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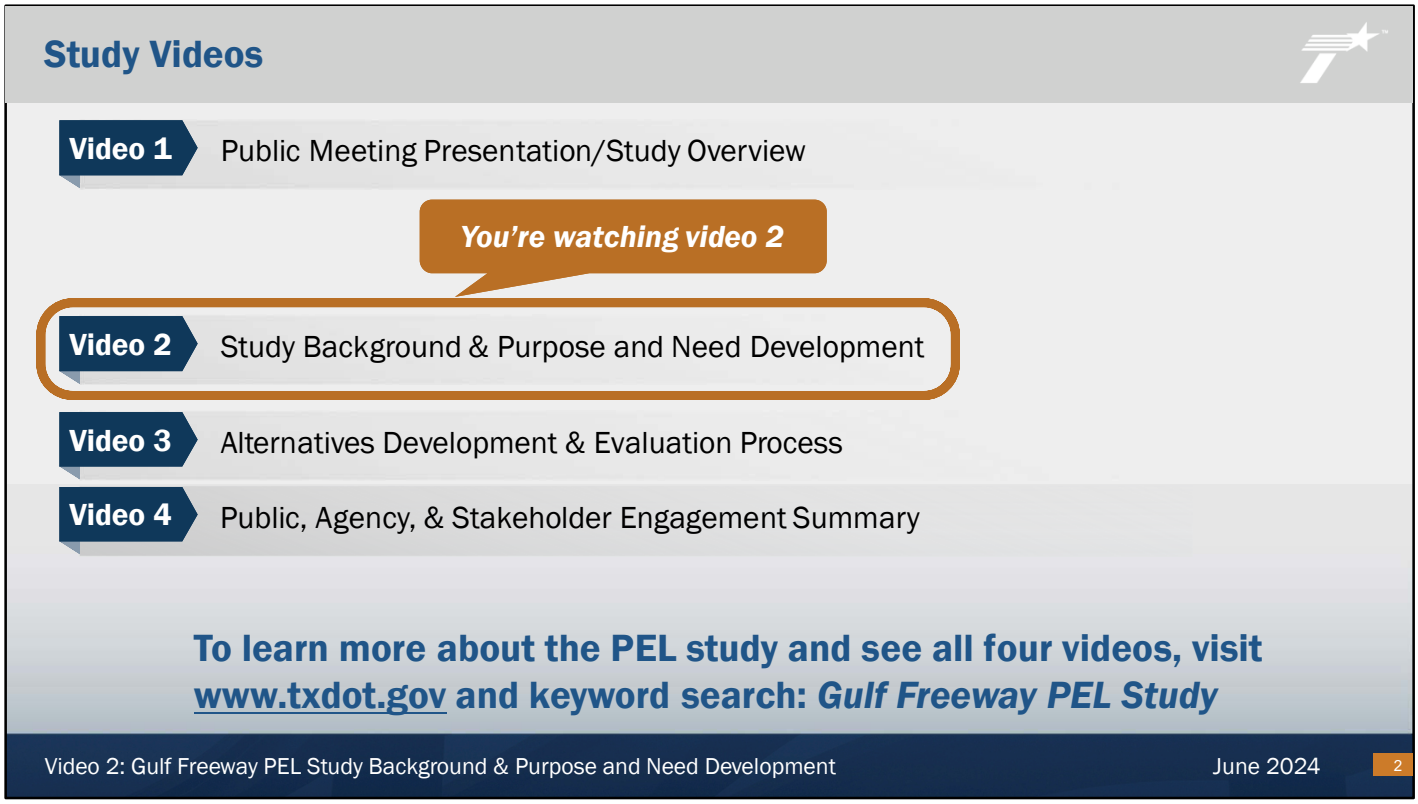
The Texas Department of Transportation, Houston District is conducting a Planning and Environmental Linkages Study, also known as a PEL Study, along Interstate 45 South from Interstate 69 / US 59 in Downtown Houston to Beltway 8 South. This video will discuss the background of the Gulf Freeway PEL study and development of the purpose and need.



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You are watching the second video in a series of 4 videos that will provide more information about the Gulf Freeway PEL Study. This video, video 2, focuses on the study background and development of the purpose and need. Video 1 provides an overview of Gulf Freeway PEL study, video 3 outlines the alternative development and evaluation process, and video 4 summarizes the public, agency, and stakeholder engagement conducted to date.

To learn more about the PEL study and to see all four videos please visit www.TxDOT.gov and use keyword search Gulf Freeway PEL Study

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In this video, we will provide a study overview, discuss the corridor history, the purpose and need, corridor goals, and the existing and future corridor needs.

Existing (2019) Typical Sections

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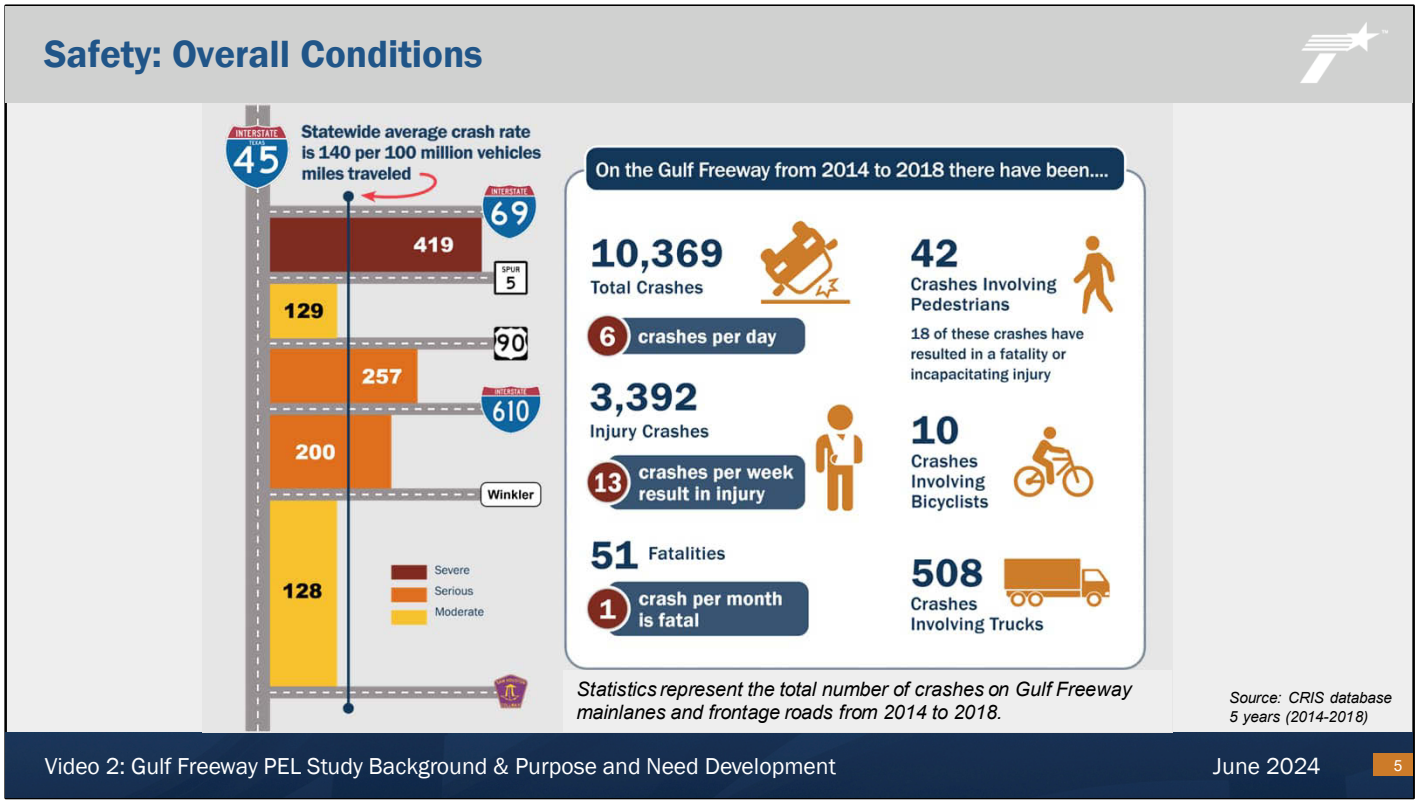
Shown on this slide are the existing typical sections for the 14-mile section of Gulf Freeway. A typical section is intended to show a cross-section of the roadway as seen from the center of the roadway at a particular location. As illustrated here, there are variations to the number of lanes on both mainlanes and frontage roads throughout the corridor.

In general, the Gulf Freeway today has four mainlanes and three frontage road lanes in each direction, plus a reversible high occupancy vehicle/high occupancy toll lane, also known as HOV/HOT lanes. This configuration is shown here as Number 3. The number of mainlanes in the other segments varies between 2 and 3 lanes in each direction as shown here.

The right-of-way width along Gulf Freeway varies with a minimum width of approximately 200 feet to a maximum width of approximately 900 feet.



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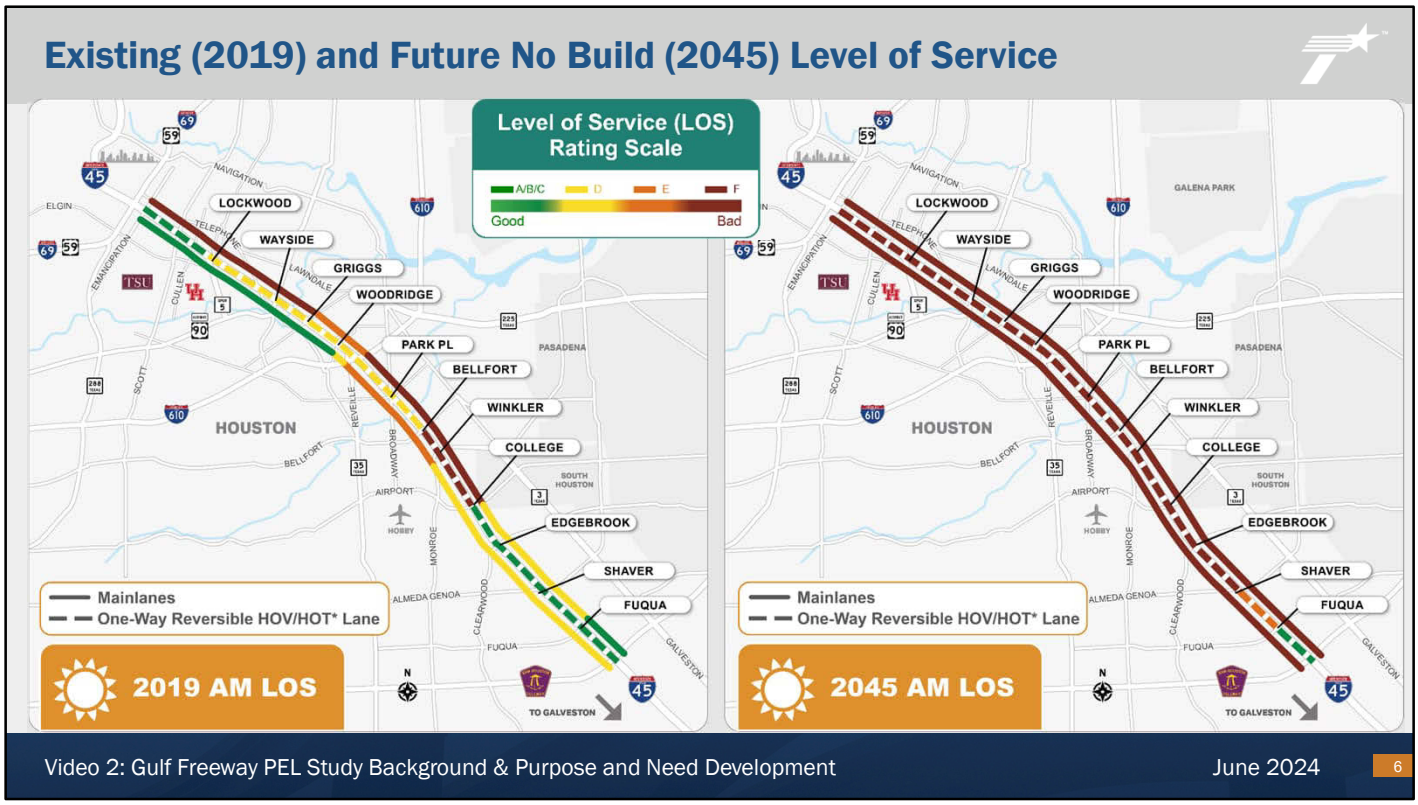
We collected and analyzed 5 years of crash data to identify safety issues along the corridor. The chart on the left compares the crash rates for each segment of the corridor to the statewide average crash rate for similar facilities. Three segments have a crash rate above the statewide average, with the segment between I-69/US 59 and Spur 5 having a rate nearly 3 times the statewide average.

Along the mainlanes and frontage roads of the corridor there were, on average:

- Six crashes per day,
- 13 injury-related crashes per week, and
- One fatal crash per month.

There were also 42 crashes involving pedestrians, 10 crashes involving bicyclists, and 508 crashes involving trucks.



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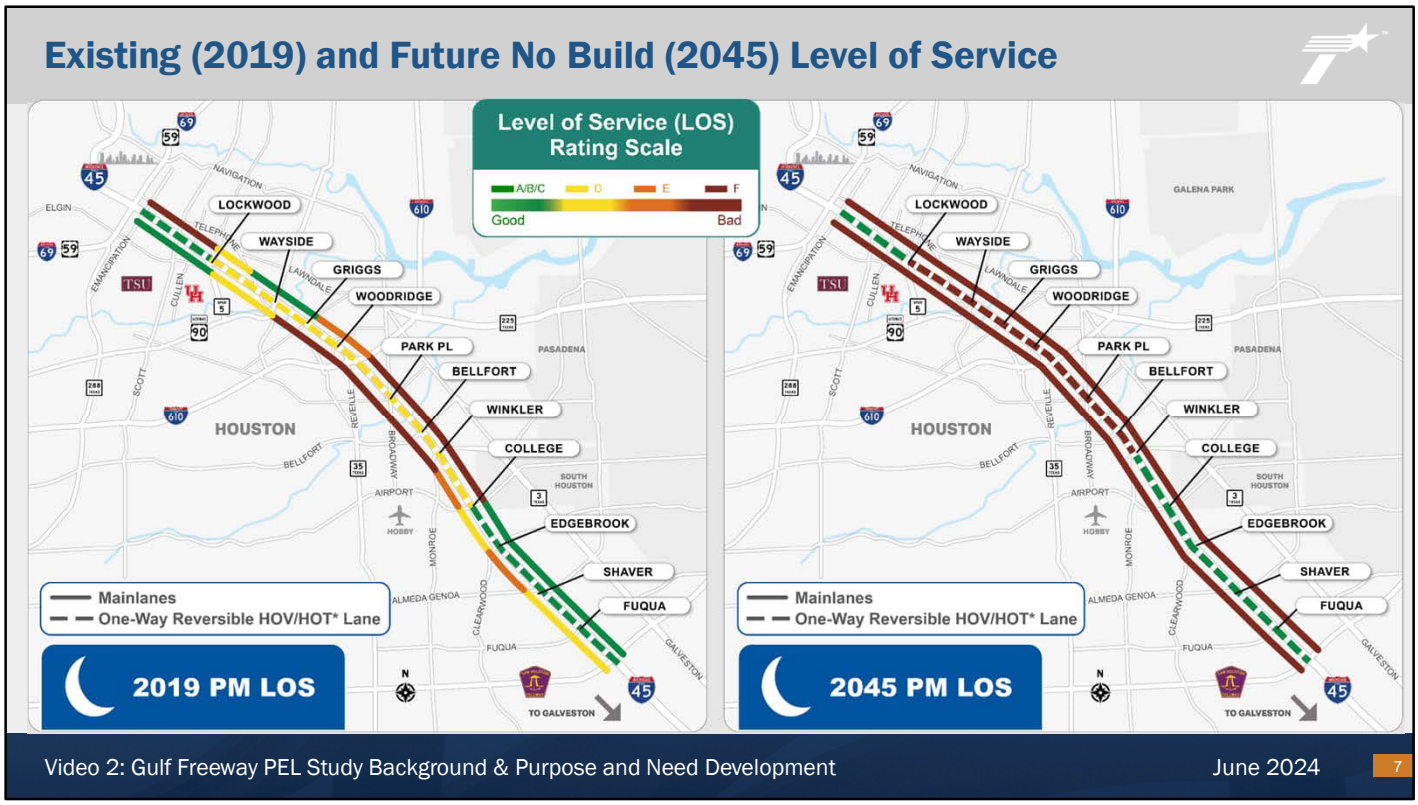
We analyzed traffic operations during peak periods (i.e., in the morning between 5 AM and 10 AM and in the evening between 2 PM and 7 PM) along the mainlanes and reversible HOV/HOT lane. The figures on this slide show the worst-case level of service during the AM peak period in the year 2019 and future year 2045 no build conditions.

Level of service describes how congested a roadway is and how much delay is experienced by the traveling public. Level of service ranges from A, which is free flowing traffic as shown in green, to F, which is heavily congested as shown in red. Level of service A through D is considered acceptable, and level of service E or F is considered unacceptable.

We analyzed existing traffic operations during AM peak periods between 5 AM and 10 AM along the mainlanes and reversible HOV/HOT lane. The mainlanes level of service is represented by a solid line and the reversible HOV/HOT lane level of service is represented by a dashed line.

For the year 2019, during the AM peak, the northbound mainlanes experienced the most congestion. The traffic operations are anticipated to get worse over time. During the 2045 no build conditions morning peak travel period, the majority of the Gulf Freeway study corridor is expected to have high congestion.



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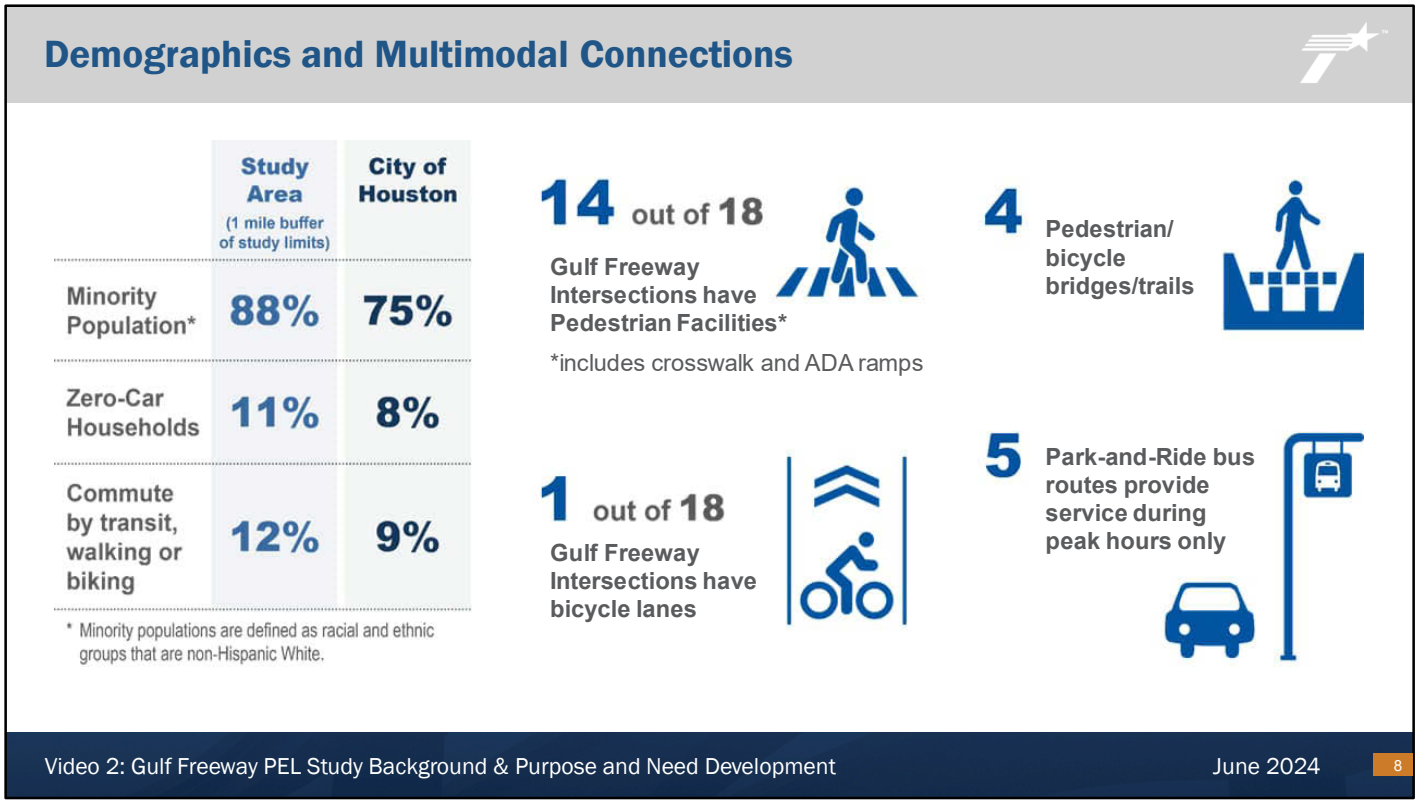
Similarly, we analyzed existing traffic operations during PM peak periods between 2 PM and 7 PM along the mainlanes and reversible HOV/HOT lane. The figures on this slide show the worst-case level of service during the PM peak period in the year 2019 and future year 2045 no build conditions.

The mainlanes level of service within the peak period is represented by a solid line and the reversible HOV/HOT lane level of service is represented by a dashed line.

In 2019, the PM peak period experienced congestion in both the northbound and southbound directions. For the year 2045, the evening peak period will experience heavy congestion throughout the corridor.



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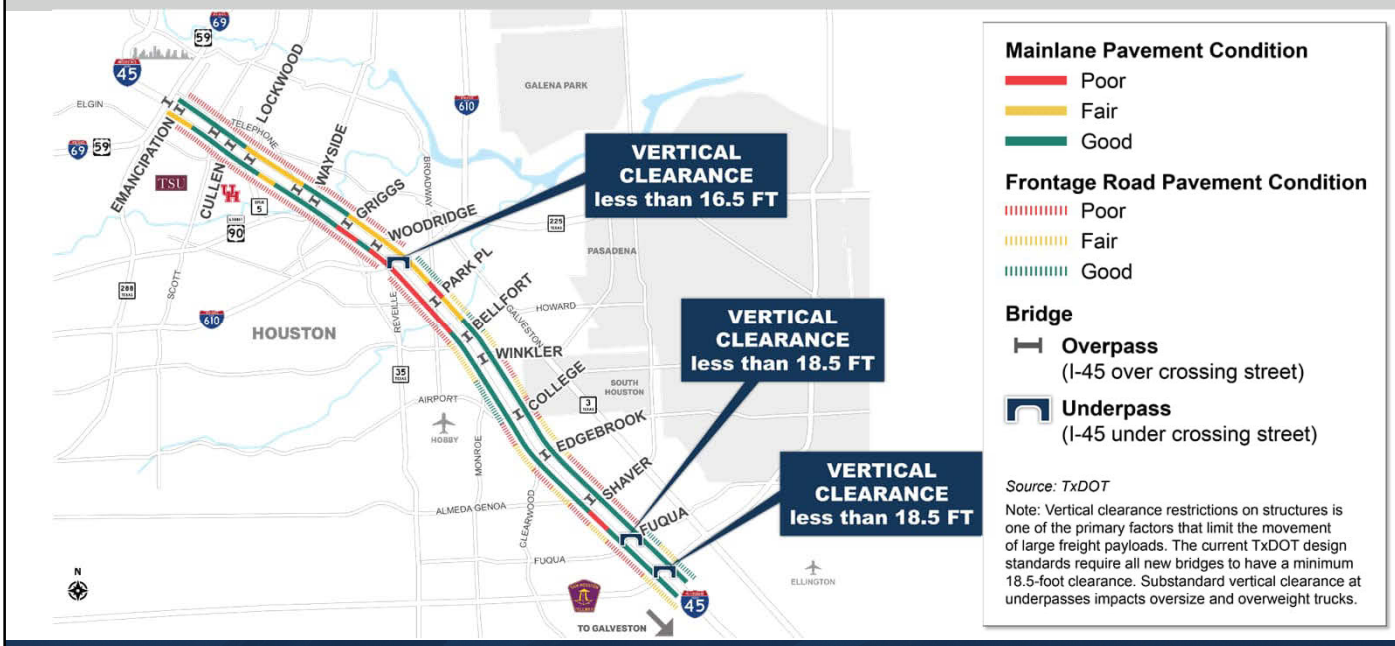
In order to identify needs for multimodal connections along Gulf Freeway, the study team evaluated the corridor demographics including environmental justice, which identifies low-income, minority, and limited English proficient populations. Of the 172,000 people living in the study area, 88 percent are classified as an environmental justice population, 11 percent are zero-car households, and 12 percent commute by transit, walking, or biking. Each of these are higher than the statistics for the city of Houston. These populations typically rely more heavily on multimodal accommodations.

The study team evaluated the existing and planned multimodal accommodations including transit, bicycle, and pedestrian accommodations. Of the 18 intersections along the study corridor, 14 have pedestrian facilities and 1 has bicycle lanes. There are also 4 bicycle/pedestrian bridges or trails that cross the corridor. There are 5 Park and Ride bus routes that provide service during peak hours only.

Infrastructure Conditions



Video 2: Gulf Freeway PEL Study Background & Purpose and Need Development June 2024 9

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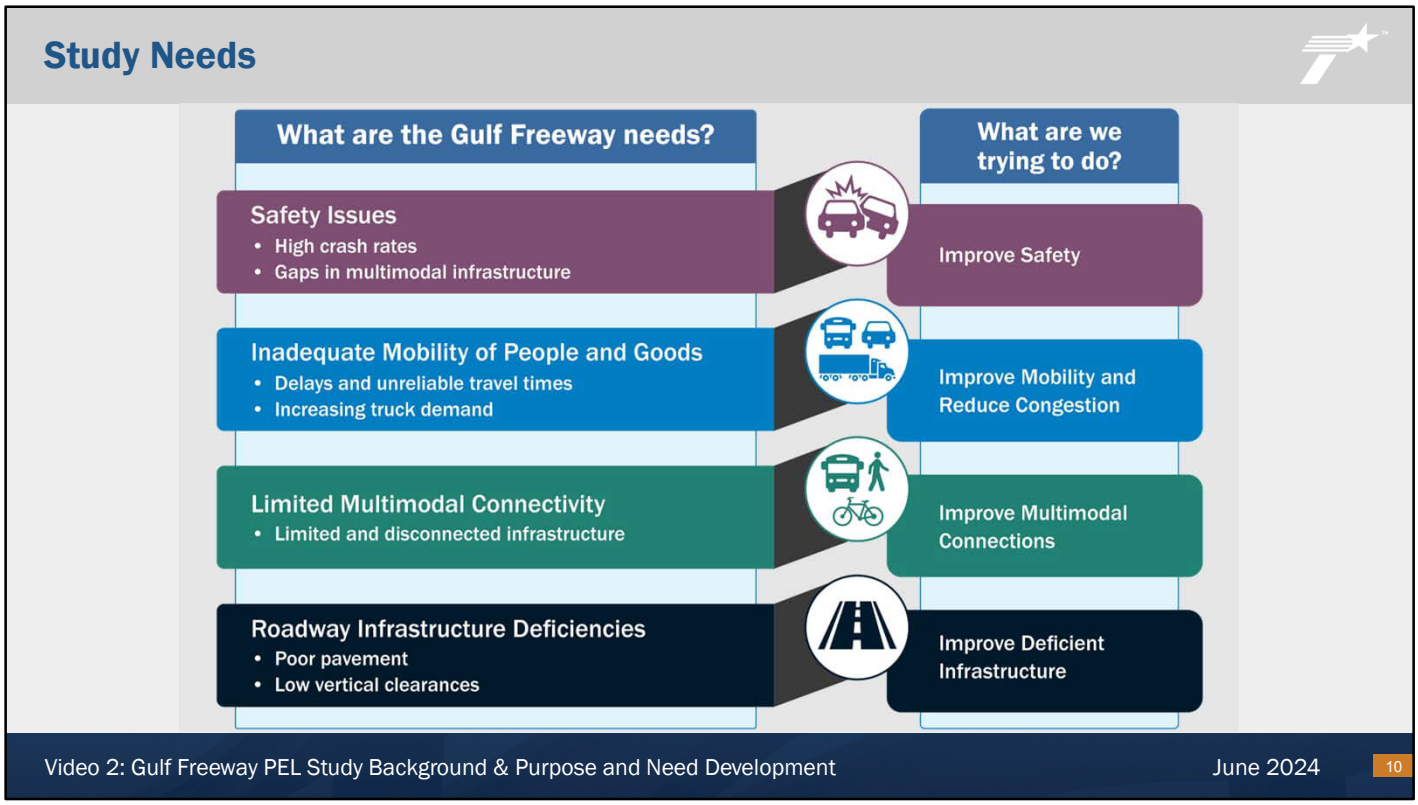
In addition, TxDOT reviewed the condition of the current infrastructure, including pavement and bridges.

The evaluation identified poor pavement conditions on the mainlanes and frontage roads in several sections.

The bridge evaluation looked at vertical clearance, which can limit the movement of oversized trucks. The Gulf freeway is a primary freight corridor that is used by oversized trucks. Three bridges on the corridor have a vertical clearance less than 18 and a half feet, which is below the design standards and can limit the movement of freight along the Gulf Freeway.



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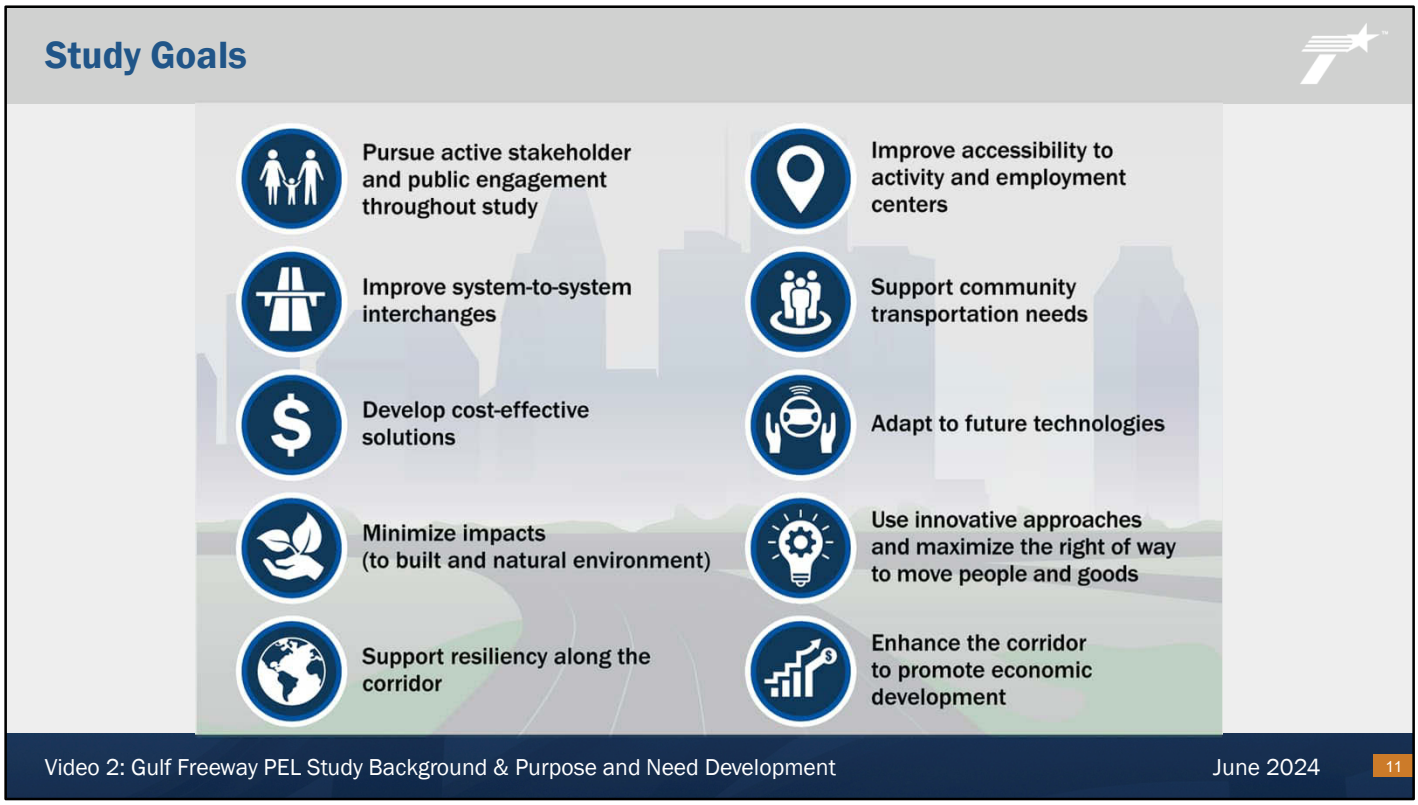
A Purpose and Need is the foundation of a transportation study in which the alternatives are built upon. A need is a documented problem that exists within the corridor. The purpose defines what we need to do to meet the needs.

Through the analysis done so far, and the input received during multiple stakeholder and public meetings, TxDOT identified four needs along the Gulf Freeway, Safety, Inadequate Mobility, Limited Connectivity, and Infrastructure Deficiencies:

- The first need is safety issues: The safety analysis identified high crash rates on the mainlanes, frontage roads, and intersections. Additionally, gaps in the multimodal network pose unsafe conditions for pedestrians and bicyclists.
- The second need is inadequate mobility of people and goods: congestion and excessive delays are currently occurring along both the mainlanes and frontage roads, and this is expected to get worse in the future.
- The third need is limited multimodal connectivity: Analysis identified limited accessibility to multimodal choices and disconnected existing infrastructure.
- The fourth need is roadway infrastructure deficiencies: poor pavement conditions currently exist along the mainlanes and frontage roads and a few bridges over the mainlanes have low and below standard vertical clearances.

The purpose of the study is to improve safety, improve mobility and reduce congestion, improve multimodal connections, and improve deficient infrastructure.



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Goals are used to shape the transportation solutions. The study goals guide the alternative development and evaluation process and balance guiding values.

The goals were developed based on input received from the public, stakeholders, and agencies during the study outreach process.

A total of 10 goals have been identified, they are the following:

- Pursue active stakeholder and public engagement throughout the study
- Improve system-to-system interchanges
- Develop cost-effective solutions
- Minimize impacts to the built and natural environment
- Support resiliency along the corridor
- Improve accessibility to activity and employment centers
- Support community transportation needs
- Adapt to future technologies
- Use innovative approach to maximize the right of way to move people and goods
- Enhance the corridor to promote economic development

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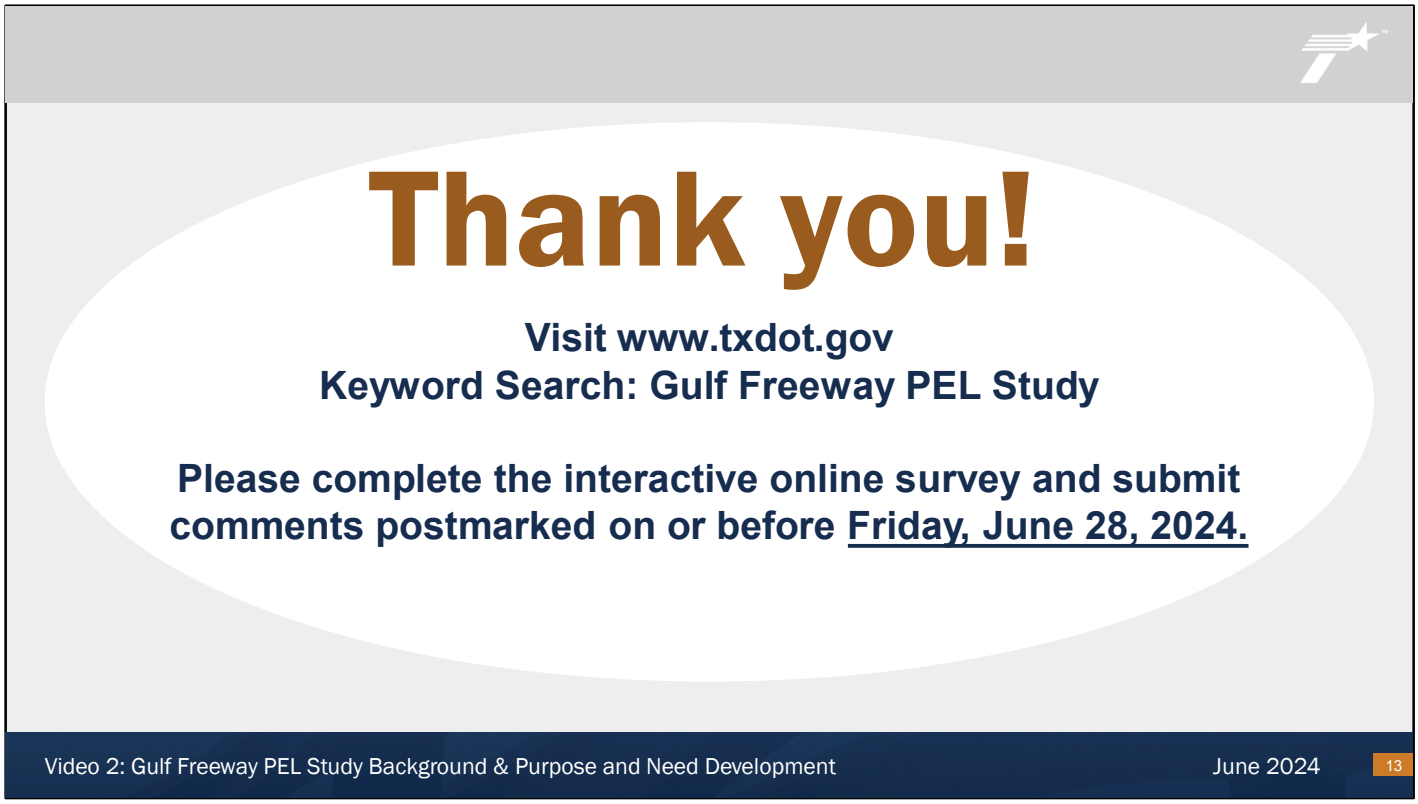
Sadly, November 7, 2000 was the last deathless day on roadways in Texas. That means for nearly 24 years, at least one person has died every single day. We all have a part to play to change that. This message is that reminder – to End the Streak of deaths on Texas highways. We need drivers and passengers to act more responsibly and help us reach our goal of zero deaths by 2050. Texans can play a major role in ending fatal crashes with a few simple driving habits: wear seatbelts, drive the speed limit, put away the phone and other distractions, and never drive under the influence of alcohol or drugs. So please, do your part and share this message with your friends and family.

Scan the QR code on this screen or search #EndTheStreakTX to learn more about #EndTheStreakTX campaign.



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Thank you for watching this video on the Gulf Freeway PEL study background and purpose and need.

To learn more about the Gulf Freeway PEL study, to access the online survey, or to provide feedback on the reasonable alternatives, please visit the TxDOT webpage and use the keyword search “Gulf Freeway PEL Study”. Please complete the online survey and submit comments postmarked on or before Friday, June 28, 2024.

Check out the other short videos on the study webpage to learn more about the alternatives development and evaluation process as well as public, agency, and stakeholder outreach.