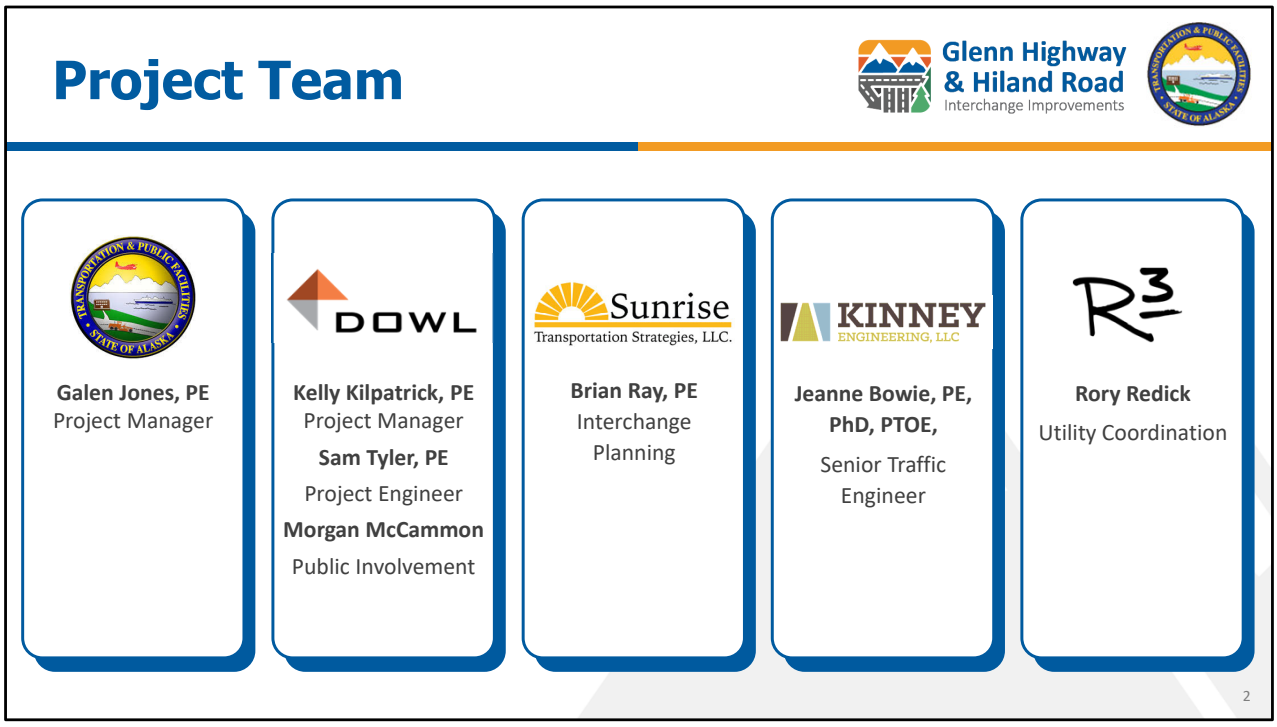
Glenn Highway & Hiland Road
Interchange Improvements

Glenn Highway & Hiland Road Interchange

Open House No. 1

January 23, 2025

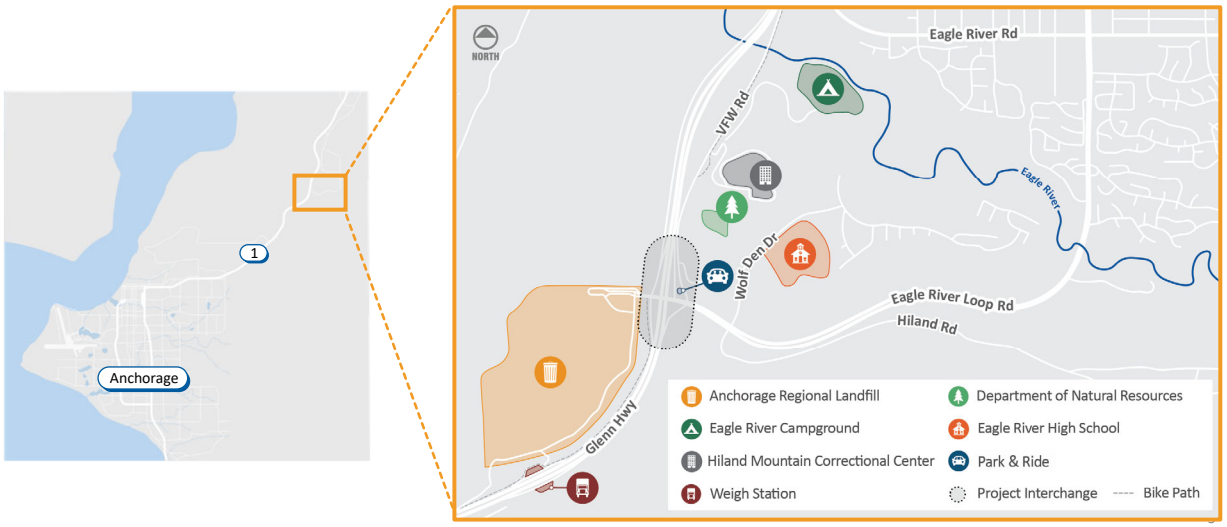
Welcome to the Alaska Department of Transportation and Public Facilities' first open house for the Glenn Highway and Hiland Road Interchange project.



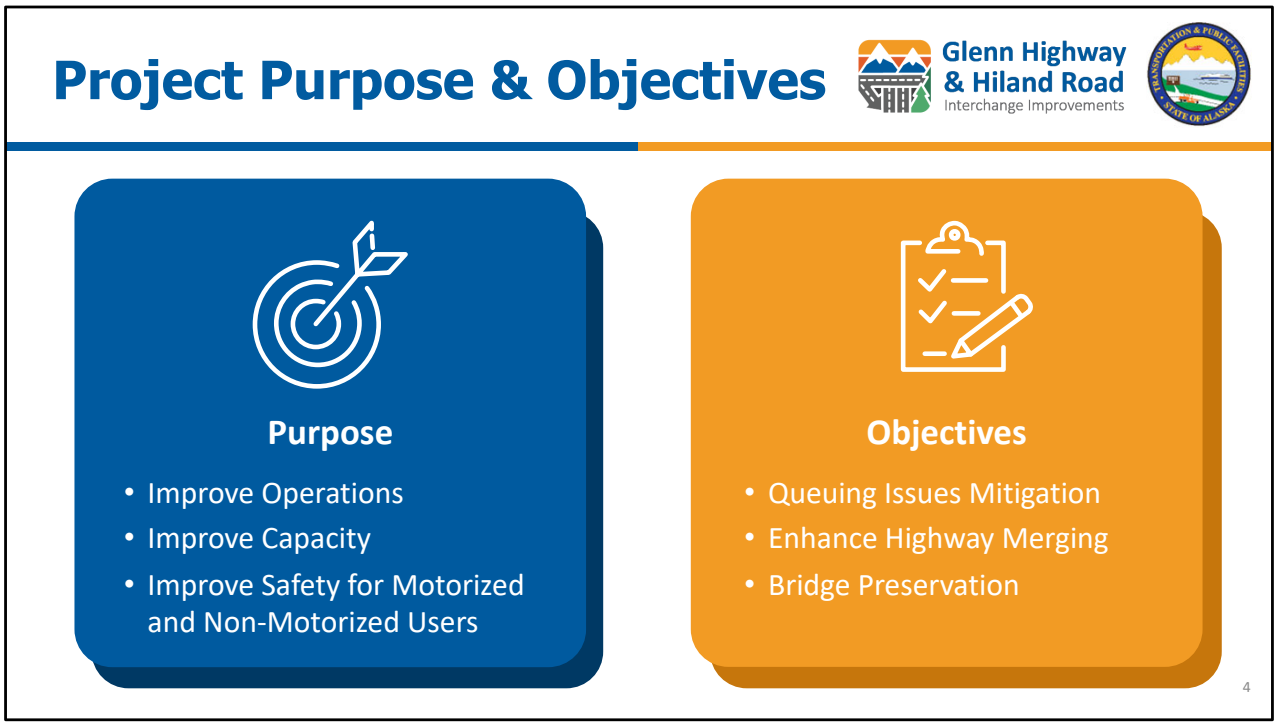
This federally funded project is led by the Alaska Department of Transportation and Public Facilities, or DOT&PF, while working in close coordination with the Municipality of Anchorage, or MOA. The consultant team is led by DOWL, with interchange planning provided by Sunrise Transportation Strategies, traffic and safety analysis by Kinney Engineering, and utility coordination and agreements by RRR.

Project Area

Glenn Highway & Hiland Road
Interchange Improvements



This project proposes to improve the interchange connecting Eagle River Loop Road to the Glenn Highway, which serves the Eagle River community. Improvements to the interchange will consider potential impacts on surrounding roadways and stakeholders, including VFW Road, the Anchorage Regional Landfill, the Park & Ride lot, Glenn Highway Weigh Station, and the Wolf Den Drive intersection, which provides access to Eagle River High School to the north and Hiland Road to the south.



The purpose of the project is to improve operations, capacity, and safety for all roadway users. The key objectives to achieve the project's purpose include:

- Addressing lane utilization that causes long queues along Eagle River Loop Road during peak morning hours,
- Improving the efficiency of the southbound highway merge, and
- Developing design solutions that preserve the existing bridge, so it remains functional and structurally sound.

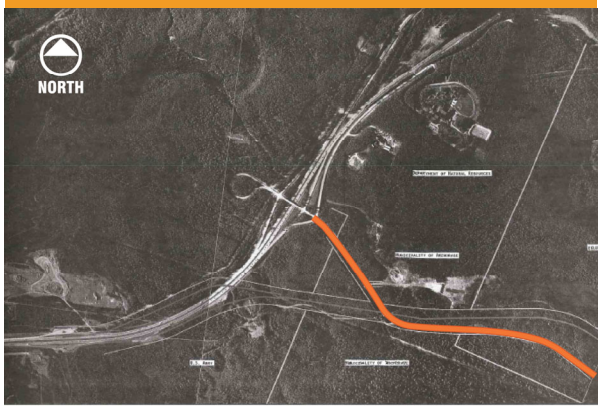
Interchange Background

Glenn Highway & Hiland Road
Interchange Improvements

1970s: Hiland Interchange Original Connection

- Hiland Road connected to the Glenn Highway
- Limited development and land uses
- Low volume and demand

Project Area History – 1970s



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The interchange was originally constructed in the 1970s to provide a direct connection to Hiland Road to the east. Hiland Road had limited development and land uses in the area, so traffic volumes remained low.

Interchange Background

Glenn Highway & Hiland Road Interchange Improvements

1990s: Eagle River Loop Road Connection

- Reconstructed to connect Eagle River Loop Road to the Glenn Highway
- Widened the bridge to add:
  - Additional lane
  - Pedestrian and bicycle facilities

Current Aerial

6

In the 1990s, the interchange was reconstructed to connect Eagle River Loop Road to the Glenn Highway. This required realigning Hiland Road to intersect with Eagle River Loop Road to the east and widening the bridge to add an additional vehicle lane and a sidewalk for pedestrian and bicycle users.

Existing Bridge – Preserve

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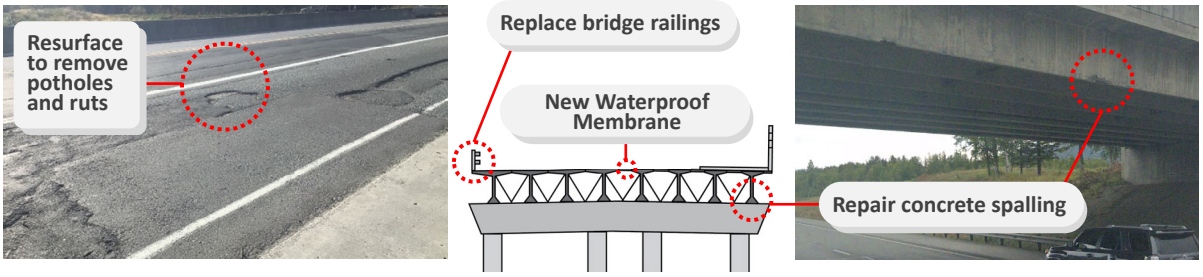
Interchange Improvements

- Retain and use the existing bridge
- 75-year design life with ~25 years left
- Already widened once, cannot be widened again
- In good condition but needs preventive maintenance:

Glenn-Hiland Bridge



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The existing bridge was constructed with a 75-year design life and has approximately 25 years remaining. This project will retain and use the existing bridge. As the existing bridge was already widened once, it cannot be widened again due to structural constraints. It is in good condition but needs preventive maintenance including:

- Repair the pavement surface, which has extensive potholes and rutting,
- Replace the bridge railings,
- Repair concrete spalling on the superstructure, and
- Replace the waterproofing membrane to prevent rust of the structural elements under the pavement.

Existing Transit Routes & Non-Motorized Facilities

Glenn Highway & Hiland Road
Interchange Improvements

- Design will maintain or improve existing facilities with proposed interchange improvements
- Coordinating with local bicycle groups, high school, and MOA Transit

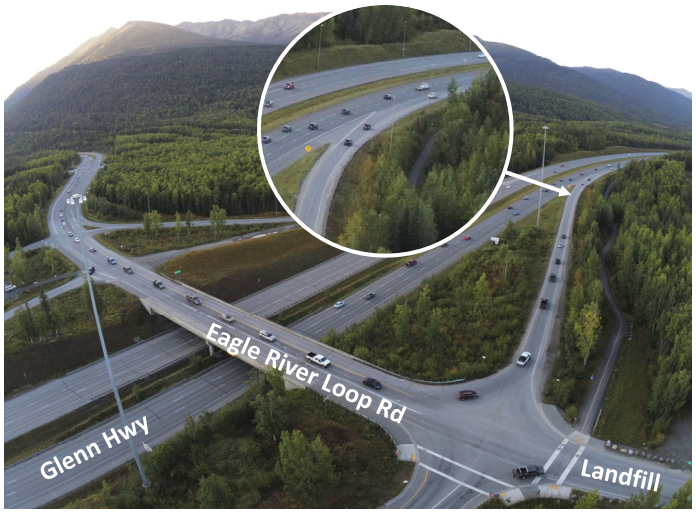
The project design will maintain or improve existing pedestrian, bicycle, and transit facilities with proposed interchange improvements. The project team is coordinating with local bicycle groups, Eagle River High School, Anchorage School District Student Transportation, and MOA Transit to develop design solutions to address current and future needs.

Existing Conditions – Traffic

Glenn Highway & Hiland Road
Interchange Improvements

Southbound On-ramp Merge:

- Tapered merge not current design practice
- Operates near capacity during a.m. peak
- Number of vehicles entering Glenn Highway constrained by upstream conditions:
  - Single entrance lane
  - Tight turn



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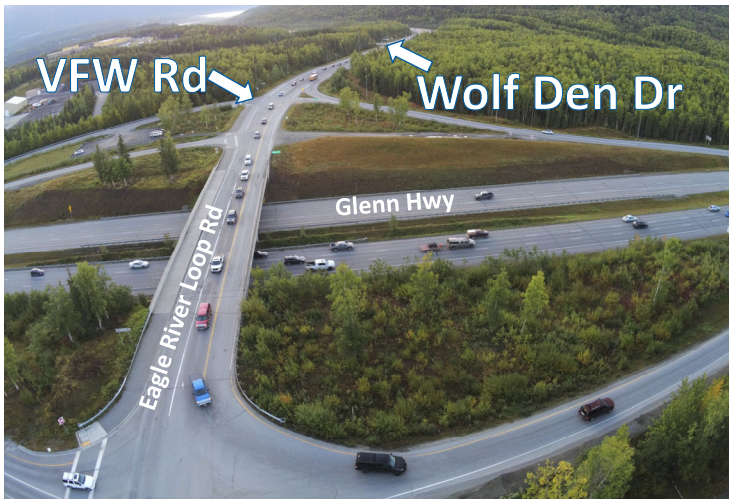
The existing southbound on-ramp merge operates near capacity as a tapered merge. This configuration has proven to be a challenge, especially during the morning peak traffic time. The situation is further compounded by the limited number of vehicles able to enter the Glenn Highway, as the single entrance lane and the tight left turn from Eagle River Loop Road create a significant bottleneck. As a result, the flow of traffic is hindered, leading to congestion and delays.

Existing Conditions – Traffic

Glenn Highway & Hiland Road Interchange Improvements

Rolling queue entering southbound on-ramp causes

- Insufficient gaps in the a.m. peak at ramp terminal intersections and VFW Road



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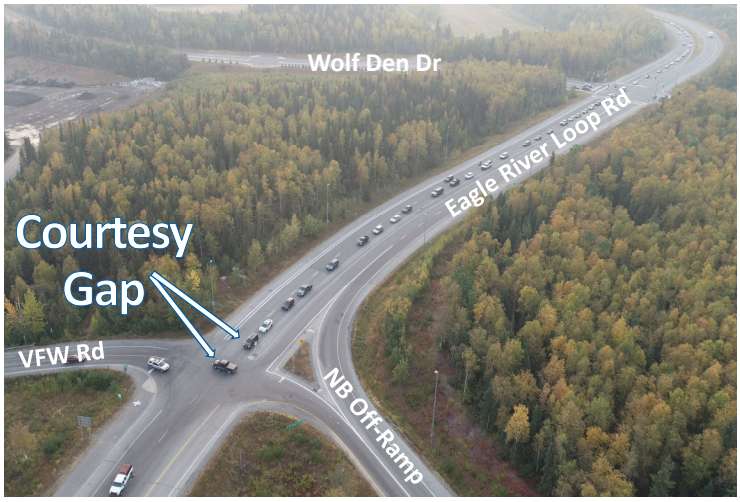
The westbound rolling queue entering the southbound Glenn Highway on-ramp causes insufficient traffic gaps during the morning peak, leading to significant delays. Specifically, for those trying to turn left onto Eagle River Loop Road from the northbound and southbound Glenn Highway off-ramps, VFW Road, and for trucks exiting the MOA Landfill.

Existing Conditions – Traffic

Glenn Highway & Hiland Road Interchange Improvements

- Drivers in rolling queue let side street drivers in (courtesy gap)
- Drivers prepare for single lane turn in advance, using single lane through the Wolf Den Drive signal



The only way traffic from these directions can make their turns during the morning peak is when drivers in the rolling queue create “courtesy gaps” by allowing side street drivers in. As shown in this photo, we can see the drivers prepare for the single left-turn onto the southbound Glenn Highway on-ramp, by lining up in only one of two westbound lanes at the Wolf Den Drive signal.

Existing Conditions – Traffic

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Westbound lane imbalance at signal causes:

- Long westbound left-turn morning queues can be seen as far as Briggs Bridge (1.9 miles)

This westbound lane utilization imbalance at the signal causes long morning queues, which can be seen as far back as Briggs Bridge or even Walmart, which is nearly two miles from the interchange.

No Build 2050

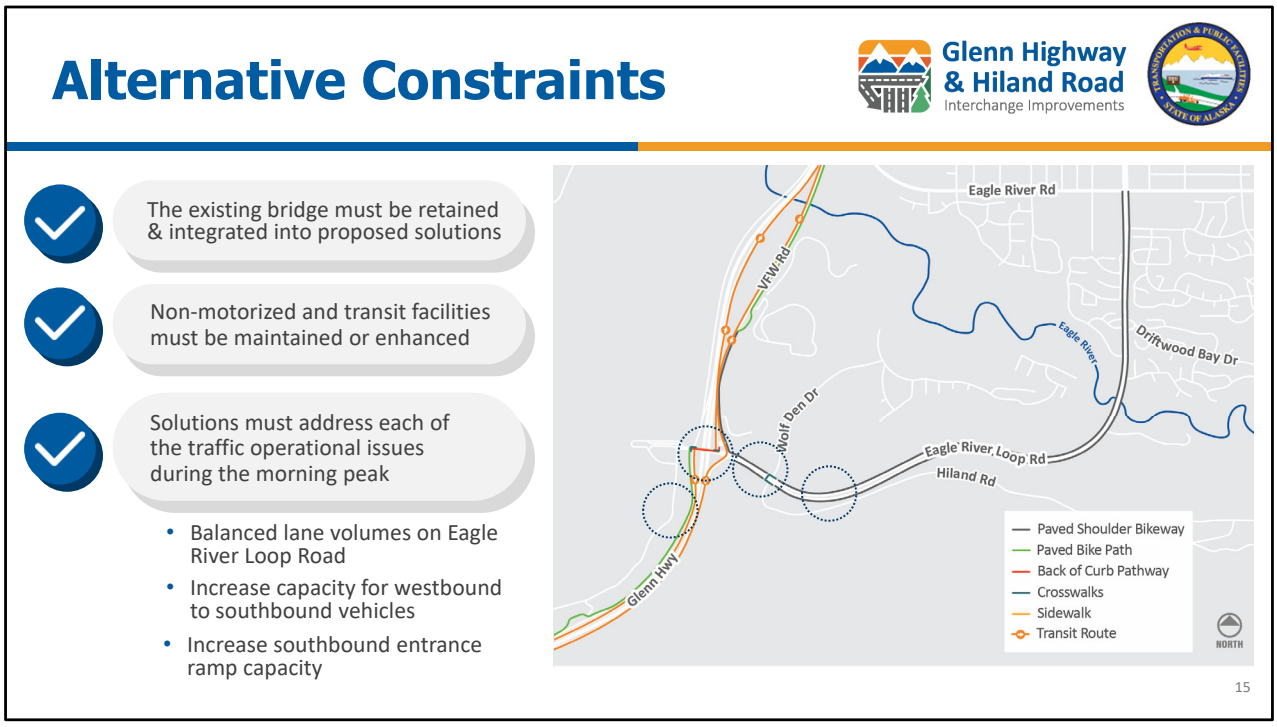
Glenn Highway & Hiland Road
Interchange Improvements

Forecast growth is less than 1% annually to 2050

13

After reviewing existing conditions, we considered the forecasted growth, which is projected to be less than one percent annually through the design year of 2050. Based on existing traffic volumes forecast to 2050, congestion and long delays during the morning peak hours are expected to persist unless improvements are made to the interchange. The graphic shows intersection movements that do not meet an acceptable level of service and delay in the future year with no improvements. Level of service is a grade assigned to describe the average delay measured in seconds during a specific time period.

With a thorough understanding of existing conditions, the project team developed and evaluated preliminary alternatives aimed at addressing morning congestion at the interchange all while maintaining the project's purpose and objectives to improve operations, increase capacity, and enhance safety for all users.



As the preliminary alternatives were developed, the project team adhered to the following key constraints:

- The existing bridge must be retained and integrated into proposed solutions,
- Improvements should fit within the existing schedule and budget.
- Non-motorized and transit facilities must be maintained or enhanced.
- Solutions must address the traffic operational issues during the morning peak:
  - Balance westbound lane volumes on Eagle River Loop Road,
  - Increase capacity for westbound to southbound vehicles traveling to the Glenn Highway, and
  - Expand the southbound Glenn Highway entrance ramp capacity.

SB Ramp – Double Left

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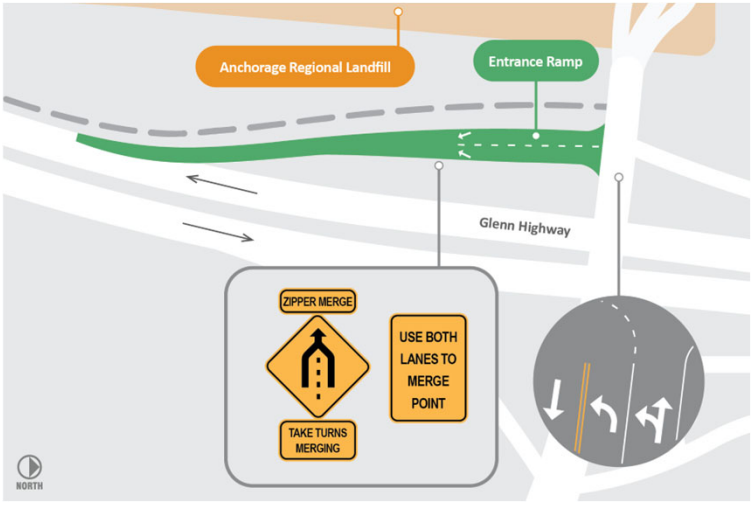
Interchange Improvements

Positive

- Low impacts; ROW, Utility, Schedule
- Low cost

Negatives

- Does not fix operational deficiencies at other intersections
- Not favorable to truck operations



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The first alternative the project team evaluated includes converting the westbound through lane on the bridge to a combination left turn and through lane with overhead lane signage to encourage drivers to use both lanes. These two left turn lanes would merge on the ramp prior to entering the southbound Glenn Highway. This alternative has lower impacts to right-of-way, utilities, schedule, and would cost less than other alternatives. While this alternative increases the left turn capacity, and may improve lane utilization, it does not fix operational deficiencies at other intersections along Eagle River Loop Road and is not favorable to truck operations.

SB Ramp – Dual Loop Ramp

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Interchange Improvements

Positive

- ERLR traffic heading to Anchorage has no conflicts
- Grade separated pedestrian tunnel

Negatives

- Operations and safety for users on east side of interchange are not improved
- Major utility relocations
- Multiple full and partial acquisitions from JBER and MOA
- Major schedule and budget impacts

17

Another alternative the project team considered is constructing a dual-lane loop ramp. The single-lane loop ramp is a well-known ramp style for Alaska drivers. This alternative would allow Eagle River Loop Road traffic heading to Anchorage to move freely onto the ramp with no turning conflicts. A grade separated pedestrian and bicycle tunnel connecting to the existing pathway would need to be constructed under the west intersection to enhance non-motorized safety. This would remove the need for non-motorized users to cross the steady stream of traffic during the morning peak period.

While this alternative would enhance the west-to-southbound capacity, it still does not address or resolve several key issues, including:

- Improving operations and safety for users on the east side of the interchange,
- Requiring major utility relocations,
- Needing multiple full and partial land acquisitions from JBER and the MOA,
- Significant schedule delays, and
- Budget implications due to the high cost of the pedestrian tunnel, right-of-way acquisitions, and utility impacts.

Divergabout

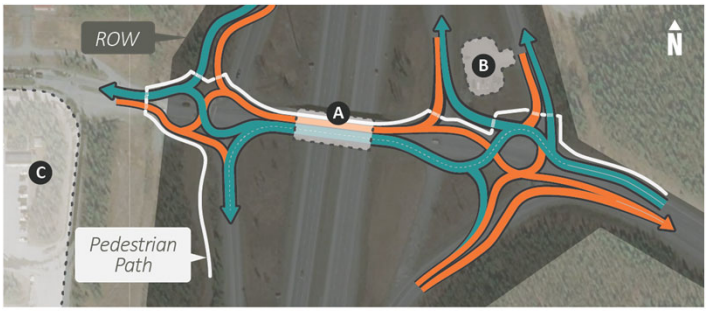
Glenn Highway & Hiland Road Interchange Improvements

Positive

- Improves interchange operations and performance
- Pedestrian facilities have refuges and single lane crossings.
- Reduces or eliminates high-cost utility impacts

Negatives

- Small partial ROW impact at MOA Regional Landfill entrance
- First Diverging Diamond with Roundabout intersections in Alaska



Eastbound Traffic Flow
Westbound Traffic Flow

A Existing Bridge Remains
B Park & Ride
C Anchorage Regional Landfill

18

The alternatives were developed with an incremental approach, focusing on improving the biggest traffic issue with the smallest solution. However, after carefully evaluating the previous alternatives, additional key issues were not resolved.

The third alternative considered by the project team is an idea not yet introduced in Alaska, which operates well in the other areas of the US. This alternative is a diverging diamond interchange with roundabouts, otherwise known as a divergabout. The project team's site evaluations and traffic study show a divergabout can:

- Improve operations and performance on both sides of the interchange and at the VFW Road intersection,
- Reduce or eliminate high-cost utility impacts,
- Avoid full parcel acquisitions from JBER and associated schedule delays, and
- Pedestrian facilities would have refuges and single lane crossings, increasing safety.

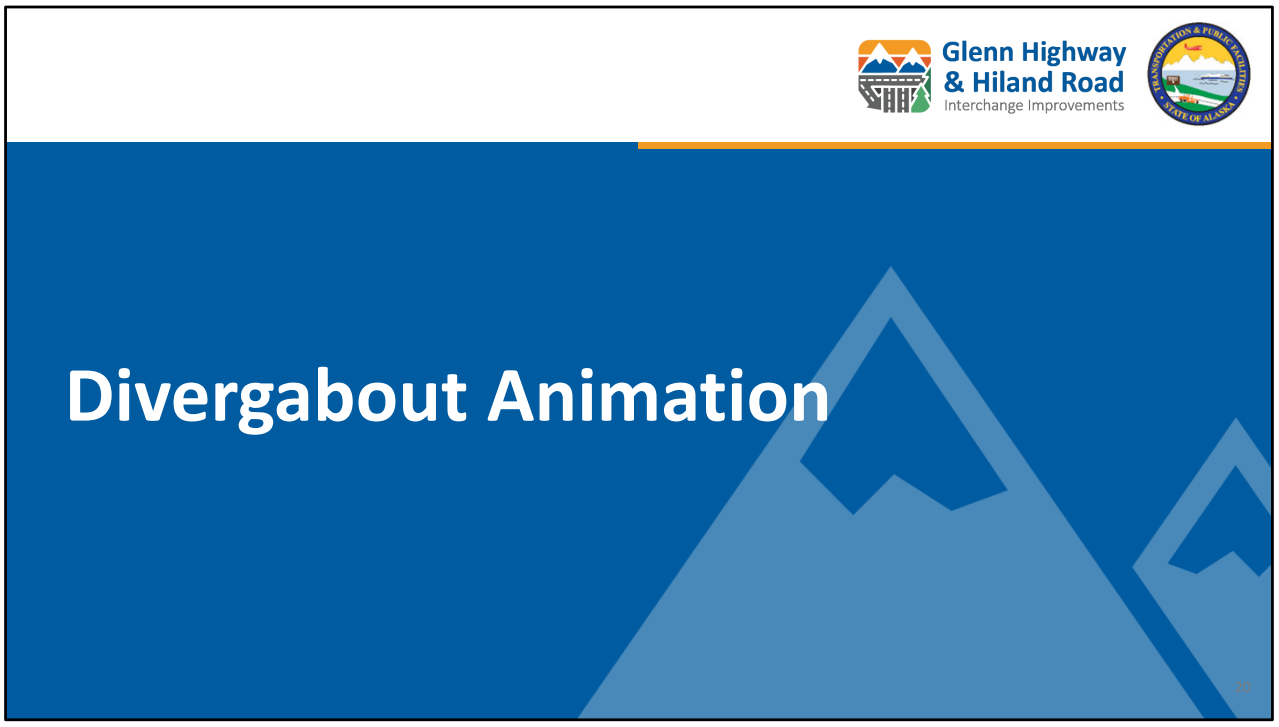
This interchange design would:

- Be the first divergabout in Alaska,
- It would require a small partial right-of-way acquisition at the MOA Landfill entrance,
- Be compatible with the bridge replacement after its design life, and
- Comprehensively address the project's identified concerns, tackling the issues for long-term success.

Glenn Highway & Hiland Road
Interchange Improvements

How a Divergabout Works

For a clearer understanding of navigation through a divergabout, here's an animation demonstrating how vehicles flow within it.



Westbound Eagle River Loop Road

Drivers traveling westbound on Eagle River Loop Road enter the roundabout and may exit north to VFW Road, northbound Glenn Highway, or continue across the bridge to Glenn Highway southbound towards Anchorage or the Landfill using the contraflow lanes.

Southbound Glenn Highway

Here are ways drivers would move through the divergabout from the southbound Glenn Highway. Overhead signage, splitter islands, and concrete barrier reduce the risk of wrong way movements.

Anchorage Regional Landfill

Here are ways drivers would move through the divergabout from the Anchorage Regional Landfill.

Northbound Glenn Highway

Here are ways drivers would move through the divergabout from the northbound Glenn Highway. For all movements, access would be maintained to the same locations as today.

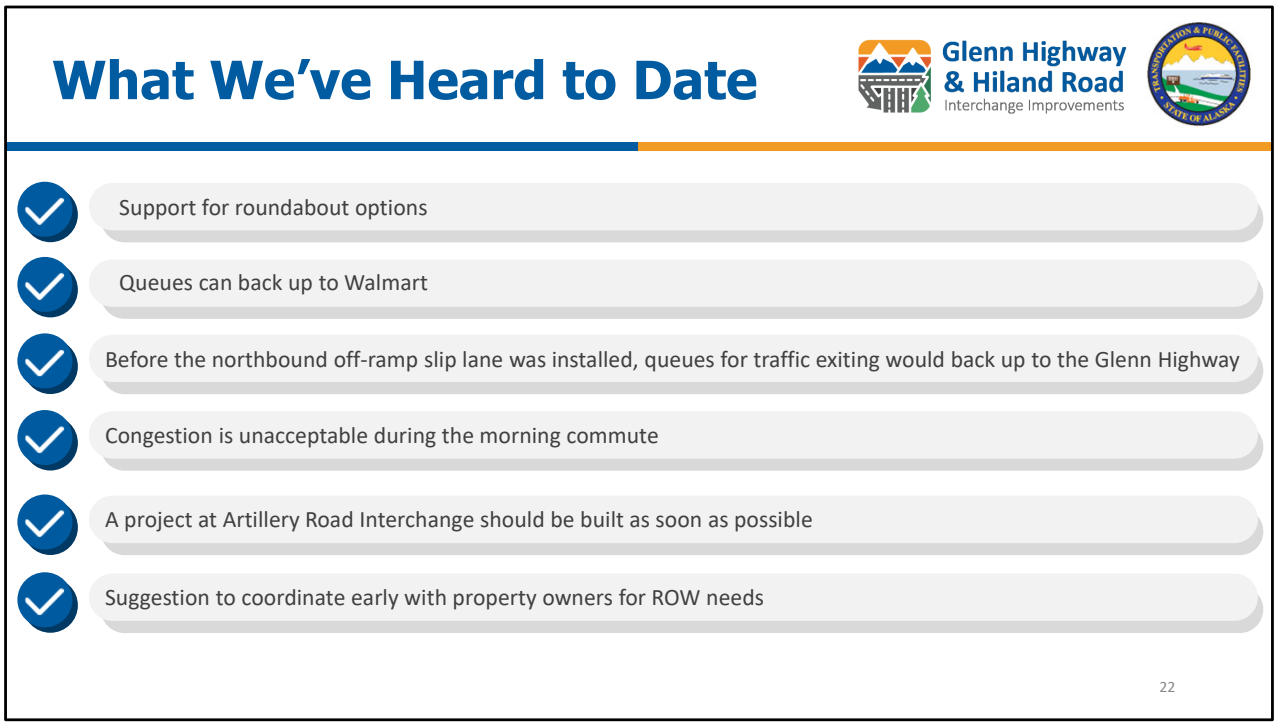
Comparative Assessment

Glenn Highway & Hiland Road Interchange Improvements

	No Build	Double Left	Loop Ramp	Divergabout
Operations & Capacity				
Lane Utilization	☹	☺	☺	☺
West Terminal Intersection	☹	☹	☺	☺
East Terminal Intersection	☹	☹	☹	☺
ERLR/Wolf Den Intersection	☹	😐	😐	😐
Truck Operations	☹	☹	☺	☺
Safety Performance				
Motorized	😐	😐	☺	☺
Non-Motorized	😐	😐	😐	☺
Impacts				
ROW Impacts	☺	☺	☹	😐
Utility Impacts	☺	☺	☹	☺
Environmental Impacts	☺	☺	☺	☺
Schedule Impacts	☺	☺	☹	😐
Capital Cost	☺	☺	☹	😐

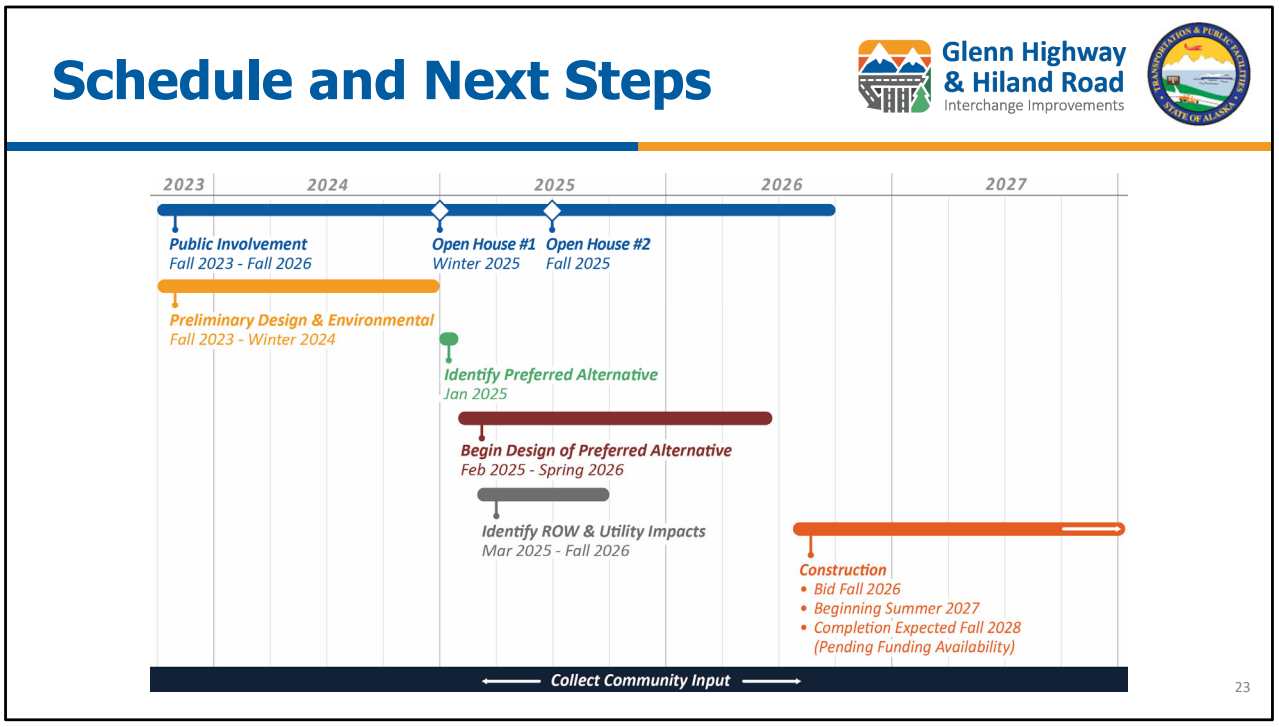
Comparing alternatives can be subjective but in summary, here are the project team's initial assessments based on engineering analysis to date.

- All build alternatives can improve westbound lane utilization on Eagle River Loop Road,
- The divergabout alternative improves operation and capacity for the whole interchange and Wolf Den Drive signalized intersection, not just the west half,
- The divergabout offers the greatest safety improvement for motorized and non-motorized traffic, and
- The divergabout has minor impacts to right-of-way and utilities; however, it best meets the project's purpose and objectives at a lower cost when compared to the loop ramp.



The project team has presented these ideas at area community council meetings, a CBERRRSA meeting, and Anchorage Metropolitan Area Transportation Solutions committee meetings. Some of the most frequent comments we've heard are:

- Strong support for roundabouts
- Unacceptable congestion during the morning commute, with westbound queues on Eagle River Loop Road sometimes extending to Walmart
- Before the northbound Glenn Highway off-ramp slip lane was installed, queues for traffic exiting would back up to the northbound Glenn Highway through lane
- A project at the Artillery Road Interchange should be implemented as soon as possible
- Suggestion to coordinate early with property owners for right-of-way needs



The input received from stakeholders and the public will be carefully considered throughout the process. Following this open house, the project team will identify a preferred alternative and begin design, which will help identify potential right-of-way and utility impacts. We plan to return in fall 2025 for a second open house to present the preferred alternative and gather additional feedback. Your comments are crucial to this process. Please share your thoughts on the double left, dual loop ramp, and divergabout alternatives.

This concludes our presentation. Stay informed by visiting Glenn-Hiland.com. Submit questions and comments via email at Glenn-Hiland@dowl.com or by using the comment button on the project website. Thank you.