# GO VAIL 2045

## *Vail Mobility & Transportation Master Plan*

PEC

April 2024

TOWN OF VAIL

FEHR & PEERS

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# Project Process & Vision

GO VAIL 2045

# Meet the Team

**TOM KASSMEL**

Town of Vail Project Manager

**ANN BOWERS**

Fehr & Peers Project Manager

TOWN OF VAIL

FEHR & PEERS

*LEAD CONSULTANT*

MULLER ENGINEERING COMPANY

SE GROUP

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

2009
Transportation
Master Plan

VAIL 20/20
Focus on the Future

GO VAIL 2045

# History/Why now?

- Existing Transportation Master Plan is 15 years old
- Expected growth
- Changing technology
- Multimodal focus
- Safe mobility for all ages and abilities
- Continued success as a leader in active transportation

# PROCESS

## Master Plan Elements

- ✓ Vision & Goals
- ✓ Pedestrian & Bicycle
- ✓ Transit
- ✓ Parking
- ✓ Traffic Calming
- ✓ I-70 Impacts
- ✓ Traffic
- ✓ Emerging Technology
- ✓ Loading/Delivery
- ✓ Special Event Logistics
- ✓ Implementation & Funding

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**2022**

- Vision & Goals
- Existing Conditions

**2023**

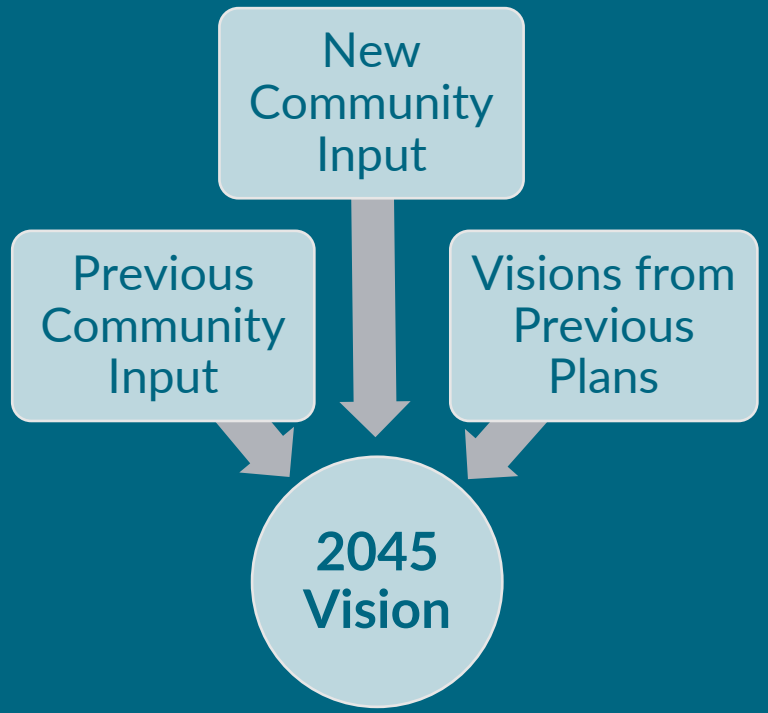
- July — Pedestrian & Bicycle; Transit
- August — Parking
- December — Traffic Calming; I-70
- January — Traffic; Emerging Technology

**2024**

- January – March — Draft Master Plan
- April – June — Adopt Master Plan

PUBLIC ENGAGEMENT

# Transportation Vision




**Vail is recognized** as having a comprehensive multimodal transportation system **with well-integrated alternative transportation options** which reduce the number of single occupant vehicle trips and overall vehicle miles travelled to, from, and within Vail.

- Transit, walking, and biking are highly encouraged, comfortable, safe, affordable, reliable, and convenient, supported by state-of-the-art infrastructure, emerging mobilities and technologies, as well as education and outreach programs.
- Vail's transportation system is designed to support the sustainability of the natural environment and contribute to the Town's Climate Action goals as well as to provide equitable access to economic, recreational, and other opportunities.
- Those who choose to drive are welcomed with a well-maintained roadway system and clear direction for locating Vail's managed parking areas and alternative fuel vehicle stations. Loading of goods, services, and passengers is efficient and clearly designated through the town's dispersed loading and delivery system.
- Traveling between Vail and regional destinations within the intermountain area and the Front Range is reliable, convenient, safe and seamless by public transit or private vehicle. Convenient connections to the nearby airports make year-round travel to Vail easy from anywhere in the world.

# Master Plan **Outcomes** Implementation, Prioritization & Funding

## Pedestrian & Bicycle Improvements

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **BICYCLE FACILITIES** | | | | | | |
| **Bike Lanes** | | | | | | |
| Frontage Road 6' Bike Lanes | | | $$ | Mid Term | 5 | Coordinate with Asphlat Overlays |
| West Lionshead Circle - 5' Bike Lanes | 79% | 11% | $ | Short Term | 2 | Coordinate with Asphlat Overlays |
| East Lionshead Circle - 5' Bike Lanes | 78% | 12% | $ | Short Term | 2 | Coordinate with Asphlat Overlays |
| Vail Road (GVT-Meadow to Forest Rd) - 5' Bike Lanes | 82% | 12% | $ | Short Term | 1 | Coordinate with Asphlat Overlays |
| Vail Valley Drive (S. Frtge to GP) - 5' Bike Lanes | 82% | 12% | $ | Short Term | 1 | Coordinate with Asphlat Overlays |
| | | | | | | |
| **Separated Multi Use Paths** | | | | | | |
| GVT S. Frontage Rd - Dowd to WV Rdabt | 73% | 9% | $$$$ | Long Term | 4 | |
| S. Frontage Rd - Donovan to Lionshead | 78% | 9% | $$ | Mid Term | 2 | Coordinate with S. Frtge Road Diets |
| GVT Lionshead Gondola Bypass | 77% | 13% | $$$ | Short Term | 1 | Design Complete-Coordination with VR |
| Library to Lionshead Pedestrian Nature Trail | 77% | 13% | $$ | Short Term | 1 | Provides Safer Pedestrian option |
| Middle Creek Connection - S. Frontage Rd. to Dobson | 66% | 8% | $ | Mid Term | 2 | Coordinate w/ Vail Internationa & Evergreen |
| S. Frontage Rd - Along Ford Park Parking Lot | 73% | 9% | $ | Mid Term | 3 | Facilitates Frtge Rd Parking on South Side |
| S. Frontage Rd - Along Gore Creek & Golf Course | 73% | 9% | $$$$ | Long Term | 4 | Facilitates Frtge Rd Parking on South Side |
| GVT along VVD - Ford Park thru Nature Ctr to S. Frtge | 67% | 12% | $$$$ | Long Term | 4 | Moves GVT off Vail Valley Drive |
| GVT Sunburst Dr - VVD to Golf Clubhouse | | | $$ | Short Term | 2 | Separates GVT and provides Traffic Calming |
| N. Frontage Rd - Katsos to Bighorn Rd | 66% | 8% | $$ | Mid Term | 3 | Links VMS to East Vail |
| GVT - Bighorn Rd | 67% | 7% | $$$ | Short Term | 1 | Separates GVT from Bighorn Rd. |
| Stephens Park Connection - Across Creek to S. Frontage | 65% | 13% | $$$ | Long Term | 5 | Alt. to S. Frtge Rd |
| Bald Mtn Connection - S. Frontage Rd. under I-70 | 59% | 14% | $$$$$ | Long Term | 5 | Alt. to S. Frtge Rd & Wildlife X-ing |
| | | | | | | |
| **Residential Striped Shoulders (4')** | | | | | | |
| Buffehr Creek Rd | | | $ | Short Term | 1 | Requires widening if 4' shoulders |
| Lions Ridge Loop | | | $ | Short Term | 2 | Requires widening if 4' shoulders |
| Forest Rd | | | $$ | Mid Term | 2 | Requires widening if 4' shoulders |
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| Sunburst - East of Golf Clubhouse | | | $ | Short Term | 1 | Requires widening if 4' shoulders |
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| Chamonix Ln | 52% | 7% | $$ | Short Term | 1 | Requires widening if 4' shoulders |
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| Main Gore Dr | 58% | 9% | $ | Short Term | 1 | Requires widening if 4' shoulders |
| | | | | | | |
| **Residential Striped Shoulders (4') and/or Sidewalk** | 35-45% | | $$ | Long Term | 5 | |
| | | | | | | |
| **Trail Safety Improvements** | | | | | | |
| Driveway Crossings | | | $$ | Mid Term | 3 | |
| Sight Distance | | | $ | Short Term | 1 | |
| User amenitites (Signage, Lighting, benches, etc...) | | | $ | Mid Term | 3 | |
| | | | | | | |
| **Road Diets** | | | | | | |
| N. Frontage Rd - Adjacent to WV Commercial | 56% | 37% | $$$ | Mid Term | 2 | Improves Ped X-ing, TC, & supports WV MP |
| S. Frontage Rd - Adjacent to Westhaven Drive | | | $$ | Mid Term | 2 | Improves Multi-Use Path & Traffic Calming |
| S. Frontage Rd - Adjacent Glen Lyon Office Buildings | 66% | 22% | $$ | Mid Term | 2 | Improves Multi-Use Path, Ped X-ing, & TC |
| S. Frontage Rd - Adjacent to VTC | 64% | 28% | $$ | Mid Term | 3 | Improves Bike Lanes, TC, & Transit Ctr Exp |
| | | | | | | |
| **Rapid Flashing Beacons at Pedestrian Crossings** | | | | | | |
| West Vail Roundabout | | | $ | Mid Term | 3 | Add for all crossings |
| N. Frontage Rd - WV Commercial | | | $$ | Short Term | 1 | Coordinate w/ WV Road Diet |

| Cost Ranges | |
|---|---|
| $ | $100k-$500k |
| $$ | $500k-$1.5M |
| $$$ | $1.5M-$3.5M |
| $$$$ | $3.5M-$10M |
| $$$$$ | >$10M |
| **Timing Range** | |
| Short Term | 0-5 Years |
| Mid Term | 5-10 Years |
| Long Term | 10-20+ Years |
| **Priority Level** | |
| 1 | Implement |
| 2 | Evaluate then Implement |
| 3 | Evaluate Further |
| 4 | Nice to have |
| 5 | Needs a Trigger |

# Master Plan **Outcomes**

## Implementation, Prioritization & Funding

### Transit, Parking, Traffic, Technology, & I-70 Improvements

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **TRANSIT FACILITIES** | | | | | | |
| **Transit Facilities** | | | | | | |
| VTC Expansion | | | $$$$$ | Short Term | 1 | 2024-26 MMOF Grant Funding |
| | | | | | | |
| **Transit Service** | | | | | | |
| WV Express - All Day Year Round | | | $/year | Short Term | 1 | |
| EV Express - All Day Year Round | | | $/year | Short Term | 2 | Convert from Hiker Express |
| Lions Ridge Loop - Year Round | | | $/year | Mid Term | 3 | |
| Sandstone Loop - Increased Frequency | | | $/year | Mid Term | 3 | |
| N. Frontage Rd Employee Express - All Day Year Round | | | $/year | Short Term | 1 | Coordinate w/ West Middle Creek Housing |
| Add Bus Stop at Vail Run along S. Frontage Rd | | | $ | Short Term | 1 | Provides West Vail access to this area |
| Micro Transit (On-Demand) Service | | | $/year | Mid Term | 4 | Consider Pilot Program |
| Mobility Pass | | | | Mid Term | 3 | Coordination with EVTA & CDOT |
| | | | | | | |
| **Transit Safety Improvements** | | | | | | |
| In-Town Signage Improvements | | | $ | Short Term | 1 | Pedestrian Awareness of Transit Route |
| Bus Shelters at High Boarding Locations | | | $ | Short Term | 1 | |
| Bus Pads and amenities | | | $ | Mid Term | 2 | |
| Pedestrian Lighting at all Bus Stops | | | $ | Short Term | 1 | Assumes Solar Lights |
| | | | | | | |
| **PARKING FACILITIES** | | | | | | |
| **Parking Improvements** | | | | | | |
| Frontage Rd Paid Parking | | | $ | Long Term | 4 | Coordinate with CDOT |
| Eliminate Frontage Rd Parking at VTC & LH | | | $ | Short Term | 1 | Imporves safety along High Volume roads |
| Improve Frontage Road Parking - Lighting & Sidealks | | | $$$$ | Long Term | 5 | Improves pedestrian safety |
| WV Parking Improvements - +60 Spaces | | | $$ | Mid Term | 2 | |
| CDOT/VR Mtnce Parking lot - +100 Spaces | | | $$$ | Long Term | 3 | |
| Ford Park Angled Parking - +100-200 Spaces | | | $$$ | Mid Term | 3 | Improves Ford Park, TC, & skier parking |
| | | | | | | |
| **TRAFFIC FACILITIES** | | | | | | |
| **Traffic Improvements** | | | | | | |
| Permanent Traffic Counters at Roundabouts | | | $ | Short Term | 1 | Provides key traffic data to trigger projects |
| 2-NB Lanes at Main Vail Roundabouts | | | $$$$ | Long Term | 5 | Implement at volumen threshold |
| 2-NB Lanes at West Vail Roundabouts | | | $$ | Long Term | 5 | Implement at volumen threshold |
| Left Turn Lanes at Frontage Rd Intersection | | | $$ | Long Term | 5 | Implement at volumen threshold |
| West Vail Commercial Roundabout | | | $$$ | Long Term | 5 | Implement with WV Redevelopment |
| Ever Vail Roundabout | | | | Long Term | 5 | Implement with EV Redevelopment |
| East Lionshead Circle Roundabout | | | $$$ | Long Term | 5 | Improves In-Town Bus Left Turns |
| VTC/Vail Valley Drive Roundabout | | | $$$ | Short Term | 2 | Imporves VVD intersection & VTC exiting |
| Ford Park West Roundabout | | | $$$ | Long Term | 5 | Alternate location for VVD Roundabout |
| Ford Park East Roundabout | | | $$$ | Long Term | 3 | Improves Ford Park Lot access |
| | | | | | | |
| **Speed Limit & Traffic Calming** | | | | | | |
| Residential Speed Limit to 20mph | 77% | 14% | $ | Short Term | 1 | |
| Traffic Calming Policy | | | $ | Short Term | 1 | |
| Lane Striping | 79% | 13% | $ | Short Term | 1 | |
| Photo Enforced Radar | 36% | 56% | $ | Long Term | 5 | |
| Neckdowns & CurbExtensions | 47% | 37% | $ | Long Term | 5 | |
| Speed Humps | 44% | 52% | $ | Long Term | 5 | |
| | | | | | | |
| **OTHER** | | | | | | |
| **Technology Improvements** | | | | | | |
| SMART City Technolgy | | | $$ | Long Term | 4 | Consider Pilot Program |
| MaaS (Mobiliy as a Service) | | | $ | Mid Term | 3 | Coordination with multi agencys |
| Parking Mangement App | | | $ | Short Term | 1 | Coordination with Private Parking |
| | | | | | | |
| **I-70 Pedestrian Crossings Imporvements** | | | | | | |
| West Vail Interchange Underpass | | | $$ | Long Term | 5 | Triggered by WV Traffic Improvement |
| Buffehr Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by WV Redevelopment |
| Red Sandstone Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by Ever Vail |
| Middle Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by Civic Area |
| Main Vail Interchange Underpass | | | $$ | Long Term | 5 | Triggered by MV Traffic Improvement |
| Elkhorn Drive Underpass | | | $$$$$ | Long Term | 5 | Triggered evaluation by PW Master Plan |
| Bald Mountain Road | | | $$$$$ | Long Term | 5 | Triggered evaluation by Wildlife Crossing |
| Columbine Drive Underpass | | | $$$$$ | Long Term | 5 | Triggered evaluation by Tunnel Replacement |
| East Vail Interchange Underpass | | | $ | Mid Term | 3 | Further evaluate for implementation |

| Cost Ranges | |
|---|---|
| $ | $100k-$500k |
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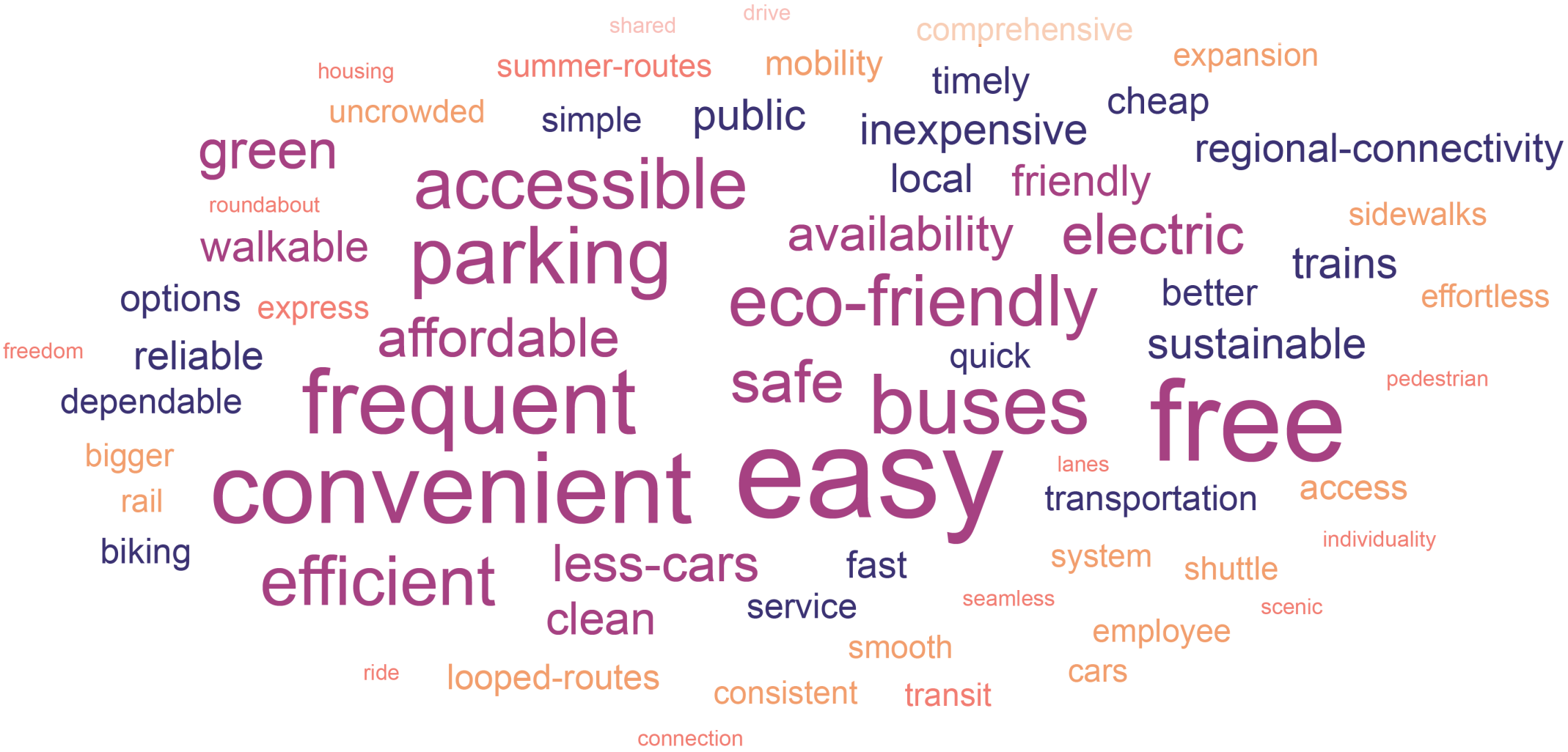
# Community Engagement

# Community's Vision for Vail's Transportation System



# Summary of Engagement Methods

5 Intercept Events

2 Online Surveys

1 Interactive Map

# Community Engagement

## Intercept Events

| | |
|---|---|
| July 19, 2022 | VTRC, Town Hall, & Bighorn Park |
| July 24, 2022 | Farmers Market & Art Show |
| August 9, 2022 | Lionshead & Donovan Park |
| July 11, 2023 | Bighorn Park |
| August 8, 2023 | Donovan Park |
| March 5, 2024 | Vail Community Meeting |

## Town Council Meetings

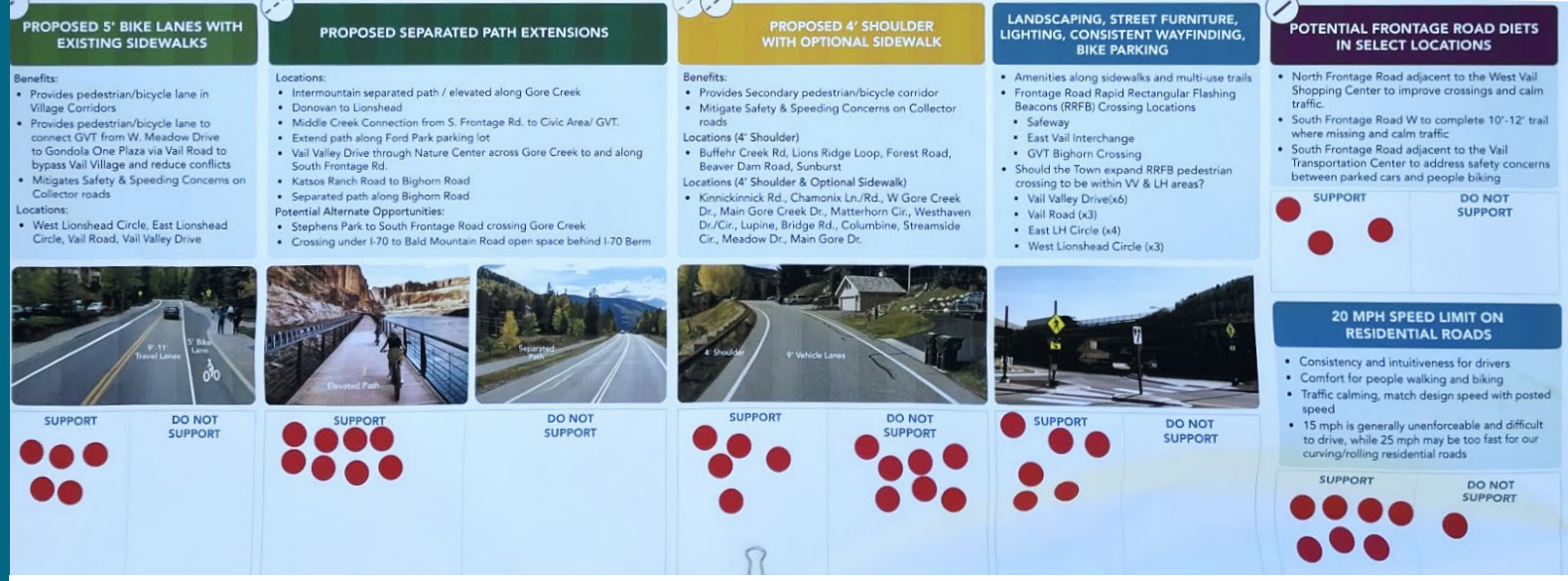
| | |
|---|---|
| June 21, 2022 | Go Vail 2045 Kickoff |
| September 6, 2022 | Project Goals & Vision Statement |
| August 1, 2023 | Pedestrian, Bicycle, & Transit Concepts |
| August 15, 2023 | Parking Concepts |
| October 17, 2023 | Public Survey Results |
| December 19, 2023 | Speed Limits, Traffic Calming, & I-70 Impacts |
| January 2, 2024 | Traffic, Transit Center, & Technology |
| March 5, 2024 | Draft Master Plan Review Schedule |
| March 19, 2024 | Draft Master Plan Review |

## Planning & Environmental Commission Meetings

| | |
|---|---|
| August 14, 2023 | Vision, Pedestrian, Parking, & Transit Concepts |
| January 22, 2024 | Traffic Calming, Traffic, I-70, & Technology |

# Intercept Event Results

60 people reached

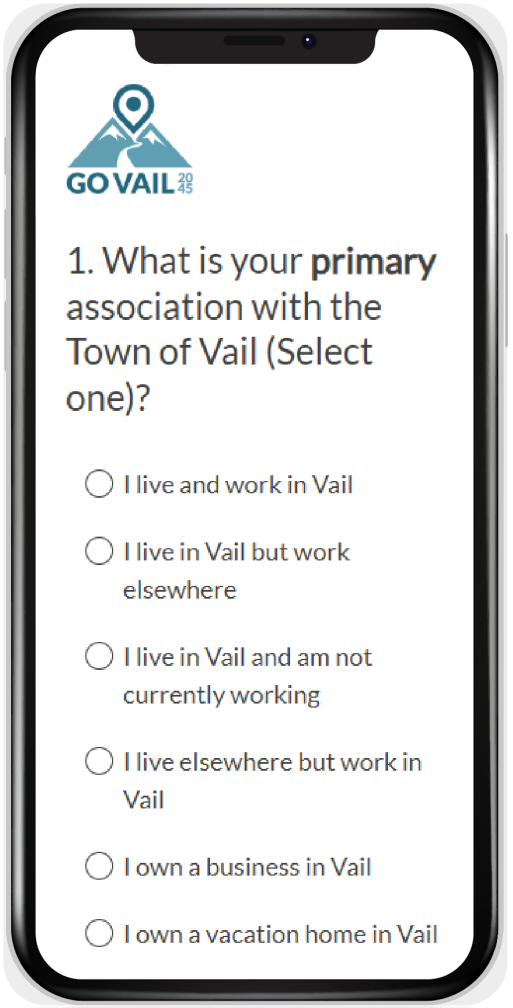



Support for many transit and bike/ped improvement options

Interest in bike path connections and etiquette signage

Interest in increased bus frequency and ease of use (tracking, less transfers, more destinations)

Interest in more visibility and amenities (shelters, lighting, electronic bus tracking) at bus stops




# Online Survey

## Existing Concerns Survey 2022

275 total responses

## Opportunities Survey 2023

143 total responses

# Interactive Map

42 Comments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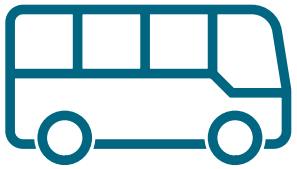
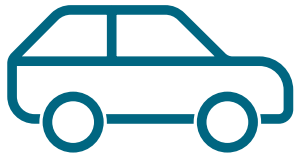
# What is **working well** about transportation in Vail?

Walking & biking is easy & comfortable

Sidewalks and trails are well maintained



Local buses are frequent, free, and easy to use



Navigating Vail by car is easy

# What is **challenging** about transportation in Vail?

Conflicts between people walking and biking in dismount zones and on trails

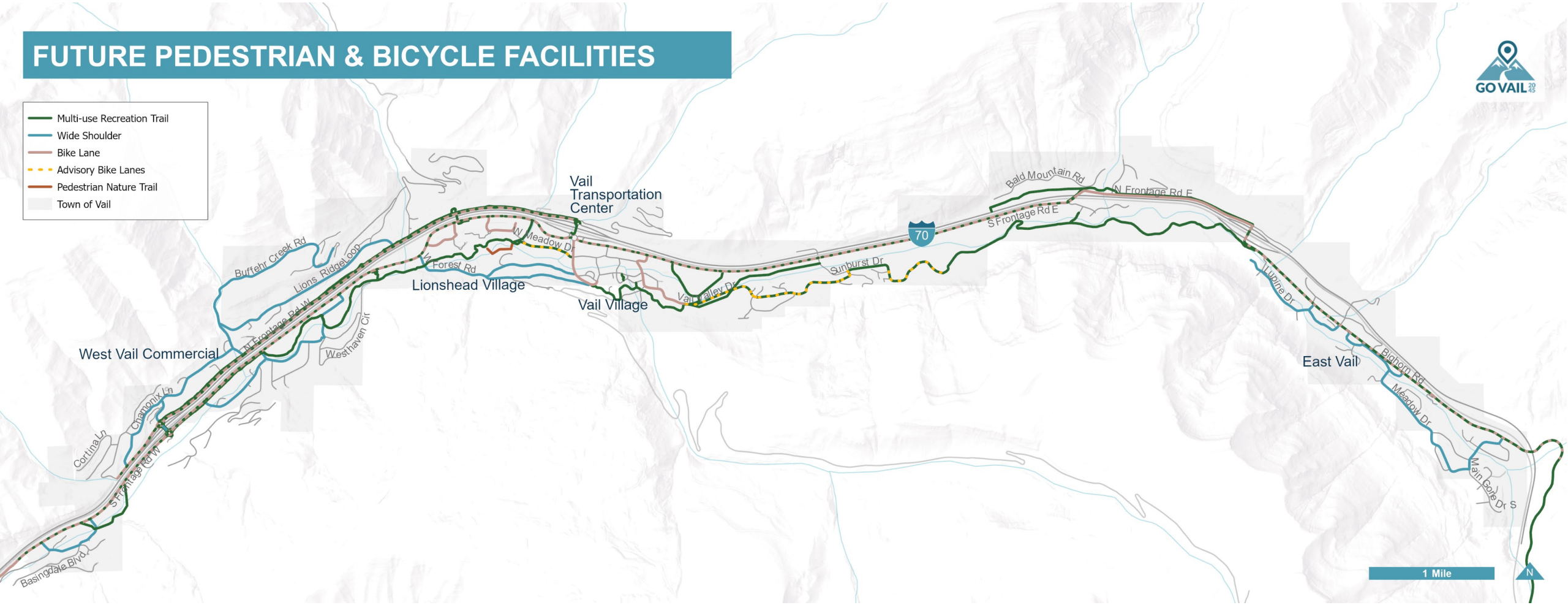

Finding places for parking & passenger loading is challenging

Community desires more routes and greater frequency for regional buses

Traffic congestion makes it difficult to drive

# Pedestrian & Bicycle

# FUTURE PEDESTRIAN & BICYCLE FACILITIES



# Bike Lanes

**Benefits:**

- Provides pedestrian/bicycle lane in Village Corridors
- Provides pedestrian/bicycle lane to connect GVT from W. Meadow Drive to Gondola One Plaza via Vail Road to bypass Vail Village and reduce conflicts
- Helps mitigate Safety & Speeding Concerns on Collector roads
- Pro & Con: Narrows vehicular lanes

**Locations:**

- West Lionshead Circle, East Lionshead Circle, Vail Road, Vail Valley Drive

# Multi-use Recreational Trails

**Locations:**

- Intermountain separated path / elevated along Gore Creek
- Donovan to Lionshead
- Middle Creek Connection from S. Frontage Rd. to Civic Area/ GVT.
- Vail Valley Drive through Nature Center across Gore Creek to and along South Frontage Rd.
- Extend path along Ford Park parking lot
- Sunburst Drive from Vail Valley Drive to Golf Clubhouse
- Katsos Ranch Road to Bighorn Road
- Separated path along Bighorn Road
- Potential Alternate Opportunities:
    - Stephens Park to South Frontage Road crossing Gore Creek
    - Crossing under I-70 to Bald Mountain Road open space behind I-70 Berm


# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
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| **BICYCLE FACILITIES** | | | | | | |
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# Wide Shoulder

**Benefits:**
- Provides Secondary pedestrian/bicycle corridor
- Help mitigate Safety & Speeding Concerns on Collector roads

**Locations (4’ Shoulder)**
Buffehr Creek Rd, Lions Ridge Loop, Forest Road, Beaver Dam Road, Sunburst

**Locations (4’ Shoulder & Optional Sidewalk)**
Kinnickinnick Rd., Chamonix Ln./Rd., W Gore Creek Dr., Matterhorn Cir., Westhaven Dr., Lupine, Bridge Rd., Columbine, Streamside Cir., Meadow Dr., Main Gore Dr.

*Note: In most locations adding a 4’ shoulder would require widening the road by +/- 4’*

# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **Residential Striped Shoulders (4')** | | | | | | |
| Buffehr Creek Rd | | | $ | Short Term | 1 | Requires widening if 4' shoulders |
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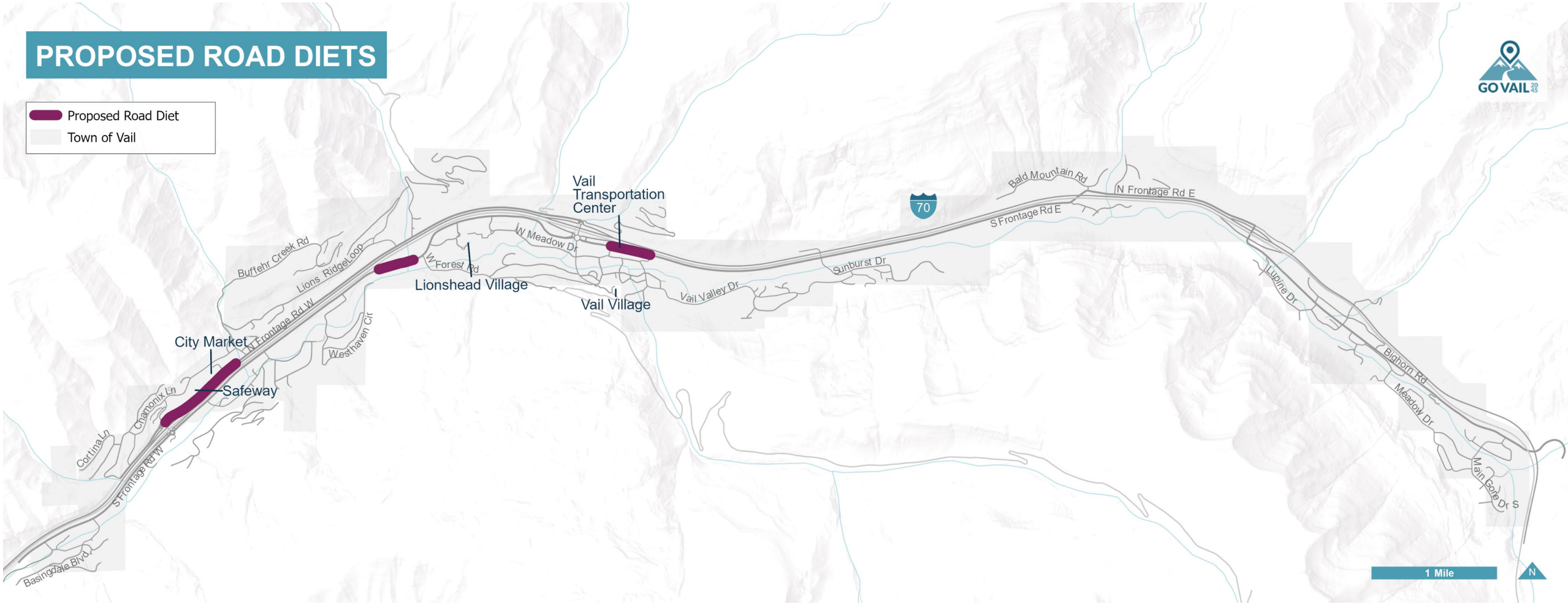
| **Residential Striped Shoulders (4') and/or Sidewalk** | 35-45% | | $$ | Long Term | 5 | |
| | | | | | | |
| **Trail Safety Improvements** | | | | | | |
| Driveway Crossings | | | $$ | Mid Term | 3 | |
| Sight Distance | | | $ | Short Term | 1 | |
| User amenitites (Signage, Lighting, benches, etc…) | | | $ | Mid Term | 3 | |

# Potential Frontage Road Diets



# Potential Frontage Road Diets in Select Locations


**N. Frontage Rd. adjacent to West Vail Commercial** to improve crossings and calm traffic.

**S. Frontage Rd. at West Forest Road and Westhaven Dr.** to improve multi-use trail, crossings, and calm traffic.

**S. Frontage Rd. adjacent to the VTRC** if Frontage Road parking is eliminated.

# Landscaping, Street Furniture, Lighting, Consistent Wayfinding, & Bike Parking

- Amenities along sidewalks and multi-use trails
- Add Frontage Road Rapid Rectangular Flashing Beacons (RRFB) Crossing Locations
    - Safeway
    - East Vail Interchange
    - GVT Bighorn Crossing
- Expand potential RRFB pedestrian crossing locations to be within VV & LH
    - Vail Road (x3)
    - East LH Circle (x5)
    - Vail Valley Drive (x6)
    - West Lionshead Circle (x4)

# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **Road Diets** | | | | | | |
| N. Frontage Rd - Adjacent to WV Commercial | 56% | 37% | $$$ | Mid Term | 2 | Improves Ped X-ing, TC, & supports WV MP |
| S. Frontage Rd - Adjacent to Westhaven Drive | | | $$ | Mid Term | 2 | Improves Multi-Use Path & Traffic Calming |
| S. Frontage Rd - Adjacent Glen Lyon Office Buildings | 66% | 22% | $$ | Mid Term | 2 | Improves Multi-Use Path, Ped X-ing, & TC |
| S. Frontage Rd - Adjacent to VTC | 64% | 28% | $$ | Mid Term | 3 | Improves Bike Lanes, TC, & Transit Ctr Exp |
| | | | | | | |
| **Rapid Flashing Beacons at Pedestrian Crossings** | | | | | | |
| West Vail Roundabout | | | $ | Mid Term | 3 | Add for all crossings |
| N. Frontage Rd - WV Commercial | | | $$ | Short Term | 1 | Coordinate w/ WV Road Diet |
| East Vail Interchange | | | $ | Mid Term | 3 | Coordinate w/ Pedestrian Improvements |
| Bighorn Rd - At Gore Valley Trail | | | $ | Short Term | 1 | |
| West Lionshead Circle - 4 Locations | 78% | 21% | $ | Short Term | 2 | |
| East Lionshead Circle - 5 Locations | 78% | 21% | $ | Short Term | 1 | Highest Volume Pedestrian Crossings |
| Vail Road - 3 Locations | 78% | 21% | $ | Short Term | 1 | Highest Volume Pedestrian Crossings |
| Vail Valley Drive - 6 Locations | 78% | 21% | $ | Short Term | 2 | |

# Key Survey Takeaways

There is a high degree of alignment between Master Plan ideas and public opinion:

- **70%** of respondents support the proposed **recreation trail improvements** while 27% do not.
- **80%** of respondents support **bike lanes on key village collector roads** while 12% do not.
- **64%** of respondents support **striped shoulders and/or sidewalks** while 9% do not, and 28% have no opinion. Of note, about 35%-45% specifically support sidewalks.

# Key Survey Takeaways

- About **65%** of respondents approved of **'road diets' on the South Frontage Rd.** while **56%** support them on the **North Frontage Rd.**
- About **78%** of respondents approve of **rapid-flashing beacon** installation on village collector roads, while 20% do not.
- About **77%** of respondents support a consistent **20 mph speed limit** on residential roads, while 14% do not.

# Transit

# Summer Ridership

| Month | Intown | | | Outlying | | | *Total* | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2021 | 2022 | 2019 | 2021 | 2022 | *2019* | *2021* | *2022* |
| May | 12,520 | 14,019 | 20,410 | 16,335 | 10,156 | 21,007 | *28,855* | *24,175* | *41,417* |
| June | 81,672 | 55,035 | 62,157 | 61,072 | 34,282 | 43,772 | *142,744* | *89,317* | *105,929* |
| July | 153,978 | 105,386 | 106,236 | 76,181 | 48,858 | 65,032 | *230,159* | *154,244* | *171,268* |
| August | 112,833 | 73,087 | 86,133 | 54,103 | 36,894 | 52,798 | *166,936* | *109,981* | *138,931* |
| September | 62,661 | 45,814 | 53,627 | 38,935 | 32,107 | 39,479 | *101,596* | *77,921* | *93,106* |
| October | 31,525 | 27,275 | 31,065 | 25,894 | 20,545 | 28,184 | *57,419* | *47,820* | *59,249* |
| *Total* | *455,189* | *320,616* | *359,628* | *272,520* | *182,842* | *250,272* | *727,709* | *503,458* | *609,900* |

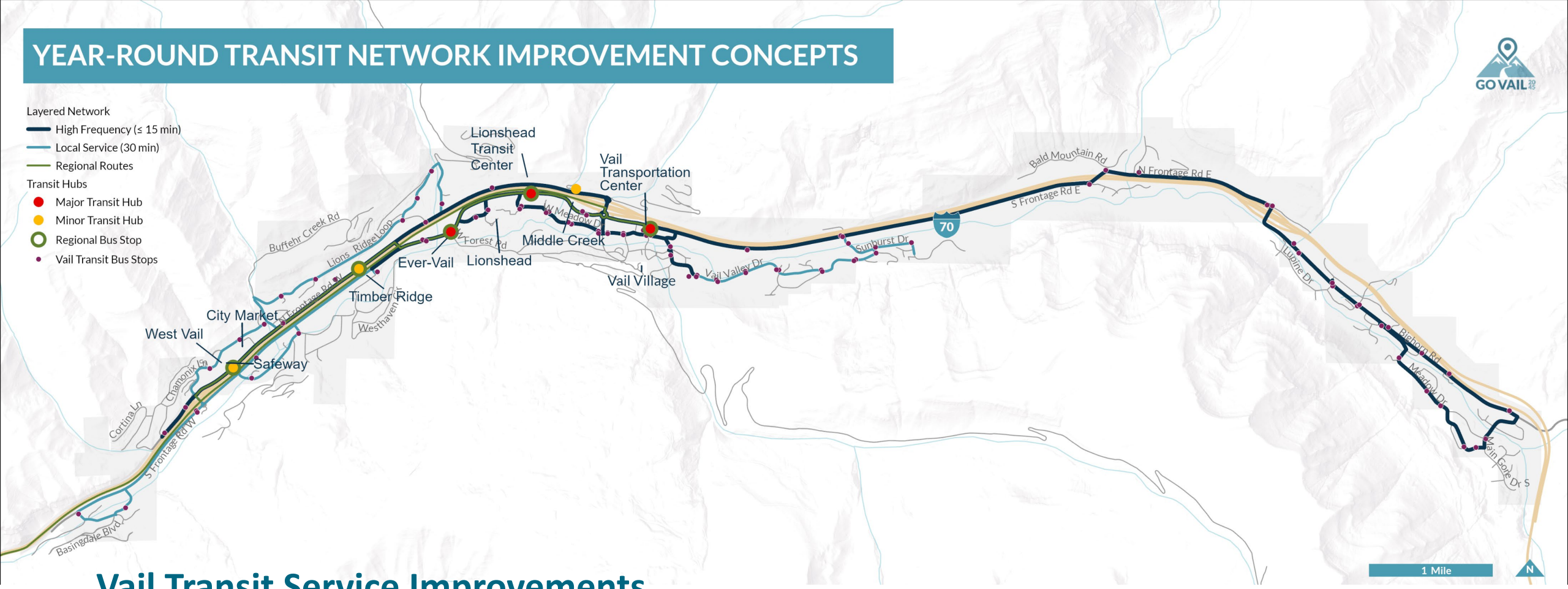
**2019 and 2021 numbers are hand counts and the 2022 numbers are from our automated passenger counting system.*

# Winter Ridership

| Month | Intown | | | | Outlying | | | | *Total* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2018-2019 | 2019-2020 | 2021-2022 | 2022-2023 | 2018-2019 | 2019-2020 | 2021-2022 | 2022-2023 | *2018-2019* | *2019-2020* | *2021-2022* | *2022-2023* |
| November | 68,294 | 71,066 | 58,748 | 65,350 | 64,069 | 54,107 | 36,336 | 60,419 | *132,363* | *125,173* | *95,084* | *125,769* |
| December | 242,521 | 220,404 | 176,860 | 198,560 | 188,972 | 168,673 | 121,774 | 193,088 | *431,493* | *389,077* | *298,634* | *391,648* |
| January | 249,062 | 246,146 | 182,037 | 246,556 | 223,764 | 207,996 | 152,206 | 240,218 | *472,826* | *454,142* | *334,243* | *486,774* |
| February | 229,749 | 243,272 | 174,553 | 242,496 | 183,732 | 214,395 | 150,488 | 209,231 | *413,481* | *457,667* | *325,041* | *451,727* |
| March | 265,120 | 89,345 | 174,835 | 237,541 | 226,116 | 90,836 | 146,336 | 208,902 | *491,236* | *180,181* | *321,171* | *446,443* |
| April | 99,015 | - | 68,262 | 95,939 | 86,358 | - | 66,046 | 96,024 | *185,373* | - | *134,308* | *191,963* |
| *Total* | *1,153,761* | *870,233* | *835,295* | *1,086,442* | *973,011* | *736,007* | *673,186* | *1,007,882* | *2,126,772* | *1,606,240* | *1,508,481* | *2,094,324* |

** 18-19/19-20 numbers are hand counts and the 21-22/22-23 numbers are from our automated passenger counting system.*

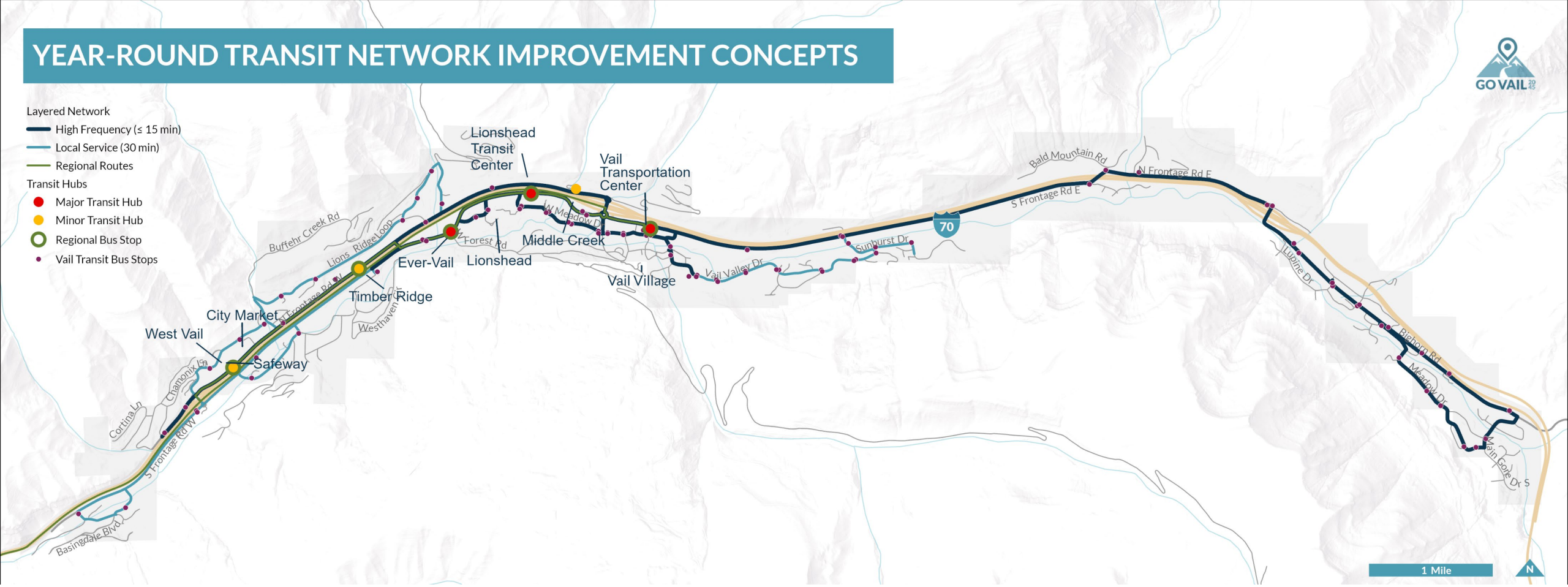
# YEAR-ROUND TRANSIT NETWORK IMPROVEMENT CONCEPTS




## Vail Transit Service Improvements

1. **More Frequent Service/Year-Round Schedule**
   a) Year-round, all-day WV Express & East Vail hiker express to provide seamless Express service from East Vail to West Vail
   b) 30-minute year-round service on Lions Ridge Loop and Red Sandstone Road as combined loop
   c) North Frontage Road employee housing express for ~600 units (MVR, MC, WMC, Solar Vail)
   d) Provide Sandstone Area better access to West Vail via Red route with WB stop along N. Frontage Road at Vail Run
2. **Explore Pilot Program for Microtransit** (On-Demand) along Buffehr Creek Rd/Potato Patch or Golf Course
3. **Consolidate/Limit Private Shuttles** that are already on High Frequency Transit Routes (to reduce vehicle trips & free up shuttle drop-off space at transit centers)

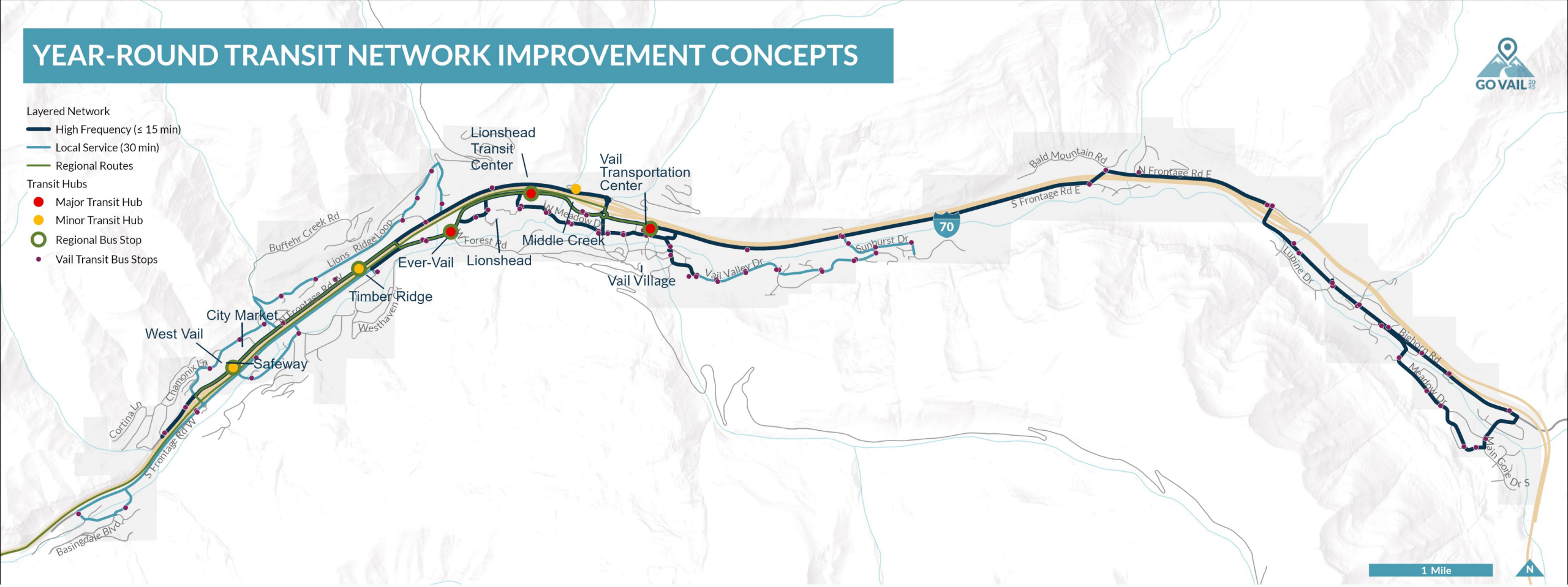
# YEAR-ROUND TRANSIT NETWORK IMPROVEMENT CONCEPTS




## Regional Transit Improvements

- **Support Implementation of Eagle Valley RTA improvements**
  - Fare-Free to Edwards & Minturn,
  - Local Route along N. Frontage Road to provide down valley access to Employee Housing
  - Explore transfer opportunities in West Vail
- **Support expanded service to Summit County** (Frisco and Breckenridge – likely through Bustang & Pegasus)
- **Support Expanding Regional Service to Denver** (Bustang & Pegasus)
- **Plan for Regional Advanced Guideway System/Rail Connections**

# YEAR-ROUND TRANSIT NETWORK IMPROVEMENT CONCEPTS




## Facilities & Infrastructure Improvements

- **Expand Capacity at Vail Transportation Center** (MMOF Grant design 2024-26)
- **Upgraded Major Mobility Hub at Vail Transportation Center**
- **New Minor and Residential TOD Mobility Hubs** to support transfers between services and modes
- **West Vail, Timber Ridge, West Middle Creek** pending housing developments
- **Convert Fleet to Zero Emission Vehicles,** expand opportunity charging

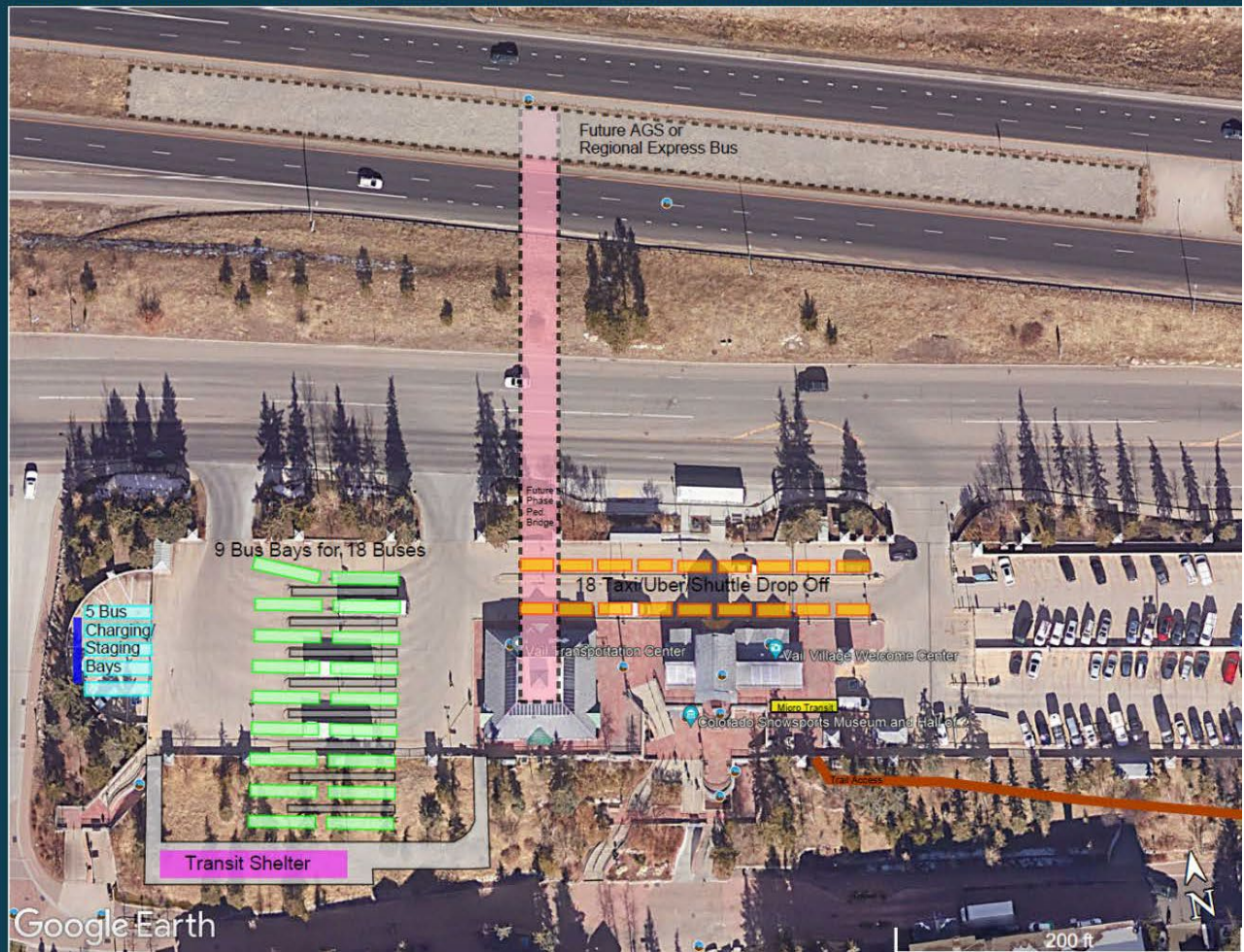
# Vail Transit Center Expansion

- 2024 Design w/ $1.5M Matching Grant
- Accommodate 15-20 Taxi/Shuttle/Uber
- Accommodate 18-20 Bus Bays: Vail Transit +3 Bus bays, EVTA +4-7 Bus Bays, Bustang/Charter +2 Bus Bays

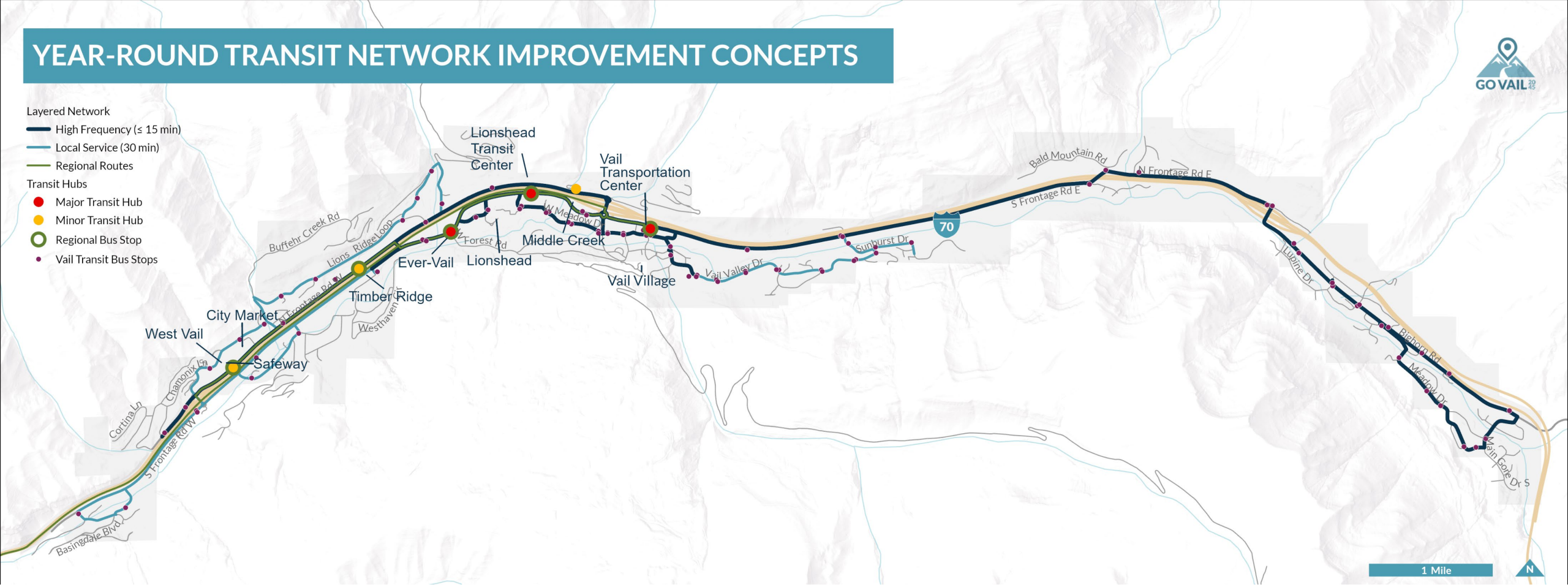
## CONCEPT A


## CONCEPT B

**Note:** Concept B includes doubling up two buses per bay, which may generate bus scheduling and operational challenges, and contribute to delays. While this configuration could work in a constrained situation, it is not ideal for efficient bus operations.



# YEAR-ROUND TRANSIT NETWORK IMPROVEMENT CONCEPTS




## Safety Improvements

- **Mitigate Transit/Pedestrian/Bicycle Conflicts Along In-Town Route**
  - Study existing conflicts and potential improvements. Opportunities could include:
    - Larger infrastructure improvements on the pedestrian mall to separate buses from people walking and biking
    - Signage and striping to better delineate where buses are operating and conflict points with people walking and biking
    - Other operational improvements
- **Improve Existing Bus Stops**
  - Add bus shelters at stop locations with high daily boardings
  - Add amenities (benches, larger waiting areas, trash cans, etc.) to stop locations with a medium level of boardings
  - Provide a larger area with more separation from traffic at all bus stops along higher speed streets
- **Pedestrian Lighting at All Stops**
- **Improved Pedestrian Crossing at Stops along Major Roads**

# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **TRANSIT FACILITIES** | | | | | | |
| **Transit Facilities** | | | | | | |
| VTC Expansion | | | $$$$$ | Short Term | 1 | 2024-26 MMOF Grant Funding |
| | | | | | | |
| **Transit Service** | | | | | | |
| WV Express - All Day Year Round | | | $ /year | Short Term | 1 | |
| EV Express - All Day Year Round | | | $ /year | Short Term | 2 | Convert from Hiker Express |
| Lions Ridge Loop - Year Round | | | $ /year | Mid Term | 3 | |
| Sandstone Loop - Increased Frequency | | | $ /year | Mid Term | 3 | |
| N. Frontage Rd Employee Express - All Day Year Round | | | $ /year | Short Term | 1 | Coordinate w/ West Middle Creek Housing |
| Add Bus Stop at Vail Run along S. Frontage Rd | | | $ | Short Term | 1 | Provides West Vail access to this area |
| Micro Transit (On-Demand) Service | | | $ /year | Mid Term | 4 | Consider Pilot Program |
| Mobility Pass | | | | Mid Term | 3 | Coordination with EVTA & CDOT |
| | | | | | | |
| **Transit Safety Improvements** | | | | | | |
| In-Town Signage Improvements | | | $ | Short Term | 1 | Pedestrian Awareness of Transit Route |
| Bus Shelters at High Boarding Locations | | | $ | Short Term | 1 | |
| Bus Pads and amenities | | | $ | Mid Term | 2 | |
| Pedestrian Lighting at all Bus Stops | | | $ | Short Term | 1 | Assumes Solar Lights |

# Key Survey Takeaways

- Creating a **seamless bus service from East to West Vail and increasing the frequency of bus service in West Vail** are viewed as the most likely improvements to encourage more transit ridership within Vail.
- **57%-67%** of respondents indicate that they would be **'somewhat likely' or 'likely' to take EVTA free-fare bus service** from Edwards to Vail.

# Parking

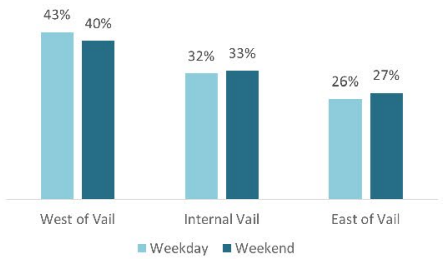
GO VAIL 2045

## PROPOSED PARKING MANAGEMENT STRATEGIES

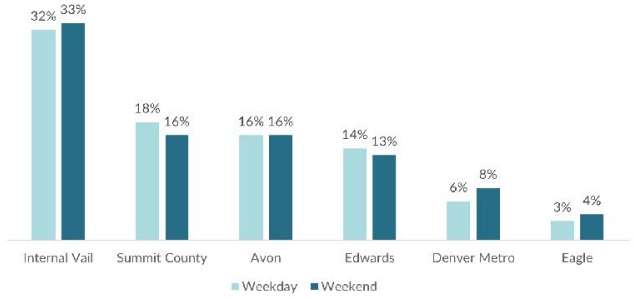
# MANAGING PARKING DEMAND

## WHERE ARE PEOPLE WHO PARK IN VAIL COMING FROM?

Vail Village Parking Garage (Vail)




Vail Village Parking Garage (Internal Vail vs. Elsewhere)




## CARPOOLING (2+ OCCUPANTS) RATES FOR VAIL VISITORS

**70-80%**

Vail Village and Lions Head Parking Garages

**20-30%**

Ford Park Parking Area

## OPPORTUNITIES TO MITIGATE PARKING DEMAND

### MOBILITY PASS

- Pass valid for transit, e-bikes, and Sole Power program
- Pass holders earn points for all trips to/from Vail completed without a car

### MANAGE PARKING


- Develop a mobile app that shows people where there are spaces available in both public and private parking areas and the cost for each.

### INCENTIVES

- Incentivize transit for target groups close to bus stops in Vail
  - Free coffee, hot chocolate, or breakfast
  - Free ski storage for transit users.

### ON-DEMAND TRANSIT

- Provide target groups with transit access on peak days in areas far from bus stops
  - Specific Neighborhoods
  - Employees
  - Second homeowners
  - Short-term rentals

### EVTA

- Fare free bus service between Edwards and Vail.
- Increase the frequency of all buses and increase the number of express routes.

GO VAIL 2045

## PROPOSED PARKING MANAGEMENT STRATEGIES

# OVERFLOW PARKING ON THE FRONTAGE ROADS

**30-60**
Typical number of overflow frontage road parking days per year

**200-300**
Average number of overflow vehicles per day

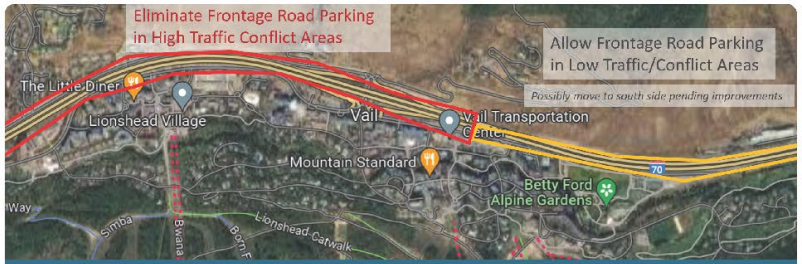
**1000+**
Highest number of overflow vehicles in a day

## OPPORTUNITIES TO MITIGATE OVERFLOW PARKING IMPACTS

### IMPROVEMENTS TO FRONTAGE ROAD

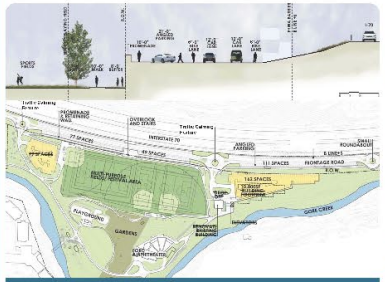
Add pedestrian enhancements to Frontage Roads; new sidewalks, crosswalks, and lighting. (similar to improvements found in West Vail)

Convert Frontage Road parking into paid or metered parking.

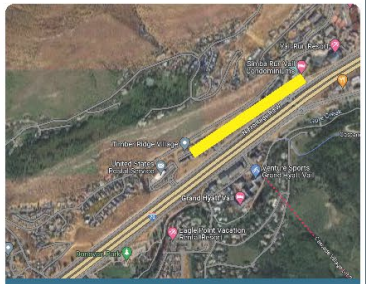



Restrict Frontage Road parking only to areas where conflicts between vehicles and people walking are limited in order to improve safety and comfort for all users.
*Areas may include: East of Vail Village/Ford Park, West of LHPS, Vail Village (only during emergencies)*

### PARKING AREA EXPANSIONS

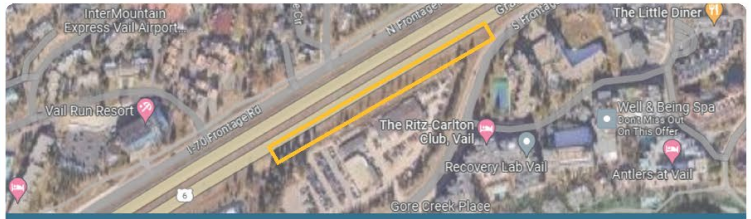


Ford Park Angled Parking (100-200 Spaces)



Lions Ridge Loop (50-80 Spaces)

West Vail First Station (60 Spaces)

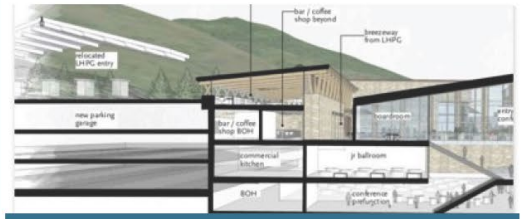



Vail Resorts/CDOT (100 Spaces)

### PARKING TO BE ADDED THROUGH FUTURE REDEVELOPMENT

Ever Vail

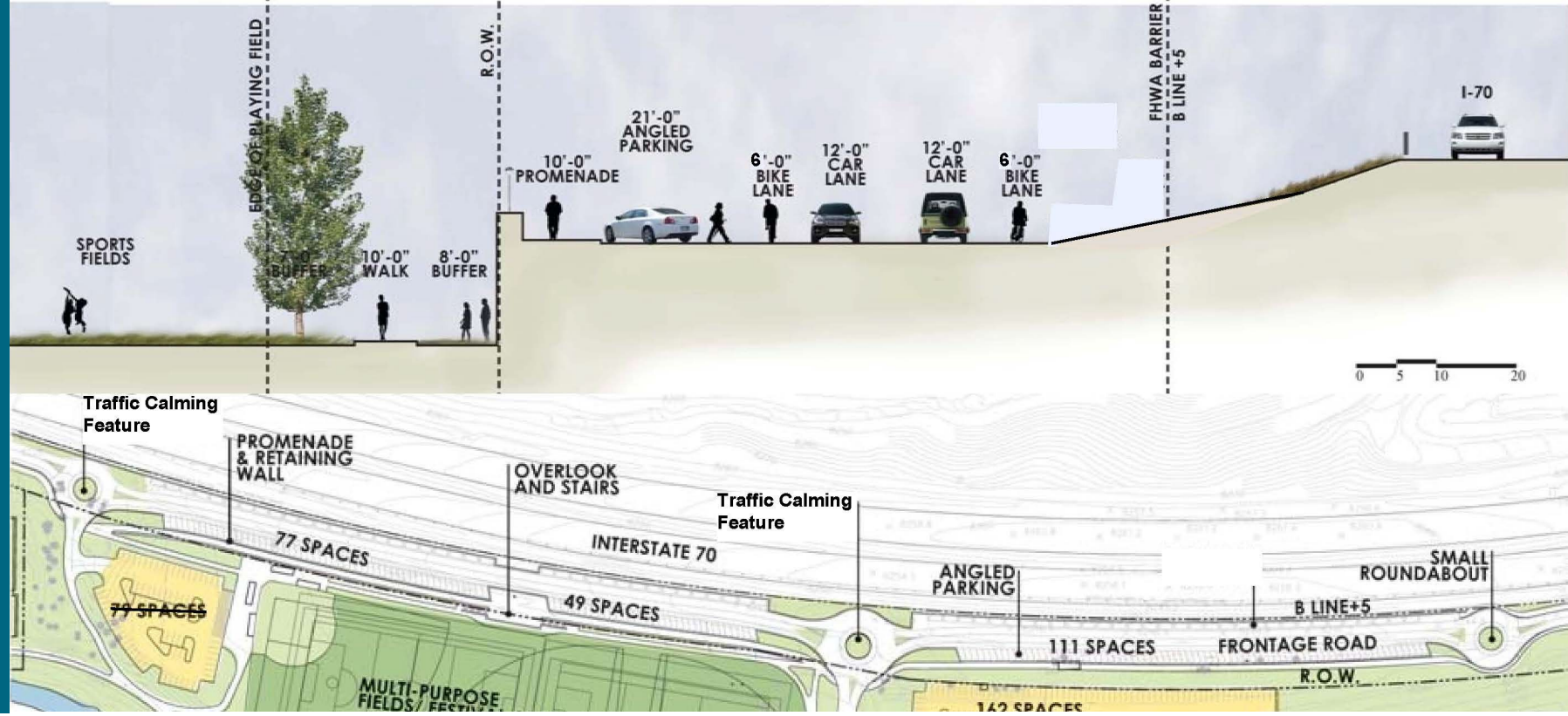

Town Hall



Civic Area

# Ford Park Parking

- 100-200 Added Spaces
- Summer & Winter Use
- Promenade Experience
- Traffic Calming
- Reduce “Frntge Rd Days”
- Improve Ford Park Lot Access




| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **PARKING FACILITIES** | | | | | | |
| **Parking Improvements** | | | | | | |
| Frontage Rd Paid Parking | | | $ | Long Term | 4 | Coordinate with CDOT |
| Eliminate Frontage Rd Parking at VTC & LH | | | $ | Short Term | 1 | Imporves safety along High Volume roads |
| Improve Frontage Road Parking - Lighting & Sidealks | | | $$$$ | Long Term | 5 | Improves pedestrian safety |
| WV Parking Improvements - +60 Spaces | | | $$ | Mid Term | 2 | |
| CDOT/VR Mtnce Parking lot - +100 Spaces | | | $$$ | Long Term | 3 | |
| Ford Park Angled Parking - +100-200 Spaces | | | $$$ | Mid Term | 3 | Improves Ford Park, TC, & skier parking |

# Key Survey Takeaways

- **Just over half** of respondents are in favor of **keeping overflow parking** on frontage roads and adding improvements, **while about 40% prefer eliminating the parking.**
- **Adding sidewalks and crosswalks is identified as the most favorable improvement** to frontage road parking followed by **limiting parking** on busy sections and **lighting**.

## Additional Parking Options:

If the Town were to increase parking supply the most popular options are in CDOT right-of-way:

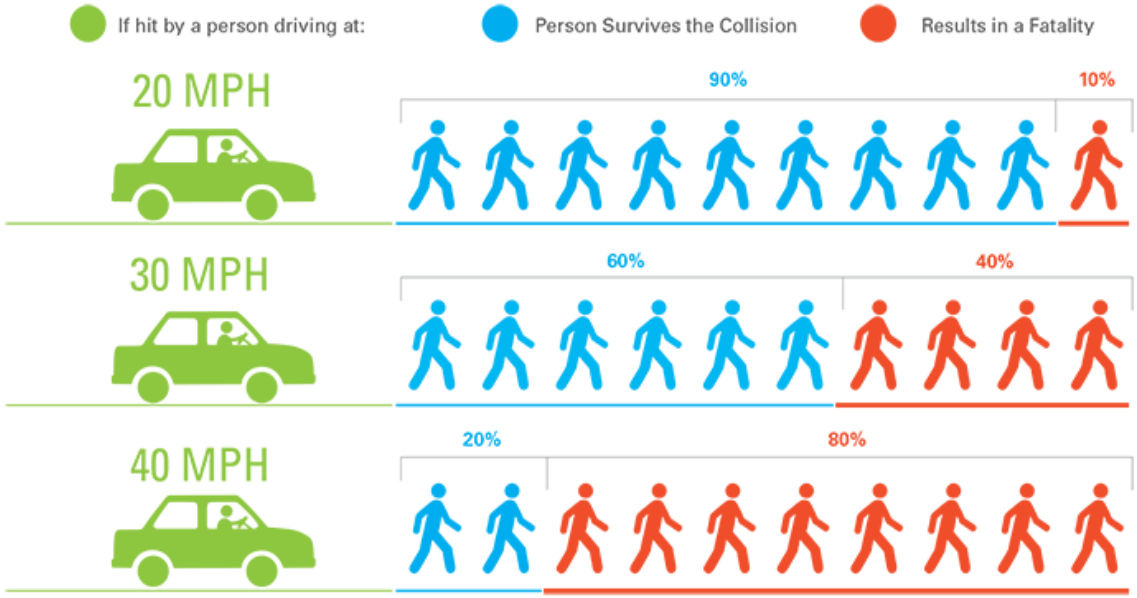
- **Adjacent to Vail Resorts Maintenance Yard**
  - Adds 100+ parking spaces, provides additional oversize vehicle parking (“Sprinter Vans”)
  - Adds 10+ Small RV parking
  - Great location for Special Event staging
- **Head-in parking west of West Vail Fire Station**
  - Adds +60 new parking spaces
  - Could be used for Special Event staging
- **Angled parking at Ford Park**
  - Adds 100 to 200 new parking spaces
  - Available for Summer Ford Park events & Winter Day Skier Parking
  - Enhances Frontage Road Ford Park experience with traffic calming and Pedestrian Streetscape

# Speed Limit Setting

# 15mph or 25mph? Why Not 20 mph?

- Road geometry governs how fast people drive not posted speed limits.
  (*i.e. Kinnickinnick was reduced from 25mph to 15 mph with no change in driver behavior)*
- 15 mph is difficult to enforce; *90% of residential traffic exceeds 15 mph**
- 25 mph is too fast for curving/rolling residential roads; *90% of residential traffic is driving below 25mph**
- 20 mph is average speed on Vail's residential roads*
- 80% of survey respondents supported 20 mph
- National push for "20 is Plenty"
- Eagle County School Zones are 20mph

*Based on 2021 Speed Survey of 28 Vail Residential Roads (with some exceptions).


*Source: ITE*

# Traffic Calming

# Toolbox of Traffic Calming Devices

**Physical Traffic Calming Measures**

- Vertical devices
- Horizontal devices
- Narrowing devices
- Pedestrian Accommodations

**Non-physical Measures**

- Education
- Encouragement
- Enforcement



# Considerations for Vertical and Horizontal Treatments

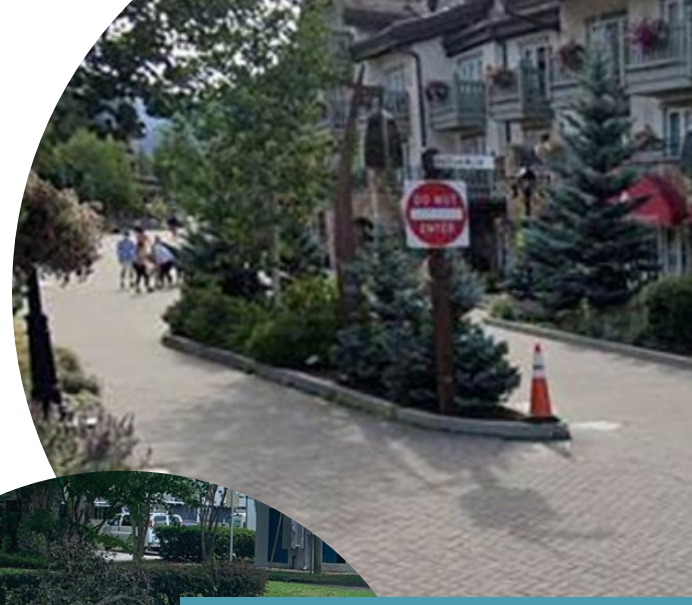
- **Pros & Cons:**
  - Slows most, but not all, vehicles at specific locations
  - Maintenance/Snowplowing
  - Emergency Response/Evacuation impediment
  - Transit Rider experience
  - Potential noise & pollution increase
- **2018 Speed Hump Pilot Project in Vail:**
  - Goal was to slow vehicles to 15-20mph
    - Along an entire roadway requires speed humps every ~200FT
    - At point locations requires only 1-2
- **Vail 2023 Survey:** Only ~45% of respondents **support** these measures

**HORIZONTAL**

✓Bulb-outs
✓Chicanes
✓Chokers

**VERTICAL**

✓ Speed table or cushions



EAST MEADOW NECKDOWN

SPEED TABLE

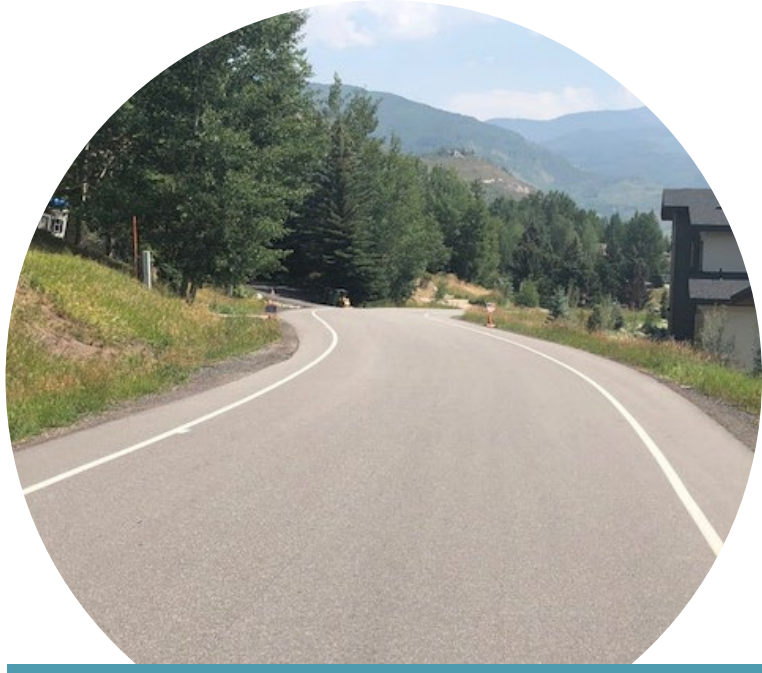
SPEED HUMP

# Considerations for Narrowing and Striping

- **Pros & Cons:**
  - Does not slow most traffic
  - Provides awareness & designation of uses (Vehicles & Pedestrians)
- **Painted shoulders:** Narrowed travel lanes to 9’ provides ~2’ shoulder on most roads; roads should be widened to provide 3’-4’ shoulder
- **Advisory bike lanes**: Dashed lane lines, narrow center bi-directional lane to ~12’; provides 5’ shoulder lanes for bicycles/pedestrians.
  - New type of striping installation, can be confusing to drivers
  - May not be appropriate for low pedestrian volume
- **Vail 2023 Survey:** ~80% of respondents **support** these measures

**NARROWING**

✓ Lane narrowing
✓ Painted shoulders
✓ Advisory bike lanes



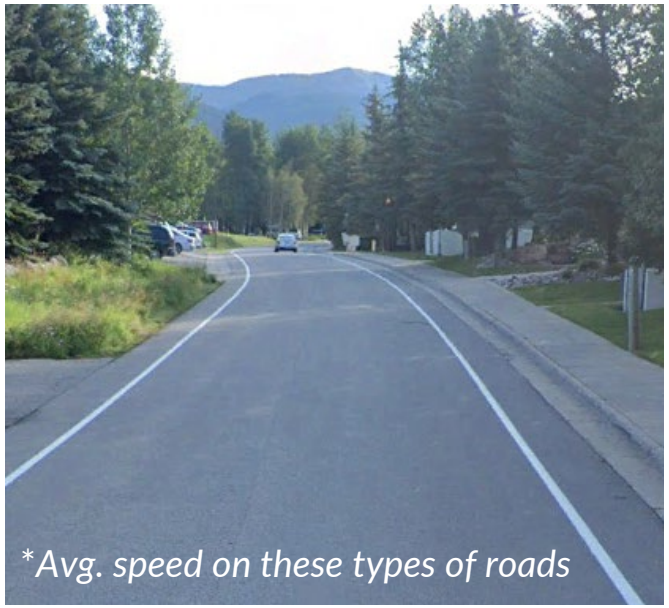
PAINTED SHOULDERS

ADVISORY BIKE LANES

# Considerations for Pedestrian Accommodations

- **Do we have a speeding issue or a lack of Pedestrian Accommodations issue on Collector roads?**
  - Most speeding complaints by pedestrians who frequently walk along the roads
  - A vehicle driving 20 mph* within 3'-6' of a pedestrian feels uncomfortable and is perceived much faster "35-40 mph"
- **Vail 2023 Survey:** 35%-45% of respondents **support** sidewalks
- Sidewalks/Separated Paths may be a future consideration
- **Pro & Cons**
  - "Urbanizes" neighborhood
  - Costs & Property impacts
  - Provides safe alternative for pedestrians

PEDESTRIAN ACCOMMODATIONS



*Avg. speed on these types of roads

# Considerations for Non-Physical Traffic Calming Measures

- **Education & Encouragement**
  (E.g.: Signage, speed trailer)
- **Enforcement**
- **Heavy Enforcement Days**
  Can be costly & is impacted by officer availability
- **Photo Radar**
  Unpopular with residents - Vail 2023 Survey: Only ~35% of respondents support Photo Radar

**NON-PHYSICAL**

✓ Enforcement
✓ Signage


SPEED TRAILER


PHOTO RADAR

# Traffic Calming Opportunities

**Sunburst Dr.**
- Narrow Golf Course section of roadway
- Add separated bike path

**Buffehr Creek & Red Sandstone Rd.**
- Remove double yellow
- Add shoulder striping

**Streamside Circle East**
- Add shoulder striping

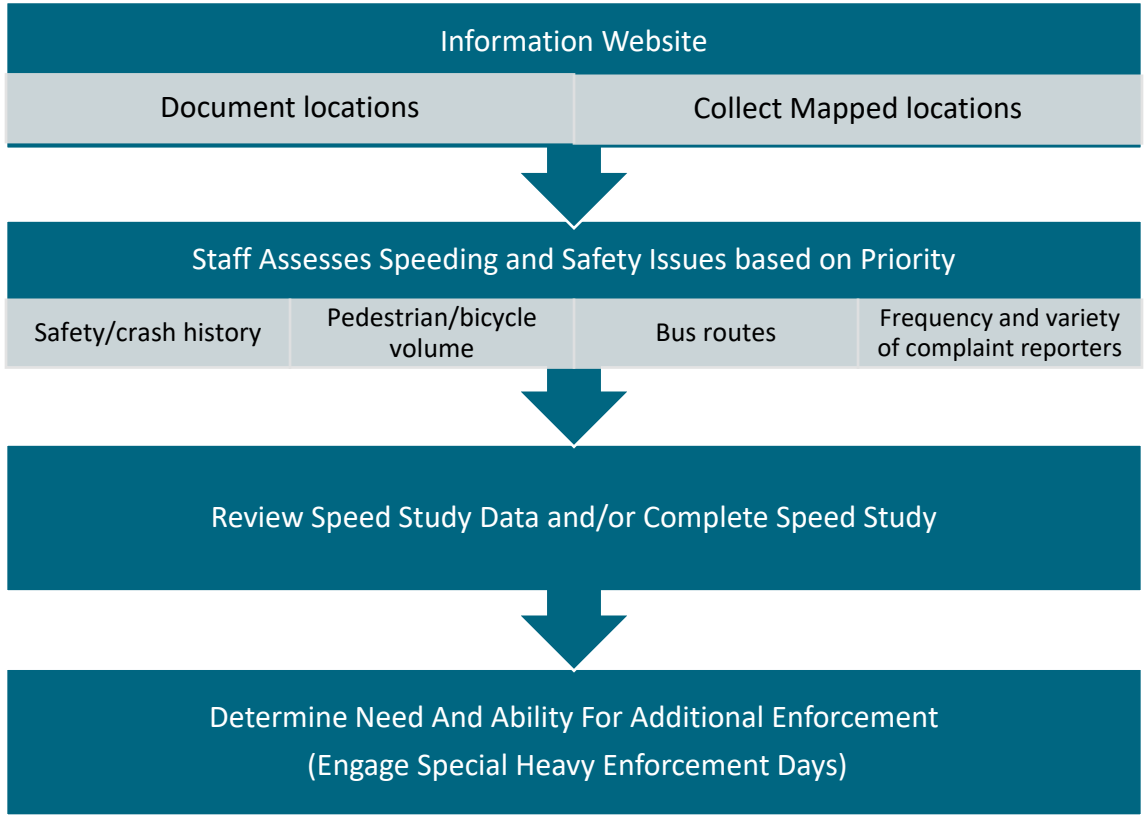
**Vail Valley Drive (to Gold Peak)**
- Add 5’ bike lanes; narrow travel lanes

**Lions Ridge Loop**
- Add neckdowns @ Timber Ridge Parking

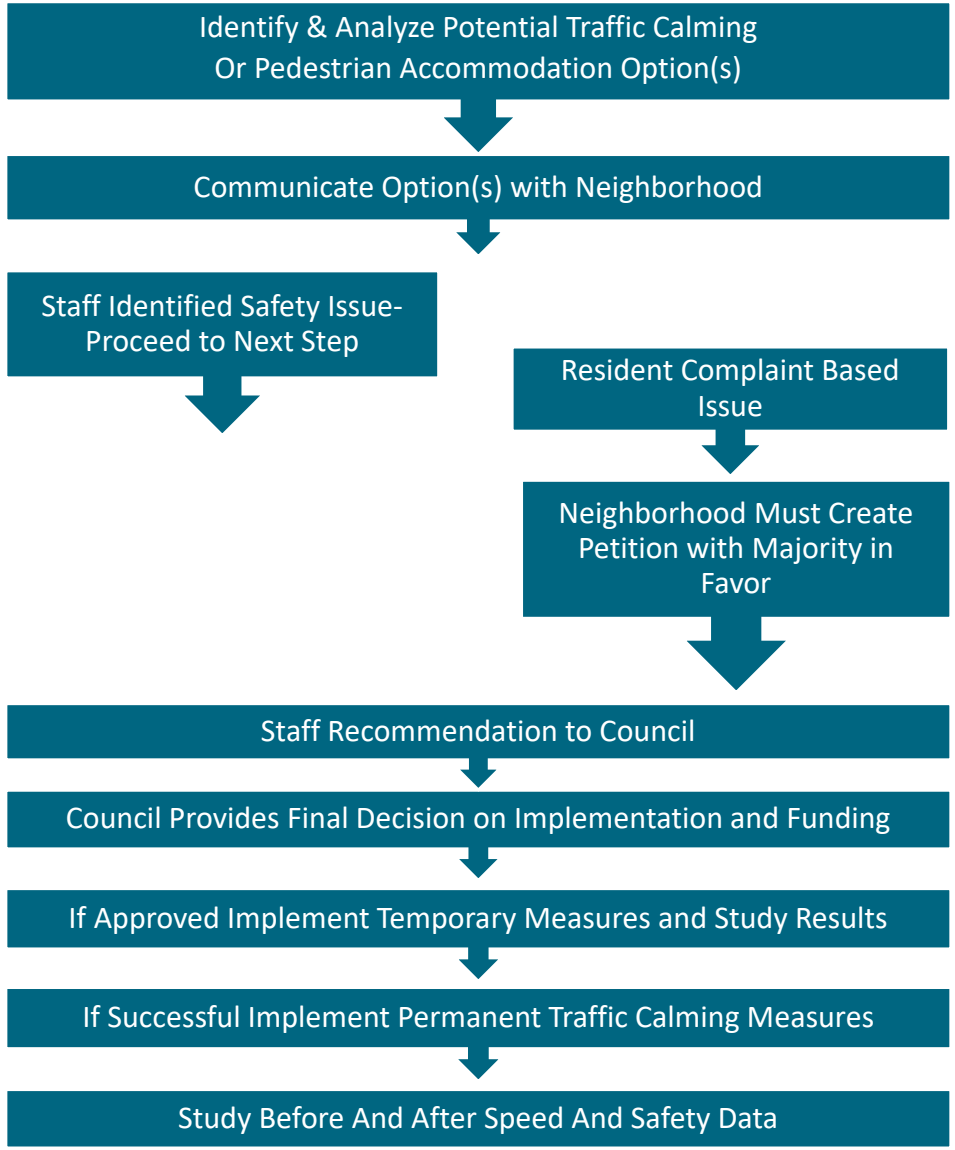
| Roadways with the Most Speeding | | | | | |
|---|---|---|---|---|---|
| **Street Name** | **From** | **To** | **Speed Limit** | **% Obey Speed Limit** | **% Over 25 mph** |
| **Sunburst Dr** | Vail Valley Dr | Cul-de-sac | 15 | 5% | 30% |
| **Buffehr Creek Rd** | N. Frontage W. | Lionsridge Loop | 15 | 5% | 45% |
| | Lionsridge Loop | Cul-de-Sac | 25 | 25% | 75% |
| **Red Sandstone Rd** | N. Frontage W. | Vail View Dr | 15 | 5% | 45% |
| **Streamside Cir. E** | Streamside Cir. W. | Bighorn Rd | 15 | 5% | 45% |
| **Chamonix Lane** | Buffehr Creek Rd | Chamonix Rd | 25 | 70% | 30% |
| | Chamonix Rd | Arosa Dr | 25 | 50% | 50% |
| **Vail Valley Dr** | S. Frontage E. | Gold Peak | 15 | 25% | 30% |
| **Lions Ridge Loop** | Moraine Dr | Vail View Dr | 25 | N/A | N/A |

# Proposed Outline of Traffic Calming Policy

## LEVEL 1 REVIEW




## LEVEL 2 REVIEW - *If LEVEL 1 is Unsuccessful*



# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **Speed Limit & Traffic Calming** | | | | | | |
| Residential Speed Limit to 20mph | 77% | 14% | $ | Short Term | 1 | |
| Traffic Calming Policy | | | $ | Short Term | 1 | |
| Lane Striping | 79% | 13% | $ | Short Term | 1 | |
| Photo Enforced Radar | 36% | 56% | $ | Long Term | 5 | |
| Neckdowns & CurbExtensions | 47% | 37% | $ | Long Term | 5 | |
| Speed Humps | 44% | 52% | $ | Long Term | 5 | |

# Key Survey Takeaways

- About **65%** of respondents approved of **'road diets' on the South Frontage Rd.** while **56%** support them on the **North Frontage Rd.**
- About **78%** of respondents approve of **rapid-flashing beacon** installation on village collector roads, while 20% do not.
- About **77%** of respondents support a consistent **20 mph speed limit** on residential roads, while 14% do not.
- **Less than half** of respondents support **traffic-calming measures**, except for the notable exception that 79% supported lane striping.

# I-70 Impacts and Recommendations

# Interstate I-70

**I-70** serves as a vital transportation **artery**, **connecting** Vail to the outside world and facilitating the **movement** of goods and people. *Conversely*, it also presents **challenges** to the town's **cohesiveness** and **aesthetic** appeal and as an increasing source of **noise**.

## CDOT Infrastructure Recommendations (I-70 PEIS)


*Advanced Guideway System follows the general location of the I-70 highway but is not necessarily within the highway right-of-way.

# How Vail can Prepare for CDOT's I-70 PEIS Infrastructure Recommendations

- **Support Vail Pass Auxiliary Lanes** (under construction)
- **Support Improvements to Dowd Canyon**
  - Safety and capacity improvements
  - Variable Speed Limits (VSL) (2024)
  - I-70 Dowd Canyon Feasibility Report (2022)
    - *Specifically* supporting Option 2, the Tunnel Option
- **Support Truck Operation Improvements**
  - Pullouts, parking, lighting, chain stations
- **Support Vail Interchange Improvements**
  - As Identified in Traffic section of this Master Plan

# How Vail can Prepare for CDOT's I-70 PEIS AGS Recommendations

- **Coordinate with CDOT** on feasibility of high-speed rail passenger service
- **Identify most optimal location of AGS** alignment for Vail
- **Consider AGS in planning of potential transit station** locations and local land use considerations (VTC Expansion Project)
- **Seek grant opportunities** to enhance existing transit center, transit, and future AGS
- **Continue to update ridership projections**
- **Coordinate with existing/future transit systems** (EVTA, Bustang/Pegasus, Greyhound)
- **Consider freight delivery** in above planning

# How Vail can Prepare for CDOT's I-70 PEIS Non-Infrastructure Recommendations

- Coordinate with the non-infrastructure strategies that **CDOT** may employ on the corridor (ITS, TDM, Regional Transit)
- Support the goals of the PEIS by **adopting local non-infrastructure strategies**
  - **Transit**, improvements to bus frequency, routes, on-demand services, and transit center(s)
  - **Parking**, implement strategies to encourage transit & micro transit use and off-peak corridor travel
  - **Technology**, implement *Smart City* technologies and coordinate with CDOT implementations

# I-70 Noise

# I-70 Noise Monitoring

**Noise monitoring survey locations (*distance from I-70*)**

- M1: West Vail near the Chamonix Chalets (~210')
- M2: Donovan Park at Matterhorn Circle (~375')
- M3: Sandstone Park (~280')
- M4: East Vail - Fall Line Drive (~180')
- M5: Timber Ridge Apartments (~165')
- M6: Red Sandstone Elementary School (130')

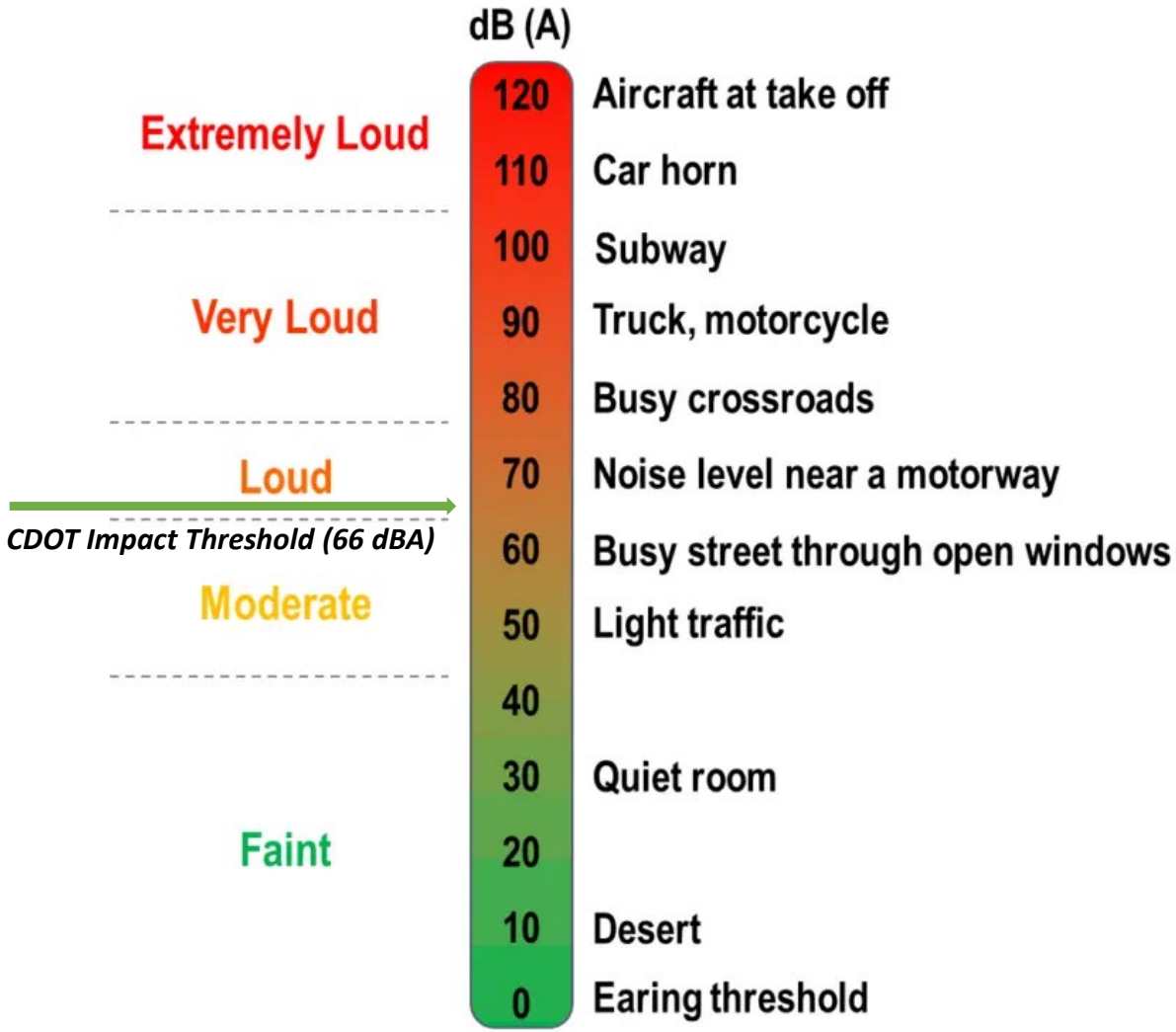
**2008 vs 2022**

- Noise increase 2 to 4 dBA
- Increase corresponds to traffic volumes
  - 2008: 18,000 to 21,000 ADT
  - 2022: 27,000 to 39,000 ADT

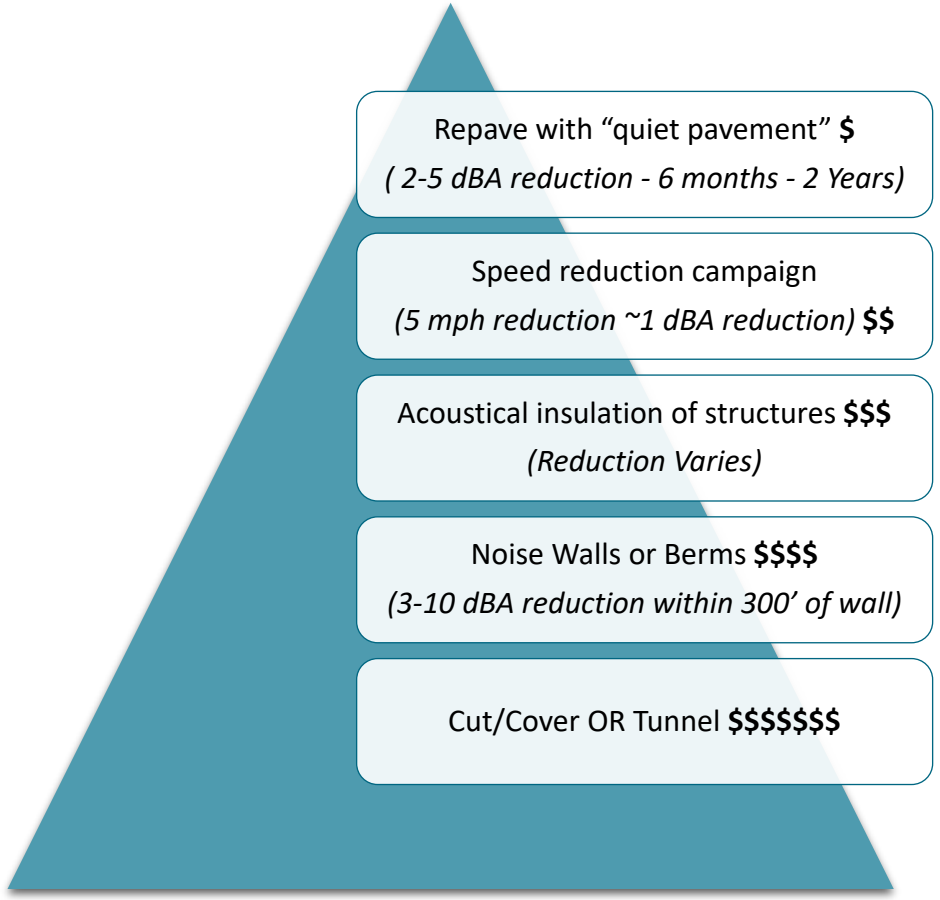
**Measured Maximum One-Hour Average Noise Levels (dBA $L_{eq}$)**

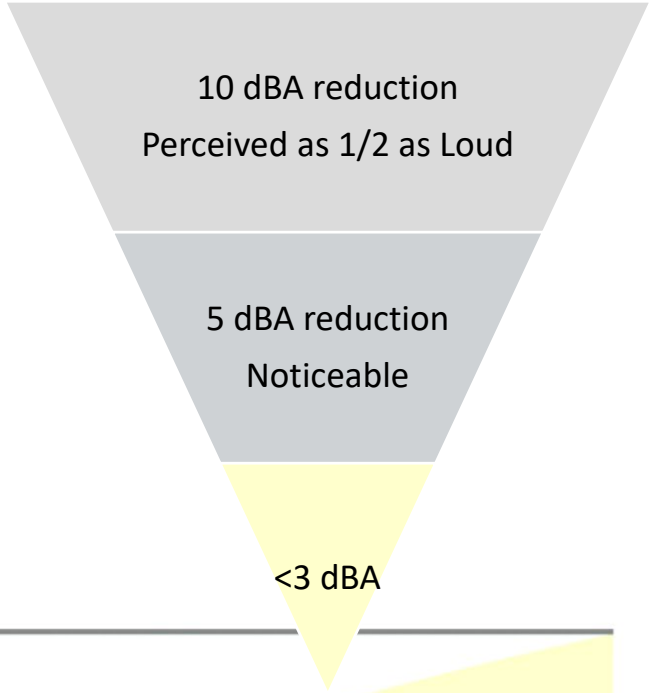
| Survey Date | M1 | M2* | M3 | M4 | M5 | M6 |
|---|---|---|---|---|---|---|
| April 2004 | 69 | 63 | 63 | 66 | - | - |
| August 2004 | 67 | 62 | 62 | 66 | - | - |
| April 2007 | 68 | 63 | 63 | 67 | - | - |
| September 2008 | 66 | 61 | 61 | 65 | 70 | 69 |
| August 2022 | 68 | 69* | 64 | 69 | 72 | 72 |

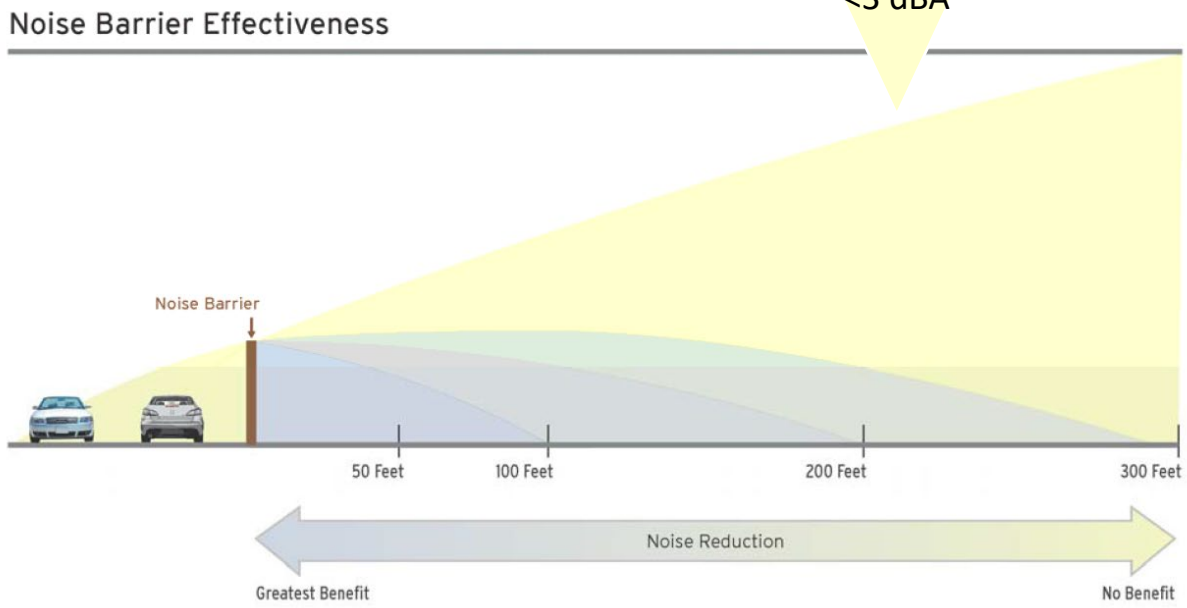
*(*Marriott construction impacted M2)*



# Potential Methods to Reduce Noise along the I-70 Corridor



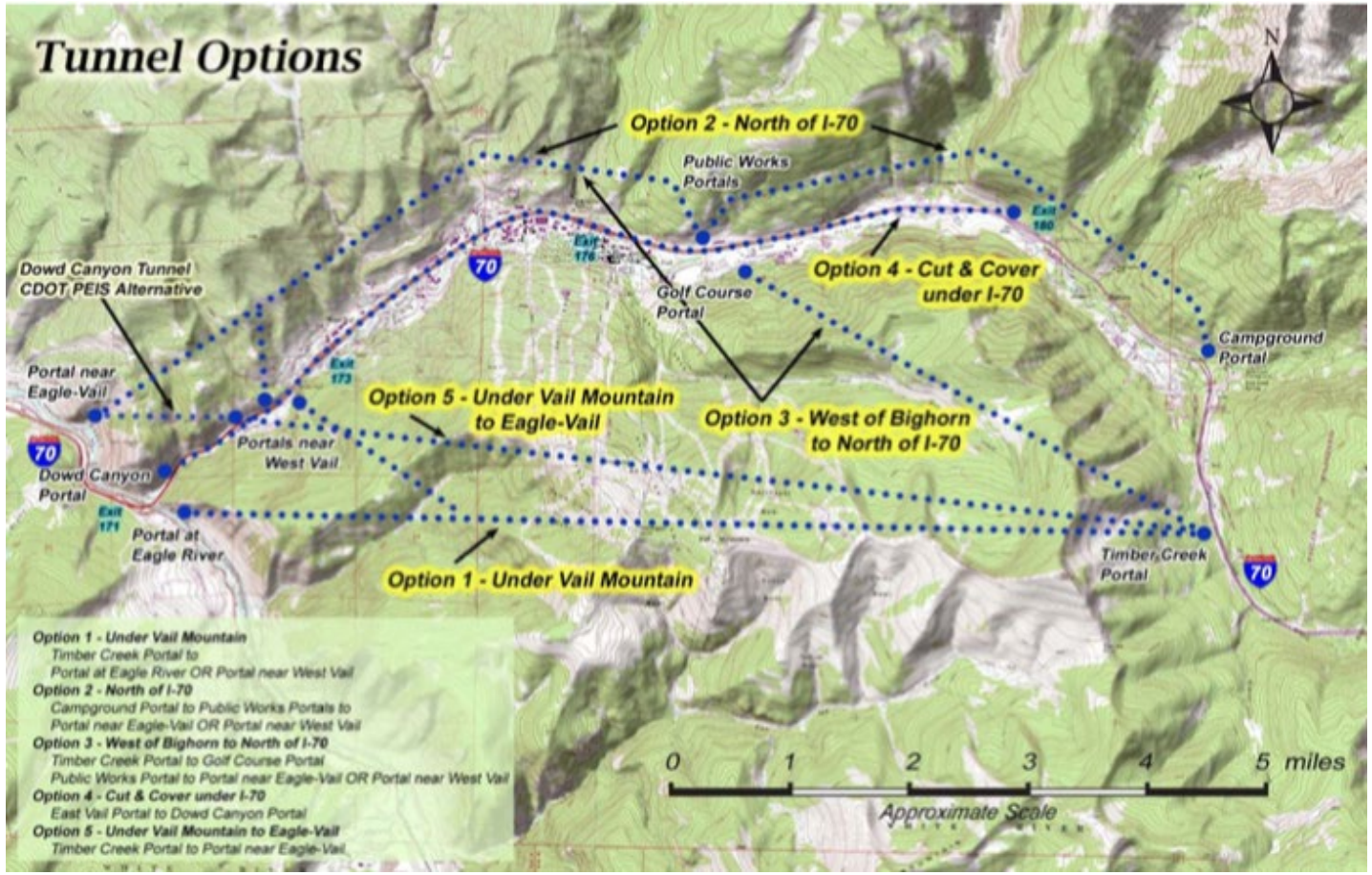



# Vail Tunnel Update

# Summary of I-70 Tunnel Options

- 2002 Vail Transportation Master Plan
  - ‘Cut and Cover’ I-70
- 2005 Vail Tunnel Options Study
  - 5 options to bury I-70
- 2023 Go Vail  2045 –Cost & Considerations Update
  - Critical Considerations
  - Cost Update (Rough Order of Magnitude)
  - Available Developable Land Update
    - Open Space Scenario
    - Medium Density Scenario
    - High Density Scenarios (2)



## Why Study Burying I-70?

- Noise
- Aesthetic Character of Vail
- Quality of Life
- Connectivity
- Safety
- Air Pollution
- Transit Enhancements

## Critical Considerations

- Community Support
- Impacts on Vail (Access, Development)
- Construction Impacts
- Cost & Funding Mechanism(s)
- CDOT/FHWA Right of Way Relinquishment/Process
- CDOT/FHWA Operation/Maintenance
- Local Road Network Expansion/Reconstruction
- Public Infrastructure Expansion/Reconstruction (Utilities, Facilities, Maintenance, etc.)
- Freight/Hazardous Material

**DENVER**

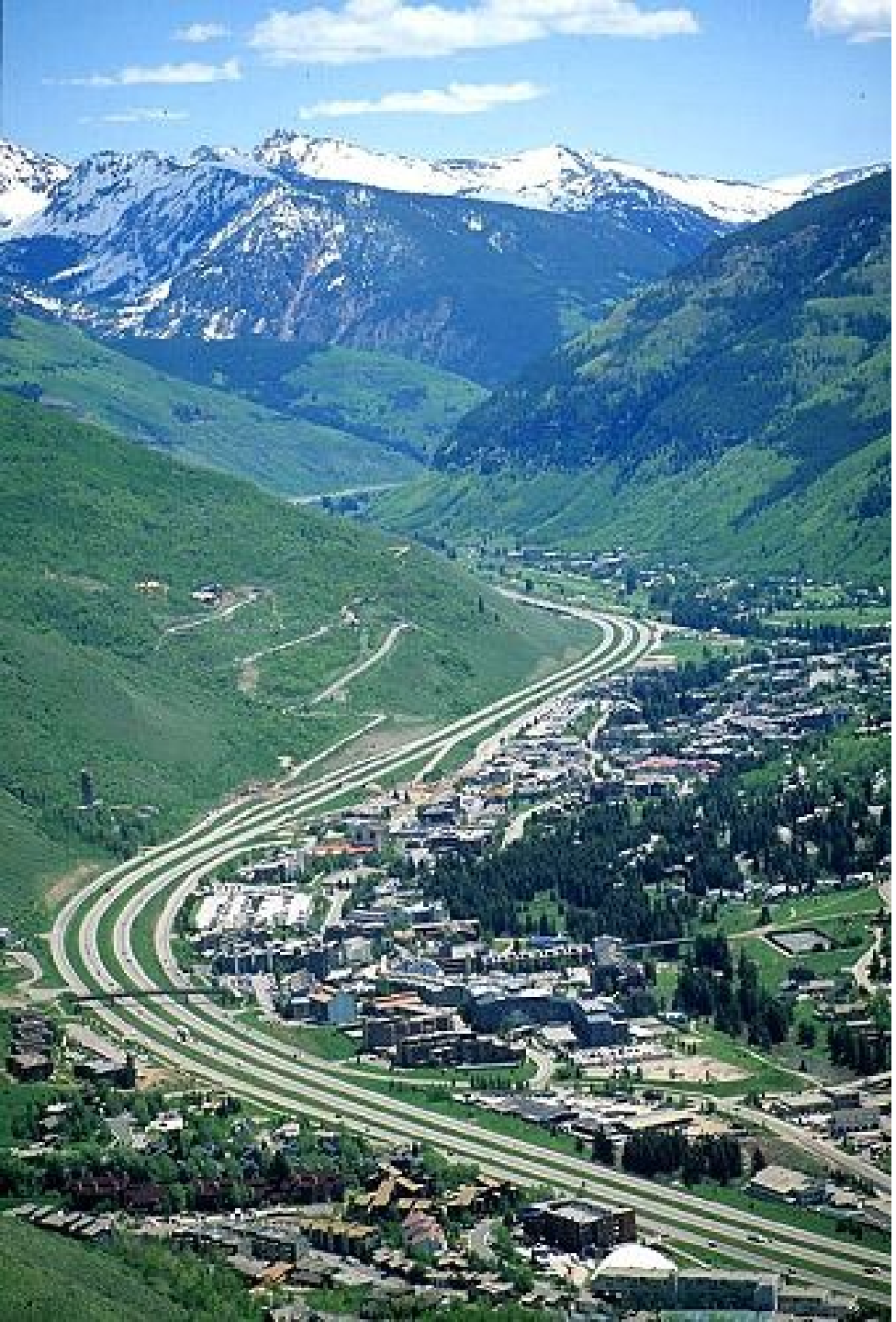
**SEATTLE**

**ATLANTA**

Lid I-5 – Let's build a stronger Seattle, together. (lidi5.org)

# Summary Cost Information

| | |
|---|---|
| 2005 Tunnel Report Cost (Billions) | $2.6 |
| NHCCI (Q1 2005 to Q1 2023) (+223%) | +$3.2 |
| 2023 Updated Cost (Billions) | $5.8 |
| Local Road, interchange and Other Infrastructure (15%) | +$0.9 |
| Additional Planning, Engineering, Construction Management (15%) | +$0.9 |
| 2023 Conceptual Costs (Tunnel or Full Cut and Cover) – Total (Billions) | $7.6 |
| 2023 Conceptual Costs (Partial Cut and Cover) (25% of Full C&C) – (Billions) | $1.9 |



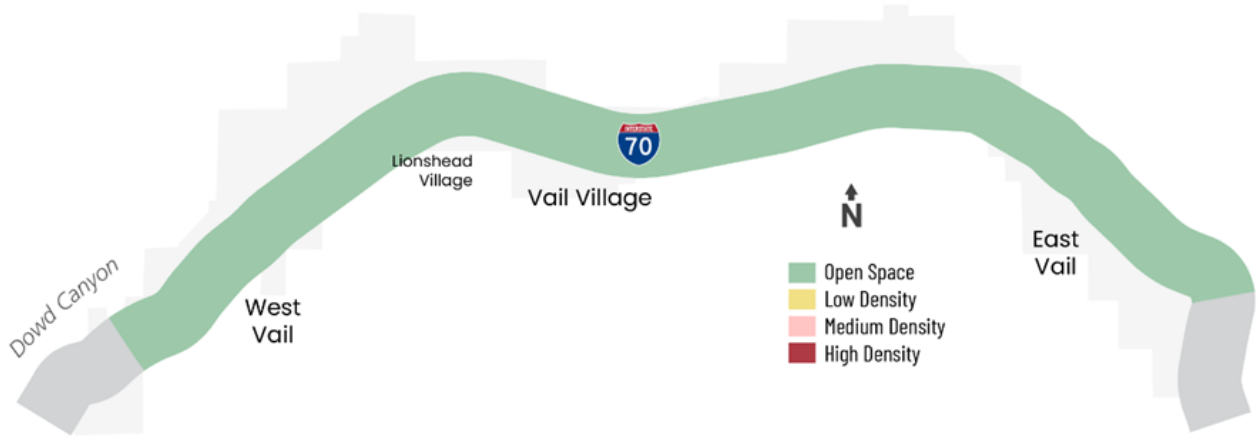
# Potential Funding Mechanisms

- **Federal Agencies**
  Similar to other “Lid” projects
- **CDOT**
  Funding from future Vail I-70 Projects
- **Sell/Lease Developable Land**
  - Private Development
  - RETT for Open Space portions
- **Improvement Districts**
- **Tax Increase for Noise Relief**
- **Bonding**
- **Traffic Impact Fees**
- **Town’s Capital Budget**
- **Private Funding**

# Tunnel/Cut & Cover Developable Land

# Scenario 1: Open Space

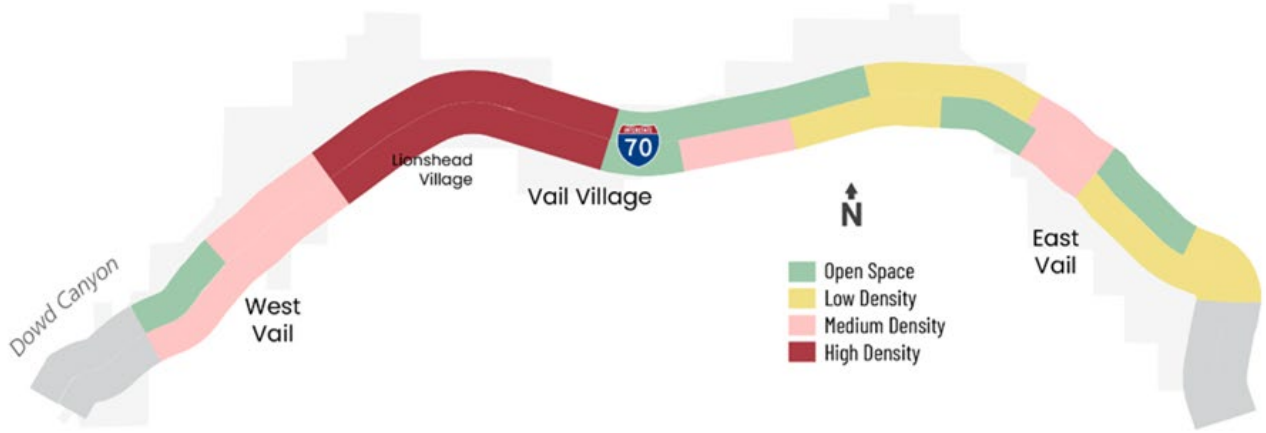
- Convert all new developable land into open space
  - I-70 ROW ~460 Acres
  - New Arterial ~178 Acres
  - Net New ~282 Acres
- No Development Funding




| Land Use Description | Scenario 1 | |
|---|---|---|
| | Acres | Percent |
| Open Space | 282 | 100% |
| Low Density | 0 | 0% |
| Medium Density | 0 | 0% |
| High Density/Commercial | 0 | 0% |
| Public/Misc. | 0 | 0% |
| Net Increase to Current Units | 0% | |
| Construction Cost | $7.6 Billion | |
| Potential Land Cost Recouped | $0 | |
| Remaining Cost | $7.6 Billion | |

# Tunnel/Cut & Cover Developable Land
# Scenario 2: Medium Density

- Mix of open space, low, medium, and high density
- ~45% increase in Residential/Commercial units
- ~15% of cost funded by land sales

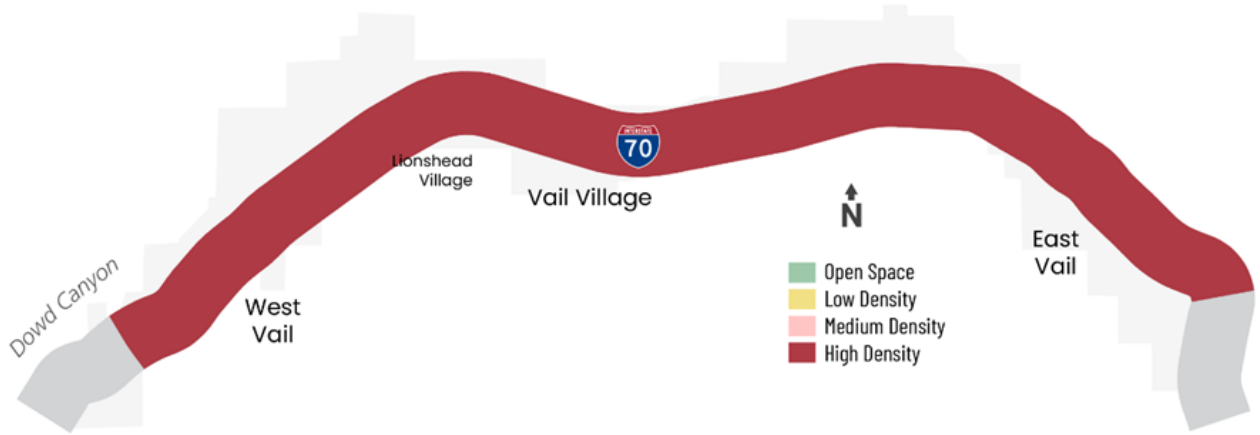



| Land Use Description | Scenario 2 | |
|---|---|---|
| | Acres | Percent |
| Open Space | 66 | 23% |
| Low Density | 83 | 29% |
| Medium Density | 70 | 25% |
| High Density/Commercial | 63 | 22% |
| Public/Misc. | 0 | 0% |
| Net Increase to Current Units | 45% | |
| Construction Cost | $7.6 Billion | |
| Potential Land Cost Recouped | $1.1 Billion | |
| Remaining Cost | $6.5 Billion | |

# Tunnel/Cut & Cover Developable Land

# Scenario 3: High Density

- All high density development
- ~85% increase in Residential/Commercial units
- ~30% of cost funded by land sales

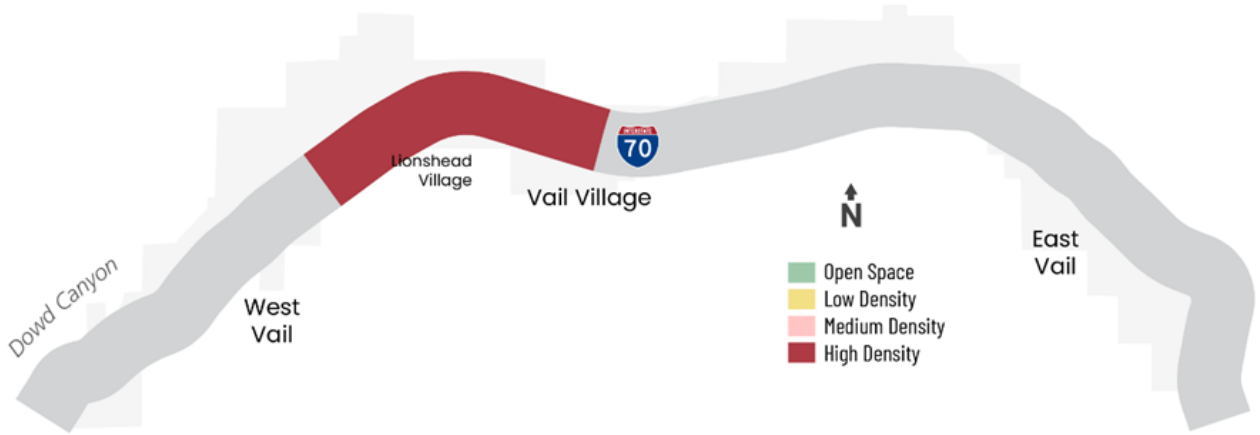



| Land Use Description | Scenario 3 | |
|---|---|---|
| | Acres | Percent |
| Open Space | 0 | 0% |
| Low Density | 0 | 0% |
| Medium Density | 0 | 0% |
| High Density/Commercial | 282 | 100% |
| Public/Misc. | 0 | 0% |
| Net Increase to Current Units | 85% | |
| Construction Cost | $7.6 Billion | |
| Potential Land Cost Recouped | $2.3 Billion | |
| Remaining Cost | $5.3 Billion | |

# Partial Cut & Cover Developable Land

# Scenario 4: Partial Cut & Cover

- All high density development
- ~20% increase in residential/Commercial units
- ~25% of cost funded by land sales




| Land Use Description | Scenario 4 | |
|---|---|---|
| | Acres | Percent |
| Open Space | 0 | 0% |
| Low Density | 0 | 0% |
| Medium Density | 0 | 0% |
| High Density/Commercial | 63 | 100% |
| Public/Misc. | 0 | 0% |
| Net Increase to Current Units | 20% | |
| Construction Cost | $1.9 Billion | |
| Potential Land Cost Recouped | $0.5 Billion | |
| Remaining Cost | $1.4 Billion | |

# Tunnel Next Steps

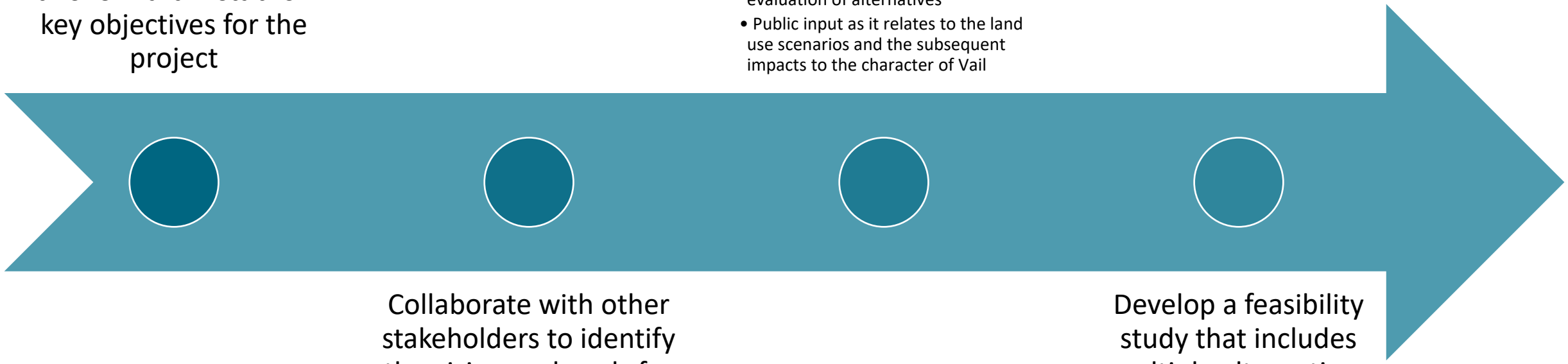
Determine whether or not to continue moving this forward. Establish key objectives for the project

Collaborate with other stakeholders to identify the vision and goals for the future of Vail

Develop framework for more detailed analysis that should include:

- Participation of a cross section of stakeholders that will allow a clear evaluation of alternatives
- Public input as it relates to the land use scenarios and the subsequent impacts to the character of Vail

Develop a feasibility study that includes multiple alternatives



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# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **I-70** | | | | | | |
| **Noise & Tunneling** | | | | | | |
| Monitor Noise Levels | | | $ | Mid Term | 1 | Monitor noise every 5-10 years |
| I-70 Cut/Cover & Tunnel | | | $$$$$$ | Long Term | 5 | |
| | | | | | | |
| **I-70 Pedestrian Crossings Imporvements** | | | | | | |
| West Vail Interchange Underpass | | | $$ | Long Term | 5 | Triggered by WV Traffic Improvement |
| Buffehr Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by WV Redevelopment |
| Red Sandstone Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by Ever Vail |
| Middle Creek | | | $$$$ | Long Term | 5 | Triggered evaluation by Civic Area |
| Main Vail Interchange Underpass | | | $$ | Long Term | 5 | Triggered by MV Traffic Improvement |
| Elkhorn Drive Underpass | | | $$$$$ | Long Term | 5 | Triggered evaluation by PW Master Plan |
| Bald Mountain Road | | | $$$$$ | Long Term | 5 | Triggered evaluation by Wildlife Crossing |
| Columbine Drive Underpass | | | $$$$$ | Long Term | 5 | Triggered evaluation by Tunnel Replacement |
| East Vail Interchange Underpass | | | $ | Mid Term | 3 | Further evaluate for implementation |
| | | | | | | |

# Traffic

# Existing Traffic Volumes

- **Key indicators of Vail Traffic**
  - Main Vail South Roundabout; 3000+/- VPH *(peak count in 2012 at 3600+/-)*
  - West Vail North Roundabout; 1900 +/- VPH *(peak count in 2004 at 2500+/-)*
- **How has Vail Managed Traffic Growth**
  - Vail Transit; 3 Million passengers
  - Parking Fees; encourages transit/shuttles/carpool
  - Capital Improvements
    - Sandstone Underpass; 400+/- VPH *(Existing)*
    - Lionshead Transit Center/West Vail Express
    - Vail Health to LH Improvements

# 2045 Projected Traffic Volumes

**Projected Growth**

- **Traditional Approach:** Apply trending growth rate of 1% to 2%/year for 20 years
- **Vail Development Approach:** Apply Project specific growth based on known and speculated redevelopment projects. *This provides known location of growth and better approximates traffic concerns*

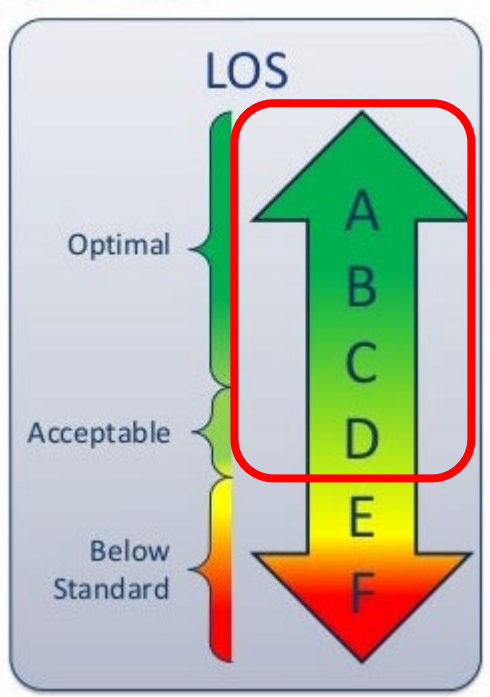
**Vail Development:**

- 2009 VTMP: +2800 new Vehicle trips in the Peak Hour (VPH)
- 2024 VTMP: +1400 VPH
    - Key Developments (1100+ VPH)
        - Ever Vail; 400+ VPH
        - West Vail Commercial;  300+ VPH
        - Lionshead; 250+ VPH
        - Housing; 180+ VPH *(Transit reduction of ~40%)*



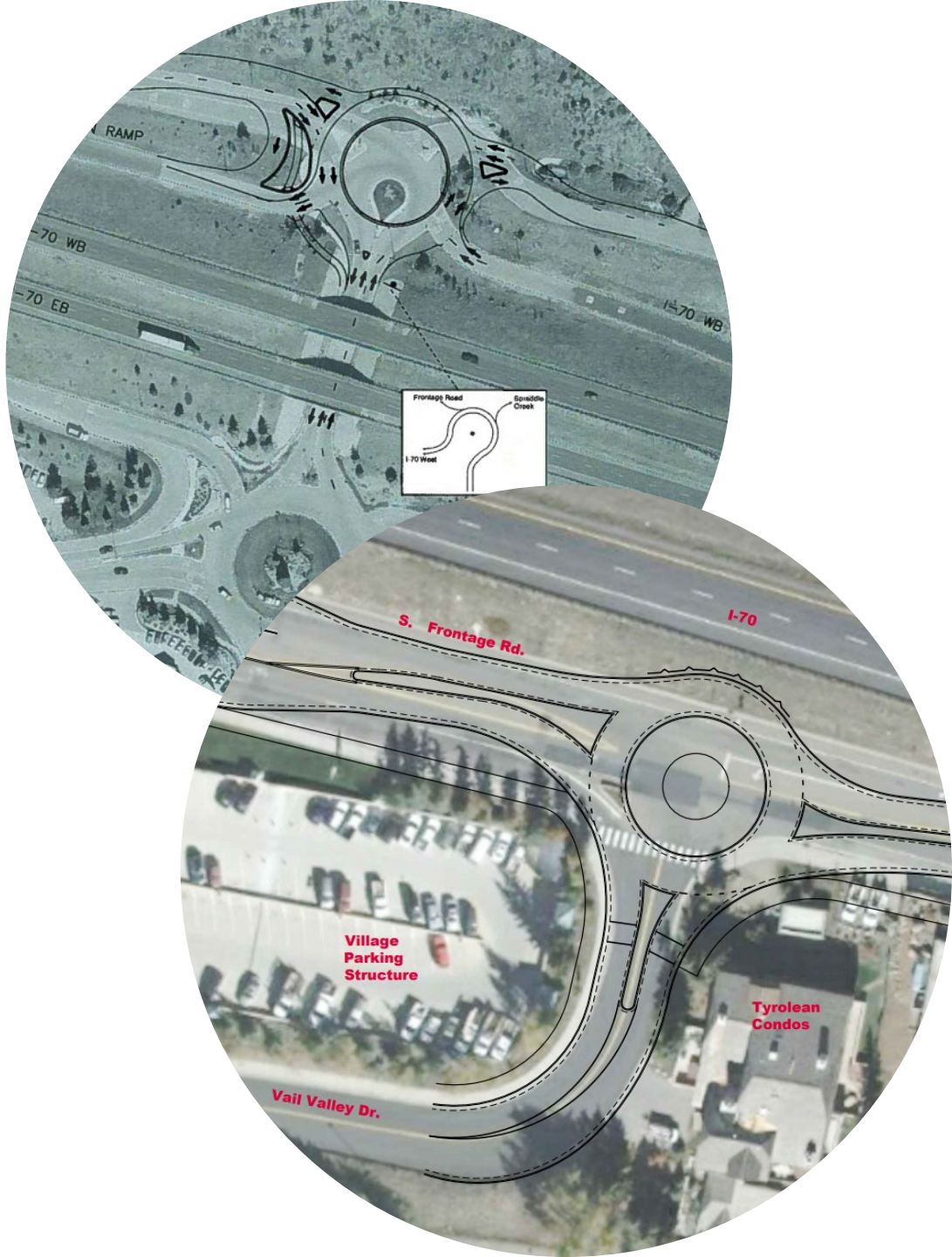
# 2045 Projected Level Of Service (LOS)

- **Existing**
  - All Frontage Road Intersection operate at LOS C or Better
  - All Roundabouts operate at LOS C or Better *except*
    - Main Vail Center Roundabout (South): LOS E
    - VV Parking Entrance & Vail Valley Drive: LOS F
- **Projected 2045**
  - All Frontage Road Intersection operate at LOS C/D or Better *except*
    - East & West LH Circle, Village Center Drive, VTRC: LOS E
    - W. Forest Road, VV Parking Entrance, Vail Valley Drive: LOS F
  - All Roundabouts operate at LOS C or Better *except*
    - MV Center Roundabout (South) & WV Roundabout (North): LOS F
- **Key indicators of Vail Traffic**
  - Main Vail South Roundabout; 3000 to 3550+/- VPH *(March 2012 - Peak 3570)*
  - West Vail North Roundabout; 1900 to 2250 +/- VPH *(Dec 2004 - Peak 2500)*



# 2045 Capital Improvements

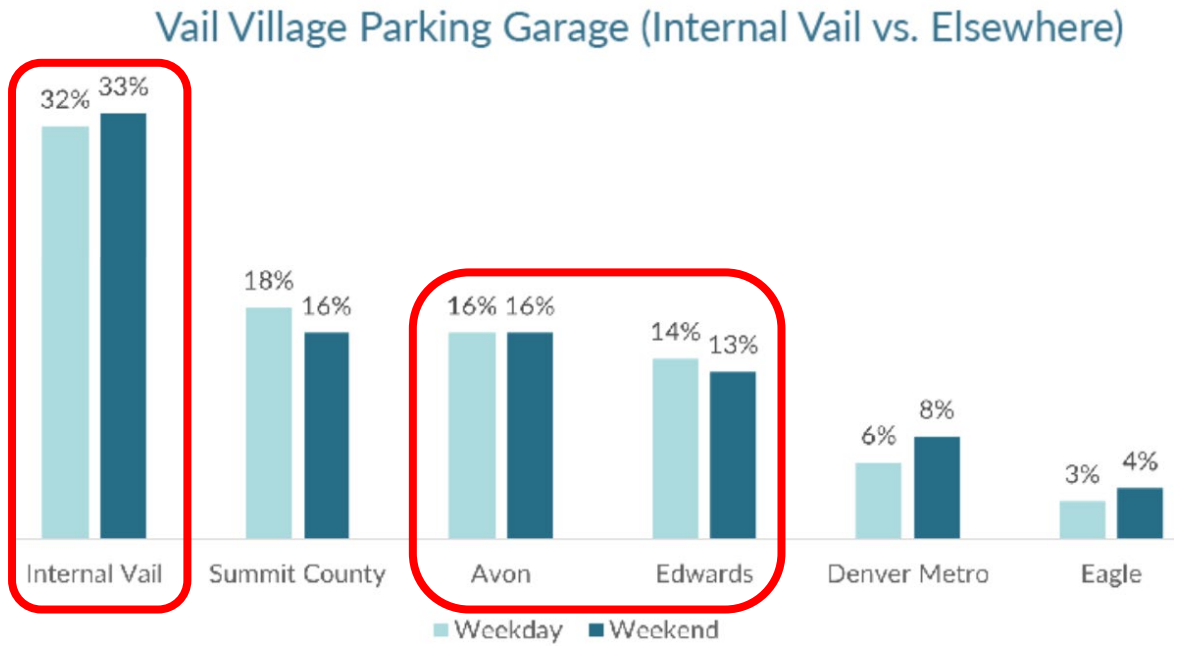
- **Capital Improvements** *(2009 Master Plan & Go Vail 2045)*
  - *2-Lanes NB @ MV & WV* (Trial Increased NB capacity by 22%)
  - *Left Turn Lanes* at Frontage Road intersections as needed
  - *Potential Roundabouts*
    - West Vail Master Plan
    - Ever Vail
    - E. Lionshead Circle
    - Vail Transportation Center/Vail Valley Drive
    - Ford Park West (*If not at VVD*)
    - Ford Park East (*Access to Parking Lot*)
  - *Permanent Traffic Counters* at Key Roundabouts
    - Volume threshold indicate need for;
      - Capital Improvements
      - Travel Demand Management strategies



# 2045 Travel Demand Management

**TDM - Manage destination vehicular trips**;

- Public Parking *rates and availability*
  - Summer & Winter *paid parking*
- Vail & EVTA *Fare Free Zone*
  - 60% of vehicles are from future Fare Free Zone(s)
  - Easy, Free, & Frequent to/from developments
- Regional Transit; *Bustang/Pegasus*, AGS(Rail) (25%)
- Encourage Front Range travelers to use *East Vail exit*
- Smart City technology coordination
  - Parking App, Ride Vail, COtrip.org
  - Increases driver expectancy




- Reduce MV South traffic from VV by 15% for LOS D
- Reduce WV North traffic by 10% for LOS D

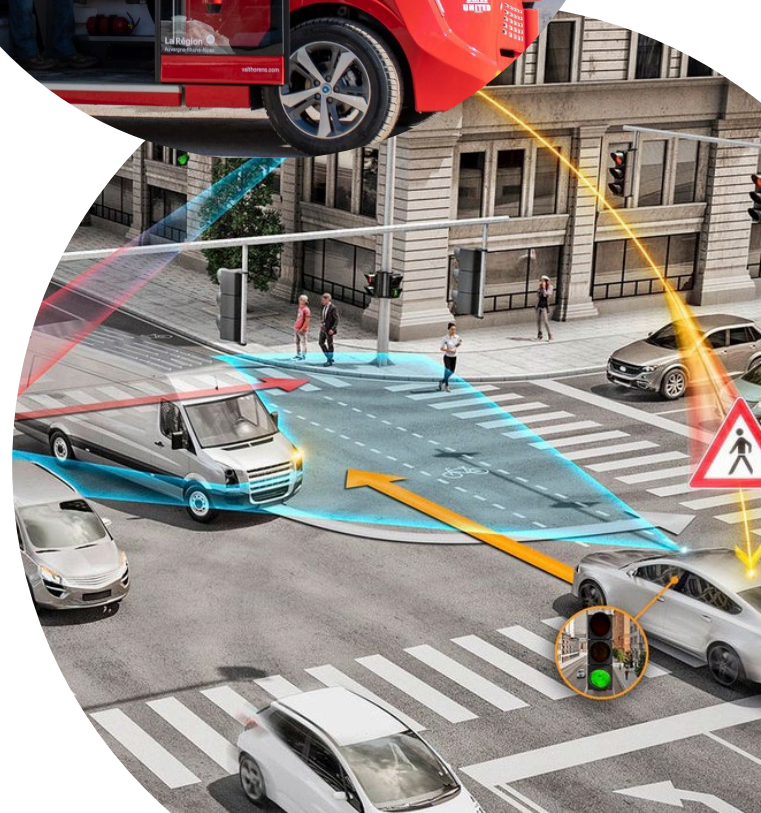
# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **TRAFFIC FACILITIES** | | | | | | |
| **Traffic Improvements** | | | | | | |
| Permanent Traffic Counters at Roundabouts | | | $ | Short Term | 1 | Provides key traffic data to trigger projects |
| 2-NB Lanes at Main Vail Roundabouts | | | $$$$ | Long Term | 5 | Implement at volumen threshold |
| 2-NB Lanes at West Vail Roundabouts | | | $$ | Long Term | 5 | Implement at volumen threshold |
| Left Turn Lanes at Frontage Rd Intersection | | | $$ | Long Term | 5 | Implement at volumen threshold |
| West Vail Commercial Roundabout | | | $$$ | Long Term | 5 | Implement with WV Redevelopment |
| Ever Vail Roundabout | | | | Long Term | 5 | Implement with EV Redevelopment |
| East Lionshead Circle Roundabout | | | $$$ | Long Term | 5 | Improves In-Town Bus Left Turns |
| VTC/Vail Valley Drive Roundabout | | | $$$ | Short Term | 2 | Imporves VVD intersection & VTC exiting |
| Ford Park West Roundabout | | | $$$ | Long Term | 5 | Alternate location for VVD Roundabout |
| Ford Park East Roundabout | | | $$$ | Long Term | 3 | Improves Ford Park Lot access |

# Emerging Technology

# Technology Trends

- **Autonomous Vehicles**
  - Decreases Parking Need, Increases VMT (Congestion)
  - Pilot Programs (San Francisco, Yellowstone, Val Thorens Ski Resort)
- **Alternative Fuel Vehicles**
  - Vail EV Readiness Plan
  - Hydrogen Fuel Alternative
- **ITS & Connected Vehicles**
  - SMART CITY – Info & Com Technologies (ICT's) woven into infrastructure
    - Sensors, Networks, Data Sensors
    - LPR, Cameras, Real-Time Information
    - Smart & Dynamic Parking
    - AI Cameras – 2023 Detroit Pilot 40 Bosch Camera
      - Alerting Drivers Pedestrian is crossing
      - Alerting Drivers if crash is about to occur
      - Mitigate Congestion
      - Monitor Parking
      - Monitor Weather
      - Traffic & Pedestrian Counts
      - Air Quality
      - Noise
      - Wrong Way Detection



https://youtu.be/CVG7_ymt_QQ

# Technology Trends

- **Smart Public Transportation**
  - Mobility as a Service(MaaS)
  - Single application multimodal planner app (RideVail ride.vail.gov)
- **Drone Delivery Services**

# Project Implementation, Prioritization & Funding

| Project | Supported | Not Supported | Relative Cost | Timing | Priority | Comments |
|---|---|---|---|---|---|---|
| **TECHNOLOGY** | | | | | | |
| **Technology Improvements** | | | | | | |
| SMART City Technolgy | | | $$ | Long Term | 4 | Consider Pilot Program |
| MaaS (Mobiliy as a Service) | | | $ | Mid Term | 3 | Coordination with multi agencys |
| Parking Mangement App | | | $ | Short Term | 1 | Coordination with Private Parking |
| | | | | | | |

# Thank you