



## Congestion and Transportation Safety Improvement Plan

# Historic Columbia River Highway Congestion and Transportation Safety Improvement Plan: Existing Conditions Executive Summary

The Historic Columbia River Highway is a National Historic Landmark, National Scenic Byway, and heavily used transportation corridor providing access to recreational opportunities in the Columbia River Gorge. The Historic Highway is a narrow and winding roadway, attracting tourists and recreation users to the many attractions within the designated National Scenic Area.

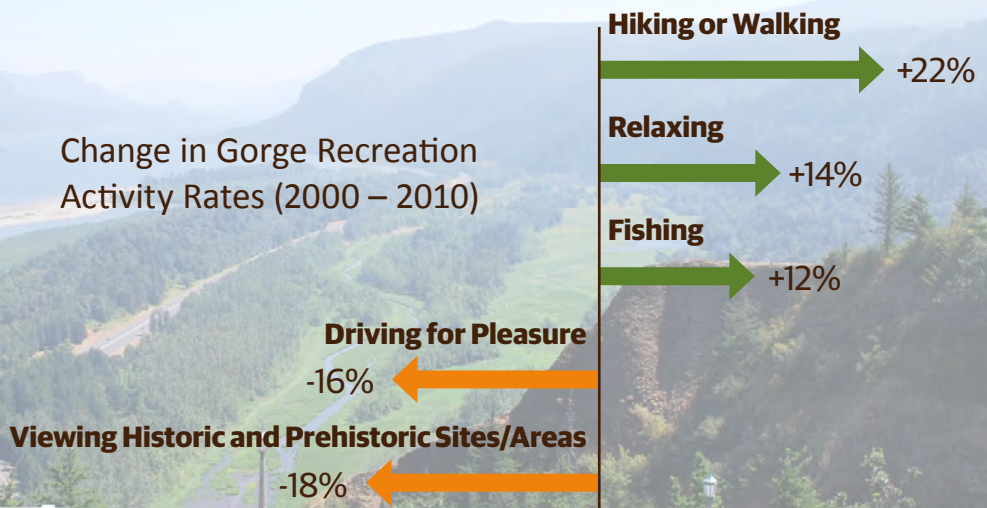
### Key issues:

- The Historic Highway has heavy congestion during summer weekends, impacting natural resources and degrading visitor experiences
- Vehicles, recreation trailers and campers, bicyclists, and pedestrians accessing trailheads from their parked vehicles often share a narrow, congested roadway space on the Highway
- Trailhead parking lots exceed capacity on summer weekends, leading to spillover and illegal parking on highway shoulders
- Congestion, limited sightlines and narrow shoulders create uncomfortable bicycling conditions on a popular scenic bike route



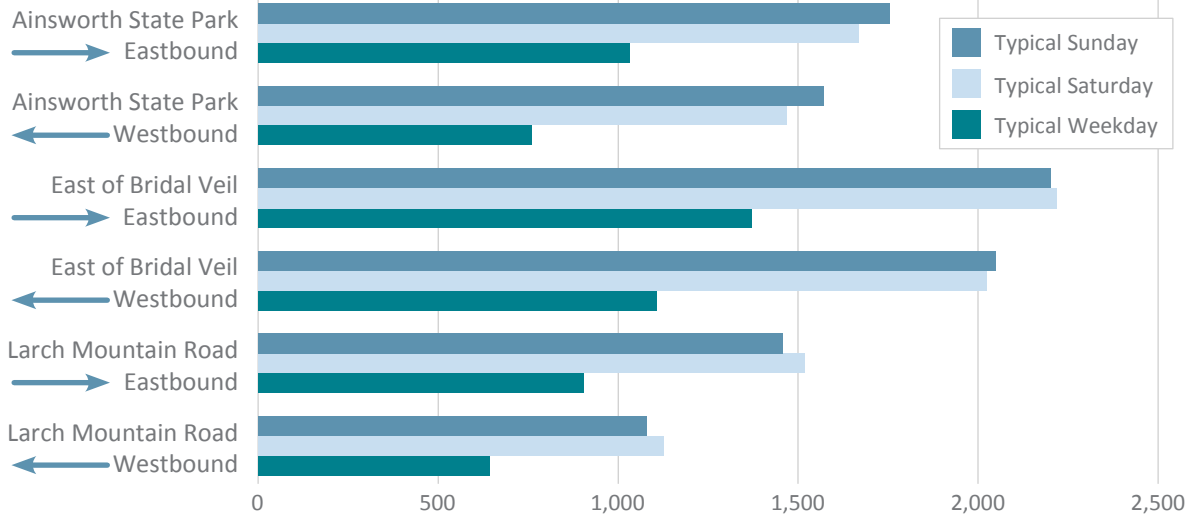
**Millions of tourists** and recreation users visit the area each year. **National Geographic Travel Magazine** lists the Gorge as the **6th best travel destination in the world.**

### Change in Gorge Recreation Activity Rates (2000 – 2010)

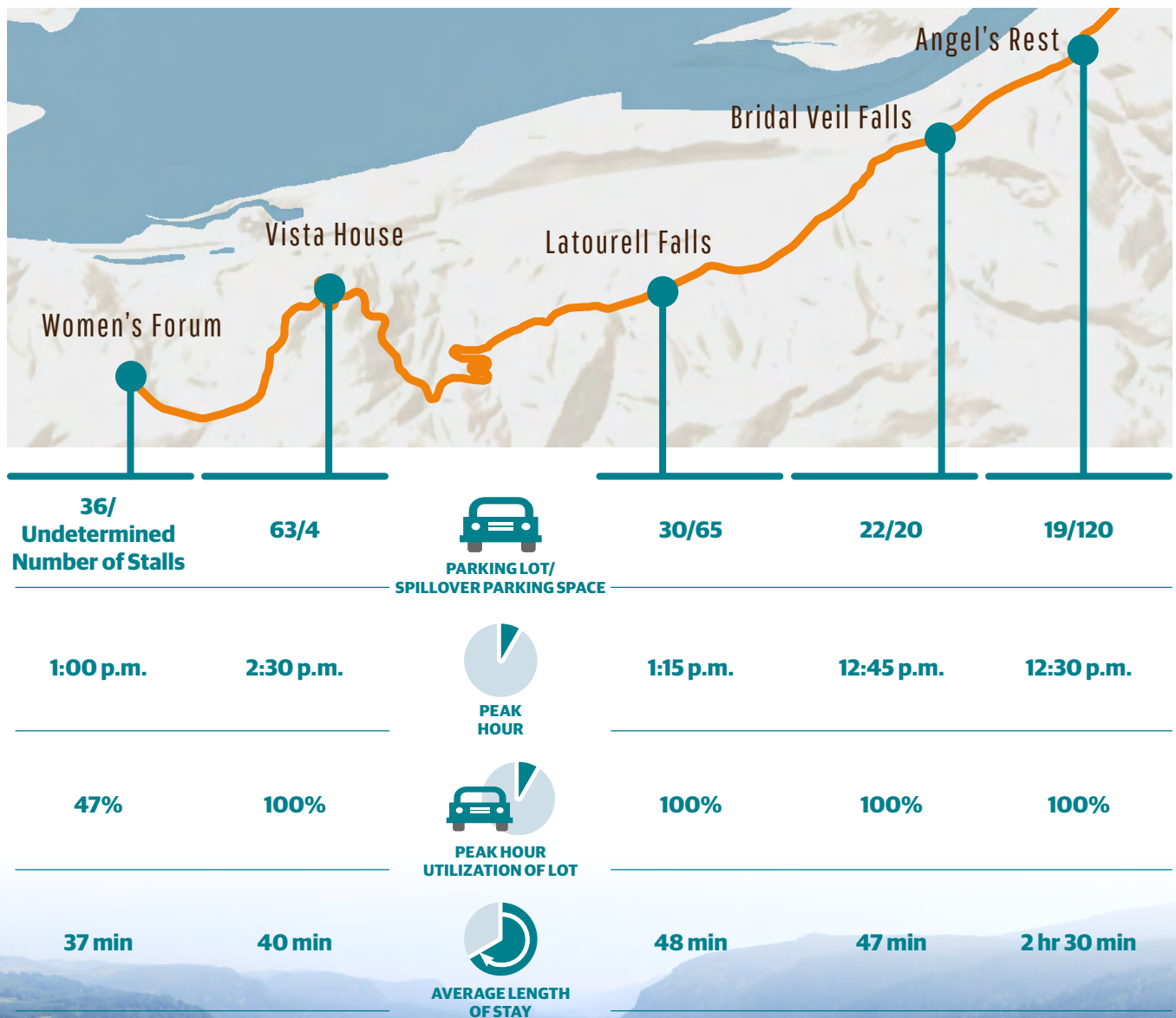


# HISTORIC COLUMBIA GORGE HIGHWAY

## Average Daily Vehicle Volumes



## Parking Along the Historic Highway





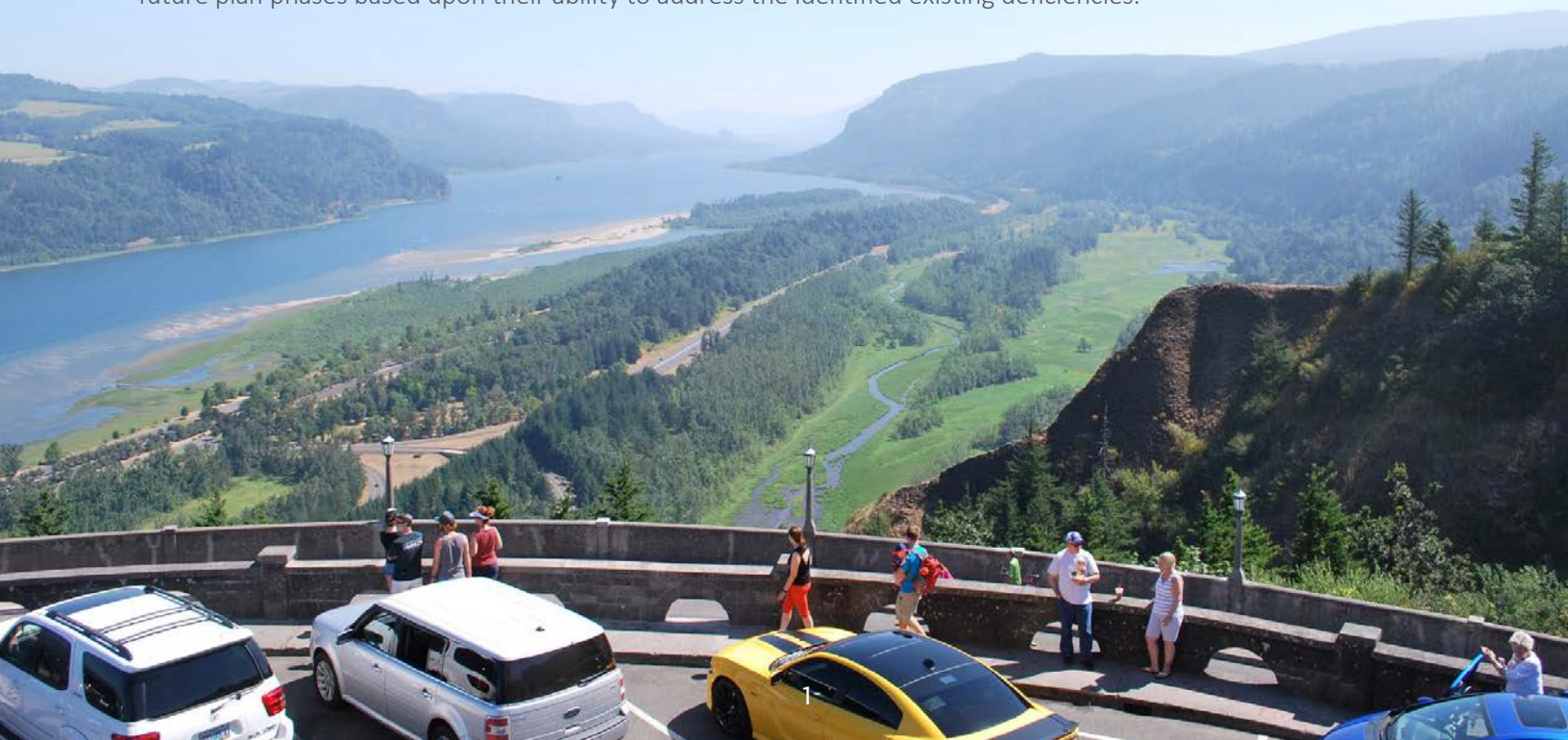
Congestion and  
Transportation Safety  
Improvement Plan

# Historic Columbia River Highway Congestion and Transportation Safety Improvement Plan: Existing Conditions

## Introduction

The Historic Columbia River Highway, also known as the Historic Highway, is a National Historic Landmark, National Scenic Byway, and heavily used recreation corridor providing access to rural communities and recreational opportunities in the Columbia River Gorge. The Historic Highway is a narrow and winding roadway, taking residents, tourists, cyclists and recreation users to its many attractions. On peak days, heavy traffic leads to congestion and safety concerns among shared roadway users. The Oregon Department of Transportation, U.S. Forest Service, the Oregon State Parks and Recreation Department, Multnomah County and the Federal Highway Administration came together to develop a plan for addressing these concerns. The Historic Highway Congestion and Transportation Improvement Plan will recommend potential congestion mitigation, safety solutions and implementation scenarios to preserve the historic, scenic, recreation access and cultural integrity of the corridor.

To provide a foundation for the Plan, this document analyzes existing conditions for vehicle, bicycle and transit travel. The document considers access and safety for pedestrians and vehicles accessing trailheads and scenic destinations. The report documents allowable land uses, zoning, the policy and regulatory environment governing the National Scenic Area, demographic impacts and recreational attractors and experiences in the Columbia River Gorge. Key deficiencies and challenges within the study area of the Historic Highway are distilled from the data collection and analysis detailed in this report. The team will evaluate congestion mitigation and safety tools in future plan phases based upon their ability to address the identified existing deficiencies.



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## Summary of Key Findings

- Millions of visitors recreate in the Columbia River Gorge annually and that number is expected to continue to grow each year, even after the 2017 fires. This growth will bring additional pressure to existing roadway and parking infrastructure.
- Residents living along the Historic Highway are impacted by congestion and illegal parking, particularly during peak summer months.
- A significant portion of visitors travel to the Columbia River Gorge to hike, visit historical sites, and view natural features. Surveys indicate that participation in recreational activities will continue to grow in future years.
- Visitors largely report positive experiences while visiting the Gorge, and survey respondents who visited the Columbia River Gorge in the last year were more likely to say they would return to the Gorge in the next year (91 percent). Some visitors cited transportation-related barriers to visiting the Gorge, including crowding (19 percent) and lack of public transportation options (6 percent).
- Based upon ODOT traffic counters, traffic along the Historic Highway grew nearly 50 percent in the past ten years, with much of the growth occurring since 2013.
- Historic vehicle counts show a clear peak in travel demand along the Historic Highway in the summer months, with daily traffic volumes three-to-four times higher than winter months, and around twice as high as spring and fall months.
- A significant majority of the slowing on the Historic Highway occurs in the segment east of Bridal Veil Road where vehicles access the Historic Highway from I-84. The most significant slowing occurs on weekend summer days, peaking around noon eastbound and 3 p.m. westbound, when average travel speeds through the segment fall to around 40 percent of typical free-flow speeds.
- Vehicle slowing is consistent with gate activity at the I-84/Multnomah Falls parking lot. The first closure occurs around 10 a.m. on weekend summer days, and is closed for the majority of the day until around 5 p.m.
- The highest traffic volumes are east of Bridal Veil Road. All the locations where traffic volumes were collected show higher overall eastbound daily volumes compared to westbound, with a significant difference at the westernmost count location, Larch Mountain Road. This suggests a preference for drivers from the Portland metro area to use the Historic Highway to access the falls area, but use I-84 for the return trip.
- Bicycle volumes on the Historic Highway are significantly higher at the Portland Women’s Forum than at Multnomah Falls, particularly on weekend days. The highest eastbound volumes are in the morning and westbound volumes are spread more evenly throughout the afternoon.
- There are a significant number of people walking at Multnomah Falls throughout the day, particularly on weekend days. The number of people crossing the Historic Highway on foot from the parking lot to access Multnomah Falls neared or exceeded 1,000 per hour, even during the least busy observation hour (9-10 a.m.).
- There were 31 crashes in the Study Area of the Historic Highway between 2011 and 2015; two of the crashes resulted in serious injury and one crash, involving a fixed object, resulted in a fatality.





# Study Corridor Context

## History of Area / Historic Highway

The Historic Highway is America’s first scenic highway and a National Historic Landmark. The highway follows the south side of the Columbia River Gorge, and is set into walls of basalt and lined with waterfalls. The iconic highway is the legacy of Samuel Hill, a railroad lawyer who advocated for the good roads movement, and engineer Samuel Lancaster, who designed a modern road with grade and curvature standards and also sensitive to the surrounding landscape. The roadway was built between 1913 and 1922 and the Multnomah County segment of the road was dedicated in 1916. Early destinations included the Vista House, dedicated in 1918, and the historic Multnomah Falls Lodge, opened in July 1925. The highway was designed to naturally follow the mountainside topography, creating a windy highway that hugs the cliffs and passes by the base of several falls, including Latourell, Shepperd’s Dell, Bridal Veil, Wahkeena, Horsetail and Multnomah.



*The Historic Highway was designed to lay lightly on the land and take advantage of the majestic views*

After I-84 was built, eastern portions of the Historic Highway were cut into pieces or partially destroyed. Segments of the abandoned roadway have been transformed into a vehicle free-path for pedestrians and cyclists called the Historic Columbia River Highway State Trail. Many cyclists use the Historic Highway in the Waterfall Zone segment, also open to cars, to access the Historic Columbia River Highway State Trail farther east.

## Study Area

The study area for the Congestion and Transportation Safety Improvement Plan is on the Historic Highway from the Portland Women’s Forum at the western end to Exit 35 at the eastern end where the Historic Highway meets I-84 (MP 8.4 - 21.7). The segment is known as the Waterfall Zone. The study area includes the roadway and adjacent parking lots. The study area includes the following trip attractors:

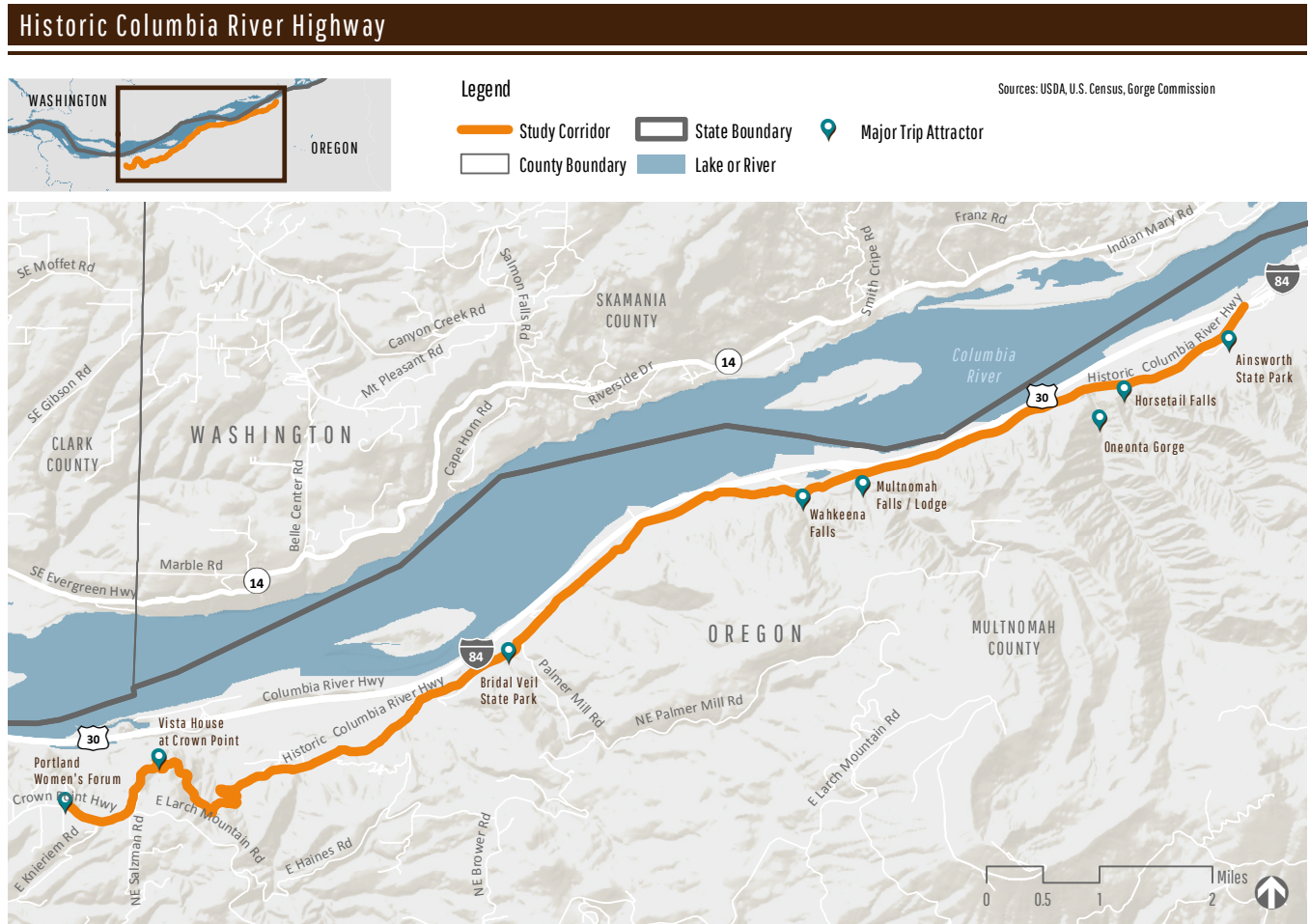
- Portland Women’s Forum
- Vista House at Crown Point
- Bridal Veil Falls State Scenic Viewpoint
- Wahkeena Falls
- Multnomah Falls/Lodge
- Horsetail Falls
- Oneonta Gorge
- Ainsworth State Park



*Vista House was the first built attraction on the Historic Highway, opening in 1918 as a memorial to the Oregon Pioneers*

# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 1. Map of Study Area



## Growth Trends in the Study Area

### Growth projections for the Portland Metropolitan Area, Multnomah County and Hood River County

The Portland metro region and Hood River County, at the west and east ends of the study area respectively, are forecast to grow substantially by 2040 (Table 1). The Portland metro region (the tri-county region of Multnomah, Washington, and Clackamas counties) population is estimated to grow by one-third, or 600,000 people – nearly the population of the City of Portland today. Multnomah County, part of the metro region, is similarly forecast to grow at about the same rate. Hood River County, which has a relatively smaller population, is anticipated to grow by about 10,000 people, or a 41 percent increase over 2015.

Table 1. Population Trends in the Study Area

	2015 Population	2040 Population Estimate <sup>1, 2</sup>	Population Change, 2015-2040
Tri-County (Multnomah, Washington, Clackamas)	1,763,300	2,358,000	+33 percent
Multnomah County	790,300	1,069,000	+35 percent
Hood River County	23,700	33,530	+41 percent

### Growth projections for recreation use

In 2014, a diverse interagency team from Oregon and Washington, along with federal and tribal partners released their latest report on recreation trends in the Columbia River Gorge National Scenic Area.<sup>3</sup> This report details key trends and findings related to recreational use and demand in the Gorge. Table 2 shows the observed change in activity participation, as determined from surveys of recreation users. Key findings, based on surveys of agency managers and users, include:

- Activities with increases in participation since the year 2000 include: fishing, trail running, kite boarding, hiking, dog-walking, white water rafting, and road biking.
- Nearly 72 percent of all Gorge visitors participate in hiking or walking.
- Recreation managers have observed an increased demand for recreation opportunities since 2004.
- During the summer, recreation managers report that about one-third of all developed recreation sites are at 80-100 percent capacity, with about two-thirds at 40-70 percent capacity in the fall and spring.

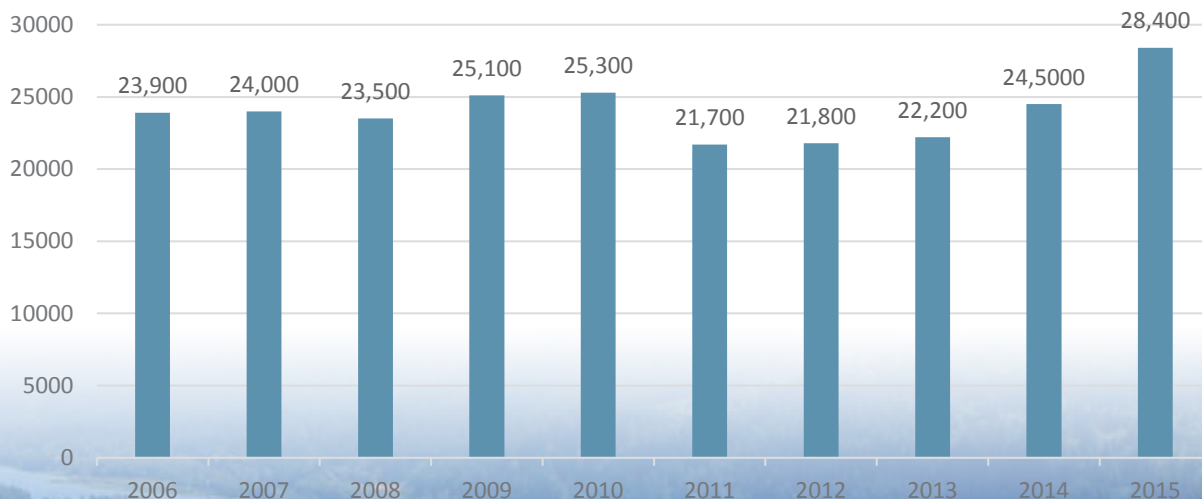
**Table 2. Change in Gorge Recreation Activity Participation (2000 – 2010)<sup>4</sup>**

Activity	Percent change (2000-2010)
Hiking or walking	+22 percent
Relaxing	+14 percent
Fishing	+12 percent
Driving for pleasure	-16 percent
Viewing historic and prehistoric sites/areas	-18 percent

### Travel growth and automatic traffic recorder (“ATR”) data trends

Vehicle traffic has grown steadily on I-84 and on the Historic Highway within the study area. Traffic trends on both roads are very similar, as measured by ATRs located on both facilities. Traffic volumes were relatively steady from 2006 to 2010, followed by a slight decline in 2011, 2012, and 2013. This mirrors an overall decrease in travel observed nationally during and after the recession of 2007 to 2009, and an increase in fuel prices in 2011. Since 2013, traffic on both state highways has increased, with about 6,000 additional vehicles per day on I-84 west of Multnomah Falls and about 250 additional vehicles per day on the Historic Highway from 2013 to 2015. The change represents approximately 25 percent growth in traffic on both facilities in just three years, potentially fueled by population growth, tourism campaigns and low gas prices. The 2017 fires may impact traffic volumes due to roadway and recreation site closures in the short-term. However, long-term growth is expected to continue due to population growth and the increasing desire of tourist to come to Oregon.

**Figure 2. Change in Average Annual Daily Traffic on I-84**

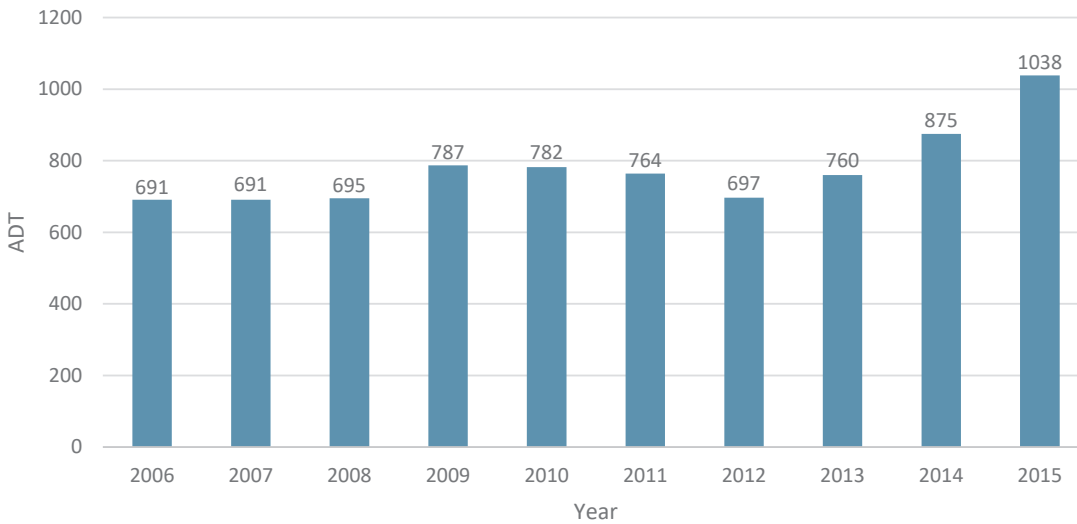


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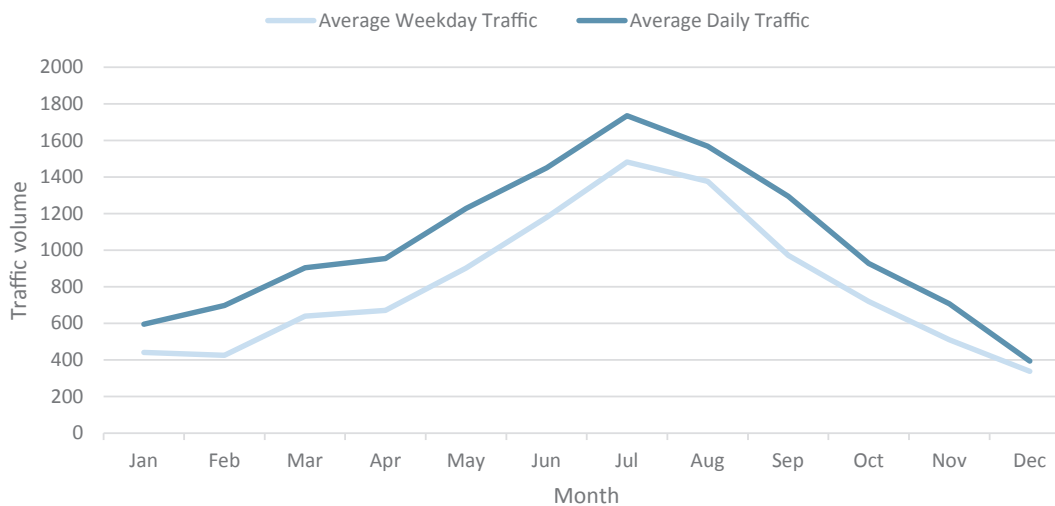
The figures below help illustrate general travel trends over the last ten years and over the course of a typical year within the study area. Table 4 shows the average daily traffic for each of the ten most recent years for which data is available (2006 through 2015) at the Bridal Veil automatic traffic recorder, just west of Bridal Veil Falls. As shown, daily traffic levels have risen from just under 700 vehicles per day (total in both directions) to over 1,000 in 2015. – a nearly 50 percent increase. Most of the growth occurred in 2014 and 2015.

The next table shows how traffic volumes varied over the course of the most recent available year of data (2015). Average daily traffic reached as high as nearly 1,800 vehicles per day in the summer, while winter months had volumes as low as 400 vehicles per day – around a 75 percent decline. Some of the variation can be attributed to weather conditions, but the data clearly reflect high summer travel demand for Gorge attractions.

**Figure 3. Change in Average Daily Traffic on the Historic Highway (2006-2015)**



**Figure 4. Seasonal Traffic by Month on the Historic Highway (2015)**



# Policy and Regulatory Environment

The Columbia River Gorge National Scenic Area Management Plan, known as the Management Plan, provides overarching policy and guidelines for management and development of the National Scenic Area. The Management Plan is a bi-state agreement actively managed by the Columbia River Gorge Commission.

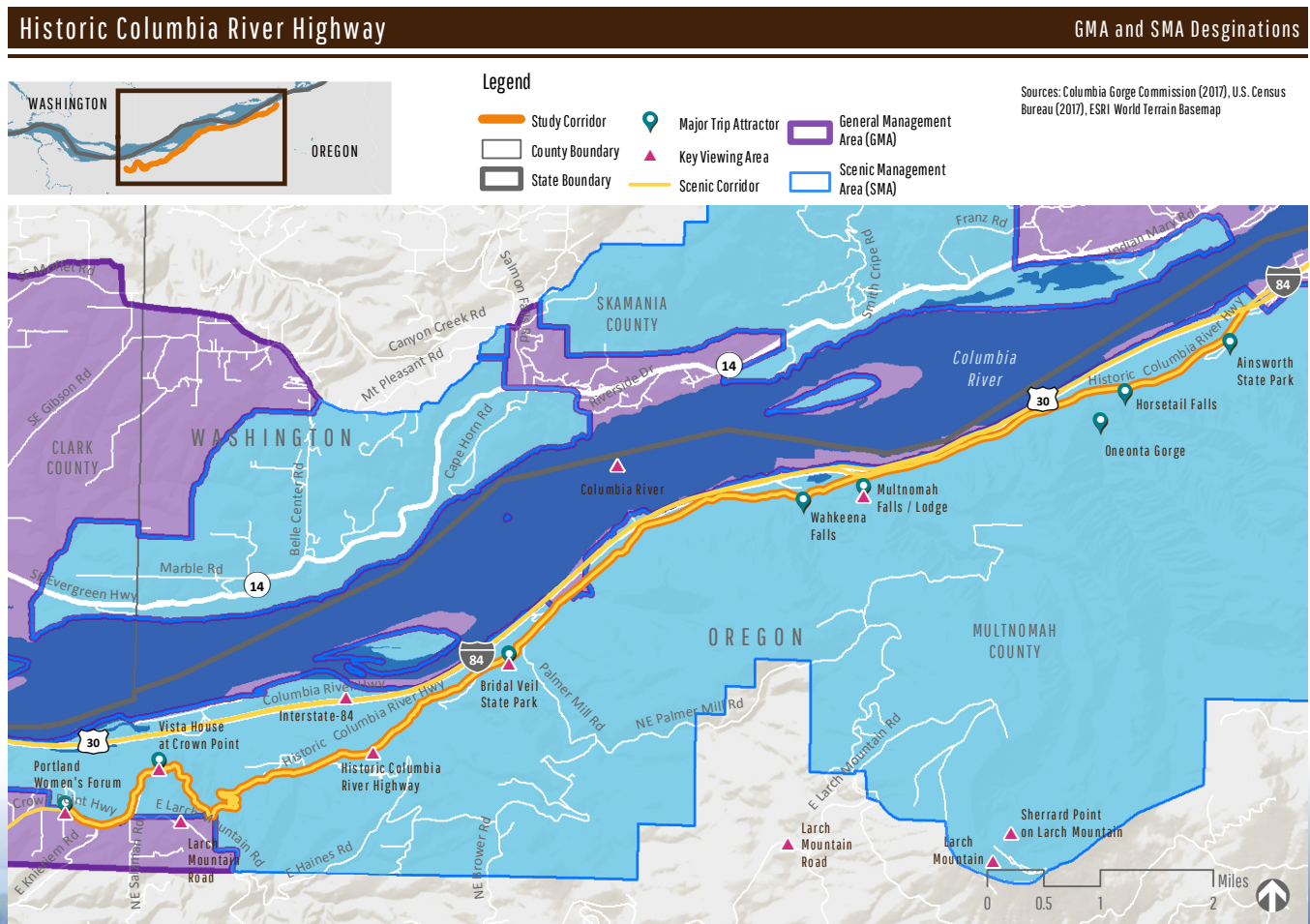
## Land Use

The Management Plan regulates development in the National Scenic Area. The role of the National Scenic Area is to protect and provide for the enhancement of the scenic, natural, cultural, and recreation resources of the Columbia River Gorge. Counties within the NSA and the Gorge Commission grant land use approvals jointly according to uses outlined the Management Plan. Land use categories include uses allowed outright, requiring expedited review or requiring full scenic area review.

The NSA includes general management areas, special management areas, and urban areas. NSA land use regulations exempt Urban areas from regulations that apply to the general and special management areas. The USFS is the principal land owner for special management areas, whose uses are more restricted than designated general management areas.

NSA regulations aim to protect scenic, cultural, natural and recreational resources within the Management Areas. Sites and corridors of visual significance are identified as key viewing areas and scenic corridors protected by scenic regulations. The Management Plan defines key viewing areas as portions of important public roads, parks or other vantage points where the public views scenic landscapes. There are 22 designated key viewing areas within the NSA on both the Washington and Oregon sides of the Columbia River.

Figure 5. Map of General Management and Special Management Area Designations in the Columbia River Gorge

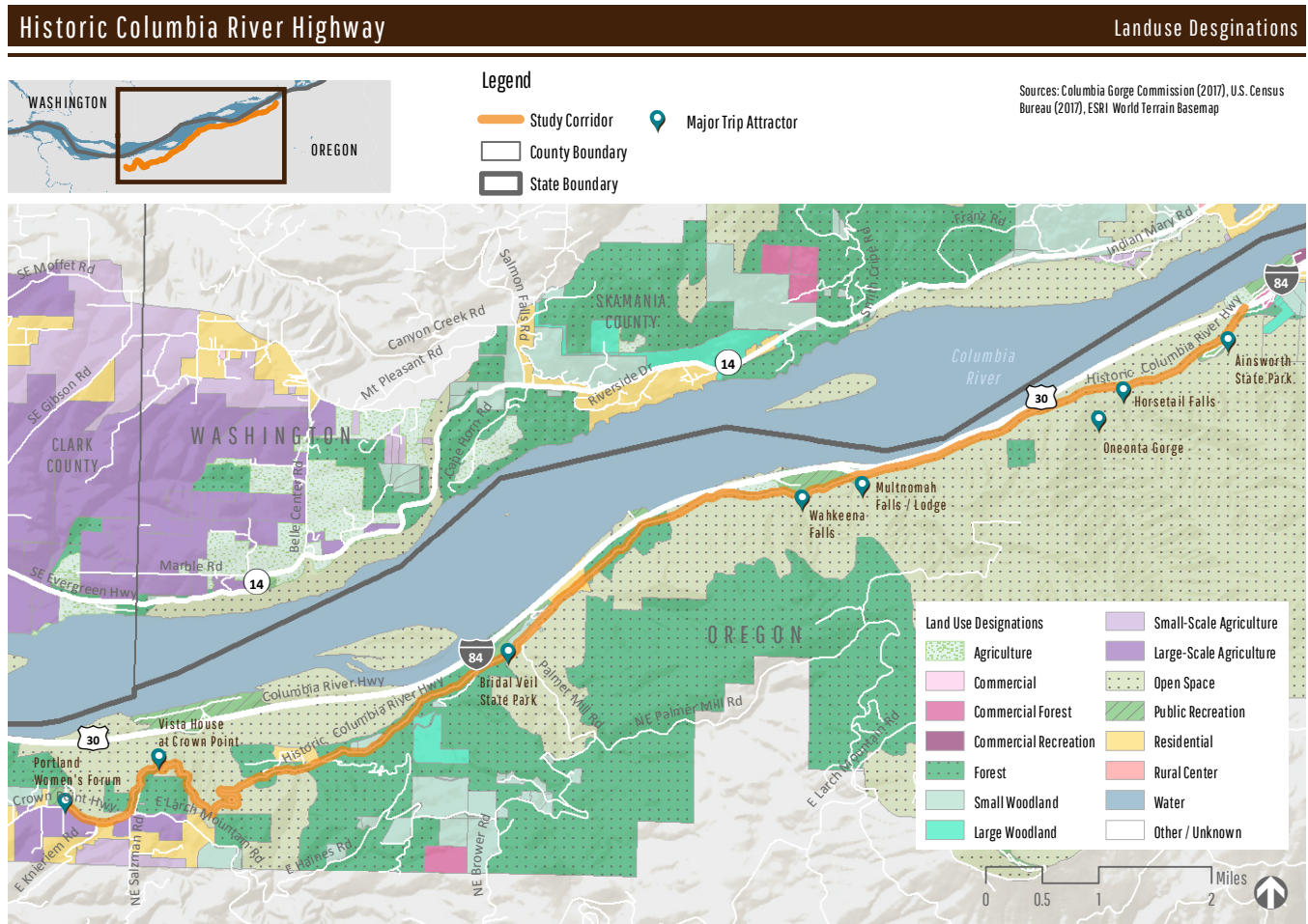


## HISTORIC COLUMBIA GORGE HIGHWAY

Land use approvals in the NSA include a detailed process and must meet regulations for scenic, natural, cultural, and recreation resources. Scenic resource regulations require built structures to preserve key viewing areas.

The western edge of the study corridor contains a general management area designation, but otherwise the study area for this plan is located within an special management area, requiring the USFS and the Counties to work in partnership for the application of the Management Plan (Figure 6). general management area land use designations along the corridor consist of Large-Scale Agriculture, Open Space, and Residential with special management area designations of Forest, Open Space, Public Recreation, and Residential.

**Figure 6. Map of Land Uses in the Columbia River Gorge**



**Table 3. Study Corridor Land Use Designations**

Management Area	Land Use Designation	Key Viewing Areas/Scenic Corridors
General Management Area	Large Scale Agricultural	<ul style="list-style-type: none"> <li>Historic Columbia River Highway</li> <li>Portland Women’s Forum</li> <li>Crown Point (Vista House)</li> <li>I-84</li> </ul>
	Open Space	
	Residential	
Special Management Area	Forest	<ul style="list-style-type: none"> <li>Multnomah Falls</li> <li>Bridal Veil Falls State Scenic Viewpoint</li> <li>Larch Mountain Road</li> <li>Larch Mountain</li> <li>The Columbia River</li> <li>Sherrard Point on Larch Mountain</li> </ul>
	Open Space	
	Public Recreation	
	Residential	

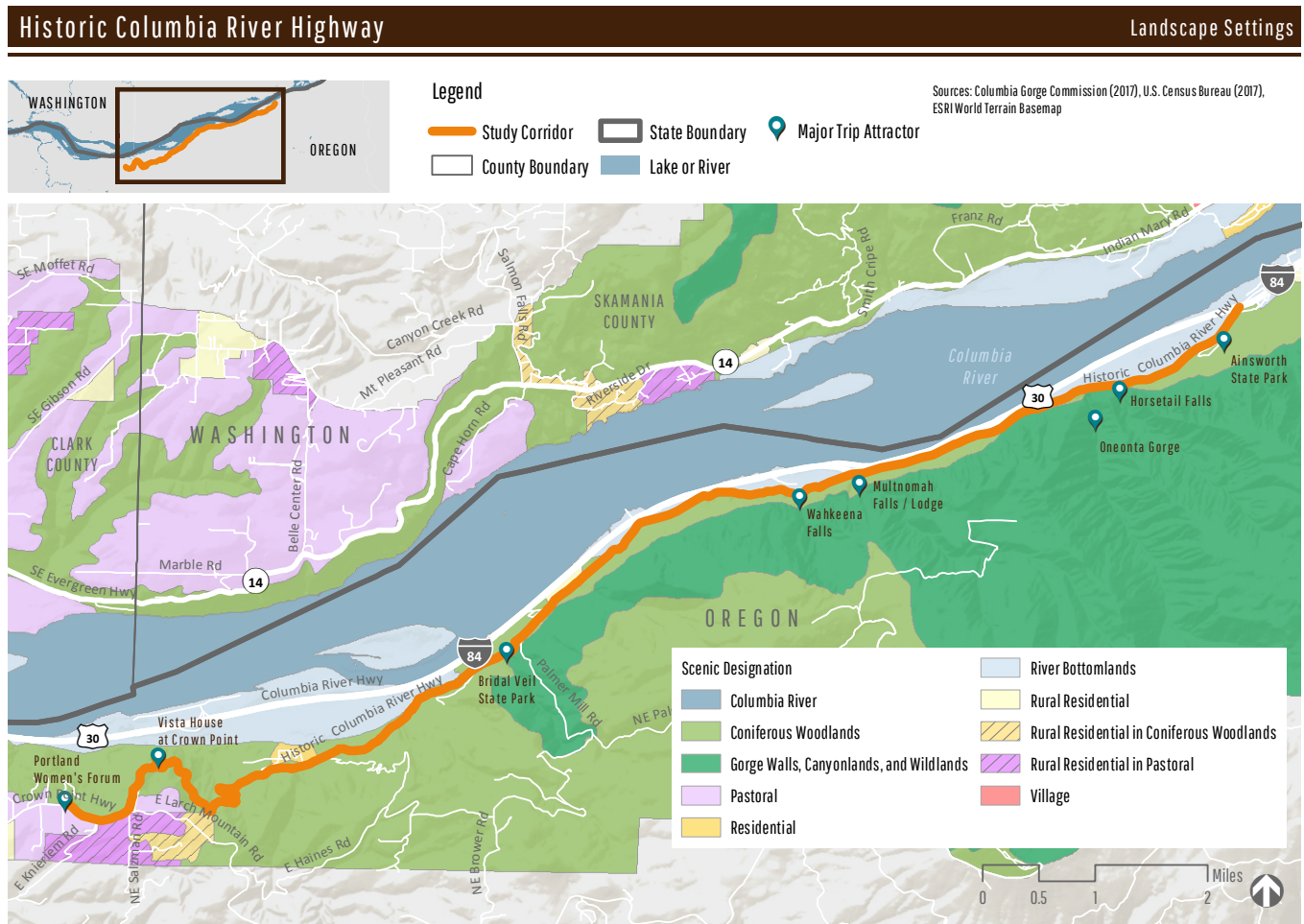


# HISTORIC COLUMBIA GORGE HIGHWAY

## Landscape Settings

Landscape settings describe the area’s naturally occurring landscapes and are defined in the Management Plan as “the combination of land use, landform, and vegetation patterns that distinguish an area in appearance and character from other portions of the Scenic Area.” Four distinct landscape settings are located along the study corridor. The majority of the corridor is located in the coniferous woodlands landscape setting with pastoral, residential, and gorge walls, canyonlands, and wildlands in smaller areas (Figure 8).

Figure 8. Map of Landscape Settings Located On and Near Study Corridor





# CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

**Table 4. Study Corridor Land Uses Allowed Outright**

Management Area	Goal	Land Uses Allowed Outright	
<b>Agriculture</b>			
General Management Areas	Protect and enhance agricultural land for agricultural uses.	<ul style="list-style-type: none"> <li>• Agricultural uses</li> <li>• Forest practices</li> <li>• Repair, maintenance and operation of existing structures</li> <li>• Accessory structures</li> <li>• Small wire-strand or woven-wire fences (posts and wire), brown or black if visible from key viewing areas.</li> <li>• Small wire-strand fences outside of deer and elk winter range as delineated in the Gorge Commission/USDA Forest Service natural resource inventories</li> <li>• Guardrails, access control fences and gates, barriers, energy attenuators, safety cables, traffic signals and controllers, traffic detection devices, vehicle weighing devices, and signal boxes</li> <li>• Pavement markers, guide posts, object markers, inlay markers, and pavement markings and striping</li> <li>• Regulatory, guide, and warning signs</li> <li>• Culverts</li> <li>• Small bridges (e.g., decks, beams)</li> <li>• Underground utilities</li> <li>• Aboveground and overhead utilities (towers, pole/tower-mounted equipment, cables and wires, anchors, padmounted equipment, service boxes, pumps, valves, pipes, water meters, and fire hydrants)</li> <li>• Whip antennas, cables, wires, transformers, and other similar equipment</li> <li>• Flagpoles</li> <li>• Signs related to elections, “For Sale”, construction, public service company, safety, or informational private property warning the public against trespassing, danger from animals, the private nature of a road, driveway or premise, or signs prohibiting or otherwise controlling fishing or hunting, signs advertising civil, social, or political gatherings and activities</li> <li>• Wind machines for frost control in conjunction with agricultural use</li> </ul>	
<b>Forest Land</b>			
Special Management Areas	Protect and enhance forest lands for forest uses.		
<b>Residential Land</b>			
General Management Areas	<ol style="list-style-type: none"> <li>1. Protect and enhance the character of existing residential areas.</li> <li>2. Ensure that residential development outside Urban Areas does not adversely affect scenic, cultural, natural, or recreation resources.</li> <li>3. When designating lands for residential use, consider their physical characteristics and their geographic proximity to transportation, commercial facilities, and other amenities.</li> </ol>		
Special Management Areas	Allow concentrated residential development only at Rowena Dell and Latourell.		
<b>Public Recreation</b>			
Special Management Areas	Protect and enhance lands that are suitable for public recreation.		

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Management Area	Goal	Land Uses Allowed Outright
<b>Open Space</b>		
General Management Areas	Protect those most significant and sensitive scenic, cultural, natural, and recreation resources on unimproved lands from conflicting uses and enhance them where appropriate.	<ul style="list-style-type: none"> <li>• Existing structures</li> <li>• Safety or protective structures (guardrails, access control fences and gates, barriers, energy attenuators, safety cables, and traffic signals and controllers)</li> <li>• Traffic detection devices, vehicle weighing devices, and signal boxes</li> <li>• Raised pavement markers, guide posts, object markers, inlay markers, and pavement markings and striping</li> <li>• Guardrails</li> <li>• Small bridges (e.g., decks, beams)</li> <li>• Underground utilities</li> <li>• Aboveground and overhead utility facilities (towers, pole/tower-mounted equipment, cables and wires, anchors, padmounted equipment, service boxes, pumps, valves, pipes, water meters, and fire hydrants)</li> <li>• Utility poles</li> <li>• Whip antennas (cables, wires, transformers, and other similar equipment)</li> <li>• Signs related to elections, “For Sale”, construction, public service company, safety, or informational private property warning the public against trespassing, danger from animals, the private nature of a road, driveway or premise, or signs prohibiting or otherwise controlling fishing or hunting, signs advertising civil, social, or political gatherings and activities, and regulatory, guide, and warning signs</li> </ul>
Special Management Areas	Protect and enhance open space values.	

## Policy and Regulations Related to Transportation Facilities

The Management Plan further designates policies and provisions related to development for four “recreation intensity classes” in General Management Area and Special Management Area lands. Parking provisions for each recreation intensity class are described in Table 5.

**Table 5. Special Management Area and General Management Area Parking Provisions<sup>5</sup>**

	Class 1 (Very Low Intensity)	Class 2 (Low Intensity)	Class 3 (Moderate Intensity)	Class 4 (High Intensity)
General Management Areas Lands	<ul style="list-style-type: none"> <li>• Parking for max of 10 cars</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 25 cars</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 75 cars</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 250 cars</li> <li>• Mass transit accommodation is required (e.g., bus parking)</li> </ul>
Special Management Areas Lands	<ul style="list-style-type: none"> <li>• Parking for max of 10 cars</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 25 cars</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 50 cars</li> <li>• Mass transit accommodation is required (e.g., bus parking)</li> </ul>	<ul style="list-style-type: none"> <li>• Parking for max of 200 cars</li> <li>• Parking for up to 250 cars may be provided with enhanced mitigation</li> <li>• Mass transit accommodation is required (e.g., bus parking)</li> </ul>

Other parking requirements included in the Columbia River Gorge Natural Area include:

- Parking areas must be designed to fit existing topography to the extent possible;
- Parking areas over 50 spaces must be divided into discrete, landscaped parking islands;
- Landscape buffers are required, with a greater buffer for larger parking lots;
- Parking areas must be set back from the Columbia River and major tributaries by at least 100 feet;
- Vehicles must display a winter recreational pass in parking areas between November 15th and April 30th where designated by the Oregon Transportation Commission.

Additional relevant transportation policies and provisions include:

- Alternate forms of transportation, such as transit, are strongly encouraged;
- New development and reconstruction of scenic routes must include provisions for bicycle lanes.

Finally, the Management Plan does not contain any policies or provisions explicitly addressing parking pricing or pricing generally.

### Other applicable laws/statutes

The Oregon Constitution does not contain any provisions that would explicitly prohibit development of transportation facilities within the Columbia River Gorge, nor does state law. Section 3A of the Oregon Constitution requires that revenue from tax levied on campers, motor homes, travel trailers, snowmobiles, or like vehicles, may be used for the acquisition, development, maintenance or care of parks or recreation areas.

ORS 390.124 allows the Oregon Transportation Commission to adopt rules to assess reasonable charges for the use of areas established and maintained by the department. OPRD, Division 15, 736-015-0030 allows the parks director to enact a motor vehicle day use parking permit at selected park areas to manage park use. This charge is a parking fee and is currently required at Viento State Park, Benson State Recreation Area, Dabney State Recreation Area, Historic Columbia River Highway State Trail, Mayer State Park and Rooster Rock State Park (each location is in the Columbia River Gorge but outside this Plan's study area).

Oregon House Bill 2017 (HB 2017), passed and signed into law in mid-2017, requires the development of a traffic congestion relief program that includes "value pricing," or congestion pricing, to generate revenue and reduce highway congestion.<sup>6</sup> The law requires development of value pricing on the Interstate 5 and 205 corridors in the Portland metro area, but also allows the Oregon Transportation Commission to implement value pricing in other areas of the state. Though rulemaking is still underway as of this writing, and FHWA approval of the program is required, HB 2017 could provide the legal authority to establish value pricing programs in the Columbia River Gorge.



*Parking lot at Bridal Veil Falls*

## Recreational Context

The Columbia River Gorge is a popular destination for tourists and residents of the Portland/Vancouver metropolitan areas and communities in the Gorge. Millions of recreationalists visit the area annually as it has become a national and international tourist destination.<sup>7</sup> National Geographic Travel Magazine lists the Gorge as the top rated travel destinations in the world for destination stewardship. Recreation and tourism in the Gorge is expected to continue growing as metro area populations expand and tourism campaigns continue to raise the profile of the region. National trends also indicate that participating in outdoor recreation activities is a growing trend across most age groups.



*Views of the Columbia River*

In the Pacific Northwest, participation rates in outdoor activities is higher than in other parts of the country. About half of Oregon and Washington residents participate in outdoor recreation. The top recreation activities for Oregonians<sup>8</sup> were: walking, picnicking, sightseeing, visiting historic sites, ocean beach activities, day hiking, and nature/wildlife observation. The primary recreation activities in the Columbia River Gorge are hiking, park day-use/ historic site seeing, and overnight camping.

### Recreational Intensity Classes

The Gorge Commission designates recreational intensity classes for all General Management Areas. The recreational intensity classes act as an overlay to the underlying land use; indicating suitability for existing and future public recreational uses. There are four recreational intensity classes within the study area:<sup>8</sup>

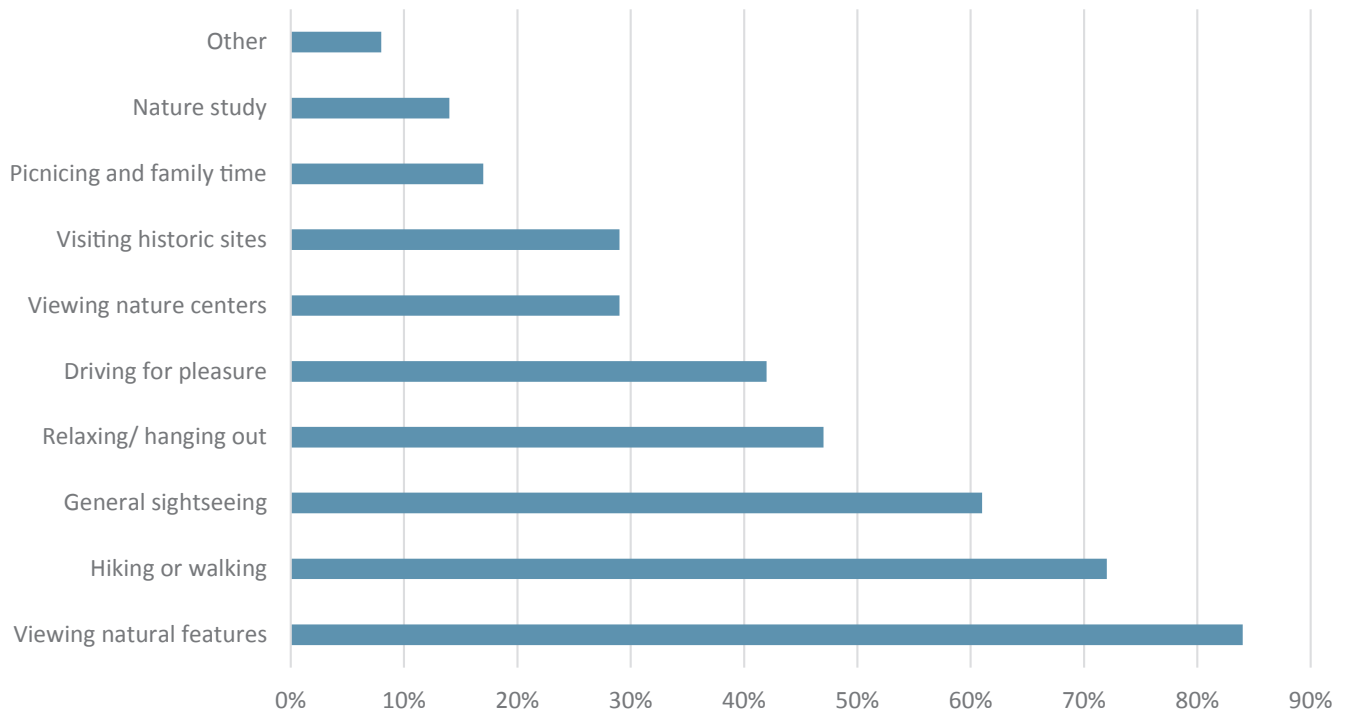
1. Class 1 (very low intensity) allowable uses – small parking lots, trails and paths, scenic views, signs, boat ramps, and picnic areas.
2. Class 2 (low intensity) allowable uses – Class 1 uses and parking lots up to 25 spaces, tent site campgrounds, and larger signs and boat ramps.
3. Class 3 (moderate intensity) allowable uses – Classes 1 – 2 and parking for up to 75 spaces, interpretive facilities, concession stands, and campgrounds for tents and recreational vehicles.
4. Class 4 (high intensity) allowable uses – Classes 1 – 3 and horse stables, and larger campgrounds and boat ramps.

## Visitor Experience

Each year, a multitude of visitors and residents come to the Columbia Gorge to experience the scenic beauty and recreational activities. A Columbia River Gorge National Scenic Area Recreation study in 2013<sup>9</sup> found that the top reason people visited the National Scenic Area was to do the outdoor activities they enjoy (approximately 45 percent), followed by the response “because I enjoy the place itself” (approximately 23 percent). The most popular activities in the Gorge were viewing natural features, followed by hiking or walking. About half of Gorge visitors traveled less than 50 miles (53 percent), while 25 percent traveled more than 500 miles. An on-board survey of Gorge Express riders found that approximately 70 percent live out of state or outside of the country.

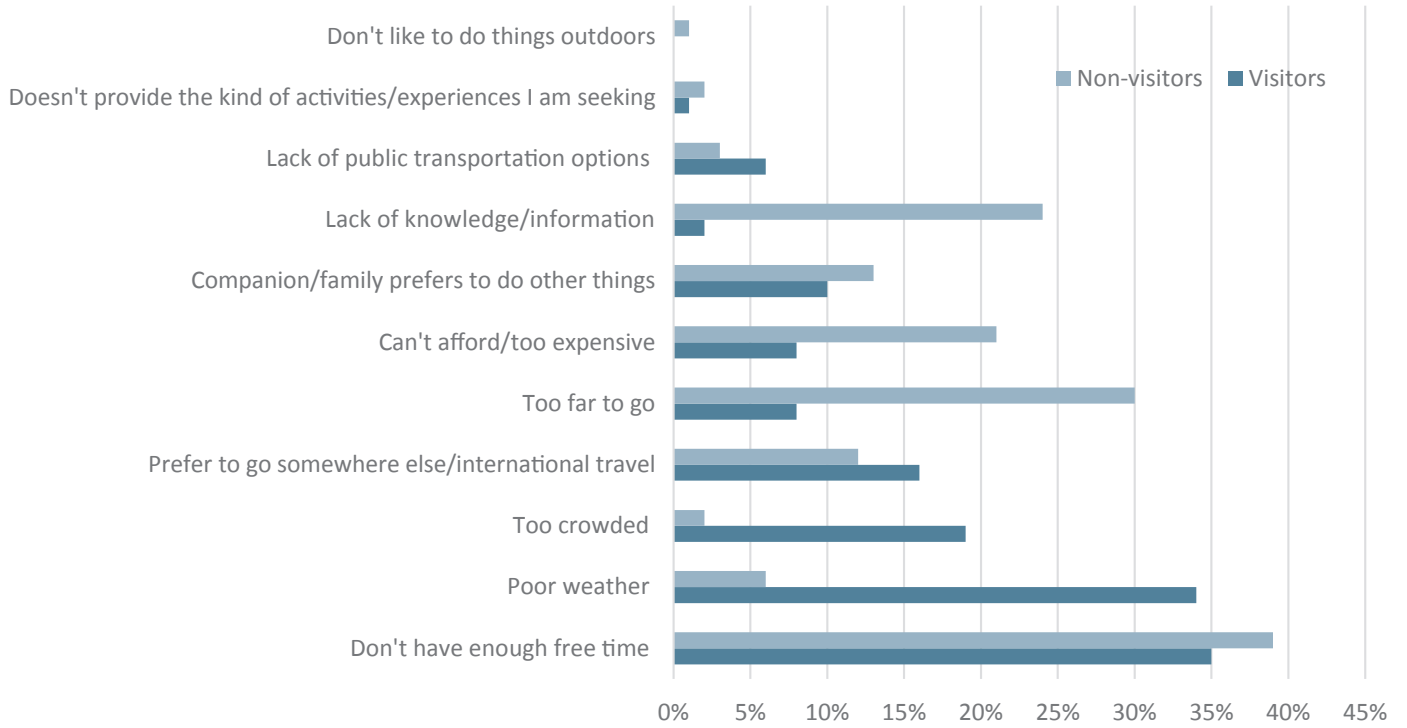
A 2015 Travel Oregon<sup>10</sup> survey asked respondents for their motivating factors to visiting the Columbia River Gorge, as well as their satisfaction with their experiences. The most popular activities and reasons for visiting the Gorge include hiking, eating at restaurants or breweries, attending and festivals or events and wildlife viewing. Most visitors take day trips to the gorge, usually spending less than \$100 per day. Respondents who visited the Columbia River Gorge in the last year were more likely to say they would return to the Gorge in the next year (91 percent), rather than those who had not visited in the last year (67 percent). The most common barriers to visiting the Gorge were lack of free time (35 percent), weather (34 percent) and crowding (19 percent). For those that had not visited in the past year, the distance to the Gorge was also a commonly cited barrier (30 percent).

**Figure 9. Participation Rates for Gorge-Area Activities**



# HISTORIC COLUMBIA GORGE HIGHWAY

**Figure 10. Cited Barriers to Visiting the Gorge**



*Note: Non-visitors include survey respondents who have not visited the Gorge in the past year, or have never visited.*



# Historic Highway Characteristics

## Roadway Characteristics

The Historic Highway is designated as State Highway 30 and is maintained by ODOT. ODOT classifies the highway as a District Highway with a 60-foot right-of-way and a paved width that varies between 18 and 30 feet. The



*Bridge near Multnomah Falls*

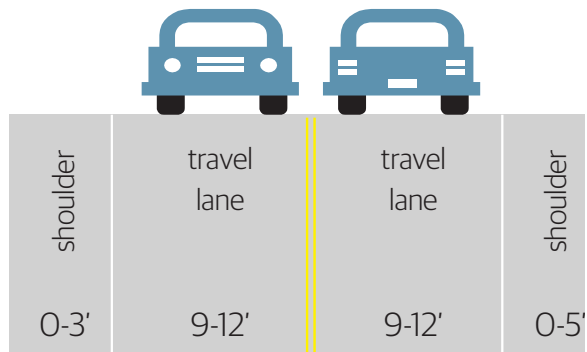
highway is comprised of a two-lane typical cross-section (two lanes each direction; 12-foot-wide lanes inclusive of shoulders) throughout the study area. In the Waterfall Zone area that make up a large portion of the study corridor, the roadway is narrow and winding, and is constrained. The shoulder width varies, with shoulder width of 3 feet or greater from the Portland Women’s Forum to Oneonta Gorge. From Oneonta Gorge to Dodson (near Ainsworth State Park), the shoulder width is three feet or greater on the south side and less than three feet on the north side of the road.

Throughout the Historic Highway corridor bicycles share the road with vehicles. Bicycles may use shoulders where available, but the shoulders are narrow and are often used for spillover or illegal parking. Concrete gutters parallel the road for drainage, further restricting shoulder use for bicycles. Tight curves limit sight distance. Pedestrians walking from parked vehicles to trailheads also share shoulders and roadway where space is limited. Trail 400 provides some connectivity between waterfalls and trailheads, allowing recreational users to avoid using the Historic Highway to walk between trailheads.

The recreational attractions are the primary trip generators. The Historic Highway is listed by Travel Oregon as a scenic bikeway, and is a popular route for bicyclists to access Larch Mountain, Cascade Locks and other popular destinations. In addition, residents living in communities along the Historic Highway use it to meet their daily travel needs.



*Pedestrians share the roadway with all other users*

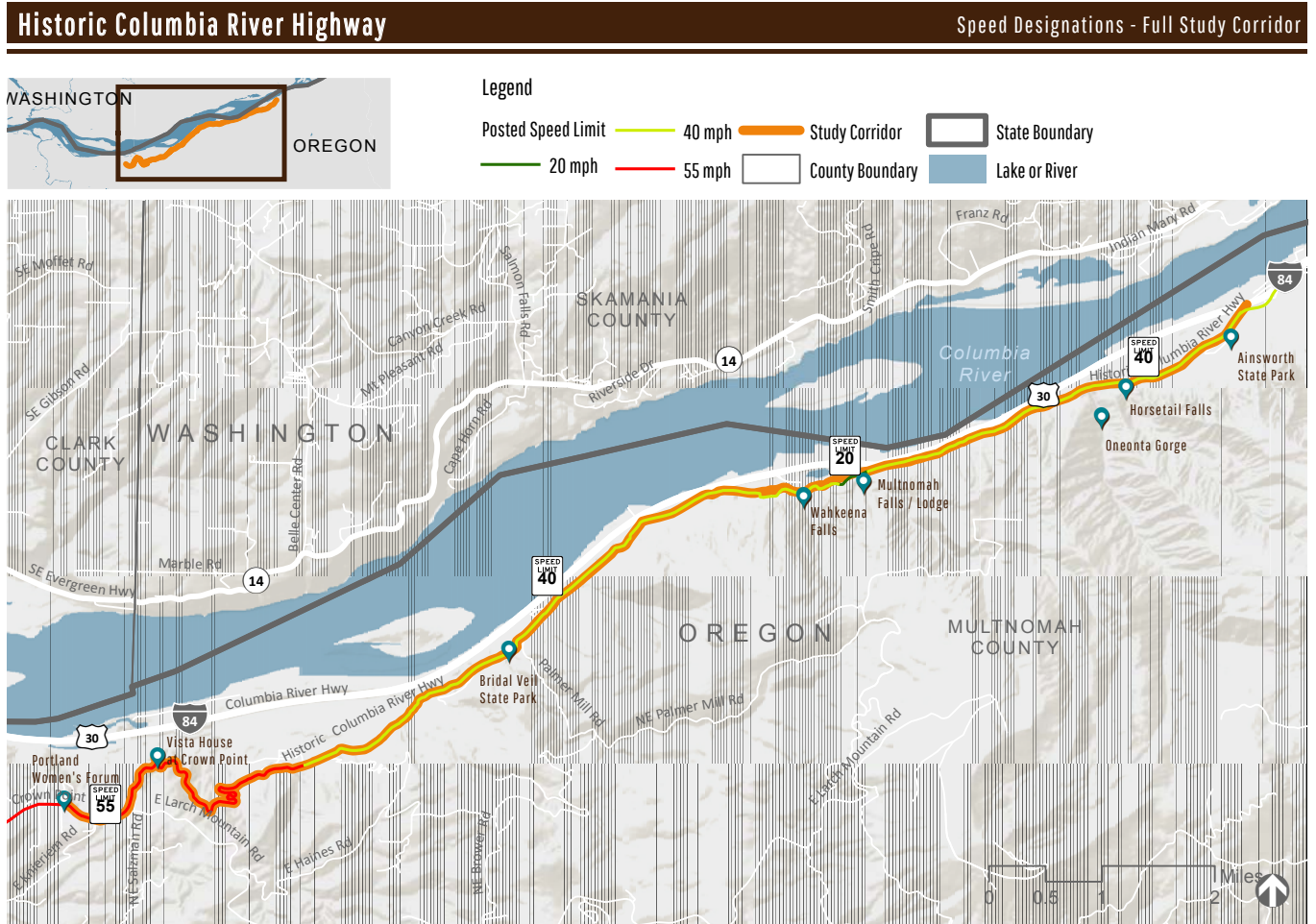


**Figure 11. Typical Existing Cross Section of the Historic Highway**

## Posted Speeds

Posted speeds vary along the Historic Highway (Figure 7). The posted speed limit is 55 mph at the west end of the corridor, and 40 mph east of the Vista House area. Near Multnomah Falls, the speed is reduced to 20 mph.

Figure 12. Map of Posted Speeds Along Study Corridor





# Transportation Access and Volumes

## Vehicle Access and Volumes

The project team collected data on motor vehicle volumes and speeds over a ten-day period to document traffic flows to and from the Columbia Gorge area on different days and times. Data collection ran from Saturday, Aug. 26, through Monday, Sept. 4 (Labor Day), 2017. The data prior to the Eagle Creek Fire, which started Saturday, Sept. 2, represents typical conditions with clear weather and no smoke. The data included:

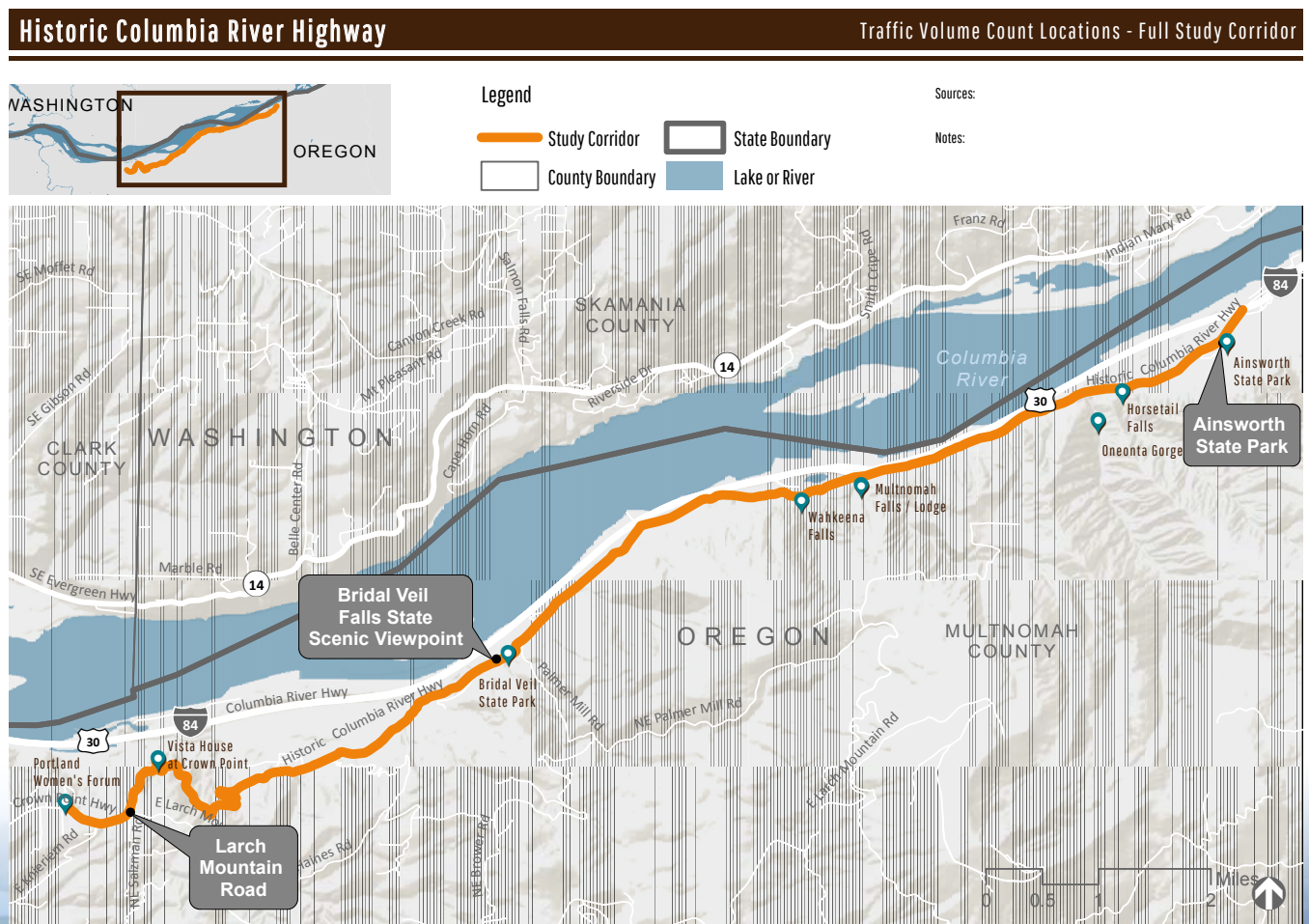
- Motor vehicle volume data in 15-minute increments via bi-directional tube counts at three locations along the Historic Columbia River Highway, seen in Figure 8:
  - Just east of the Larch Mountain Road intersection
  - Just east of the Bridal Veil Road intersection
  - Just east of the Ainsworth State park entrance

The Columbia Gorge attracts visitors year-round, but the transportation demand by residents and visitors varies along a variety of dimensions:

- Mode (private motor vehicle, transit, bike)
- Access point (Historic Columbia River Highway or I-84)
- Season
- Day of week
- Hour of day

This section describes travel activity along these dimensions, illustrating how and when people access the Waterfall Zone area of the Historic Highway.

Figure 13. Map of Posted Speeds Along Study Corridor



## HISTORIC COLUMBIA GORGE HIGHWAY

- Motor vehicle travel time data via HERE, which is a database of sampled travel times along predefined roadway segments using vehicle GPS data. HERE data was available in two segments that allowed comparison of speed and congestion in five-minute increments. The available Historic Highway segments were:
  - From the Portland Women’s Forum to Bridal Veil Road
  - From Bridal Veil Road to the I-84 interchange just east of Ainsworth State Park.

The following pages provide volume and speed characteristics by time of day for each of the following categories from the ten days for which data was collected:

- Typical Summer Saturday (Aug. 26, 2017)
- Typical Summer Sunday (Aug. 27, 2017)
- Typical Summer Weekday (Aug. 28-31, 2017)
- Typical Holiday Weekend Friday (Sept. 1, 2017)
- Typical Holiday Weekend Saturday (Sept. 2, 2017)
- Typical Holiday Weekend Sunday (Sept. 3, 2017)
- Typical Holiday Weekend Monday (Sept. 4, 2017)

Note that the data from Sunday, Sept. 3, and Monday, Sept. 4, is not assumed to reflect a typical condition due to the Eagle Creek fire. The smoke and fire warnings, along with the closure of portions of the highway for segments of time during those two days, likely suppressed travel during those two days.

## Vehicle Volume Summary

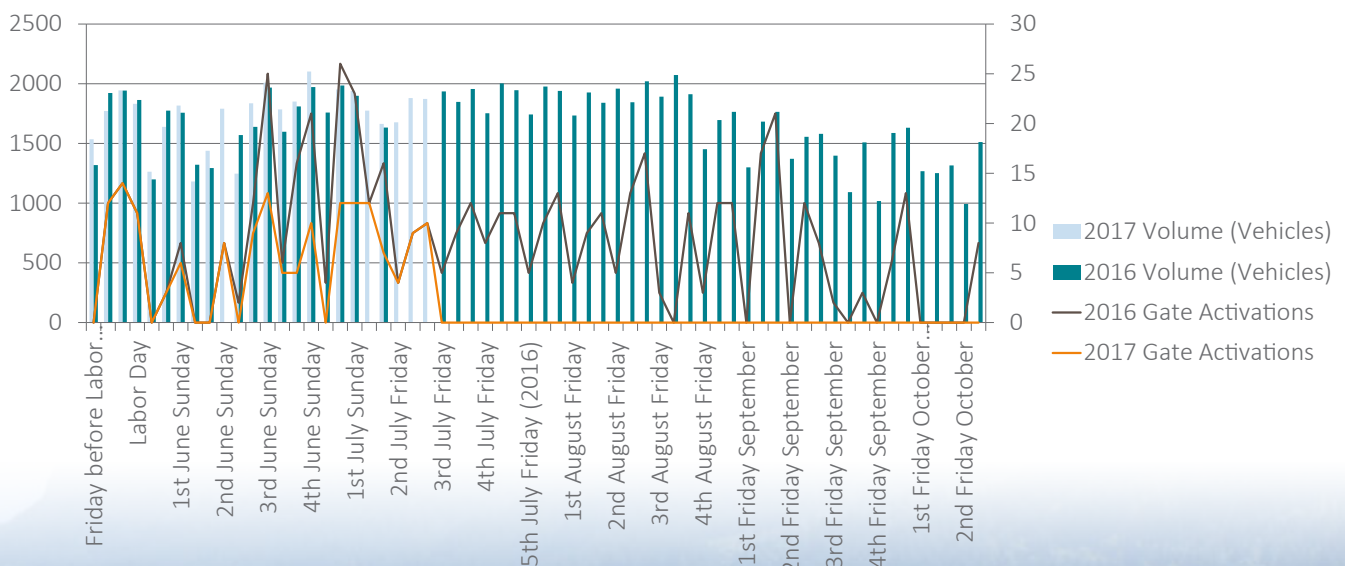
Table 11 summarizes the directional Average Daily Traffic volumes and average hourly bi-directional volume at each location. Travel demand for recreation along the Historic Highway can vary for a variety of reasons, including seasons, weather conditions and nearby wildfires.

The Bridal Veil Road location features the highest traffic volumes of the three locations studied. The holiday weekend Saturday and Sunday experienced the highest volumes of all the days studied. The Larch Mountain and Bridal Veil locations, which are west of Multnomah Falls, typically have higher daily eastbound volumes than westbound, suggesting that some visitors elect to use the Historic Highway to access the falls area, but use I-84 for the return trip.

**Table 6. Traffic Volume Summary at Select Locations**

Traffic Volume	Typical Weekday	Typical Friday	Typical Saturday	Typical Sunday	Holiday Friday	Holiday Saturday	Holiday Sunday	Holiday Monday
<b>East of Larch Mountain (55 mph)</b>								
Eastbound ADT	905	1200	1519	1457	1132	1623	1742	1179
Westbound ADT	642	860	1126	1078	773	1185	1221	903
Average Hourly Volume	64	86	110	106	79	117	123	87
<b>East of Bridal Veil (40 mph)</b>								
Eastbound ADT	1371	1869	2217	2200	1854	2560	2540	1955
Westbound ADT	1108	1567	2024	2050	1521	2588	2667	1841
Average Hourly Volume	103	143	177	177	141	215	217	158
<b>East of Ainsworth State Park (40 mph)</b>								
Eastbound ADT	1032	1395	1668	1755	1370	1914	1950	1300
Westbound ADT	758	1097	1468	1571	1034	1943	2040	1133
Average Hourly Volume	75	104	131	139	100	161	166	101

**Figure 14. Multnomah Falls I-84 Lot Gate Closures**



## Typical Weekday

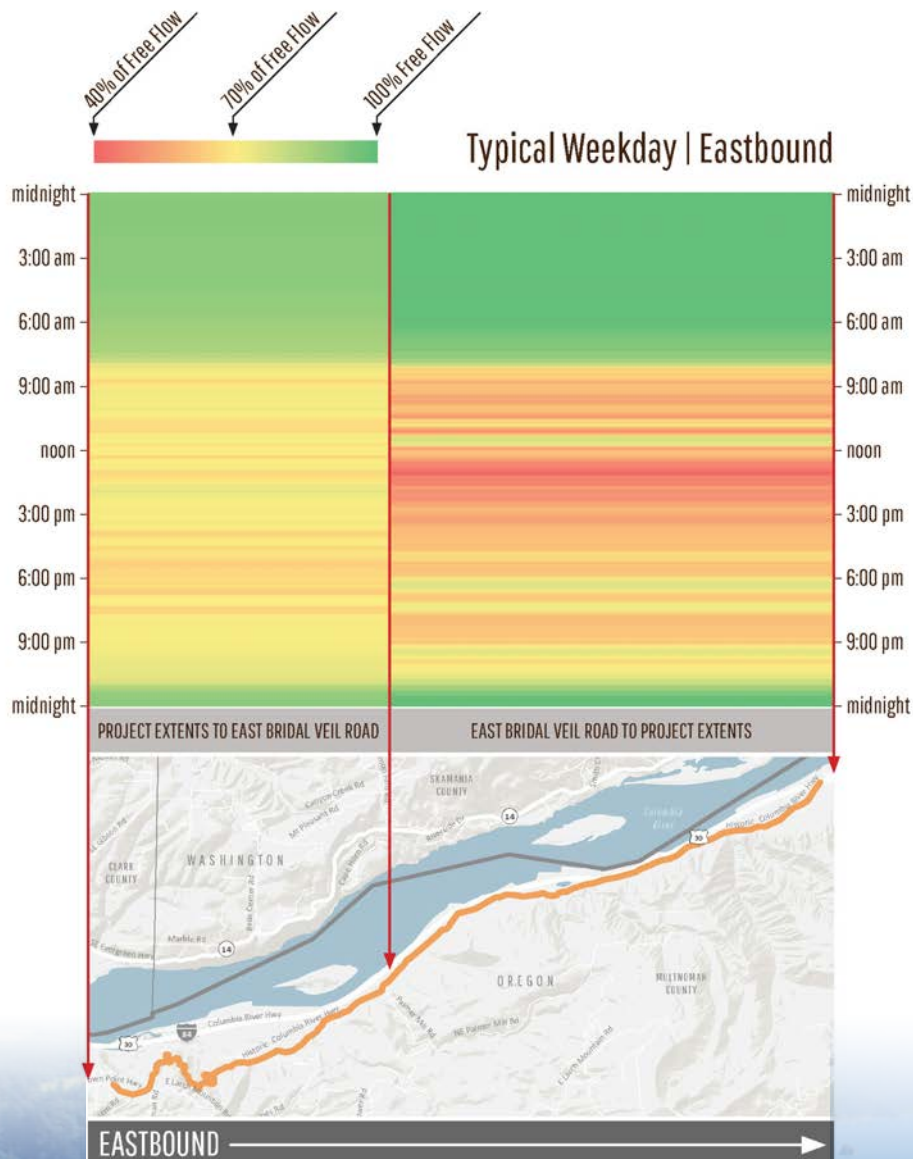
### Access

On the typical summer weekdays for which data was collected, the most significant slowdowns occurred around the noon hour in the segment east of Bridal Veil Road. Slowdowns in the westbound direction were more prevalent around noon and before, while eastbound slowing tended to occur between noon and 3 p.m. Slowdowns were less prevalent west of Bridal Veil Road.

### Volumes

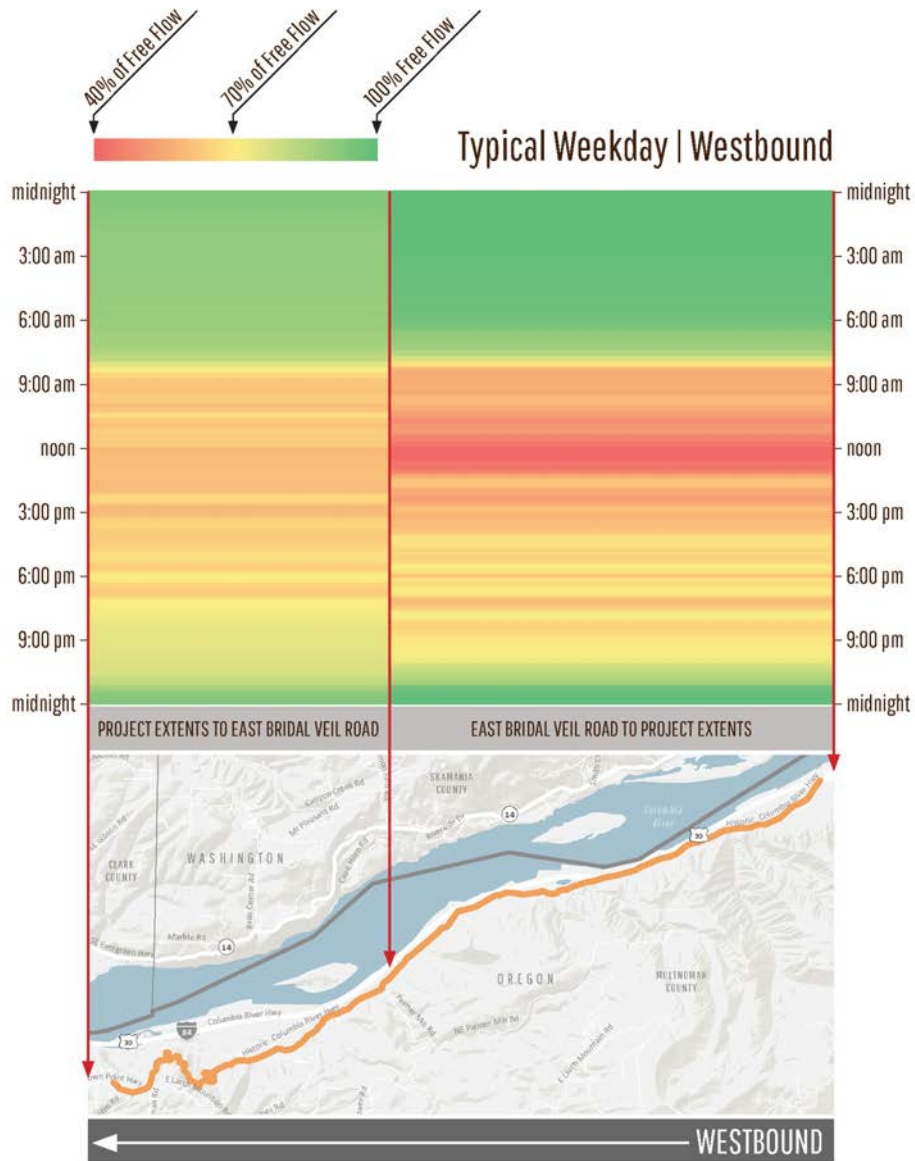
Typical weekday volumes peaked at around 80 vehicles per 15 minutes (a 240 vehicle-per-hour flow rate) at the Bridal Veil Road count location. Volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until about 3 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park are relatively balanced. The time and direction of the highest volumes tend to correlate with the times of the lowest average speeds through the corridor.

Figure 15. Eastbound Traffic Congestion and Slowing During Typical Weekday Conditions



# CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

Figure 16. Westbound Traffic Congestion and Slowing During Typical Weekday Conditions



# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 17. Larch Mountain Road Weekday Traffic Volumes

## Larch Mountain Rd



Traffic Volumes at Larch Mountain Road | Typical Weekday

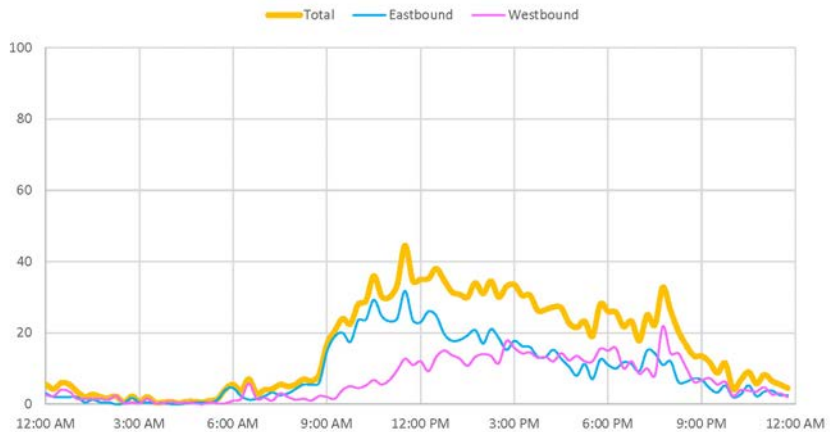


Figure 18. Bridal Veil Weekday Traffic Volumes

## Bridal Veil



Traffic Volumes at Bridal Veil | Typical Weekday

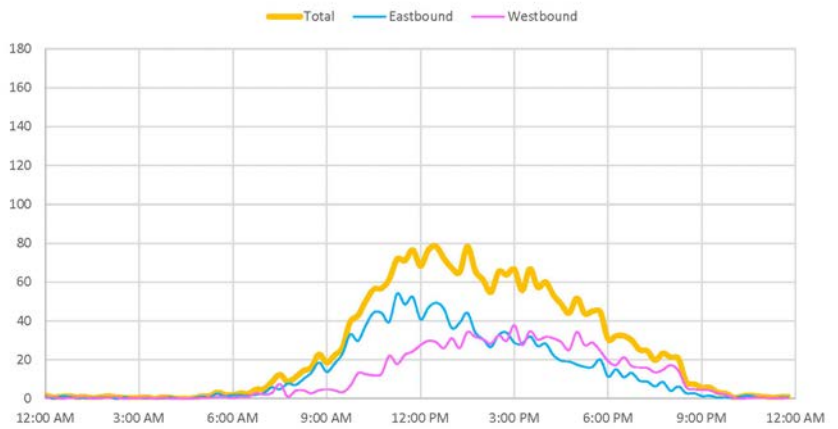
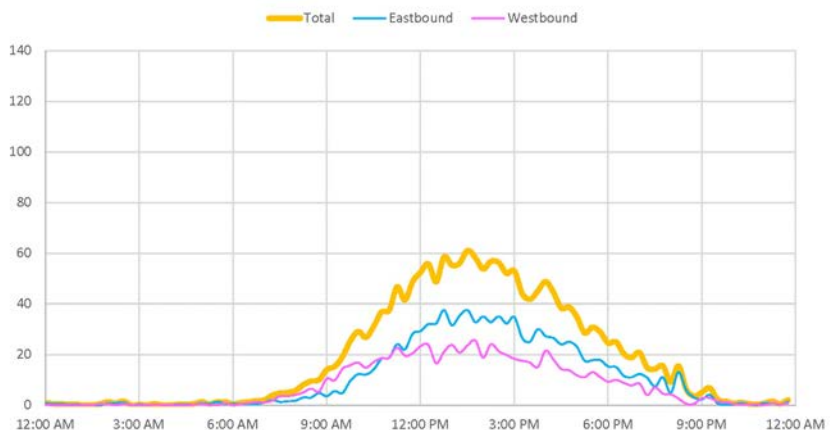


Figure 19. Ainsworth State Park Weekday Traffic Volumes

## Ainsworth State Park



Traffic Volumes at Ainsworth State Park | Typical Weekday



## Typical Summer Saturday

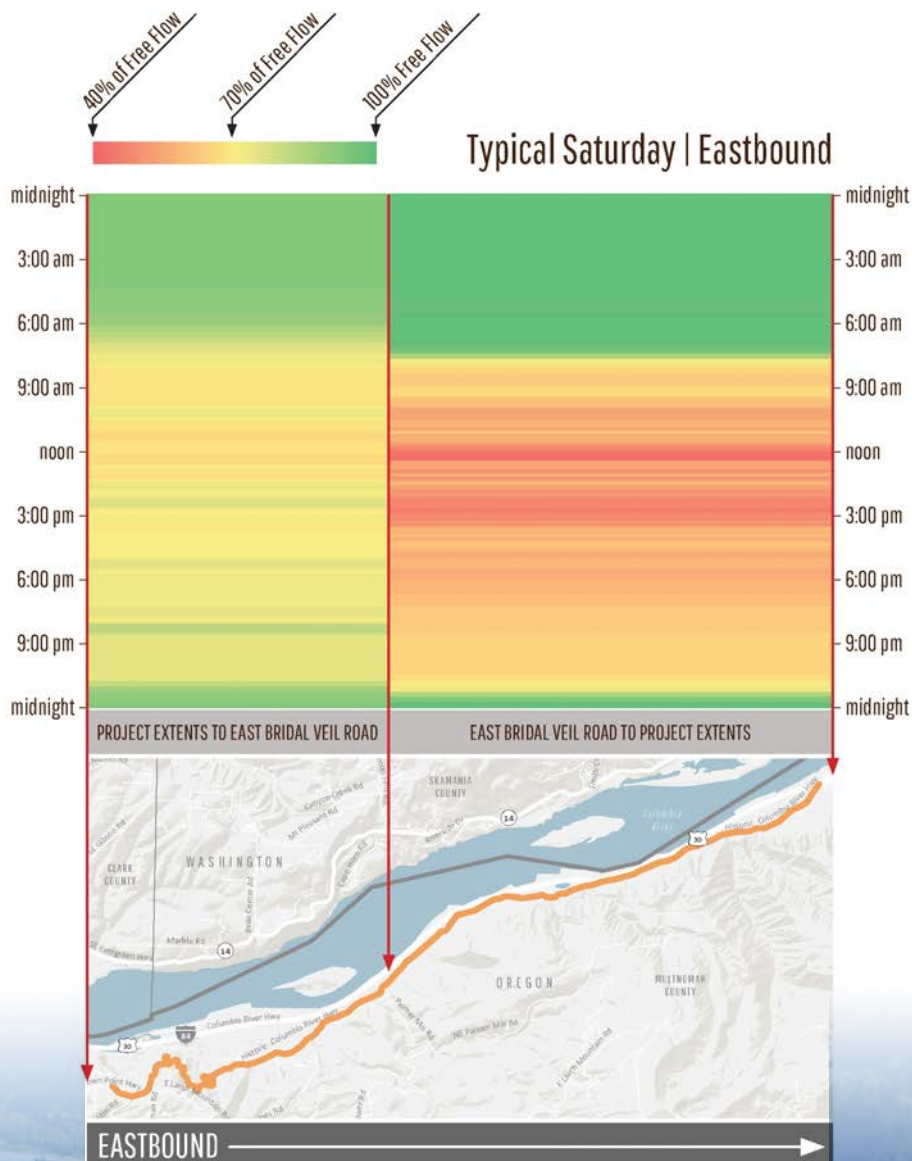
### Access

On the typical summer Saturday for which data was collected, the timing of slowdowns varied by direction for the segment east of Bridal Veil Road, while slowdowns west of Bridal Veil Road were relatively insignificant. Slowdowns in the eastbound direction were most prevalent around noon, with continued slowing until 3 p.m. Westbound, slowdown peaked at about 3 p.m., with some slowing in the previous two hours. This is typical of observed weekend patterns, with more slowing eastbound (from the Portland area) early, and more slowing westbound late.

### Volumes

Typical Saturday volumes peaked at around 150 vehicles per 15 minutes (a 600 vehicle-per-hour flow rate) at the Bridal Veil Road count location. Volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until about 3 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park show an opposite pattern, likely reflecting that inbound volumes to the falls area originate to the east, at Exit 35 (Ainsworth State Park) at the I-84 interchange.

Figure 20. Eastbound Traffic Congestion and Slowing During Typical Saturday Conditions



# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 21. Westbound Traffic Congestion and Slowing During Typical Saturday Conditions

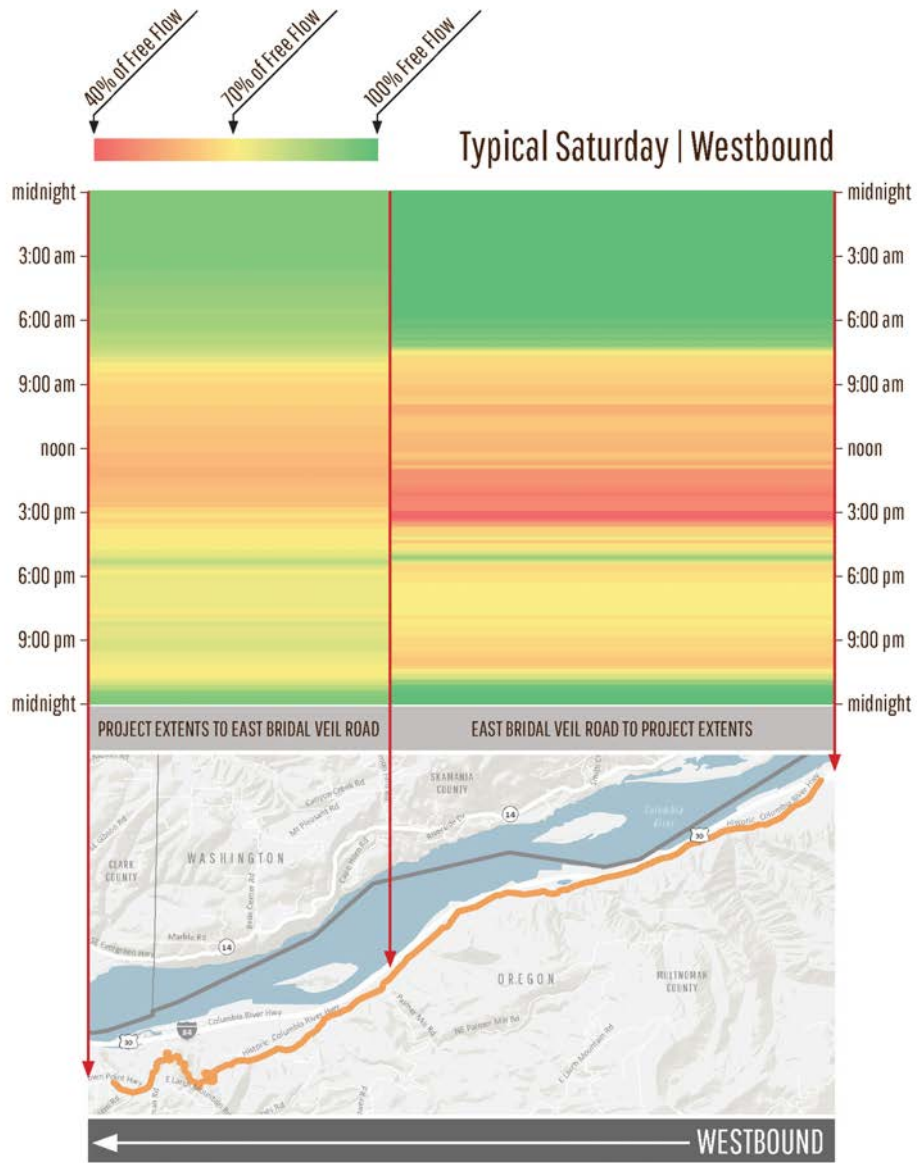




Figure 22. Larch Mountain Road Saturday Traffic Volumes

**Larch Mountain Rd**



Traffic Volumes at Larch Mountain Road | Typical Saturday

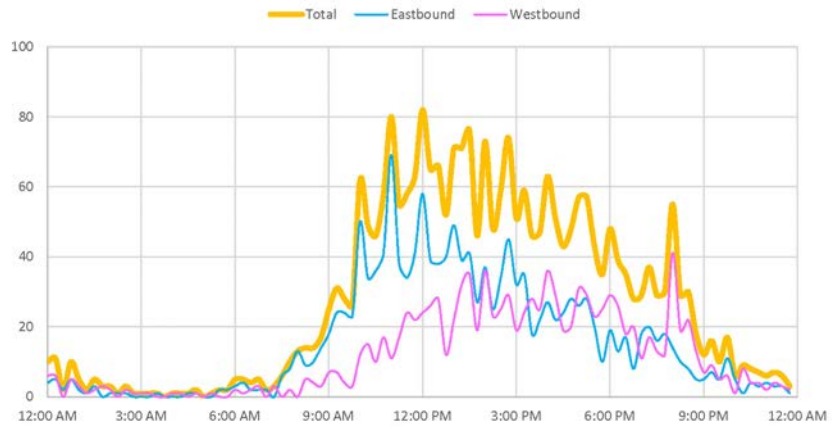
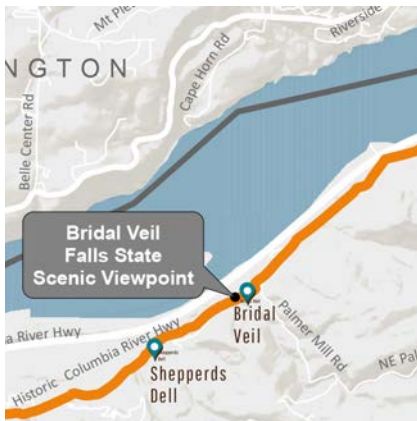


Figure 23. Bridal Veil Saturday Traffic Volumes

**Bridal Veil**



Traffic Volumes at Bridal Veil | Typical Saturday

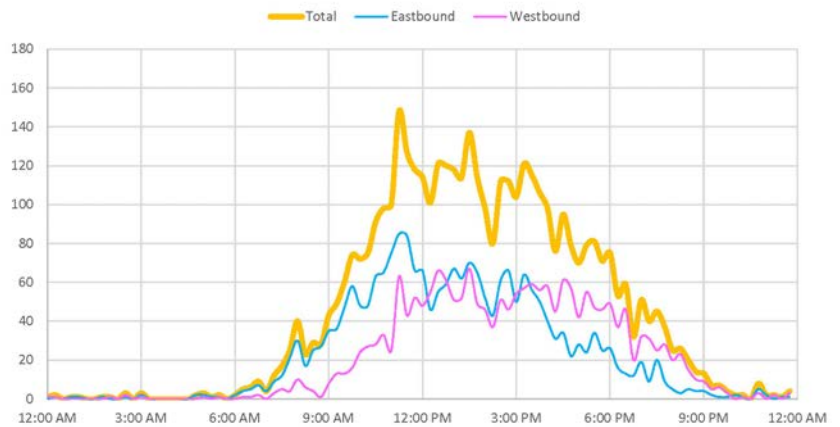
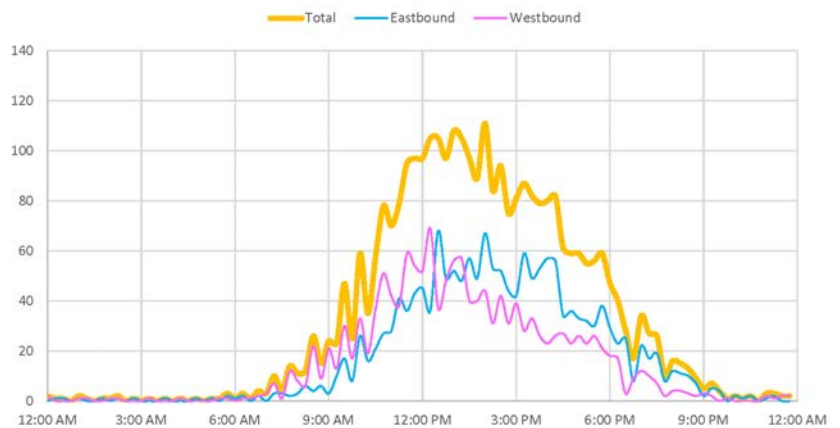


Figure 24. Ainsworth State Park Saturday Traffic Volumes

**Ainsworth State Park**



Traffic Volumes at Ainsworth State Park | Typical Saturday



## Typical Summer Sunday

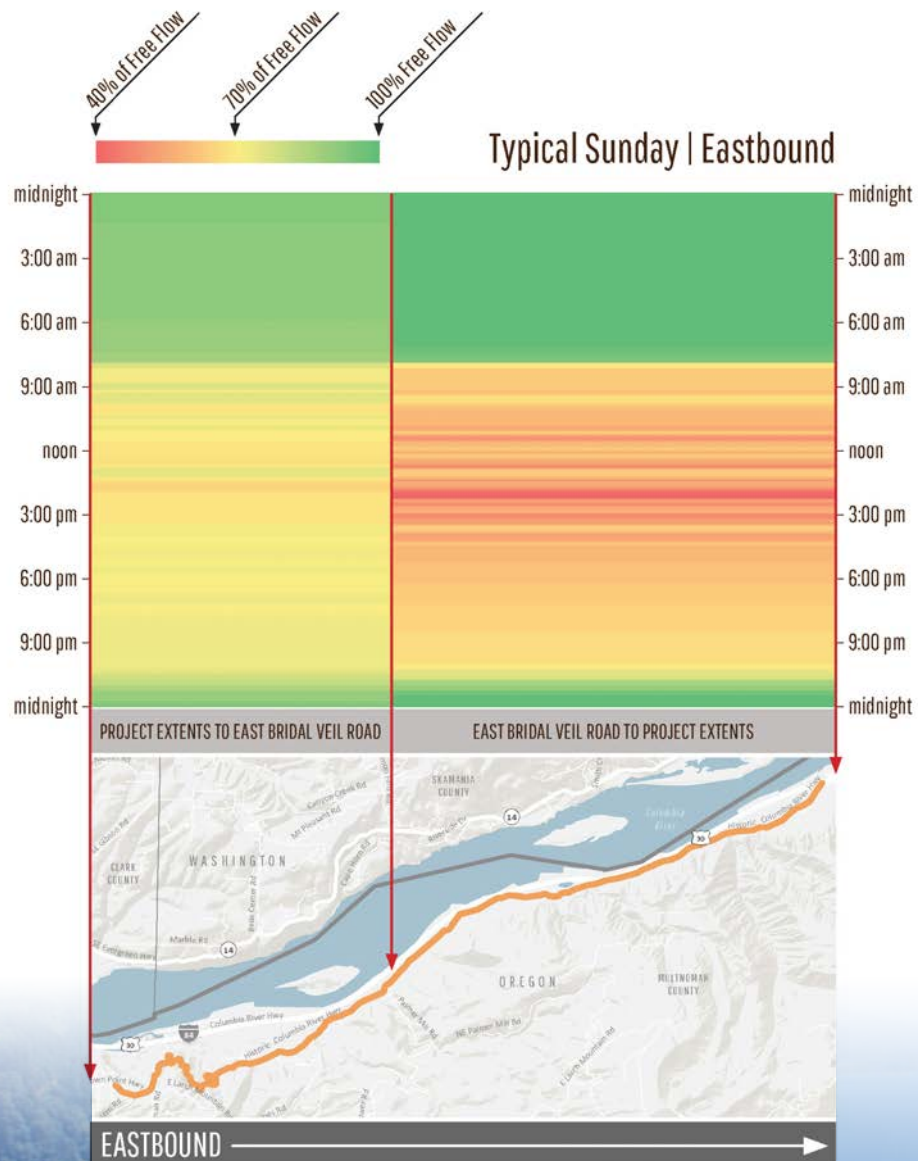
### Access

On the typical summer Sunday for which data was collected, the timing and duration of slowdowns varied by direction for the segment east of Bridal Veil Road. Slowdowns west of Bridal Veil Road were limited to westbound travel, and mostly occurred early in the day (9 a.m. to 1 p.m.). Slowdowns in the eastbound direction were most prevalent around 2 p.m., with continued slowing until 3 p.m. Westbound, slowdowns peaked at about 2 p.m. to 3 p.m., but slowdowns were apparent throughout the day until close to 6 p.m. This is consistent with the gate closure activity at the I-84/Multnomah Falls parking lot. On summer Sundays, the first gate closure typically occurs around 10 a.m. and the final closure lifts around 5 p.m.

### Volumes

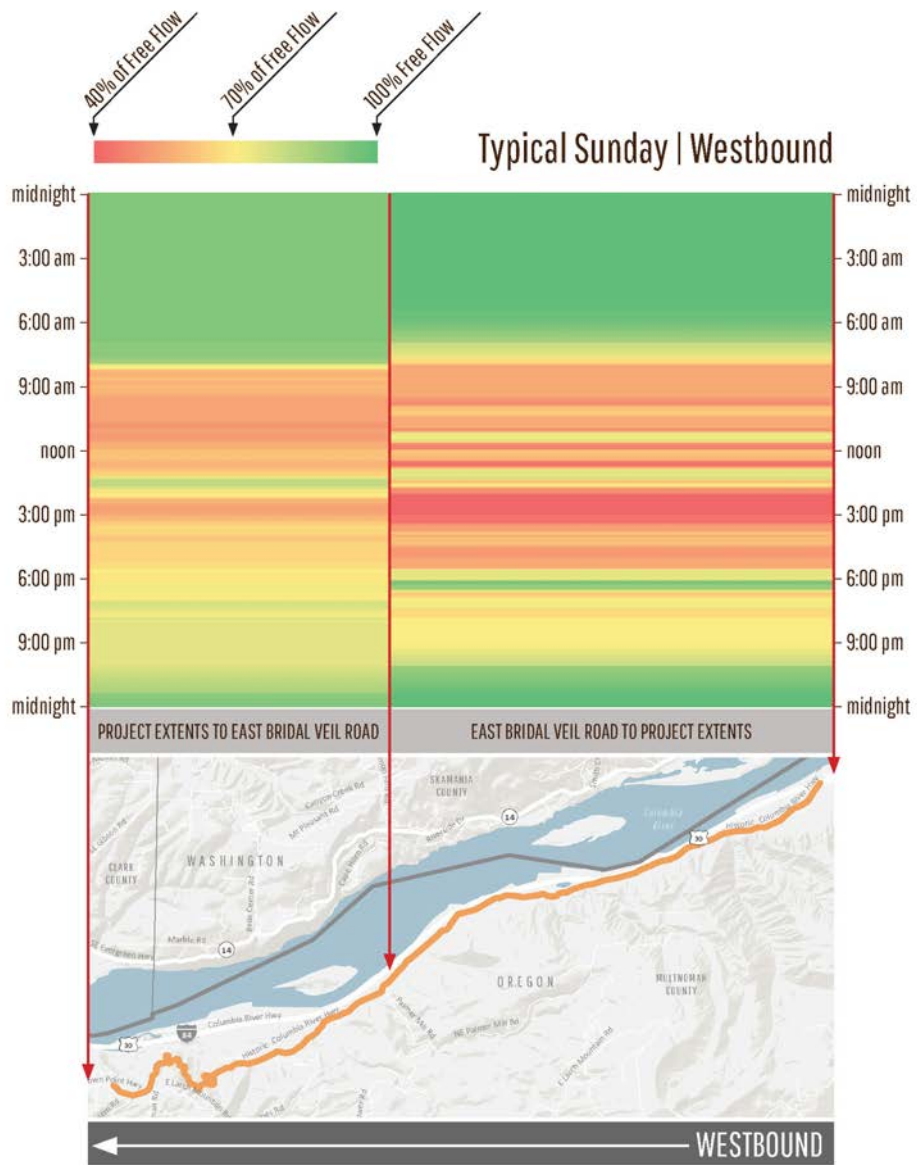
Typical Sunday volumes peaked at around 140 vehicles per 15 minutes (a 560 vehicle-per-hour flow rate) at the Bridal Veil Road count location. As with the other typical summer days, volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until 1-2 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park follow a more balanced pattern, with neither westbound or eastbound travel being prevalent at a particular time of day – both directions peak around 2 p.m.

**Figure 25.**  
Eastbound Traffic  
Congestion and Slowing  
During Typical Sunday  
Conditions



# CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

Figure 26. Westbound Traffic Congestion and Slowing During Typical Sunday Conditions



# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 27. Larch Mountain Road Sunday Traffic Volumes

## Larch Mountain Rd



Traffic Volumes at Larch Mountain Road | Typical Sunday

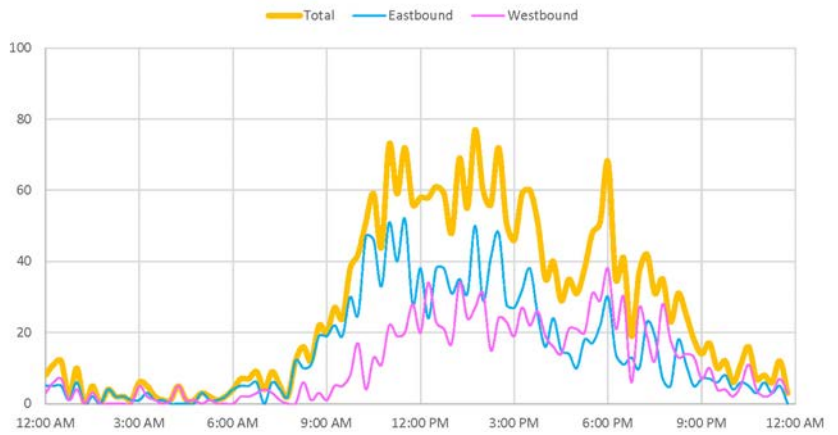
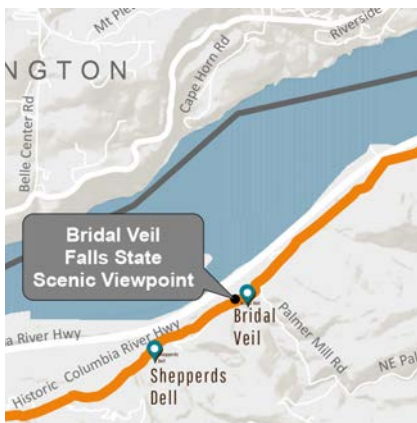


Figure 28. Bridal Veil Sunday Traffic Volumes

## Bridal Veil



Traffic Volumes at Bridal Veil | Typical Sunday

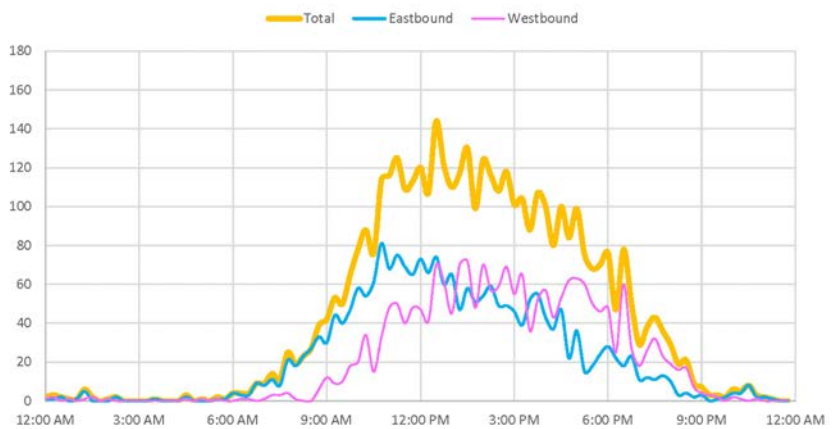
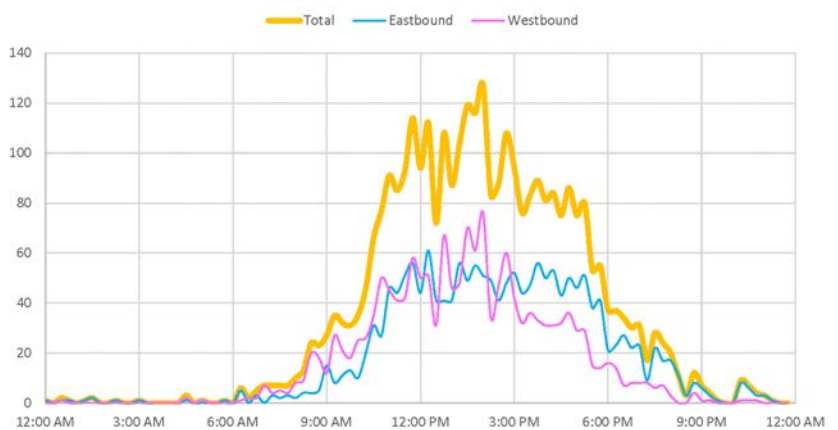


Figure 29. Ainsworth State Park Sunday Traffic Volumes

## Ainsworth State Park



Traffic Volumes at Ainsworth State Park | Typical Sunday



## Extended Holiday Friday

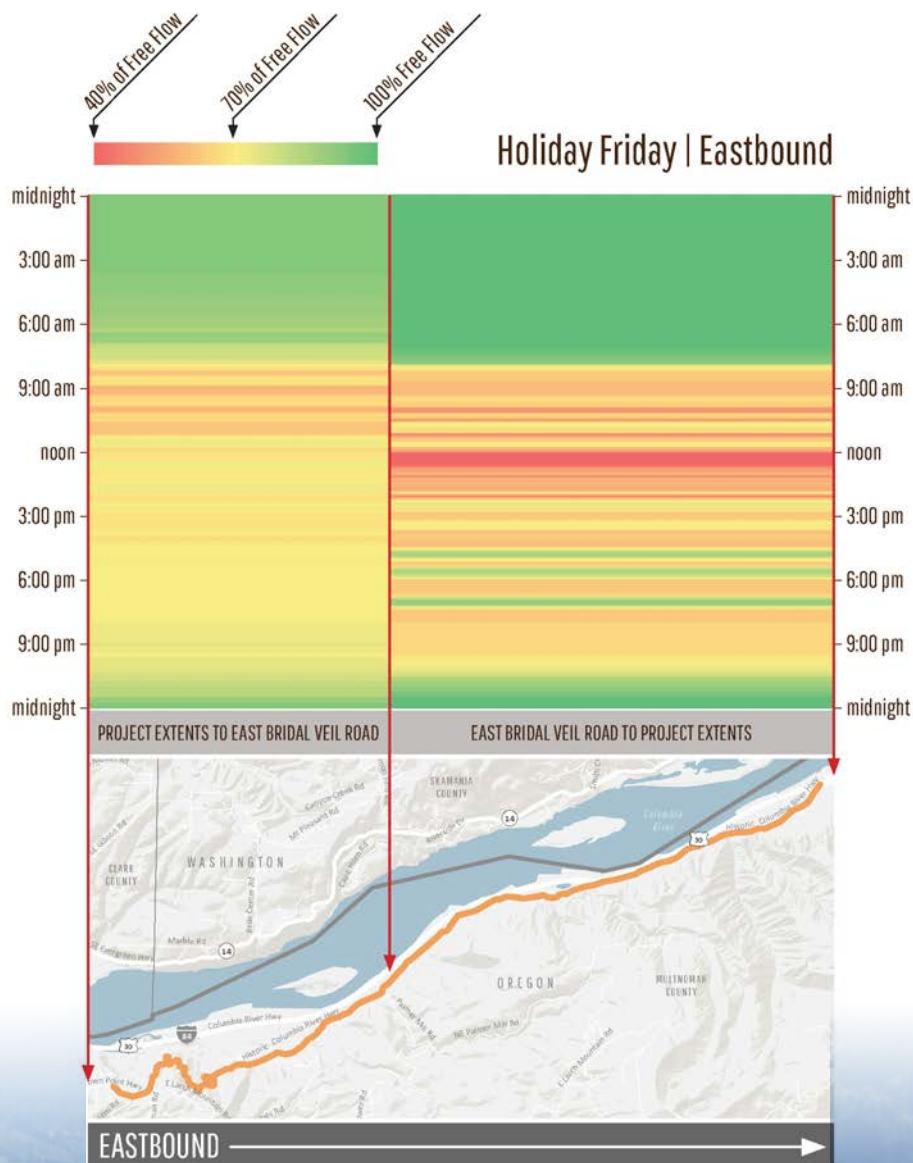
### Access

On the Labor Day weekend Friday for which data was collected, the timing and duration of slowdowns varied by direction for the segment east of Bridal Veil Road, while the segment west of Bridal Veil Road featured only moderate slowdowns. Slowdowns in the eastbound direction were concentrated around the noon hour. Westbound, slowing occurred for a significant part of the day, from 9 a.m. to 3 p.m.

### Volumes

Holiday weekend Friday volumes peaked at around 170 vehicles per 15 minutes (a 680 vehicle-per-hour flow rate) at the Bridal Veil Road count location. As with the most other days, volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until 1-2 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park show an opposite pattern, likely reflecting that inbound volumes to the falls area originate to the east, at Exit 35 (Ainsworth State Park) at the I-84 interchange.

Figure 30. Eastbound Traffic Congestion and Slowing During Holiday Friday Conditions



# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 31. Westbound Traffic Congestion and Slowing During Holiday Friday Conditions

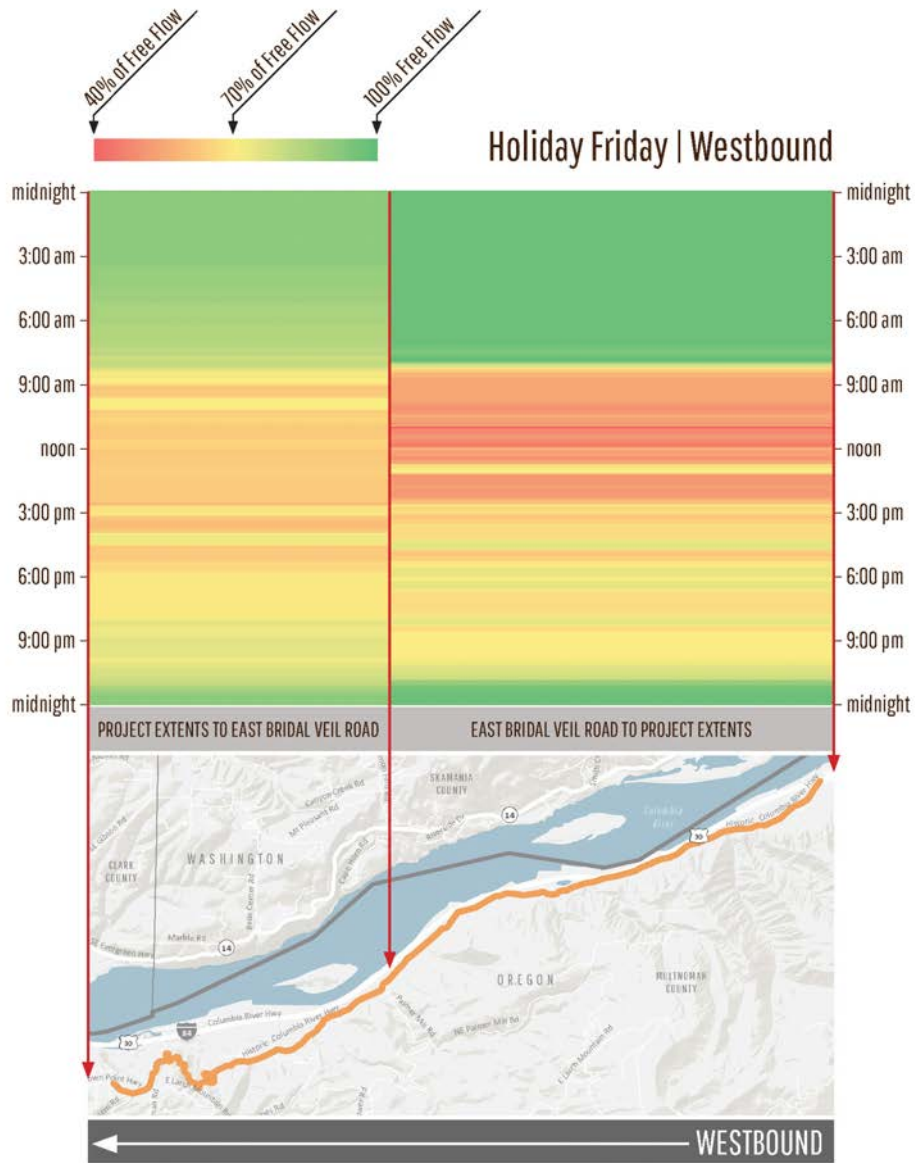


Figure 32. Larch Mountain Road Holiday Friday Traffic Volumes

**Larch Mountain Rd**



Traffic Volumes at Larch Mountain Road | Holiday Friday

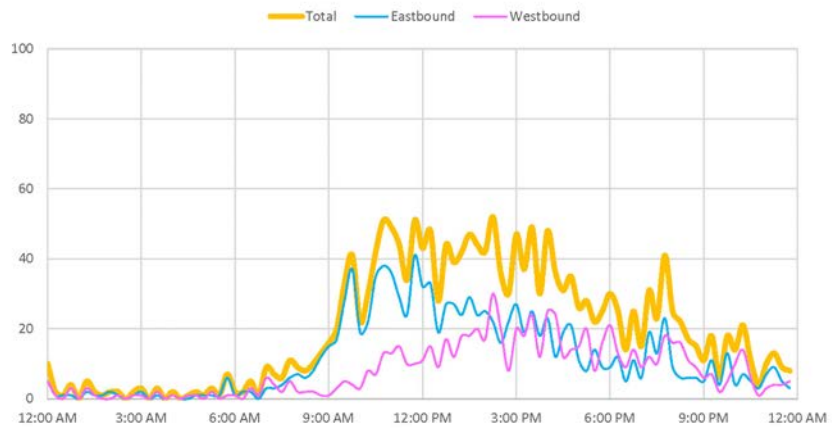
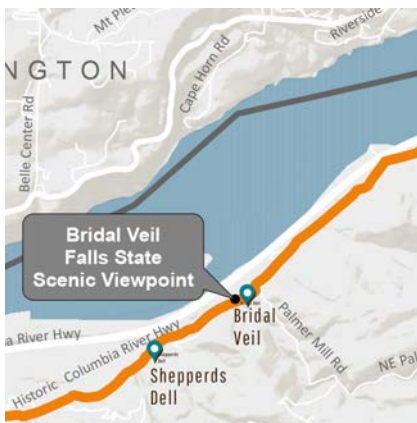


Figure 33. Bridal Veil Holiday Friday Traffic Volumes

**Bridal Veil**



Traffic Volumes at Bridal Veil | Holiday Friday

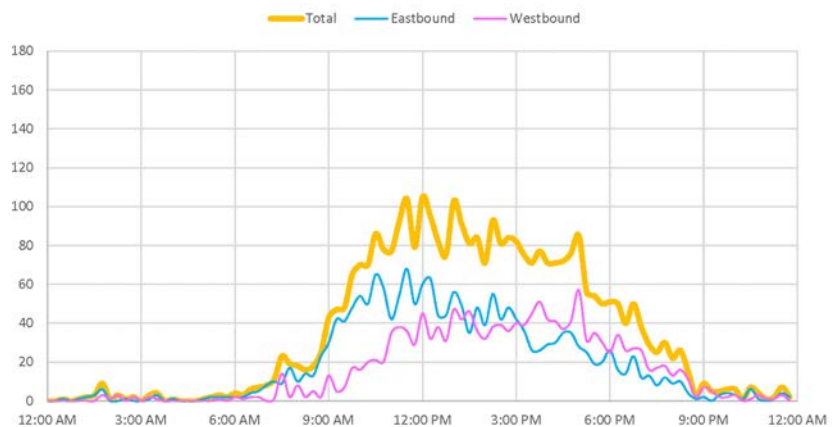
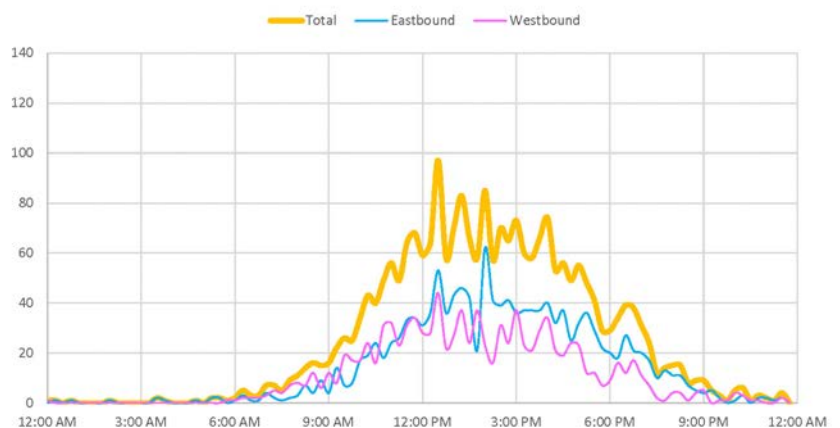


Figure 34. Ainsworth State Park Holiday Friday Traffic Volumes

**Ainsworth State Park**



Traffic Volumes at Ainsworth State Park | Holiday Friday



## Extended Holiday Saturday

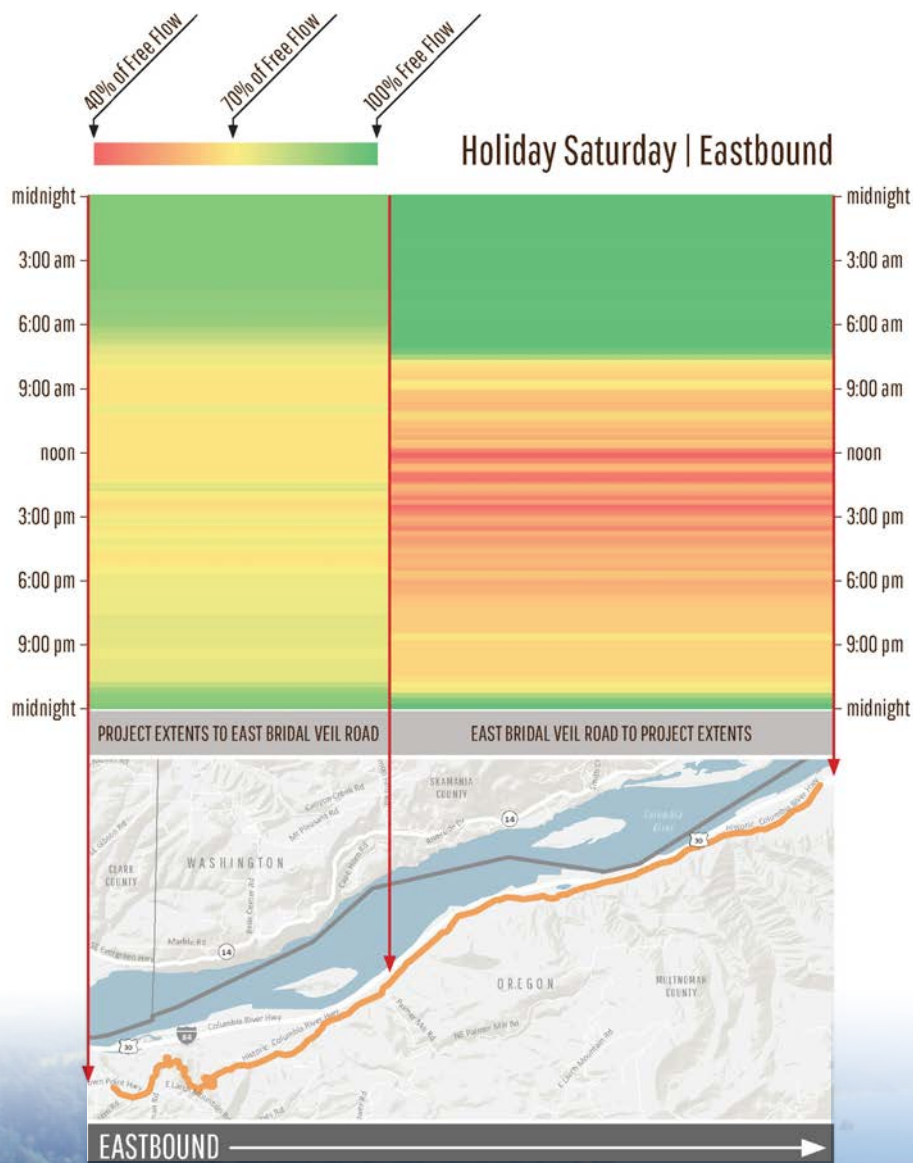
### Access

On Saturday of Labor Day weekend, the timing and duration of slowdowns varied by direction for the segment east of Bridal Veil Road, while the segment west of Bridal Veil Road featured only moderate slowdowns in the westbound direction. For the eastern segment, slowdowns in the eastbound direction occurred between noon and 3 p.m. Westbound, slowing was focused in the afternoon hours, from 3-4 p.m.

### Volumes

Holiday weekend Saturday volumes peaked at around 150 vehicles per 15 minutes (a 600 vehicle-per-hour flow rate) at the Bridal Veil Road count location. As with the other days studied, volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until 1-2 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park show an opposite pattern, likely reflecting that inbound volumes to the falls area originate to the east, at Exit 35 (Ainsworth State Park) at the I-84 interchange.

Figure 35. Eastbound Traffic Congestion and Slowing During Holiday Saturday Conditions





# CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

Figure 36. Westbound Traffic Congestion and Slowing During Holiday Saturday Conditions

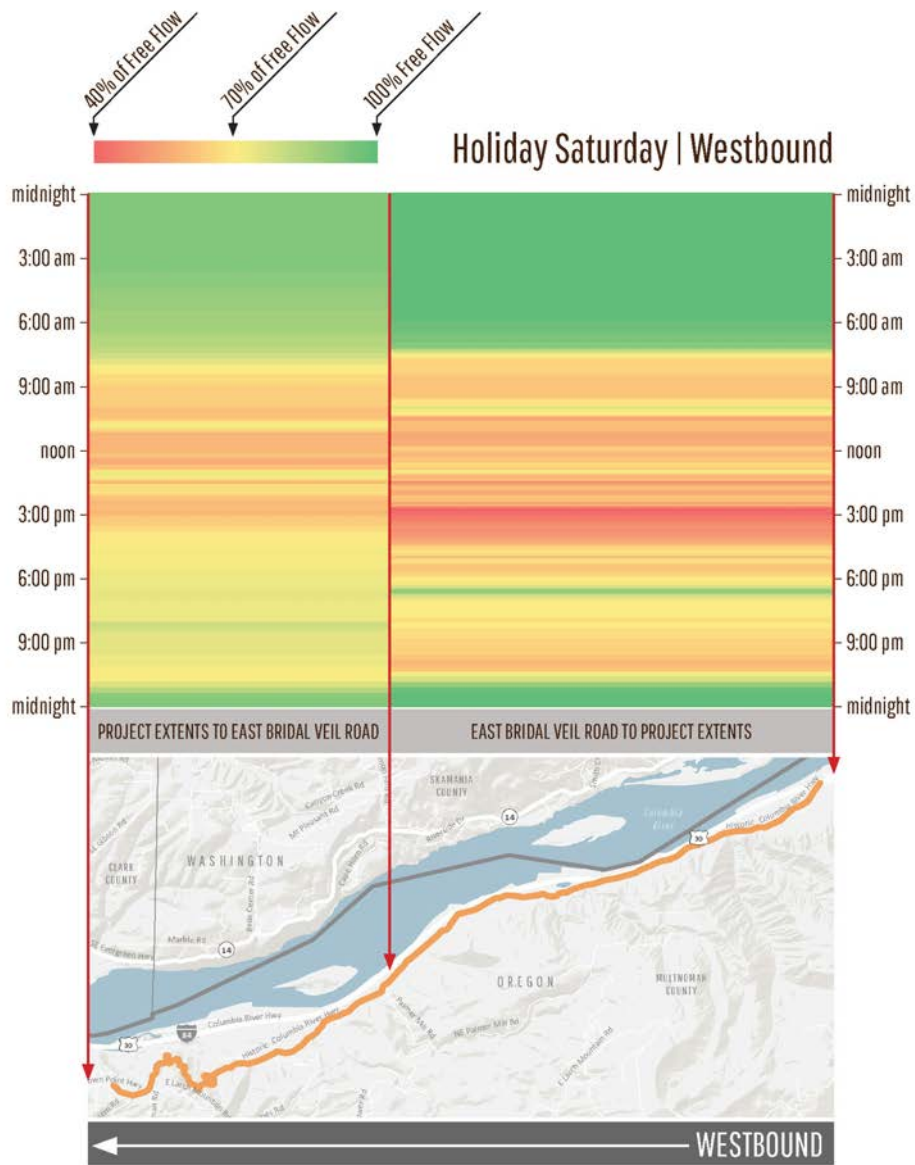


Figure 37. Larch Mountain Road Holiday Saturday Traffic Volumes

**Larch Mountain Rd**



Traffic Volumes at Larch Mountain Road | Holiday Saturday

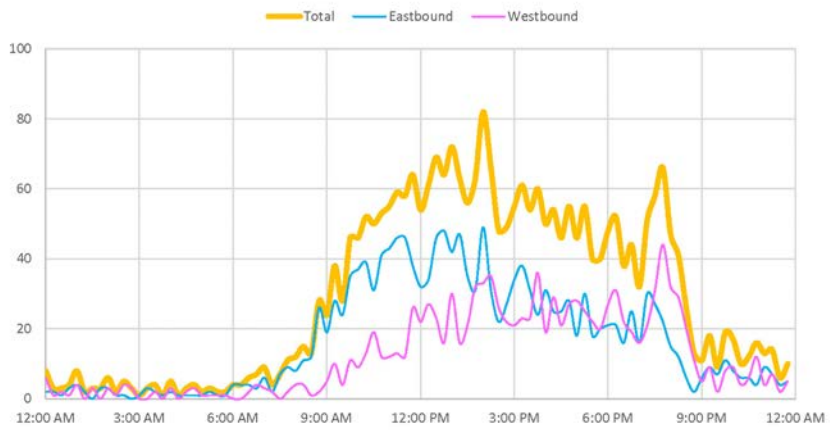


Figure 38. Bridal Veil Holiday Saturday Traffic Volumes

**Bridal Veil**



Traffic Volumes at Bridal Veil | Holiday Saturday

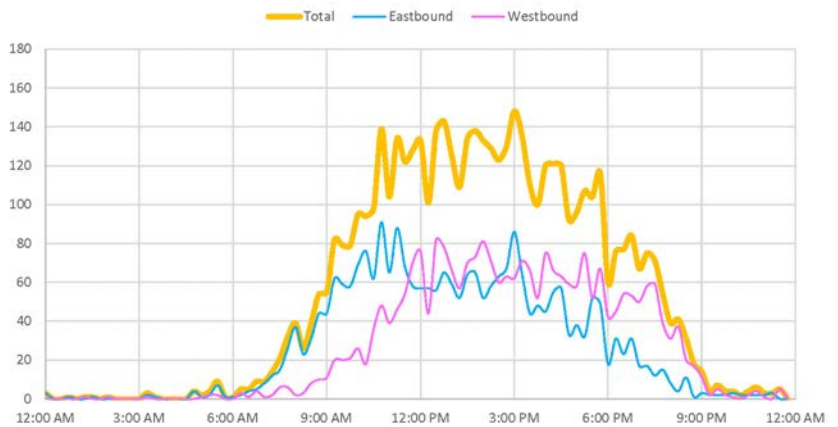
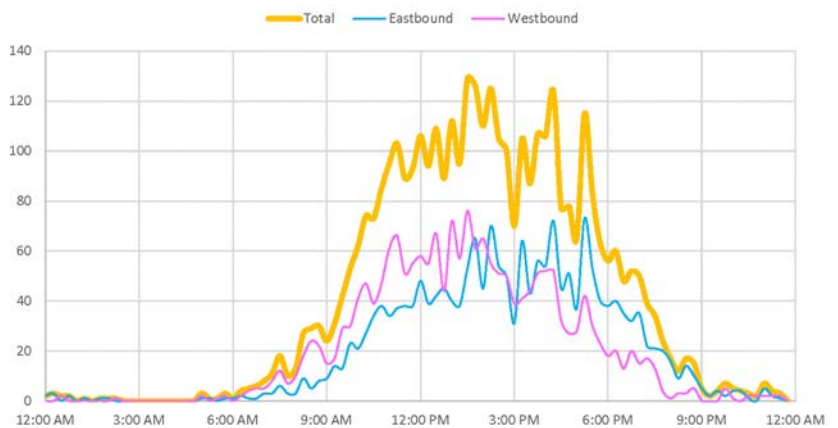


Figure 39. Ainsworth State Park Holiday Saturday Traffic Volumes

**Ainsworth State Park**



Traffic Volumes at Ainsworth State Park | Holiday Saturday



## Extended Holiday Sunday

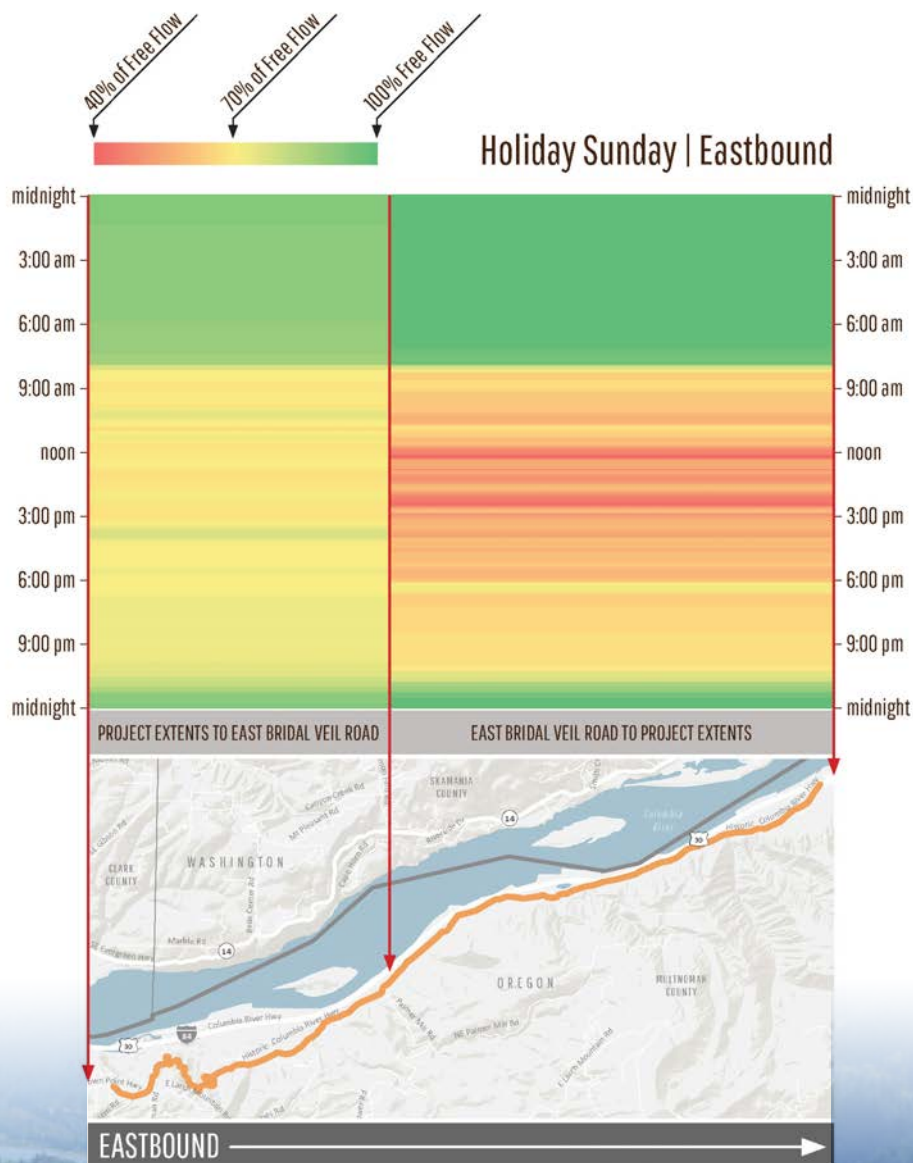
### Access

Although Sunday of Labor Day weekend was the first full day after the outbreak of the Eagle Creek fire, the speeds and volumes showed similar characteristics to comparable studied days. Slowdowns were moderate to the west of Bridal Veil Road, while slowing was more prevalent to the east. For the eastern segment, slowdowns in the eastbound direction occurred mostly between noon and 3 p.m. Westbound, slowing was focused in the afternoon hours, from about 2-5 p.m.

### Volumes

As with other days, the highest volumes recorded on the corridor were at Bridal Veil Road, peaking at around 170 vehicles per 15 minutes (a 680 vehicle-per-hour flow rate). Volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until 1-3 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park show an opposite pattern, likely reflecting that inbound volumes to the falls area originate to the east, at Exit 35 (Ainsworth State Park) at the I-84 interchange.

Figure 40. Eastbound Traffic Congestion and Slowing During Holiday Sunday Conditions



# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 41. Westbound Traffic Congestion and Slowing During Holiday Sunday Conditions

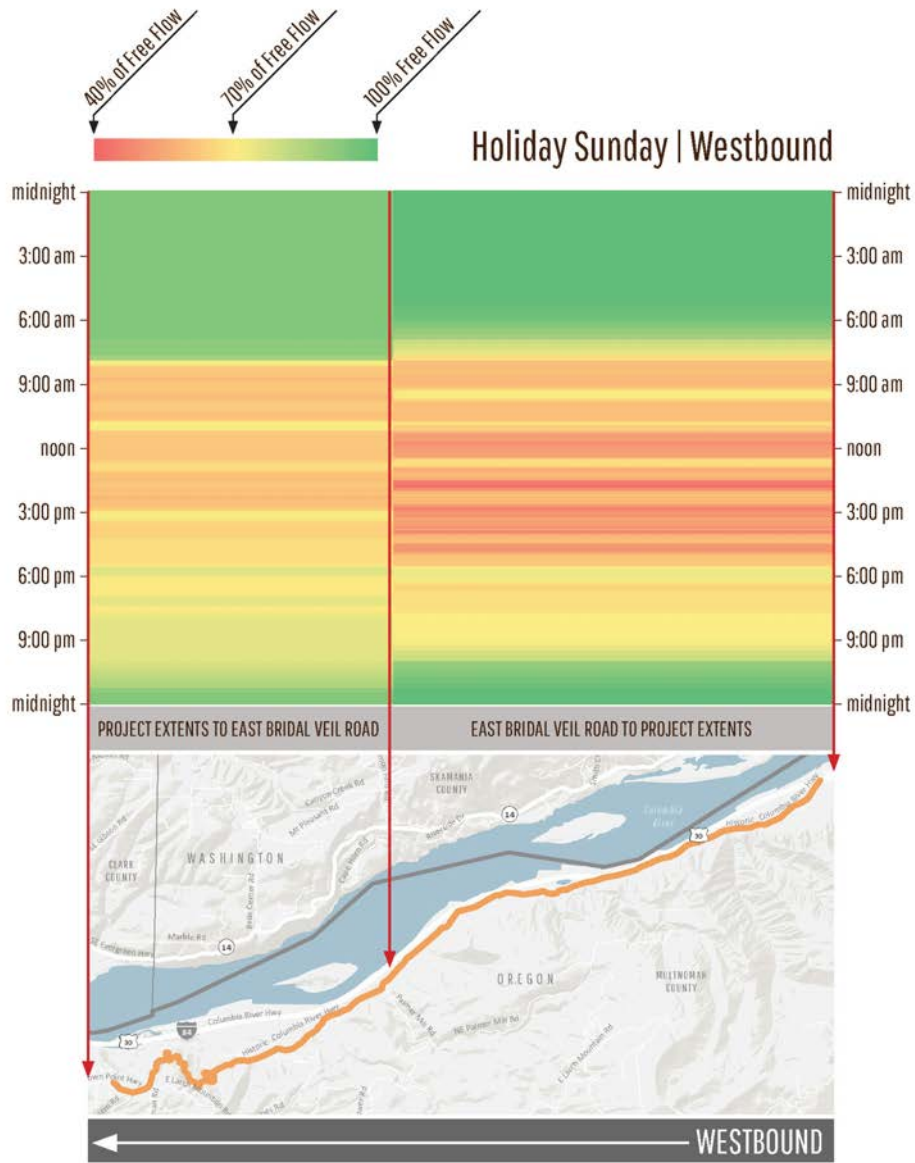


Figure 42. Larch Mountain Road Holiday Sunday Traffic Volumes

**Larch Mountain Rd**

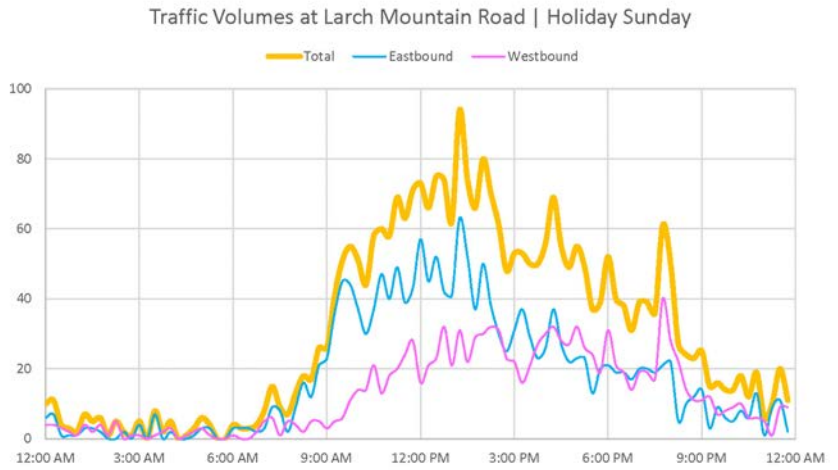


Figure 43. Bridal Veil Holiday Sunday Traffic Volumes

**Bridal Veil**

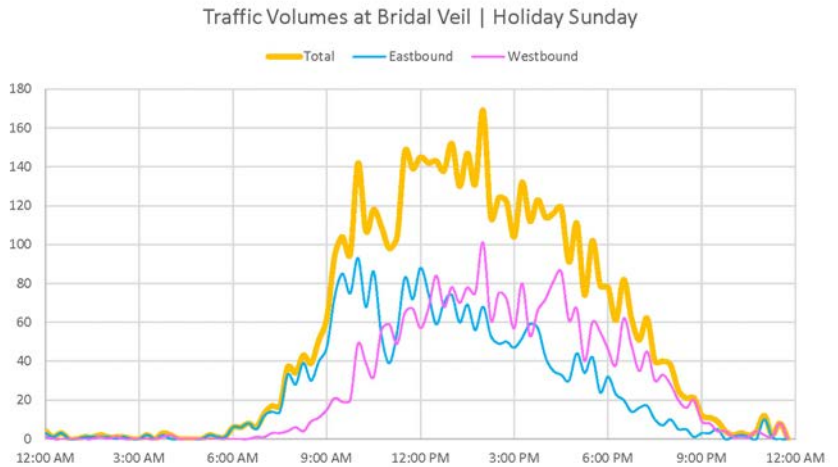
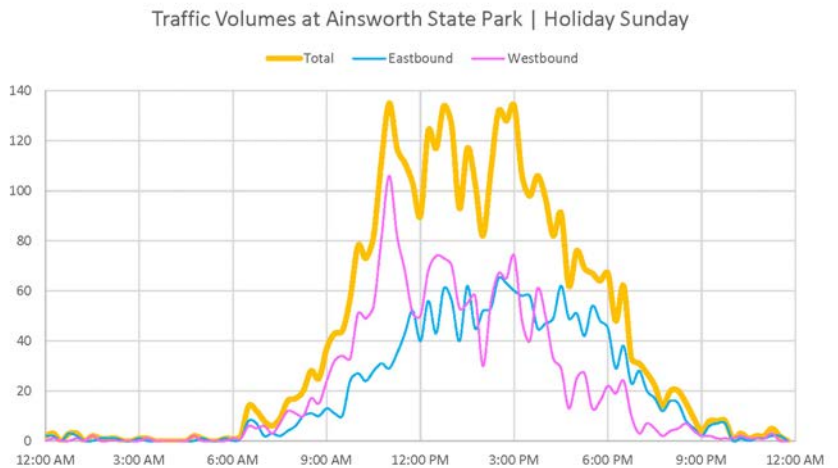


Figure 44. Ainsworth State Park Holiday Sunday Traffic Volumes

**Ainsworth State Park**



## Extended Holiday Monday

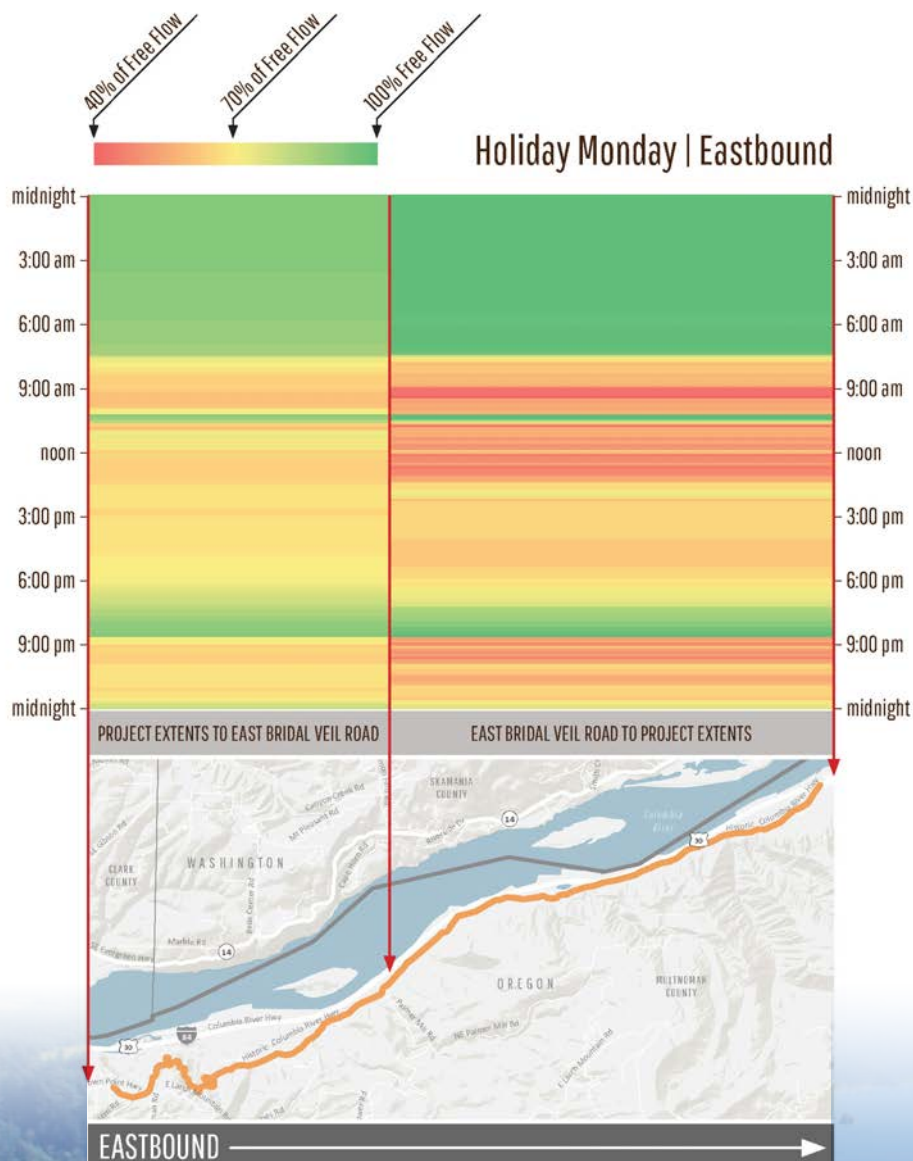
### Access

Data from Monday, Sept. 4 (Labor Day) reflects reduced traffic related to the continued spreading of the Eagle Creek fire and smoky conditions. As with other days studied, speed data shows the most variation east of Bridal Veil Road, with significant eastbound slowdowns from 9 a.m. to 1 p.m. in the eastbound direction. Data also shows slowing traffic late in the evening (9 p.m. to midnight), which may be related to worsening travel conditions (visibility/smoke) or the types of vehicles allowed on the segment (i.e., emergency responders, maintenance). Westbound, slowdowns were concentrated at the noon hour.

### Volumes

The highest volumes recorded on the corridor were at Bridal Veil Road, peaking at around 110 vehicles per 15 minutes (a 440 vehicle-per-hour flow rate). Volume patterns at Larch Mountain Road and Bridal Veil Road show higher eastbound volumes earlier in the day (until 1-3 p.m.), and higher westbound volumes later in the day. Volumes at Ainsworth State Park are relatively balanced in terms of direction throughout the day.

Figure 45. Eastbound Traffic Congestion and Slowing During Holiday Monday Conditions



# CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

Figure 46. Westbound Traffic Congestion and Slowing During Holiday Monday Conditions

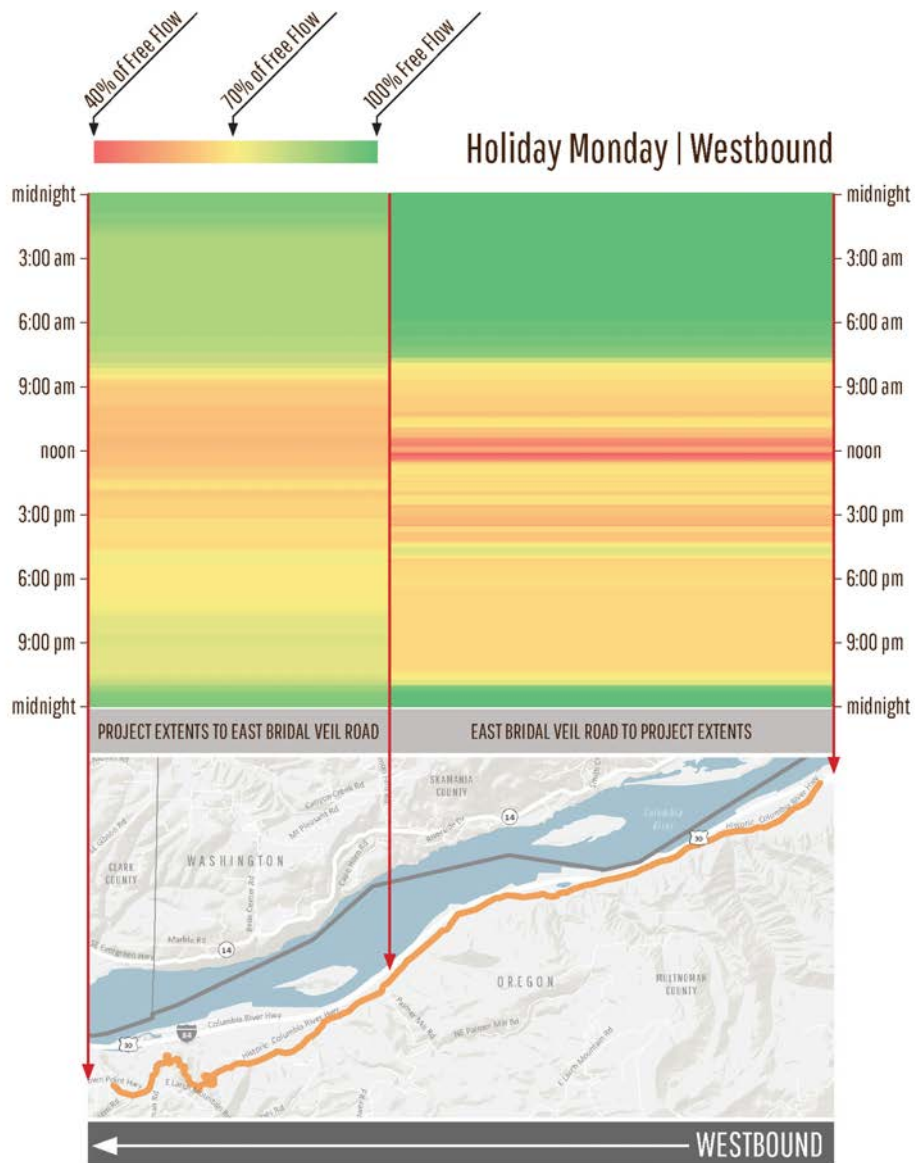


Figure 47. Larch Mountain Road Holiday Monday Traffic Volumes

**Larch Mountain Rd**

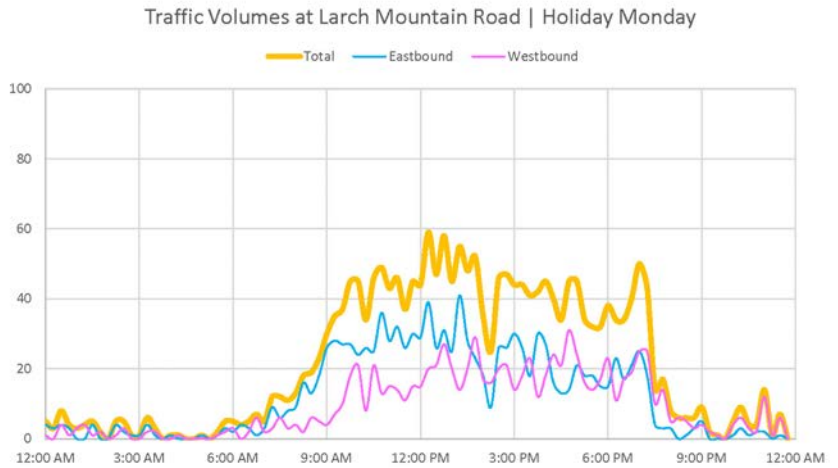


Figure 48. Bridal Veil Holiday Monday Traffic Volumes

**Bridal Veil**

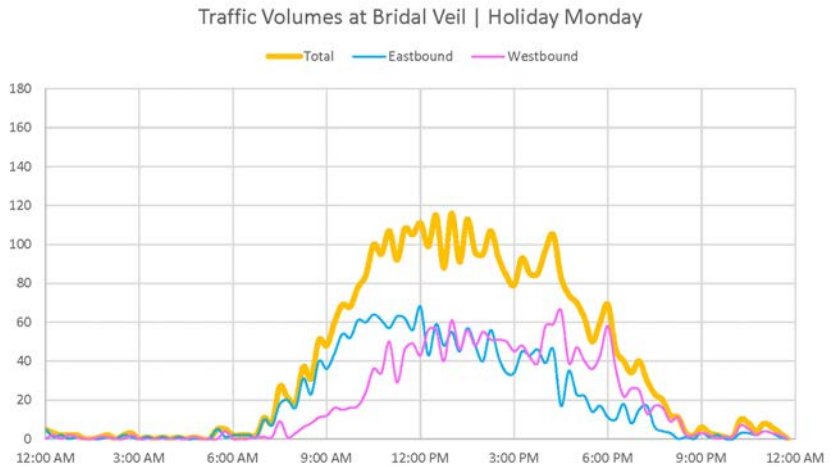
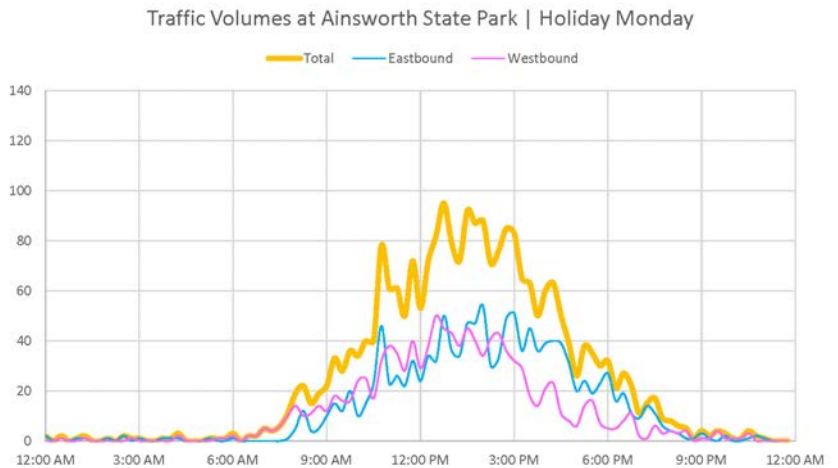


Figure 49. Ainsworth State Park Holiday Monday Traffic Volumes

**Ainsworth State Park**

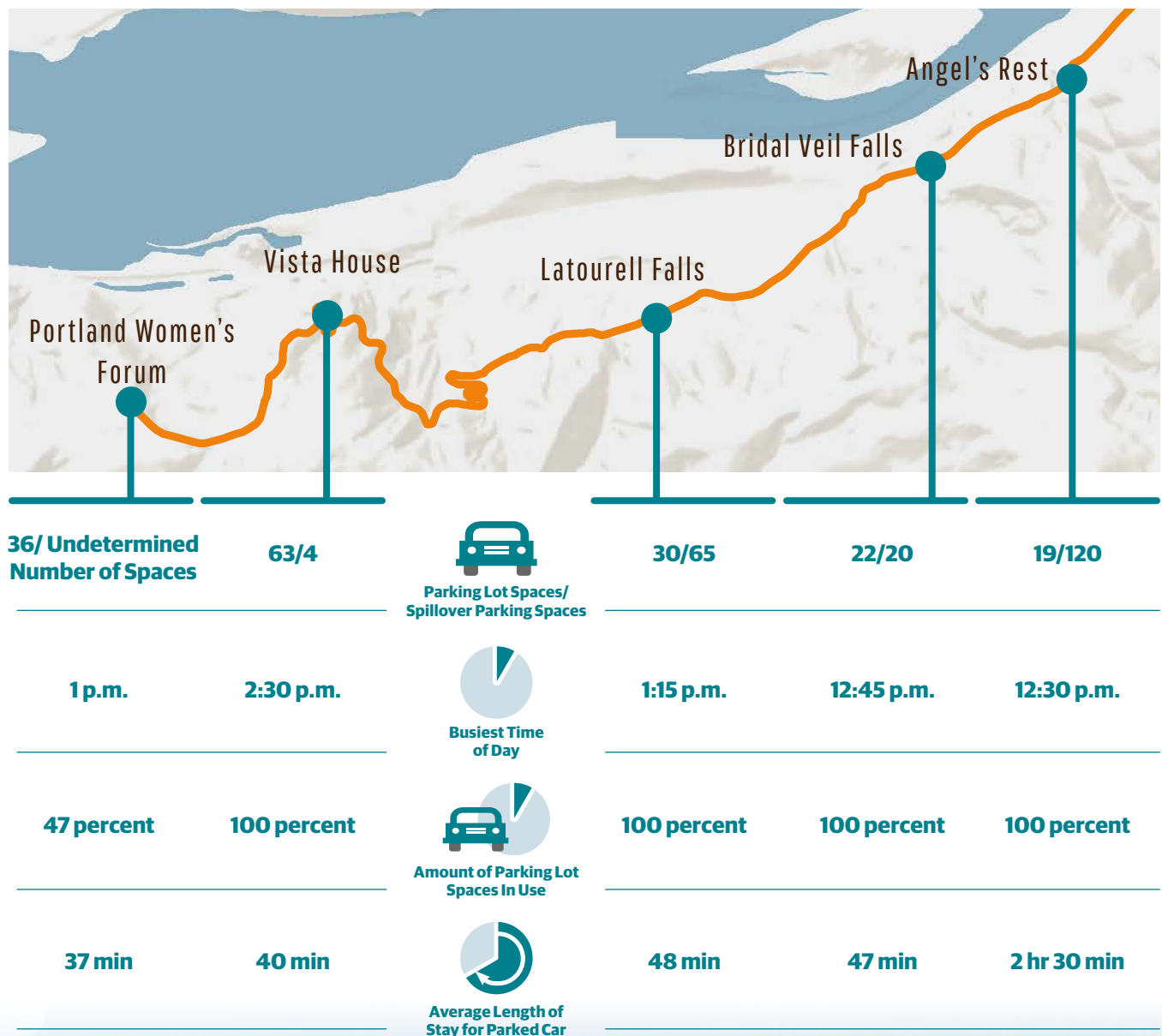




# Vehicle Parking

The team collected parking data on capacity and utilization at five trailheads or visitor destinations along the Waterfall Zone corridor. The team collected license plate information in both parking lots and spillover parking along the Historic Highway to track length of stay, turnover and other data points. The team collected data on Saturday, Aug. 26th and Tuesday, Aug. 29th, 2017 to represent typical peak summer weekday and weekend demand. The weekend survey day was sunny and warm (mid 80s) with no rain. The weekday survey was cooler in the low 70s, but dry (no rain). Team members recorded license plates every 30 minutes from 8 a.m. to 6 p.m. to capture short-term and long-term visitors.

All the trailheads and Vista House reached capacity during the weekend. The parking lots and spillover spaces had high utilization for several hours throughout the weekend day. Angel's Rest trailhead reaches capacity earliest in the day and maintains high occupancy until late afternoon.

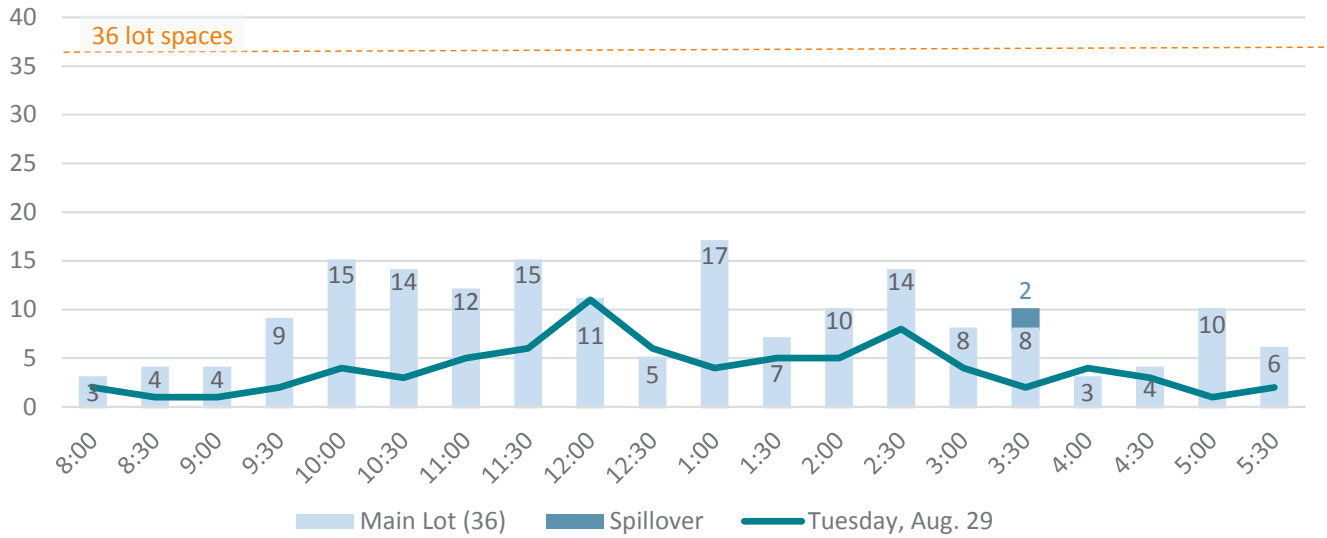


## HISTORIC COLUMBIA GORGE HIGHWAY

The Portland Women’s Forum was the only destination that did not exceed parking lot capacity. The site has adequate parking and a shorter average length of stay which allows for greater parking turnover. During weekdays, parking utilization was 55 percent lower than weekend observations.

**Figure 50. Portland Women’s Forum Parking Utilization (2017)**

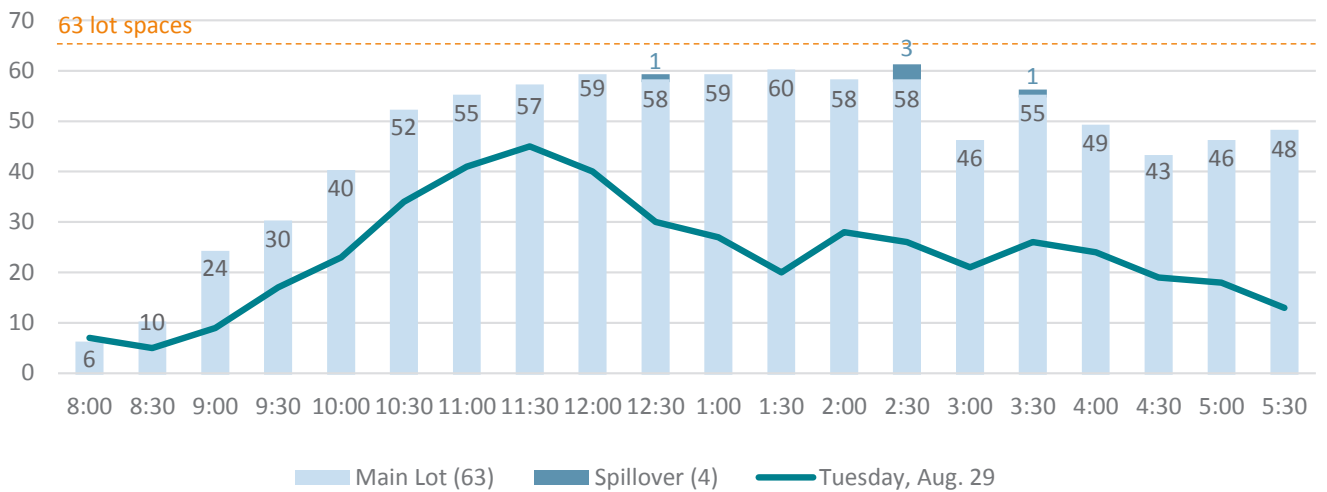
Saturday, Aug. 26 vs Tuesday, Aug. 29 (36 spaces)



During the weekend, the Vista House parking lot (63 spaces) effectively reaches capacity by noon and maintains that level of utilization until 3 p.m. The spillover spaces were only used during three observed half hour segments. During the weekdays, utilization peaks earlier in the day (11:30 a.m.) and slowly lessens over the course of the afternoon, whereas weekend days maintain high rates of utilization throughout the afternoon.

**Figure 51. Vista House Parking Utilization (2017)**

Saturday, Aug. 26 vs Tuesday, Aug. 29 (67 spaces)

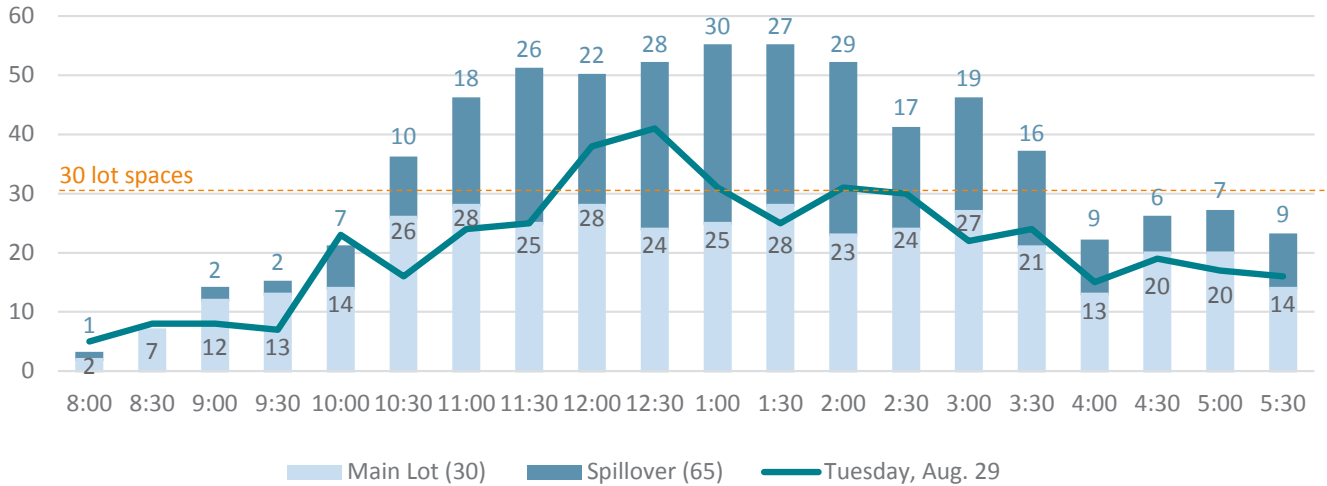


## CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

At Latourell Falls the parking lot has capacity for 30 vehicles, while the spillover area near the trailhead can accommodate approximately 65 additional vehicles. During the weekend, parking demand exceeds parking lot capacity around 10:30 a.m. Spillover areas near the trailhead are highly utilized during peak periods of the day. At Latourell Falls, much of the spillover parking is located a reasonable distance off the highway (unlike several other trailhead spillover areas to the east). Weekday utilization takes longer to reach its sustained peak occupancy levels (11:30 a.m. to 2:30 p.m.), and occupancies are 39 percent less than on weekend days.

**Figure 52. Latourell Falls Parking Utilization (2017)**

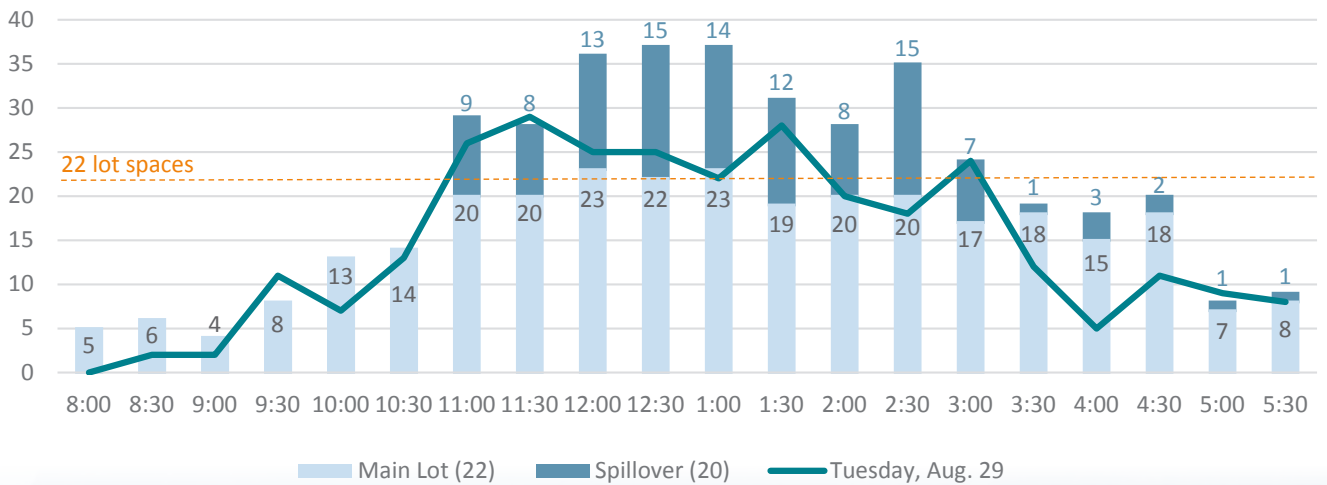
*Saturday, Aug. 26 vs Tuesday, Aug. 29 (95 spaces)*



On weekends during the peak summer months Bridal Veil Trailhead Lot (22 spaces) effectively reaches capacity by 11 a.m. The lot maintains or exceeds operating capacity until 3 p.m. Weekday utilization patterns mirror weekend occupancies except during peak hours, noon to 3 p.m., when visitors rely more heavily on the spillover parking area to accommodate their trips.

**Figure 53. Bridal Veil Falls Parking Utilization (2017)**

*Saturday, Aug. 26 vs Tuesday, Aug. 29 (42 spaces)*

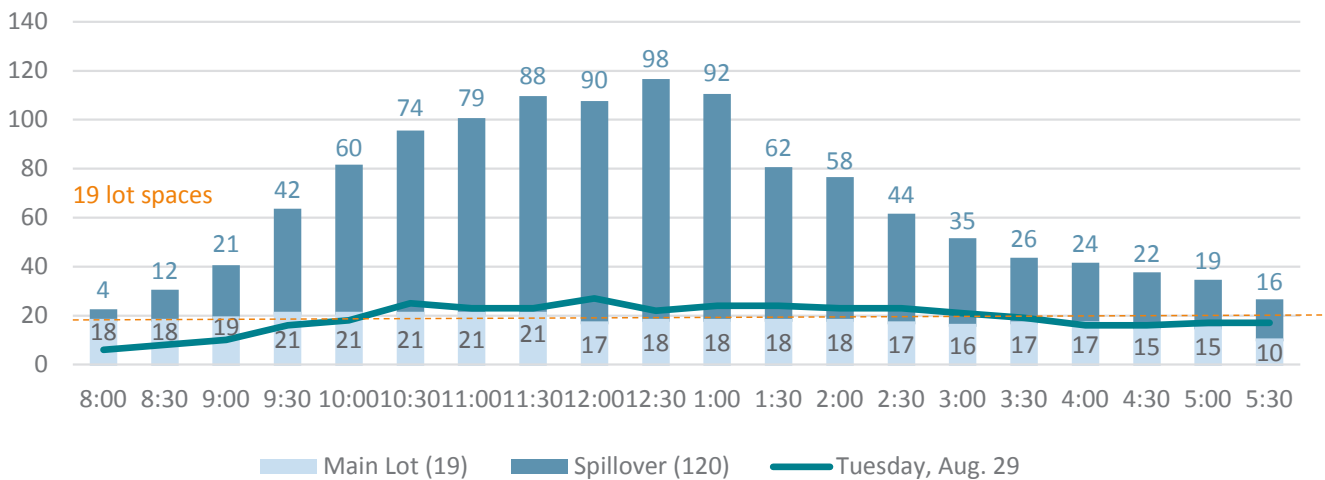


## HISTORIC COLUMBIA GORGE HIGHWAY

On weekends during the peak summer months the Angel’s Rest parking lot (19 spaces) effectively reaches capacity by 9 a.m. and exceeds it between 9:30 a.m. and noon with spillover parkers. The lot maintains high occupancy levels until 4:30 p.m. Angel’s Rest is a popular hiking location, and the longer average length of stay leads to slower parking turnover. Beginning at 2 p.m., the amount of vehicles parked in undesig-nated spots decrease each hour until 5:30 p.m.

Weekday parking utilization is significantly lower than weekend occupancies. Weekday parking demand did not exceed the lot’s capacity until 10:30 a.m. when vehicles began using the spillover parking. By 4 p.m. all parking demand could be accommodated at the trailhead lot (less than 19 vehicles). The line labeled Tuesday, August 29 represents the total for parked vehicles on that day.

**Figure 54. Angel’s Rest Parking Utilization (2017)**  
Saturday, Aug. 26 vs Tuesday, Aug. 29 (139 spaces)



### Additional Vehicle Parking Utilization (Summer, 2016)

In 2016, ODOT conducted a trailhead parking utilization study at popular destinations along the Historic Highway and had similar findings. The team followed similar data collection methods as the 2017 survey, counting license plates every 30 minutes from 8 a.m. to 6 p.m. during a busy summer weekday and weekend day (Tuesday, Aug. 23rd and Saturday Aug., 27th 2016). The team collection data for Wahkeena Falls Trailhead, Multnomah Falls, Oneonta, Horsetail Falls and Ainsworth State Park. The 2017 data reinforces the findings from the 2016 data collection that parking lot spaces regularly exceed capacity early in the day and stays at capacity until late afternoon or early evening.

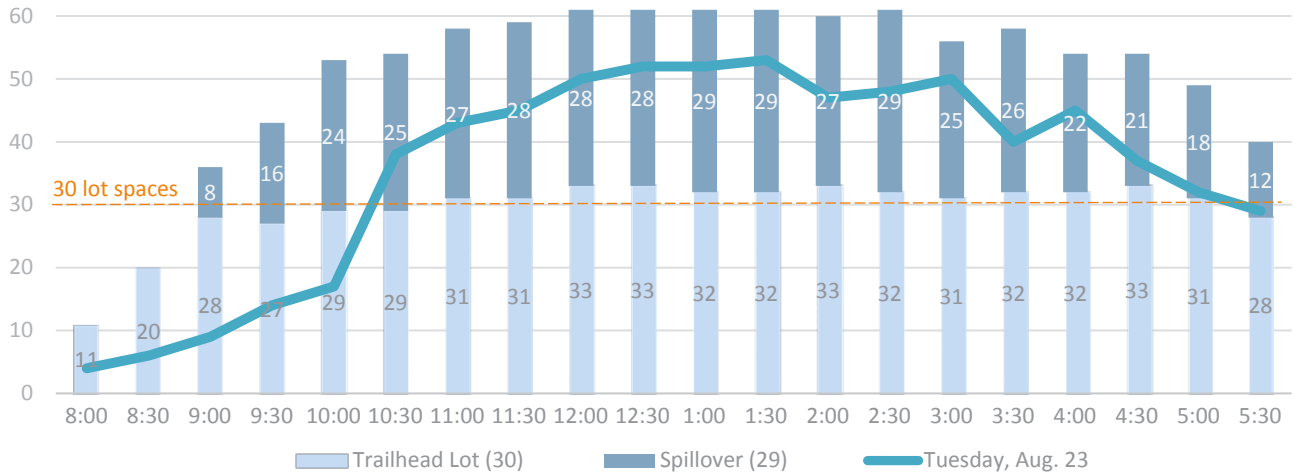
On weekends during the peak summer months Wahkeena Falls parking lot effectively reaches capacity by 10 a.m. and maintains or exceeds operating capacity until 5:30 p.m. Spillover parking locations reach capacity at 11:30 a.m. and sustain high use levels until 2:30 p.m.

Weekday parking does not spillover onto the highway until 10:30 a.m. (an hour and half later than weekends). On average, weekday occupancies are 25 percent less than weekend days. With the ease of access to parking spaces (i.e., perpendicular spaces immediately adjacent on either side of the highway), Wahkeena Falls has consistent and sustained parking occupancies throughout the day.

## CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

**Figure 55. Wahkeena Falls Trailhead Parking Utilization (2016)**

Saturday, Aug. 27 vs Tuesday, Aug. 23 (59 spaces)

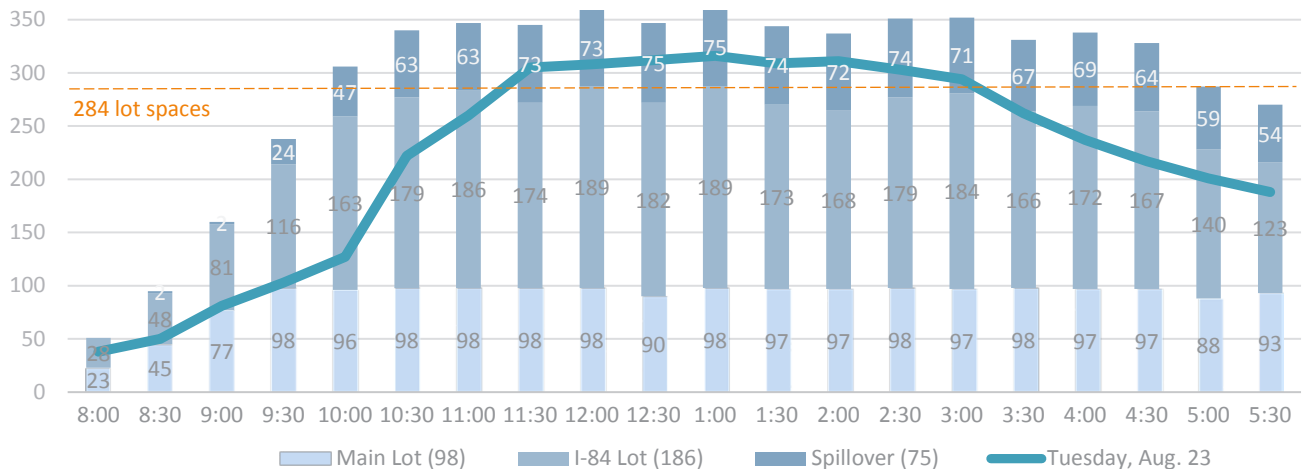


There are three “improved” parking lots associated with Multnomah Falls – the Main Lot (98 spaces), the I-84 Lot (186 spaces), and the Spillover Lot (75 spaces). Like many of the trailhead lots along the highway, parking demand commonly exceeds supply. Parking at Multnomah Falls stays fairly contained within the lot boundaries due to strict enforcement of parking prohibitions on the shoulder that extend immediately to the east and west of spillover area. The highest count of vehicles parked in the Multnomah Falls “capture area” was 362 vehicles at 1 p.m. (Saturday). This is two more vehicles than spaces (i.e., illegal parking).

On weekends during the peak summer months Multnomah Falls Main parking lot (98 spaces) effectively reaches capacity by 9:30 a.m. The lot maintains or exceeds operating capacity until 5 p.m. On weekends the I-84 Lot reaches capacity by 11 a.m. and fluctuates at near capacity levels until 3:30 p.m. when utilization gradually begins to decrease into the early evening hours. Spillover parking locations reach capacity at 11:30 a.m. and sustain utilization levels until 3:30 p.m.. These spillover facilities have similar visitor access patterns as the I-84 Lot. Weekday utilization takes longer to reach its sustained peak occupancy levels (11:30 a.m. to 3 p.m.). On average, weekday occupancies are 12 percent less than weekend days over the midday peak period.

**Figure 56. Multnomah Falls Parking Utilization (2016)**

Saturday, Aug. 27 vs Tuesday, Aug. 23 (359 spaces)

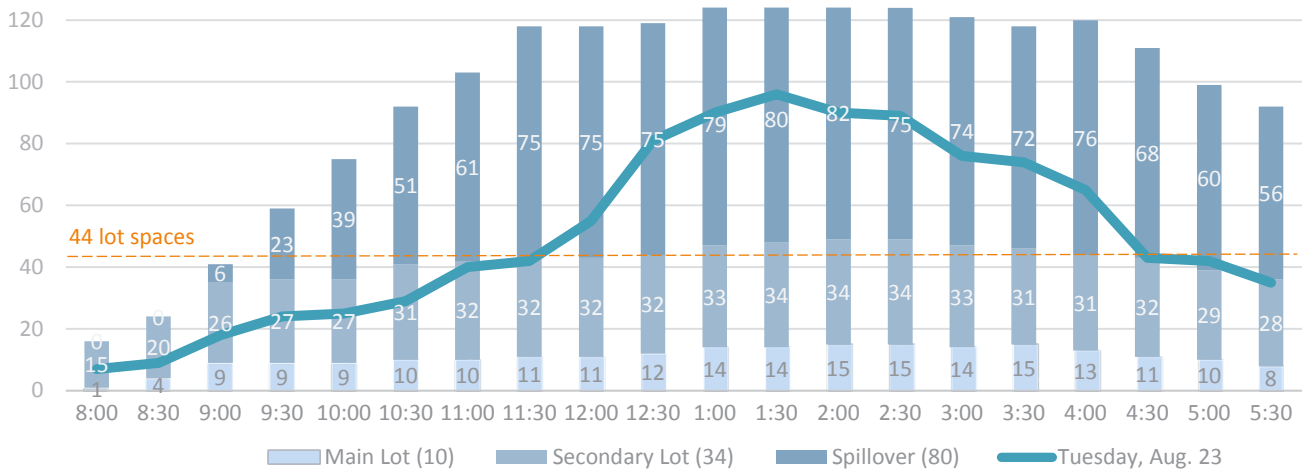


## HISTORIC COLUMBIA GORGE HIGHWAY

Oneonta’s Main lot periodically exceeds capacity (10 spaces) when users park illegally (e.g. double park, stacking) to gain access. On weekends, the Secondary Lot (34 spaces) operates at near capacity starting at 10:30 a.m. and maintains that occupancy level throughout the day until 5 p.m., similar to the Main Lot.

Weekday utilization (blue line) falls short of the weekend demand, but maintains occupancy of 80 percent or more in the Main Lot and spillover area. During the peak weekend hours the spillover for Oneonta can reach 80+ vehicles (vehicle counts in excess of 80 are likely parked illegally), nearly double the capacity of the two parking lots. Full capacity of the spillover is estimated at 80 vehicles.

**Figure 57. Oneonta Parking Utilization (2016)**  
Saturday, Aug. 27 vs Tuesday, Aug. 23 (124 spaces)



Like many of the trailhead lots along the highway in the summer, parking demand at Horsetail Falls regularly exceeds supply. Due to the lot’s generous size and long pull-through area, vehicles regularly wait in the aisle way for a parking space to become available. Occupancies regularly exceed capacity during peak periods. The spillover area for Horsetail is extensive, extending up to the tunnel on the west and a quarter-mile to the east toward Ainsworth State Park.

On weekends during the peak summer months Horsetail Falls Trailhead Lot (26 spaces) effectively reaches capacity by 8:30 a.m. The lot maintains or exceeds operating capacity until 6 p.m. (beyond the data collection period). Spillover parking at 1 p.m. exceeds the number of estimated spaces (+3). Spillover parking in this area is particularly dangerous as the highway shoulders are especially narrow and force users to walk in the roadway to the trailhead. Visitors will sometimes illegally park over the fog line in order to get a parking space. Weekday utilization takes longer to reach its sustained peak occupancy levels (noon to 2 p.m.). On average, weekday occupancies at Horsetail Falls are 34 percent less than on weekend days.

# Bike Access and Volumes

The team collected bicycle volume data between 9 a.m. and 3 p.m. on an extended typical summer weekend: Friday, Aug. 25 through Monday, Aug. 28, 2017. Data was collected at two locations: just west of the Portland Women’s Forum scenic overlook at the west end of the corridor, and in front of the Multnomah Falls Lodge. Bike volumes were higher and directional patterns stronger at the Portland Women’s Forum location.

## Typical Weekday

For the typical weekday, bike volumes were highest at the Portland Women’s Forum overlook location. Eastbound bike volumes were highest at 9 a.m., while westbound peaked at 1 p.m. Bike volumes were slightly lower at the Multnomah Falls location, suggesting that people biking from the Portland metro area either do not travel as far as Multnomah Falls, or they divert to other roads such as Larch Mountain Road.

Figure 58. Portland Women’s Forum Bike Weekday Volumes

### Portland Women’s Forum

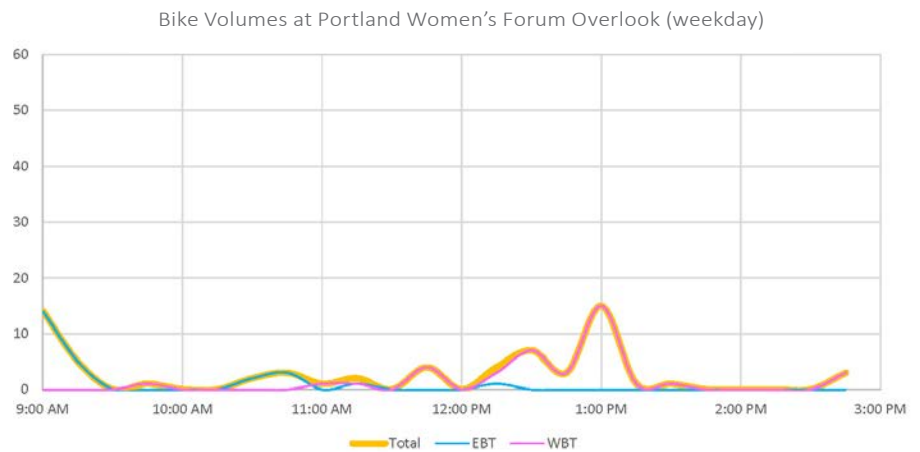
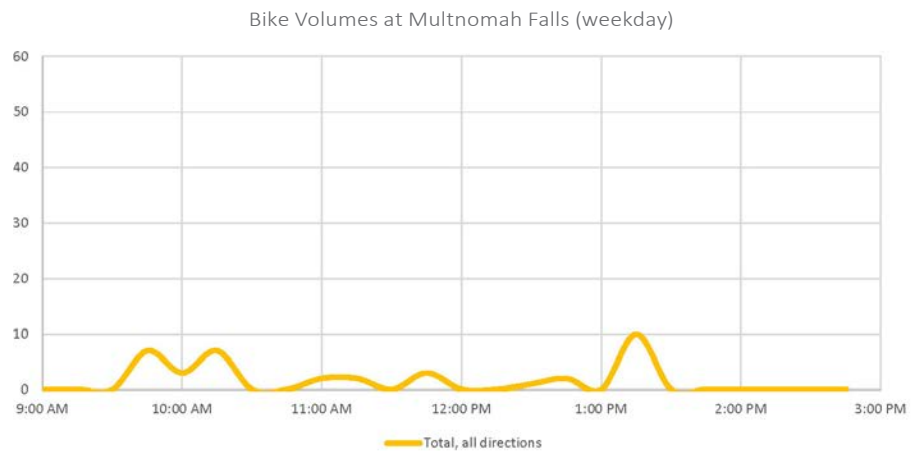


Figure 59. Multnomah Bike Weekday Volumes

### Multnomah Falls



## Typical Weekend Day

For the typical weekday, bike volumes were highest at the Portland Women’s Forum overlook location. Eastbound bike volumes were highest at 9 a.m., while westbound peaked at 1 p.m. Bike volumes were slightly lower at the Multnomah Falls location, suggesting that people biking from the Portland metro area either do not travel as far as Multnomah Falls, or they divert to other roads.

Figure 60. Portland Women’s Forum Bike Weekend Volumes

### Portland Women’s Forum

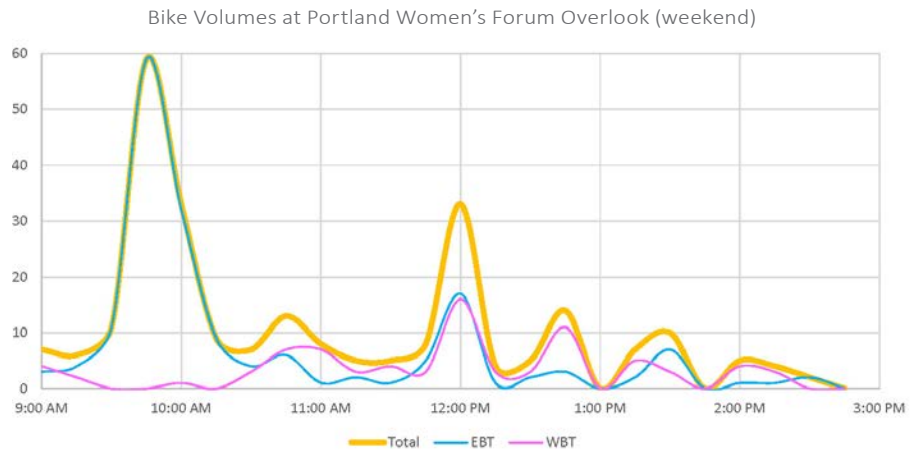
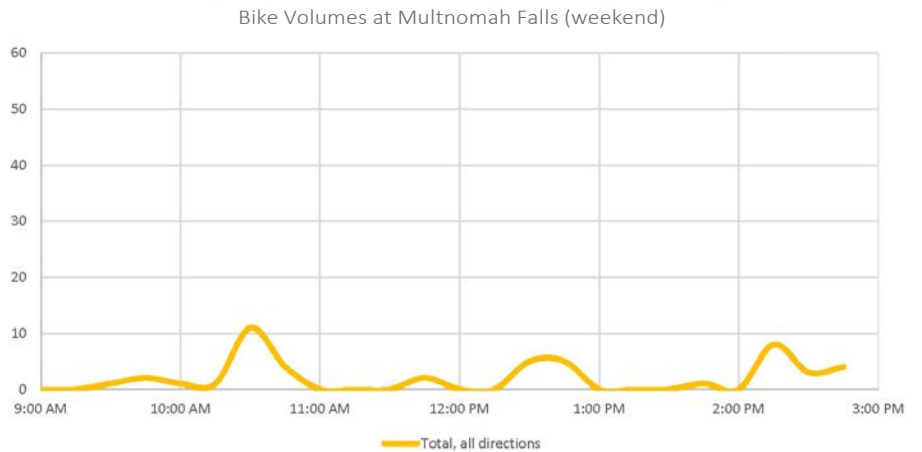


Figure 61. Multnomah Bike Weekend Volumes

### Multnomah Falls





# Walking Access and Volumes

Pedestrian volume data was collected at the same time and locations as bicycle data: between 9 a.m. and 3 p.m. on an extended typical summer weekend: Friday, Aug. 25 through Monday, Aug. 28, 2017.

Pedestrian volumes at the Portland Women’s Forum were very low on all days studied. Multnomah Falls, by contrast, experienced significant pedestrian activity. Activity at the Falls location included a variety of patterns, shown in Figure 48:

- Northbound and southbound travel across the crosswalk in front of the falls
- Northbound and southbound travel across the Historic Highway in unmarked areas as far west as the west end of the Lodge frontage
- Eastbound and westbound travel along the roadway frontage, crossing an imaginary “cutoff line” running north and south at the west end of the Lodge



People often walk in roadway when shoulders are used for parking

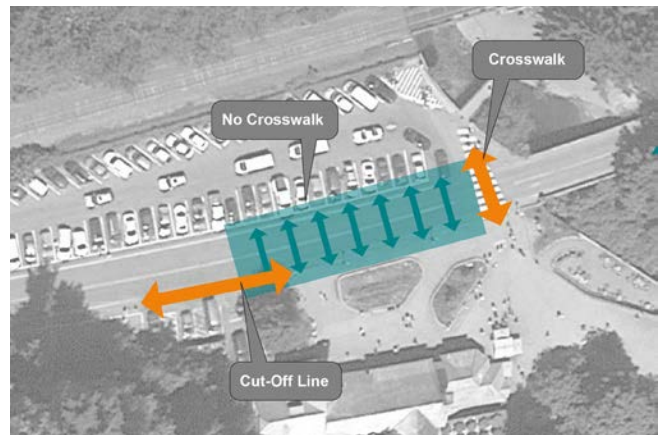


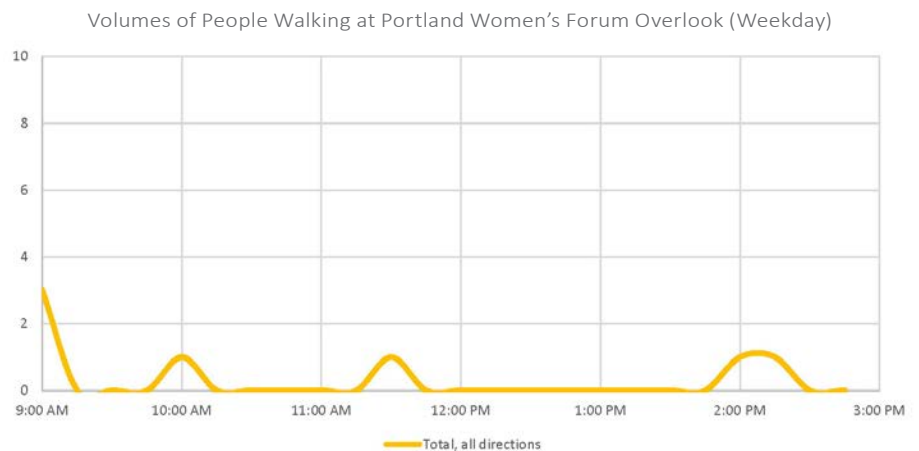
Figure 62. Walking Count Observation Points at Multnomah Falls

## Typical Weekday

On a typical weekday, crossing volumes at Multnomah Falls were extremely high, averaging 200-300 people per 15 minutes (800-1,200 per hour) from about 11 a.m. until the end of data collection at 3 p.m. Along the Lodge frontage, about 100 people per hour crossed the roadway.

Figure 63. Portland Women’s Forum Pedestrian Weekday Volumes

### Portland Women’s Forum



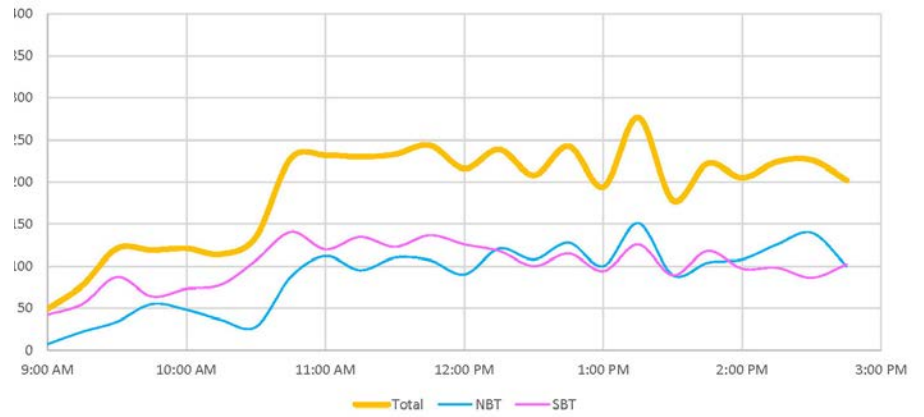
# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 64. Multnomah Falls Pedestrian Weekday Volumes at Several Locations

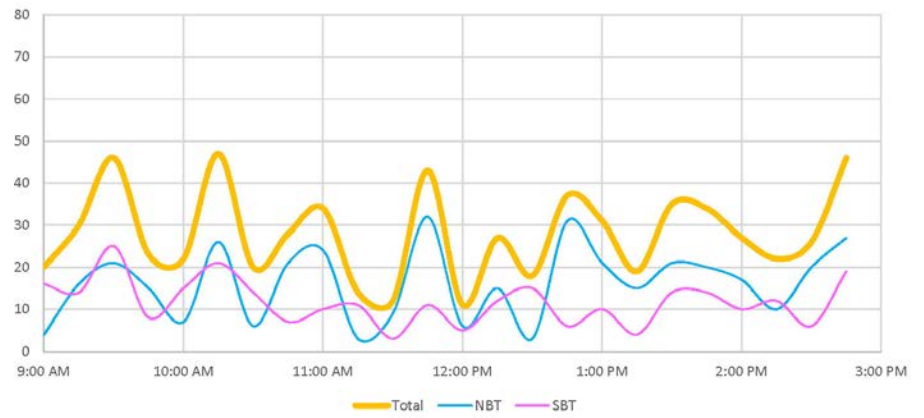
## Multnomah Falls



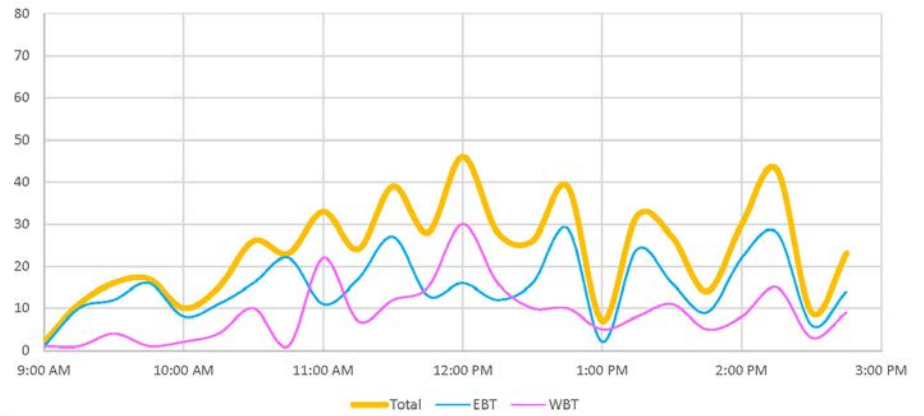
Volumes of People Walking at Multnomah Falls | Crosswalk (Weekday)



Volumes of People Walking at Multnomah Falls | No Crosswalk (Weekday)



Volumes of People Walking at Multnomah Falls | Cut-Off Line (Weekday)

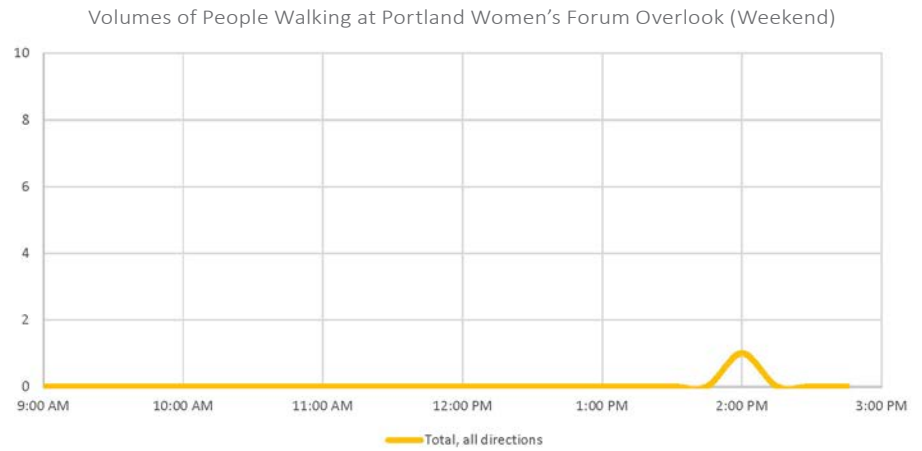


## Typical Weekend Day

On a typical weekend day, crossing volumes at Multnomah Falls average 250-400 people per 15 minutes (1,000-1,600 per hour) from about 9:30 a.m. until the end of the data collection period at 3 p.m. Pedestrian volumes along the Lodge frontage were around 100-150 per hour for most of the study period. At the Portland Women’s Forum location, by contrast, just a single pedestrian was counted over the six hour period.

Figure 65. Portland Women’s Forum Pedestrian Weekend Volumes

### Portland Women’s Forum



People cross at multiple locations at Multnomah Falls, including marked and unmarked locations

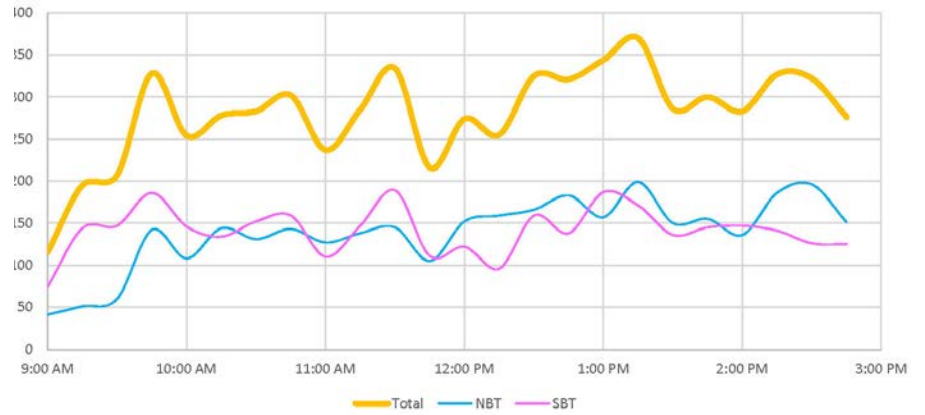
# HISTORIC COLUMBIA GORGE HIGHWAY

Figure 66. Multnomah Falls Pedestrian Weekend Volumes at Several Locations

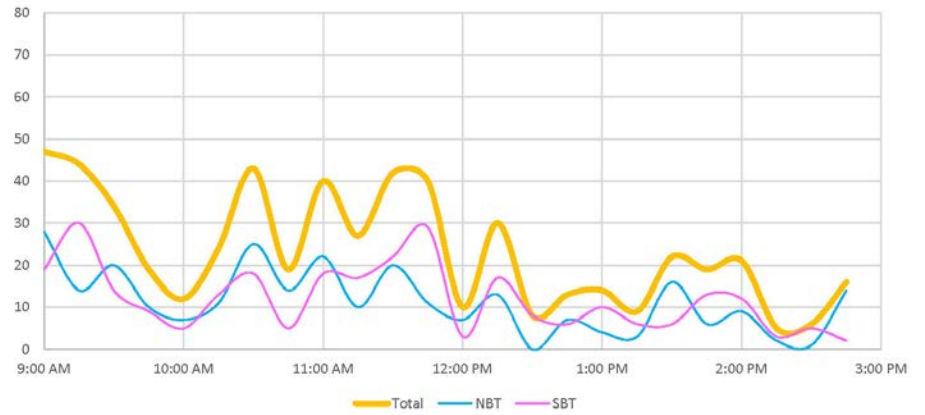
## Multnomah Falls



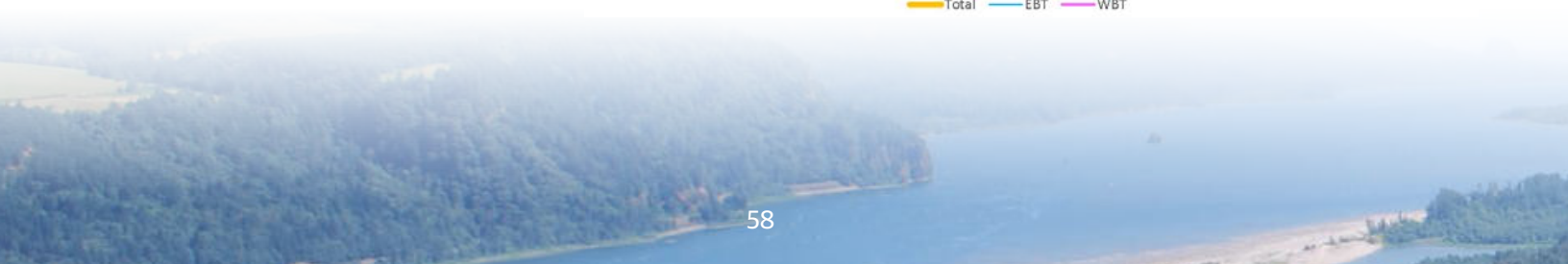
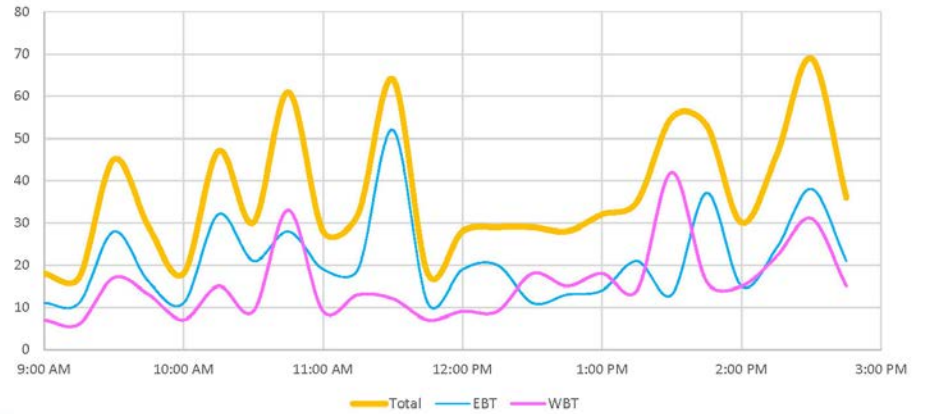
Volumes of People Walking at Multnomah Falls | Crosswalk (Weekend)



Volumes of People Walking at Multnomah Falls | No Crosswalk (Weekend)



Volumes of People Walking at Multnomah Falls | Cut-Off Line (Weekend)



# Transit

Prior to the introduction of the Columbia River Gorge Express in 2016, there were no public transit operations serving the study corridor. The Columbia Area Transit Service operates fixed route service near the study corridor on I-84 between The Dalles, Hood River and Portland. Service operates on Tuesdays and Thursdays departing The Dalles at 7:30 a.m. with Portland-area stops at the Gateway Max Station, Portland Art Museum, Oregon Health Sciences University and Clackamas Town Center. Service departs from the Clackamas Town Center at 2 p.m. and returns to The Dalles at 5:10 p.m.<sup>11</sup>

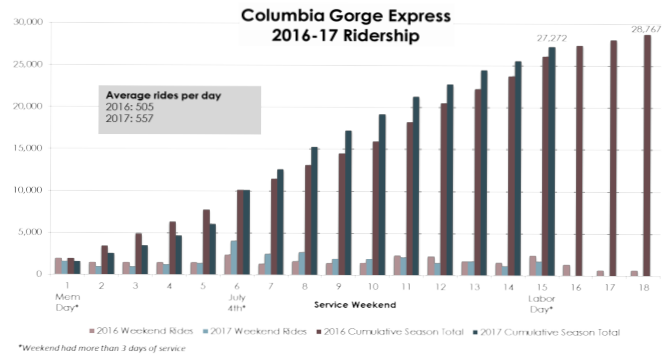
## Columbia Gorge Express

The Columbia Gorge Express was introduced to the study corridor due to increasing congestion at Multnomah Falls and along the Historic Highway. ODOT conducted the Columbia River Gorge Transit Study<sup>12</sup> between 2015 and 2016 to consider new opportunities to meet regional transportation needs. The study focused on improving transit access to recreational sites, enhancing mobility and safety, addressing congestion and limited parking capacity, and protecting natural and cultural resources through the reduction of illegal parking. The study recommended transit service opportunities for two distinct time frames; (1) a two-

year pilot service program operating during periods of peak annual travel from May through June; and (2) near term service expansions serving a broader market and additional travel needs in 2018-2020. The Columbia Gorge Express began operating in 2016 based on the study’s findings and is the sole public transit operator serving the recreational sites in the study area. Several private tour bus operators also operate in the corridor.

The service operated Friday through Sunday from late May to September. The shuttle departed Gateway Transit Center in East Portland twelve times per day with round trip service to Rooster Rock State Park and Multnomah Falls. Passenger tickets from Gateway Transit Center cost \$5 and are free for passengers boarding at Rooster Rock. Rooster Rock State Park serves as a park and ride for passengers visiting Multnomah Falls and vehicles are assessed a \$5 parking fee. When the Multnomah Falls parking lot is at capacity, variable messaging signs direct visitors to park at Rooster Rock and use the bus.

Figure 67. Columbia Gorge Express Data



Visitors wait to load the Gorge Express Bus

Ridership throughout the pilot program exceeded expectations, with approximately 30,000 estimated trips using the bus during both the 2016 and 2017 season. Service in 2017 ended early as the Eagle Creek fire forced the cancellation of the final three service weekends. While on track to exceed the 2016 season, the loss of three weekends of service ultimately led to slightly lower seasonal ridership. Table 17 summarizes the total ridership for 2016 and 2017.

Clear ridership patterns emerged over the course of the two-year pilot. Sundays were the busiest days on average, and more riders boarded at Rooster Rock than at Gateway Transit Center. The vast majority of riders boarding at Gateway visited Multnomah Falls, while about one-quarter visited Rooster Rock, either solely or in addition to Multnomah Falls. Peak travel eastbound to the Gorge occurred between 9 a.m. and 1 p.m., and peak travel westbound from the Gorge occurred between 1-4 p.m.. Fourth of July weekend was the busiest weekend during both seasons, accounting for 8 percent of trips in 2016 and 15 percent in 2017.

**Table 7. Columbia River Gorge Express Ridership**

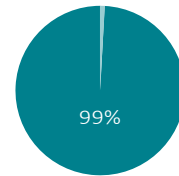
Stop Location	Total Ons by Year	
	2016	2017*
Gateway Transit Center	5,390	5,670
Rooster Rock State Park	9,234	8,840
Multnomah Falls	14,144	11,995
Total	28,768	27,272**

\* Columbia River Gorge Express service was canceled from week 16 through 18 (9/8/17 through 9/24/17) due to wildfires.

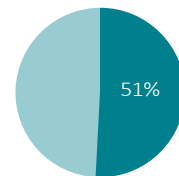
\*\* Total does not match stop total because partial estimates were made by ODOT in weeks 4 and 9 at each stop resulting in additional travelers than those accounted for by individual stop.

**An on-board survey taken by bus riders in 2017 uncovered the following findings:**

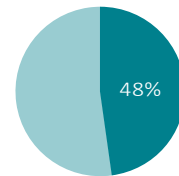
Most respondents boarding at Gateway learned about the Gorge Express via a transit trip planner or web search. Most of those boarding at Rooster Rock learned about the service from a sign on I-84.



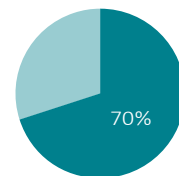
**99 percent** of respondents would recommend the Columbia Gorge Express



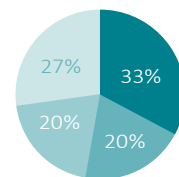
**51 percent** of Gateway riders said they do not have access to a car



**48 percent** chose to ride the bus to save money



Nearly **70 percent** riders hailed from another state or live out of the country.



Gateway riders mostly began their trip from the Portland area:

**One-third** from hotel/Airbnb/VRBO, etc. in downtown Portland

**20 percent** from a hotel/Airbnb/VRBO, etc. outside of downtown,

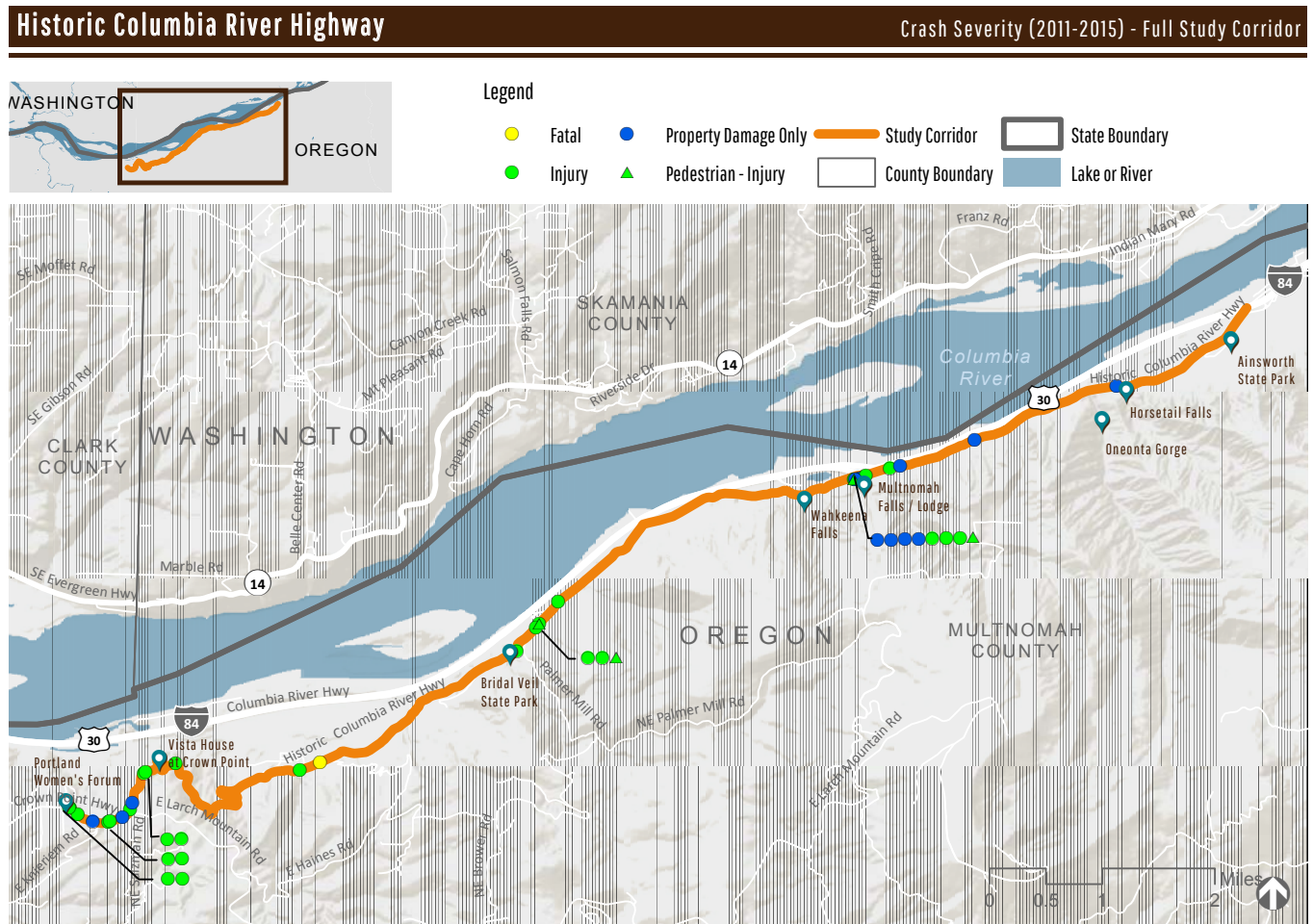
and **20 percent** from their Portland-area home

*Rooster Rock riders began their trips from a city besides Portland.*

# Transportation Safety

Oregon Department of Transportation provided crash data from 2011 through 2015 (the most recent five years available) to identify any high-crash locations and trends involving people walking or biking along the Historic Highway. Figure 53 shows the locations of the crashes. During this five-year period there were a total of 29 crashes, two of which involved pedestrians. The most crashes are clustered near Multnomah Falls. Table 18 presents crashes by day of the week and time of day.

Figure 68. Map of Crashes on the Historic Highway (2011-2015)



## HISTORIC COLUMBIA GORGE HIGHWAY

**Table 8. Crashes by Day of the Week and Time of Day (2011-2015) on the Historic Highway**

	Total	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Total	29	7	2	5	1	5	3	6
Midnight	1							1
1 a.m.	1			1				
2 a.m.								
3 a.m.	1	1						
4 a.m.	1					1		
5 a.m.								
6 a.m.								
7 a.m.								
8 a.m.								
9 a.m.	1	1						
10 a.m.	1							1
11 a.m.	3	1			1			1
Noon	4	1	1	1		1		
1 p.m.	3	1					1	1
2 p.m.	4		1	1		2		
3 p.m.	3	1					1	1
4 p.m.	3			1		1		1
5 p.m.	2	1		1				
6 p.m.	1						1	
7 p.m.								
8 p.m.								
9 p.m.								
10 p.m.								
11 p.m.								



## CONGESTION AND TRANSPORTATION SAFETY IMPROVEMENT PLAN

Of the 29 crashes, one resulted in a fatality, 18 resulted in injury, and 10 resulted in property damage only. The two pedestrian crashes resulted in minor (possible) injuries. One of the pedestrian crashes was subsequent to a motor vehicle collision. The vehicle was forced into the pedestrian after being hit by another vehicle performing an improper turn. The other pedestrian was hit while in the roadway. The collision types are categorized by injury severity level in Table 19. Crash severity is categorized using the KABCO scale, which categorizes crashes from property damage (e.g. a dent to the car) to a fatality. The scale labels each category as:

- K** – Fatal Crash
- A** – Disabling or Incapacitating Injury
- B** – Documented Injury
- C** – Possible Injury
- O** – Property Damage Only (PDO)

**Table 9. Collision Type and Injury Severity of 29 Crashes on the Historic Highway (2011-2015)**

Collision type	K - Fatal	Injury A	Injury B	Injury C	O - PDO	Total
Pedestrian				1		1
Sideswipe-meeting			2			2
Sideswipe-overtaking			1			1
Turning Movement		1	1	1	1	4
Parking Maneuver					2	2
Non-Collision			2			2
Fixed Object	1	1	2	4	4	12
Backing				1	1	2
Miscellaneous			1		2	3
<b>Total</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>7</b>	<b>10</b>	<b>29</b>

The crash analysis was supplemented by a review of ODOT’s Safety Priority Index System listings for locations in the study area that ranked among the state’s top ten percent of hazardous locations. The Safety Priority Index System, known as SPIS, is a method developed by ODOT for identifying hazardous locations on state highways, with the score based on three years of crash data, considering crash frequency, rate, and severity. This rating provides a general comparison of the overall safety of the highway based on crash information for all highway segments throughout the state. ODOT bases its SPIS on 0.10-mile segments to account for variances in how crash locations are reported. A SPIS score is calculated for a segment if a location has: 1) three or more crashes OR; 2) one or more fatal crashes, over the three-year period. According to ODOT 2015 SPIS ratings (data reported between 2012 and 2014), the only highway segment in the study area for which this criteria was true was the segment from MP 17.84-17.98. This segment’s SPIS score was in the 55th percentile of statewide SPIS scores. No location was identified as being among the top ten percent of hazardous locations.

# Existing Intelligent Transportation Systems Tools and Tactics

In 2011, ODOT developed an active traffic management and parking system concept for the Multnomah Falls area. The project targeted the parking lot in the center of I-84 at the falls with the goal of improving safety by eliminating queuing back on to the freeway mainline.

The system concept began operations in May 2014 and included the following elements:

- **Exit ramp gate control system** to physically restrict access to the I-84/Multnomah Falls parking lot from I-84 eastbound.
- **Exit ramp gate closure zone detection system** to verify that the gate area is clear of vehicles before closing.
- **Parking occupancy system** using an inductive loop system at all four ramps to help tabulate total lot occupancy, which triggers gate closure and opening.
- **Exit ramp queue detection system** using inductive loops to identify when queuing occurs on the I-84 eastbound off-ramp.
- **En route and pre-trip traveler information** using dynamic message signs on I-84 eastbound to alert drivers when the lot is closed, and pre-trip information on ODOT's TripCheck website.
- **Ramp and parking lot monitoring system** using cameras to actively monitor and visually confirm traffic and parking conditions.
- **Enhanced parking lot guide signing** to improve flow through the parking area, directing drivers to the three lots (north lot, south lot, RV/trailer lot).

## Key Deficiencies and Challenges

Previous studies and planning efforts have identified congestion and safety issues along the Historic Highway. Data collection confirms that the Historic Highway has challenges accommodating the number of visitors to the area, particularly during summer weekends. Key challenges include:

- Trailheads, particularly Angel’s Rest, but also Bridal Veil Falls and Latourell Falls, do not accommodate vehicle trips with existing parking capacity during peak periods.
- Vehicles often park on shoulders near trailheads, delaying vehicles on the roadway and forcing pedestrians and bicyclists into the travel lane.
- The windy character of the roadway and the topography of the walls and cliffs limit sight lines and create challenges to creating a safe space along the roadway for nonmotorized users.
- There were 29 reported crashes in the study corridor during the last five years of available data. The mixing of modes (vehicles, bicycles and pedestrians) in travel lanes can create uncomfortable conditions, but congestion-induced low speeds have produced crashes that result in property damage only, or Injury B or C (categorized as moderate). There was one fatality during the five-year period where a driver crashed into a fixed object.
- The western portion of the study corridor (near the Portland Women’s Forum) is particularly popular with bicyclists riding the Historic Highway, which connects to the Historic Columbia River Highway State Trail and is a designated Scenic Bikeway. Narrow and disappearing shoulders create conditions where bicycles must share the road with vehicles. During peak congestion, bicycles may try to squeeze by idling cars and navigate around pedestrians also sharing the travel lane to reach their vehicles or trailheads.

## HISTORIC COLUMBIA GORGE HIGHWAY

### Notes

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