USER GUIDE FOR CORRIDOR SKETCH SUMMARIES

A companion document for the Corridor Sketch Initiative

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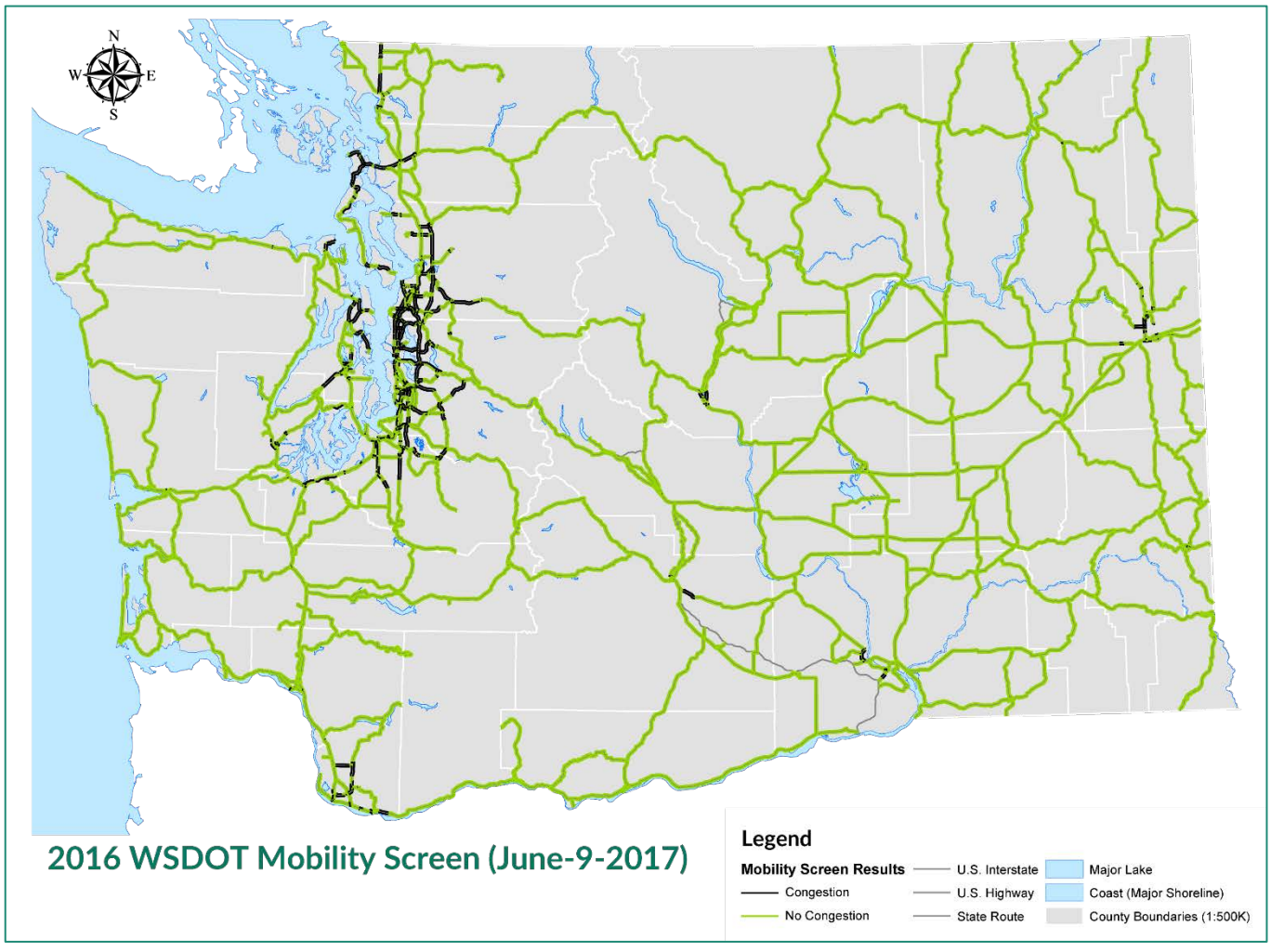

Executive Summary

User Guide for Corridor Sketch Summaries

The Washington State Department of Transportation's (WSDOT) Corridor Sketch Initiative is a set of planning activities that engages the agency's partners to determine the context and performance of state highway corridors and identify high-level strategies for addressing performance gaps. The initiative complements and supports regional planning processes around the state. As part of the Corridor Sketch Initiative, the agency is producing Corridor Sketch Summaries for state highways throughout Washington.

This *User Guide for Corridor Sketch Summaries* is a companion document that explains the information presented in each Corridor Sketch Summary. The document provides a brief overview of key information included in the summaries and WSDOT's uses for this information.

Contents and Layout of the Corridor Sketch Summary

Each Corridor Sketch Summary is divided into four sections covering corridor context, highlights and performance, strategies, and access to additional information. If a corridor has any congestion performance gaps, there will also be a Mobility Assessment, which details the specific corridor segments where those gaps occur and potential strategies for addressing traffic congestion.

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Corridor Summary, Description and Function

The first page of each Corridor Sketch Summary includes features and context of each corridor, such as the corridor's name, location, surrounding area, and its current and expected future functions.

Corridor Description

The corridor description summarizes a corridor's general context, or what a user would see on a corridor, excluding the roadway itself. (Roadway characteristics on the corridor are on the following page.) WSDOT provides information about communities located along the corridor, land use, terrain and identifying landmarks. The corridor description part may include:

- Length.
- General location – nearby major communities, counties, regional identity.
- End points.
- Nearby landmarks, such as locations of cultural significance or well-known highways and/or roads.
- Characteristics of the communities the corridor passes through (urban, rural, and/or suburban).
- Major identifying features of nearby communities.
- Primary land uses along the corridor and population density.
- Other land uses along the corridor.
- General terrain and climate information, such as plant life and topography.

Corridor Function

Corridor function summarizes how a corridor is used and by whom. This section includes information such as:

- High-level function. What purpose does this highway have as a whole? What is the function of this specific corridor?
- A brief description of user purposes of this corridor. Is this corridor being used for commuting, freight movement, or recreational travel?
- Scale of travel on the corridor. Is it local, regional, or international?
- Types of traffic present. Are automobiles, bicycles, pedestrians, bus transit, paratransit, rail transit, vanpools, freight, or ferries using the corridor?
- Intersections and/or significant cross roads that are present. What connections exist to other major transportation facilities or locations?
- Sources of traffic. What prominent traffic generators and destinations are on the corridor?

Future Function

Future function summarizes if and how the operation and use of the corridor is likely to change in the near future. Corridors generally do not drastically change function over time. When changes do occur, they typically arise from projects or land use changes that significantly shift how the corridor will be used and by whom. For example, if a new high occupancy vehicle lane is planned on a corridor, the modes of transportation sharing the corridor would change, thus altering the future function of the corridor. Alternatively, population growth would increase demand for use of the corridor, but the proportion of user types (automobiles, bicycles, transit, etc.) and purposes would be similar or the same, and therefore the future function is unchanged.

Highlights and Performance

The second page of each summary provides information on the corridor's roadway characteristics, performance, and performance gaps, as well as feedback about the corridor from agency partners.

Roadway Characteristics

In the first paragraph under "Highlights and Performance, roadway characteristics provides a brief summary of the roadway configuration, locations of greatest traffic use, and other prominent features of the roadway itself.

What's Working Well & What Needs to Change

The sections labeled "What's Working Well" and "What Needs to Change" collectively summarize WSDOT's assessment of the most important performance aspects of the corridor. These may include noteworthy performance information, or any information that stood out within the criteria listed below. For example, this section may include weight restrictions on roadways and bridges, investments made, or information on local wildlife affected.

Corridor Performance Indicators

Corridor performance indicators includes a standard set of data points intended to give a high-level view of system performance and asset conditions on each corridor. WSDOT selected these metrics in order to provide an at-a-glance summary of corridor performance that is comparable across corridors.

General Corridor Performance Indicators

- **Annual Average Daily Traffic (AADT) (High and Low)** is the number of vehicles which use this corridor each day, averaged over a year. It is a widely used indicator of how much traffic the corridor supports.
- **Bus/Truck Percentage of AADT (High and Low)** is the portion of average daily traffic on the corridor made-up of buses and commercial trucks. This metric gives a sense of the corridor's function.
- **Number of Lane Miles** is the length of the corridor multiplied by the number of lanes. For example, one mile of a six-lane freeway equals six lane miles. This figure describes the amount of roadway on a corridor and gives an idea of preservation and maintenance needs.
- **Number of Signalized and Stop Controlled Intersections** is the number of intersections with traffic signals or stop signs[1]. This number only includes intersections along the mainline of a highway, and does not include interchanges or ramp metering. Signalized and stop controlled intersections change how traffic flows on a corridor.
- **Corridor Investments (2005-2016)** is the amount of money WSDOT spent on corridor improvements between January 3, 2005 and November 1, 2016. This figure includes capital costs and some operations costs, while excluding maintenance costs. The corridor investments metric gives context for how much work has been completed on a corridor recently, and it can be considered against other performance metrics.

Preservation Performance Indicators

Preservation is the work needed to restore the condition or function of existing transportation facilities. The objectives are to achieve the best long-term financial investment for a transportation facility and prevent failure of the existing system. The preservation section on page two of each summary lists high-level indicators including pavement types, surface conditions, and bridge preservation needs on a

[1] Stop signs are only counted when the highway itself is stopped. Intersections with stop signs only on the side street are excluded from this figure.

corridor. These measures give a baseline condition of the corridor and provide information about the type of preservation that may need to occur. Note that all preservation needs associated with Asset Management are subject to update through the Asset Management Plan (expected in 2018).

- **Roadway Surface Type –** The bar graph identifies the types of surfacing materials in the paved portions of the corridor. There are four corridor surface types including: asphalt concrete pavement (ACP), bituminous surface treatments (BST) (more commonly referred to as a chip seal), Portland cement concrete pavement (PCCP), and bridges. Surface type is important in determining a corridor's preservation needs and associated costs.
- **Roadway Surface Condition –** WSDOT categorizes pavement with three condition levels: "good & very good," "fair," and "poor & very poor." See the Pavement Annual Report in *Gray Notebook 64* for an explanation of these categories. This is the primary, high-level metric WSDOT uses to direct roadway preservation. Please note, this metric only includes surveyed pavement on each corridor.
- **Bridge Preservation Needs –** WSDOT breaks down bridge asset management goals for each corridor into nine categories:

  - Border bridge
  - Bridge repair
  - Bridge replacement
  - Steel bridge painting
  - Seismic retrofit
  - Bridge deck repair and overlay
  - Moveable bridge
  - Bridge rehabilitation
  - Scour repair

  See the Bridge Annual Report in *Gray Notebook 62* and WSDOT's Bridge Preservation webpage to learn more about these categories and associated risks they address.

Mobility Performance Indicators

Mobility is the ability of users to move through a transportation system.

Percent of Corridor Congested is the portion of a corridor identified by WSDOT's 2016 Draft Mobility Screening Process as experiencing "congestion" (based on 2015 data). WSDOT uses traffic speed as the primary criteria to determine if a roadway segment is congested. The agency bases congestion thresholds on the facility type. See the Appendix for details on how WSDOT calculated congestion for the Corridor Sketch Initiative.

Environment Performance:

Environment is the work needed to ensure the conditions or assets associated with the highway support the existing or preferred environmental functions of that corridor. The environment focus provides context for partnership discussions outside of the typical transportation planning arena, and includes issues that often come up as part of a project's community engagement process. WSDOT identifies several features located on (or near) the corridor that provide on-going environmental function or benefit within the right-of way, or in the larger watershed or community context.

- **Fish Barriers** – WSDOT's inventory of culverts that are fish passable and non-passable is frequently updated. Of the total fish passage sites in the corridor, the percent passable indicates the need for protection and maintenance. The percent "to do" indicates the need for assessment and correction. More information is available on the project page for fish passages, and through WSDOT's Online Map Center on the *WSDOT – Uncorrected Fish Passage Barriers* layer.
- **Noise Walls** – Noise walls are free-standing barriers built parallel to a highway to reduce the impact of noise on nearby communities. These must be maintained. Areas within the corridor

that have been identified for noise reduction are indicated as a percent unresolved. More information on noise is available on the Noise FAQ.

- **Chronic Environmental Deficiencies (CED)** - CED sites are locations along the state highway system where recent, frequent, and chronic maintenance repairs to the state transportation system are causing impacts to aquatic environments. Sites that have been built/corrected are maintained. Proposed sites are on a list to be addressed as resources become available. More information is available on WSDOT's CED website.
- **Wildlife Connectivity** – "Number of structures in place" indicates that there are wildlife fences, under/over crossings, and/or warning signage in the corridor that must be maintained. Priority miles indicate areas where roadways intersect with important wildlife habitats, wildlife migration routes, lands under special management for the protection and enhancement of wildlife (like wildlife refuges), and areas with high animal vehicle collisions. More information is available on WSDOT's biology website.
- **Stormwater Treatment** – WSDOT identifies, prioritizes, and implements retrofit solutions to manage stormwater runoff from highways. WSDOT maintains "Best Management Practices" (BMPs) such as biofiltration swales and infiltration ponds that require on-going maintenance. The number of BMPs shown here are only those within 500 feet of the roadway – others may exist beyond that threshold. Highway segments that are prioritized for retrofit funding are being identified in coordination with federal, state, local and tribal partners. More information is available on WSDOT's stormwater monitoring website.
- **Climate Impacts** – WSDOT's statewide vulnerability assessment shows the potential climate risks on state-owned transportation assets. "Percentage of corridor with high potential" indicates that climate or extreme weather threats may worsen existing conditions through increased flooding, landslides, and drought/fire. Detailed information is available through WSDOT's Online Map Center on the *Climate Impact Vulnerability* layer.
- **Wetlands** – WSDOT is responsible to maintain and ensure performance of its wetland mitigation sites. Wetland mitigation locations indicate either a WSDOT-owned mitigation site or an area where WSDOT has established a shared wetland bank. More information is available on WSDOT's wetland website.
- **Historic Bridges** – WSDOT maintains an inventory of historic Washington State bridges. All bridges built before 1971 have been evaluated for eligibility for listing on the National Register of Historic Places. More information is available on WSDOT's historic bridges website.

What We Heard From Our Partners

WSDOT planners collected input from the agency's partners about their perspectives and priorities relative to each corridor. The agency summarized the key themes heard during partner engagement in this section to document the input and ensure it is used in subsequent steps of the planning and project development process.

Strategies

The third page of each summary includes information about the strategies WSDOT and its partners identified to keep things working well and address performance gaps on a corridor.

WSDOT identified strategies and associated actions to keep the corridor working well and to address performance gaps. WSDOT collaborated with partners on high-level mobility strategies. These strategies will serve to guide analysis of specific solutions later on in the planning process. The identified strategies are not meant to be all-inclusive, nor an established list of priorities. Further evaluation is needed before

any strategy can be recommended as a solution to address performance. Project funding decisions will take place at the programming phase and are subject to statewide prioritization.

The agency presents strategies grouped under the Legislature's six statewide policy goals for transportation. Strategies found on this summary are an abbreviated collection of a larger set of strategies.

Economic Vitality

Strategies for Economic vitality will be included at a later date. WSDOT is working both internally and with partners to identify performance measures and strategies that accurately reflect the transportation system's relationship to – and effect on – economic vitality.

Environmental

WSDOT aims to protect and enhance the environmental functions associated with highway corridors and the surrounding environment. WSDOT works to achieve this goal through a combination of strategies that include: retrofitting or replacing environmentally inadequate facilities or locations, promoting sustainable practices, protecting natural and cultural resources, and supporting long-term solutions that reduce pollution and hazards.

Mobility

WSDOT works to maintain the efficient flow of traffic through its corridors, utilizing a screening process to identify areas of congestion. Consistent with the Highway System Plan, the Corridor Sketch Initiative considers a corridor congested when it meets a threshold of congestion. Details on how congestion is calculated can be found in the Appendix.

WSDOT has identified six high-level strategies to guide its approach to addressing mobility performance including accepting current performance, operational improvement, travel demand management, local network improvements, policy changes, and further study. More detail on the performance gaps, root causes/contributing factors, and strategies can be found in the Mobility Assessment section.

Preservation

WSDOT strives to maintain the condition of its corridors in a state of good repair. WSDOT does this through a combination of strategies which include:

- **Maintenance** - The maintenance strategy includes the top three activity types based on historical expenditures for that maintenance area. WSDOT prioritizes maintenance work each biennium according to the Maintenance Priority Matrix.
- **Pavement** - The pavement strategy includes a description of the number of actions (and percent of the corridor affected) as identified by "P1 – Roadway Preservation" projects in the Six-Year Plan. Only projects with proposed completion on or after July 2017 are included. Actions and strategies for roadway preservation will be updated as part of the Asset Management Plan.
- **Structures** - The structures strategy includes a description of the number of actions (and percent of the corridor affected) as identified by "P2 – Structures Preservation" projects in the Six-Year Plan. Only projects with proposed completion on or after July 2017 are included. Actions and strategies for structures will be updated as part of the Asset Management Plan.
- **Other facilities** - The other facilities strategy includes a description of the number of actions (and percent of the corridor affected) as identified by "P3 – Other Facilities" projects in the Six-Year Plan. Only projects with proposed completion on or after July 2017 are included. Actions and strategies for other facilities will be updated as part of the Asset Management Plan.

Safety

WSDOT uses Target Zero to reduce and eliminate accidents that result in fatalities and serious injury along its corridors.

- **Investment** - This strategy includes a description of the number of actions (and percentage of the corridor affected) as identified by "I2 – Safety" projects in the Six-Year Plan. Only projects with proposed completion on or after July 2017 are included.

Stewardship

Under Practical Solutions, the Corridor Sketch Initiative identifies corridor performance and assesses alternative strategies to improve the quality, effectiveness, and efficiency of the transportation system.

Mobility Assessment

Summaries for corridors that WSDOT has identified as experiencing congestion regularly will include assessments for the specific congested corridor segments. This section will start on page four, and can be multiple pages long, as it may cover multiple congested segments. Topics include congested segment characteristics, contributing factors/root causes of the congestion, and potential strategies to address the performance gaps.

Parts within this section provide an overview of corridor segments with identified mobility performance gaps. Each mobility strategy section covers the major characteristics of the segment, the mobility performance gap and its root causes, and the proposed strategies for addressing performance gaps. Unless otherwise noted, information found in the mobility strategy sections resulted from WSDOT working with its partners in Multidisciplinary, Multimodal, Multi-agency (M3) teams. This M3 approach helps WSDOT ensure it is including the full range of possible strategies by leveraging knowledge from partners.

Corridor Segment Characteristics

This part provides a brief overview of the congested corridor segment characteristics, which can include: segment location, AADT for both cars and trucks, road capacity, number of signalized intersections, any major roads/highways or crossings, additional main corridor uses, and other modes available on the corridor.

Contributing Factors (or Root Causes)

This section outlines factors that may contribute to any identified mobility performance gaps.

Proposed Mobility Strategies

This part summarizes the list of mobility strategies provided by WSDOT Regions and M3 teams to address the identified mobility performance gaps. WSDOT will use these strategies as starting points for further analysis of specific solutions. It is important to note that each M3 team has a slightly different approach to identifying and defining each of the strategies below based on team members' professional experience. Mobility strategies used in the current iteration of the Corridor Sketch Initiative are:

- **Acceptance** refers to accepting a level of performance below the performance threshold. An M3 team may select this strategy because the benefits of potential strategies do not outweigh the cost of implementing potential solutions, and the performance is deemed acceptable by the M3 team.
- **Operational Improvements** refers to conceptual solutions that focus on improving traffic flow of the existing roadway, without major roadway modifications or expansion. More information on minor operational enhancements and technology improvements can be found on the TSMO Website.

- **Demand Management** refers to a set of conceptual solutions aimed at reducing the demand for roadway travel, particularly in single occupancy vehicles. These strategies address a wide range of externalities associated with driving, including congestion, poor air quality, less livable communities, reduced public health, dependence on oil, reduced environmental health, climate change, and greenhouse gas emissions. Some demand management strategies are designed to reduce total vehicle demand, while others are designed to reduce peak period demand, which may disproportionately contribute to these externalities. More information on travel demand management can be found on the TSMO Website.
- **Policy Change** can refer to a recommendation involving changes to roadway policy, policy designations, behavioral changes and education, land use modifications, or other abstract concepts affecting highway performance.
- **Local Roadway Improvements** refers to changes on the surrounding roadway network that will improve highway performance. For example, it could include completing an incomplete network or providing an alternative commuter route.
- **Further Study** can refer to gathering more information and further evaluating how strategic capacity changes could improve corridor performance. For example, this could result in a corridor planning study or a detailed traffic analysis. WSDOT employs this strategy when performance gaps cannot be addressed through the use of the other strategies listed above and for situations that are too complicated to be addressed through the Corridor Sketch Initiative.

It is important to note that based on professional experience, each M3 team has a slightly different approach to identifying and defining each of the strategies above.

Access to Additional Information

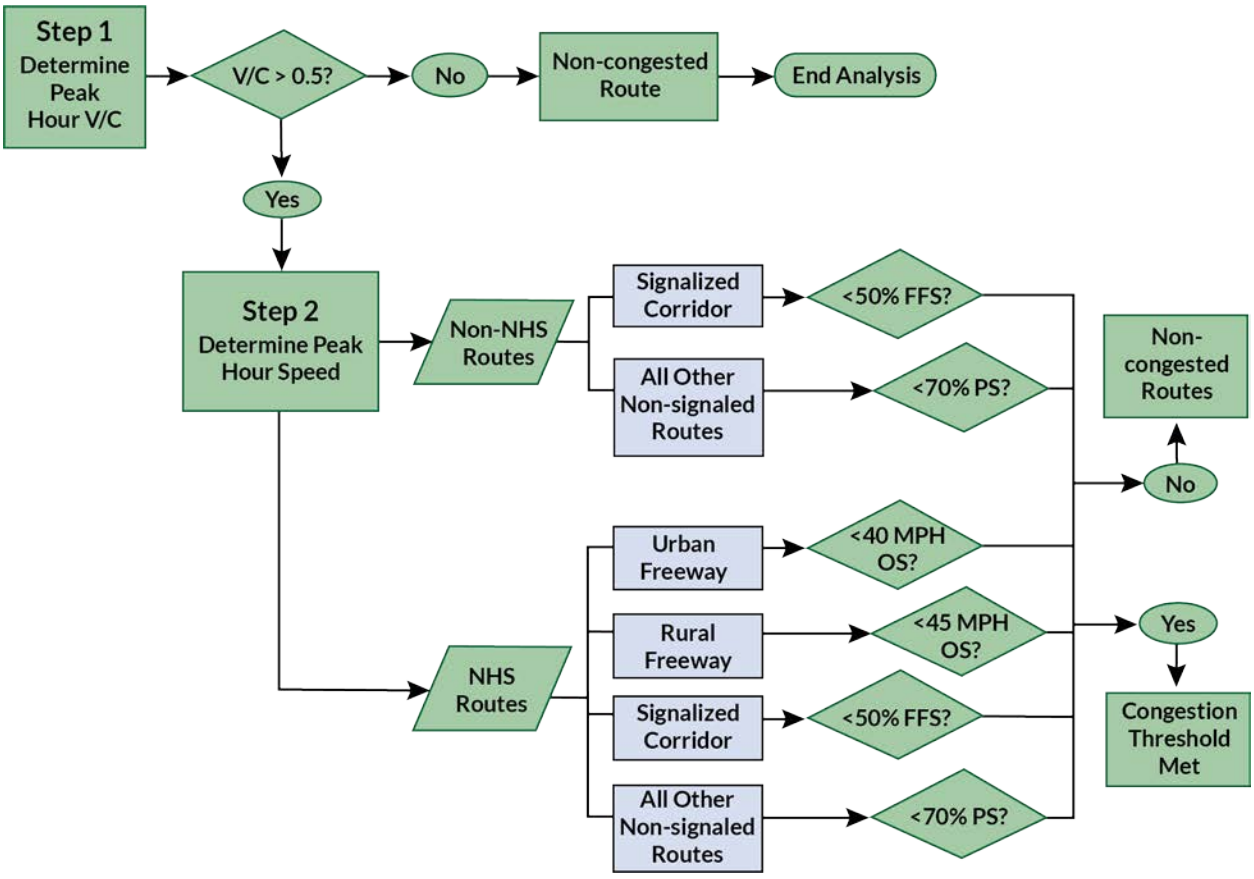
The last page of each summary provides points of contact for the corridor, and Americans with Disability Act and Title VI information.

Appendix

Congestion Methodology

The Corridor Sketch Initiative used a two-step process to identify congestion along the corridors. The first step filters out corridors with a volume to capacity ratio of less than 0.5, meaning traffic is less than 50 percent of what a roadway can handle. This eliminates segments operating below congested speed thresholds due to external factors such as steep slopes. The second step determines if a segment is operating below congested speeds based on the type of facility and other characteristics. WSDOT uses this step (Step 2 in the graphic below) to determine if a segment is congested. As noted, the threshold for congestion varies based on the type of highway being evaluated.

Congestion Thresholds for the Corridor Sketch Initiative



Legend:

- NHS = National highway System
- V/C = Volume-to-Capacity Ratio
- FFS = Free Flow Speed
- PS = Posted Speed
- OS = Operating Speed