TABLE OF CONTENTS

Table of contents .............................................................................................................. 2
Acronyms and Abbreviations ........................................................................................... 3

Executive Summary ........................................................................................................... 4
  Columbia Gorge Express Evolution ................................................................................. 5
  Performance Report Card ................................................................................................ 6
  Summary 2016-2019 ..................................................................................................... 11
  Stakeholder Input ........................................................................................................... 12

Background .................................................................................................................... 13
  Visitation ......................................................................................................................... 13
  CGE Customer Profile ..................................................................................................... 17

CGE Performance Report Card ........................................................................................ 25
  Meeting Our Goals .......................................................................................................... 25
  Service Levels ................................................................................................................. 25
  Evaluation Matrix ........................................................................................................... 26

Goal: Access ..................................................................................................................... 28
  Service Availability ......................................................................................................... 28
  Ridership ......................................................................................................................... 28
  Equity .............................................................................................................................. 30

Goal: Mobility and Safety ................................................................................................ 32
  Service Efficiency ........................................................................................................... 32
  Service Effectiveness ..................................................................................................... 36
  On-Time Performance .................................................................................................... 42
  Safety .............................................................................................................................. 45

Goal: Address Congestion ............................................................................................... 49
  Traffic Congestion ......................................................................................................... 49
  Vehicle Trips diverted from Multnomah Falls ............................................................... 53
  Gate Closures ................................................................................................................. 53
  Stakeholder Input ........................................................................................................... 56

Goal: Protect ..................................................................................................................... 59
  Emissions Reductions .................................................................................................... 59
  Illegal Parking ................................................................................................................ 60
ACRONYMS AND ABBREVIATIONS

APC — Automatic Passenger Counter
ATR – Automatic Traffic Recorder
CAT — Columbia Area Transit (Hood River County Transportation District)
CGE — Columbia Gorge Express
CL — Cascade Locks
EB – Eastbound
GTC — Gateway Transit Center
GTC-MF – Service route between Gateway Transit Center and Multnomah Falls
GTC-HR – Service route between Gateway Transit Center, Multnomah Falls, Cascade Locks, and Hood River
Historic Highway — Historic Columbia River Highway
HR — Hood River
I-84 — Interstate 84
FLAP — Federal Lands Access Program
LEHD — Longitudinal Employer-Household Dynamics
MF — Multnomah Falls
MTR – MTR Western (contracted operator for CGE service under ODOT)
ODOT — Oregon Department of Transportation
OPRD — Oregon Parks and Recreation Department
RR — Rooster Rock
USFS – United States Forest Service
WB – Westbound
EXECUTIVE SUMMARY

The Oregon Department of Transportation (ODOT) launched the Columbia Gorge Express (CGE) program on Memorial Day weekend 2016. In 2017, the Western Federal Lands Division of the Federal Highway Administration awarded ODOT a Federal Lands Access Program (FLAP) grant to expand CGE, funding the program through September 2020. As CGE approaches the end of its current grant cycle, assessing its performance is integral to understanding how the program has met its goals, while providing insights into what service should look like in 2021 and beyond.

CGE has four primary goals. Based on analysis of performance data and input from stakeholder interviews, a letter grade has been assigned to objectives within each goal.

1. Improve transit access and options to recreational destinations in the Columbia River Gorge and between East Multnomah County and The Dalles
2. Enhance mobility and safety in the Columbia River Gorge
3. Address congestion and limited parking capacity at Multnomah Falls
4. Protect natural and cultural resources; reduce illegal parking

Goal: Improve Access
- CGE Ridership: A
- Equity: A

Goal: Enhance Mobility and Safety
- Efficiency: B
- Cost-Effectiveness: C
- On-Time Performance: C
- Gorge Safety: N/A

Goal: Reduce Congestion
- Traffic Congestion: B
- Exit 31 Gate Closures: B

Goal: Protect Resources
- Environmental Impacts: B
- Parking Impacts: C
COLUMBIA GORGE EXPRESS EVOLUTION

Service Timeline

2015
Governor Brown convenes the Historic Columbia River Highway Collaborative to find solutions to congestion and safety in the Gorge

2016
Pilot service between Portland, RR, and MF begins in May
ODOT awarded a FLAP grant to fund 2017-2020 service in partnership with USFS
Service levels: Spring/summer weekends and holidays

2017
Service levels: summer weekends and holidays
Eagle Creek Fire 9/2/17 – service ends for season

2018
Service expands to Cascade Locks and Hood River in summer
Service expands to 7 days per week in summer
Historic Highway remains closed

2018
Service expands to year-round in fall

2019
CAT takes over intercity service in November

2019 System Map

Columbia Gorge Express
Rooster Rock to Multnomah Falls
(Spring/Summer/Fall 2019 – operated by MTR Western)
Gateway TC to Multnomah Falls
(In service summer 2020 – operated by MTR Western)
Gateway TC to Hood River
(Jan-Nov 2019 – operated by MTR Western)

Columbia Area Transit
Gateway TC to The Dalles (Effective Nov 2019 – operated by CAT)

Gateway Transit Center
Rooster Rock
Multnomah Falls
Cascade Locks
Hood River
To The Dalles
PERFORMANCE REPORT CARD

Goal: Improve transit access and options to recreational destinations in the Columbia River Gorge and between East Multnomah County and The Dalles

Prior to CGE, intercity public transit service in the Gorge was limited. In 2016, there were 2 round trips per week between Gateway Transit Center and Hood River (Tuesdays and Thursdays only), operated by Columbia Area Transit. In May 2018, CGE introduced daily service in the corridor. As of November 2019, there are 8 weekday and 6 weekend round trips, including 2 direct daily connections to The Dalles.

CGE services demonstrate consistent demand and opportunity for continued growth, particularly during the peak months of May through September. Ridership on services to Multnomah Falls and Hood River has exceeded projected estimates. Ridership on the Rooster Rock to Multnomah Falls shuttle has remained constant (with the exception of 2018, when ridership was much higher due to the closure of the Historic Highway); growth in shuttle ridership is constrained by limited capacity. There is overwhelming stakeholder support for continuing, and expanding if possible, the Rooster Rock to Multnomah Falls shuttle.

CGE Ridership

- CGE transported 226,704 one-way trips throughout the Gorge since its inception on May 27, 2016 through the end of the fall shoulder season on November 3, 2019.
- Total annual ridership increased by 155%, from 30,090 boardings in 2016 to 76,867 in 2019.
- Boardings at Multnomah Falls grew from 12,722 in 2016 to 33,040 in 2019.
- Service availability increased from 61 days in 2016 to 296 in 2019.

Equity

- In 2019, 49% of CGE riders had no access to a vehicle or no other option for travel to their destination.
- 35% of riders in 2019 represented people of color (down from 43% in 2018). 24% of the Portland Metro area population identified as people of color and 30% of the U.S. population identified as people of color in 2018 (source: ACS 2018).
Goal: Enhance mobility and safety in the Columbia River Gorge

CGE is one part of a larger strategy to move people to and through the Gorge without the use of personal vehicles. Ridership on CGE has been strong, but there is also a need to evaluate how well the service has performed in terms of enhancing mobility. To measure mobility, the team assessed CGE’s efficiency, effectiveness, and on-time performance.

As safety was a major impetus for CGE’s launch, the team analyzed crash data for the area around Multnomah Falls. The limited availability of reported data, coupled with the challenge of correlating CGE (or public transit in general) with reported incidents, made it impractical to assign a grade to the safety objective.

CGE Efficiency

- Ridership is heavily seasonal, with average daily boardings of 653 in summer, 137 in spring/fall shoulders, and 30 in winter (2019).
- Riders per hour dipped from 22.5 in 2016 to 15.4 in 2019 (this decline is primarily due to the 2018 service expansion to Hood River and year-round service). A typical rural service carries 10 passengers per hour while an urban route carries 20 per hour. CGE, which serves both rural and urban contexts, sits between these two metrics.
- Shoulder and off-season boardings per hour is fairly low at 7.4 per hour in 2019.

CGE Effectiveness

- Cost per hour lowered from $119.91 (2016) to $115.60 (2019), which is lower than the cost of a major urban provider like TriMet ($145/hour) but higher than a small city system like Columbia Area Transit ($100/hour).
- In general, service is becoming more effective. Service hours were reduced in 2019, but ridership remained about the same.
- Scheduling continues to be a challenge, with long lines for westbound service on weekend afternoons.

CGE On-Time Performance

- In 2019, average on-time performance for CGE was 75%. On-time performance goals for many transit agencies ranges from 85-90%.
• Eastbound runs typically had better on-time performance than westbound runs.
• Hood River westbound (60% on time, 18% late, 22% early) and Cascade Locks westbound (64% on time, 24% late, 12% early) were the worst performing stops.
• The Rooster Rock shuttle had the best on-time performance of any route, likely due to the shorter distance and longer dwell times at Multnomah Falls (to account for gate closures).

Gorge Safety
• Overall the number of reported crashes at or near the I-84 Multnomah Falls parking is very small.
• Crashes at Exit 31 are more frequent than crashes at other nearby exits; eastbound connection crashes have declined while westbound crashes increased through 2017.
• Vehicle crashes around Exit 31 on I-84 are down in 2019 compared to 2015 and 2016.
Goal: Address congestion and limited parking capacity at Multnomah Falls

It is challenging to directly correlate the presence of CGE with congestion changes. Millions visit Multnomah Falls each year, thus it would be difficult for CGE to have a measurable impact (for example, 2019 CGE ridership accounts for an estimated 4% of annual visitation at Multnomah Falls). Stakeholders generally agree that CGE has to be part of a larger, multi-faceted solution to truly change travel patterns. There are, however, some indicators that show positive changes to general traffic conditions in the Gorge. Anecdotally, stakeholders agree that CGE has reduced congestion around the I-84 parking lot, but there remain significant challenges on the Historic Highway.

Traffic Congestion

- Annual vehicle hours of delay near Exit 31 have dropped by 70%, from approximately 12,800 hours in 2015 to 3,900 hours in 2019.
- Summer eastbound delay was far higher in 2015 than in 2016 and onward, when CGE began operation.
- Since service began, CGE has diverted a total of 20,725 cars from the I-84 parking lot (about 2% of tracked vehicle volume in the I-84 lot from 2016-2019). Diversions peaked in 2018 when the Historic Highway was closed.
- The closure of the Historic Highway waterfall corridor (Bridal Veil to Ainsworth State Park) from September 4, 2017 to November 23, 2018 shows the power of a drastic access change. The closure resulted in higher demand for the CGE shuttle compared to previous years. Ridership increased significantly and there were no parking violations on the closed Historic Highway.

Exit 31 Gate Closures

- The total number of days with gate closures was nearly identical in 2018 and 2019 (167 and 165, respectively); gate closures in 2017 were much lower at 114 days, this difference is mostly due to the Eagle Creek Fire.
- Looking at peak season only (June, July and August), the number of closures and duration of closures has increased every year from 2017 – 2019.
- Gate closures remain a challenge for transit, impacting operational costs, on-time performance, and customer experience. When the eastbound gate is closed, the CGE buses must continue on I-84 and turn around at Exit 35 Ainsworth, adding about 8 service miles and 15+ minutes to the trip.
- Temporary barriers at the westbound exit were added in summer 2019. Passenger vehicles trying to enter the parking lot from the westbound side were not permitted entry until the eastbound gate reopened, thus blocking any CGE buses behind them. The westbound barriers also delayed employee shuttles and special events vehicles for the Multnomah Falls Lodge.
- Drivers within the Multnomah Falls parking lot who wait for a spot to open impede traffic flow; it is sometimes faster for a westbound bus to go east to Exit 35 Ainsworth, turn around, and then travel back on I-84 westbound to get to RR or GTC (adding another 8 miles and 15 minutes to the trip).
Goal: Protect natural and cultural resources; reduce illegal parking

CGE is funded through the Federal Lands Access Program and serves sites in a federally designated National Scenic Area. Preservation of natural space is therefore a priority of CGE funders and partners.

Reducing illegal parking along the Historic Highway was originally framed as a CGE goal for two reasons:

1. Parking in non-designated areas can damage wildlife
2. Drivers in search of parking can block through movement on the Historic Highway, resulting in major congestion (and carbon emissions) and degrading the ability to access federal recreation land

Other than Multnomah Falls, CGE does not serve sites along the Historic Highway, which is where the majority of illegal parking activity occurs. It is therefore challenging to directly correlate parking conditions on the Historic Highway with CGE service. Transit alone cannot change visitor behavior in this corridor; reducing illegal parking and congestion on the Historic Highway necessitates a much broader approach, of which transit is one strategy.

Environmental Impacts

- From 2016 - 2019, CGE service reduced carbon emissions in the Gorge by 170 metric tons of CO²
- CGE's 2019 emission reductions (60 metric tons) make up 0.001% of the Portland Metro's CO² levels annually produced from cars and light trucks
- Visitors who drive to Multnomah Falls and circle to look for parking before taking the Rooster Rock shuttle add to carbon emissions, negating a portion of CGE's impact

Parking Impacts

- Parking violations on the Historic Highway in 2019 are down 53% from 2017
- CGE has not had an impact on congestion or parking on the Historic Highway
- Anecdotally, parking issues were less concentrated at Multnomah Falls in 2019 and instead were more dispersed throughout the Gorge; backups on I-84 at Rooster Rock have increased

Summary

Figure 1 summarizes progress toward goals; a detailed table with all data is in the CGE Report Card below.
## Figure 1  Meeting our goals

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve transit access to recreation destinations between East Multnomah County and The Dalles</td>
<td>Increase amount of transit service between Portland and The Dalles</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Increase transit ridership at recreation destinations</td>
<td>-</td>
<td>🟣</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Increase the availability of transit all year</td>
<td>-</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Enhance equitable access to recreation opportunities</td>
<td>-</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Enhance Gorge mobility and safety</td>
<td>Increase transit ridership in the Gorge</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Meet or exceed ridership projections for service expansion to Cascade Locks and Hood River</td>
<td>-</td>
<td>-</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Provide efficient service</td>
<td>-</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Transition intercity service to an established transit provider</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Reduce vehicle crashes at Exit 31 EB</td>
<td>🟣</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Address congestion and limited parking at Multnomah Falls parking lot</td>
<td>Reduce driving trips to Multnomah Falls parking lot</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Reduce congestion at Exit 31 EB</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td>Protect natural and cultural resources, reduce illegal parking</td>
<td>Reduce carbon footprint of Gorge visitors</td>
<td>-</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
<tr>
<td></td>
<td>Reduce illegal parking along Historic Highway</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
<td>🟢</td>
</tr>
</tbody>
</table>

-  = Made progress toward measure / made improvement
-  = No progress toward measure / no change
-  = Degraded progress toward measure / conditions worsened
STAKEHOLDER INPUT

The team conducted several interviews with stakeholders to discuss CGE strengths, opportunities, and the future of the service and has integrated feedback throughout the report card.

Stakeholders’ wish list for CGE 2021 and beyond:

- Fix the I-84 Multnomah Falls parking lot. Stakeholders differed in opinion on whether to close the lot entirely to passenger vehicles or find another way to tackle congestion.
- When ODOT closes the westbound ramp, it negatively affects transit service.
- Get the service frequency right based on ridership – more westbound service is needed on summer afternoons. There is also a desire for service to start earlier and end later. Yet the biggest issues occur in afternoon, when passengers trying to go westbound can wait up to 2 hours for a bus.
- Add much more robust marketing, including more marketing to local communities, more information distribution to places that reach tourists, and supporting a Gorge to Airport message.
- Offer (or better market) one-seat ride connection to The Dalles
- Price parking at I-84 Multnomah Falls lot and Rooster Rock, and use funds to support transit and traffic enforcement.
- First-mile / last-mile connections to CGE stops
- Tackle congestion on the Historic Highway. Add flaggers and traffic enforcement on Historic Highway.
- Add stops at trailheads and Bonneville Dam. [Note: USFS prefers not to add more sites to CGE].
- Accommodate pets and bikes
- Need alignment among stakeholders on the bigger picture ideas, the longer-term solutions – which ones should be pursued?
- Explore additional places for shuttle parking, including Benson State Park, Dalton Point, Hatfield Visitor Center, and the unused gravel lot north of Lewis and Clark to reduce pressure on Rooster Rock.
BACKGROUND

VISITATION

Each year, millions of people travel to the greater Columbia River Gorge/Mt. Hood Area. Approximately 1.5 million people visit Multnomah Falls annually, according to an estimate from the U.S. Forest Service. This high level of visitation underscores the need for congestion and safety solutions.

Automatic Traffic Recorders (ATRs) near Multnomah Falls track vehicle volumes and provide insights into visitor volumes traveling by car. Figure 2 shows ATR locations. Figure 3 shows overall traffic volume has increased in the region between 15-35% (an average of 22%) between 2012 and 2018. Traffic volumes at the I-84 Multnomah Falls lot (Exit 31) have grown by nearly 35% in that time. These data, along with tourism/economic trends\(^1\) collected during the same time period, show a 30-35% increase in visitation to the region between 2012-2018.

Oregon Parks and Recreation District (OPRD) collected vehicle counts at popular attractions near Multnomah Falls (Figure 4). Across all sites, 2017 visitation was the lowest out of years 2014-2019, likely due to the Eagle Creek Fire. The general trend for each site shows variations in visitation numbers, which is different from the upward trend seen in traffic growth. The spike in usage at Rooster Rock in 2018 is likely the result of the Historic Highway closure, as nearly half of the vehicle/spillover parking spaces at Multnomah Falls were inaccessible.
Gorge visitors come from all over the country, documented by CGE survey respondent home ZIP code or country of origin (Figures 5-7). Only about 25% of CGE riders live in Oregon or the Portland Metro area.\(^2\) The GTC-HR and GTC-MF routes tend to have a higher percentage of Portland Metro riders and fewer riders from other areas in the U.S. in comparison with the RR-MF shuttle route. The share of international riders and those from the greater U.S. has increased over time.

\(^2\) [http://rlisdiscovery.oregonmetro.gov/?action=viewDetail&layerID=179](http://rlisdiscovery.oregonmetro.gov/?action=viewDetail&layerID=179)
Stakeholder input related to tourism and visitation included:

- Service has been great for Cascade Locks; it brings many people in the summer, mostly tourists. In terms of commuters, the service does not work well for those who commute across the river into Washington.
- There is a lot opportunity to enhance marketing and information about CGE. This consists of two elements:
  1. Partner communication, such as alerting partners about service changes, where information is distributed (are CGE schedules posted at welcome centers? Hotels?)
  2. Marketing the service to potential users. Potential markets include:
     - In the winter, there is a surge in demand to access the falls during Thanksgiving and Christmas
     - Winter car-free Gorge access (don’t need to chain up)
     - Great to have a one-seat ride to The Dalles – a very easy place to see things car-free
     - Market more to the local communities
     - If there were a stop in Troutdale, that could be marketed as “Access the Gorge without a car” since Troutdale is the gateway to the Gorge.
CGE CUSTOMER PROFILE

Every year, ODOT administers a survey of CGE customers. From 2016 – 2019, staff distributed hard copies of the survey to passengers as they boarded the bus at Multnomah Falls to return to either Rooster Rock or Gateway Transit Center. In 2019, ODOT also distributed online surveys by email to customers who purchased tickets electronically. The survey questions were consistent each year, with some variations to the question asking the purpose of CGE trips. The team standardized all responses into three categories based on route – RR-MF (those taking the shuttle from Rooster Rock), GTC-MF (those boarding at Gateway Transit Center heading for Multnomah Falls), and intercity (those traveling from Gateway Transit Center to either Cascade Locks or Hood River).

Figure 8 summarizes number of respondents per route per year. The overall survey response rate has risen, likely due to the administration of the online survey in 2019. Customers who rode the GTC-MF or intercity route but indicated that their origin and destination pair was Rooster Rock to Multnomah Falls, or vice versa, have been coded to the RR-MF route.

Figure 8 Survey respondents over time

![Survey respondents over time](image)

As ODOT expanded service to Hood River, the proportion of customers using CGE for purposes besides sightseeing or recreation grew substantially, from 5% to 20% (Figure 9). This could be attributed to the addition of online surveying, which reached more Cascade Locks and Hood River riders, as well as the expanded service allowing customers to use CGE for purposes such as commuting, visiting family, and accessing medical care.
The majority of riders across all routes visit a single destination (Figure 10). In 2016 and 2017, there were two possible destinations – Rooster Rock or Multnomah Falls. When intercity service began in 2018, there was an increase in that particular year of people visiting multiple destinations (Figure 11).
The reasons GTC-MF and intercity customers chose to use CGE have remained relatively constant over the years, with about 50% stating they had no other option (Figure 12). Rooster Rock shuttle riders have had more variation in response over time, with an increase in customers choosing to use CGE to avoid parking hassles and a decrease in customers deciding to use the shuttle only after seeing the sign on I-84 (Figure 13). This may indicate a greater awareness of the availability of the shuttle and the difficulty of parking directly at Multnomah Falls. In 2018, at least 20 respondents cited that they chose to use the shuttle because Exit 31 or the Historic Highway was closed.
Figure 12  Why GTC-MF and GTC-HR riders chose CGE (multiple responses possible)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid parking hassles</td>
<td>38%</td>
<td>27%</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>Avoid traffic</td>
<td>30%</td>
<td>24%</td>
<td>26%</td>
<td>29%</td>
</tr>
<tr>
<td>Better for the environment</td>
<td>36%</td>
<td>28%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Save money</td>
<td>48%</td>
<td>47%</td>
<td>46%</td>
<td>48%</td>
</tr>
<tr>
<td>Only option</td>
<td>55%</td>
<td>49%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Figure 13  Why RR-MF riders chose CGE (multiple responses possible)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid parking hassles</td>
<td>30%</td>
<td>30%</td>
<td>38%</td>
<td>47%</td>
</tr>
<tr>
<td>Avoid traffic</td>
<td>12%</td>
<td>19%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Better for the environment</td>
<td>12%</td>
<td>14%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>MF lot full</td>
<td>41%</td>
<td>48%</td>
<td>42%</td>
<td>35%</td>
</tr>
<tr>
<td>Sign on I-84</td>
<td>67%</td>
<td>42%</td>
<td>42%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Most riders across all routes were first time riders; however, this has declined slightly for the GTC-MF and intercity routes, from 89% in 2017 to 84% in 2019 (Figure 14). Shuttle riders are nearly all first-time users (Figure 15). In 2019, of the eight respondents who had ridden the shuttle prior to the trip they were surveyed on, two respondents had ridden three or more times. CGE staff have observed a small group of passengers who regularly ride CGE to get to Rooster Rock, which is supported in the survey data.

Figures 14 and 15 show the percentage of first time versus repeat riders for GTC-MF & GTC-HR and shuttle services, respectively.

Surveys asked several questions about customer satisfaction (Figure 16-Figure 21). In general, passengers gave CGE very positive ratings, with a high percent of “excellent” or “good” marks. The rate of “excellent” marks has declined slightly over time over all the customer satisfaction areas. Driver courtesy and ease of paying fare have consistently had the highest percent of “excellent” ratings (Figure 16, Figure 17). Ease of finding the bus stop, stop...
amenities, and service frequency have consistently had the lowest percent of “excellent” ratings (Figure 18-Figure 21). Stop amenities have been limited, in part due to the pilot nature of the service as well as the patchwork of jurisdictions, ownership, and regulation across the Gorge. For example, Multnomah Falls Lodge staff requested a canopy at the Multnomah Falls stop since passengers must sometimes wait more than an hour for CGE, but there were concerns about safety (high winds could blow away the canopy) and the lodge would have also been required to take down the canopy every night. In terms of finding the bus stops, the CGE website included an aerial map for each stop location, but the lower excellent and good scores for this category indicate that this information was not clearly communicated to riders.

Figure 16     Driver Courtesy - Satisfaction Rating

Figure 17     Ease of Paying Fare - Satisfaction Rating
Figure 18  Ease of Finding Stops - Satisfaction Rating

Figure 19  On-Time Performance - Satisfaction Rating
Figure 20  Amenities/Comfort at Stops - Satisfaction Rating

<table>
<thead>
<tr>
<th>Year</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2019</td>
<td>56%</td>
<td>20%</td>
<td>17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>51%</td>
<td>22%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>58%</td>
<td>21%</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>62%</td>
<td>20%</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>61%</td>
<td>15%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = Number of Responses

Figure 21  Frequency of Service - Satisfaction Rating

<table>
<thead>
<tr>
<th>Year</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2019</td>
<td>51%</td>
<td>29%</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>46%</td>
<td>30%</td>
<td>17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>48%</td>
<td>28%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>53%</td>
<td>35%</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>60%</td>
<td>23%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = Number of Responses
CGE PERFORMANCE REPORT CARD

The remainder of this document provides an in-depth analysis of CGE performance for each of the service’s goal areas.

MEETING OUR GOALS

ODOT introduced Columbia Gorge Express service to address congestion and safety concerns in the Gorge while also recognizing the rising demand for access to this recreation area. Figure 22 lists the performance measures and benchmarks that show progress toward each goal and data points for the year before CGE began and each year since.

SERVICE LEVELS

When interpreting the information in the CGE Performance Report Card, it is important to note two factors that have affected CGE service and metrics:

1. The September 2017 Eagle Creek Fire ended CGE’s service season several weeks early, resulting in lower ridership figures for the year. The ensuing closure of the Historic Highway through November 23, 2018 significantly increased 2018 service levels, ridership, and operational costs. Drivers who in past years would park at the Multnomah Falls Lodge lot (98 formal spaces and 75 spillover spaces) only had the I-84 parking lot (186 spaces) as an option. Resulting congestion and safety concerns led ODOT to launch the Rooster Rock shuttle service earlier than planned and budgeted, provide an extra shuttle bus on weekends, and extend service into October rather than mid-September. Since shuttle service is free, ODOT did not recoup the additional costs through fares.

2. Some operational costs were higher than originally budgeted (mainly bus procurement and personnel). Coupled with the increased costs of operating in summer 2018 and lower fare revenue than projected, CGE faced a budgetary shortfall that would not sustain service for the planned duration of the program. ODOT took several measures to address the shortfall: requested and received additional funding from the Federal Lands Access Program (FLAP), increased the fare to Multnomah Falls, and reduced service levels in 2019. Reduced service levels contributed to poor year-over-year performance in several areas.
## Evaluation Matrix

<table>
<thead>
<tr>
<th>Goal</th>
<th>Performance Measure</th>
<th>Code</th>
<th>Metric/Benchmark</th>
<th>2015</th>
<th>2016</th>
<th>% Change</th>
<th>2017</th>
<th>% Change</th>
<th>2018</th>
<th>% Change</th>
<th>2019</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase amount of transit service between Portland and The Dalles</td>
<td>A1</td>
<td>Daily round trips between Gateway Transit Center and Multnomah Falls, peak season</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>10</td>
<td>-17%</td>
<td>12</td>
<td>20%</td>
<td>8</td>
<td>-33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A2</td>
<td>Daily round trips between Portland and Hood River</td>
<td>2 round trips per week</td>
<td>2 round trips per week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Peak: 4-5 trips/day Off-season: 2 trips/day</td>
<td></td>
<td></td>
<td>Peak: 3 trips/day Off-season: 2 trips/day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase transit ridership at recreation destinations</td>
<td>A3</td>
<td>Total annual ridership at Multnomah Falls, on all routes</td>
<td>12,722</td>
<td>12,048</td>
<td>-5%</td>
<td>32,695</td>
<td>171%</td>
<td>33,040</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A4</td>
<td>Total annual ridership at Cascade Locks</td>
<td></td>
<td></td>
<td></td>
<td>4,817</td>
<td>5,312</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A5</td>
<td>Total annual ridership at Hood River</td>
<td></td>
<td></td>
<td></td>
<td>7,672</td>
<td>8,990</td>
<td>17%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase the availability of transit all year</td>
<td>A6</td>
<td>Annual days of service 2016, 2017, 2018, 2019</td>
<td>61</td>
<td>49</td>
<td>-13%</td>
<td>210</td>
<td>329%</td>
<td>296</td>
<td>41%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhance equitable access to recreation opportunities</td>
<td>A7</td>
<td>Percent of riders without access to a vehicle over time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50%</td>
<td>1%</td>
<td>50%</td>
<td>0.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A8</td>
<td>Percent of riders representing people of color</td>
<td></td>
<td></td>
<td></td>
<td>43%</td>
<td></td>
<td>35%</td>
<td>19%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A9</td>
<td>Percent of riders representing people with income of $24,999 or less</td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
<td></td>
<td>10.1%</td>
<td>-38%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A10</td>
<td>Percent of riders with limited mobility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase transit ridership in the Gorge</td>
<td>M1</td>
<td>Total ridership on CGE services per year</td>
<td>30,090</td>
<td>27,272</td>
<td>-9%</td>
<td>92,475</td>
<td>239%</td>
<td>76,867 (through 11/2/19)</td>
<td>-17%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meet or exceed ridership projections for service expansion to Cascade Locks and Hood River</td>
<td>M2</td>
<td>Ridership for Hood River extension compared to projection (projection 14,620 riders; 9,682 weekend and 4,938 weekday)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37,068 GTC-HR riders</td>
<td>41,555 GTC-HR riders</td>
<td>12%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Performance Measure</td>
<td>Code</td>
<td>Metric/Benchmark</td>
<td>2015</td>
<td>2016</td>
<td>% Change</td>
<td>2017</td>
<td>% Change</td>
<td>2018</td>
<td>% Change</td>
<td>2019</td>
<td>% Change</td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
<td>------</td>
<td>------------------</td>
<td>------</td>
<td>------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
</tr>
<tr>
<td>Enhance Gorge mobility and safety</td>
<td>Average number of riders per service hour</td>
<td>M3</td>
<td>22.5</td>
<td>25.2</td>
<td>12%</td>
<td>13.7</td>
<td>-46%</td>
<td>15.4</td>
<td>12%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average number of riders per service mile</td>
<td>M4</td>
<td>0.448</td>
<td>0.650</td>
<td>45%</td>
<td>0.390</td>
<td>-40%</td>
<td>0.392</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transition intercity service to an established transit provider</td>
<td>Projected intercity ridership: Q1 Nov-Dec 2019: 2,000 passenger trips</td>
<td>M5</td>
<td>2,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce vehicle crashes at Exit 31 EB</td>
<td>Crashes by year within about 0.5 miles of Exit 31 eastbound, on I-84 and on Exit 31 off-ramp (Source: ODOT)</td>
<td>M6</td>
<td>4</td>
<td>3</td>
<td>-25%</td>
<td>2</td>
<td>-33%</td>
<td>4</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce congestion at Exit 31 EB</td>
<td>Hours of gate closures per year</td>
<td>C1</td>
<td>188.9</td>
<td>253.1</td>
<td>34%</td>
<td>351.8</td>
<td>39%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of days gates were closed at all per season, per year</td>
<td>C2</td>
<td>114</td>
<td>167</td>
<td>47%</td>
<td>160</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual Vehicle Hours of Delay at Exit 31 vicinity</td>
<td>C3</td>
<td>12,776</td>
<td>9,385</td>
<td>-27%</td>
<td>5,879</td>
<td>-37%</td>
<td>3,694</td>
<td>-37%</td>
<td>3,869</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Reduce driving trips to Multnomah Falls parking lot</td>
<td>Annual vehicle trips diverted from Multnomah Falls I-84 parking lot</td>
<td>C4</td>
<td>2,874</td>
<td>2,455</td>
<td>-15%</td>
<td>10,640</td>
<td>333.3%</td>
<td>4,756</td>
<td>-55%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RR-MF seasonal shuttle boardings</td>
<td>C5</td>
<td>13,898</td>
<td>9,185</td>
<td>-34%</td>
<td>25,265</td>
<td>175%</td>
<td>12,126</td>
<td>-52%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protect natural and cultural resources, reduce illegal parking</td>
<td>Metric tons of CO2 emissions avoided due to CGE</td>
<td>E1</td>
<td>12</td>
<td>16</td>
<td>26%</td>
<td>82</td>
<td>428%</td>
<td>60</td>
<td>27%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parking citations along Historic Highway</td>
<td>E2</td>
<td>37</td>
<td>72</td>
<td>95%</td>
<td>88</td>
<td>22%</td>
<td>10</td>
<td>-89%</td>
<td>41</td>
<td>310%</td>
<td></td>
</tr>
</tbody>
</table>

Note: The Eagle Creek Fire shut down CGE service early in 2017, resulting in lower figures in some metrics (days of service, ridership, gate closures); the ensuing closure of the Historic Highway (Bridal Veil to Ainsworth State Park) from September 4, 2017 to November 23, 2018 resulted in higher figures in some metrics (shuttle ridership, vehicle trips diverted, CO2 emissions avoided).
GOAL: ACCESS

CGE services demonstrate consistent demand and opportunity for continued growth, particularly during the peak months of May through September. Ridership on services to Multnomah Falls and Hood River has exceeded projected estimates. Ridership on the Rooster Rock to Multnomah Falls shuttle has remained constant (with the exception of 2018, when ridership was much higher due to the closure of the Historic Highway); growth in shuttle ridership is constrained by limited capacity. There is overwhelming stakeholder support for continuing, and expanding if possible, the Rooster Rock to Multnomah Falls shuttle.

Access Performance Measures

- Increase amount of transit service between Portland and The Dalles
- Increase transit ridership at recreation destinations
- Increase the availability of transit all year
- Enhance equitable access to recreation opportunities

SERVICE AVAILABILITY

Findings

- Service availability increased by 385%, from 61 days in 2016 to 296 days in 2019.
- Prior to CGE, intercity public transit service in the Gorge was limited. In 2016, there were 2 round trips per week between Gateway Transit Center and Hood River (Tuesdays and Thursdays only). In May 2018, CGE introduced daily service in the corridor. As of November 2019, there are 8 weekday and 6 weekend round trips, including 2 direct daily connections to The Dalles.

RIDERSHIP

Findings

- CGE transported 226,704 one-way trips throughout the Gorge since its inception on May 27, 2016 through the end of the fall shoulder season on November 3, 2019.
- Total annual ridership increased by 155%, from 30,090 boardings in 2016 to 76,867 in 2019.
- Boardings at Multnomah Falls grew from 12,722 in 2016 to 33,040 in 2019.

“...more buses especially during the morning/heavy traffic times would be great!”
- Passenger survey
Methodology / Analysis

Ridership Data Gaps

ODOT, through its contractor, gathered ridership data from multiple sources including Automatic Passenger Counters (APCs) and manual counts conducted by bus drivers. The APCs did not always collect accurate data, or data for every trip/stop observation. Thus the ridership data included many trips with no ridership information. Gaps were backfilled based on percent of observations at a given stop and route, within the entire dataset, and comparable trips with data from the same year, month, and day of week.

During peak season, CGE schedules are fairly complicated from the operations side – drivers switch routes mid-shift and different vehicles operate multiple routes in a day. Trip data was not always assigned to a route in the data provided, and determining which route that vehicle was serving was challenging due to the variation in schedules and operator assignments throughout the seasons. Therefore route-level data does not match precisely to ridership totals due to this challenge of cross-tabbing data by route.

Figure 23 summarizes boardings by year by route. Note the following service details for each year:

- 2016: Seasonal service, Friday – Sunday
- 2017: Seasonal service, Friday – Sunday; season cut short due to Eagle Creek Fire
- 2018: Data includes boardings from May 25 through December 31; launch of intercity service to Cascade Locks and Hood River; service expanded to 7 days a week and year-round; Historic Highway closed through November.
- 2019: Data includes boardings from January 1 through November 3; Columbia Area Transit (CAT) took over operation of the intercity service on November 4, 2019.

Boardings per day dropped in 2018 and 2019 as CGE added service days. Shuttle boardings were significantly higher in 2018 due to the closure of the Historic Highway.

Figure 23  Total Boardings per Year by Route

<table>
<thead>
<tr>
<th>Year</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
<th>GTC-HR</th>
<th>Total Boardings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>13,898</td>
<td>16,192</td>
<td></td>
<td>37,068</td>
</tr>
<tr>
<td>2017</td>
<td>9,185</td>
<td>18,087</td>
<td></td>
<td>25,265</td>
</tr>
<tr>
<td>2018</td>
<td>12,126</td>
<td>30,142</td>
<td></td>
<td>41,555</td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td>23,186</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The original target market for CGE was visitors to Multnomah Falls. Visitation levels at the Falls are significantly higher in the summer than the winter, therefore CGE’s schedules vary accordingly (i.e. more service is provided in the summer). Service seasons include peak (summer), shoulder (spring and fall) and off-season (winter). Service is the most productive during peak months (May through September). The addition of off-peak winter service has greatly increased access to and from the Gorge available to residents and visitors, but the service yields much lower boarding numbers than peak service. As an example of the variations in service patterns, for 2018 service followed this general pattern:

- **Peak (5/25/18-10/7/18)**
  - Weekdays (Monday through Thursday)
  - Weekends (Friday, Saturday, Sunday, holidays)
    o 4 or 5 daily round trips GTC-HR
    o 7 daily round trips GTC-MF
    o 9 daily round trips RR shuttle

- **Shoulder (10/8/18-12/2/18)**
  - Weekdays (Monday through Thursday)
    o 2 daily round trips GTC-HR
    o 1 daily round trips GTC-MF
    o No RR shuttle service
  - Weekends (Friday, Saturday, Sunday, holidays)
    o 3 daily round trips GTC-HR
    o No routes terminating at MF; passengers board intercity GTC-HR to access the falls
    o 5 daily round trips RR shuttle

- **Off-Season (12/3/18-4/5/19)**
  - Daily (Monday through Sunday)
    o 2 daily round trips GTC-HR
    o 1 daily round trip GTC-MF
    o No RR shuttle service

Note that service schedules have changed in 2019 with additional RR shuttle trips in summer and increased intercity trips with the transition of the GTC-HR service to CAT; the above list is provided to give a sense of how much the service varies by season.

**EQUITY**

**Findings**

- In 2019, 49% of riders had no access to a vehicle or no other option for travel to their destination
- 35% of riders in 2019 represented people of color (down from 43% in 2018). 24% of the Portland Metro area population identified as people of color and 30% of the U.S. population identified as people of color in 2018.
Methodology / Analysis

Census data from the 2018 American Community Survey and CGE survey data was used to compare the demographic of CGE riders to the region.

CGE has been successful in providing services to people that identify as people of color and those that are low income, defined as earning less than $24,999 annually. Forty three percent of riders in 2018 identified as people of color, nearly 20 percentage points higher than the Portland Metro population (Figure 24). When comparing riders’ incomes across the Portland Metro region and the United States, CGE’s intercity riders (GTC-MF and GTC-HR) represent a variety of incomes on both the low and high ends of the spectrum. The CGE shuttle, however, draws a disproportionately large percentage of high-income riders, those with an annual income of $100,000 or more (Figure 25). In 2019, the only year data was available, 6% of CGE riders reported having limited mobility.

Figure 24 Race/Ethnicity 2018

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Portland Metro</th>
<th>CGE Riders</th>
</tr>
</thead>
<tbody>
<tr>
<td>People of Color</td>
<td>30%</td>
<td>24%</td>
<td>43%</td>
</tr>
<tr>
<td>White</td>
<td>70%</td>
<td>76%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Figure 25 Income Levels 2018

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Portland Metro</th>
<th>CGE - Intercity Riders</th>
<th>CGE - Shuttle Riders</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $24,999</td>
<td>20%</td>
<td>16%</td>
<td>25%</td>
<td>10%</td>
</tr>
<tr>
<td>$25k - $49,999</td>
<td>22%</td>
<td>20%</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>$50k - $99,999</td>
<td>30%</td>
<td>32%</td>
<td>26%</td>
<td>33%</td>
</tr>
<tr>
<td>&gt;= $100k</td>
<td>28%</td>
<td>33%</td>
<td>33%</td>
<td>46%</td>
</tr>
</tbody>
</table>
GOAL: MOBILITY AND SAFETY

CGE is one part of a larger strategy to move people to and through the Gorge without the use of personal vehicles. Ridership on CGE has been strong, but there is also a need to assess how well the service has performed in terms of efficiency and effectiveness. Safety concerns are a top priority for the Gorge. Attributing changes in safety conditions to CGE is challenging, but safety indicators telling the overall story of safety were analyzed to understand further opportunities CGE, in tandem with additional strategies, have in making people safer.

Mobility and Safety Performance Measures

- Increase transit ridership in the Gorge
- Meet or exceed ridership projections for service expansion to Cascade Locks and Hood River
- Provide efficient service
- Transition intercity service to an established transit provider
- Improve vehicular safety at Exit 31 EB

SERVICE EFFICIENCY

Findings

- Ridership is heavily seasonal, with average daily boardings of 653 in summer, 137 in spring/fall shoulders, and 30 in winter (2019)
- Riders per hour dipped from 22.5 in 2016 to 15.4 in 2019; a typical rural service carries 10 passengers per hour while an urban route carries 20 per hour. CGE, which serves both rural and urban contexts, sits between these two metrics.
- Shoulder and off-season boardings per hour is fairly low at 7.4 per hour in 2019

“I was so pleased with the experience, I have recommended it to many people since. I’m not sure how you could improve. The driver was friendly and helpful, the bus was clean, buying tickets online was simple and the scenery is "gorgeous". I’ll use the service again.”

- Passenger survey

“More service to and from Portland would be awesome! Especially in the summer months.”

- Passenger survey
Transit Industry Benchmarks

The transit industry often evaluates service from two lenses:

1. Efficiency - how much service is consumed compared to how much service is provided, assessed by looking at ridership per hour and per mile.

2. Effectiveness - how many resources are needed to provide each unit of service, typically measured by cost per hour or cost per mile, as well as on time performance (schedule adherence).

Methodology / Analysis

APC data and manual counts were used to determine boardings by stop and by season. (See data note in the Ridership section about inconsistencies in totals between charts in this report card.) Figure 26 illustrates the average boardings per service day by stop, year, and season. For the peak service season, the highest average ridership was in 2019 at over 653 boardings per day. This is mostly due to a shorter peak season in 2019 compared to 2018, as the 2018 season was extended due to the Historic Highway closure (overall, Multnomah Fall boardings decreased slightly in 2019). Average boardings per service day were highest overall in 2017, but this was because 2018 and 2019 had a much larger service season (i.e. more than just peak weekend service).

The ‘Shoulder’ and ‘Off Season’ are illustrated at a different scale (because of the much lower average daily boardings) and show how significantly demand for service drops off into the fall and winter. As demonstrated in the Visitation section, CGE is heavily used by tourists, which makes service demand heavily dependent on weather and season. Figure 26 illustrates monthly total boardings to show the seasonality of service demand.
Figure 26  Average Boardings per Service Day by Stop (by Year and Season)

Scaled for Maximum of 700 Boardings

Scaled for Maximum of 150 Boardings

Overall

Peak

Shoulder

Off Season
Figure 27  Monthly Boardings by Route and Year

- **GTC-MF**
  - 2016
  - 2017
  - 2018
  - 2019

- **RR Shuttle**
  - 2016
  - 2017
  - 2018
  - 2019

- **GTC-HR**
  - 2018
  - 2019

- **Total**
  - 2016
  - 2017
  - 2018
  - 2019
SERVICE EFFECTIVENESS

Findings

- Cost per hour lowered from $119.91 (2016) to $115.60 (2019), which is lower than the cost of a major urban provider like TriMet ($145/hour) but higher than a small city system like Columbia Area Transit ($100/hour).
- In general, service is becoming more effective. Service hours were reduced in 2019, but ridership remained about the same.
- Scheduling continues to be a challenge, with long lines for westbound service on weekend afternoons.

Methodology / Analysis

Figure 28 summarizes service provision, consumption, and cost. Farebox recovery is generally higher in the peak than the off-season and improved dramatically (from 9.7% to 21.7%) between 2018 and 2019. This was a result of a decrease in the number of service hours provided (by over one third) between 2018 and 2019.

Figure 29 assesses typical transit effectiveness measures. Cost efficiency increased in 2019, though the shoulder and off-season are still much more expensive (relatively) than the peak season. Cost per revenue hour is relatively good in 2019 at $115.60 per hour overall – as a comparative, CAT’s average cost per service hour (per the 2018 National Transit Database) is $100, while TriMet’s is $145 (Figure 30).
### Figure 28  Service Provision, Consumption and Cost Summary by Year and Peak/Off-Peak

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak / Off Peak</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
<th>GTC-HR</th>
<th>Total</th>
<th>Fare Revenue</th>
<th>Farebox Recovery</th>
<th>Estimated Service Miles (GTC-MF)</th>
<th>Estimated Service Hours (GTC-MF)</th>
<th>Boardings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 Peak/Total</td>
<td>$89,899</td>
<td>$70,287</td>
<td>$0</td>
<td>$160,186</td>
<td>$24,005</td>
<td>7.70</td>
<td>29.476</td>
<td>67.176</td>
<td>522</td>
<td>1,336</td>
</tr>
<tr>
<td>2016 Shoulder &amp; Off Season</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$22,976</td>
<td>$0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2017 Peak</td>
<td>$127,907</td>
<td>$68,168</td>
<td>$0</td>
<td>$196,075</td>
<td>$29,615</td>
<td>27.362</td>
<td>14.582</td>
<td>41,944</td>
<td>653</td>
<td>429</td>
</tr>
<tr>
<td>2017 Shoulder &amp; Off Season</td>
<td>$127,907</td>
<td>$68,168</td>
<td>$0</td>
<td>$219,051</td>
<td>$59,544</td>
<td>37.346</td>
<td>13.597</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018 Shoulder &amp; Off Season</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$169,136</td>
<td>$274,802</td>
<td>$15,594</td>
<td>5.7%</td>
<td>0</td>
<td>0</td>
<td>1,312</td>
</tr>
<tr>
<td>2018 Peak</td>
<td>$203,001</td>
<td>$134,445</td>
<td>$233,922</td>
<td>$621,369</td>
<td>$917,272</td>
<td>81,890</td>
<td>41,824</td>
<td>69,676</td>
<td>193,390</td>
<td>2,210</td>
</tr>
<tr>
<td>2017 Total</td>
<td>$120,001</td>
<td>$134,445</td>
<td>$393,058</td>
<td>$986,160</td>
<td>$86,867</td>
<td>38,876</td>
<td>113,611</td>
<td>237,325</td>
<td>1,210</td>
<td>3,121</td>
</tr>
<tr>
<td>2019 Shoulder &amp; Off Season</td>
<td>$30,713</td>
<td>$14,502</td>
<td>$159,324</td>
<td>$204,539</td>
<td>$40,370</td>
<td>1,143</td>
<td>3,304</td>
<td>73,516</td>
<td>2,462</td>
<td>3,769</td>
</tr>
<tr>
<td>2019 Peak</td>
<td>$123,740</td>
<td>$76,336</td>
<td>$173,137</td>
<td>$373,213</td>
<td>$84,751</td>
<td>32,927</td>
<td>22.7%</td>
<td>42,429</td>
<td>26,260</td>
<td>53,843</td>
</tr>
<tr>
<td>2019 Total</td>
<td>$154,453</td>
<td>$90,838</td>
<td>$332,460</td>
<td>$577,752</td>
<td>$125,121</td>
<td>53,710</td>
<td>110,752</td>
<td>196,048</td>
<td>1,253</td>
<td>2,651</td>
</tr>
<tr>
<td>Total</td>
<td>$635,260</td>
<td>$363,738</td>
<td>$725,518</td>
<td>$875,319</td>
<td>$265,608</td>
<td>$25,394</td>
<td>14.3%</td>
<td>200,662</td>
<td>117,469</td>
<td>224,362</td>
</tr>
</tbody>
</table>

### Figure 29  Service Cost and Provision Efficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak / Off Peak</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
<th>GTC-HR</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 Peak/Total</td>
<td>$5.55</td>
<td>$5.06</td>
<td>-</td>
<td>$5.32</td>
<td>$110.45</td>
</tr>
<tr>
<td>2017 Shoulder &amp; Off Season</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$119.91</td>
</tr>
<tr>
<td>2017 Peak</td>
<td>$119.85</td>
<td>$118.20</td>
<td>-</td>
<td>-</td>
<td>$4.67</td>
</tr>
<tr>
<td>2017 Shoulder &amp; Off Season</td>
<td>$119.85</td>
<td>$118.20</td>
<td>-</td>
<td>-</td>
<td>$22.77</td>
</tr>
<tr>
<td>2018 Shoulder &amp; Off Season</td>
<td>$0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$2.95</td>
</tr>
<tr>
<td>2018 Peak</td>
<td>$0</td>
<td>$5.49</td>
<td>$6.62</td>
<td>$7.10</td>
<td>$119.00</td>
</tr>
<tr>
<td>2018 Total</td>
<td>$8.73</td>
<td>$5.32</td>
<td>$10.60</td>
<td>$9.69</td>
<td>$119.09</td>
</tr>
<tr>
<td>2019 Shoulder &amp; Off Season</td>
<td>$8.15</td>
<td>$10.65</td>
<td>$19.99</td>
<td>$15.61</td>
<td>$151.53</td>
</tr>
<tr>
<td>2019 Peak</td>
<td>$6.37</td>
<td>$7.09</td>
<td>$5.16</td>
<td>$8.55</td>
<td>$125.32</td>
</tr>
<tr>
<td>2019 Total</td>
<td>$6.66</td>
<td>$7.49</td>
<td>$8.00</td>
<td>$7.52</td>
<td>$123.24</td>
</tr>
<tr>
<td>Total Average</td>
<td>$7.25</td>
<td>$6.01</td>
<td>$8.23</td>
<td>$8.17</td>
<td>$129.84</td>
</tr>
</tbody>
</table>

Note: Nelson\Nygaard Consulting Associates Inc. | 37
One way CGE can enhance mobility is by providing service when people need it. Anecdotally, stakeholders reported long lines for service, especially on peak weekends for passengers waiting to return back to Rooster Rock or GTC. Stakeholder input included:

- Not enough service for demand; people wait two hours in line at Multnomah Falls to return to Rooster Rock/GTC. There needs to be more frequency during summer peak weekend afternoons westbound.
- When demand is high in the afternoon, MTR may decide to cancel a trip because there is not enough capacity to bring all the people from Multnomah Falls back to Portland or Rooster Rock. MTR has also begun operating “sweeper runs” to bring the last set of customers back from Multnomah Falls. If there are more passengers than can fit onto the last westbound trip for the day, MTR will take the full bus back to Rooster Rock then return to Multnomah Falls to sweep up the last set of passengers.
- Need more communication from ODOT and MTR about schedule or operations changes, e.g. closing the westbound ramp into the I-84 Multnomah Falls parking lot.
- There is huge demand variation by season. Off-peak season is quiet, but on summer weekends there can be 80 people in line while only 56 fit on the bus.
- Start the shuttle earlier and end later to capture broader market
- The schedule between Rooster Rock and Multnomah Falls is very frequent, but for passengers going back to Gateway Transit Center, there are long gaps in service.

Figure 31 shows a visualization of the number of round trips provided by route during the peak season (weekdays and weekends). In general, as reflected in previous sections, the decrease in the number of total round trips that has occurred over time has improved the effectiveness of the service in terms of productivity. Nevertheless, stakeholders see the need for additional service, particularly on the shuttle. Figure 32 shows demand patterns by hour of the day.
Figure 31  Round Trips by Day Type and Year (Peak Season)

**Peak Weekdays**

<table>
<thead>
<tr>
<th>Year</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
<th>GTC-HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>12</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>7</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Peak Weekends**

<table>
<thead>
<tr>
<th>Year</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
<th>GTC-HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>12</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>7</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Legend:
- GTC-MF
- RR Shuttle
- GTC-HR
Figure 32  Average Boardings per Hour in 2019 Peak Season, by Day Type, Route, and Direction

**Eastbound**

<table>
<thead>
<tr>
<th>Time</th>
<th>GTC-HR</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Westbound**

<table>
<thead>
<tr>
<th>Time</th>
<th>GTC-HR</th>
<th>GTC-MF</th>
<th>RR Shuttle</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11 am</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7 pm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
High demand for service can also be measured by the number of people waiting in line at Rooster Rock. ODOT interns conducted spot counts in summer 2019 (Figure 33). The maximum number of people observed in this small sample generally occurred between noon and 2 pm. In a couple cases well over 75 people were waiting in line (CGE vehicles can fit 35-56 depending on vehicle type).

Figure 33 Max People Waiting in Line at Rooster Rock, per Sample Day in 2019
ON-TIME PERFORMANCE

Findings

- Average on-time performance in 2019 was 75%. On-time performance goals for many transit agencies is 85-90%.
- Eastbound runs typically had better on-time performance than westbound runs.
- Hood River westbound (60% on time, 18% late, 22% early) and Cascade Locks westbound (64% on time, 24% late, 12% early) were the worst performing stops.
- The Rooster Rock shuttle had the best on-time performance of any route, likely due to the shorter distance and longer dwell times at Multnomah Falls (to account for gate closures).

Methodology / Analysis

ODOT, through its contractor, provided on time performance data for CGE operations between April 18, 2019 and Nov. 3, 2019, covering more than 10,000 observations of vehicle departure and arrival times at individual stops. The team aggregated these data by route, direction, and stop in Figure 34. Using the TriMet service guidelines (since CGE does not have its own), the team classified stop departure observations using the following criteria:

- **Early**: vehicles departed more than one minute before the scheduled departure time.
- **Late**: vehicles departed more than five minutes after the scheduled departure time.
- **On-time**: vehicles were inside the six-minute window making them not ‘Early’ or ‘Late’. For the last stop in a trip, a vehicle could arrive early and still be counted as ‘on time’ (there is no negative effect on the passenger). TriMet sets their target on-time performance at 90%.

Early observations were often a result of the following factors:

- On peak days when interns are staffed at Multnomah Falls and Rooster Rock, buses can depart when full, which may be before the scheduled time (primarily be for shuttle runs). When interns are present, they communicate with drivers to make these types of decisions and are able to provide support and information to waiting passengers. In summer 2019 interns were present Friday-Monday from Memorial Day – Labor Day.
- When the schedule changes, drivers occasionally make mistakes as they are in the habit of following the old schedule. Early/late departures and missed stops were more likely to occur during the first week or two of a new schedule.

Late observations could be a result of a wider variety of factors, including traffic congestion, slow boarding activities, and gate closures at Multnomah Falls.

---

3 [https://trimet.org/pdfs/tlp/serviceguidelines.pdf](https://trimet.org/pdfs/tlp/serviceguidelines.pdf)
4 [https://trimet.org/about/dashboard/index.htm](https://trimet.org/about/dashboard/index.htm)
### Figure 34  On-Time Performance Summary

<table>
<thead>
<tr>
<th>Route</th>
<th>Direction</th>
<th>Stop</th>
<th>Early</th>
<th>Late</th>
<th>On Time</th>
<th>Total Trips</th>
<th>% On Time</th>
<th>% Early</th>
<th>% Late</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GTC-HR</strong></td>
<td>Eastbound</td>
<td>Gateway Transit Center</td>
<td>76</td>
<td>114</td>
<td>325</td>
<td>515</td>
<td>63%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rooster Rock</td>
<td>2</td>
<td>81</td>
<td>46</td>
<td>129</td>
<td>36%</td>
<td>2%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multnomah Falls</td>
<td>111</td>
<td>57</td>
<td>311</td>
<td>479</td>
<td>66%</td>
<td>22%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cascade Locks</td>
<td>25</td>
<td>64</td>
<td>357</td>
<td>446</td>
<td>80%</td>
<td>6%</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hood River</td>
<td>301</td>
<td>28</td>
<td>117</td>
<td>446</td>
<td>94%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Hood River</td>
<td>123</td>
<td>99</td>
<td>336</td>
<td>558</td>
<td>60%</td>
<td>22%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cascade Locks</td>
<td>58</td>
<td>114</td>
<td>304</td>
<td>476</td>
<td>64%</td>
<td>12%</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multnomah Falls</td>
<td>56</td>
<td>43</td>
<td>367</td>
<td>466</td>
<td>79%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rooster Rock</td>
<td>39</td>
<td>15</td>
<td>153</td>
<td>207</td>
<td>74%</td>
<td>19%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gateway Transit Center</td>
<td>159</td>
<td>46</td>
<td>189</td>
<td>394</td>
<td>88%</td>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>GTC-MF</strong></td>
<td>Eastbound</td>
<td>Gateway Transit Center</td>
<td>48</td>
<td>85</td>
<td>351</td>
<td>484</td>
<td>73%</td>
<td>10%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rooster Rock</td>
<td>12</td>
<td>83</td>
<td>191</td>
<td>286</td>
<td>67%</td>
<td>4%</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multnomah Falls</td>
<td>320</td>
<td>33</td>
<td>89</td>
<td>442</td>
<td>93%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Multnomah Falls</td>
<td>120</td>
<td>74</td>
<td>396</td>
<td>590</td>
<td>67%</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rooster Rock</td>
<td>96</td>
<td>63</td>
<td>243</td>
<td>402</td>
<td>67%</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gateway Transit Center</td>
<td>93</td>
<td>126</td>
<td>275</td>
<td>494</td>
<td>75%</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td><strong>RR Shuttle</strong></td>
<td>Eastbound</td>
<td>Rooster Rock</td>
<td>143</td>
<td>108</td>
<td>656</td>
<td>907</td>
<td>72%</td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multnomah Falls</td>
<td>691</td>
<td>43</td>
<td>118</td>
<td>852</td>
<td>95%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Multnomah Falls</td>
<td>150</td>
<td>135</td>
<td>625</td>
<td>910</td>
<td>69%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rooster Rock</td>
<td>557</td>
<td>115</td>
<td>222</td>
<td>894</td>
<td>86%</td>
<td>1%</td>
<td>13%</td>
</tr>
</tbody>
</table>

### Route & Direction Totals

<table>
<thead>
<tr>
<th>Route</th>
<th>Direction</th>
<th>Early</th>
<th>Late</th>
<th>On Time</th>
<th>Total Trips</th>
<th>% On Time</th>
<th>% Early</th>
<th>% Late</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GTC-HR</strong></td>
<td>Eastbound</td>
<td>515</td>
<td>344</td>
<td>1,156</td>
<td>2,015</td>
<td>73%</td>
<td>10%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>435</td>
<td>317</td>
<td>1,349</td>
<td>2,101</td>
<td>72%</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>GTC-MF</strong></td>
<td>Eastbound</td>
<td>380</td>
<td>201</td>
<td>631</td>
<td>1,212</td>
<td>79%</td>
<td>5%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>309</td>
<td>263</td>
<td>914</td>
<td>1,486</td>
<td>69%</td>
<td>13%</td>
<td>17%</td>
</tr>
<tr>
<td><strong>RR Shuttle</strong></td>
<td>Eastbound</td>
<td>834</td>
<td>151</td>
<td>774</td>
<td>1,759</td>
<td>83%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>707</td>
<td>250</td>
<td>847</td>
<td>1,804</td>
<td>77%</td>
<td>9%</td>
<td>14%</td>
</tr>
</tbody>
</table>

### Stop Totals

<table>
<thead>
<tr>
<th>Stop</th>
<th>Early</th>
<th>Late</th>
<th>On Time</th>
<th>Total Trips</th>
<th>% On Time</th>
<th>% Early</th>
<th>% Late</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway Transit Center</td>
<td>376</td>
<td>371</td>
<td>1,140</td>
<td>1,887</td>
<td>74%</td>
<td>7%</td>
<td>20%</td>
</tr>
<tr>
<td>Rooster Rock</td>
<td>849</td>
<td>465</td>
<td>1,511</td>
<td>2,825</td>
<td>74%</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Route</td>
<td>Direction</td>
<td>Stop</td>
<td>Early</td>
<td>Late</td>
<td>On Time</td>
<td>Total Trips</td>
<td>% On Time</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
<td>---------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Multnomah Falls</td>
<td></td>
<td></td>
<td>1,448</td>
<td>385</td>
<td>1,906</td>
<td>3,739</td>
<td>78%</td>
</tr>
<tr>
<td>Cascade Locks</td>
<td></td>
<td></td>
<td>83</td>
<td>178</td>
<td>661</td>
<td>922</td>
<td>72%</td>
</tr>
<tr>
<td>Hood River</td>
<td></td>
<td></td>
<td>424</td>
<td>127</td>
<td>453</td>
<td>1,004</td>
<td>75%</td>
</tr>
<tr>
<td><strong>Overall Total</strong></td>
<td></td>
<td></td>
<td><strong>3,180</strong></td>
<td><strong>1,526</strong></td>
<td><strong>5,671</strong></td>
<td><strong>10,377</strong></td>
<td><strong>75%</strong></td>
</tr>
</tbody>
</table>

Color Reference:
- Green  ≥ 90%
- Yellow ≥ 75% & <90%
- Red <75%
SAFETY

Safety concerns at the I-84 Multnomah Falls parking lot were a major impetus for the start of CGE. The left-side exit caused backups onto I-84 into the fast lane. Prior to CGE service, ODOT attempted to address this problem by adding an automated gate to the eastbound parking lot entrance.

Findings

- Overall the number of crashes at or near the I-84 Multnomah Falls parking is very small.
- Crashes at Exit 31 are more frequent than crashes at other nearby exits; eastbound connection crashes have declined while westbound crashes increased through 2017.
- Vehicle crashes around Exit 31 on I-84 are down in 2019 compared to 2015 and 2016.

Methodology / Analysis

Safety indicators include crashes, near misses (based on stakeholder observation), and police citations for traffic or moving violations. Yet drawing a clear correlation between CGE and safety outcomes is not possible; rather, CGE is one part of a larger effort needed to make the Gorge safer.

Crash data was available from ODOT and the Multnomah County Sheriff’s office. While the Sheriff’s office data is more comprehensive – the data includes a broader range of reported incidents and covers a larger geography – officers do not distinguish between incidents on the mainline (I-84) or connection (exit/entrance ramp). ODOT crash data is less comprehensive – it lists fewer incidents – but includes information about exit ramp crashes (particularly important for CGE’s evaluation).

The crashes were normalized by ADT to account for traffic volume variation. Crashes normalized by ADT are shown in Figure 35. Crashes at Exit 31 occur more frequently than crashes at other exits. It appears that eastbound connection crashes have declined while westbound connection crashes are slightly elevated in 2016 and 2017, compared to the average from 2010 - 2015. The actual number of crashes is very small, as shown in Figure 36.
Figure 35  Ratio of crashes to ADT, per 10,000 vehicles. Averaged for the years 2010-2015.
### Figure 2  
**ODOT Crashes and Average Daily Traffic (ADT), 2016-2018**

<table>
<thead>
<tr>
<th>Exit</th>
<th>Direction</th>
<th>Roadway</th>
<th>Crashes</th>
<th>ADT</th>
<th>Crashes</th>
<th>ADT</th>
<th>Crashes</th>
<th>ADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rooster Rock</td>
<td>Eastbound</td>
<td>Connection</td>
<td>460</td>
<td>170</td>
<td>190</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit 25</td>
<td></td>
<td>Mainline</td>
<td>1</td>
<td>15,880</td>
<td>14,360</td>
<td>15,120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Connection</td>
<td>320</td>
<td>200</td>
<td>210</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mainline</td>
<td>14,850</td>
<td>13,720</td>
<td>14,620</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridal Veil</td>
<td>Eastbound</td>
<td>Connection</td>
<td>470</td>
<td>350</td>
<td>430</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit 28</td>
<td></td>
<td>Mainline</td>
<td>1</td>
<td>15,410</td>
<td>14,010</td>
<td>14,690</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Connection</td>
<td>460</td>
<td>380</td>
<td>380</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mainline</td>
<td>14,390</td>
<td>2</td>
<td>13,340</td>
<td>14,240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multnomah Falls</td>
<td>Eastbound</td>
<td>Connection</td>
<td>1,000</td>
<td>650</td>
<td>730</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit 31</td>
<td></td>
<td>Mainline</td>
<td>3</td>
<td>15,170</td>
<td>2</td>
<td>13,760</td>
<td>4</td>
<td>14,300</td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Connection</td>
<td>1</td>
<td>720</td>
<td>1</td>
<td>480</td>
<td>490</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mainline</td>
<td>1</td>
<td>14,210</td>
<td>13,120</td>
<td>14,030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ainsworth</td>
<td>Eastbound</td>
<td>Connection</td>
<td>730</td>
<td>490</td>
<td>520</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit 35</td>
<td></td>
<td>Mainline</td>
<td>1</td>
<td>15,380</td>
<td>13,670</td>
<td>14,120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Westbound</td>
<td>Connection</td>
<td>780</td>
<td>460</td>
<td>490</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mainline</td>
<td>1</td>
<td>14,070</td>
<td>12,920</td>
<td>13,840</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Color Reference:**
- **Green** <= 10
- **Yellow** 11 - 50
- **Red** > 50

Safety conditions can also be understood through the number of citations issued by law enforcement. The Multnomah County Sheriff’s office provided citation data for 2014 through 2019 for the portion of I-84 within the Gorge and the Historic Highway (Figure 37). The data shows that parking violations are a primary problem along the Historic Highway while traffic stops are more common on I-84. The Sheriff’s office commented that parking issues were not as concentrated at Multnomah Falls in 2019 as previous years and were more dispersed throughout the Gorge. They have also observed that back-ups on I-84 at the Rooster Rock exit appear to have increased with the combined shuttle parking and high visitor use.
Another method for assessing safety, and the impact of traffic, is looking at the number of times drivers struck the east-bound gate to the Multnomah Falls parking lot. A single gate strike is costly to fix and represents a lack of compliance from drivers. Gate strike data was available by year. Based on reported data, gate strikes were temporarily reduced after CGE started service in 2016 but 2019 gate strikes are at the same level as 2014.

**Figure 3**

<table>
<thead>
<tr>
<th>Year</th>
<th>Gate Strikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>6</td>
</tr>
<tr>
<td>2018</td>
<td>7</td>
</tr>
<tr>
<td>2017</td>
<td>2</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>4</td>
</tr>
<tr>
<td>2014</td>
<td>6</td>
</tr>
</tbody>
</table>

GOAL: ADDRESS CONGESTION

Partners identified congestion in the Gorge as a particular problem along the Historic Highway and at the I-84 Multnomah Falls parking lot. It is challenging to directly correlate the presence of CGE with congestion changes. Millions visit Multnomah Falls each year, thus it would be difficult for one bus service to affect this pattern (in 2019, CGE riders accounted for an estimated 4% of total visitation at Multnomah Falls). Stakeholders generally agree that CGE has to be part of a larger, multi-faceted solution to truly change travel patterns. There are, however, some indicators that show changes to general traffic conditions in the Gorge. These include:

- Traffic volumes and delay near Multnomah Falls
- Amount of times the eastbound I-84 parking lot gate is closed
- Quantifying the number of car trips diverted from the I-84 parking lot
- Parking utilization at Rooster Rock. One consequence of the shuttle’s popularity has been increased usage of the Rooster Rock parking lot; parking lot utilization can show if CGE demand outpaced projections.

Congestion Performance Measures

- Reduce congestion at Exit 31 EB
- Reduce driving trips to Multnomah Falls parking lot

TRAFFIC CONGESTION

Findings

- Annual vehicle hours of delay near Exit 31 have dropped by 70%, from approximately 12,800 hours in 2015 to 3,900 hours in 2019.
- Summer eastbound delay in 2015 was far higher than in 2016 and onward, when CGE began operation.
- Since service began, CGE has diverted a total of 20,725 cars from the I-84 parking lot (2% of tracked vehicle volume from 2016-2019). Diversions peaked in 2018 when the Historic Highway was closed
- The closure of the Historic Highway waterfall corridor (Bridal Veil to Ainsworth State Park) from September 4, 2017 to November 23, 2018 shows the power of a drastic access change. The closure resulted in higher demand for the CGE shuttle compared to previous years. Ridership increased significantly and there were no parking violations on the closed Historic Highway.

“I would recommend anyone stop driving their cars to enjoy nature. It defeats the purpose in my eyes. Getting to meet new people on the bus was also fun and something new!”
- Passenger survey

“It's very convenient easy and cheap. No parking or worrying about traffic, even Internet access.”
- Passenger survey
Methodology / Analysis

The following data visualizations rely on HERE data. HERE is a private vendor of aggregations of GPS probe data (e.g., mobile phones, GPS units), and ODOT has a contract with HERE. After selecting a series of links near Exit 31 (Multnomah Falls) in both directions representing approximately one mile of roadway (illustrated in Figure 39), ODOT extracted historical vehicle delay\(^5\) information for those links at a five-minute resolution.

Figure 39  Map of Links Used for Extracting HERE Data

Figure 39 illustrates the aggregate vehicle delay estimate (in both directions) on an annual basis, with the estimated ADT in the same vicinity superimposed for comparison in trends. It is clear that even as ADT has increased (as discussed earlier), vehicle delay has significantly decreased between 2015 and 2019, indicating more consistent traffic flow through the area.

Figure 41 breaks down the annual vehicle delay by direction. This shows that the decrease has been even more dramatic in the eastbound direction, where stakeholder anecdotes indicate most of the congestion/safety issues occur (adjacent to the left-side Exit 31). Figure 42 further illustrates this, where vehicle delay is broken down further on a monthly basis, showing that the peak delay experienced eastbound in 2015 drops significantly from July 2016 onward. **This is not to say that all delay issues have been resolved at the location, or that CGE alone changed conditions, but that data clearly show positive outcomes for I-84 congestion.** Anecdotally, stakeholders agree that CGE has reduced congestion at the I-84 parking lot, but there remain major congestion challenges on the Historic Highway.

---

\(^5\) Delay in this context is defined as the difference between the prevailing traffic speed at a given time and what that speed is on the same link under ‘free flow’ conditions, as defined by ODOT.
Figure 40  Comparison of Average Daily Traffic and Vehicle Delay in Vicinity of Exit 31 (Multnomah Falls)

Sources: ODOT ATR, HERE

Figure 41  Annual Hours of Vehicle Delay by Direction

Source: HERE
Figure 42  Monthly Vehicle Hours of Delay in Exit 31 Vicinity by Year and Direction

Source: HERE
VEHICLE TRIPS DIVERTED FROM MULTNOMAH FALLS

Findings

- CGE service has diverted an estimated 20,724 vehicle trips from the Multnomah Falls parking lot.
- Diverted trips peaked in 2018, due to the closure of the Historic Highway because of the fire.
- Trips diverted increased 66% from 2016 (2,874) to 2019 (4,756).

Methodology / Analysis

Based on survey results, about half of CGE riders destined for Multnomah Falls would have driven if CGE was not available. To calculate the total number of vehicle trips diverted from the lot, total boardings at GTC and RR was used as a baseline. This number was divided by average party size, since if the respondent had driven, multiple people might have been in that car. The portion of riders that stated they used CGE because they had no other option / no vehicle (nearly 50 percent) were removed, since it is assumed that those people would not have driven to Multnomah Falls. Some survey respondents at RR said they took CGE because they drove to Multnomah Falls and the lot was full – those people did not alleviate congestion and were removed. Figure 43 summarizes vehicle trips diverted from the I-84 lot by year based on these calculations.

Figure 43  Annual vehicle trips diverted from Multnomah Falls parking lot

GATE CLOSURES

Findings

- Hours of gate closures increased from 214 hours in 2017 to 414 hours in 2019.
- The number of days with gate closures dropped slightly from 2018 to 2019 (167 to 160) but are above 2017 levels (114 days).
- Gate closures remain a challenge for transit, impacting operational costs, on-time performance, and customer experience. When the eastbound gate is closed, the CGE buses must continue on I-84 and turn around at Exit 35 Ainsworth, adding about 8 service miles and 15 minutes to the trip time.
Temporary barriers at the westbound exit in summer 2019 caused delays to CGE service. Passenger vehicles trying to enter the parking lot from the westbound side were not permitted entry until the eastbound gate reopened, thus blocking any CGE buses behind them. The westbound barriers also delayed employee shuttles and special events vehicles for the Multnomah Falls Lodge.

Drivers within the Multnomah Falls parking lot who wait for a spot to open impede traffic flow; it is sometimes faster for a westbound bus to go back east to Exit 35 Ainsworth, turn around, and then travel back on I-84 westbound to get to Rooster Rock (RR) or GTC (adding another 8 miles and 15 minutes to the trip).

Methodology / Analysis

Sensors at Multnomah Falls Exit 31 track vehicle volume, triggering the eastbound gates to close when the lot is full. The gates reopen when there are about 30 open spaces. Through these sensors, ODOT tracks vehicle volume by day, as well as the date, time and duration of gate closures at Exit 31. This dataset has become more robust over time, which presents a challenge when making assumptions about year-over-year changes. Data for 2015-2016 is limited to peak days during peak season (Fridays – Sundays from May – September) and does not include gate closure duration. Data from 2017-2019 is collected daily, year-round, and includes gate closure duration. Due to these differences, only 2017-2019 data was used for this report.

The highest year for gate closures was 2018, which was when the Historic Highway was closed due to the Eagle Creek Fire. Nevertheless, gate closures in 2019 overall exceed those in 2017, meaning that the declines observed in initial years of service have disappeared. More gate closures do not necessarily indicate poorer operations of the roadway or the Multnomah Falls lot, though – on the contrary, overall vehicle delay in the area has been reduced as discussion in the Traffic Congestion section. Data and anecdotal reports also indicate that technical issues can result in the gates remaining closed for longer than necessary.

Figure 44 illustrates the total number of annual gate closures for years with full data available, Figure 45 shows total annual hours of gate closures, and Figure 46 show the number of gate closures by month and year.

Figure 44   Annual Gate Closures at I-84 Exit 31 (Eastbound)
Figure 4  Annual Hours of Gate Closures at I-84 Exit 31 (Eastbound)

Figure 5  Gate Closures by Month and Year
Anecdotally, backups at the eastbound gate, which have led to cars stopped on the actual highway, have declined. However, gate closures remain a challenge for transit as they add several minutes to the eastbound trip time. If the variable messaging sign says the gate is closed, bus operators stay in the right lane and turn around at Exit 35 (Ainsworth State Park) and enter the Multnomah Falls lot from the westbound exit (Figure 47). On peak days the westbound exit can also experience congestion and backups onto the interstate, as visitors who may have been blocked by the eastbound gate realize that they are able to access the lot when heading west.

At some peak times ODOT has used flaggers and temporary barriers to close the westbound entrance and prevent vehicles from backing up onto the Interstate. Flaggers install the temporary barrier when the eastbound gates close and then remove them when the gates open. According to the CGE operator, when the westbound entrance is not staffed or closed and the lot is at capacity, this results in the same issues that used to happen eastbound – drivers enter the lot, cannot park, and traffic backs up on the ramp. If the CGE vehicle cannot use the westbound ramp without the end of the bus sticking out onto I-84, the driver must keep going back to Rooster Rock.

**Figure 47 Access Route when eastbound gate down**

**STAKEHOLDER INPUT**

Much of the stakeholder conversations revolved around issues at the I-84 parking lot. Stakeholders were also concerned about how to tackle congestion in general in this area of the Gorge.

Stakeholder opinion is mixed regarding how to truly change travel patterns and congestion. If ODOT decides to close the I-84 lot, there are safety concerns for Multnomah Falls visitors and employees due to the reduced access for emergency vehicles, for example. Simply closing the lot without a viable option may also push congestion elsewhere. At the same time, closing it to passenger vehicles or adding a hefty charge for parking could be the strong tactic needed to get people out of cars, and if visitors do drive, charging for parking could fund transit.

Input included:

- Variable messaging signs are not always accurate on whether the eastbound entrance gates are closed
Anecdotally, there have not been as many instances of people backing up onto I-84 at the eastbound Exit 31, but CGE has not helped Historic Highway congestion. Transit alone cannot solve congestion.

The I-84 lot access options could include variable messaging “for authorized vehicles only” and upgrading the gate to have a key card or other such automatic access, or staff on site to open and close the gate. Creating an exit to provide a safe way for people to use perimeter roads to turn around without entering the parking lot would be useful (Figure 48).

Figure 48  Potential turn around route

Explore alternate sites for shuttle parking, including Benson State Park, Dalton Point, the unused gravel lot north of Lewis and Clark, and the Hatfield Visitor Center.

Add a CGE stop in east County communities such as Troutdale/Fairview/Wood Village. If the P&R was along county right-of-way, there could be an opportunity to leverage travel dollars or a similar grant program to upgrade a site for transit customers. A CGE P&R could be an economic development opportunity.

A sign saying MF lot full doesn’t really solve congestion. There is a market for getting people out of their cars from Portland, and then the shuttle would serve those who already chose to drive.

There’s agreement around “we need to solve congestion” but given all the partners, authorities, jurisdictions – there’s good solutions but many are very difficult to implement. It is really complicated.

The biggest opportunity is pricing – price parking at a super premium to park at the I-84 lot and charge a lower cost to park at Rooster Rock. People will still drive, but then partners could reinvest parking funds in transit and traffic enforcement.

Parking at Rooster Rock

Congestion at the Rooster Rock entrance kiosk, where patrons purchase their $5 parking pass, and in the parking lot itself has been cited as a concern. OPRD has reserved 121 of its 1,300 parking spaces at Rooster Rock for CGE customers, including three handicap spots. In 2019, ODOT interns conducted spot counts of the number of cars parked in the CGE-designated area across 14 days. This small sample provides a snapshot into parking conditions. Figure 49 shows the maximum occupancy recorded for each sample day. The highest occupancy recorded was 95% on August 17. On average, the maximum parking capacity was 47% across all sample days. This indicates congestion may be a larger problem at the entrance kiosk versus the parking lot.
Figure 6  Maximum occupancy of CGE-Designated Parking at Rooster Rock, 2019
GOAL: PROTECT

CGE is funded through the Federal Lands Access Program and serves sites in a federally designated National Scenic Area. Preservation of natural resources is therefore a goal for CGE funders and partners.

Protect Performance Measures

- Reduce carbon footprint of Gorge visitors
- Reduce illegal parking along Historic Highway

Emissions Reductions

Findings

- From 2016 - 2019, CGE service reduced carbon emissions in the Gorge by 170 metric tons of CO²
- CGE's 2019 emission reductions (60 metric tons) make up 0.001% of the Portland Metro's CO² levels annually produced from cars and light trucks
- Visitors who drive to Multnomah Falls and circle to look for parking before taking the Rooster Rock shuttle add to carbon emissions, negating a portion of CGE's impact

Methodology / Analysis

Emission reductions due to CGE included three elements—reduction in emissions from vehicles from the Portland to Multnomah Falls trips, emissions from vehicles from the Portland to Hood River trips, and emissions from vehicles from Rooster Rock to Multnomah Falls trips. The methodology for this calculation includes:

1. Emissions reduced for GTC-MF diverted trips
2. Emissions reduced for RR-MF diverted trips
3. Emissions reduced for GTC-HR diverted trips
4. Added emissions from vehicles that drove to Multnomah Falls were unable to park, and then drove back to Rooster Rock and took CGE.

Total emission reductions were calculated using the sum of these four components. Trips diverted do not include trips that would not have been possible without CGE, based on percentage of survey respondents who said they had no other option / no access to a vehicle.

---

6 GTC-HR trips diverted were calculated with similar methodology as GTC-MF trips diverted. The percent of survey respondents that boarded at GTC but went to Hood River was found per year and multiplied by GTC boardings. Trips that would not have been possible without CGE were subtracted.
The EPA states that a standard mid-size vehicle produces 404 grams of CO₂ per mile of driving\(^7\). The GTC-MF trip counted as 24.4 miles of driving each way, and was doubled to account for a round trip. The GTC-HR trip was 56.2 miles one-way, doubled for round trip. The RR-MF trip counted as 7.1 miles one way, or 14.2 miles round trip. Emissions from those who drove to the Multnomah Falls lot and then returned to Rooster Rock when they found the lot full totaled 22.3 miles of additional emissions created; this amount was added to the equation. This accounts for the additional mileage of a driver passing the Multnomah Falls lot and turning around at Exit 35.

The appropriate mileage per trip was multiplied by the grams of carbon per mile and converted to pounds. As shown in Figure 21, in 2019 CGE removed 60 metric tons of CO₂ from the air. In 2010, Metro completed a regional greenhouse gas inventory. Travel from cars and light trucks contributed 14\% of all emissions, equaling 4,340,000 metric tons\(^8\). CGE’s 2019 emission reductions make up 0.001\% of this amount.

**ILLEGAL PARKING**

**Findings**

- Parking violations on the Historic Highway in 2019 are down 53\% from 2017
- CGE has not had an impact on congestion or parking on the Historic Highway
- Anecdotally, parking issues were less concentrated at Multnomah Falls in 2019 and instead were more dispersed throughout the Gorge; backups on I-84 at Rooster Rock have increased

**Methodology / Analysis**

Reducing illegal parking along the Historic Highway is part of the Protect goal for two reasons: first, drivers parking in non-designated areas can damage wildlife; second, drivers’ cars can block through movement on the Historic Highway, resulting in major congestion (anecdotally, the highway can be at a standstill for hours) and degrading the ability to access Federal recreation lands. Figure 36 shows parking-related citations on the Historic Highway have declined in 2019 compared to 2017 levels.

---


\(^8\) [https://www.oregonmetro.gov/sites/default/files/2015/05/10116_climate_change_fact_sheet_pla_csc.pdf](https://www.oregonmetro.gov/sites/default/files/2015/05/10116_climate_change_fact_sheet_pla_csc.pdf)