	0	**4**
Instances of Equipment Damage	1	0	1	**5**
Staff Injuries Reported	0	0	0	**0**

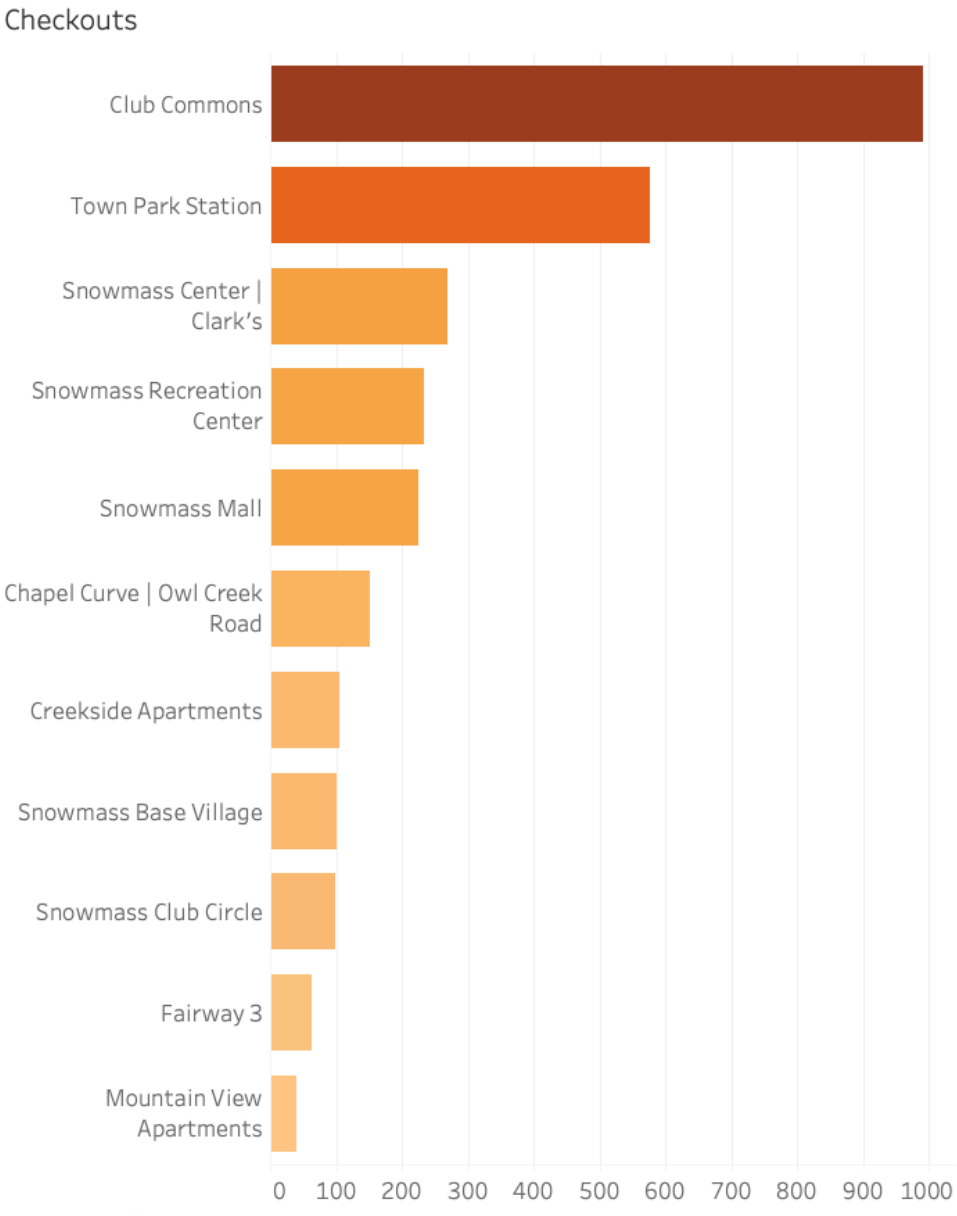
SNOWMASS VILLAGE RIDERSHIP BY MONTH

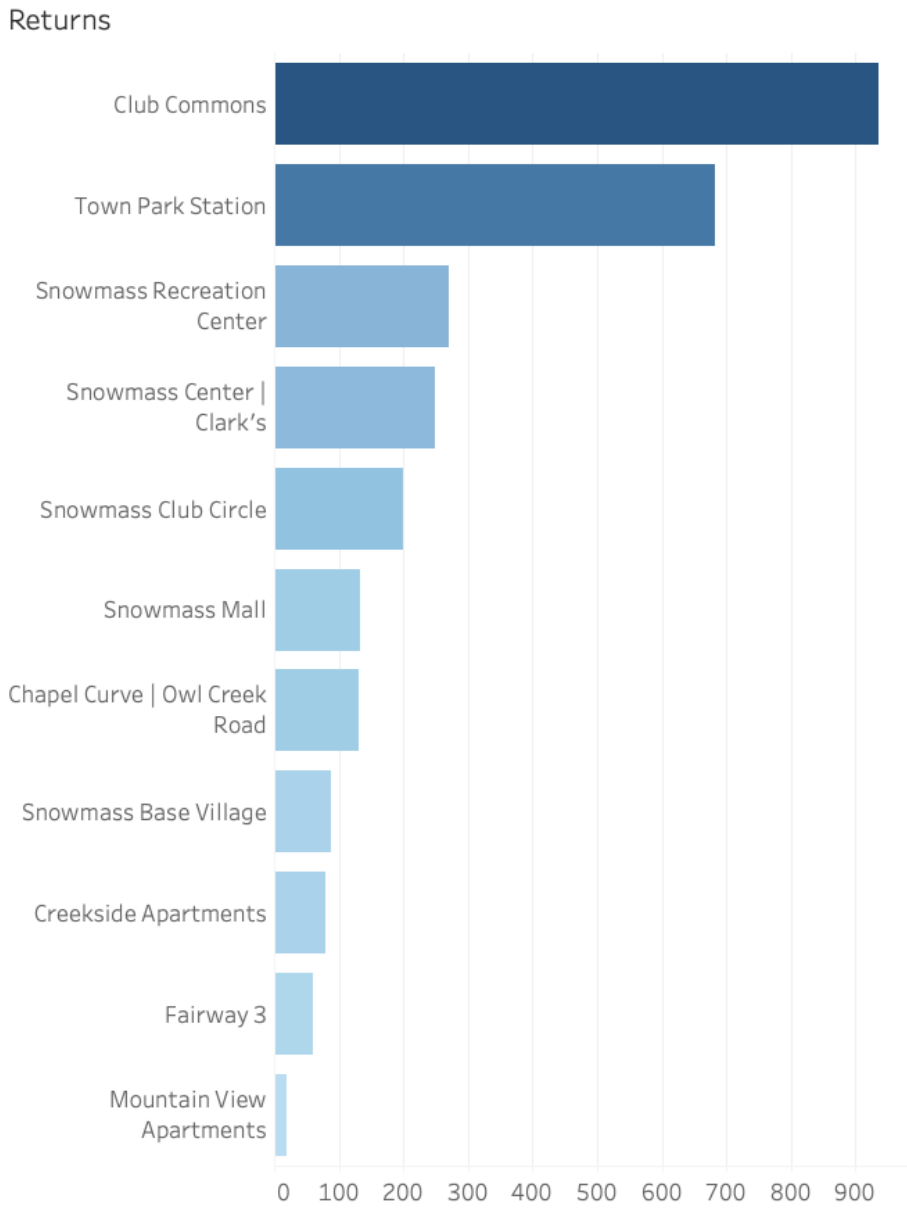


Snowmass Village Ridership Notes

- On November 2nd, Snowmass Village wrapped its first season with an expanded 11 station system with only e-bikes. In total, 1,928 riders took 24,236 rides in the 2025 season.
- For all six months of the season, the most popular stations for ridership were Club Commons and Town Park Station. This trend continues to highlight the popularity of bikeshare for short connections and first- and last-mile connections to transit.
- WE-cycle and the Town of Snowmass Village continue to discuss future opportunities and ways to improve upon our first year of service.

SNOWMASS VILLAGE - OCTOBER STATION RIDERSHIP





TOSV Origin Destination June 2025 EFTS

Sum of Column Labels

Row Labels	Assay	Base	Brush	Brush	Brush	Brush	Brush	Brush	Burnt	Creek	Creek	Crest	Ditch	Encla	Fairw	Faray	Fireh	Horse	Laure	Lemo	Liche	Marti	Marti	Mead	Mead	Mead	Moun	N Rid	Pinor	Ridge	Rode	Rode	Sincl	Snow	Snow	Snow	Spur	Stone	Terra	The R	Timb	Top C	Town	Two C	Vicer	Wooc	Wooc	Wooc	(blan	Grand Total
Base Village		2					2			1	2	4	4					5	7				16		1	11	4			1			18	13	50				9	7	18			1	206				382
Blue Spruce Lane																																		1														1
Bridge Ln																										1																							1
Bridlepath Lane																																										1						1
Brush & Meadow																								4																									4
Brush & Owl																		9						10										1		1						4							25
Brush & Sin		1																		1				1								1	12		1		1	2										20
Burnt Mountain Dr																																4	4															8
Creekside		10	1			1		3								1										1							137		46					30				27	2				259
Crestwood		3																								1							4		2					1					2				13
Ditch Trail		1									3													2											8					1	3	3	4	5	2				32
Enclave																																	1															1
Ermine Lane											1																																					1
Fairway Dr		1																																														1
Faraway Rd																																			2														2
Firehouse																																			1		2										1	4
Fox Run Dr																																				2													2
Hidden Ln																																			1													1
Horse Ranc		3																															2		3		2					13						23
Janss Ln																																			1													1
Laurelwood		1						2													1												8		18									2	2			34
Lemond Pl						1	1																												2													4
Lichenhearth																																	6		1		1				39							47
Meadow Ln		10																2																	2													14
Meadow Ra		2																															1															3
Meadow Rd				1	9																			2	1							4		4						5							26
Mountain Crest Ln																																			1													1
Mountain V		25					1		2	4														4	5							1	98	2	90		3			1	11	1		23	14			285
Mustang Cir																																					3											3
N Ridge Ln		4																																	9													13
Rodeo Pl																																												8				8
Rodeo Rd																																	1		1													2
Sinclair Rd																																	11	7	4						16			1				39
Snowmass		8		1	2	3	10		4		44		4	1						2		1	1	2		5	7	35	2				5	3	3	99		14		4	39	22	4		60	1		386
Snowmass		2									2						2											4					4	3	25													38
Snow	2	58			4	4	4	9			23		3				1	4	6				3	8	1	3	62	4	1	3		2	243	35	8		4	3	19	22	49	52		7	178				825
Spur Ridge Ln																																													1				1
Stonebridge		19		2	1						1							6									4					31		4						3		10	46	1			128
Summit Ln		7																																														7
Terrace Ln																																			1													1
The Ridge		5									2																								15		6											28
Timberline		26									38																6						38		118		12					1		1		2		242
Tom Blake T		5																									3								2													10
Top Of The		31											2		3				3		39						9						72	4	361		3			3	3	2			1				536
Town Park S		1				1		1			1								1							7	4				2	25	26		53		2			2	1			16	5			148
Trail Rider Ln																												4																					4
Two Creeks																																												1				1
Valley View Ln																																								2							2
Viceroy													4														20		6				4		19		7			1				4				65
Woodbridge		170									2	2												2			8						54	3	130	1	42				4	4		2	5			429
Woodrun Pl		4																															2		1													7
Woodrun V		1																						2	1																							4
(blank)																																																	
Grand	2	400	1	4	16	13	15	17	8	1	119	6	17	1	3	1	3	26	19	1	41	1	5	24	6	45	172	14	7	3	2	1	38	785	72	1085	1	102	5	34	107	153	106	4	78	549	9	1	4123

Expanded D	184
Expanded P	168
June Total	352

TOSV Origin Destination July 2025 EFTS

Sum of Column Labels

Row Labels	Base	Bridg	Brust	Brust	Chan	Creel	Creel	Crest	Daly T	Ditch	Divid	Edge	Encla	Farav	Fireh	Horse	Laure	Liche	Mall	Maple	Marti	Marti	Mave	Meac	Meac	Meac	Mour	N Rid	Oak F	Owl &	Pine (	Pinto	Publi	Rode	Sadd	Sincl	Snow	Snow	Snow	South	Spruc	Stone	Terra	The R	Timb	Tom I	TOV	Town	Trails	Two (	Valle	Vicer	Villas	Willo	Wooc	Wooc	Wooc	Wooc	(blan	Grand Total
Aspenwood																			2																			4																						6
Base	1	9		20	2		3	4	2	6		3				31	4	4	109	4			7		7	15				2				15	36		5	2		1		1	33		22	15				4		282		2	651
Bridg	4																		2							1									2																						9
Bridlepath Ln																			6																																							6
Brush & Owl																1		1																																								2
Brust	2																		8						1											4												5										20
Chamonix																			2																																							3
Creel	12					1		1								2			52																	132		4						22			4		25			3				258
Crest	2														3				18							1									10		9		1			2	7	3											56
Daly Townhomes																			2																											1											3
Deer	4																																																								4
Ditch	4																2		9							1									6								5			4		6			18				55
Divide Rd																			3																															1			1			5
Edge	3									2																									6																					11
Enclave																			3																																							3
Fairway Dr																			10																																						2		12
Faraway Rd						2													3																	1																					6
Firehouse																			2																																							2
Gambel Way																																																										3		3
Hidde	2																																																									2
Horse	24		4																35																	4		1		4						71										143
Laure	7										3							3	43																	24			2						2							3				87
Lemond Pl																																																									6		6
Lichenhearth																			4																	12										36										52
Mall	151			5		2	35	11	1	4	4		3	1	3	31	7	11	2		1		1	6	98	5	2						8	268	2	44		6	6	16	65		127	38			10		18	7	235			####
Maple	4																																																									4
Marti	1																		2																	9																						12
Martingale Pl																																				4																						4
Meado	9																																			1																						10
Meado	5																		4																																						9
Meado	6																		13																	2										23										44
Mourn	28					1		1										3	112							6									148		3		7				3	3			34				13				362
Oak Ridge Rd																			1																																							1
Pine Crest Ln																			1																																							1
Pinto Cir																			2																																							2
Public Works																			2																												2										4
Rodeo Rd																			2																																							2
Saddleback Ln																																				1										8											9
Sincla	14																1		10																	38	7									22				4		1				97
Snow	17		1	5			61	2		2		6		1		4	15	4	124		1	1				1	46							1	33				4		12		42	9				1		45	1		439
Snow	6																		21						1											3		1							1			1				2				36
Snowmass Club Cir																																	6																							6
South Rim Trail																3	2									1																5								6				17
Stallion Cir																			1																	1																						2
Stellar Ln																																											1								3				4
Stone	18																5		8								11									23									5	6							29				105
Terrace Dr																			1																																							1
The R	7																		13																	1									1										22
Timbe	39						37										9		190								3	5								15				8					11	10		2			2	5		336
Tom Blake Trail												2							4																										2											8
TOV	106						5										5	42	482		1						8									86		12		7		7	7		2	22		2		2				4				800
Town	10			2			1	3								45			35							35	2						1		6	23	10			10			11		7						1		11	3		216
Two Creeks																			3																		1																						4
Two C	1															1			2								1																															5
Viceroy							1			1									40								2	18						1									2		2							1				68
Village Run Cir																																																5										5
Villas North							1												16																																						3		22
Willo	1																		1																																							2
Wood Rd																			7																																							7
Wooc	199						2	1		14							1		192							1	12		5	3					71			4	1	13				20			1	4		3				547
Wooc	2																																			14									6										22
Wooc	1																		3																																							4
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Grand	690	9	5	32	2	2	150	21	5	29	7	11	3	2	6	118	51	68	####	4	2	1	1	7	2	57	225	5	2	5	3	2	7	1	7	80	936	9	79	8	1	64	6	34	155	2	262	279	10	2	1	81	4	28	7	670	9	2	####

Expanded D	436
Expanded F	328
July Total	764

TOSV Origin Destination August 2025 EFTS

Sum of Column Labels

Row Labels	Base	Branch	Brush &	Brush &	Brush &	Burnt	Center	Chamo	Creek	Crest	Daly Tr	Ditch	Edgew	Enclave	Fairway	Faraway	Firehou	Fox Ln	Hidden	Horse	Laurel	Lemon	Lichen	Mall	Maple	Martin	Maver	Meado	Meado	Meado	Mtn Vi	Mustan	N Ridg	Oak Ri	Pinon	Pinto	Public	Ridge	Saddl	Sincla	Sincla	Snow	Snow	Spruc	Stallio	Stone	Summ	Terrac	The R	Timbe	Timbe	TOV	Town	Two C	Vicen	View	Villas	Wooc	Wooc	Wooc	(blank	Grand Total
Base	1	4				2	10		9	1	1	8								27	1	2	1	121	8			6	2	1	33		8			5	3	4			29	5	2	3	14			12	19		37	20		4		3	213				619
Blue Roofs							1																	4							2													4							1									12
Branding Ln																								4																																					4
Bridg	1		1				4																								1																														7
Brush & Faraway																2								4							1																															7
Brush & Meadow																								1				7																																	8
Brush & Owl							1		3	13										3										1															1																	23
Brush & Sinclair							3																																						3																9
Burnt	6																																																												6
Center	26		1		1			1	134	14			1			6				7	14		9	260		16		6		10	124										5				30	2		24	40	14	1			62	2			810
Chamonix							2																																						1																3
Creek	2																																																											2
Creek	20						66				1									1				34							2																			12		2	1					1				140
Crest	3										1	2												9							2																						8									25
Daly T	4										1													5							6											1							9		1	3	7								36
Ditch Trailhead							5			1														5																																2			2					16
Edgewood Ln							1																																																								1
Enclave							2																	7																																							9
Faraway Rd		1					2									1								9																																6			1					20
Firehouse																	1																																													1
Hidden	1																				1			8																																							10
Horse	24			6			5																	18							4													2																	100
Laurel	2						2											2	1					5																																									16
Lichenhearth							9																	15							4																															57
Little Red Schoolhouse																								1																																							1
Mall	61		3	2			136	10	49	5		16		18	1	8	1		5	6	7	1	1	25			1	8	1	39	123		2	1		3	2		3	2	7	4		6	3	1	15	101	4	307	30	3	59	2	4	241	10	1	1338
Maple	7																							1																																									8
Martin	1																																																														1
Martin	1						2																																																							3
Maverick Cir																								3																																						3
Meadow & Brush																												1																																		1
Meadow Ln							7																	8															2																							17
Meadow Ranch																								5																																						5
Meado	6						12														10	2		9							1																															32			2			74
Mtn Vi	15						36			1		1												156						1	2										1				8			4	5	2	2	18			14			266
Mustang Cir																								4																								1															5
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Oak Ridge Rd																								2																																						2
Pinon Dr																								1																																						7
Pinto	3																																																													3
Public Works																																																														1
Ridge	2															2								2																																							18
Roden	1																																																													2
Saddleback Ln																																																														2
Sinclai	23						11						5									2		4							2																															33						80
Snow	2																						4	10							3		2							24				1									16						7			69
Snowmass Club																								1																																							7			8
Snowmass Club C		1					1													1				31							2																															1			37
Spur	1																																																											2				3
Stone	35						7	2																6							5	8						6			2		1					1	4					44				121
Summit Ln					2		2																																																							4
The R	3											2												27																																2				34
Timbe	1						13		1															12							2																							1	15		16		3			64
Timbers Club									3																						1																														1			5
TOV	19						23																25	69							7													3	1							1	1		9					158
Town	10						1													40			3	45							10	2									3		14					3		3			16		1	4			155
Two C	5																																																													5
Vicen	2						1		31			2												37							23																							28		6						130
View Ridge Ln																								2																																							4
Village Run Cir							2		1	2										3											5											5				4							14		1			3			40
Wooc	253			7			61	1	4			3		1		1								296	2						27											2			24			5	4		4	22	1	1		7				726
Woodrun Place							4																	8							2																													1			15
Wooc	5																																																													5
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Grand	551	4	6	16	3	2	432	14	235	37	5	34	6	19	1	20	2	2	6	85	33	10	43	1284	10	16	1	28	3	67	381	8	10	2	1	5	8	12	3	3	79	18	7	3	4	106	13	4	45	197	4	464	239	15	129	2	8	617	14	1	5377

Picku	370
Drop	317
Total	687

Town of Snowmass Village

Agenda Item Summary

DATE OF MEETING:

February 9, 2026

AGENDA ITEM:

Village Shuttle Zero Emission Bus Transition Plan

PRESENTED BY:

Sam Guarino, Transportation Director

BACKGROUND:

In 2025 the Transportation and Public Works departments undertook a Zero Emission Bus Transition Plan with the support of Kimley-Horn as the consultant on the project.

The Village Shuttle Zero Emission Transition Plan will help the Town make an efficient, measured, and successful transition for low and no emission technologies for its transit fleet, an important part of the Town's efforts to reach its goals of lowering impact on the environment. The plan is also a requirement to be eligible for FTA low and no emission vehicle grants.

DISCUSSION:

In development of the plan, it was found that key criteria had to be met before a transition could take place. They are as follows:

(1) Technology Constraints: The Town will not procure electric buses until at least two manufacturers produce a proven technology of a compatible platform length operating for at least two North American transit agencies.
The Town wants to preserve the viability of the 30' platform through a diversity of options while it occupies its current transit facility. With ZEB manufacturers moving away from producing 30' platform buses (see Appendix A: State of the Industry Technical Memorandum) and only one OEM currently having a 30' ZEB in operation, the Town should remain responsive to the market. To ensure competitive ZEB procurement, 30' electric bus procurement will be contingent on the conditions outlined by the Town. However, should a future facility be

constructed with capacity for 35’ or 40’ ZEBs, the Town can consider procurement of other, more widely-produced platforms.

(2) Operational Constraints: The Town will maintain a fleet of traditionally-fueled, long-distance vehicles until electric bus technology evolves to support fleet replacement on a 1:1 basis. Electric bus technology has not evolved sufficiently to accommodate all daily vehicle tasks of the Town’s preferred service. While many tasks are compatible with ZEB range and could be transitioned given current technology, the Town prefers to maintain some traditionally fueled buses until a 1:1 range equivalent is available for those buses. This strategy will limit disruptions to the Town’s transit service from range constraints while ensuring the Town’s fleet does not need to grow in size to accommodate a ZEB transition.

(3) Facility Constraints: The Town will initiate and complete a facility master planning effort to develop an understanding of future facility expansion, reconfiguration, consolidation, or relocation requirements. This facility master planning effort is anticipated to be completed in the next two years, following completion of this plan. Space limitations at the Town’s current transit facilities serve as a limitation to a full ZEB transition. Based on the conceptual bus charging layout for the Snowmass Village Mall Transit Garage shown in Appendix B: Charging Layout, current facility capacity does not support a full ZEB fleet. The Town will conduct a facility master planning effort to determine future facility needs with the anticipation of supporting a 100% ZEB fleet at a consolidated facility.

Once these criteria are met the transition could begin and would take 14 years to complete. However, the transition could be done in pieces, with perhaps the smaller vehicles transitioning first if they meet these above criteria first.

The goal of these criteria is to not begin an Electric Bus transition that could leave the Town in a worse operational and/or fiscal situation than it currently is in. Many Electric Bus transitions have been plagued by underperforming technologies, failing manufacturers, and poorly executed facility planning. This transition plan takes a more cautious approach meant to avoid these potential failure points.

FINANCIAL IMPACT:

None, this is a discussion item only. However, the eventual transition will have large budget impacts in the future, with facility planning and retrofitting having a cost of approximately $3 million, higher yearly maintenance costs, and higher vehicle purchase prices. These additional costs could be offset by a proposed reduction in fleet size and grant opportunities that this plan makes the Town eligible for.

APPLICABILITY TO COUNCIL GOALS & OBJECTIVES:

The Zero Emission Bus Transition Plan applies to a number of council goals and objectives, including but not necessarily limited to:

- Preserve and protect open spaces and our environment to ensure that nature is and remains the dominate feature on the landscape.
- Promote environmental and economic sustainability and resiliency.
- Focus on improved access and safety to make Snowmass Village more walkable and bikeable.
- Continue to improve the multi-modal connections between Base Village, the Mall, and the Center.
- Manage parking and transit to encourage efficient, effective, and sustainable mobility choices.

COUNCIL OPTIONS:

Discussion item only.

STAFF RECOMMENDATION:

Discussion item only

ATTACHMENTS:

1. Village Shuttle Zero Emission Bus Transition Plan
2. ZEB Transition Plan_Final Report_1.7.2026

Village Shuttle Zero Emission Bus Transition Plan

Why a Zero Emission Bus Plan?

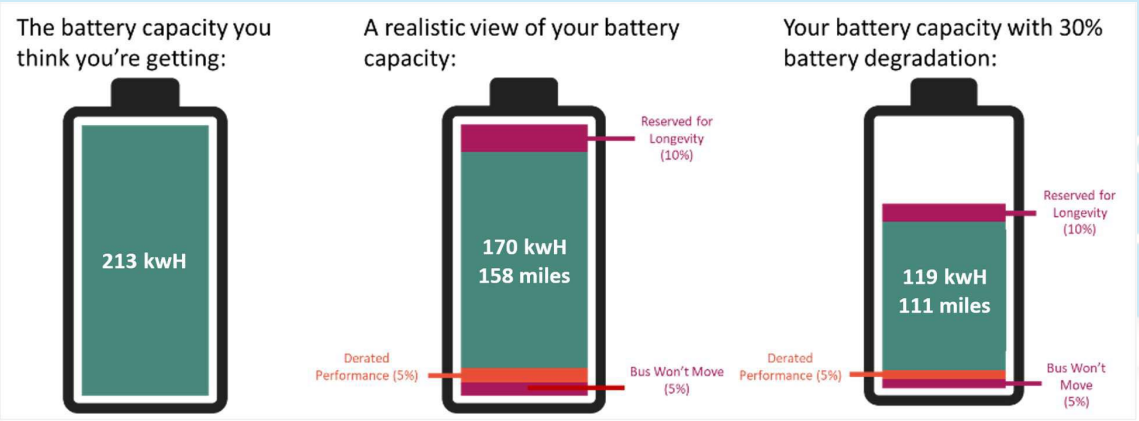
- **Reduce operational emissions and meet sustainability goals**
  - Help the Town move towards a lower emission future
- **Prepare for FTA Low/No Emission and Bus Facilities funding**
  - Applications for FTA Low/No Emissions funding requires a completed transition plan
- **Create a realistic, phased path to a fully electric fleet**
  - Avoid or prepare for potential operational difficulties and consequences

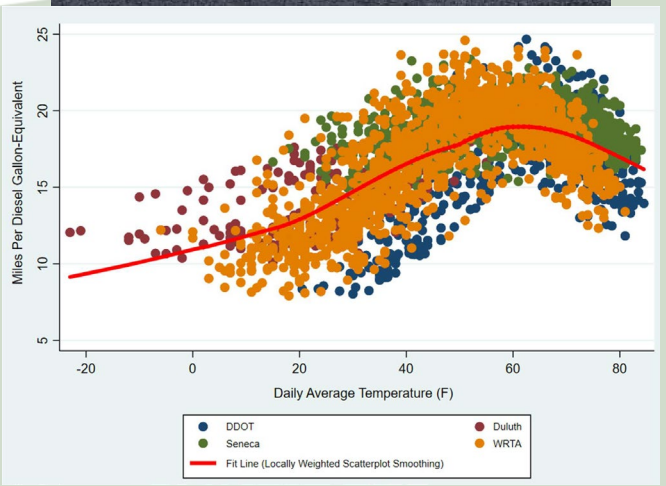
Guiding Policies

- **Technology Constraints**
  - The Town will not procure electric buses until at least two manufacturers produce a proven technology of a compatible platform length operating for at least two North American transit agencies.
- **Operational Constraints**
  - The Town will maintain a fleet of traditionally-fueled, long-distance vehicles until electric bus technology evolves to support fleet replacement on a 1:1 basis.
- **Facility Constraints**
  - The Town will initiate and complete a facility master planning effort to develop an understanding of future facility expansion, reconfiguration, consolidation, or relocation requirements.

Technology Constraints

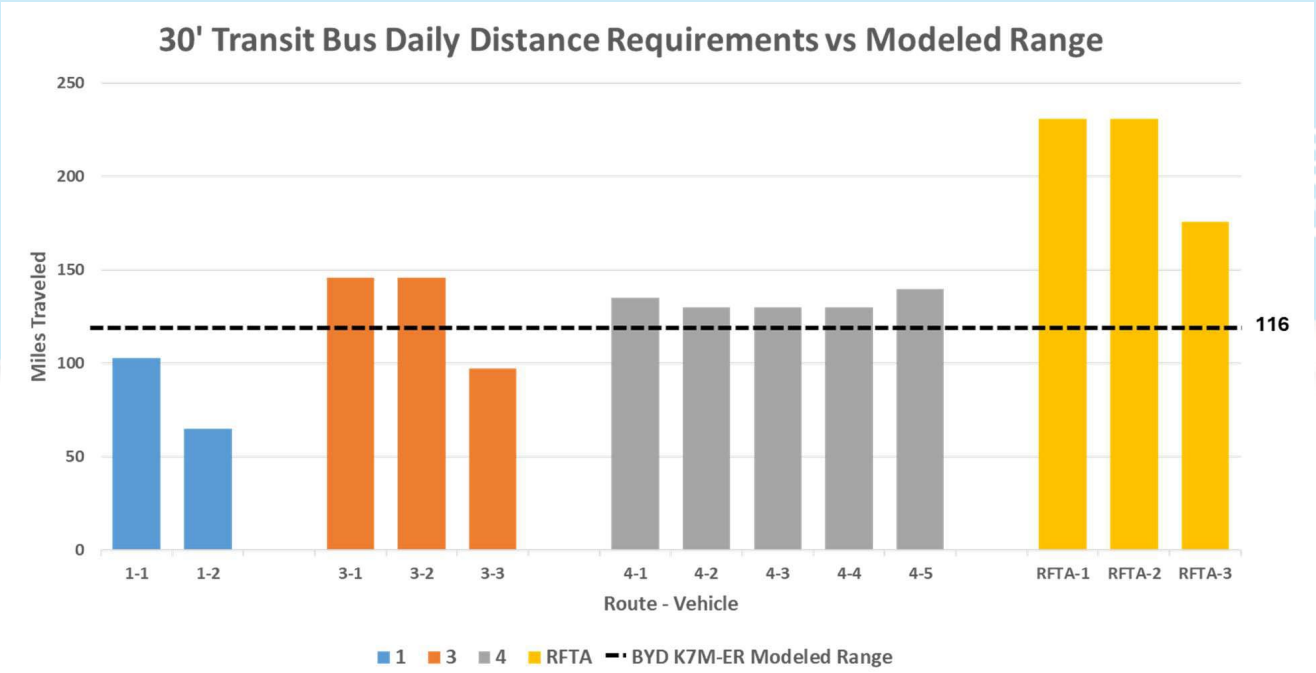
- The trouble with the 30’ Platform…
  - Only one bus in production
- Challenges with range
  - Smaller Platform = Less Batteries
  - Steep inclines degrade performance
  - Extreme temperatures degrade performance
  - Performance reductions over time
- Hydrogen not widely available
- Hybrid (traditional or plug-in) a possible transition technology
- Diesel auxiliary heaters an option for cold temperatures

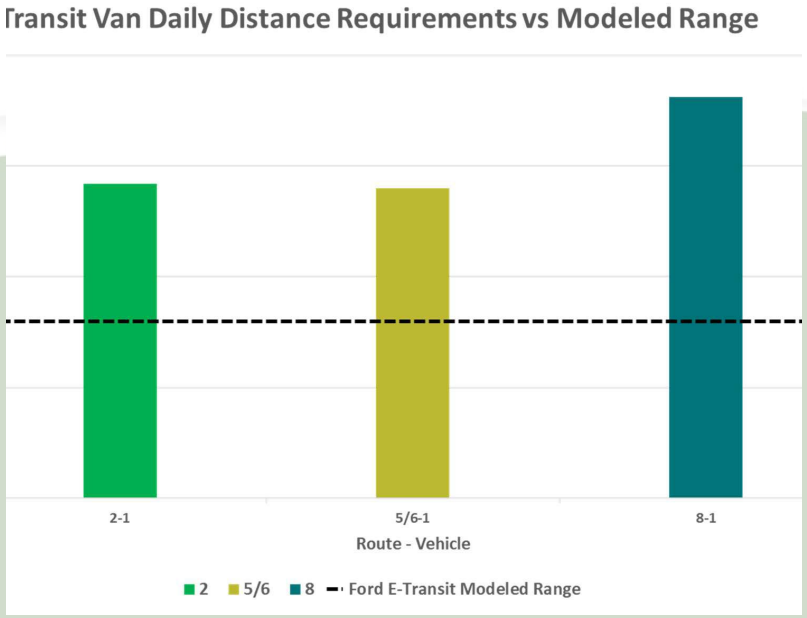




Operational Constraints

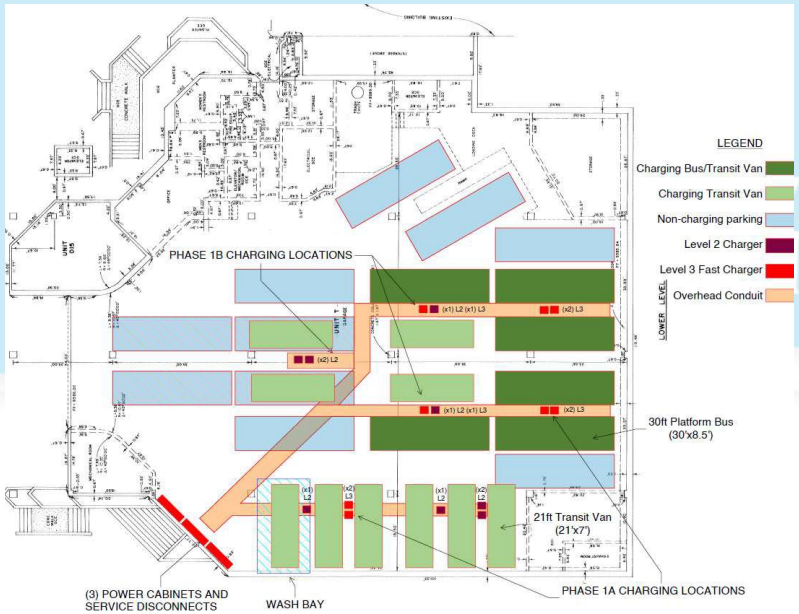
- Range Challenges to Operations
  - Current operations would not support available ranges
  - Re-blocking/interlining could be necessary
- Refueling Challenges to Operations
  - Buses require time between shifts to charge
  - Operations must be fit to match charging requirements
- Opportunity Charging
- Vehicle Swapping
- Re-Blocking

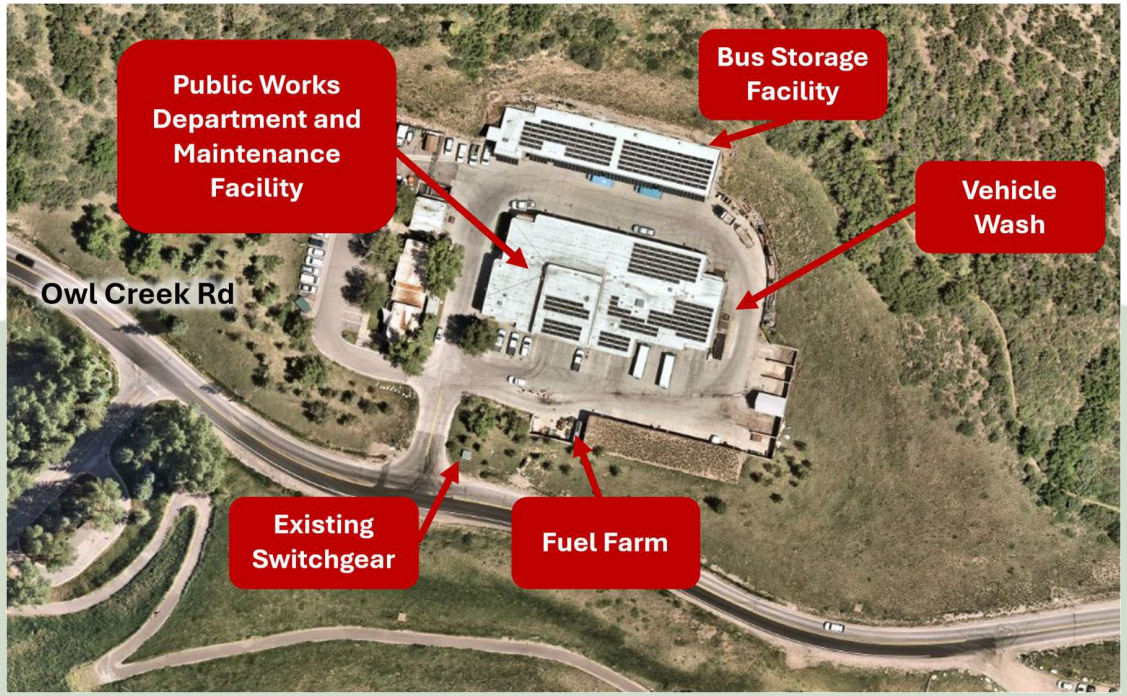




Facility Constraints

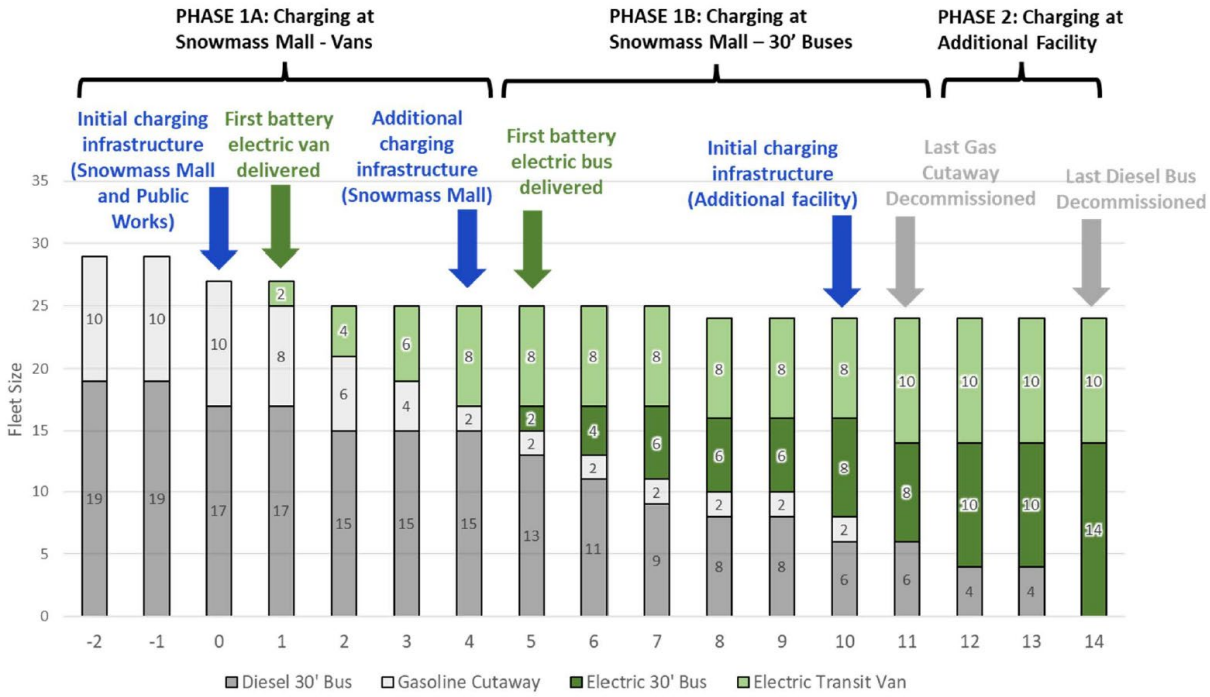
- Current facilities were not designed with EV Charging in mind
- Space constraints in current facilities make the logistics of charging a challenge
- Upsizing and/or adding transformers at facilities is a must
- Opportunities for charging at other sites are limited and logistically challenging





Phased Approach to Transition

- **Phase 0 (Years -2 to 0)**
  - Before the phased transition takes place, a study of current and potential future facilities should take place
- **Phase 1A (Years 0 to 4)**
  - Install initial charging infrastructure
  - Begin electric van transition
- **Phase 1B (Years 4-11)**
  - Install additional charging infrastructure
  - Begin electric bus transition
- **Phase 2 (TBD) (Years 12-14)**
  - If deemed necessary/possible begin installation of charging infrastructure at addition site.
  - Complete transition



Phase	Location	# of Chargers by Type		Notes
		Level 2	Level 3	
1A	Mall Transit Garage	-	4	Electrical capacity infrastructure investment should be made based on a full build-out scenario, but charger procurement has a phased approach. Initial chargers will primarily be used to charge vans.
1A	Snowmass Village Public Works Facility	4	-	Chargers are used for operational flexibility and maintenance needs.
1B	Mall Transit Garage	8	4	Charging capacity is met at the Mall Transit Garage. 16 vehicles can charge on a combination of Level 2 and Level 3 chargers. Chargers in Phase 1B will provide opportunity to charge buses once procured.
2	Additional Facility (TBD)	TBD	TBD	Charger procurement and infrastructure installation in Phase 2 should be coordinated with the confirmed fleet composition and size.
Total		12+	8+	

Fleet Procurement

- Electric vehicles more expensive to procure and maintain
  - $6k more per year for operating and maintenance buses
  - $10k more per year for operating and maintenance of vans
  - $4k more per van
  - $244k more per bus
- Fleet size can be reduced be 5 30’ buses to help offset cost increases
- Potential for low and no emission grant opportunities to help offset increased costs
- Charging infrastructure installation estimated at $2.25 million (2025 dollars)

	Diesel 30'	Gasoline Cutaway	BEB 30'	BEB Van
Vehicle Life	15	10	15	10
Miles per Year	13,296	13,270	13,296	13,270
Fuel Cost/Mile	$0.55	$0.41	$0.10	$0.04
Maintenance Cost/Mile	$0.58	$0.38	$1.50	$1.50
Annualized Lifetime Costs	$15,020.00	$10,480.00	$21,270.00	$20,410.00
Annualized Difference in Lifetime O&M Costs Compared to Diesel/Gasoline	Baseline	Baseline	+ $6,240.00	+ $9,930.00

Transition Year	ZEBs Purchased	Traditional Procurement Costs	Planned Zero Emission Fleet Procurement Costs	Cost Differential
1	(2) Van	$270,000	$278,000	$8,000
2	(2) Van	$270,000	$278,000	$8,000
3	(2) Van	$270,000	$278,000	$8,000
4	(2) Van	$270,000	$278,000	$8,000
Phase 1A Total Costs		**$1,080,000**	**$1,112,000**	**+ $32,000**

Transition Year	ZEBs Purchased	Traditional Procurement Costs	Planned Zero Emission Fleet Procurement Costs	Cost Differential
5	(2) Bus	$1,212,000	$1,700,000	$488,000
6	(2) Bus	$1,212,000	$1,700,000	$488,000
7	(2) Bus	$1,212,000	$1,700,000	$488,000
8	No purchases			
9	No purchases			
10	(2) Bus	$1,212,000	$1,700,000	$488,000
Phase 1B Total Costs		**$4,848,000**	**$6,800,000**	**+ $1,952,000**

Other Considerations

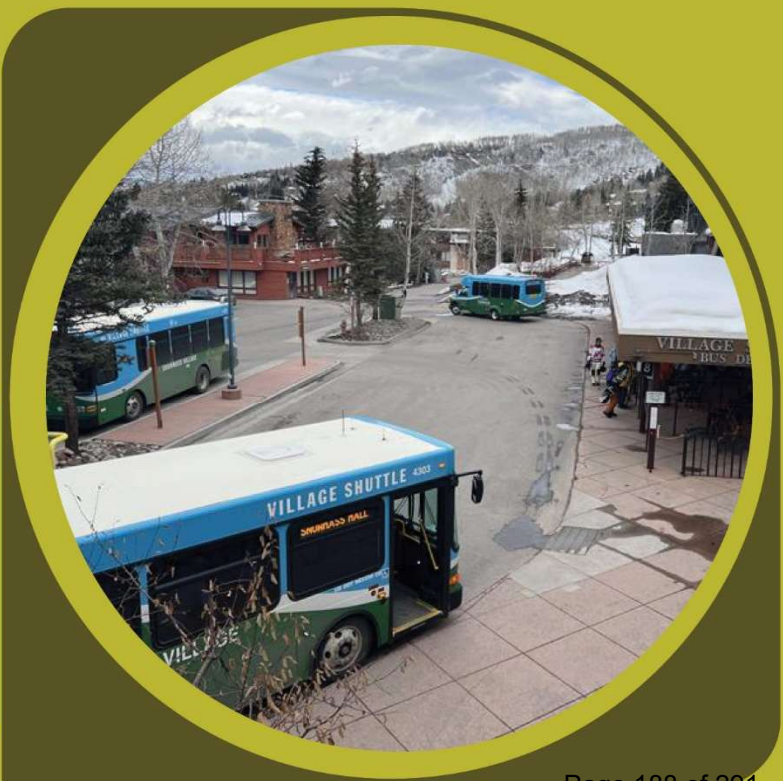
- Workforce Transition Plan
  - Phased training plan to take place in concert with Fleet Transition
- Plan to be implemented when criteria are met, rather than in a target year
- Holy Cross letter of support

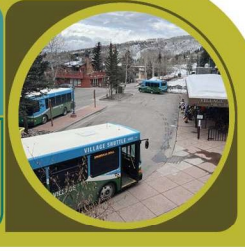
Next Steps

- Townwide Fleet Transition Plan Underway
- Van Transition Opportunities
  - Don’t necessarily need to wait for the 30’ buses to begin
- Future Facility Feasibility Study
- Local/Regional/Statewide/National Initiatives
  - Keeping up and staying involved with planning strategies on not only the local and regional level, but also the state and national level
  - May help to shape this plan in the future

Town of SNOWMASS Village

Zero Emission Bus Plan *2025*





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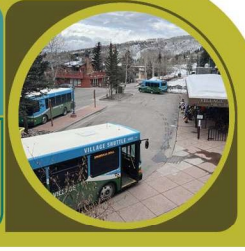

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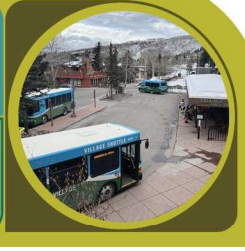

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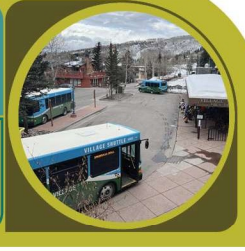

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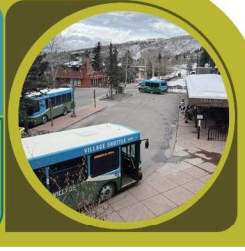

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EXECUTIVE SUMMARY

The Town of Snowmass Village (the Town) is pursuing the acquisition of zero-emission buses (ZEBs) to reduce operational emissions and meet the Town's sustainability goals. To prepare for potential federal funding opportunities and plan for a seamless transition to ZEBs, the Town prepared a Federal Transit Administration (FTA)-compliant ZEB Transition Plan for the Town's transit service, the Village Shuttle. The transition plan includes an overview of available technology types, an operational analysis of the Village Shuttle's existing operations, an electrical capacity evaluation of the Town's main transit facility, and outlines a strategy for transitioning to a fully electric fleet.

In the year following the completion of this ZEB plan, the Town will continue to pursue reduced emissions by initiating planning for a zero-emission vehicle (ZEV) fleet. The ZEV plan will build on this ZEB plan, specifically leveraging the electrical capacity evaluation completed herein to identify opportunities for shared assets supporting vehicle charging.

Phased Approach to Transition

The Town intends to implement a phased approach to transitioning to ZEBs, summarized in **Figure 1** and **Table 1**, targeting for a full transition 14 years after initial charging infrastructure is in place and the first battery electric van has been received. The first phase will focus on battery-electric vans for demand-response services, as this operation type offers greater flexibility for charging and vans have proven successful in the Town's unique environment during past testing periods. The initial focus on battery electric vans also aligns with the Town's goal to provide more robust demand-response service in the future, for the purposes of overall operational efficiency.

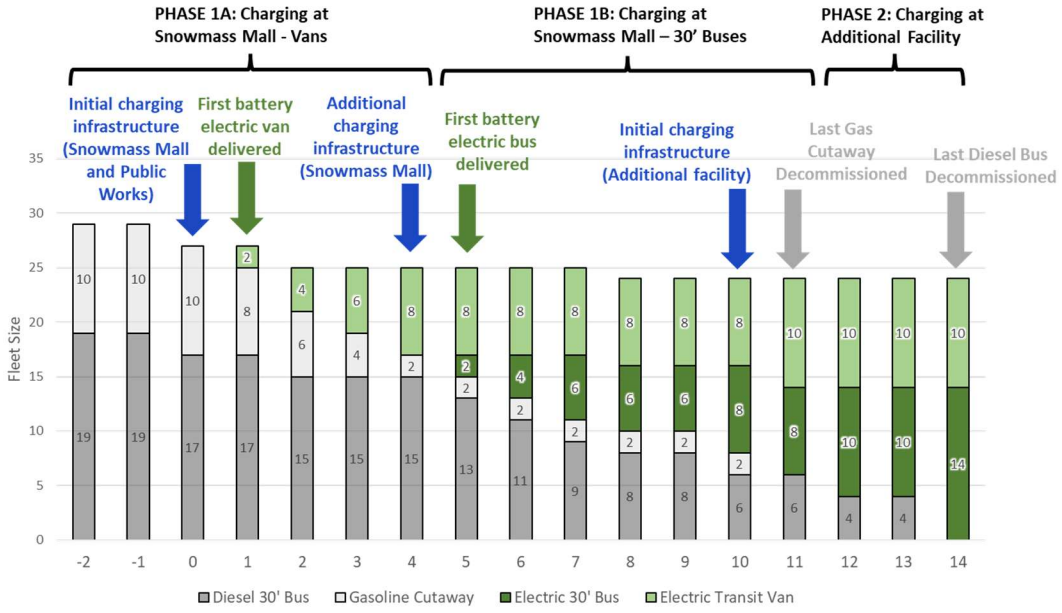


Figure 1: Fleet Transition Strategy

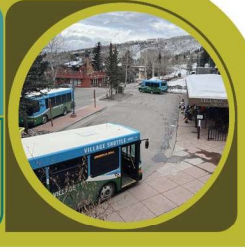


Table 1: Transition Strategy Milestones

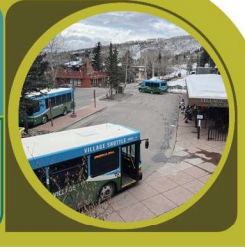
Transition Year	Milestones and Actions
-1	Undertake Operations and Maintenance Facility Master Planning effort to determine suitable locations for future consolidated charging location
0	Install initial charging infrastructure four Level 3 chargers at the Mall Transit Garage four Level 2 chargers at Public Works Facility
1	Receive and commission first two zero-emission vans, operated out of the Mall Transit Garage
3	Revisit transition plan based on current state of technology and advances in ZEB technology and availability
4	Install additional charging infrastructure four Level 3 chargers and up to eight Level 2 chargers at the Mall Transit Garage
5	Receive and commission first two zero emission; zero-emission 30' buses should not be procured unless two manufacturers have Altoona tested buses in operation, indicating long-term viability of the platform OR the Town has constructed a future facility that can accommodate 35' or 40' platform ZEBs
8	Revisit and reassess transition plan based on ZEB performance; determine final fleet size and composition
10	Install additional charging infrastructure at potential future consolidated facility
11	Decommission final gas cutaways/vans
14	Decommission final diesel buses; first year fleet could be 100% ZEB; fleet should not be fully transitioned to zero emission until ZEBs could complete current tasks on a 1 to 1 basis

Policies Guiding Full Fleet Transition

While the Town desires to move towards a Zero Emission transition, it wants to make sure that any such transition is done in a measured and realistic way. The intent of the transition is to reduce the fleet's impact on the environment, without sacrificing quality of service. To avoid degradation of quality or implementation of technology insufficient for the Town's needs, the full fleet transition plan, which will begin with the procurement of the first 30' electric transit bus, is guided by the following policies.

(1) TECHNOLOGY CONSTRAINTS

With the Town's current transit facilities, bus length is restricted to 30'. At present, only one manufacturer manufactures 30' ZEBs comparable to the Town's existing fixed route fleet. The transition strategy assumes that the market will evolve to include multiple 30-foot electric buses, enabling competitive procurement. The Town will adjust its transition strategy as needed to reflect market conditions. However, were a new operations and maintenance facility constructed capable of accommodating longer buses, the Town could procure 35' or 40' platform battery electric buses (BEBs). To ensure reliable BEBs are procured, regardless of length, ***the Town will not procure electric buses until at least two manufacturers produce a proven technology of a compatible platform length operating for at least two North American transit agencies.***



(2) OPERATIONAL CONSTRAINTS

The Town does not plan to significantly alter Village Shuttle blocking, routing, or fleet size to accommodate range constraints of ZEBs presently on the market. The Town will continue to monitor developments in ZEB technology and may make modifications to the transition strategy as technology develops. ***The Town will maintain a fleet of traditionally-fueled, long-distance vehicles until electric bus technology evolves to support fleet replacement on a 1:1 basis.***

(3) FACILITY CONSTRAINTS

The Town's existing operations and maintenance facility faces space limitations with the current Village Shuttle fleet size and vehicle length. A separate facility master planning effort will need to take place outside of this ZEB transition plan to determine how to best accommodate zero emission infrastructure. The infrastructure plan section of this ZEB transition plan is intended to serve as an input for that future effort. ***The Town will initiate and complete a facility master planning effort to develop an understanding of future facility expansion, reconfiguration, consolidation, or relocation requirements. This facility master planning effort is anticipated to be completed in the next two years, following completion of this plan.***

Cost Considerations

This transition plan includes cost estimates for ZEVs and infrastructure procurement (based on 2024 – 2025 cost data, which will change over time), as well as potential funding avenues. A transition to ZEVs for the Town represents an estimated 70% increase in spending on operations and maintenance and an estimated 26% increase in spending on vehicle procurement over a traditionally fueled fleet. Additionally, a ZEB transition will necessitate an infrastructure investment of $2.25 million at the Snowmass Village Mall Transit Garage.

INTRODUCTION

The is pursuing the acquisition of ZEBs to reduce operational emissions. The Bipartisan Infrastructure Law (BIL) requires that any federal grant application for projects related to ZEBs must include a zero-emission transition plan. Therefore, the FTA requires a Zero-Emission Bus Transition Plan from each transit agency that applies for the FTA Low or No Emission Grant Program—5339 (c)—and the FTA Bus and Bus Facilities Grant Program—5339 (a)—for zero-emission projects.

As per FTA, this Zero-Emission Bus Transition Plan includes the following six elements:

1. **Fleet Plan:** Demonstration of a long-term fleet management plan with a strategy for how the applicant intends to use the current request for resources and future acquisitions
2. **Fuel Plan:** Description of the partnership of the applicant with the utility or alternative fuel provider
3. **Facility & Infrastructure Plan:** Evaluation of existing and future facilities and their relationship to the technological transition
4. **Funding Plan:** Address the availability of current and future resources to meet costs for the transition and implementation
5. **Policy & Legislative Impacts:** Consideration of policy and legislation impacting relevant technologies
6. **Workforce Transition Plan:** Examination of the impact of the transition on the applicant's current workforce by identifying skill gaps, training needs, and retraining needs of the existing workers. This focuses on supporting the applicant's short-term and long-term needs to operate and maintain ZEBs while avoiding displacement of the existing workforce

The Town's ZEB transition plan includes each of these required elements, which will guide the Town's investments and strategy in the coming years. In addition to these required elements, this plan includes a Transition Strategy section that combines the details of the phasing of bus procurement and facility improvements necessary into a succinct description and timeline of the elements that comprise a successful ZEB transition. While this plan identifies a goal and current trajectory of 100 percent ZEBs in 2041, this target will be continually reevaluated and revised based upon changing markets, emerging technologies, and battery-electric technology's ability to meet service and operational requirements.

TRANSITION STRATEGY OVERVIEW

The Transition Strategy is composed of the **Fleet Plan**, the **Fuel Plan**, and the **Facility & Infrastructure Plan**. The **Fleet Plan** provides a summary of the Town's current transit fleet, current transit operations, and their estimated compatibility with ZEBs. All descriptions of current fleet and operations reflect the conditions as of December 2025, and apply to all analysis, tables, and figures contained within the **Fleet Plan**. The findings summarized in this section were established through reviews of original equipment manufacturers (OEMs) and service and fleet data provided by the Town. The **Fuel Plan** provides an overview of various charging types and proposes a charging strategy for the Town's future zero-emission fleet. This section also documents coordination completed with Holy Cross Energy, the energy provider for the Town, on electrical capacity for charging. The **Facility & Infrastructure Plan** highlights the current transit facilities used by the Town and their compatibility with ZEB charging, while also outlining the need to explore a future additional facility. These three plans inform the Transition Strategy for the Town, which is detailed in the **Transition Strategy Summary**.

The transition strategy is guided by three policy statements:

(1) Technology Constraints: The Town will not procure electric buses until at least two manufacturers produce a proven technology of a compatible platform length operating for at least two North American transit agencies.

The Town wants to preserve the viability of the 30' platform through a diversity of options while it occupies its current transit facility. With ZEB manufacturers moving away from producing 30' platform buses (see **Appendix A: State of the Industry Technical Memorandum**) and only one OEM currently having a 30' ZEB in operation, the Town should remain responsive to the market. To ensure competitive ZEB procurement, 30' electric bus procurement will be contingent on the conditions outlined by the Town. However, should a future facility be constructed with capacity for 35' or 40' ZEBs, the Town can consider procurement of other, more widely-produced platforms.

(2) Operational Constraints: The Town will maintain a fleet of traditionally-fueled, long-distance vehicles until electric bus technology evolves to support fleet replacement on a 1:1 basis.

Electric bus technology has not evolved sufficiently to accommodate all daily vehicle tasks of the Town's preferred service. While many tasks are compatible with ZEB range and could be transitioned given current technology, the Town prefers to maintain some traditionally fueled buses until a 1:1 range equivalent is available for those buses. This strategy will limit disruptions to the Town's transit service from range constraints while ensuring the Town's fleet does not need to grow in size to accommodate a ZEB transition.

(3) Facility Constraints: The Town will initiate and complete a facility master planning effort to develop an understanding of future facility expansion, reconfiguration, consolidation, or relocation requirements. This facility master planning effort is anticipated to be completed in the next two years, following completion of this plan.

Space limitations at the Town's current transit facilities serve as a limitation to a full ZEB transition. Based on the conceptual bus charging layout for the Snowmass Village Mall Transit Garage shown in **Appendix B: Charging Layout**, current facility capacity does not support a full ZEB fleet. The Town

will conduct a facility master planning effort to determine future facility needs with the anticipation of supporting a 100% ZEB fleet at a consolidated facility.

FLEET PLAN

The Fleet Plan is a long-term management plan that outlines how the Town intends to transition its current transit fleet to ZEBs. This section is one of three parts which comprise the Transition Strategy: **Fleet Plan**, **Fuel Plan**, and **Facility & Infrastructure Plan** – a summary of the findings of all these sections can be found within the **Transition Strategy Summary** covered later in this document.

Operations and Fleet

OPERATIONS

The Town's service provisions vary significantly across the year, with each season having different demands for service. For this analysis, winter service levels were modeled against ZEB performance because winter has the highest level of service operated by the Town to support the influx of activity driven by the Town's status as a popular ski destination. During the winter, the Town operates six routes (1, 2, 3, 4, 5/6, and 8) at their highest frequency. The spring/fall shoulder service that the Village Shuttle operates on behalf of the Roaring Fork Transportation Authority (RFTA) was included among the routes modeled for ZEB compatibility because of the considerable distance traveled on this route. This route will be known as the "RFTA Shoulder Service" throughout the remainder of this memo.

The Town provided inputs to define a "preferred future service" in the winter season, including span of service, number of operational vehicles, frequency, and route distance. **Table 2** summarizes the preferred future service provided by the Town including the baseline service and peak overlay service, which refers to a service that operates only during peak travel times to complement the baseline service. For simplicity, the analysis assumes that routes are not interlined, meaning that it is assumed that each vehicle in service will operate on one route per day.

Table 2: Town of Snowmass Village Preferred Future Service

Route	Route Distance (miles)	Max Vehicles in Operation	Baseline Service		Peak Service Overlay	
			Departures per hour	Number of hours	Departures per hour	Number of hours
1	3.0	2	4	11.5	2	5.5
2	3.0	1	3	16	*no peak service overlay*	
3	7.0	3	4	11	2	5.5
4	5.2	5	12	10.5	3	1.5
5/6	3.3	1	3	14	*no peak service overlay*	
8	5.7	1	2	16	*no peak service overlay*	
RFTA Shoulder Service	11.0	3	4	8	2	12.5

Additional details of the approximate span of service and frequency on each route are as follows:

- **Route 1:** 15-minute headways 6:30 AM – 6:00 PM; 30-minute headways 6:00 PM – 11:30 PM

- **Route 2:** 20-minute headways from 6:30 AM – 10:30 PM
- **Route 3:** 15-minute headways from 6:30 AM – 5:30 PM; 30-minute headways from 5:30 PM – 11:00 PM
- **Route 4:** 5-minute headways from 7:00 AM – 5:30 PM; 20-minute headways from 6:30 AM – 7:00 AM, 5:30 PM – 6:30 PM
- **Route 5/6:** 20-minute headways from 7:00 AM – 11:00 PM
- **Route 8:** 30-minute headways from 7:00 AM – 11:00 PM
- ***RFTA Shoulder Service:*** *30-minute headways from 6:00 AM – 2:00 AM; peak hour increases – 4 hours in the morning and 4 hours in the afternoon of 15-minute headways*

Figure 2 summarizes the Town's preferred future service by vehicle, showing the distance each vehicle would travel over a typical day. This shows the Town's span of service and the distance traveled by each vehicle during the service window, approximating the range required for each vehicle on each route. This allows for comparison of the Town's vehicle tasks with the modeled range of ZEBs.

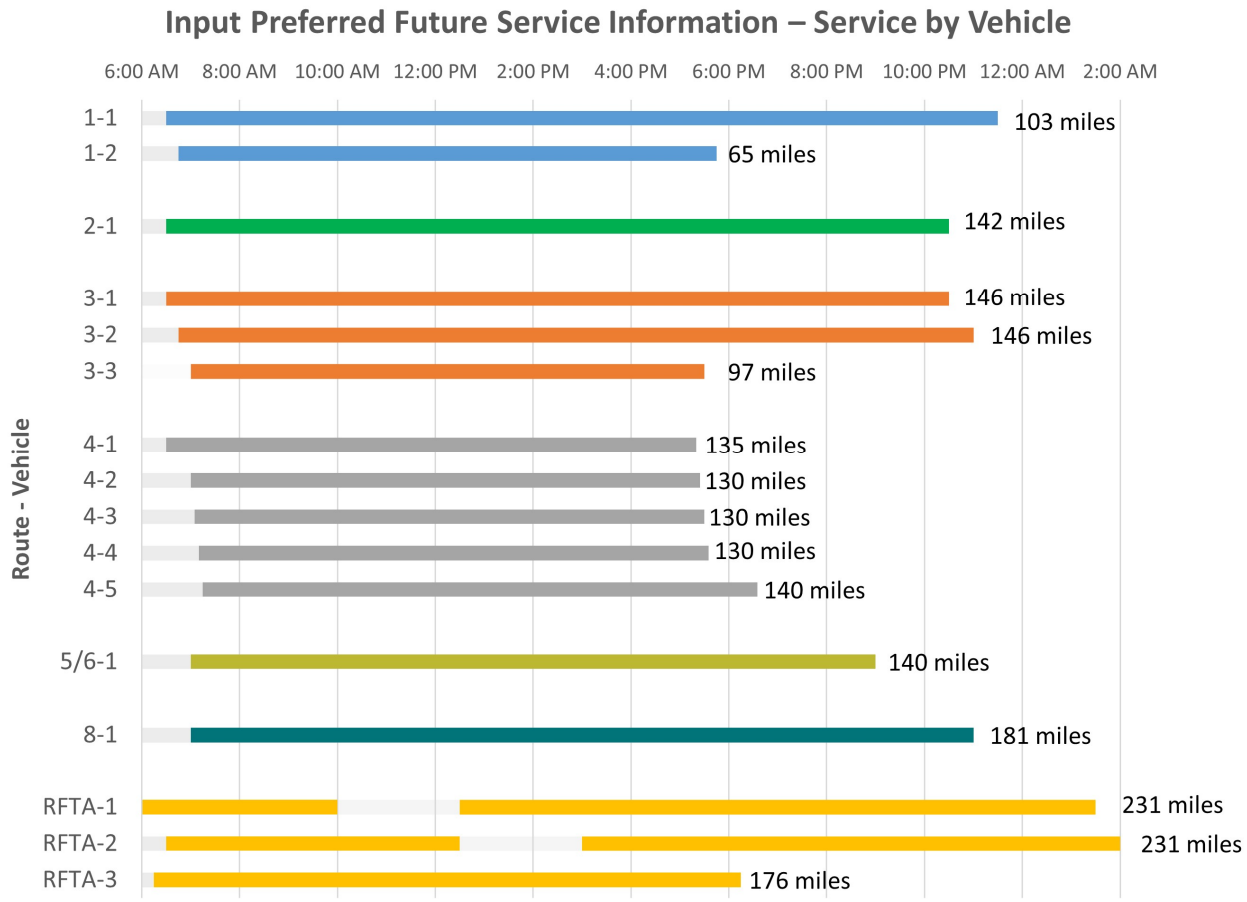


Figure 2: Input Preferred Future Service Information - Service by Vehicle

CURRENT FLEET

The Town currently operates two types of traditionally fueled vehicles: Ford E450 Cutaways and 29' Gillig Low Floor Transit Buses. The Ford E450 Cutaways are typically operated on Routes 2, 5/6, and 8, while the Gillig buses are typically operated on Routes 1, 3, and 4, and the RFTA Spring and Fall Shoulder Service.[1] The Town owns 10 cutaways and 19 transit buses. The composition of the fleet is shown in

Table 3, with acquisition year and end of useful life also indicated. **It is critical to note that the Town intends to downsize the fleet to 24 vehicles to ensure efficient fleet sizing and match future service goals, which is described further in the following section.**
The end of useful life year for each bus was estimated using the year of procurement of the bus and Colorado Department of Transportation (CDOT) Group Transit Asset Management (TAM) plan useful life benchmarks (ULB)[2]. These ULBs are estimated at 10 years for a cutaway and 15 years for a bus.

Table 3: Town of Snowmass Village Current Transit Fleet

Make	Model	Fuel Type	Length	Acquisition Year	End of Useful Life Estimate
Ford	E450 Cutaway	Gas	22.5'	2017	2027
Ford	E450 Cutaway	Gas	22.5'	2017	2027
Ford	E450 Cutaway	Gas	22.5'	2019	2029
Ford	E450 Cutaway	Gas	22.5'	2019	2029
Ford	E450 Cutaway	Gas	22.5'	2019	2029
Ford	E450 Cutaway	Gas	22.5'	2021	2031
Ford	E450 Cutaway	Gas	22.5'	2021	2031
Ford	E450 Cutaway	Gas	22.5'	2021	2031
Ford	E450 Cutaway	Gas	22.5'	2021	2031
Ford	E450 Cutaway	Gas	22.5'	2022	2032
Gillig	Low Floor	Diesel	29'	2011	2026
Gillig	Low Floor	Diesel	29'	2011	2026
Gillig	Low Floor	Diesel	29'	2011	2026
Gillig	Low Floor	Diesel	29'	2011	2026
Gillig	Low Floor	Diesel	29'	2012	2027
Gillig	Low Floor	Diesel	29'	2012	2027
Gillig	Low Floor	Diesel	29'	2013	2028
Gillig	Low Floor	Diesel	29'	2013	2028
Gillig	Low Floor	Diesel	29'	2014	2029

[1] The Town operates a fixed route service during the spring and fall seasons as a contracted service for RFTA. This route travels between Snowmass Village and the Brush Creek Park & Ride and is operated using Village Shuttle buses.
[2] Colorado Department of Transportation. (2023). Colorado Department of Transportation Group Transit Asset Management Plan. www.codot.gov/programs/transitandrail/assets/plans-studies-reports/cdot-sponsored-group-transit-asset-managment-plan/2023-cdot-group-tam-plan-combined_02-28-2023.pdf

Make	Model	Fuel Type	Length	Acquisition Year	End of Useful Life Estimate
Gillig	Low Floor	Diesel	29'	2014	2029
Gillig	Low Floor	Diesel	29'	2015	2030
Gillig	Low Floor	Diesel	29'	2015	2030
Gillig	Low Floor	Diesel	29'	2015	2030
Gillig	Low Floor	Diesel	29'	2017	2032
Gillig	Low Floor	Diesel	29'	2017	2032
Gillig	Low Floor	Diesel	29'	2017	2032
Gillig	Low Floor	Diesel	29'	2021	2036
Gillig	Low Floor	Diesel	29'	2022	2037
Gillig	Low Floor	Diesel	29'	2023	2038

REDUCED FUTURE FLEET SIZE

The Town plans to decrease the total size of its transit fleet to 24 vehicles, which is the fleet size that would allow the Town to run its desired levels of future transit service while facilitating more efficient operations. With advancing technology, improved facilities, and adjusted blocking and interlining, the Town could likely replace the current diesel fleet vehicles on a 1:1 basis with electric vehicles in the future. The Town also recognizes the opportunity to downsize its transit fleet as a way to partially offset cost of a more expensive zero-emission fleet. The composition of the reduced future fleet size is detailed in **Table 4**.

Table 4: Town of Snowmass Village Reduced Future Fleet Size

Vehicle Type	Operational Vehicles	Spare Vehicles	Total Vehicles
30' Transit Bus	10	4	14
Transit Van	7	3	10
Total	**17**	**7**	**24**

ZEB Daily Task Feasibility Assessment

This section assesses the suitability of ZEBs to complete the Town's existing operations. Using ZEBs identified in **Appendix A: State of the Industry Technical Memorandum**, a series of range reduction factors were applied to the OEM-advertised vehicle ranges to approximate vehicle performance on a typical day of service. These modeled ranges were then compared to the daily distance requirements of each vehicle used in the Town's future preferred service provision. The resulting feasibility of ZEBs on each route then served to inform the Fleet Transition Strategy. Only BEBs were utilized for this analysis, as hydrogen fuel cell electric vehicles were not identified as a viable and/or compatible vehicle type for the Town's future fleet. Please see **Appendix A: State of the Industry Technical Memorandum** for further information on hydrogen fuel cell infeasibility.

MODELED ZEB RANGE

Battery Capacity

The Town has completed an assessment of BEB technology for the purpose of conservatively estimating vehicle range, based on the understanding that the capacity and range advertised by the manufacturer is not fully usable in actual operations. Electric batteries degrade, which occurs over time as the battery loses its ability to hold a charge. **Figure 3** highlights the effects of battery degradation. When the battery is new the first 10% of the battery should be reserved for longevity. The remaining 90%, referred to as service energy, is the portion of battery capacity that is useable. The service energy is designed to protect battery life.[3] The last 10% will hold the bus to a derated performance, and the BEB will not experience the same range per kilowatt hour (kWh) as it would with the rest of the battery. Below 5%, the energy supplied by the battery will be insufficient to move the bus. When the battery degrades, the 10% reserved for longevity and 10% that holds the bus to derated performance remain the same. For example, in a 213 kWh battery, the 10% reserved for longevity will remain at 21.3 kWh no matter the level of degradation the battery has experienced. See **Appendix A: State of the Industry Technical Memorandum** for further details on battery capacity and degradation.

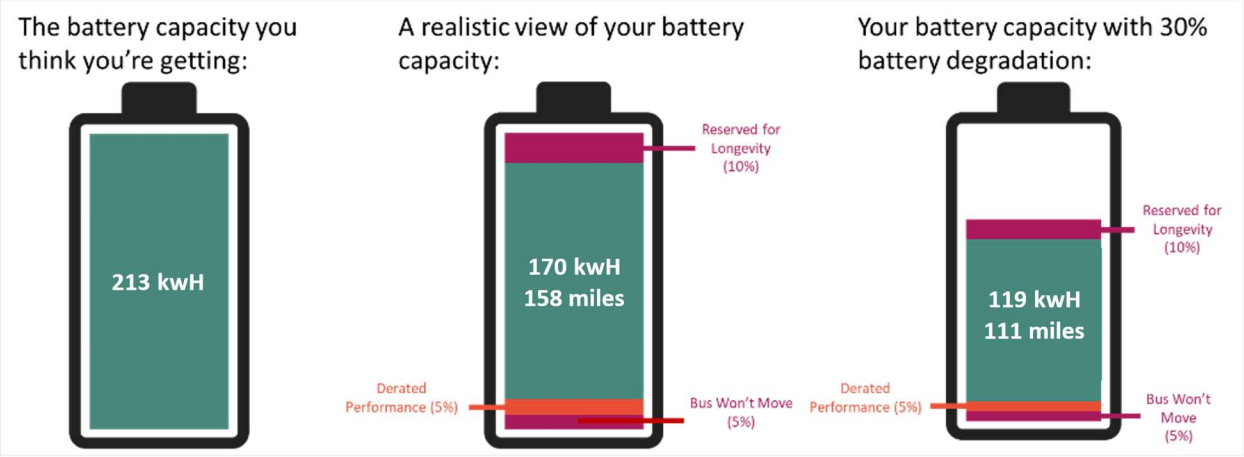


Figure 3: BEB Battery Degradation

Depending on the BEB manufacturer and details outlined in the bus procurement contract, OEMs typically provide an initial warranty on the battery, which often guarantees between 70-80% of the kWh of a new battery. This warrantied amount of battery life is typically calculated against the stated range of the battery, rather than the actual range of the battery not including a reserve. For example, if the battery is advertised at 213 kWh nameplate capacity, the actual benchmark amount covered and replaced by the warranty could be anywhere between 149 kWh and 170 kWh. This highlights the need to plan for lifetime and warrantable battery degradation to account for a vehicle's ability to complete its

[3] Mountain Line Transit. 2020. Zero-Emission Bus Implementation Plan. Retrieved from: mountainline.az.gov/wp-content/uploads/2021/03/Phase-2-Implementation-FINAL.pdf

required tasks. As noted above, the amount of battery degradation covered by the warranty is dependent on negotiation with the OEM and can influence the purchase price of the BEB.

Local Context Considerations-Climate and Topography

BEBs use the vehicle battery to operate all functions of the vehicle. The constant heating demand present in cold climates like Snowmass Village causes the battery to deplete quicker than it would in moderate climates. To mitigate these impacts, peer agencies such as TransFort in Fort Collins and the Town of Vail have utilized diesel auxiliary heaters on BEBs to help offset the impact of heating on the battery—though these heaters produce emissions, they are minor and can significantly increase the range of a BEB in cold conditions. Since climate and extreme temperatures can impact the ability of a battery to maintain a charge, it is important to understand to what degree this may impact the Town's operations. **Figure 4** shows the average highs and lows throughout the year in Snowmass Village. The solid red line shows the average high and the solid blue line shows the average low. July tends to be the hottest month in Snowmass Village, with an average high of 75°F. January is the coldest month with the average low of around 8°F.

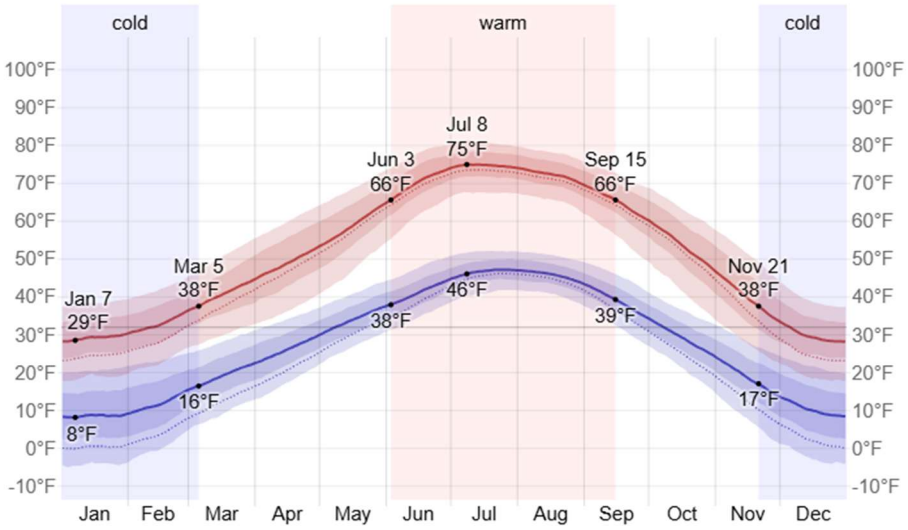


Figure 4: Town of Snowmass Village Monthly Average High and Low Temperatures[4]

To compare the yearly temperatures of Snowmass Village to the experiences of transit agencies deploying BEBs, **Figure 5** shows observed battery performance for a BEB in a range of temperatures. The agencies included in this analysis represent a variety of climates (District Department of Transportation (DDOT) in Washington, DC; Seneca Transit in Seneca, SC; Duluth Transit Authority (DTA) in Duluth, MN; and Worchester Regional Transit Authority (WRTA) in Worchester, MA). In general, these agencies saw battery performance peaking at around 60°F, with efficiency declining at higher and lower

[4] Weather Spark. 2025. Climate and Average Weather Year-Round in Town of Snowmass Village, Colorado. weatherspark.com/y/3371/Average-Weather-in-Snowmass-Village-Colorado-United-States-Year-Round

temperatures. Because Snowmass Village frequently experiences temperatures on both ends of this spectrum throughout the year, the Town will need to be prepared for fluctuations in the actual ranges of BEVs.

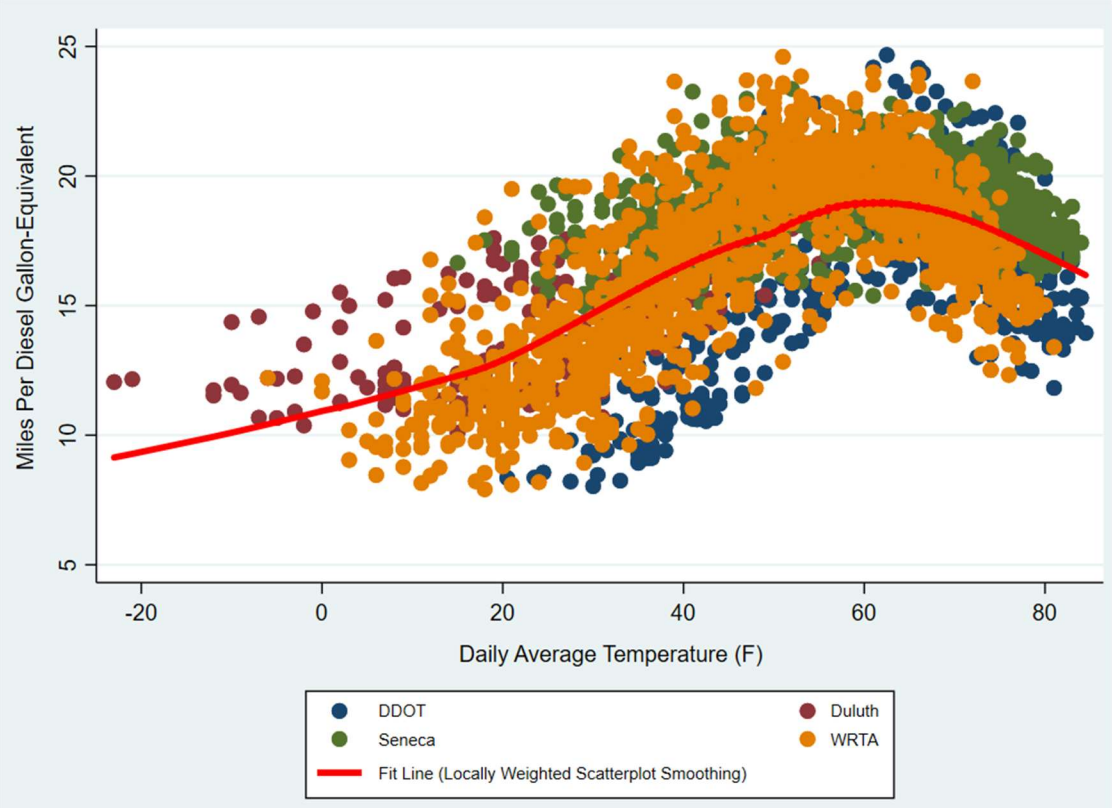


Figure 5: Miles per diesel gallon-equivalent fuel economy for BEVs[5]

A 2019 report published by the Center for Transportation and the Environment (CTE) along with the Midwest Hydrogen Center of Excellence (MHCoE), Cleveland State University (CSU), and the Stark Area Regional Transit Authority (SARTA) evaluates the relationship between ambient temperature and fuel economy of ZEBs.[6] The analysis found that when the ambient temperature fell from around 50-60°F to 22-32°F, BEBs lost about 37.8 percent of their range. This consideration is crucial in the successful transition to ZEB technology for the Town, given the low winter temperatures.

[5] Mark Henning, Andrew R. Thomas, Alison Smyth. 2019. An Analysis of the Association between Changes in Ambient Temperature, Fuel Economy, and Vehicle Range for Battery Electric and Fuel Cell Electric Buses. Retrieved from: engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=2634&context=urban_facpub

[6] Alison Smyth, Mark Henning, Andrew Thomas in partnership with Midwest Hydrogen Center of Excellence (MHCoE), Cleveland State University, and the Stark Area Regional Transit Authority (SARTA). 2019. Analysis of Cold Weather Impacts on ZEBs. Retrieved from: cte.tv/cold-weather-study-2019/

Topography

Topography can impact the range of BEBs, though existing benchmarking and trials of demanding routes to better understand a vehicle's energy need when navigating topographically more challenging areas are limited. A 2022 study evaluated the performance and energy consumption of BEBs driving terrain demanding routes in Europe.[7] This study shows that routes with elevation increases require significantly more energy. This is amplified by low outside temperatures. Even though the authors concluded that buses at higher elevations have higher energy consumption on hilly roads compared to flat roads, they recommend real-life testing to better understand each route's topography and impact on battery range. With current research unable to quantify the exact impact of topography on battery range, this variability is accounted for by conservative battery capacity estimates when modeling vehicle range.

Vehicle Range

The Town has modeled BEB performance for existing routes based on battery capacity estimates and daily operating range. Operating the Heating, Ventilation, and Air Conditioning (HVAC) system during hot or cold temperatures draws power away from the systems that power the bus propulsion, significantly reducing the amount of battery power available to propel the vehicle. Batteries also degrade over time, and over the lifetime of a BEB, they can degrade significantly.

To analyze the potential for BEB deployment on the Town's existing scheduling and blocking, a route analysis estimated the range of a BEB in nominal conditions. The route analysis is based on the range estimates shown in

Table 5 and **Table 6**, modeling the range of a 313 kWh BYD K7M-ER 30' Bus and a 89 kWh Ford E-Transit Van in various conditions to create conservative estimates of the maximum daily range for the Town's fixed-route fleet.[8] It is assumed based on existing operating practices that Routes 1, 3, 4, and the RFTA shoulder service will use the 313 kWh BYD K7M-ER 30' Bus and Routes 2, 5/6, and 8 will use the 89 kWh Ford E-Transit Van. More information on these comparable vehicles can be found in **Appendix A: State of the Industry Technical Memorandum.**

Analyzing BEB feasibility to create a reliable estimate of usable battery capacity estimates must model a difficult day for the battery capacity of the bus, estimating intensive HVAC usage or other conditions which would reduce the range of a BEB. To account for these factors, the feasibility model developed by the Town accounts for battery degradation of up to 30% of the original battery capacity, representing a bus operating with 70% of the battery's original capacity. Although batteries can degrade well beyond 70% of their original capacity, this threshold was chosen based on warranty practices observed in the current market. The assumed impacts of these strenuous conditions are detailed in **Appendix A: State of the Industry Technical Memorandum**.

Table 5: Battery Capacity and Ranges for a BYD K7M-ER

Battery Condition	Battery Capacity (kWh)	Range (miles)

[7] www.sciencedirect.com/science/article/pii/S1364032122004543

[8] A 313 kWh BYD K7M-ER 30' Bus and an 89 kWh Ford E-Transit Van were identified as the model vehicles because of their similar size and capacity to the vehicles currently operated by the Town.

	New	70% Battery Capacity	New	70% Battery Capacity
Advertised Capacity	313	219	N/A	N/A
Usable Capacity	240	165	188	129
Perceived Capacity in Nominal Conditions	216	149	169	116

Table 6: Battery Capacity and Ranges for a Ford E-Transit

Battery Condition	Battery Capacity (kWh)		Range (miles)	
	New	70% Battery Capacity	New	70% Battery Capacity
Advertised Capacity	89	62	N/A	N/A
Usable Capacity	61	40	137	89
Perceived Capacity in Nominal Conditions	55	36	123	80

ROUTE FEASIBILITY

The following analysis models the effects of moderate HVAC usage on a vehicle operating with 70% of the battery's original capacity. This conservative approach to modeling allows for the vehicle's efficiency to fluctuate without overestimating what the bus may be capable of doing on a day-to-day basis. The analysis is conducted route-by-route, demonstrating ZEB compatibility with the daily vehicle distance requirements on each route. The distance traveled by each vehicle on each route was calculated using the preferred future service inputs provided by the Town, detailed in the "Operations" section of this memo. Using this service provision as an input, the analysis modeled compatibility of each route/vehicle combination with either a BYD K7M-ER or Ford E-Transit. The results of this feasibility analysis are shown below in **Figure 6** and **Figure 7** for the BYD K7M-ER or Ford E-Transit vehicles, respectively.

Again, this analysis assumes that there is no interlining of vehicles and is based on a hypothetical assignment of vehicles to single routes per day of service.

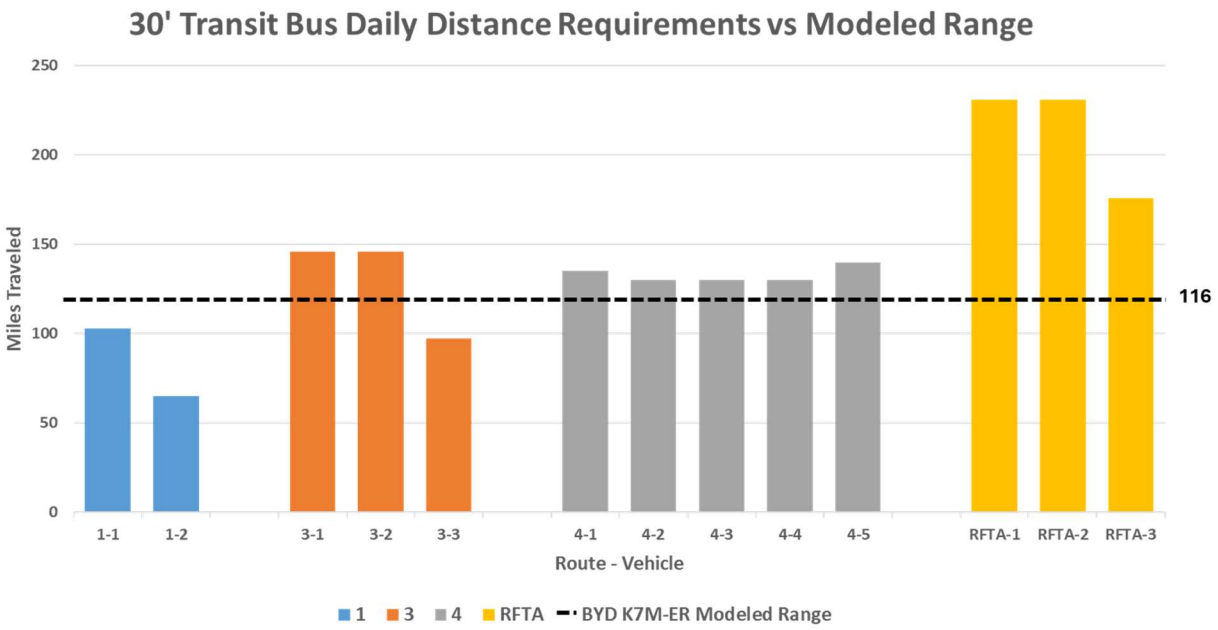


Figure 6: Current Daily Distance Requirements vs BYD K7M-ER Modeled Range

Routes 1, 3, 4, and the RFTA shoulder service currently utilize a transit bus, with the BYD K7M-ER being a comparable ZEB alternative. Three of the Town's current daily vehicle tasks could be served by the BYD K7M-ER when analyzed under these conditions. With the application of a margin of error of 20 miles of vehicle range, seven tasks could be served by the BYD K7M-ER. Based on the projected performance of currently market-available zero-emission transit buses, additional buses would be needed to complete desired service on these routes, especially under strenuous conditions where battery efficiency would be reduced. **Table 7** gives a detailed breakdown of the ZEB compatibility with the Town's current vehicle tasks, showing the number of ZEBs that would be required to complete that day of service. Because additional vehicles would be required to operate desired service on many of the Town's routes, the Town will not immediately procure 30' ZEBs. Traditionally fueled vehicles will be maintained until there is a 1:1 ZEB equivalent, as outlined in **Policy Statement 1**.

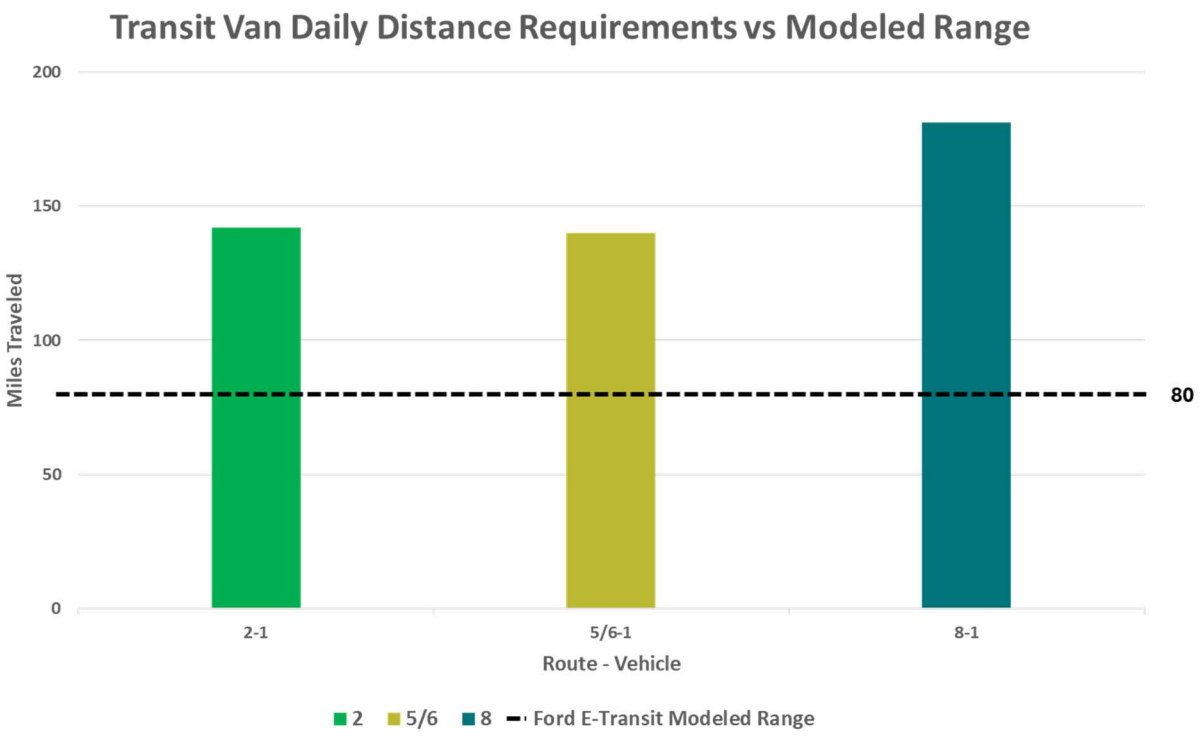


Figure 7: Transit Van Daily Distance Requirements vs Ford E-Transit Modeled Range

Routes 2, 5/6, and 8 currently utilize cutaways, with the Ford E-Transit being a comparable zero-emission van alternative. Given the Town's desire to transition their cutaways to vans in the future, zero emission cutaways were not considered for this analysis.

None of the Town's current vehicle tasks could be served by a single Ford E-Transit van under these conditions. The application of a margin of error of 20 miles of vehicle range does not qualify any additional tasks for service by a Ford E-Transit van. The Town anticipates using these vans primarily for demand response services in the future, though, which will create natural breaks for charging throughout the day of service. Based on the projected performance of zero-emission transit vans on this service and the state of the market for battery electric transit vans, additional vans would be necessary to complete desired service on these routes, especially under strenuous conditions where battery efficiency would be reduced.

A detailed breakdown of the ZEB compatibility with the Town's current vehicle tasks is located in **Table 7**, showing how many ZEBs would be required to complete that day of service.

Table 7: ZEB Fleet Requirements

Route	Vehicle	Vehicle Type	Distance	Total ZEB Requirements
1	1	30' Transit Bus	103	1
1	2	30' Transit Bus	65	1
2	1	Transit Van	142	2
3	1	30' Transit Bus	146	2
3	2	30' Transit Bus	146	2
3	3	30' Transit Bus	97	1
4	1	30' Transit Bus	135	2
4	2	30' Transit Bus	130	2
4	3	30' Transit Bus	130	2
4	4	30' Transit Bus	130	2
4	5	30' Transit Bus	140	2
5/6	1	Transit Van	140	2
8	1	Transit Van	181	3
RFTA	*1*	*30' Transit Bus*	*231*	*2*
RFTA	*2*	*30' Transit Bus*	*176*	*2*
RFTA	*3*	*30' Transit Bus*	*231*	*2*

Key: **GREEN** (meets vehicle range constraints), **YELLOW** (within margin of error of vehicle range – 20 miles), **RED** (does not meet vehicle range constraints)

Table 8: Future Fleet Composition vs ZEB Fleet Composition

Future Fleet Composition				ZEB Fleet Composition			
Vehicle Type	Operational Vehicles	Spare Vehicles	Total Vehicles	Vehicle Type	Operational Vehicles	Spare Vehicles	Total Vehicles
30' Transit Bus	10	4	14	**30' Transit Bus**	17	4	21
Cutaway	7	3	10	**Transit Van**	7	2	9
Total	**17**	**7**	**24**	**Total**	**24**	**6**	**30**

Note: the fleet needs of the RFTA shoulder service are not factored into the ZEB Fleet Composition, as this service operates in the off season and would not require additional vehicles

A full ZEB transition, given current ZEB range constraints, would require an increase in fleet size compared to the Town's required future fleet of 24 vehicles. A single day's service would need 30 ZEBs in operation as opposed to 24 traditionally fueled vehicles, as seen in

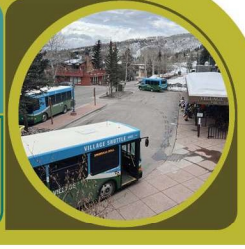
Table 8. Notably, the ZEB fleet size was developed using modeling that did not include interlining, which may create additional efficiencies in fleet size.

Per **Policy Statement 1**, **the Town will maintain a fleet of traditionally fueled, long-distance vehicles until electric bus technology evolves to support fleet replacement on a 1:1 basis.** Therefore, while route modeling based on current vehicle technology indicates that 30 ZEBs would be needed to operate the Town's preferred future service, this transition plan identifies 24 as the Town's desired fleet size. In the interim period preceding battery technology development (to support 1:1 replacement), the Town can ease route infeasibility concerns by evaluating the strategies outlined below:

STRATEGIES FOR ADDRESSING ROUTE INFEASIBILITY

There are three primary strategies to account for the lack of battery capacity that would be needed to complete a day of service on the infeasible routes: opportunity charging, maintaining the Town's existing fleet size to allow for the swap of vehicles midday, or re-blocking to optimize routes. Each strategy is covered below. For the purposes of the transition strategy, a blended charging strategy was assumed that leverages both opportunity charging during driver breaks and re-blocking.

- **Opportunity Charging:** Charging during "opportunities" (gaps in service or layovers) allows for the bus to gain additional charge throughout the day and should be implemented where the vehicle may spend significant layover time. This can be conducted in short bursts during layovers if the charging is properly positioned but could also take place during operator breaks. To gain



sufficient charge to supplement the range of the vehicle, opportunity charging should target at least 20 minutes. Using a Level 3 fast charger, daily vehicle range could be extended to complete tasks that would not be feasible given standard vehicle range. Notably, this transition strategy plans for several Level 3 fast chargers in the conceptual layout for the charging infrastructure required at the Snowmass Mall to provide flexibility for Opportunity Charging.

- **Vehicle Swapping/Fleet Expansion:** Using two or more electric vehicles to cover the daily operations of a single traditionally fueled vehicle could make the Town's routes feasible for conversion to ZEB on both days with normal operating conditions and under strenuous conditions (very hot or very cold weather during service, where energy efficiency would be further derated). Generally, an example of this would be while bus A is operating, bus B is charging and then swaps into revenue service when bus A needs to be charged.
- **Re-blocking**: This exercise can be done by the Town to optimize their routes to allow for ZEBs to work more efficiently. This can increase feasibility for a ZEB to complete daily tasks without requiring as much battery capacity during service or create opportunities for midday charging.

Fleet Transition Strategy

Building on the findings of the **ZEB Daily Task Feasibility Assessment**, the Town is planning for a phased approach to its transition, prioritizing a phasing in of zero-emission vans before expanding the transition to ZEBs. This will allow the necessary time for scaling up the required zero-emission infrastructure while also leaving room for technological improvements in the ZEB industry that may yield more efficient vehicles. It is recommended that the Town begin the fleet transition in the year 2028, given the acquisition of the requisite charging infrastructure. Charging infrastructure should be in place prior to vehicle delivery to ensure a seamless transition.

It should be noted that the Town is pursuing a fleet size of 24, reflective of the reduced future fleet size. While under current ZEB range constraints an estimated 30 vehicles would be required to operate the Town's future desired service, the Town will not pursue a 100% ZEB fleet until service could be operated with the goal fleet size of 24 (ensuring a 1:1 replacement ratio). This reflects the Town's stance in **Policy Statement 2**, with traditionally fueled vehicles maintained until ZEB range constraints are improved.

The Fleet Transition Strategy separates the approach of buying ZEBs and supportive charging infrastructure into two main phases, detailed below in **Figure 8**.

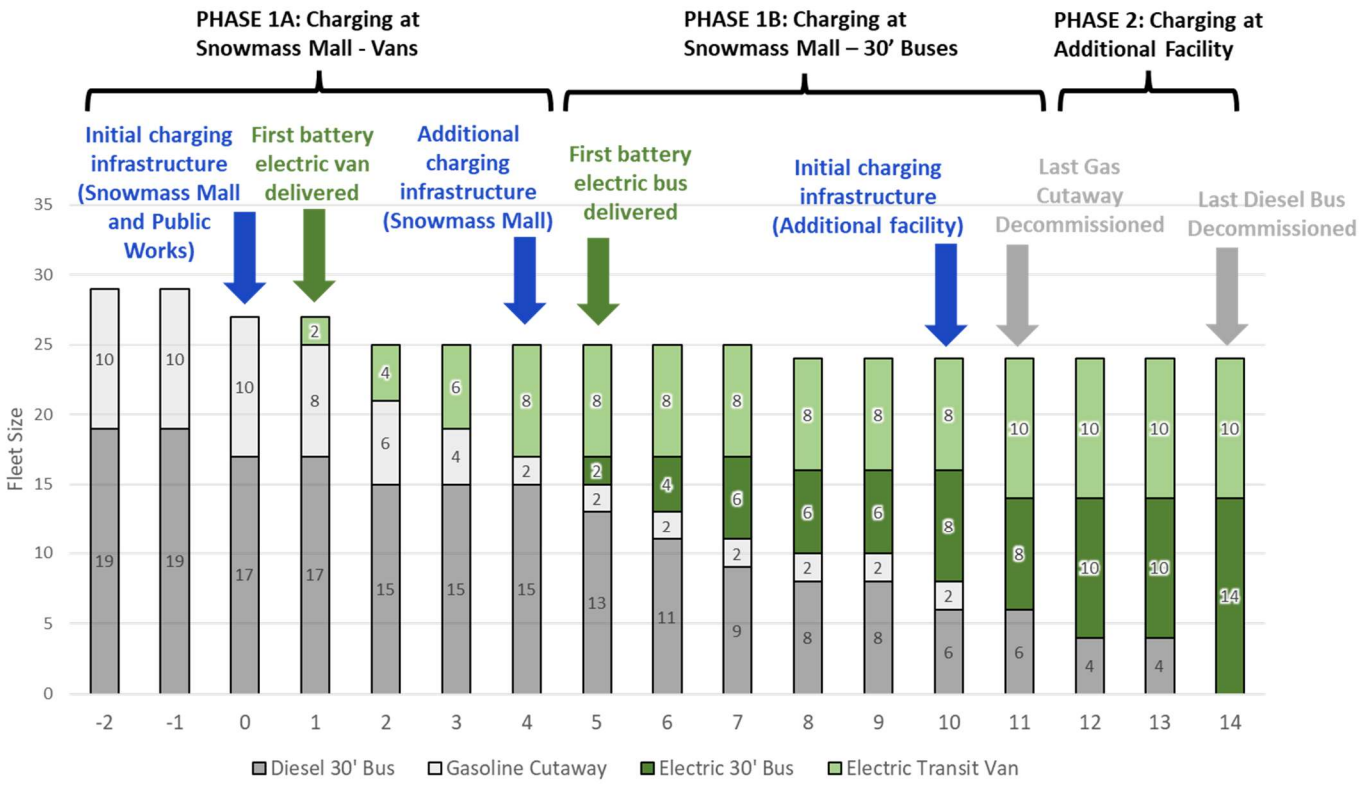
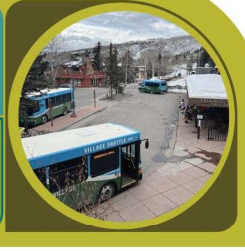


Figure 8: Fleet Transition Strategy



PHASE 1 TRANSITION

Phase 1 of the Town's zero-emission transition is characterized by the charging of vehicles at the Snowmass Mall Transit Garage (Mall Transit Garage). The Mall Transit Garage has a full build-out charging capacity that accommodates charging for 16 vehicles, defined by the Town's desire to align with current operations, desire to prioritize conversion of the van fleet, and need to maintain the parking capacity of the space. The procurement of chargers and vehicles is split into Phase 1A and Phase 1B. These subphases are detailed below. However, Phase 1 overall involves the following:

- **Constant Monitoring of Market Progress:**
  - The Town will consistently monitor market progress on ZEB technology, particularly surrounding potential advancements in range for BEBs
  - It is recommended that the Town conduct an Operations and Maintenance Facility Master Planning effort during Phase 1 to explore the need for a consolidated facility for vehicle charging, maintenance, and operations

Phase 1A

Phase 1A of the Town's zero-emission transition includes the following:

- **Charger Installation:**
  - Charger installation will be planned for the initial zero-emission vans, with chargers installed at the Mall Transit Garage (prior to year one of the transition)
    - Infrastructure for the full Phase 1 charging build-out will be constructed, but chargers are recommended to be procured in phases
    - Four Level 3 chargers will be procured for van charging and future 30' bus charging
  - Additional Level 2 chargers will be installed at the Public Works facility to accommodate maintenance and operational flexibility
- **Initial Vehicle Procurement:**
  - Eight zero-emission transit vans will be procured during Phase 1A

Figure 9 below details the projected fleet composition through Phase 1A of the Town's ZEB transition.

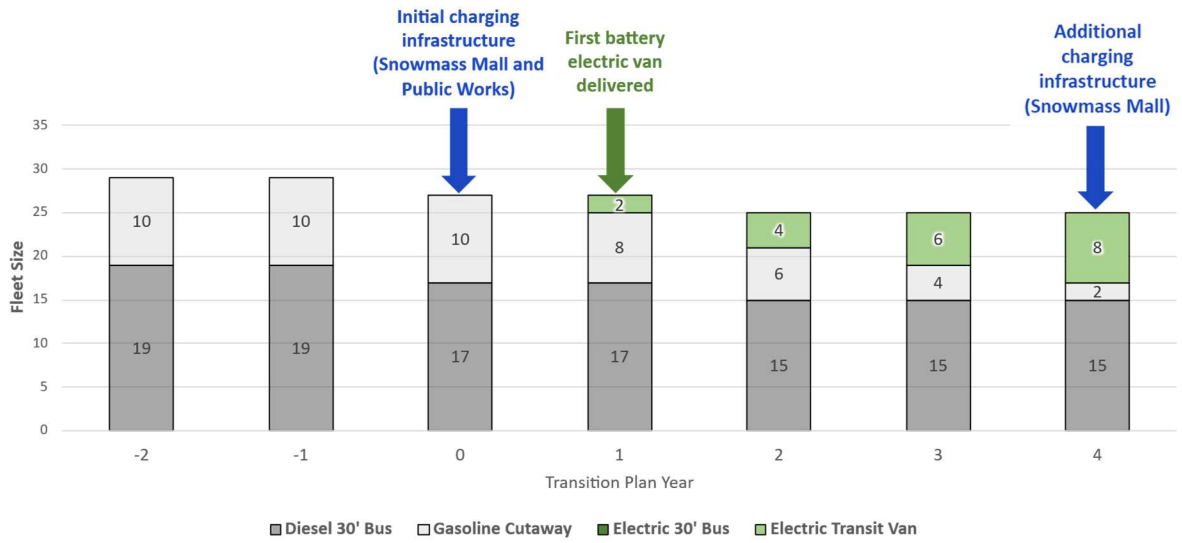


Figure 9: Phase 1A Fleet Mix and Milestones

Phase 1B

Phase 1B of the Town's zero-emission transition includes the following:

- **Additional Charger Installation:**
  - Charger installation will be expanded at the Mall Transit Garage to accommodate delivery of initial zero-emission 30' buses in year 5 of the transition
    - An additional four Level 3 chargers will be procured for bus charging
    - An optional eight Level 2 chargers will be procured for van charging
- **Vehicle Procurement:**
  - Eight zero-emission 30' buses will be procured to reach the maximum capacity at the Mall Transit Garage of 16
    - Zero-emission 30' buses should not be procured unless there are two manufacturers in the market that have zero-emission 30' buses, Altoona tested and currently in operation
- **Fleet Conversion:**
  - The Town will have the flexibility to retain a number of traditionally fueled vehicles for flexibility and contingency, but also to ensure that no vehicle is replaced before reaching its ULB

Figure 10 below details the projected fleet composition through Phase 1B of the Town's ZEB transition.

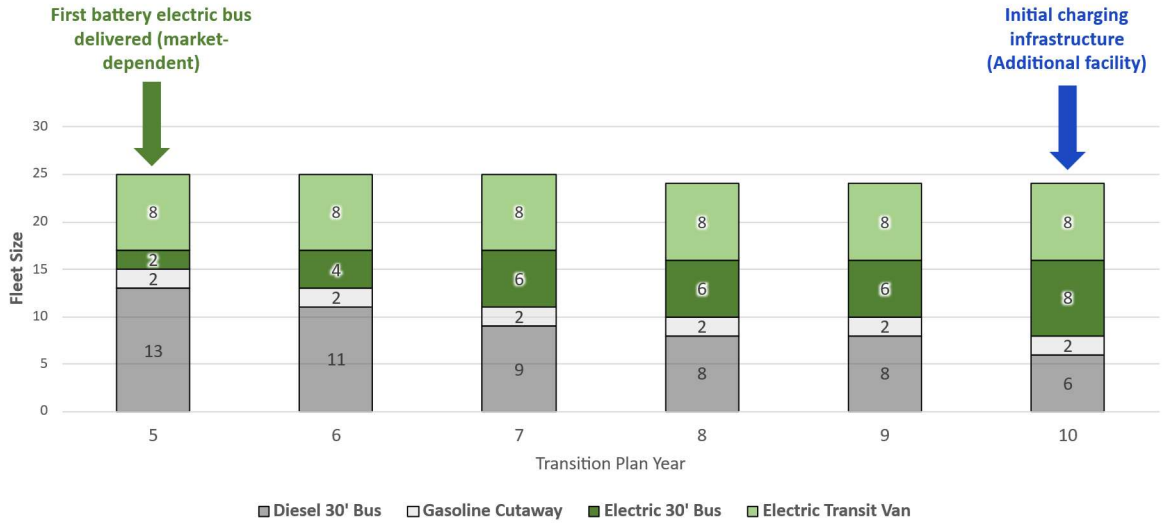


Figure 10: Phase 1B Fleet Mix and Milestones

PHASE 2 TRANSITION

Phase 2 of the Town's zero-emission transition is characterized by the charging of vehicles at an additional facility. Phase 2 involves:

- **Revisit Zero-Emission Transition Strategy and Future Planning**
  - Phase 2 involves revisiting the strategy to determine a future desired fleet size and composition based on performance of ZEBs in operation by the Town, including potential for fleet expansion
- **Facility Consolidation**
  - An additional facility is recommended prior to the procurement of additional ZEBs beyond the 16 procured in Phase 1, based on the parking constraints at the Mall Transit Garage
  - If an additional facility is constructed for operations and maintenance, the Town should consider potential to consolidate charging infrastructure
- **Final Bus and Van Procurement**
  - Additional zero-emission buses and vans will be procured to finalize the fleet transition to fully zero emission
    - The Town's fleet should not be fully transitioned to zero emission until market available battery electric transit buses could complete the current tasks of the Town's transit bus fleet on a 1:1 basis

Figure 11 below details the projected fleet composition through Phase 2 of the Town's ZEB transition.

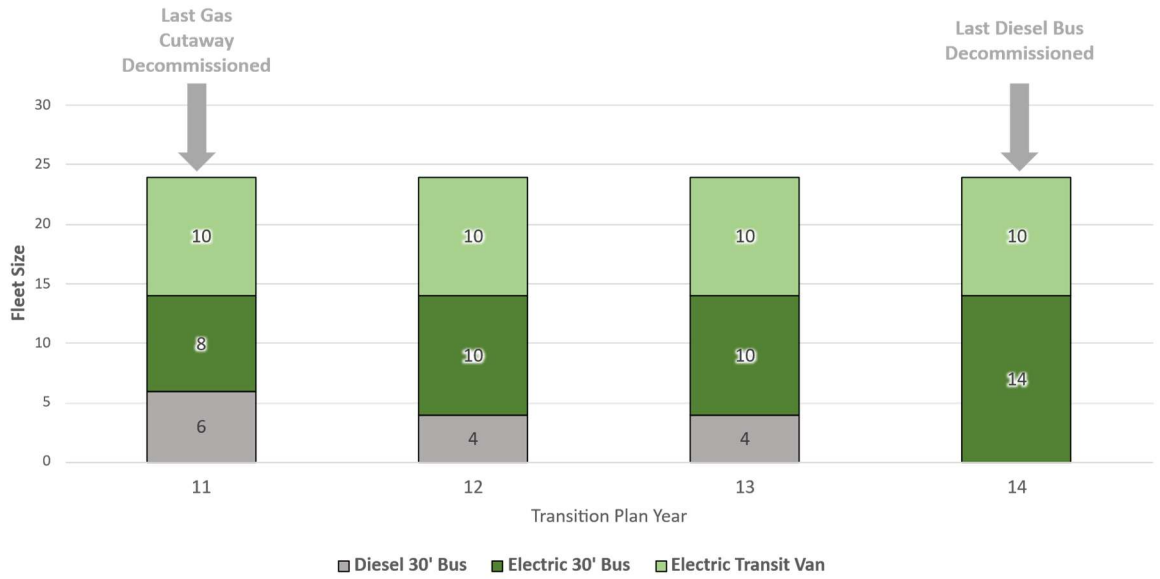


Figure 11: Phase 2 Fleet Mix and Milestones

FUEL PLAN

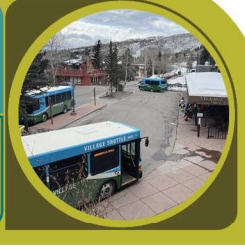
The Fuel Plan details the utility coordination conducted and identifies the charging infrastructure and electrical capacity needed to operate the future fleet of ZEBs. As mentioned, the Town is pursuing battery electric as the suitable zero-emission technology based on available vehicle types and the lack of availability of cost-efficient hydrogen fuel.

Utility Coordination Completed

The Town coordinated throughout the development of the ZEB Transition Plan with the utility responsible for electric power in the Town, Holy Cross Energy. Coordination included several phone meetings, an in-person meeting, and a high-level engineering evaluation of feasibility by Holy Cross Energy staff. Holy Cross Energy provided a detailed review of the Snowmass Village Mall Transit Garage Charging Layout in the **Facility & Infrastructure Plan** and **Appendix B: Charging Layout** and confirmed the transformer/utility upgrades included within the cost estimate in the **Funding Plan** and **Appendix C: Charging Infrastructure Cost Estimate**. A letter of support from Holy Cross Energy for this ZEB Transition Plan can be found in **Appendix D: Letter of Support From Holy Cross Energy**.

Charging Methods

There are three primary charging methods employed by transit agencies for BEBs: plug-in chargers, overhead conductive chargers, and wireless inductive chargers. However, it should be noted that only buses can use overhead or inductive chargers, so these would not be options to charge any battery



electric transit van the Town might procure. As a result, plug-in charging will be the main charging method assessed by the Town. An overview of the infrastructure requirements of each is below.

Plug-in Charging

Plug-in chargers are by far the most common method for charging electric vehicles. Typically used at bus depots, they charge BEBs using a plug-in connection. The output of plug-in chargers ranges from 50 kW to 350 kW for Level 3 chargers and can typically recharge a battery electric transit bus fully in five hours or less, dependent on charger output and the time of day**.** The output of Level 2 chargers ranges from 7 kW to 19 kW and would primarily be used to charge the Town's battery electric van fleet. A Level 2 charger can typically recharge a battery electric van in eight hours or less, dependent on charger output and time of day.[9] Plug-in chargers are primarily designed for agencies to charge vehicles slowly overnight, which can result in reduced (off-peak) electricity costs.[10] These chargers could be implemented as either ground mounted or drop down, with the design considerations of each type outlined below.

GROUND MOUNTED PLUG-IN CHARGING

Facility design considerations for ground-mounted plug-in chargers:

- Requires trenching to distribute power to cabinets
- Requires space dedicated to charging cabinets and dispensers, as well as cable management (to avoid risk of cable damage)
- May require placement of new curbs or bollards to protect power modules and other above-ground equipment
- Requires that bus operators plug-in vehicles to begin charging
- Charging cabinets are at ground level and are therefore easier to access and maintain when needed
- Visual cues for bus operators to assist in proper alignment of the bus with the charging pad to maximize energy transfer

DROP DOWN PLUG-IN CHARGING

Facility design considerations for drop-down (support-frame-mounted) plug-in chargers:

- Minimizes footprint required for charging infrastructure, allowing higher site capacity
- May require capital investment in upgrading or building overhead support structures

[9] U.S. Department of Transportation. 2025. Charger Types and Speeds. Retrieved from: www.transportation.gov/rural/ev/toolkit/ev-basics/charging-speeds
[10] Aamodt, A., Cory, K. and Coney, K. 2021. Electrifying Transit: A Guidebook for Implementing Battery Electric Buses. Retrieved from: www.nrel.gov/docs/fy21osti/76932.pdf

- Minimizes trenching onsite
- Requires space dedicated to charging cabinets and dispensers, as well as cable management (to avoid risk of cable damage)
- May require longer conduit run distances (depending on charging cabinet mounting location)
- Requires that bus operators plug-in vehicles to begin charging
- Typically placed towards the rear of the vehicle

Overhead Pantograph Charging

Overhead pantograph chargers can be used for depot charging and on-route charging. They utilize a moveable pantograph either mounted to the roof of the vehicle (commonly called pantograph-up systems) or mounted on an overhead mast at the charging station (commonly called inverted or drop-down pantographs). The latter is preferred across the industry because it avoids placing additional weight on the vehicle, prevents the mechanical system from being exposed to constant vibration, and requires fewer pantograph systems for a given route or system.[11] As part of the charging array, an electrical cabinet and other wiring would need to be installed within 400 to 600 feet of the overhead charging mast.

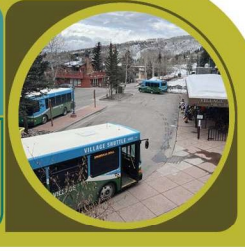
Because of their ability to charge vehicles quickly, overhead pantograph chargers are often used onroute to extend the daily range of a vehicle. During a typical service cycle, a vehicle may connect with an on-route charger several times, consistently increasing its state-of-charge (SOC) throughout the day to remain in service and extend range. Overhead pantographs have an output of 175 to 500 kW and typically charge vehicles for between 5 and 20 minutes if used for on-route charging. While the vehicle is charging, passengers can safely board and alight the vehicle.[12]

Weather can also impact the pantographs themselves, particularly in cold weather, where ice buildup can reduce charging capacity or affect the deployment of the drop-down or pantograph-up mechanism. To address this, auxiliary heating systems can be installed to keep the overhead charging mast clear of ice, which would require no further modifications to the vehicle.[13] Installation of overhead pantograph charging may require either upgrading an existing overhead structure to support the weight of the overhead charging system elements or building a new overhead support frame rated to the weight demands of the specific chargers procured.

Facility design considerations for inverted/drop-down pantograph chargers:

- Minimizes footprint required for charging infrastructure, allowing higher site capacity

[11] OppCharge. Fast Charging of Electric Vehicles. Available online: www.oppcharge.org (accessed on 20 April 2023).
[12] Aamodt, A., Cory, K. and Coney, K. 2021. Electrifying Transit: A Guidebook for Implementing Battery Electric Buses. Retrieved from: www.nrel.gov/docs/fy21osti/76932.pdf
[13] Mountain Line. 2020. Zero-Emission Bus Implementation Plan. Retrieved from: mountainline.az.gov/wp-content/uploads/2021/03/Phase-2-Implementation-FINAL.pdf



- May require capital investment in upgrading or building overhead support frames from which the dispensers and sometimes cabinets are mounted
- Requires no direct operator interaction to initiate charging process
- Minimizes trenching by running majority of conduit overhead
- Allows for more flexibility in rearranging charging configurations by remounting, with no trenching required
- May require longer conduit run distances (depending on charging cabinet mounting location)
- Inverted/drop-down pantographs are typically placed over the front axle of the vehicle

Wireless Inductive Charging

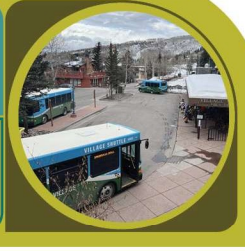
The other method commonly used for on-route charging, inductive charging, use coils beneath a pad and a vehicle equipped with a separate pad to charge the vehicle. When a vehicle stops and lowers (or "kneels"[14]) over the charging pad, an electrical current is sent up through the buried coil, creating a magnetic field with the pad mounted to the vehicle that charges the onboard battery. Energy is only transferred when the charger is activated, and walking or driving over the pad when the charger is not activated is not harmful.[15] Inductive chargers have an electrical output of 50 kW to 250 kW.

Like overhead pantograph charging infrastructure, inductive chargers are often used for on-route charging at transit centers and locations where buses have scheduled layovers. Inductive chargers have an electrical output of 50 kW to 250 kW. Antelope Valley Transit Authority (AVTA) has installed 12 250 kW charging pads at transit centers in its service territory and scheduled their operations to allow buses to get 10-20 minutes of charge time at each layover. For every ten minutes spent on one of these chargers, an AVTA bus gains around 15 miles in range (with a 324kWh battery).[16] AVTA uses these on-route inductive charging pads to supplement their depot charging setup, which delivers the buses to 100% SOC overnight to begin the day with a full battery.

Use of wireless inductive charger requires certain specifications on the bus: communication antenna, system interface controller, user display, and under-carriage-mounted power receiver positioned rearward of the front axle.[17]

Another significant consideration is that inductive chargers can lose much of their efficiency if the vehicle is not properly aligned with the charging pad. IndyGo, which uses inductive chargers at one of its

[14] Depending on the manufacturer, kneeling may or may not be required.
[15] Mass Transit Magazine. 2021. IndyGo implements inductive charging along Red Line to charge buses en route. Retrieved from: www.masstransitmag.com/bus/maintenance/power-converters-battery-chargers-and-inverters/press-release/21244707/indianapolis-public-transportation-corporation-indygo-indygo-implements-inductive-charging-along-red-line-to-charge-buses-en-route
[16] SAE International. 2022. WAVE inductive charging purpose-built for larger EVs. Retrieved from: www.sae.org/news/2022/05/wave-inductive-charging-purpose-built-for-large-evs
[17] Alexandria Transit Company. (2021). DASH ZEB Implementation Final Report.



transit centers and has experienced these issues, improved charger efficiency through operator training, monitoring operator charging compliance, and regular software updates.

Facility design considerations for in-ground wireless inductive chargers:

- Requires trenching to run in-ground charging equipment
- May require placement of new curbs or bollards to protect power modules and other above-ground equipment
- Depending on vendor specifications, the power modules and ground equipment must be mounted between 50-100 feet of the induction pad, placing some restrictions on installation locations
- Visual cues for bus operators to assist in proper alignment of the vehicle with the charging pad to maximize efficient energy transfer
- Charging pads can be paired and share a power module, reducing infrastructure and spacing requirements[18]

Charging and Energy Management Software Systems

To support the efficient implementation of charging infrastructure, many agencies with BEBs in service employ a charging and energy management software system (CEM), which allows the agency to track SOC for vehicles throughout the day, optimize charging, and reduce costs and energy use. If peak energy load is optimized, this may reduce the need for costly grid enhancements and utility infrastructure. A CEM reduces operating costs by optimizing and automating depot charging around fleet schedules and utility time of use rates.

Charging Strategy

To identify the number of vehicles and chargers needed to complete the daily operations for each route, the Town's daily operations were modeled to estimate the amount of time a bus could operate before needing to recharge.

The following assumptions were made for this analysis:

- The modeled charger is a level 3 DC fast charger that can deliver 150 kW of power.
- The modeled vehicle for routes 1, 3, 4, and the RFTA shoulder service is a BYD K7M-ER with a battery capacity of 313 kWh and maximum charging rate of 150 kW. Assuming use of a Level 3 150 kW charger, this vehicle could be fully charged in 2-2.5 hours.
- The modeled vehicle for routes 2, 5/6, and 8 is a Ford E-Transit with a battery capacity of 89 kWh and a maximum charging rate of 115 kW. Assuming use of a Level 3 150 kW charger operating at 115 kW, this vehicle could be charged from 15-80% in less than 30 minutes and

[18] WAVE Inductive Charging

fully charged in less than an hour. Assuming use of a Level 2 charger operating at 19 kW, this vehicle could be charged in less than 5 hours.

The charging modeling revealed that an overnight charging plan for all vehicles would be feasible given normal operating conditions and the swapping of vehicles throughout the day. A blended charging strategy, with a combination of overnight charging with strategic mid-day charging of vehicles, could be used to extend vehicle range under strenuous conditions and ensure route coverage and operations. **Table 9** outlines the proposed charging strategy for the Town's transit fleet based on storage capacity, operational requirements, and efficiency of investment. This plan also recognizes that charging capacity will be reassessed during the design phase, so full charging build-out is subject to change.

Table 9: Proposed Charging Strategy

Phase	Location	# of Chargers by Type		Notes
		Level 2	Level 3	
1A	Mall Transit Garage	-	4	Electrical capacity infrastructure investment should be made based on a full build-out scenario, but charger procurement has a phased approach. Initial chargers will primarily be used to charge vans.
1A	Snowmass Village Public Works Facility	4	-	Chargers are used for operational flexibility and maintenance needs.
1B	Mall Transit Garage	8	4	Charging capacity is met at the Mall Transit Garage. 16 vehicles can charge on a combination of Level 2 and Level 3 chargers. Chargers in Phase 1B will provide opportunity to charge buses once procured.
2	Additional Facility (TBD)	TBD	TBD	Charger procurement and infrastructure installation in Phase 2 should be coordinated with the confirmed fleet composition and size.
Total		**12+**	**8+**	

FACILITY & INFRASTUCTURE PLAN

The Facility and Infrastructure Plan incorporates an analysis of the Town's existing transit facilities and recommendations for short- and long-term plans to accommodate and support a zero-emission fleet. The Facility and Infrastructure Plan, in addition to this ZEB Transition Plan as a whole, should be updated based on the findings of the facility master planning effort referenced within **Policy Statement 2**, reflecting that the Town will complete a facility master planning effort to better understand the facility's needs for the ZEB transition.

Current Facilities

The Town's transit fleet is currently stored and operated out of two facilities: the Snowmass Mall Transit Garage (Mall Transit Garage) and the Town of Snowmass Village Public Works facility. These locations are described below.

SNOWMASS MALL TRANSIT GARAGE

The Town currently stores buses at the Mall Transit Garage, shown in **Figure 12**. The Snowmass Mall also serves as the main layover location for the Town's fixed route transit operations. This property has strong potential to support future ZEBs for the Town's fleet. The Mall Transit Garage has a parking capacity of approximately 24 and a charging capacity of 16 vehicles, enabling charging for a significant portion of the future zero-emission fleet to occur here.

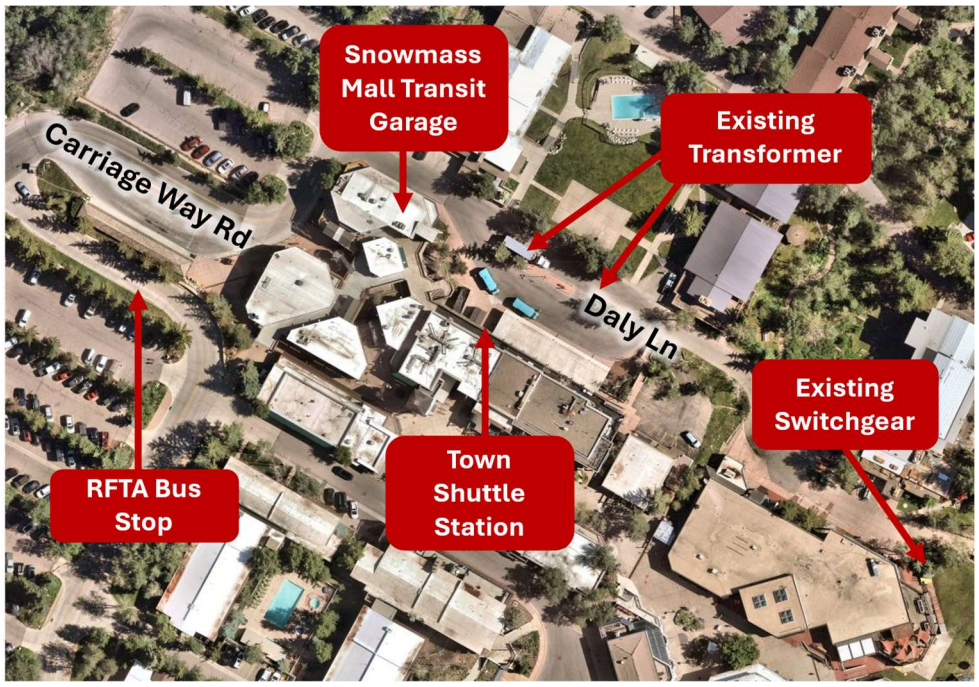


Figure 12: Snowmass Mall Transit Garage

Charging could occur at the Mall Transit Garage for a total of 16 vehicles. Parking is available for 24 vehicles, but at a full charging build-out, eight vehicles would be required to park in non-charging spaces. A proposed charging layout for Mall Transit Garage is shown below in **Figure 13**. A larger version of this layout is available in **Appendix B: Charging Layout**.

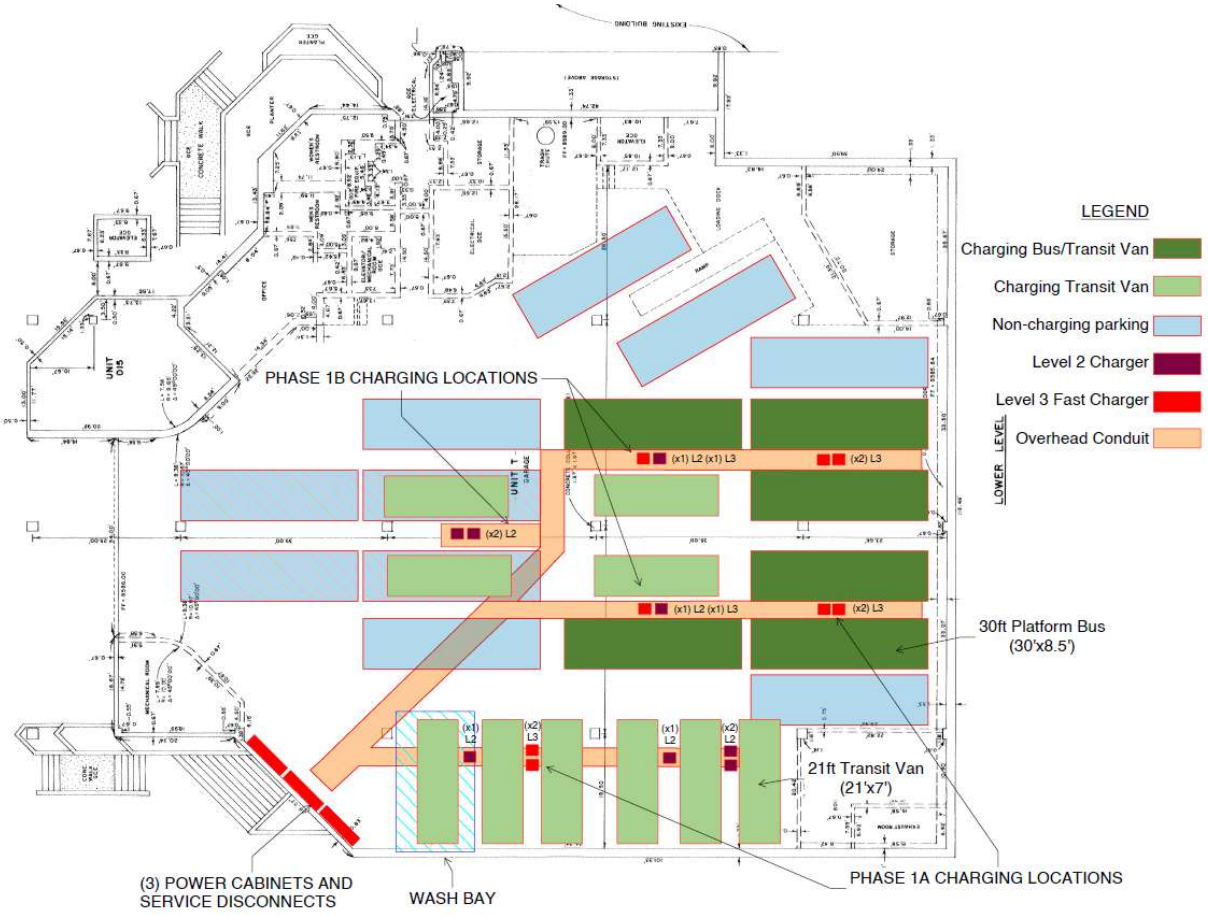


Figure 13: Snowmass Mall Transit Garage Charging Layout

This layout assumes the installation of three charging cabinets to power eight Level 3 fast chargers, as well as the optional installation of eight Level 2 chargers. While any upgrades to power capacity at the Mall Transit Garage should occur in one investment to minimize costs, installation of chargers can be phased based on vehicle procurement. Phase 1A of the transition recommends the installation of four Level 3 fast chargers with up to four more Level 3 chargers and up to eight Level 2 chargers installed in Phase 1B. To maximize operational efficiency, Level 3 chargers should be mainly placed along the walls of the garage to allow charging on operator breaks if necessary. In this configuration, the Level 3 chargers are used for buses, and the Level 2 chargers are used for vans, with Level 3 chargers available for fast van charging if needed. More details about the proposed charging strategy at the Mall Transit Garage are given in the **Fuel Plan** section of this report.

TOWN OF SNOWMASS VILLAGE PUBLIC WORKS FACILITY

This facility currently provides limited additional overnight fleet storage for the Town's transit fleet, as well as providing fleet maintenance and fueling. This site is shown in **Figure 14.** The existing fleet vehicle parking area can be used to charge ZEBs for maintenance movements and contingency but will not be a priority charging location. Extensive vehicle charging at the Public Works Facility presents operational complications, but the installation of four Level 2 chargers is recommended to provide flexibility for the maintenance of the Town's transit fleet.

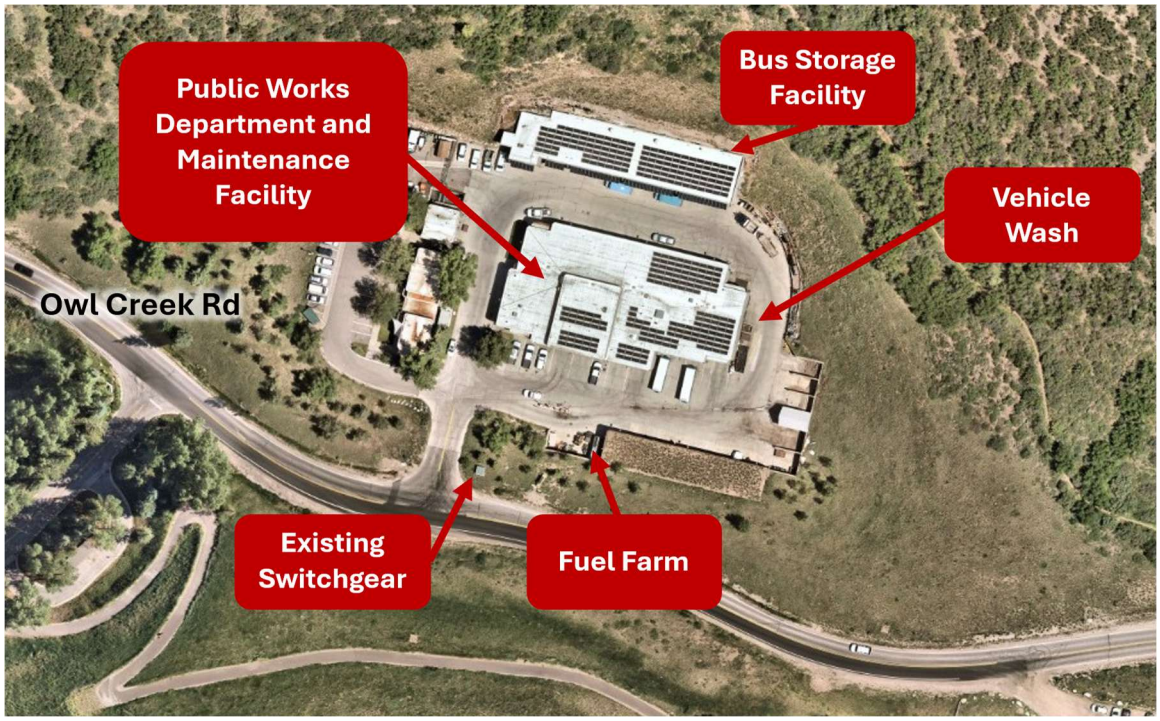


Figure 14: Town of Snowmass Village Public Works Facility

Future Facilities

SNOWMASS MALL TRANSIT CENTER

It is important to note that Town staff are in the process of designing an updated Snowmass Mall Transit Center, which should be considered in conjunction with plans to install zero-emission charging infrastructure at the current mall facility. The proposed facility will not include bus storage but should be considered for future opportunity/on-route charging infrastructure. This project involves significant collaboration with RFTA, who also utilizes the Snowmass Mall Transit Center for their transit operations. The most recent concept design is shown on the following page in **Figure 15**.[19]

[19] Town of Snowmass Village. (February 2025). "Snowmass Mall Transit Center Updated Concept Approach." www.tosv.com/490/Snowmass-Mall-Transit-Center

Figure 15: Snowmass Mall Transit Center Updated Concept Approach

ADDITIONAL FUTURE FACILITY

An additional facility for bus storage and charging, or an expansion to the Town's current transit facilities, will be needed to support a 100% zero-emission fleet. The current Mall Transit Garage concept layout provides the capacity for charging 16 vehicles, short of what would be required for a 100% zero-emission fleet. A future facility could also be used to consolidate charging to one location to simplify operations, as well as accommodate 35' or 40' platform ZEBs that would provide the Town with more viable ZEB procurement opportunities sooner. Further analysis will be required to determine potential suitable facility locations.

TRANSITION STRATEGY SUMMARY

This Transition Strategy combines the findings from the Fuel, Fleet, and Facility Plans to summarize recommendations for how the Town will move forward with the transition to ZEB technology.

This strategy was developed to prioritize operational feasibility without requiring a significant fleet expansion, and accounts for prioritizing vans for conversion to zero emission based on the Town's plans for the vans to operate in a demand-response capacity. This type of service allows for greater operational flexibility for these vehicles and can more simply accommodate mid-day charging to support longer daily mileage requirements when compared to a fixed-route service without expanding the fleet size.

The Mall Transit Garage was identified as a key location for charger installation in this transition strategy due to its status as the primary operations facility today and in the future. Any charging infrastructure investments recommended at the Snowmass Village Public Works Facility are intended to serve as back-up infrastructure and to support ZEB maintenance activities performed at that facility.

Finally, the Town is assuming that it will commit to a full transition to ZEB only once a competitive procurement process can be reasonably completed in the 30' electric transit bus market segment. This

stance is detailed in **Policy Statement 1,** outlining that the 30' electric transit bus market needs to have at least two manufacturers with 30' electric buses operating in North America before the Town considers procurement. This will support the long-term viability of this platform for the Town through a diversity of options.

Based on these priorities and assumptions, the Town has identified the following key milestones, shown in **Table 10.** This plan can be sped up or slowed down based on how relevant technologies develop over time. The Town is assumed to begin the transition to ZEBs in 2028 (Year 1) and will utilize the useful life of each current vehicle before acquiring any new vehicles to maximize cost efficiency.

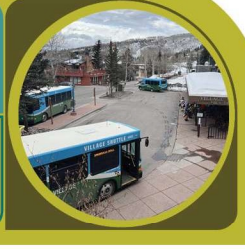
Table 10: Transition Strategy Milestones

Transition Year	Milestones and Actions
-1	Undertake Operations and Maintenance Facility Master Planning effort to determine suitable locations for future consolidated charging location
0	Install initial charging infrastructure • four Level 3 chargers at the Mall Transit Garage • four Level 2 chargers at Public Works Facility
1	Receive and commission first two zero-emission vans, operated out of the Mall Transit Garage
3	Revisit transition plan based on current state of technology and advances in ZEB technology and availability
4	Install additional charging infrastructure • four Level 3 chargers and up to eight Level 2 chargers at the Mall Transit Garage
5	Receive and commission first two zero emission; zero-emission 30' buses should not be procured unless two manufacturers have Altoona tested buses in operation, indicating long-term viability of the platform OR the Town has constructed a future facility that can accommodate 35' or 40' platform ZEBs
8	Revisit and reassess transition plan based on ZEB performance; determine final fleet size and composition
10	Install additional charging infrastructure at potential future consolidated facility
11	Decommission final gas cutaways/vans
14	Decommission final diesel buses; first year fleet could be 100% ZEB; fleet should not be fully transitioned to zero emission until ZEBs could complete current tasks on a 1 to 1 basis

The fleet procurement and transition recommendations in **Table 10** are based upon the assumption that the Town will use buses until the end of their useful life and purchase buses in the year before, during, and after the useful life is over to reduce single-year economic burdens.

Table 11: ZEB Transition Overview by Year

Phase	Transition Year	Gas Cutaway	Diesel 30' Bus	Electric Transit Van	Electric 30' Bus	Total Chargers	Notes
1A	-2	10	19				
	-1	10	19				
	0	10	17			Four (4) Level 3 Four (4) Level 2	Install chargers for upcoming vans at Mall Transit Garage and Public Works Facility
	1	8	17	2		Four (4) Level 3 Four (4) Level 2	First electric vans delivered
	2	6	15	4		Four (4) Level 3 Four (4) Level 2	
	3	4	15	6		Four (4) Level 3 Four (4) Level 2	Transition plan revised to account for advancing vehicle technology and market availability
	4	2	15	8		Eight (8) Level 3 Four to 12 Level 2	Install chargers for additional vans and buses at the Mall Transit Garage
1B	**5**	2	13	8	2	Eight (8) Level 3 Four to 12 Level 2	First electric buses delivered
	6	2	11	8	4	Eight (8) Level 3 Four to 12 Level 2	
	7	2	9	8	6	Eight (8) Level 3 Four to 12 Level 2	
	8	2	8	8	6	Eight (8) Level 3 Four to 12 Level 2	Transition plan revised to account for advancing vehicle technology and market availability
	9	2	8	8	6	Eight (8) Level 3 Four to 12 Level 2	
	10	2	6	8	8	TBD	Install chargers for additional vans and buses at future facility
2	**11**		6	10	8	TBD	First year that final gas cutaways can be decommissioned
	12		4	10	10	TBD	
	13		4	10	10	TBD	
	14			10	14	TBD	100% ZEB fleet, final diesel buses can be decommissioned



Action Steps

While the Town actively navigates its long-term path towards zero emissions, the following near-term steps will be pursued:

- Begin exploration of charger procurement options for placement at the Mall Transit Garage and the Snowmass Village Public Works facility.
- Initiate a Maintenance and Operations Facility Master Plan to investigate the need for an additional facility for charging and storage of ZEBs.
- Monitor development of plans of ZEB transitions for other departments and agencies within and proximate to the Town to identify opportunities to share fueling infrastructure and benefit from procurements that serve multiple departments.
- Monitor the marketplace for ZEB technology performance and availability; track state and regional initiatives and incentives; and communicate regularly with peer agencies that are in the process of transitioning their own fleets to share lessons learned.

FUNDING PLAN

The transition of the existing fleet to ZEBs will present significant cost impacts to the Town. The Town will address the availability of current and future resources to meet the costs of the transition and implementation and has compiled the following assessment of anticipated operations, maintenance, and procurement costs in alignment with the **Transition Strategy**.

Operations and Maintenance Costs

Table 12 below summarizes the operations and maintenance costs for diesel, gasoline, and BEB technologies. Annualized lifetime costs were based on an average vehicle life of 15 years for the 30' buses and 10 years for the gasoline cutaway buses and an average miles per year of 13,296 for the 30' buses and 13,270 for the cutaway vehicles.[20] These estimates, as well as maintenance and fuel costs, are based on the Town's 2024 fleet usage metrics and fuel and electricity price data. [21] This section also leverages peer agency data from RFTA on ZEB maintenance costs to determine the potential cost savings of transitioning to battery electric buses. [22] RFTA's recent experience with ZEB maintenance indicates, at a high-level, that there are no maintenance cost savings with a ZEB transition, as standard parts are typically more expensive than those needed for a traditionally fueled bus, and labor often takes longer.[23]

Table 12: Operations and Maintenance Costs for ZEBs Compared to Traditionally Fueled Vehicles

	Diesel 30'	Gasoline Cutaway	BEB 30'	BEB Van
Vehicle Life	15	10	15	10
Miles per Year	13,296	13,270	13,296	13,270
Fuel Cost/Mile	$0.55	$0.41	$0.10	$0.04
Maintenance Cost/Mile	$0.58	$0.38	$1.50	$1.50
Annualized Lifetime Costs	$15,020.00	$10,480.00	$21,270.00	$20,410.00
Annualized Difference in Lifetime O&M Costs Compared to Diesel/Gasoline	Baseline	Baseline	+ $6,240.00	+ $9,930.00

[20] Useful life benchmarks for the Town's fleet are based on the Colorado Department of Transportation Group Transit Asset Management (TAM) plan

[21] Diesel and gasoline maintenance costs per mile are based on average labor and parts costs provided by the Town (Vehicle Usage-Repair 2024). BEB maintenance costs per mile based on RFTA's BEB pilot (RFTA Zero-Emission Fleet Transition Plan).

[22] Diesel and gasoline fuel costs per mile are based on fuel costs and vehicle miles per gallon provided by the Town. BEB fuel costs per mile are based on electricity prices provided by the Town. Off-peak electricity prices are assumed for this cost estimate as most vehicle charging will occur overnight, as detailed in the **Fuel Plan**.

[23] High-level maintenance experience information provided by the RFTA Director of Maintenance on December 5, 2025.

Vehicle Procurement Costs

A year-by-year comparison of procurement costs between traditionally fueled vehicles and ZEBs is below for all phases of the Town's ZEB transition. Traditional procurement costs are based on planned vehicle procurement by the Town and are in 2025 dollars, while ZEB procurement costs are based on the 2025 American Public Transportation Association (APTA) vehicle database for vehicles comparable to the Town's existing vehicles and are in 2025 dollars. Unit costs for each vehicle type are located in **Table 13** for reference. As discussed within the **Transition Strategy**, the Town plans to reduce its fleet size, which has the effect of minimizing the impacts of higher costs of ZEB procurement compared with traditionally fueled vehicles.

Unit prices for both ZEB types, the BYD K7M-ER and the Ford E-Transit, do not include potential price increases based on the negotiated warranty. **Negotiating better battery capacity warranties will result in a higher price, which should be considered when budgeting for ZEB procurement.**

Table 13: Vehicle Unit Costs

Vehicle Type	Price	Source
Gillig 29' (Diesel)	$606,000	Town of Snowmass Village (estimated based on 2027 planned procurement)
Ford Transit (Gasoline)	$135,000	Town of Snowmass Village (estimated based on 2026 planned procurement)
BYD K7M-ER (Electric)	$850,000	APTA Vehicle Database (2025)
Ford E-Transit (Electric)	$139,000	APTA Vehicle Database (2025)

PHASE 1A

Phase 1A of the Town's ZEB transition is characterized by the procurement of eight zero-emission vans to replace traditionally fueled cutaway buses. Total procurement costs of ZEVs in Phase 1A will be $32,000 more than the cost of buying the same number of traditionally-fueled vehicles, as shown in **Table 14**.

Table 14: Phase 1A Compared Vehicle Procurement Costs

Transition Year	ZEBs Purchased	Traditional Procurement Costs	Planned Zero Emission Fleet Procurement Costs	Cost Differential
1	(2) Van	$270,000	$278,000	$8,000
2	(2) Van	$270,000	$278,000	$8,000
3	(2) Van	$270,000	$278,000	$8,000
4	(2) Van	$270,000	$278,000	$8,000
Phase 1A Total Costs		**$1,080,000**	**$1,112,000**	**+ $32,000**

PHASE 1B

Phase 1B of the Town's ZEB transition is characterized by the procurement of eight ZEBs to replace traditionally-fueled buses. Total procurement costs of ZEVs in Phase 1B will be approximately $1.95 million more than the cost of buying the same number of traditionally-fueled vehicles, as shown in **Table 15**.

Table 15: Phase 1B Compared Vehicle Procurement Costs

Transition Year	ZEBs Purchased	Traditional Procurement Costs	Planned Zero Emission Fleet Procurement Costs	Cost Differential
5	(2) Bus	$1,212,000	$1,700,000	$488,000
6	(2) Bus	$1,212,000	$1,700,000	$488,000
7	(2) Bus	$1,212,000	$1,700,000	$488,000
8	No purchases			
9	No purchases			
10	(2) Bus	$1,212,000	$1,700,000	$488,000
Phase 1B Total Costs		**$4,848,000**	**$6,800,000**	**+ $1,952,000**

PHASE 2

Phase 2 of the Town's ZEB transition is characterized by the procurement of two zero-emission vans to replace traditionally-fueled cutaway buses and six ZEBs to replace traditionally-fueled buses. Total procurement costs of ZEVs in Phase 2 will be approximately $1.47 million more than the cost of buying the same number of traditionally-fueled vehicles, as shown in

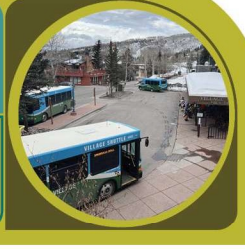
Table 16.

Table 16: Phase 2 Compared Vehicle Procurement Costs

Transition Year	ZEBs Purchased	Traditional Procurement Costs	Planned Zero Emission Fleet Procurement Costs	Cost Differential
11	(2) Van	$270,000	$278,000	$8,000
12	(2) Bus	$1,212,000	$1,700,000	$488,000
13	No purchases			
14	(4) Bus	$2,424,000	$3,400,000	$976,000
Phase 2 Total Costs		**$3,906,000**	**$5,378,000**	**+ $1,472,000**

Infrastructure Costs

Phase 1A and Phase 1B of the Town's ZEB transition assume that ZEBs will be charged at the Snowmass Village Mall Transit Garage. To facilitate charging at this facility, significant investment will be required



to increase electrical capacity and install charging cabinets. An estimate of the construction costs and procurement of charging equipment in 2025 dollars is shown in

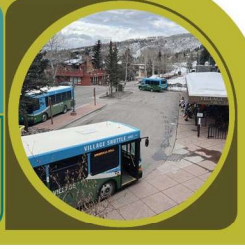


Table 17. Estimations of the cost in 2030 and 2035 dollars assume a **4.4% annual growth** based on the 5-year compound annual growth rate (CAGR) from 2020-2024 of the Consumer Price Index (CPI). This estimate was developed through coordination with Holy Cross Energy, the energy provider for the Town. Costs are based on localized construction rates and are intended to be a rough estimate, requiring further validation as the transition plan advances. Further details on the assumptions involved in this estimate can be found in **Appendix C: Charging Infrastructure Cost Estimate**.

This investment would support the charging of 16 vehicles and provides infrastructure for the entirety of Phase 1A and 1B. This estimate assumes a consolidated investment in charging infrastructure at the start of Phase 1A, but procurement of chargers could be phased based on vehicle procurement and the fuel plan to minimize single-year financial burden for the Town. A phased option for charger procurement is shown in the proposed capital expenditure plan in **Table 19**. The phased option assumes most of the infrastructure investment is made during Phase 1A, but some of the expenditure on conductors, electrical labor, electrical gear, and Level 2 and Level 3 chargers can occur during Phase 1B.

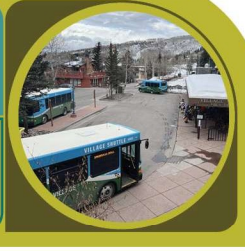


Table 17: Snowmass Mall Transit Garage Charging Infrastructure Cost Estimate

Scope of Work	Estimated Expense (2025 dollars)	Estimated Expense (2030 dollars)	Estimated Expense (2035 dollars)
Demo of Exterior Concrete	$16,625.00	$19,750.00	$24,500.00
Demo of Asphalt	$6,600.00	$7,840.00	$9,720.00
Demo of Garage Concrete	$10,500.00	$12,470.00	$15,460.00
Excavation	$6,600.00	$7,840.00	$9,720.00
Material Haul	$4,950.00	$5,890.00	$7,300.00
Demo of C&G/Valley Pans	$810.00	$970.00	$1,200.00
Conduit	$29,700.00	$35,280.00	$43,750.00
Conductors (assumed wire thickness)	$178,200.00	$211,700.00	$262,550.00
Trench Backfill	$15,675.00	$18,620.00	$23,090.00
Electrical Labor	$234,000.00	$277,990.00	$344,770.00
Electrical Equipment/Gear	$125,000.00	$148,490.00	$184,150.00
Holy Cross – Transformer Upgrade & Primary Service*	$75,000.00	$89,110.00	$110,510.00
L2 - Chargers	$40,000.00	$47,520.00	$58,930.00
L3 - Chargers & Power Cabinet	$502,000.00	$596,350.00	$739,610.00
Fire Suppression	$747,500.00	$888,010.00	$1,101,340.00
Mechanical/Snowmelt Replacement	$166,250.00	$197,500.00	$244,940.00
Concrete Replacement	$45,675.00	$54,270.00	$67,310.00
Asphalt Replacement	$9,900.00	$11,760.00	$14,580.00
C&G Replacement	$2,430.00	$2,890.00	$3,580.00
Contractor General Conditions	$30,000.00	$35,640.00	$44,200.00
Total	**$2,247,415.00**	**$2,669,890.00**	**$3,311,210.00**

*Estimate provided by Holy Cross Energy is a high-level approximation and should be further validated.

An Operations and Maintenance Facility Master Plan is recommended to inform infrastructure costs for Phase 2. As mentioned, the Snowmass Mall Transit Garage can only support charging for 16 vehicles, limiting this facility to only Phase 1 vehicle procurement. As such, a full ZEB transition would require an additional facility and further investment in charging infrastructure.

Total Cost of Transition

The following table provides a comparison between the cost of a ZEB transition for the Town and the assumed baseline operating, maintenance, and procurement costs for a traditionally fueled fleet. The proposed charging infrastructure costs are also included in the total estimation. **Table 18** shows what a zero-emission transition would cost as opposed to a "business as usual" approach. This comparison is broken down by transition phase.

At a minimum, transitioning the Town's fleet to ZEBs is anticipated to cost $19,145,900. This amount does not include the costs of infrastructure needed to support Phase 2 of the transition. Transitioning to

ZEBs is anticipated to cost about $7.19 million more over the 14 years of the zero-emission transition than a traditional procurement of diesel vehicles, representing an 84% increase. This translates to an annualized cost differential of $513,420.

Table 18: Total Cost Differential of ZEB Transition

Phase	Operations and Maintenance Cost Differential	Vehicle Procurement Cost Differential	Infrastructure Cost Differential
1A	$198,620	$32,000	$2,247,420
1B	$676,500	$1,952,000	-
2	$609,540	$1,472,000	TBD
Subtotal	$1,484,660	$3,456,000	$ 2,247,420
Total			**$7,188,080**

A detailed year-over-year capital expenditure for ZEB procurement and charging infrastructure installation is also available in **Table 19**. This estimate includes a phased approach to infrastructure expenditure. Most infrastructure upgrades will happen during Phase 1A, but procurement and installation of additional chargers, conductors, and electrical gear, as well as expenses for electrical labor, can happen during Phase 1A or 1B.

Table 19: ZEB Transition Estimated Capital Expenditure

Phase	Transition Year	ZEB Procurement Capital Expenditure	Infrastructure Capital Expenditure	Total Capital Expenditure
1A	1	$278,000	$1,761,540	$2,039,540
	2	$278,000		$278,000
	3	$278,000		$278,000
	4	$278,000		$278,000
1B	5	$1,700,000	$485,880	$2,185,880
	6	$1,700,000		$1,700,000
	7	$1,700,000		$1,700,000
	8			
	9			
	10	$1,700,000		$1,700,000
2	11	$278,000		$278,000
	12	$1,700,000		$1,700,000
	13			
	14	$3,400,000		$3,400,000
Total		$13,290,000	**$2,247,520**	**$15,537,520**

Funding Sources

To fund its transition to ZEBs, the Town will continue to leverage existing state and local funding sources and seek additional funds from federal sources summarized below in **Table 20**. Many of these federal programs allow for funds to be used towards maintenance facilities and BEB charging infrastructure and will be crucial should the Town opt to pursue a new Operations and Maintenance (O&M) Facility.

Table 20: ZEB Transition Funding Sources

Funding Program	Administering Agency	Eligibility			Funding Potential
		Maintenance Facility	Charging Infrastructure	ZEB Purchase	
Colorado Clean Transit Enterprise Facilities Program	CDOT	✓	✓	✓	High
Better Utilizing Investments to Leverage Development (BUILD) Grant Program (formerly RAISE)	USDOT	✓	✓	✓	Low
Capital Investment Grants (CIG) Small Starts	FTA		✓	✓	Low
Section 5311: Formula Grants for Rural Areas	FTA	✓	✓	✓	Moderate
Section 5339: Bus and Bus Facilities Formula Funds Grant	FTA	✓	✓	✓	High
Section 5339 C: Low or No Emission Vehicle Program	FTA	✓	✓	✓	High
Discretionary Grant Program for Charging and Fueling Infrastructure	FHWA		✓		Low
Surface Transportation Block Grant Program	FHWA		✓		Low
National Electric Vehicle (NEVI) Formula Program	FHWA		✓		Low
Carbon Reduction Program	FHWA		✓	✓	Low

Funding Program	Administering Agency	Eligibility			Funding Potential
		Maintenance Facility	Charging Infrastructure	ZEB Purchase	
Charging and Fueling Infrastructure Grant Program	FHWA		✓		Low
Alternative Fuel Tax Credit	USDOE		✓		Moderate

POLICY AND LEGISLATIVE IMPACTS

The Town anticipates future changes to policy, legislation, and the development of supportive technologies locally in addition to the plans already put in place by other jurisdictions that will impact the Town's ZEB transition plan. The Town has identified specific policies at the local, regional, state, and federal level that are relevant to the fleet transition and facilitate exploration of funding sources or partnerships that align with efforts led by other jurisdictions.

Local Initiatives

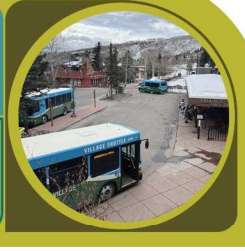
Town of Snowmass Village Resiliency & Sustainability Plan

The Town of Snowmass Village has a Resiliency & Sustainability Plan that details the Town's sustainability goals.[24] The plan was originally written in 2009 and was updated in 2020 to reflect current progress and updates to the goals. The town has an overall sustainability goal of reducing carbon emissions by 62.5% by 2030, as well as a goal to achieve net zero emissions by 2050.[25]

The Resiliency & Sustainability Plan outlines a key energy conservation and climate protection goal that relates to the Town's ZEB transition plan. The plan states that the Town should: "evaluate inclusion of hybrid, electric, flex-fuel, and/or biodiesel technology in new vehicle and equipment purchases." As of the 2020 update, the Village Shuttle had conducted a test drive of the Town's routes utilizing an electric bus. The plan tasks the Fleet Maintenance Division and the Village Shuttle with a continual evaluation of EV technology for integration into the Town's fleet, whether that be for transit vehicles or administrative vehicles.

[24] Town of Snowmass Village. 2020. "Resiliency & Sustainability Plan Update." https://www.tosv.com/DocumentCenter/View/1796/Final-Sustainability-Plan-Update-2020?bidId=

[25] Kaya Williams. 2021. "Snowmass Village adopts 'ambitious' emissions reduction goals." *Aspen Times.* *https://www.aspentimes.com/news/snowmass-village-adopts-ambitious-emissions-reduction-goals/#:~:text=Town%20will%20aim%20for%20net%20zero%20by,the%20community%20at%20a%20Nov.%2015%20meeting*



Regional Initiatives

Roaring Fork Transportation Authority Zero-Emission Fleet

RFTA published its plan to achieve a transition to zero-emission vehicles in 2024.[26] The plan, which aligns with RFTA's Climate Action Plan and Colorado's statewide goals, targets 2050 for a full transition to zero emission vehicles. RFTA evaluated two transition timelines: an accelerated option achieving full ZEB adoption by 2040, and a standard timeline targeting 2050.

The plan identifies capital investments and operational changes required to support ZEB implementation, and provides information on planning considerations, infrastructure considerations, and potential funding strategies to achieve a successful transition. The plan recommends a mix of battery electric and fuel cell electric buses to fully transition to zero-emission buses. The plan also recommends infrastructure investments at O&M facilities in Glenwood Springs and Aspen to support BEB charging and hydrogen fuel cell electric bus (FCEB) refueling.

Pitkin County Climate Action Plan

In 2025, Pitkin County released an updated Climate Action Plan (CAP) as a roadmap for reducing emissions and building resiliency within the county. [27] The CAP sets emissions reductions targets, and outlines strategies for meeting these targets. The CAP is intended to be a framework for decision-making and a guide for county planning efforts.

To achieve these goals, the CAP identified strategies related to the county's fleet and employee commutes:

- Evaluate County operations and policy options for supporting and accelerating the EV transition.
- Develop an education campaign to build awareness and support EVs for all staff.
- Monitor emerging technologies for low-emission industrial and emergency vehicles and specialty equipment and pilot new technologies as they become available.
- Study commuting behavior and provide incentives to reduce emissions.

For each of these strategies, the count identified several supporting actions, which include converting County-owned vehicles to BEVs and expanding the availability of charging infrastructure countywide. As part of its fleet transition, the Town has opportunities to coordinate with Pitkin County to mutually work towards the goals identified in the CAP.

Colorado Initiatives

The State of Colorado has several statewide initiatives that outline a framework of goals for reducing transportation-based greenhouse gas emissions in the state.

[26] Roaring Fork Transportation Authority. 2024. "Zero-Emission Transition Plan." https://www.rfta.com/wp-content/uploads/2024/07/Final-Zero-Emission-Fleet-Transition-Plan-7-11-24.pdf
[27] Pitkin County. 2025. "2025 Climate Action Plan." https://pitkincounty.com/1560/Climate-Action

Colorado Department of Transportation 2023 Electric Vehicle Plan

The 2023 Colorado Department of Transportation (CDOT) Electric Vehicle Plan details strategies that will support the deployment of ZEVs and ZEBs in the state. This plan outlines a path towards a large-scale transition of Colorado's transportation to ZEVs, and sets goals of transitioning 100% of light-, medium-, and heavy-duty vehicles being zero emission. To achieve these goals, the plan states that Colorado must:[28]

- Increase the number of light-duty EVs to 940,000 by 2030
- Develop an EV infrastructure goal by undertaking a gap analysis to identify the type and number of charging stations needed across the state to meet 2030 light-duty vehicle (LDV) and medium- and heavy-duty (M/HD) goals
- Increase the number of charging ports awarded or installed to 1,700 direct current fast chargers (DCFC) and 5,800 public Level 2 by 2025, including awarding grants for at least 1,000 ports each year through 2025
- Develop a roadmap to full electrification of the light-duty vehicle fleet in Colorado
- State government agencies must meet directives and goals related to EVs. Beginning in Fiscal Year (FY) 2022, and each subsequent FY, the Colorado Energy Office (CEO) and the Colorado Department of Public Health and Environment (CDPHE) must consult with CDOT to prepare an annual report detailing the progress made toward the EV adoption goals

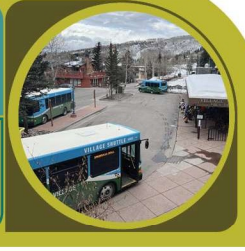
This plan is also informed by specific goals for transitioning M/HD vehicles from the 2022 Colorado Clean Truck Strategy, detailed below.

2022 Colorado Clean Truck Strategy

The 2022 Colorado Clean Truck Strategy, a joint effort between CEO, CDOT, and CPDHE, outlines the state's plan to transition to zero emission medium- and heavy-duty vehicles. The plan recognizes that transition efforts look vastly different for trucks and buses compared to light-duty EVs and sets out specific goals related to those vehicle types. The plan proposes the following goals for transitioning trucks and buses to ZEVs:[29]

- Convert public transit fleets across the state to 100% ZEVs no later 2050, with an interim target of at least 1,000 zero-emission transit vehicles by 2030
- Increase adoption of medium- and heavy duty (M/HD) ZEVs to at least 30% of new sales by 2030 and 100% of new sales by 2050

[28] Colorado Energy Office. 2023. 2023 Colorado EV Plan. Retrieved from: https://energyoffice.colorado.gov/transportation/ev-education-resources/2023-colorado-ev-plan
[29] Colorado Energy Office. 2022. 2022 Colorado Clean Truck Strategy. Retrieved from: https://freight.colorado.gov/sites/freight/files/documents/Colorado%20Clean%20Truck%20Strategy%20-%20Compliant.pdf



- Plan for and support public, utility, public-private partnership and private sector funding for M/HD charging and hydrogen fueling infrastructure to help meet clean truck and bus adoption goals

Greenhouse Gas Pollution Reduction Roadmap

Based on the 2020 CDOT EV plan, CEO created a Greenhouse Gas (GHG) Pollution Reduction Roadmap, which defined strategies and goals related to the reduction of (GHG pollution in Colorado. The Roadmap sets a goal of 90% reduction in GHG emissions from 2005 levels. To reach this goal, the Roadmap finds the need to dramatically increase the total number of ZEVs and dramatically decrease vehicles miles traveled (VMT).[30]

Colorado Transit Zero Emission Vehicle Roadmap 2021

The Colorado Transit ZEV Roadmap builds on the goals and strategies outlined in the 2020 revision of the Colorado EV Plan. This Roadmap outlines the following goals, objectives, and actions that reflect CDOT's commitment to supporting transit agencies in operating a 100% zero-emission transit fleet by 2050, as well as transitioning 1,000 transit vehicles to ZEVs by 2030:[31]

- CDOT will develop a state-approved master purchasing contract for zero-emission vans, cutaways, and large buses to streamline transit agency procurement of ZEVs.
- CEO will gather data on utility rates with municipal and rural utilities and co-ops to develop new rate structures that encourage the sustainable charging of EVs for individuals, fleets, and transit agencies.

Colorado State Senate Bill 19-077 – Electric Motor Vehicles Public Utility Services

This bill authorized the ownership of EV charging by electric utilities. In addition, it established a regulatory framework and process to file plans for EV infrastructure and facilities infrastructure investments, as well as charging programs, electrification of transit, and low-income programs.

Interstate Initiatives

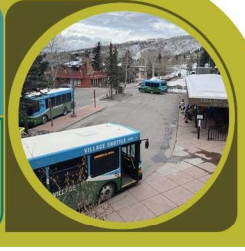
Beyond state-level initiatives, the State of Colorado has entered into interstate agreements promoting the use of alternative fuels for transportation.

Multi-State ZEV Task Force Memorandum of Understanding

In July 2022, the State of Colorado signed a memorandum of understanding (MOU) with several other states to support the deployment of medium- and heavy-duty ZEVs. Other signatory states include California, Connecticut, the District of Columbia, Hawaii, Maine, Maryland, Massachusetts, Nevada, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington. This task force set forth goals including limiting all new medium- and heavy-duty vehicle

[30] Colorado Department of Transportation. 2021. Colorado Greenhouse Gas Pollution Reduction Roadmap. Retrieved from: https://www.codot.gov/programs/environmental/greenhousegas/assets/co-ghg-pollution-reduction-roadmap.pdf

[31] Colorado Department of Transportation. 2021. Transit Zero Emission Vehicle Roadmap. Retrieved from: https://www.codot.gov/programs/innovativemobility/assets/cte/colorado-transit-zev-roadmap-2021-11.pdf



sales within the signatory states to ZEVs by 2050; accelerating the deployment of medium- and heavy-duty ZEV and ensuring that the deployment of these vehicles equitably benefits disadvantaged communities. These goals, as well as supportive strategies and recommendations, are detailed in the Multi-State Medium and Heavy-Duty ZEV Action Plan: A Policy Framework to Eliminate Harmful Truck and Bus Emissions.[32]

WORKFORCE TRANSITION PLAN

A key aspect of this ZEB Transition Plan is to preserve the current workforce and to provide a pathway to empower staff with the necessary skills to support the successful deployment and maintenance of ZEBs. This is done with the goal of ensuring consistent passenger service while delivering environmental benefits and in recognition of the value and importance of the existing workforce and the Town's role as an employer within the region. Updating the existing training systems to include battery electric vans and buses while planning for the gradual retirement of gas cutaways and diesel buses will be done as part of this transition. The Town will partner with OEMs, established training resources, and other transit operators within the region to collaborate on training for operators, mechanics, and other staff to work with the new ZEVs. The Town has identified the opportunity to collaborate with and learn from other transit agencies within the region, most significantly RFTA, which is the second largest transit agency in the state and currently in the process of transitioning to ZEB. The Town will explore the potential to share training resources with RFTA.

This **Workforce Transition Plan** provides a framework to identify skill gaps, training needs, and retraining needs of existing workers to operate and maintain ZEVs and related infrastructure while undergoing a significant operational shift.

Training Approach

Training will occur in various formats to support diverse learner needs, such as in-person instructor-led sessions, hands-on exercises, computer-based training, knowledge checks, reference material, and operational manuals. Workforce training efforts will consider the human aspect of this shift in operations and acknowledge the challenges that come with introducing new skills, processes, and procedures. For this reason, the workforce transition will include resources to support affected employees directly and indirectly through the cultural and technological shift.

The Transit Cooperative Research Program's (TCRP) Research Report 219: Guidebook for Deploying Zero-Emission Transit Buses identifies three key best practices related to training and development:

- Ensure adequate safety training related to high voltage hazards
- Require OEMs to conduct first responder training and specify training materials, needs, and responsibilities in the procurement contract

[32] Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Action Plan. 2022. Retrieved from: https://www.nescaum.org/documents/multi-state-medium-and-heavy-duty-zev-action-plan.pdf

- Careful coordination of training prior to or in conjunction with bus delivery

From a high-level perspective, workforce training needs to cover three distinct phases that progress from general to specific information:

- Phase 1: Foundational Electrical/Electronic Principles
- Phase 2: Zero-Emission Bus Systems and PPE
- Phase 3: OEM-Specific Training

The details of each phase of training as well as recommended resources are given in **Appendix D**.

Skill Assessment of Existing Workers

At present, the Town's transit vehicle fleet is maintained by the same technicians who maintain the Town's other municipal vehicles and equipment. This same crew of workers is also responsible for the maintenance of EV chargers located within the Town, including a level three DC fast-charger. With the expansion of charging infrastructure and addition of ZEBs to the Town's fleet, it is possible that the Town would want to explore expanding the workforce of maintenance technicians to account for any additional service time experienced for chargers and ZEBs.

At a broad level, it is expected that all technicians will be impacted to some degree by the transition to ZEBs. The baseline assessment of skills of maintenance technicians will be their proficiency at diagnosing and repairing electrical and electronic faults on traditional buses (12- and 24-volt electrical systems). Without these foundational skills, workers cannot be trained on ZEB-specific skills, including working on systems with upwards of 800 volts and using specialized tools and instruments to diagnose electrical faults. The Town plans to complete this assessment of baseline skills by utilizing the expertise of maintenance supervisors, who will be able to estimate the percentage of technicians who are already proficient at using specialized tools, such as digital multi-meters (DMM), to diagnose electrical faults.

Existing technicians will be evaluated to determine who already holds National Institute for Automotive Service Excellence (ASE) Transit Bus certifications for Electrical/Electronic Systems (H6), or similar certifications from the automobile and heavy-truck sectors. The Town also plans to recognize and account for training provided internally, as well as from technical schools, previous employment, and third-party training providers. The findings of this assessment will inform more detailed assessments of skills gaps and next steps, explored further in the next section.

The Town will work with facilities and labor management to develop the criteria for foundational electrical/electronic systems (E/E) skills and establish the baseline for deciding which workers need additional training and in which skill area depending on workforce structure. Impacted workers will be classified by their expected level of training required based on job requirements:

- Basic E/E Training
- Multiplex Training

- Advanced E/E Training
- Basic ZEB Training
- Advanced ZEB Training

The Town will work to develop E/E skills across the entire workforce of technicians with the understanding that these skills are widely transferrable and can assist in the repair of traditional buses and will establish baseline safe operations when working in proximity to high-voltage systems.

The early deployment of battery-electric vans should prove useful in providing technicians with more hands-on learning regarding electric drive systems; however these vehicles will require significantly different OEM training from the heavy-duty transit buses.

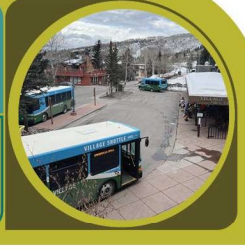
Training Plan: Strategies and Partners

The first step in closing the skill gaps will be to establish a team of labor and management subject-matter experts who are committed to working together in support of that goal. The inclusion of subject matter experts is key to a successful training strategy and will support technicians to assess their skills openly and accurately in the skills gap survey and provide a venue for the technicians to provide feedback regarding training content and delivery methods. The team will offer input on the training requirements and responsibilities of the OEM using the language and best practices outlined in the report from ITLC and Jobs to Move America (JMA) titled “Providing Training for Zero Emission Buses: Recommended Expanded RFP Language.”

Technical skills are best transferred by engaging trainees through hands-on exercises, computer simulations, training mock-ups, and on-the-job exercises. Use of learning aids and hands-on exercises will be implemented for classroom learning to supplement education on theory and principles based on the success of these methods.

There is potential to partner with local community colleges and technical schools to develop responsive training to address the need for rapid learning gains in E/E systems. One potential training partner is Colorado Mountain College, which offers an Automotive Service Technology program, however no specific high voltage systems training. If pursued, this partnership to develop course curriculum to teach the skills needed to maintain BEBs. In the case that this partnership is mutually desired, the Town will work closely with the program and instructors to ensure the syllabus materials are well suited to cover the comprehensive list of learning needs outlined in APTA’s Standard for Training on Electrical and Electronic Systems. Using the results of the surveys outlined in the previous section, the team will target training for specific technicians in specific skill areas and coordinate classes to train technicians in the skill gap areas.

The Town recognizes the significant value of the existing workforce’s experience and intends on working collaboratively throughout the process to support workers during the transition.

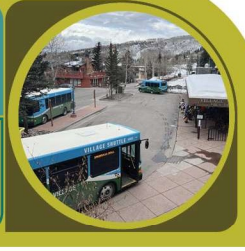


Engagement of Workforce in Development of Transition Plan

Ongoing engagement with the frontline workforce in all decision-making processes accounts for a critical piece of the transition plan and the implementation of ZEB technology. Involvement of all members of the workforce will be integrated throughout the workforce transition process, from the initial planning phases through each consecutive step.

Ensuring engagement and involvement with frontline workers is a top priority for the Town, and this will be communicated from the technician level to the management level. The Town will identify strategic approaches to integrate and engage the current workforce in the development of the transition plan, including regular communications regarding progress updates and the development of engagement mechanisms and tools between the Town leadership and the frontline workforce. Another key component to prioritize engagement of the current workforce is to encourage and empower the frontline workforce to speak up in the decision-making processes, rather than keeping these processes in the hands of management.

The Town intends to carefully develop bus procurement documents to require the OEM/vendor to provide training aligned with closing the existing skill gaps and developing staff to work on ZEBs safely and confidently. Staff with local agency subject-matter expertise may be included in meetings with the OEM/vendor to ask questions and review training specifications in the Request for Proposals (RFPs). This would ensure a voice for those in the workforce that will directly be affected by the introduction of the ZEB technologies to influence decisions that affect how they will adapt to and develop skills for the successful deployment and maintenance of ZEBs.



APPENDIX A: STATE OF THE INDUSTRY TECHNICAL MEMORANDUM

Introduction

The Town of Snowmass Village (Town) retained Kimley-Horn and Associates, Inc. to prepare a Federal Transit Authority (FTA)-compliant Zero Emission Bus (ZEB) Transition Plan for the Town's transit service, the Village Shuttle. This memorandum (memo) represents a portion of the larger effort to assist The Town in planning for ZEB technology. This memo provides a summary of the current state of zero emission technology, including refueling infrastructure, and an assessment of the Town's current fleet and operations. The findings summarized in this memo were compiled through reviews of peer transit agencies, original equipment manufacturers (OEM), available industry research, and general market trends. This memo includes the following sections:

- ZEB Technology Overview
- Fueling Equipment and Infrastructure Overview
- Zero Emission Technology Recommendation

Zero Emission Bus Technology Overview

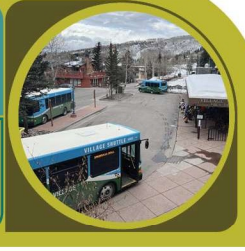
The Town currently operates two types of traditionally fueled vehicles: Ford E450 Cutaways and 29' Gillig Low Floor Buses. This memo will describe trends in zero-emission transit, including battery electric buses (BEB), hydrogen fuel cell electric buses (FCEB), and diesel hybrid buses. These technologies are described in detail below.

BATTERY ELECTRIC BUSES

BEBs operate using electricity as fuel stored in an onboard battery pack that powers an electric motor. BEBs are available with a range of battery capacities, measured in kilowatt-hours (kWh), and are formed through different configurations of multiple individual cells packed together depending on the desired total battery capacity.[33] These buses are generally categorized as either long-range or fast-charge buses depending on the size of the onboard battery packs. Long-range BEBs have large battery packs designed to accommodate overnight depot charging and longer routes (usually between 250–600 kWh). Fast-charge BEBs have smaller battery packs (from 50–250 kWh) and are designed to operate on shorter routes that benefit from opportunity charging on-route or a midday break to charge at the depot.

Many battery chemistry technologies are available on the market, the most common being lithium nickel manganese cobalt (NMC), lithium iron phosphate (LFP), and lithium titanium oxide (LTO). Major

[33] A kilowatt-hour is a measure of power equivalent to an energy consumption of 1,000 watts in 1 hour.



manufacturers in the United States (US) tend to favor NMC batteries for their higher energy density and, as a result, their extended ranges over LFP and LTO batteries.[34]

Market Availability

Transit Bus

In 2023, two major OEMs of heavy-duty transit buses shifted considerably: Proterra filed for bankruptcy, and Nova Bus ended its US bus production to shift focus to the Canadian market. Proterra's transit bus division was acquired by Phoenix EV; however, the 2024 American Public Transit Association's (APTA) Public Transportation and Vehicle Database does not note any Phoenix EV vehicles that have been procured or are planned to be procured.

In 2024, Optimal EV completed the FTA's testing procedure at Altoona, resulting in the market's first Buy America-compliant cutaway low-floor battery electric class 4 bus to pass Altoona testing.[35] This certification makes these vehicles eligible for purchase or lease under the FTA's Low- and No-Emissions Grant program. In early 2025, Endera completed Altoona testing for their B4 shuttle bus, providing another battery electric cutaway option in the North American market that is also eligible for FTA funding. [36]

At the time of publication of this report, there were only a few OEMs actively building these buses to standards that meet the Bipartisan Infrastructure Law's Low- or No-Emissions Grant Program's Buy America requirements. The source of funding for purchasing these buses must be considered when planning a transition to a low- or no-emission technology.[37]

Table 21 highlights the available bus lengths, battery capacities, and advertised ranges of different OEMs. The selection of buses shown in the table is intended to provide comparable examples to the Town's existing fleet. The Town's current fleet is comprised of 10 gas F450 Cutaway Buses and 19 diesel Gillig 29' Buses. It should be noted that many OEMs are moving away from producing battery electric buses under 35' in length, creating a more limited set of options available to the Town that are comparable to its current transit fleet. Most notably, Gillig is no longer producing BEBs under 35' in length, according to the current selection available on their website.

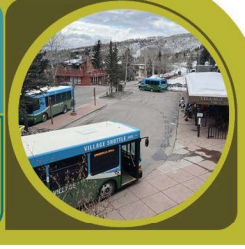
The prices shown in **Table 21** are given as estimations, as the actual purchase price can be dependent on what is contracted to be procured with the bus. The warranty negotiated with the OEM can also influence price, as a greater amount of battery degradation covered by the warranty can increase the price. Additionally, the market for BEBs is constantly evolving, and prices of BEBs fluctuate as a result.

[34] Kumar, P., Mulukutla, P., and Doshi, P., 2023. "Real-world electric bus operation: Trend in technology, performance, degradation, and lifespan of batteries" Working Paper.WRI India. Available online at doi.org/10.46830/wriwp.22.00097

[35] Optimal EV. (2024). Optimal EV Announces Altoona Testing Certification for the E1 Electric Paratransit Vehicle and S1 Low-Floor Battery Electric Cutaway. Retrieved from: www.optimal-ev.com/press/optimal-ev-announces-altoona-testing-certification-for-the-e1-electric-paratransit-vehicle-and-s1-low-floor-battery-electric-cutaway

[36] The EV Report. (2025). Endera's Electric Shuttle Aces Altoona Test. Retrieved from: theevreport.com/enderas-electric-shuttle-aces-altoona-test

[37] www.transit.dot.gov/lowno



The range distances in **Table 21** are also dependent on a variety of factors and represent those of a new bus. The advertised range typically exceeds what operators experience during daily operations, primarily due to optimal testing and driving conditions. The factors that limit the range of BEBs are detailed below in the Usable Battery Capacity and Degradation section.

Table 21: List of Market Available Electric Buses Comparable to the Town of Snowmass Village's Fleet per 2024 APTA Vehicle Database

MANUFACTURER /MODEL	LENGTH (FEET)	OCCUPANCY	BATTERY SIZE (KWH)	OEM-STATED RANGE	PRICE (2024)	BUY AMERICA COMPLIANT	ALTOONA TESTING	VEHICLE PHOTO
RIDE Motors (formerly BYD) K7M	30	22	213	158	$627,000	Yes	Passed	
RIDE Motors (formerly BYD) K7M-ER	30	20	313	196	$850,000	Yes	Passed	
El Dorado National (ENC) Axess Evo-BE	32	37	Not listed	Not listed	Not listed	Yes	Passed	

MANUFACTURER /MODEL	LENGTH (FEET)	OCCUPANCY	BATTERY SIZE (KWH)	OEM-STATED RANGE	PRICE (2024)	BUY AMERICA COMPLIANT	ALTOONA TESTING	VEHICLE PHOTO
Optimal EV S1LF Low Floor Shuttle Bus	26	21	113	125	Not listed	Yes	Passed	
GreenPower EV250	30	26	260	163	Not listed	Yes	Not Yet Tested	
Phoenix Motorcars Z-400		21	90	135	Not listed	Yes	Not Yet Tested	

MANUFACTURER /MODEL	LENGTH (FEET)	OCCUPANCY	BATTERY SIZE (KWH)	OEM-STATED RANGE	PRICE (2024)	BUY AMERICA COMPLIANT	ALTOONA TESTING	VEHICLE PHOTO
Phoenix Motorcars Z-400 Max		21	131	165	Not listed	Yes	Not Yet Tested	
Turtle Top/Motiv Epic 4	24	14	127	115	Not listed	Yes	Passed	

MANUFACTURER /MODEL	LENGTH (FEET)	OCCUPANCY	BATTERY SIZE (KWH)	OEM-STATED RANGE	PRICE (2024)	BUY AMERICA COMPLIANT	ALTOONA TESTING	VEHICLE PHOTO
Endera B4	24	14	144	105-150	Not listed	Yes	Passed	
Turtle Top Terra Transit	22	16		159	$298,000	Yes	Passed	
Ford E-Transit	22		89	159	$51,000	Yes	N/A	

Photos obtained from: RIDE, El Dorado National, GreenPower, Phoenix Motorcars, Motiv, Endera, TESCO, and For

Operating Characteristics and Performance

Over the life cycle of an energy storage system, batteries will lose usable capacity but are required to maintain a minimum state of charge (SOC) to protect the component and vehicle systems, as illustrated in **Figure 16**. Battery warranties typically guarantee a battery to 70–80% of the nameplate capacity for the life of the vehicle (approximately 12 years). This reduction is difficult to quantify and is challenging to measure consistently. As such, it can be difficult to submit a warranty claim related to battery capacity.[38]

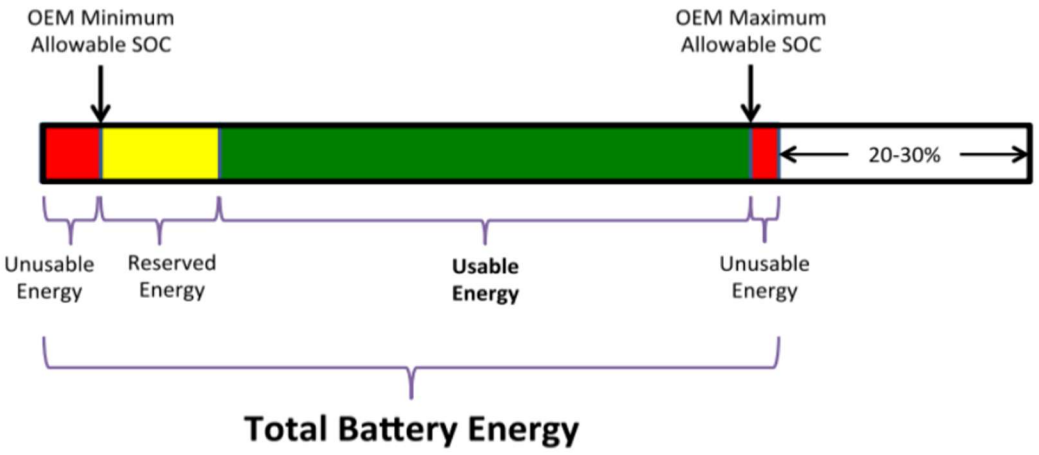


Figure 16: End-of-life Batteries[39]

Higher temperatures and extended full-drain cycles can accelerate the natural battery-aging process when compared with operating near the middle of the capacity parameters. Battery life can be extended by cycling the battery at lower SOCs when possible and avoiding a high SOC when the vehicle is not in use and/or decreasing the upper SOC limit. For example, it is more advantageous for battery longevity to cycle a BEB battery from an SOC of 40% up to 70% than to frequently recharge from 60% to 90%. Rates of battery charging also matter—fast-charging batteries have a capacity reduction of around 8.7% when compared to slower-charging counterparts, meaning that slow charging leads to longer-lasting batteries. Once a battery reaches the end of its useful life for BEB application, it will still retain 60–80% of its initial capacity, leading to opportunities for a second-life application before eventually being recycled into new battery components.[40] The ability to optimize charging (as described above) does require a significant level of oversight and management. Bus operators can employ a computerized charge management system to aid in the optimal charging of their fleets.[41]

[38] National Academies of Sciences, Engineering, and Medicine, 2021
[39] Aamodt, Cory, & Coney, 2021, Bigelow, 2017
[40] Ibid.
[41] Survey and gap prioritization of U.S. electric vehicle charge management deployments, Lawrence Berkeley National Laboratory, NREL, 2024

Usable Battery Capacity and Degradation

Electric batteries degrade over time and use (calendar and cyclical aging), resulting in a gradual decline in the battery's ability to hold a charge, known as capacity loss or capacity fade.[42] Over the life of the vehicle, this can reduce the range of the bus by about 25%. In general, battery degradation and aging are accelerated by use in high ambient temperatures (higher than 86 degrees Fahrenheit) and high depth of discharge (discharging more than 80% of total battery capacity).[43] When compared to complete charge and discharge (near 0% to 100%), a battery charged more frequently at moderate states of charge will experience less capacity degradation.

Figure 17 highlights the effects of battery degradation. When the battery is new, the first 10% of the battery should be reserved for longevity. The remaining 90%, referred to as service energy, is the portion of battery capacity that is to be considered useable. The service energy is designed to protect battery life.[44] The last 10% will cause the bus to operate at a derated performance, and the BEB will not experience the same range per kWh as it would with the rest of the battery. Below 5%, the energy supplied by the battery will be insufficient to move the bus. When the battery degrades, the 10% reserved for longevity and 10% that holds the bus to derated performance remain the same. For example, in a 440 kWh battery, the 10% reserved for longevity will remain at 44.0 kWh no matter the level of degradation the battery has experienced.

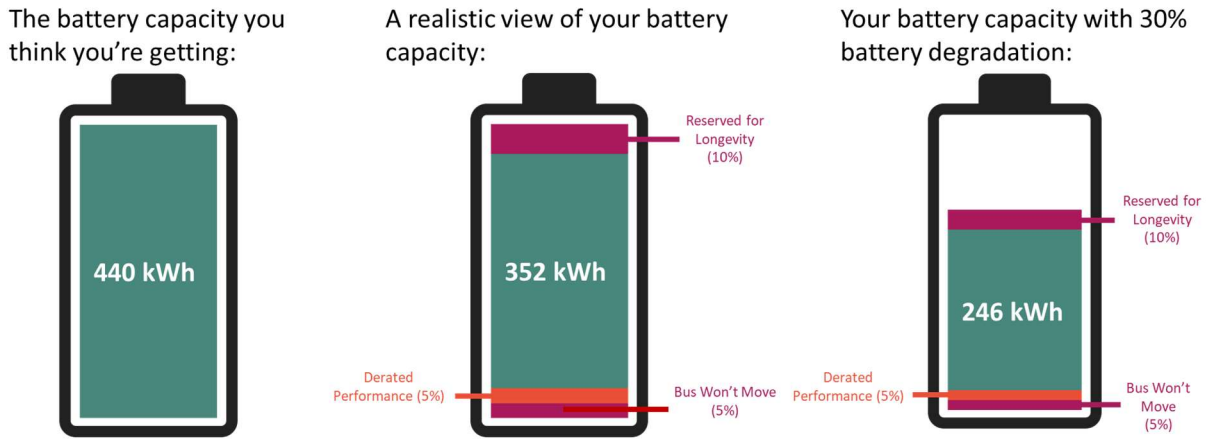


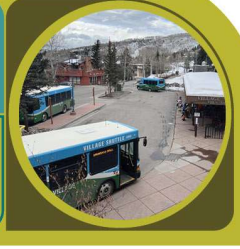
Figure 17: BEB Battery Capacity Example

Recent industry thinking suggests that agencies could strive to be more aggressive in using the battery to a greater depth of discharge, allowing for longer ranges of operation and narrower margins of SOC remaining when the bus arrives back at the depot at the end of the day. This approach requires further

[42] Kumar,P., Mulukutla, P., and Doshi, P., 2023."Real-world electric bus operation: Trend in technology, performance, degradation, and lifespan of batteries" Working Paper.WRI India. Available online at doi.org/10.46830/wriwp.22.00097

[43] Ibid.

[44] Mountain Line Transit. (2020). Zero-Emission Bus Implementation Plan. Retrieved from: mountainline.az.gov/wp-content/uploads/2021/03/Phase-2-Implementation-FINAL.pdf



investigation and should be tracked by the agency as the fleet begins conversion and actual operating performance statistics are collected.

Depending on the OEM and the details outlined in the bus procurement contract, OEMs typically provide an initial warranty on the battery, which can guarantee between 70-80% of the kWh of a new battery. This warrantied amount of battery life is typically calculated against the stated range of the battery, rather than the actual range of the battery, not including a reserve. For example, if the battery is advertised at a 440 kWh nameplate capacity, the actual benchmark amount covered and replaced by the warranty could be anywhere between 246 kWh and 282 kWh. This highlights the need to plan for lifetime and warrantable battery degradation to account for a bus's ability to complete its required tasks. As noted above, the amount of battery degradation covered by the warranty is dependent on negotiation with the OEM and can influence the purchase price of the BEB.

Impacts on Range and Duration

Heating, Ventilation, and Air Conditioning (HVAC) and Climate

BEBs use the battery to operate all aspects of the vehicle, including running the HVAC system. Any heating or cooling demand will use battery power, which can significantly shorten the range of the BEB. On particularly hot or cold days, this typically results in the vehicles observed range being significantly less than it would be in ideal operating conditions.

A 2019 study collected operations and performance data from eight transit agencies in climates ranging from Northern Minnesota to Southern California and found that, when temperatures dropped from ranges of 50–60°F to 22–32°F, BEBs lost around 32.1% battery efficiency, resulting in a reduced range.[45] The degree of impact on the battery range is highly dependent on the difference between the ambient temperature outside and the internal temperature set in the cabin. The exact energy consumption of the HVAC system can also depend on other factors, including the number of passengers onboard, the average speed of the route, and how often the vehicle opens its doors.

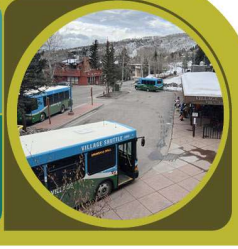
It is also important to remember that during cold temperatures, more energy is needed to start up the vehicle for operations. Depending on the transit agency's storage facility, someone might be required to turn the bus on and heat it up hours before regular operations can start. Additional "start-up" time is needed when the vehicle is stored outdoors.

Operator Driving Styles

A 2018 study evaluated various driving styles of city buses, comparing effects on pollution and energy consumption of driving a BEB versus an internal combustion engine diesel bus.[46] This study included real-world measurements, review of research, and driver surveys. Results showed that BEBs tend to be driven more aggressively and accelerated faster than diesel buses, which results in higher use of

[45] Mark Henning, Andrew R. Thomas, Alison Smyth. (2019). An Analysis of the Association between Changes in Ambient Temperature, Fuel Economy, and Vehicle Range for Battery Electric and Fuel Cell Electric Buses. Retrieved from: engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=2634&context=urban_facpub

[46] acris.aalto.fi/ws/portalfiles/portal/27322839/ENG_Veps_l_inen_Jari_Driving_Style_Comparison_IEEE_Vehicle_Power_an d_Propulsion_Conference_2017.pdf



mechanical energy, affecting range and battery longevity. The study also pointed out that more frequent stops result in higher energy needs than driving longer distances on steady speeds.

BEBs have much more torque than conventional diesel buses. Therefore, when driving a BEB it is important to use "smooth on" and "smooth off" skills to improve a rider's onboard experience and optimize the vehicle's range. Additionally, knowing how to take advantage of regenerative braking can further improve vehicle range and battery longevity. A 2023 study found that regenerative braking had the ability to recover 37.3% of the total energy in 40-ft BEBs and up to 40.2% of the total energy in 60-ft BEBs.[47] It should be noted that these skills take time to acquire, especially considering the vehicle's size and potential changes in topography.[48] However, given existing concerns over the feasibility of using regenerative braking in the Town due to icy winter conditions along many routes, regenerative braking should not be relied upon as a means of extending BEB range.

Passenger Load

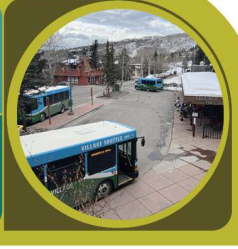
Passenger load and the additional weight a bus carries will impact a BEB's range. A *Transportation Research Record* (TRR) article from 2019 investigated the energy impacts of passenger loading on conventional buses and BEBs.[49] The study found that increased vehicle mass results in increased energy consumption; this is true regardless of drivetrain type. On average, a BEB at maximum payload consumes about 23% more energy than an empty BEB. The study notes that a diesel transit bus requires about 34% energy at maximum payload compared to a zero payload, even though BEBs are generally heavier than conventional diesel buses. The authors attribute the diesel bus's higher energy consumption to the fact that a BEB can regain energy through regenerative braking.

Therefore, it is important to plan bus operations accordingly. If a higher number of transit riders is expected for specific routes at specific times, it may be necessary to adjust a vehicle's route operating time or make route adjustments during peak periods.

Topography

Topography can significantly impact the range of BEBs, though existing benchmarking and trials of demanding routes to better understand a vehicle's energy need when navigating topographically more challenging areas are limited. A 2022 study evaluated the performance and energy consumption of BEBs driving terrain demanding routes in Europe.[50] This study shows that routes with elevation increases require significantly more energy. This is amplified by low outside temperatures. Even though the authors concluded that buses at higher elevations have higher energy consumption on hilly roads compared to flat roads, they recommend real-life testing to better understand each route's topography and impact on battery range.

[47] Perugu et. al. (2023). Characterization of battery electric transit bus energy consumption by temporal and speed variation. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S0360544222028006
[48] http://www.faac.com/blog/2023/04/20/three-training-tips-to-ensure-ev-bus-success/
[49] afdc.energy.gov/files/u/publication/time-varying_passenger_loading_impact.pdf
[50] http://www.sciencedirect.com/science/article/pii/S1364032122004543



Special Operator Training

As mentioned above, the range of the bus can be significantly impacted by many route characteristics, as well as operator driving styles and passenger load. It is recommended that operators are trained in the optimal driving styles to help maximize the range of BEBs. This includes smooth and steady acceleration, and gentle and steady braking to take advantage of regenerative braking, which transfers energy back into the battery rather than dissipating as heat.

In addition, it is recommended to accustom bus operators to driving BEBs prior to deployment. This can be done through driving simulators or behind-the-wheel training, using a used BEB dedicated for training purposes only. The Town has previously conducted a BEB pilot study, gaining pre-deployment experience in BEB operation. Training should build on the lessons learned during this pilot study.

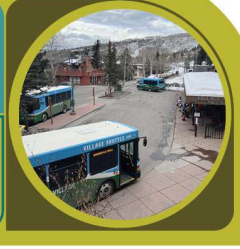
Life Cycle Considerations

The useful life target of BEBs, like traditional combustion engine vehicles, is approximately 12 years as outlined by the FTA. However, the electrical systems of the vehicle are not necessarily intended to last the duration of that lifetime, and warranty terms and periods vary by manufacturer and procurement process. Like diesel and Compressed Natural Gas (CNG) buses, BEBs may require a midlife overhaul for the energy storage system (batteries), drive motors, and power inverter. The cost of maintenance varies depending on the size and need for replacement components. The battery midlife overhaul is estimated to cost approximately $500 (2021) per kWh of battery capacity. This cost estimate is expected to decrease to approximately $218 per kWh over the next decade.[51] Specifics of the overhaul timeline and cost should be specified with the manufacturer during procurement, or warranty periods should be considered and negotiated with manufacturers.

Decommissioning

Upon the end of a BEB's useful life, there are limited options for decommissioning the bus. If the battery is still in good shape, it is possible for the battery to be reused in another application, such as an on-site energy storage system. Repurposing the battery internally can assist with operations and BEB charging while continuing to recoup initial procurement costs for the vehicle.[52] The other option for an end-of-life BEB is to recycle the battery, recovering the materials to use in new battery manufacturing. New Flyer of America, in collaboration with Li-Cycle, a battery recycling company, has recycled 45 batteries from BEBs, providing a successful case study for heavy-duty battery recycling when they reach the end of their useful life.[53] Landfill disposal of batteries should be avoided, as batteries can release toxins into the surrounding environment if they end up in a landfill.[54] Disposal or recycling procedures for batteries at the end of their useful life should be established in the procurement process, ensuring strategies are in

[51] Couch & Johnstone, 2019
[52] Cribioli. (2024). Battery Electric Bus Disposal Strategies: Challenges, Opportunities, and Recommendations. Retrieved from: https://escholarship.org/content/qt9r50384c/qt9r50384c.pdf
[53] New Flyer Industries (2021). Electric bus maker New Flyer and battery recycler Li-Cycle announce first successful recycling pilot. Retrieved from: https://www.newflyer.com/2021/01/electric-bus-maker-new-flyer-and-battery-recycler-li-cycle-announce-first-successful-recycling-pilot/
[54] Kothari. (2023). How to Ensure a Sustainable Future for Electric School Bus Batteries. Retrieved from: https://www.wri.org/technical-perspectives/electric-school-bus-battery-sustainability



place when the vehicle is purchased to minimize impacts from battery disposal. [55] Although there are not yet many BEBs that have reached the end of their life cycle, with market and industry maturation, strategies such as battery recycling and component reuse will become further established.

Costs

Table 22 highlights a sampling of the acquisition, maintenance, and overhaul costs available for electric heavy-duty buses and cutaways. It should be noted that there is not much information readily available for the cutaway vehicles or for decommissioning costs.

Table 22: BEB Cost Estimates (2025)

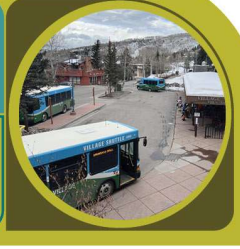
	BEB (TYP) 30'	CUTAWAY (TYP)
Vehicle Acquisition	~$627,000-850,000	~$170,000[56]+
Vehicle Operations and Maintenance[57]	$2.62/mile	Costs Not Available
Overhaul[58]	$500/kWh	Costs Not Available
Decommissioning	Costs Not Available	Costs Not Available

[55] Godfrey et al. (2023). Guidebook for Deploying Battery Electric Buses. Retrieved from: https://www.transit.dot.gov/sites/fta.dot.gov/files/2023-08/FTA-Report-No-0254.pdf

[56] Telluride 2024 Purchase of Electric Cutaway. Source: www.kdvr.com/news/local/31-7m-in-grants-to-fund-28-new-electric-transit-buses

[57] AC Transit 2024 Zero-emission Program Progress Report, June 2024.

[58] Mid-life overhaul Cost Assumptions from MTS 2020 Zero-Emission Bus Fleet Transition Study, 2020



HYDROGEN FUEL CELL TRANSIT VEHICLES

Fuel Cell Electric Buses (FCEBs) are like diesel and CNG vehicles in that they store consumable fuel on the vehicle. However, they are also like BEBs in that the drivetrain and all other vehicle systems are powered by electrical current. Instead of using combustion to produce mechanical motion, FCEBs operate using hydrogen fuel to produce electricity. The onboard fuel cell uses an electrochemical reaction to combine the hydrogen fuel with atmospheric oxygen, producing an electrical reaction that charges the battery. This battery is used to power the electric motor and other systems. The reaction produces heat and water as a byproduct. Like traditional diesel bus or gas vehicles, the size of the fuel tank directly corresponds to the overall range of the vehicle. With a larger onboard hydrogen tank, buses can operate over longer distances. Because the hydrogen fuel cell essentially charges the onboard battery as the bus operates, these buses can be outfitted with smaller batteries than their BEB counterparts.

Hydrogen fuel is stored in a gaseous state on an FCEB at an approximate pressure of 700 bar. Due to the high-energy density of hydrogen, it can be stored in a volume sufficient to allow an FCEB to perform similarly to traditional fossil fuel vehicles. Hydrogen-powered transit vehicles are close to a 1:1 replacement for traditionally fueled/internal combustion buses because of their similar range and fueling approach.[59]

Temperature influences the maximum capacity of a hydrogen storage tank. Filling during hot weather or filling rapidly can leave a vehicle only partially full for service during pull-out the next day. Strategies such as pre-chilling the gas before dispensing and slow-filling tanks can be employed to reduce the impact of temperature and maximum pressure. Deployment and operation of hydrogen fueling equipment is like that of fossil fuels, where vehicles return to the depot to fuel, unload collected fares, and be cleaned. Hydrogen fueling takes approximately 6–10 minutes, depending on the pressure of the stored hydrogen fuel and how many vehicles are being filled simultaneously.[60] Hydrogen fueling stations have hazards like CNG facilities. For hydrogen stations, safety systems will include pressure relief, fire and leak detection, and flame detection systems.[61]

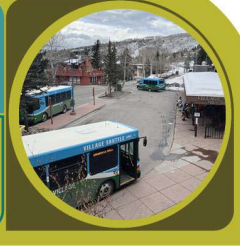
As a basis of fuel cell technology, the vehicle battery is rapidly charged and discharged based on the traction or system demands, and the fuel cell cycles between active and inactive to generate electrical current. During this cycle process, the battery will remain at a moderate SOC, compared to how a depot-charged BEB may operate, charging to maximum capacity then draining to a low state of charge while in operation. This combination of high-frequency charge/discharge and moderate battery SOC results in less battery degradation and improves the lifespan of the energy storage system compared to BEBs.

Market Availability

Transit Bus

New Flyer and El Dorado are the top two major manufacturers of FCEBs in the North American market. In April 2024, Gillig announced they would be expanding their zero-emission portfolio to include an

[59] National Academies of Sciences, Engineering, and Medicine, 2021
[60] Center for Transportation and the Environment, 2021
[61] National Academies of Sciences, Engineering, and Medicine, 2021



FCEB, which is still in development as of the writing of the memo.[62] These buses are scheduled to begin production in 2026. Ongoing changes in the funding landscape may impact the plans for their release. Another FCEB manufacturer, Van Hool, provided FCEBs for early adopter agencies in the US. Due to issues with Buy America compliance, this vendor has been largely pushed out of the US transit market.

The 40' New Flyer FCEB has an advertised range of 300 to 350 miles, with an onboard hydrogen storage volume of 37.5 kg. Operating this model, AC Transit observed a usable range of about 280 miles. AC Transit purchased New Flyer's FCEB in 2019 at a cost of $1.1 million.[63] In July 2025, New Flyer announced that their new extended range technology for FCEBs has the ability to provide 50% more fuel capacity and up to 120 miles of additional range.[64] The Stark Area Regional Transit Authority (SARTA) operates the El Dorado FCEB with an advertised range of 260 miles and an onboard hydrogen storage volume of 50kg. Operating this model, SARTA observed more than 280 miles of range on a full tank in best conditions and an average of 140 miles on cold days while operating with an electric heater.[65]

FCEBs have less available information on capital and operations costs, range, and performance in different conditions in comparison to BEBs. This is due to FCEBs being relatively newer to the market compared to BEBs, resulting in a greater number of BEB early-adopters to date; however, the market for FCEB technology continues to grow. Ranges and prices of FCEB vehicles on the market are shown in **Table 23**. As with the BEBs listed above, the ranges listed here represent testing in near-ideal conditions. The observed range of the FCEBs is likely to be less than what is given by the OEM. The prices given are based on 2024 data. The market for FCEBs is evolving rapidly, which may influence procurement costs.

Currently, there are no OEMs manufacturing FCEBs that are exactly comparable to the vehicle type of those currently serving the Town's routes in terms of vehicle length. The Town is constrained to using buses that are 30' long or shorter due to the size of the Town's transit storage facilities and the topographical constraints of the routes. With the town operating vehicles with a length of 30' or less, the currently available 40' FCEBs would not be easily integrated into the Town's existing fleet, routes, and storage/maintenance facilities. However, with the speed of technological progression in the FCEB market, future use of FCEBs should be evaluated should compatible vehicles become available.

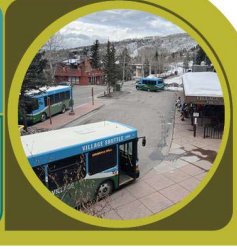
[62] Gillig. (2024). Gillig Expands Zero-Emission Lineup with Introduction of BAE Systems & Ballard-Powered Hydrogen Fuel Cell Electric Bus. Retrieved from: https://www.gillig.com/2024/04/24/gillig-expands-zero-emission-lineup-with-introduction-of-bae-systems-ballard-powered-hydrogen-fuel/
[63] AC Transit. (2022). Zero Emission Transit Bus Technology Analysis, Vol. 3. Retrieved from: www.actransit.org/zeb
[64] Mass Transit. (2025). New Flyer's Xcelsior CHARGE FC hydrogen fuel cell-electric bus now offers extended range. Retrieved from: https://www.masstransitmag.com/bus/vehicles/hybrid-hydrogen-electric-vehicles/press-release/55304433/new-flyer-new-flyers-xcelsior-charge-fctm-hydrogen-fuel-cell-electric-bus-now-offers-extended-range
[65] SARTA. (2020). Fuel Cell Bus Performance and Data Collection. Retrieved from: http://www.sartaonline.com/Content/uploads/SARTA-Fuel-Cell-Bus-Performance-Final-Report-2139.pdf

Table 23: Currently Available FCEBs per 2024 APTA Vehicle Database

MANUFACTURER/MODEL	LENGTH (FEET)	RANGE (MILES)	OCCUPANCY	PRICE (2024)	VEHICLE PHOTO
New Flyer Xcelsior Charge FC	40	370	40-52	~$1,500,000	
El Dorado National (ENC) Axess Evo-FC	40	350	43	~$2,100,000	

*FCEB prices are highly variable based on their relatively recent introduction to the market.

Photos obtained from: New Flyer of America, El Dorado National



Operating Characteristics and Performance

Impacts on Range and Duration

Potential impacts on a FCEB's range and duration include the use of the onboard HVAC system, battery degradation, operator driving style, passenger load, topography, and climate conditions. In general, FCEBs are less affected by these characteristics than their BEB counterparts due to onboard fuel storage. FCEB batteries are rapidly charged and discharged, incurring different demands from that of a BEB battery, which needs to store and release all of its energy over a much longer period of time.

HVAC and Climate

Implementing a waste heat recovery system on FCEBs can improve fuel consumption. Waste heat from the fuel cell process can be collected and used to maintain comfortable cabin temperatures and augment the electrical HVAC system. Generally, waste heat also prevents the system from freezing, making FCEBs suitable for harsh climates without significantly degrading the vehicle's range.[66] A 2022 report published by the National Renewable Energy Laboratory (NREL) in collaboration with SunLine Transit Agency identified that the FCEB fleet's fuel economy varied throughout the year, with the highest being 9.75 mpg in December 2021 and the lowest being 5.71 mpg in July 2021. This drop in fuel economy can be attributed to the increased use of air conditioning during hot weather, which reduces efficiency.[67] SARTA observed that in cold or snowy weather, their FCEBs experienced an average drop in range of approximately 20 miles.[68]

Operator Driving Styles

Some research suggests that driving style can have significant effects on the economy of FCEBs; however, studies currently available use computer simulations or passenger vehicle testing to develop a conclusion. One study[69] mentions that frequent acceleration and deceleration, as well as stopping and waiting for passengers to get on and off the vehicles, can affect the vehicle's range.

Passenger Load

Like BEBs, passenger load varies throughout the vehicle's operating time and will affect the vehicle's range. Also, like a BEB, a FCEB can regain some energy through regenerative braking, especially if the vehicle has more passengers on board when going downhill. However, it must be noted that the use of regenerative braking cannot be relied upon in the context of the Town's current transit service.

Topography

Topography has similar effects on FCEBs as it has on BEBs. Slow and steady ascends are more favorable on a vehicle's range than short and steep inclines, requiring more energy.

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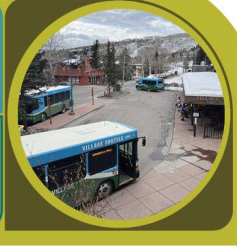
[66] saemobilus.sae.org/papers/investigating-route-gradient-thermal-demand-hydrogen-fuel-cell-electric-bus-energy-consumption-2024-01-2176

[67] SunLine Transit Agency Fuel Cell Electric Bus Progress Report Data Period Focus: Jan. 2020 through Dec. 2021. Accessed from www.nrel.gov/docs/fy22osti/83559.pdf

[68] TriMet Facilities System Master Plan; Hydrogen Fuel Cell Electric Bus Feasibility Study, October 2021

[69] http://www.sciencedirect.com/science/article/abs/pii/S0360544222003772#:~:text=The%20fuel%20cell%20bus%20is,load%20w



Special Operator Training

Training for drivers of FCEBs is similar to BEBs, where driver behavior has an impact on vehicle performance. As a result of the greater range of FCEBs when compared to BEBs, the impact is mostly on efficiency and system performance rather than the ability for a vehicle to complete a full duty cycle.

Life Cycle Considerations

Lifespan

The lifetime of the fuel cell power pack is intended to last about half of the vehicle's lifespan, approximately six of the 12 years of useful life balance. At this point, the fuel cell would theoretically need to be swapped out or rehabilitated to continue providing maximum power for the balance of the vehicle's life. The US Department of Energy has set the target of the fuel cells at 20% fuel cell voltage degradation, meaning a vehicle's battery capacity is around 80%, but this value is not necessarily considered end of life. Based on the oldest available FCEB fleet data, fuel cells are missing the 20% target, but it is likely that more recent technology will improve.[70]

Because an FCEB's onboard electrical battery is substantially smaller than that of a BEB, ranging between 50–120 kWh of capacity difference, any mid-life overhaul work or battery replacement will be less costly than replacing a larger battery.[71]

Mid-Life Overhaul

FCEBs require a mid-life replacement of onboard batteries due to degradation. The mid-life overhaul of FCEBs tends to be less expensive than overhauls for BEBs due to the smaller onboard batteries, which are the most expensive components to replace at mid-life and often priced by energy storage capacity (cost varies). FCEBs also require the overhaul or replacement of the fuel-cell component.

Decommissioning

Upon the end of an FCEB's useful life, much like BEBs, the main options are to either reuse the battery in another application, such as an on-site energy storage system, or recycle the battery. Reusing the battery from an FCEB may be less significant than that of a fully electric bus because the FCEB's battery is significantly smaller. Although there are not many FCEBs that have reached the end of their life cycle, with market and industry progression, strategies such as disposal and recycling of component reuse will become further established.

Costs

The up-front procurement cost of an FCEB is greater than that of a BEB, and there are fewer manufacturers. **Table 24** provides a high-level overview of FCEB-associated costs.

[70] Eudy & Post, NREL. Fuel Cell Buses in US Transit Fleets: Current Status 2020, 2021

[71] http://www.arlingtonva.us/files/sharedassets/public/v/1/transportation/documents/zero-emissions-buses/appendix-b-from-art-zeb-study_final-report_20230801.pdf#:~:text=The%20battery%20midlife%20overhaul%20is%20estimated%20to%20cost&text=smaller%20 – page 19

Table 24: FCEB Cost Estimates (2025)

	FCEB (TYP)
Vehicle Acquisition	~$1,500,000+*
Vehicle Operations and Maintenance[72]	$0.47/mile
Overhaul[73]	Battery Replacement: $500 per kWh Fuel Cell Overhaul: $40k per bus
Decommissioning	No cost available

***FCEB prices are highly variable.

DIESEL HYBRID TRANSIT VEHICLES

A diesel hybrid bus combines the use of a diesel engine with an electric motor to improve fuel efficiency and reduce emissions. The diesel engine generates power by burning diesel fuel, which is used to drive the wheels of the bus and charge the onboard hybrid battery. An electric motor is also connected to the wheels and can provide additional power to assist the diesel engine when needed. This helps reduce the load on the engine and improves fuel efficiency. When the bus brakes or decelerates, the electric motor acts as a generator and converts the kinetic energy into electrical energy. This energy is stored in the hybrid battery for later use. The hybrid battery stores electrical energy generated by the diesel engine and collected through the use of regenerative braking. Given the Town's experience with safety concerns regarding regenerative braking under icy driving conditions, this should not be relied upon as a means of extending the vehicle's range. The battery is then used to power the electric motor and provide additional assistance to the diesel engine, reducing fuel consumption. The control system manages the power flow between the diesel engine, electric motor, and hybrid battery, optimizing the use of electric power to improve fuel efficiency and reduce emissions.

Diesel hybrid traction power systems have been employed in recent years to improve the efficiency of transit vehicles. While these systems do deliver better fuel economy (30–60% improvement in some cases), some agencies report increased maintenance and repair challenges due to maintaining the electrical components.[74]

Hybrid buses generally have slightly lower NOx emissions than diesel buses, although real-world testing has yielded mixed results on the consistent impacts this technology. Hybrid buses generally emit lower CO2 (g/mi) than diesel or CNG buses due to their higher fuel economy. Total well-to-wheels greenhouse gas (GHG) emissions are generally lower from hybrid buses than from non-hybrid buses, also due to

[72] AC Transit 2024 Zero-emission Program Progress Report, June 2024
[73] Mid-life overhaul Cost Assumptions from MTS 2020 Zero-Emission Bus Fleet Transition Study, 2020
[74] (Pan, 2021)

their higher fuel economy. The reduction in total annual GHG emissions from operating new hybrid buses instead of new CNG buses could be as high as 54.5 tons CO2-e per bus. [75]

The average range of a diesel hybrid is about 6.3 miles per gallon compared to regular diesel buses that have a fuel economy of about 5.3 miles per gallon, according to a King County Metro Report comparing buses with different fuel types.[76, 77] Another study found that diesel hybrid buses have the best fuel economy when cruising at a speed between 24 and 29 miles per hour.[78] Diesel hybrid vehicles can be considered a 1:1 replacement for traditionally fueled buses.

Market Availability

According to APTA's 2024 vehicle database report, there are currently nine different manufacturers of diesel hybrid buses. The most common include Gillig, New Flyer, and El Dorado National. Listed below in **Table 25** are the diesel hybrid buses currently manufactured that are compatible with the Town's existing fleet. As with other types of zero-emission buses, it should be noted that most of the currently manufactured diesel hybrid buses are not comparable with the Town's existing fleet because of their length. The two comparable diesel hybrid bus options, manufactured by El Dorado National, are shown below.

[75] (M.J. Bradley & Associates, 2013)
[76] http://www.transit.dot.gov/research-innovation/zero-emission-bus-evaluation-results-king-county-metro-battery-electric-buses#:~:text=This%20report%20outlines%20the%20evaluation,fuel%20economy%20of%205.3%20mpdge
[77] http://www.newflyer.com/2018/07/electric-vs-diesel-vs-natural-gas-which-bus-is-best-for-the-climate/
[78] http://www.sciencedirect.com/science/article/abs/pii/S1361920920308221#:~:text=They%20found%20that%20buses%20achiev

Table 25: Currently Available Diesel Hybrid Buses per APTA Vehicle Database

MANUFACTURER/MODEL	LENGTH (FEET)	OCCUPANCY	PRICE (AS OF 2024)	VEHICLE PHOTO
El Dorado National EZ Rider II 30'	30	31	Not Listed	
El Dorado National EZ Rider II 32'	32	33	$835,723	

Photos obtained from: El Dorado National, Tesco

Operating Characteristics and Performance

Impacts on Range and Duration

HVAC

Using the HVAC system on a bus to maintain an ambient cabin temperature will affect a vehicle's range, as additional power from the engine and battery is needed to power the HVAC system. Heating and cooling the vehicle in extreme temperatures will exacerbate the fuel consumption, further reducing the vehicle's range.

Operator Driving Styles

Like other vehicles, aggressive driving styles, such as rapid acceleration and high-speed driving, can decrease the range and duration of a diesel hybrid bus. Eco-friendly driving techniques, such as smooth acceleration and maintaining a constant speed, can help optimize the vehicle's range.

Passenger Load

Like BEBs and FCEBs, passenger load also affects diesel hybrid buses. Higher payloads require higher amounts of power to move the vehicle, thus pulling more fuel from the vehicle's tanks and battery. Due to the nature of diesel hybrid buses, this also means increased CO2 emissions.

Topography

Like with BEBs and FCEBs, topography can significantly affect a diesel hybrid bus's range. Steep inclines require more power, while descends will help regain energy that is stored in the vehicle's electric battery.

Special Operator Training

Special operator training for diesel hybrid buses does not differ greatly from training required for operators to drive vehicles in the Town's current fleet. Training should cover topics such as understanding the characteristics and performance of the vehicle, range management, eco-friendly driving techniques, and the impact of various factors on vehicle performance. It should also include safety protocols, emergency procedures, and maintenance requirements specific to diesel hybrid buses.

Life Cycle Considerations

Lifespan

Diesel hybrid buses have an expected life cycle of 14 to 16 years, although the actual number of years varies greatly depending on use and maintenance. This is slightly less than the expected lifespan of a normal diesel transit bus, with a life cycle of about 16 years. Some transit agencies can keep buses in use for as long as 20 years.

Decommissioning

Decommissioning a diesel hybrid transit vehicle involves multiple steps and the decommissioning process can be included in the contract a transit agency signs with a transit vehicle manufacturer. Generally, it is important to consider if decommissioning means selling or disposing of the vehicle. If a transit agency decides to dispose of the vehicle, proper handling and recycling of all vehicle parts is critical, including the vehicle's electric battery and following all local laws. Decommissioning prices and processes vary based on location, contracts, and local laws.

Facilities Considerations

Additional tools and maintenance infrastructure may be required to allow trained technicians to safely work on the electrical components of these vehicles. Additionally, proper storage and conveyance of diesel fuel must be maintained to avoid accidental combustion, including, but not limited to, adequate setbacks, bollards, and leak detection systems.

Costs

Over the life of a diesel-hybrid bus, compared to a diesel bus, an agency can expect to see significant savings in total fuel costs. New Flyer estimates their diesel hybrid buses can deliver up to 8% in fuel savings.[79] Decommissioning cost information is difficult to obtain and can vary greatly depending on location, the contract signed with the manufacturer, and other local regulations, but typical costs are shown in **Table 26**.

Table 26: Typical Diesel-hybrid Bus Costs (2025)

	DIESEL HYBRID BUS (TYP)
Vehicle Acquisition	~$835,000
Vehicle Operations and Maintenance[80]	$2.16/mile
Overhaul	$80,000

Fueling Equipment and Infrastructure Overview

Because BEBs and FCEBs rely on alternative forms of fuel, both technologies require specialized refueling/recharging equipment and infrastructure.

BATTERY ELECTRIC INFRASTRUCTURE

The charging infrastructure for BEBs utilizes the existing electrical grid to charge buses. Typically, this involves leveraging existing power lines, transformers, and switchgears to install electric bus chargers on a given site, represented in **Figure 18.** The existing electrical grid can sometimes serve as a limiting factor, and upgrades to electrical infrastructure may be necessary to support BEB charging. Charge management software can also help agencies charge fleets most efficiently to reduce costs and work within limits of a facility's existing power capacities.[81]

[79] New Flyer, www.newflyer.com/bus/xcelsior-hybrid/
[80] AC Transit, *2024 Zero-emission Program Progress Report* published June 2024.
[81] Survey and gap prioritization of US electric vehicle charge management deployments, Lawrence Berkeley National Laboratory, NREL, 2024

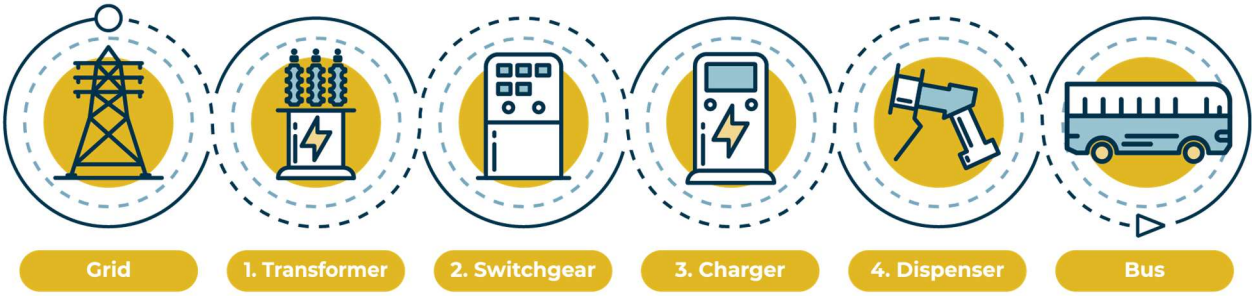


Figure 18: Generalized BEB Charging Schematic

There are two primary charging methods for BEBs: depot charging and opportunity charging. In practice, opportunity charging fast chargers are typically deployed on-route to supplement (and not replace) overnight depot charging for the purpose of providing extended range. Below is a description of both types of charging infrastructure.

Depot Charging

Depot charging typically takes place overnight at an operations and maintenance (O&M) facility after a bus has finished service for the day and prior to beginning service the next day. Depot chargers come in two primary styles: ground-level plug-in chargers (similar to a standard electric vehicle charger) and overhead chargers.

Overhead chargers can either be plug-in, where the charging cable drops down from an overhead structure, or pantograph, where an overhead structure on top of the bus comes in contact with an overhead charging apparatus using automated systems. Pantograph chargers can be either pantograph up, where the moving element of the system is mounted on the bus and extends up to connect to the charger, or pantograph down (also called inverted pantograph) where the moving element extends down from the charging station to connect to the bus. The advantages and disadvantages of each style of charger are detailed in **Table 27**.

An example of a cabinet-style depot charger is shown in **Figure 19**, individual depot charger examples are shown in **Figure 20**, and an example of an overhead charging array is shown in **Figure 21**.

The typical output of a plug-in depot charger is between 40 kWh and 125 kWh, although some agencies are using depot chargers that range up to 225 kWh and faster options are said to be currently in development.[82] As a result of this lower electrical output, depot chargers are slower than methods of fueling traditional diesel vehicles and can require four to six hours to fully charge a bus.[83] This is often a lower-cost way to charge BEBs, since many electric utilities incentivize customers to charge more slowly and during the grid's off-peak period at night. Overhead pantograph depot chargers are capable of

[82] US Department of Transportation, Office of Policy Development, Strategic Planning and Performance. Retrieved from www.transportation.gov/urban-e-mobility-toolkit/e-mobility-basics
[83] National Renewable Energy Laboratory. (2021). *Electrifying Transit: A Guidebook for Implementing Battery Electric Buses*. Retrieved from: www.nrel.gov/docs/fy21osti/76932.pdf

charging at higher power than their plug-in counterparts—from 150–600kWh.[84] Operators may also consider charging the fleet in smaller batches to avoid demand charges associated with charging all buses at the same time, although this may require staff present to shift buses on and off chargers. Charge management software with automated load management capabilities can help agencies reduce peak loads to be within the limits of a facility's existing power capacities and help avoid the cost of labor associated with shifting buses around the facility to access chargers overnight.

Figure 19: Power Converters at Mountain Line Transit, Missoula, MT

Figure 20: Individual Depot Plug-in Chargers at Mountain Line Transit, Missoula, MT

[84] ABB. Retrieved from new.abb.com/ev-charging/products/pantograph-down

Figure 21: Overhead Depot Chargers at Foothill Transit

Opportunity Charging

Opportunity charging usually takes place on-route at a transfer center or layover location where operators have scheduled breaks. These chargers, often termed "fast chargers," tend to have a higher electrical output than depot chargers do, ranging from 250 kWh to 600 kWh, but often are at the higher end of this range. As BEBs cycle through the facility where fast chargers are installed, they connect to the charger for 10 to 20 minutes per charge.[85] This allows a BEB to stay in service longer by replenishing charge throughout the day while the bus is in service. If layover times are insufficient to provide the BEB with a meaningful charge, then scheduling changes may need to be made. In addition, the energy costs associated with fast charging are higher due to the intensity of electricity. Alternatively, opportunity fast charging may allow for charging during off-peak periods.

On-route chargers come in two styles: inductive and pantograph. Like the use in depots, pantograph charging uses direct contact between an overhead structure on top of the bus and an articulated structure mounted on either the bus or the overhead structure. The types of pantographs used for on-route charging typically have a higher electrical output than the pantographs used for depot charging, with some models having an output of up to 600 kWh.

In 2020, the Society of Automotive Engineers (SAE) published *J-3105 Electric Vehicle Power Transfer System Using Conductive Automated Connection Devices Recommended Practices* to outline standards of conductive direct current (DC) power transfer to heavy-duty vehicles.

Inductive charging consists of a power pad buried beneath a stop or layover point that the bus then parks over to charge without contact. Current inductive charging implementations provide outputs of up to 300 kWh. Both on-route charging installations require electrical equipment such as switchgear and a transformer to ensure enough electrical capacity. The tradeoffs between the two methods of on-route charging are detailed in **Table 27**.

[85] National Renewable Energy Laboratory. (2021). *Electrifying Transit: A Guidebook for Implementing Battery Electric Buses*. Retrieved from: www.nrel.gov/docs/fy21osti/76932.pdf

Figure 22: Overhead Pantograph Chargers, Park City Transit, UT

Figure 23: Inductive Charging Pad at Antelope Valley Transit Authority[86]

[86] WAVE Wireless Charging. (2023). *WAVE Wireless Charging Propels AVTA to Zero-Emission Milestone*. Retrieved from: waveipt.com/wave-wireless-charging-propels-avta-to-zero-emission-milestone/

Table 27 depicts the advantages and disadvantages of each type of charging and **Table 28** highlights the observed costs of BEB charging infrastructure. The costs of BEB chargers can vary due to the type of equipment and necessary labor to install the infrastructure.

Table 27: BEB Chargers' Advantages and Disadvantages

CONFIGURATION	TYPICAL USE	ADVANTAGES	DISADVANTAGES
Ground Mounted Plug-In	Depot	• Most ubiquitous charging solution with many implementations nationwide • The charging cabinet is accessible at ground level for maintenance or replacement • Lowest-cost charging equipment • Open Charge Point Protocol (OCPP)-compliant chargers widely available (industry standardized)	• Requires new curbs in existing parking areas to protect ground-mounted equipment • Requires operator to plug in heavy charging cord • The charging cord must be managed for the risk of damage from buses driving over • Requires trenching throughout the site to distribute power to cabinets and dispensers—major operational impacts during install • Reconfiguration of charger layout based on fleet changes is difficult

CONFIGURATION	TYPICAL USE	ADVANTAGES	DISADVANTAGES
Overhead Drop-Down Plug-In Cord or Pantograph	Depot (Overhead Drop-Down Plug-In Cord or Pantograph) On-Route (Pantograph)	• Can be mounted to existing overhead structures • No operator interaction with the charging process is required (pantograph) • Minimal footprint in the parking areas allows for highest site capacity • Rapid reconfiguration of charging positions possible via remounting pantographs with no trenching required; capable of adjusting with fleet • Lowest amount of trenching to the site; distribution is carried via overhead conduit	• If charging cabinets remain at ground level, there are no longer conduit runs to dispensers (if charging cabinets are mounted on the roof, conduit runs are minimized, thus minimizing cost) • Must confirm any existing structures are compatible and capable of; if not, an independent support frame is required
Ground-Mounted Induction	On-Route	• No requirement for new overhead structure/frame or mounting equipment above • Charging cabinet is accessible at ground level for maintenance • Can include multiple charging units, providing more system resilience as compared to a single pantograph	• Occupies large portion of vehicle parking and reduces site capacity • Requires new curbs in existing parking areas to protect ground-mounted equipment • Requires trenching throughout the site to distribute power to cabinets and dispensers—major operational impacts during install • Equipment must be mounted 50–100 feet from the induction pad (varies by vendor) • Requires driver compliance to engage the charging equipment and begin charging

Table 28: BEB Charging Infrastructure Costs[87, 88]

EQUIPMENT TYPE	POWER RATING (KWH)	ESTIMATED COST RANGE (PER CHARGER, 2024)
Pantograph (with charge control module)	480–500	$27,000 (equipment)
Plug-In Charger	50–200	$150,000 (equipment, with garage buildout costs amortized on a per cost basis)
Depot Charger (AVTA)	80	$19,000 (equipment) $55,000 (installation)
On-Route Inductive/Wireless Charger (AVTA)	50	$350,000 (equipment) $250,000 (installation)
Depot Charger (King County)	150	$60,000 (equipment and installation)
On-Route Overhead Charger (King County)	300	$600,000 (equipment) $240,000 (installation)
Depot Charger (City of Seneca)	Unknown	$60,000 (equipment) $8,000 (installation)
On-Route Overhead Charger (City of Seneca)	Unknown	$600,000 (equipment) $225,000 (installation)
Depot Charger Generic, no agency	N/A	$2,000–$100,000 (equipment) $2,000–$64,000 (installation)
On-Route (fast charger) Generic, no agency	N/A	$330,000–$600,000 (equipment) $50,000–$400,000 (installation)

Facilities Considerations

The following are design considerations for the facilities where BEB chargers would be installed:

- Requires trenching to distribute power to ground-mounted cabinets
- Requires space dedicated to charging cabinets and dispensers, as well as cable management (to avoid risk of cable damage)
- May require placement of new curbs or bollards to protect power modules and other above-ground equipment
- Requires that operators plug in vehicles to begin charging

[87] Sacramento Regional Transit District. (2021). Zero-Emission Bus Rollout Plan.
[88] National Academies of Sciences, Engineering, and Medicine. (2018). Battery Electric Buses State of the Practice

- Charging cabinets are at ground level and are therefore easier to access and maintain when needed
- For overhead charging, must ensure overhead structures are able to accommodate the weight of conduit and other charging elements

HYDROGEN FUEL CELL INFRASTRUCTURE

To fuel FCEBs, required infrastructure includes a hydrogen storage tank, a hydrogen pump and vaporizer, a compressed hydrogen storage tank, and a dispenser. Storing hydrogen in liquid form allows for a higher storage capacity. From the storage tank, the liquid hydrogen is processed by a pump and vaporizer, which converts the liquid into a gas. The gaseous hydrogen is then used to fuel buses via the dispenser, which operates similarly to a CNG or diesel pump, capable of refueling the bus in 10–20 minutes. A schematic of the components needed for a hydrogen refueling system is shown in **Figure 24**.

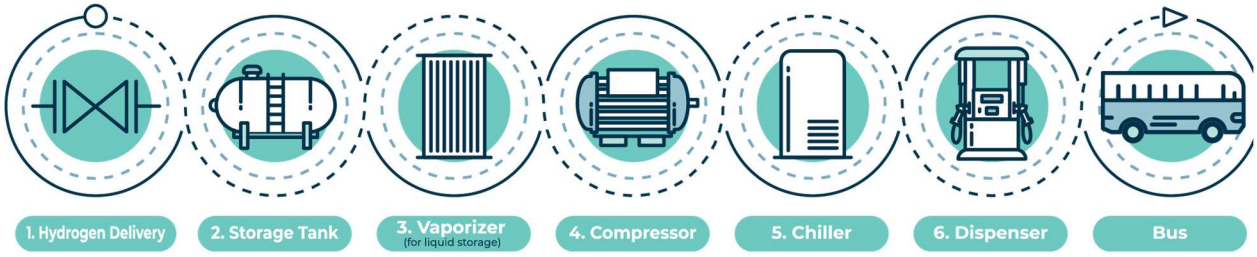


Figure 24: Generalized Hydrogen Fueling Station Schematic[89]

Because of the expense of installing the necessary infrastructure, storing fuel, and receiving regular shipments of fuel, a hydrogen fuel implementation is more cost-effective for larger fleets. In a study of public transit agencies, Ballard Power reports that as fleet size increases, marginal costs for hydrogen infrastructure decrease and costs for electrical infrastructure increase. The point at which fuel-cell infrastructure becomes more cost-effective per bus was found to be between 50–100 buses—well beyond the Town's fleet size. While not cost effective for a fleet the size of the Town's, FCEBs provide the benefits of longer range and better performance during the winter months.

Figure 25, **Figure 26**, and **Figure 27** show hydrogen fuel storage and fueling infrastructure at Champaigne-Urbana Mass Transit District's fueling facility.

[89] National Academies of Science, Engineering, and Medicine. (2021). Transit Cooperative Research Program (TCRP) Research Report 219: *Guidebook for Deploying Zero-Emission Buses*. Retrieved from nap.nationalacademies.org/catalog/25842/guidebook-for-deploying-zero-emission-transit-buses

Figure 25: Hydrogen Dispenser and Hydrogen Storage Infrastructure at AC Transit

Figure 26: Champaign-Urbana Hydrogen Fueling Station

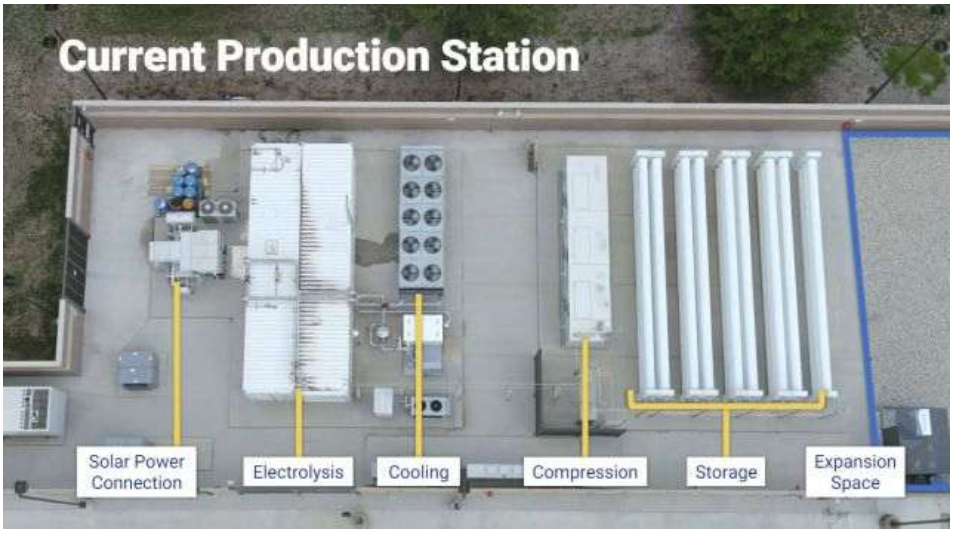


Figure 27: Champaign-Urbana Hydrogen Fueling Station and Storage

Safety Considerations

Because liquid hydrogen is flammable and potentially dangerous if not stored properly, there are some safety considerations with an FCEB deployment. The installation of emergency shutoffs, gas detection systems, and a rapid defueling system are standard for agencies operating FCEBs. Liquid hydrogen also vaporizes and expands to fill enclosed spaces, displacing oxygen and acting as an asphyxiant, which requires ample ventilation to prevent the accumulation of gas.[90]

In addition, the National Fire Protection Agency requires setbacks of at least 75 feet from property lines and combustible/flammable liquids. The setbacks required for the storage and dispensing of hydrogen fuel are highly variable based on the state of the fuel (liquid or gaseous hydrogen), the distance of conveyance, the diameter of tubing, adjacent land uses and exposures (lot lines, air intakes, parked cars, hazardous materials, flammable gas storage system, etc.), and the storage capacity of the equipment. The setbacks can often be significantly reduced by using strategically placed fire barrier walls rated for no less than two hours (height dependent on specifications of the fueling infrastructure set-up).[91]

Facilities Considerations

Table 29 highlights a sample of associated costs agencies have observed in constructing different configurations of hydrogen fueling stations and related infrastructure.

Table 29: Hydrogen Fuel Station Sample Costs

EQUIPMENT TYPE	CAPACITY (GALLONS)	SAMPLE COST (2024)
Hydrogen Tank (not including compressors and reformers) [92]	9,000	$500,000
	15,000	$700,000
Electrolysis Hydrogen Station: [93] **Capacity: produces 65 kg green hydrogen per day** **Ambient vaporizers** **IC-50 ionic compressor** **360-kg high-pressure gaseous storage** **Two dispensers**	9,000 (liquid hydrogen)	$6,300,308 (total equipment and build cost)

[90] Calstart. (2016). *Best Practices in Hydrogen Fueling and Maintenance Facilities for Transit Agencies*. Retrieved from: calstart.org/wp-content/uploads/2018/10/Best-Practices-in-Hydrogen.pdf
[91] National Fire Protection Agency. (2023). *Hydrogen Technologies Code Section 7*. Retrieved from: http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=2
[92] Sacramento Regional Transit District, 2021
[93] AC Transit, 2021

EQUIPMENT TYPE	CAPACITY (GALLONS)	SAMPLE COST (2024)
Hydrogen Station Upgrade: [94] **Dual ADC MP-100 cryogenic pumps** **High-pressure vaporizers** **360-kg high-pressure gaseous storage** **Two dispensers**	15,000 (liquid hydrogen)	$4,424,644 ($5,100,000 original build cost)

Zero-Emission Technology Transition Recommendation

NEXT STEPS

Transitioning to a full ZEB fleet presents significant challenges for the Town, particularly regarding the limited feasible vehicle lengths in the current ZEB market. A gradual transition to ZEB transit vehicles will allow for incremental technological improvements and greater diversification of the market, making vehicles more efficient and affordable over time. By adopting a phased strategy, the Town and stakeholders can ensure a smoother and more sustainable shift towards a fully ZEB fleet without disrupting current or future operations.

The next stage of analysis will analyze the compatibility of the Town's existing transit service and facilities with ZEBs, arriving at a recommendation for integrating ZEBs into the Town's transit operations.

[94] AC Transit, 2021

APPENDIX B: CHARGING LAYOUT

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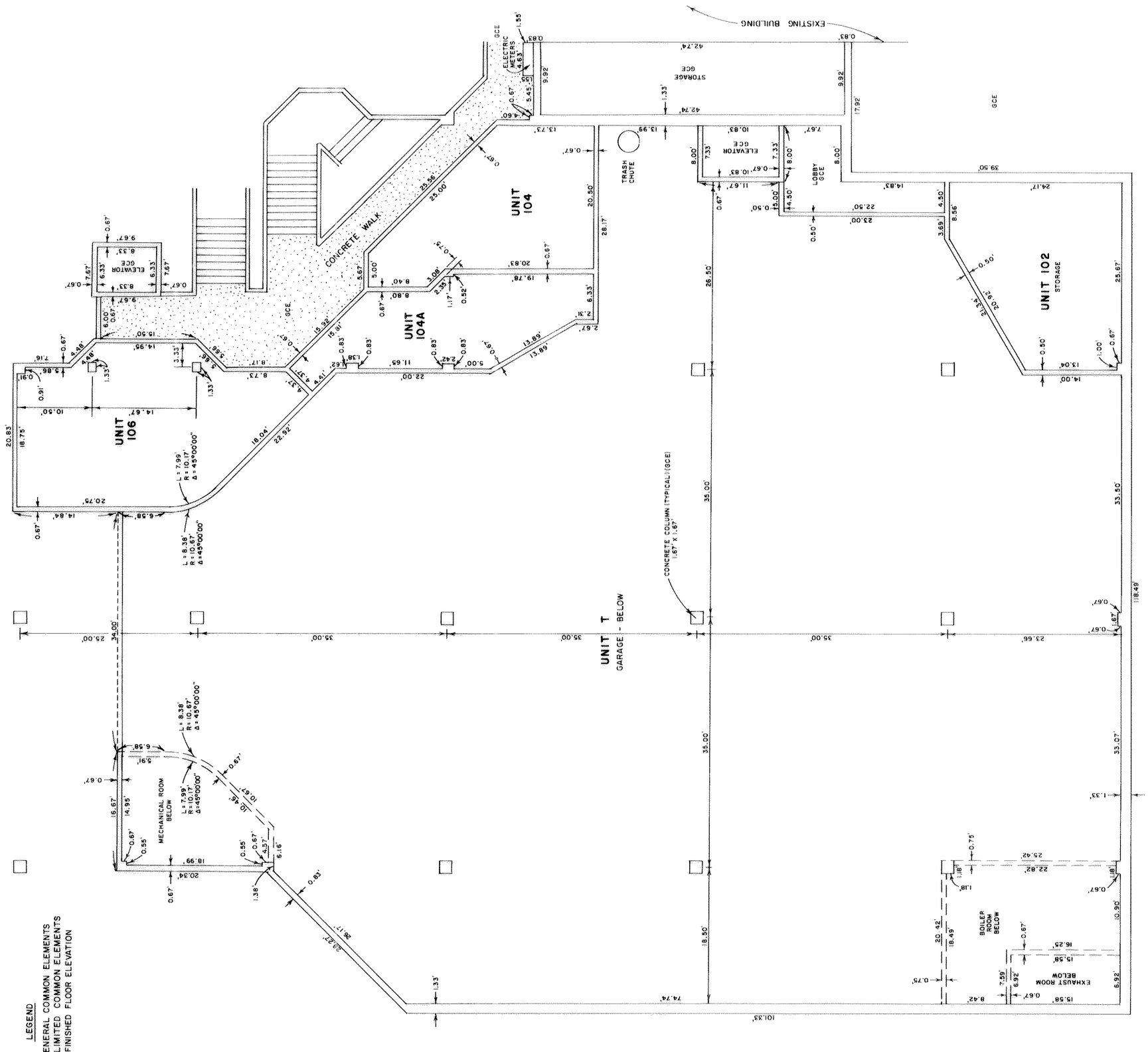
SHEET 2 OF 4

THE MAP OF
PARCEL C CONDOMINIUM

LEGEND

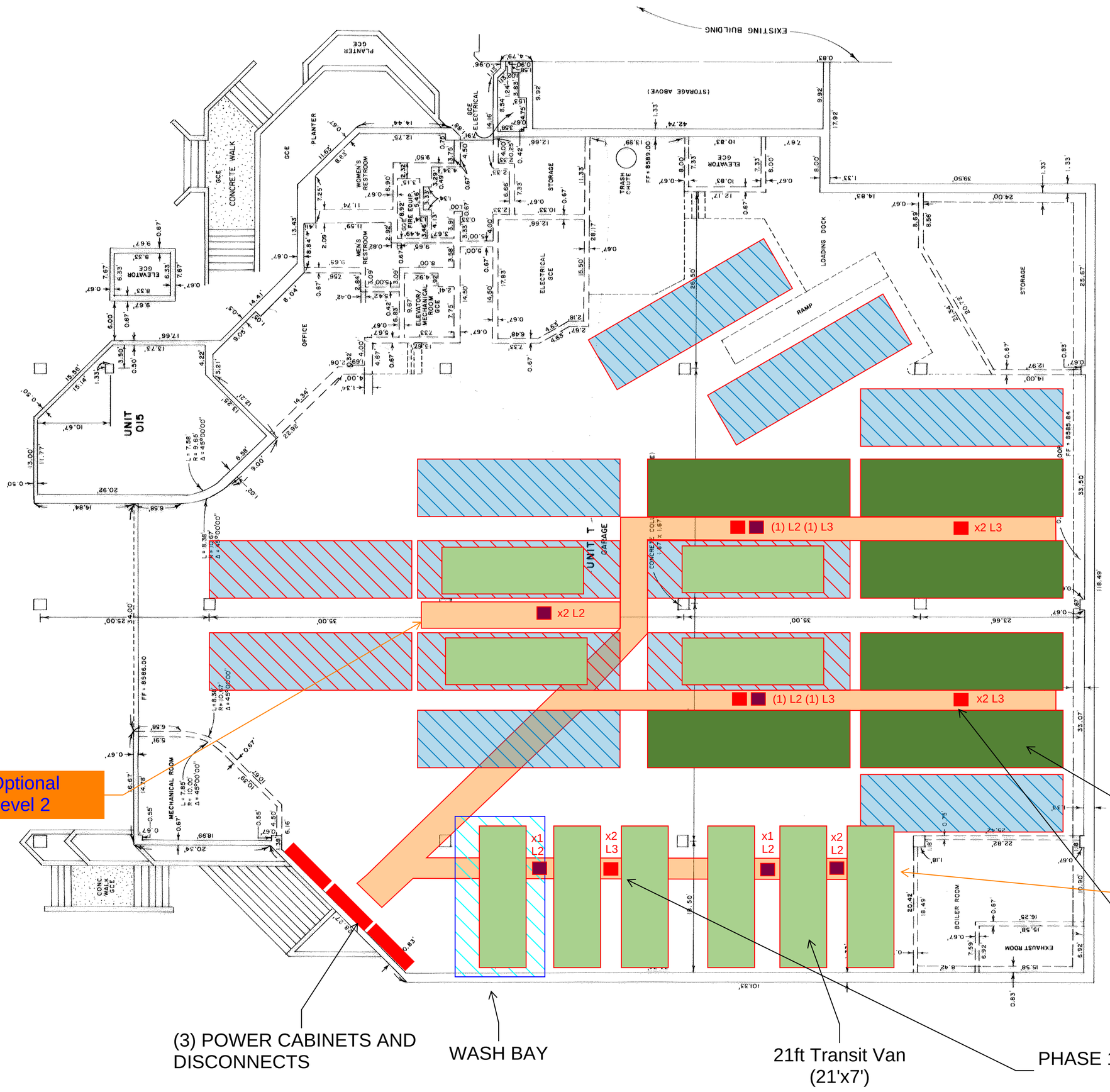
GCE-DENOTES GENERAL COMMON ELEMENTS
LCE-DENOTES LIMITED COMMON ELEMENTS
FF - DENOTES FINISHED FLOOR ELEVATION



INTERMEDIATE LEVEL

FLOOR PLANS OF AIR SPACE

SCALE: 1" = 10'



LOWER LEVEL

LEGEND

30ft Bus or 21 ft Transit Van - CHARGING

21ft Transit Van - CHARGING

Non-charging parking

Level 2 Charger

Level 3 Fast Charger

(1) L2 (1) L3

x2 L3

x2 L2

(1) L2 (1) L3

x2 L3

Optional Level 2

x1 L2

x2 L3

x1 L2

x2 L2

30ft Platform Bus (30'x8.5')

HEIGHT CLEARANCE CONCERNS: Van parking only

(3) POWER CABINETS AND DISCONNECTS

WASH BAY

21ft Transit Van (21'x7')

PHASE 1A CHARGING LOCATIONS

DRAWING NUMBER

DRAWING NUMBER

Page 62

Book 22

DRAWING NUMBER

APPENDIX C: CHARGING INFRASTRUCTURE COST ESTIMATE

An estimate of the construction costs and procurement of charging equipment in 2025 dollars is shown in **Table 30**. Estimations of the cost in 2030 and 2035 dollars assume a **4.4% annual growth** based on the 5-year compound annual growth rate (CAGR) from 2020-2024 of the Consumer Price Index (CPI). This estimate was developed through coordination with Holy Cross Energy, the energy provider for the Town. Costs are based on localized construction rates and are intended to be a rough estimate, requiring further validation as the transition plan advances.

Table 30: Snowmass Village Mall Transit Garage Charging Infrastructure Cost Estimate

Scope of Work	Description / Assumption	Qty	Unit	Unit Cost	Estimated Expense		
					Present/2026	2030	2035
Demo of Exterior Concrete	Assumed 6" depth Snowmelted Concrete in Daly ln	665	SF[95]	$25.00	$16,625.00	$19,749.84	$24,494.36
Demo of Asphalt	Assumed 4" asphalt cross section	825	SF	$8.00	$6,600.00	$7,840.54	$9,724.08
Demo of Garage Concrete	Assumed 8" depth concrete	350	SF	$30.00	$10,500.00	$12,473.59	$15,470.12
Excavation	Assumed depth of Trench 36"	165	CY[96]	$40.00	$6,600.00	$7,840.54	$9,724.08
Material Haul	Assumed Export to Dump / Import from public works dept	165	CY	$30.00	$4,950.00	$5,880.40	$7,293.06
Demo of C&G/Valley Pans	Village Shuttle station island	18	LF[97]	$45.00	$810.00	$962.25	$1,193.41
Conduit	POC: Electrical Vault in Daly Ln. (6) 4" Conduit	990	LF	$30.00	$29,700.00	$35,282.43	$43,758.35
Conductors (assumed wire thickness)	POC: (3) 500kcmil wire per Conduit (4) - leave 2 spares	1980	LF	$90.00	$178,200.00	$211,694.56	$262,550.10
Trench Backfill	Trench width 48" & 36" depth	165	CY	$95.00	$15,675.00	$18,621.28	$23,094.68
Electrical Labor	Assumed effort 5 men crew, 6 weeks	1200	HR[98]	$195.00	$234,000.00	$277,982.75	$344,762.76

[95] Square feet
[96] Cubic yards
[97] Linear feet
[98] Hours

Scope of Work	Description / Assumption	Qty	Unit	Unit Cost	Estimated Expense Present/2026	2030	2035
Electrical Equipment/Gear	Raceways, Conductors, Disconnects, Misc Elec Materials	1	EA[99]	$125,000.00	$125,000.00	$148,495.06	$184,168.14
Holy Cross - Transformer Upgrade & Primary Service*	Assumes Transformer placement in Village Shuttle Island	1	EA	$75,000.00	$75,000.00	$89,097.04	$110,500.88
L2 - Chargers	Includes material and labor	8	EA	$5,000.00	$40,000.00	$47,518.42	$58,933.80
L3 - Chargers & Power Cabinet	ABB HxC EMC Class B Equipment (8 charge points)	8	EA	$62,750.00	$502,000.00	$596,356.16	$739,619.25
Fire Suppression	Upgrade existing Fire Suppression System	11500	SF	$65.00	$747,500.00	$888,000.46	$1,101,325.47
Mechanical/Snowmelt Replacement	Repair - No REMP Fees assumed (Existing to Remain)	665	SF	$250.00	$166,250.00	$197,498.43	$244,943.63
Concrete Replacement	Assumed full depth replacement	1015	SF	$45.00	$45,675.00	$54,260.10	$67,295.04
Asphalt Replacement	Assumed full depth replacement	825	SF	$12.00	$9,900.00	$11,760.81	$14,586.12
C&G Replacement	Replace/Repair damaged Curb and Gutter	18	LF	$135.00	$2,430.00	$2,886.74	$3,580.23
Contractor General Conditions	Mobilization, Traffic Control, Security Fencing, Site Management	1	EA	$30,000.00	$30,000.00	$35,638.81	$44,200.35
TOTAL					**$2,247,415.00**	**$2,669,840.21**	**$3,311,217.92**

*Estimate provided by Holy Cross Energy is a high-level approximation and should be further validated.

[99] Each

APPENDIX D: LETTER OF SUPPORT FROM HOLY CROSS ENERGY

December 23, 2025

To Whom it May Concern,

On behalf of Holy Cross Energy, I am pleased to express our support for the Town of Snowmass Village's Zero Emission Bus Transition Plan.

Holy Cross Energy is a member-owned, not-for-profit electric cooperative serving communities in the Roaring Fork, Eagle, and Colorado River Valleys. For more than 80 years, we have provided safe, reliable, affordable, and increasingly sustainable energy to help our region thrive.

As part of our goal of providing 100% carbon-free energy to our membership by 2030, we are committed to enabling electrification across transportation and other sectors. We believe that electric transit solutions, such as Snowmass Village's proposed battery electric bus program, are essential to reducing emissions, improving air quality, and creating a cleaner future for our communities. Beyond this initiative, Holy Cross Energy has partnered with local governments and organizations to advance electric vehicle adoption and charging infrastructure throughout our service territory.

If the proposal submitted by Snowmass Village is selected for funding by the Federal Transit Administration, it is our intent to provide technical guidance and resources to ensure success. This includes support for charging infrastructure planning, identifying rate structures, and sharing best practices for integrating electric transportation into community operations.

Holy Cross Energy looks forward to working together on this project and future efforts to electrify transit in the region.

With regards,

Jenna Weatherred
Vice President, Member and Community Relations
Holy Cross Energy

970.945.5491 • holycross.com
3799 Highway 82 • PO Box 2150 • Glenwood Springs, CO 81602

Town of Snowmass Village

Agenda Item Summary

DATE OF MEETING:

February 9, 2026

AGENDA ITEM:

Resolution Regarding *Thrive Snowmass*

PRESENTED BY:

Clint Kinney, Town Manager

BACKGROUND:

Snowmass Village has long valued its identity as a close-knit, year-round community that supports a high quality of life for residents while also serving as a world-class destination. The Town's long-term success depends on maintaining a stable population of year-round residents who contribute to the community's social fabric, workforce, civic leadership, and local economy.

In recent years, rising costs associated with housing, childcare, groceries, insurance, and other essential needs have placed increasing pressure on year-round residents. These affordability challenges, combined with limited housing availability and capacity constraints in key services, have created a growing risk that residents will be forced to relocate to more affordable communities. The potential loss of year-round residents poses a threat to the Town's resilience, continuity, and ability to sustain essential services and community character.

In recognition of these challenges, the Town Council adopted its 2025 Goal Statement, *"Help Year-round Residents Thrive, Not Just Survive."* This goal explicitly acknowledges the threat of resident displacement and identifies affordability, accessibility, and capacity as priority areas requiring focused attention and partnership. The goal further emphasizes the importance of collaboration with community partners to reduce the cumulative financial pressures facing residents and to preserve Snowmass Village as a livable, inclusive community.

While the Town has pursued several initiatives, there is a growing need for a coordinated, resident-informed approach that holistically addresses cost-of-living challenges. Establishing a Thrive Advisory Committee would provide a structured forum for residents, local businesses, and community stakeholders to collaborate with Town

staff and the Town Council on identifying needs, evaluating potential solutions, and recommending strategies that support year-round residents.

This resolution formalizes the Town Council's commitment to prioritizing year-round residents and establishes a framework for ongoing engagement, policy development, and programmatic action aimed at ensuring Snowmass Village remains a place where residents can thrive over the long term.

FINANCIAL IMPACT:

The 2026 Adopted Budget includes $300,000 for *Thrive Snowmass* initiatives.

APPLICABILITY TO COUNCIL GOALS & OBJECTIVES:

Help Year-round Residents Thrive, Not Just Survive - The Council recognizes the clear threat of losing our core year-round residents to more affordable locations. This Council desires to address fundamental affordability, capacity, and accessibility issues for year-round residents. Childcare, housing, groceries, homeowner insurance, tax rates and affordable eats need to be addressed. To have the maximum impact possible, the Town will partner with others to reduce the squeeze year-round residents are feeling to ensure we can continue to provide the highest quality of life possible.

COUNCIL OPTIONS:

Town Council can choose to adopt Resolution No. 06, 2026 as written, or as amended.

STAFF RECOMMENDATION:

Staff recommends Town Council approval of Resolution No. 06, 2026

ATTACHMENTS:

1) Resolution No. 06, 2026

RESOLUTION NO. 06
SERIES OF 2026

A RESOLUTION OF THE TOWN COUNCIL TO SUPPORT YEAR-ROUND RESIDENTS AND ENSURE THEY THRIVE, NOT JUST SURVIVE.

WHEREAS, Snowmass Village is committed to preserving its unique character and ensuring that locals—those who live here year-round—are able to thrive, not merely survive; and

WHEREAS, the Town Council recognizes the clear threat of losing core year-round residents to more affordable locations, which would undermine the vibrancy and stability of the community; and

WHEREAS, fundamental affordability challenges related to housing, childcare, groceries, homeowner insurance, and other essential needs have created significant pressure on residents; and

WHEREAS, the Council's adopted 2025 Goal Statement which states:

Help Year-round Residents Thrive, Not Just Survive
The Council recognizes the clear threat of losing our core year-round residents to more affordable locations. This Council desires to address fundamental affordability, capacity, and accessibility issues for year-round residents. Childcare, housing, groceries, homeowner insurance, tax rates and affordable eats need to be addressed. To have the maximum impact possible, the Town will partner with others to reduce the squeeze year-round residents are feeling to ensure we can continue to provide the highest quality of life possible; and

WHEREAS, Snowmass Village's success as a world-class destination depends on being a strong, stable, and inclusive year-round community first; and

WHEREAS, the Town Council desires to take proactive steps to identify solutions and engage residents in shaping policies and programs that directly address these challenges;

NOW, THEREFORE, BE IT RESOLVED, that the Town of Snowmass Village hereby:

1. **Affirms its commitment** to helping year-round residents thrive by prioritizing affordability, accessibility, and quality of life initiatives.
2. **Establishes a Thrive Advisory Committee**, composed of residents, local business representatives, and community stakeholders, to advise the Town Council on strategies and actions that support year-round residents.

3. **Directs Town staff** to work with the Thrive Advisory Committee to identify and recommend programs addressing housing, childcare, and cost-of-living challenges.
4. **Supports the development** of innovative strategies to strengthen community resilience.
5. **Commits to ongoing engagement** with residents through the Thrive Advisory Committee to ensure that policies and programs reflect the needs and values of the community.

READ, APPROVED AND ADOPTED by the Town Council of the Town of Snowmass Village on the ___ day of _____, 2026, upon a motion made by Council Member _____, the second of Council Member _____, and upon a vote of ___ in favor and ___ opposed.

TOWN OF SNOWMASS VILLAGE

_____

Alyssa Shenk, Mayor

ATTEST:

_____
Megan Harris Boucher, Town Clerk

APPROVED AS TO FORM:

_____
Jeffrey Conklin, Town Attorney

THRIVE SNOWMASS ROADMAP

PHASES OF IMPLEMENTATION:

- Phase 1:
  - → Adopt Council Resolution formally establishing Thrive Snowmass
  - → Determine staff lead for Thrive
  - → Council to highlight initiatives we are already undertaking and some that we can start on now while the committee is being assembled (Communications position, revamping the community picnic, etc.)

- Phase 2:
  - → Form the Thrive Advisory Steering Committee.
  - → Conduct committee meetings to discuss ideas, set priorities, and select initial thrive initiatives to move forward.
  - → Establish goals for how money is spent.

- Phase 3:
  - → Steering Committee to Present thrive initiatives and pilot ideas to council

- Phase 4:
  - → Implement and monitor initiatives
  - → Work as a committee and with council to evaluate progress and additional initiatives to move forward

COUNCIL RESOLUTION

- Defines the Thrive Snowmass Initiative
- Prioritizing retention of year-round residents

OVERVIEW OF THRIVE STEERING COMMITTEE

- Make it a temporary committee with advisory capacity only like we did with the think tank?

- Composition
  - → Full time year-round residents
  - → Small business owners
  - → Workforce Housing representatives—deed restricted and rental
  - → Second homeowners

- The Charge/Committee Tasks
  - → Refining categories for assistance

→ Formulating ideas based on lived experience
→ Create ideas list and prioritize them (some ideas will be easier and faster to implement and others will be more long term; some ideas will be less costly than others, so it's important to have a good mix)
→ Recommending pilot actions and a budget range to accompany each idea.

COMMITTEE CONSIDERATIONS & PRIORITIES

- ***Key elements for the committee to consider:***
  → Two ways to think about grouping potential assistance:
    1. How to help people stay—childcare, home repair assistance, wildfire mitigation, etc.
    2. Quality of life—communication, recreation, local days/love a local

  → What would most likely force residents to leave in the next 1–3 years?
  → What costs are the most burdensome other than housing? Maybe identify top 5 non-housing pressure points
  → What support would most change a resident's decision to stay?
  → Is there anything you feel the Town underestimates or are we not seeing clearly?

- ***Segments of the community to consider & analyze:***
  → Renters vs owners (WF housing and free market rental vs ownership).
  → Families vs singles
  → Essential services vs tourism workforce
  → Small/local business owners

- ***Initial Ideas for Thrive Priorities/Category Areas***
  1. **Reducing Everyday Cost Burdens (explore ways to ease daily pressures)**
     → Expanding childcare options for working families/Childcare scholarships/grants
     → E-bike subsidies
     → Locals Discounts/Love a Local
     → General grant program

  2. **Workforce & resident retention**
     → Prioritize measures to prevent displacement and ensure year-round residency, including targeted financial support, property-tax relief pilots, and tenant assistance.
     → Create an essential repairs home grant program similar to APCHA for deed restricted units.
     → Grants for sustainability and home hardening/wildfire mitigation

  3. **Local/Small Businesses**
     → Protect and uplift our mom-and-pop enterprises through procurement preferences, small business support, flexible permitting, and targeted marketing.