



COLUMBIA GORGE EXPRESS EXPANSION

Near-Term Service Plan

June 2018



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1 CGE SERVICE FRAMEWORK

Operating Periods

The Columbia Gorge Express (CGE) service expanded spatially and temporally in summer 2018. The bus began serving Cascade Locks and Hood River on May 25, 2018, and expanded to a seven day per week operation on June 11, 2018. Service will continue evolving past 2020, when new funding may be needed. The three overall service operating periods are:

- Immediate-Term – May 25, 2018-Sept. 30, 2018
- Short-Term – Oct. 1, 2018-Sept 30, 2020
- Long-Term – Oct. 1, 2020 and beyond. This period is beyond the life of the Federal Lands Access Program grant, which currently provides the bulk of funding for CGE service.

This plan serves as the basis for service operation for the Immediate-Term and Short-Term.

Goals

The main goals for service are:

- Offer a car-free travel option in the Gorge between Portland and Hood River, enhancing access to key recreation destinations and serving as a part of the solution to traffic congestion.
- Relieve parking and traffic congestion at Multnomah Falls by encouraging car-bound visitors to park off-site and take a shuttle to Multnomah Falls.

Service Markets

Marketing to transit customers includes consideration of both geographic markets and trip purpose markets. The key markets for CGE service include:

- **Visitors to the Gorge living in the Portland/Vancouver metropolitan area.** These travelers live in the Portland area and visit the Gorge for day trips to recreational sites and other tourism destinations. They typically travel in pairs, small groups or families, and may be either regular or first-time visitors. They are more likely to travel to the Gorge on weekends than during the week, and typically plan their trip anywhere from one day to two weeks prior. For these visitors, it is important that transit service be reliable and easily accessible, and provide an alternative to traffic and parking congestion.
- **Visitors to the Gorge living outside the Portland/Vancouver metropolitan area.** These travelers are most likely staying temporarily in the Portland/Vancouver area, and may visit two to three top tourism destinations, including Multnomah Falls and Hood River. They generally travel in pairs, small groups or as families. Among all service markets, they are the most likely to plan their trip to the Gorge in advance (i.e., two weeks to a month prior). An advance travel plan that doesn't require a personal vehicle and allows for flexibility is important to this group. They are more willing than other groups to pay a premium to avoid stress related to congestion or limited parking availability.



- **Portland/Vancouver metropolitan area residents traveling to/through the Columbia River Gorge for utilitarian purposes.** These residents travel to or through the Gorge for a wide range of purposes, and are likely to travel any day of the week. They are less interested in visiting popular tourist destinations along their route, and seek convenient, direct connections to commute to work, visit friends and family, shop and/or run errands, and access outdoor recreation. Commuters are most interested in early morning and late afternoon weekday service options to accommodate conventional work schedules, but others in this category value regular service throughout the day and on weekends. Affordability and frequent service is key to their use of transit to or through the Columbia River Gorge.
- **Columbia River Gorge area residents traveling to the Portland/Vancouver metropolitan area for utilitarian purposes.** This market includes residents of the Columbia River Gorge who make most of their trips within their communities, and travel to the Portland/Vancouver metropolitan area anywhere from regularly (e.g., commuting) to infrequently (e.g., airport access). Relative to other groups, these travelers are most likely to drive alone. Their primary trip purposes include recreation, shopping and errands, commuting to work, access to healthcare/medical appointments, regional travel hubs (e.g., the airport), and social outings or recreation with friends or family. Once in the Portland/Vancouver area, many of these travelers are willing to utilize other regional transit to access their final destinations (e.g., TriMet MAX Light Rail).

Priorities for 2018 Peak Season

Based upon lessons learned during the 2017 season and outreach conducted in 2018, service priorities for the immediate-term are as follows.

- Provide frequencies westbound from Multnomah Falls in the afternoon at levels similar to or better than 2017 service levels. This is when service has the highest demand.
- Create a fare structure that encourages more trips (e.g. by offering group discounts) and also furthers equity by providing a discount for families.
- Offer a robust service level to Cascade Locks and Hood River. Surveys in 2015 and 2018 showed that Hood River is an extremely popular location that people are interested in taking transit to. A skeletal service (e.g. two or three trips per day) may not attract those who would normally drive. A level of service offering people multiple options to travel to Hood River enhances convenience.
- Structure the schedule to allow trip chaining across the Gorge. Surveys showed that a large percentage of people visit more than one destination in the Gorge during each trip. Giving people a schedule option to visit multiple places in one day trip may attract these customers.
- Coordinate with other transit providers. Maximize the value of transit resources by promoting connections to other providers along the Gorge and at Hood River.



2 SERVICE DESIGN

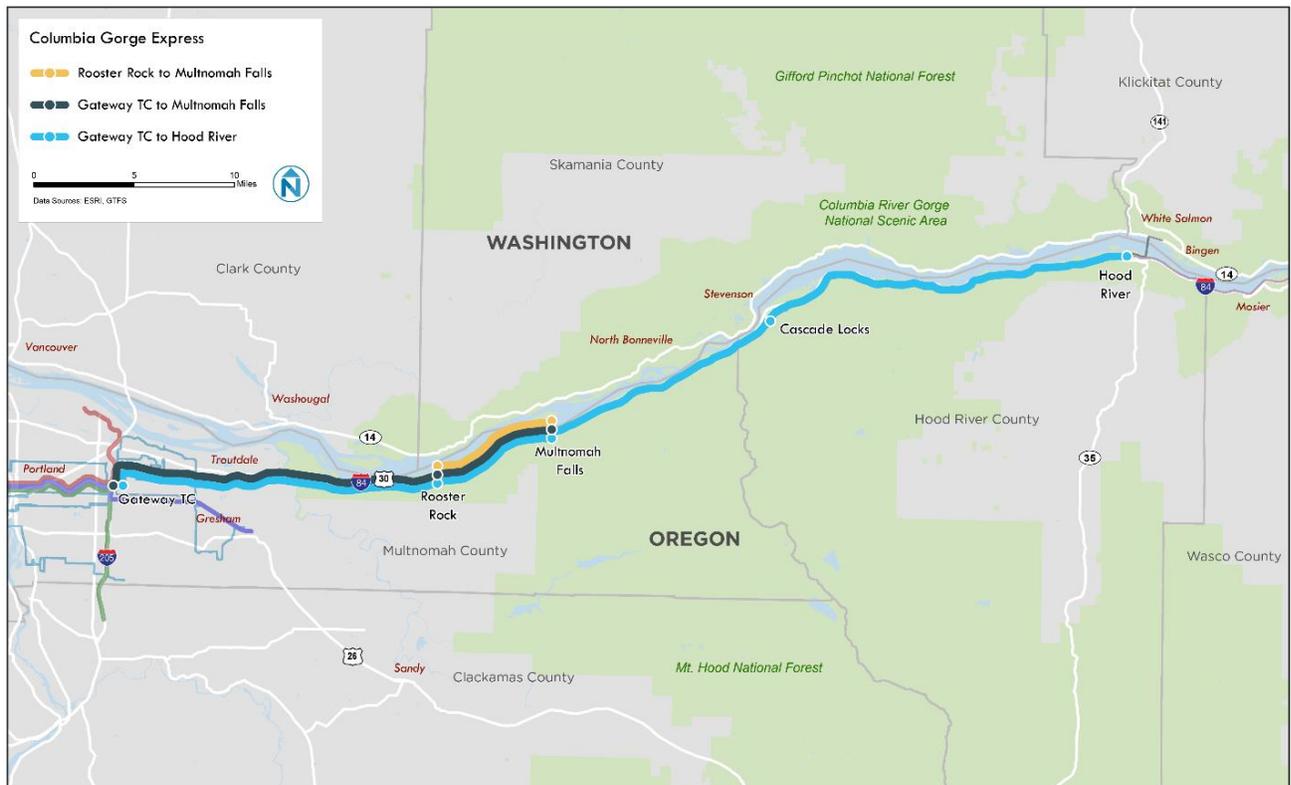
ROUTES

There are three main public-facing routes for CGE in summer 2018.

1. Portland to Multnomah Falls, stopping at Gateway Transit Center, Rooster Rock, and Multnomah Falls (in both directions).
2. Rooster Rock to Multnomah Falls. This short route travels back and forth between Rooster Rock and Multnomah Falls, acting as an overflow parking shuttle for Multnomah Falls.
3. Portland to Hood River, stopping at Gateway Transit Center, Rooster Rock, Multnomah Falls, Cascade Locks, and Hood River (in both directions).

The service map is shown in Figure 1.

Figure 1 Columbia Gorge Express Service Map





STOPS

Detail on stop locations and circulation is shown in Figure 2, Figure 3, Figure 4, Figure 5, and Figure 7.

Portland departures all leave from Gateway Transit Center, just east of I-205 at the corner of 99th Avenue and Pacific Street. This is the same stop location as the 2016 and 2017 seasons.

Figure 2 Gateway Transit Center Stop



At Rooster Rock, CGE buses travel through the Rooster Rock parking lot to the far west end of the lot to pick up passengers. Oregon State Parks has improved this area of the park for the CGE by updating a restroom facility and meeting ADA access standards. This also ensures that people visiting Rooster Rock who are not taking CGE can park closest to the main area of the park. People parking must pay a \$5 day use fee to Oregon State Parks.

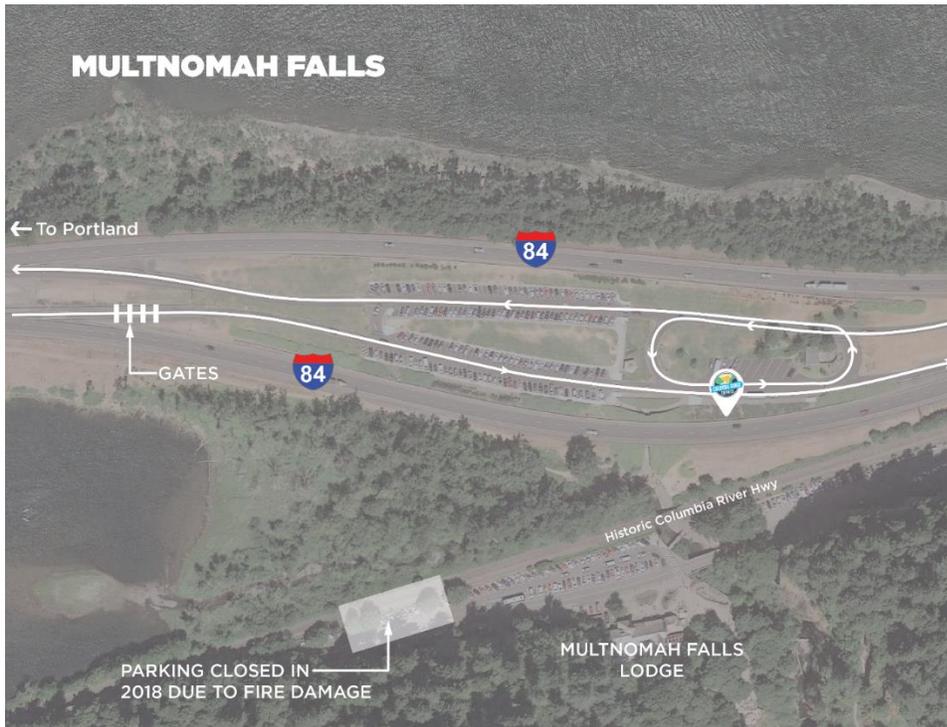


Figure 3 Rooster Rock Stop



The Multnomah Falls stop will continue to be in the same location as 2016 and 2017. Westbound buses will circulate through the parking lot to serve the stop.

Figure 4 Multnomah Falls Stop





In Cascade Locks, the CGE stop will be located just off of the downtown main street (Wa Na Pa Street) at Columbia Market, across the street from a future Gorge Hub. The bus will circulate through Columbia Market's parking lot. AutoTurn analysis using a 40-foot bus showed that buses can turn using the circulation patterns shown in Figure 5. Both westbound and eastbound buses will use the same stop. Columbia Area Transit (CAT) also plans to move from the current stop at Bridgeside Restaurant down the street to Columbia Market. Passenger infrastructure may be limited since the stop is on private property.

Needed changes at the stop include:

- Removal of one parking space in the rear (eastern edge) of the lot.
- Installation of two bus stop signs – one on Wa Na Pa St. to direct persons traveling into the parking lot, and then another at the specific stop location in the parking lot.
- Pavement markings creating a bus zone and restricting parking for non-bus vehicles (see Figure 6 for a potential striping plan)

ODOT will need to obtain a temporary easement from the Columbia Gorge Center Owners Association, who owns the parking lot, to allow bus access and make the necessary improvements. To ensure CGE customers do not use Columbia Market as a park and ride, the CGE web site will advertise other public parking locations.

Figure 5 Cascade Locks Stop

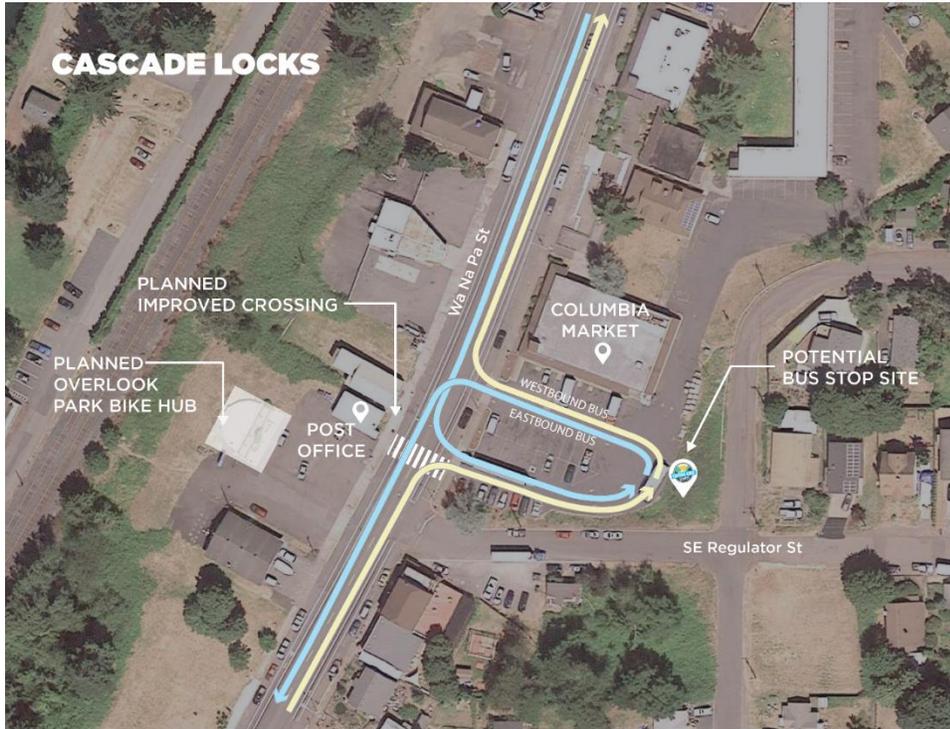
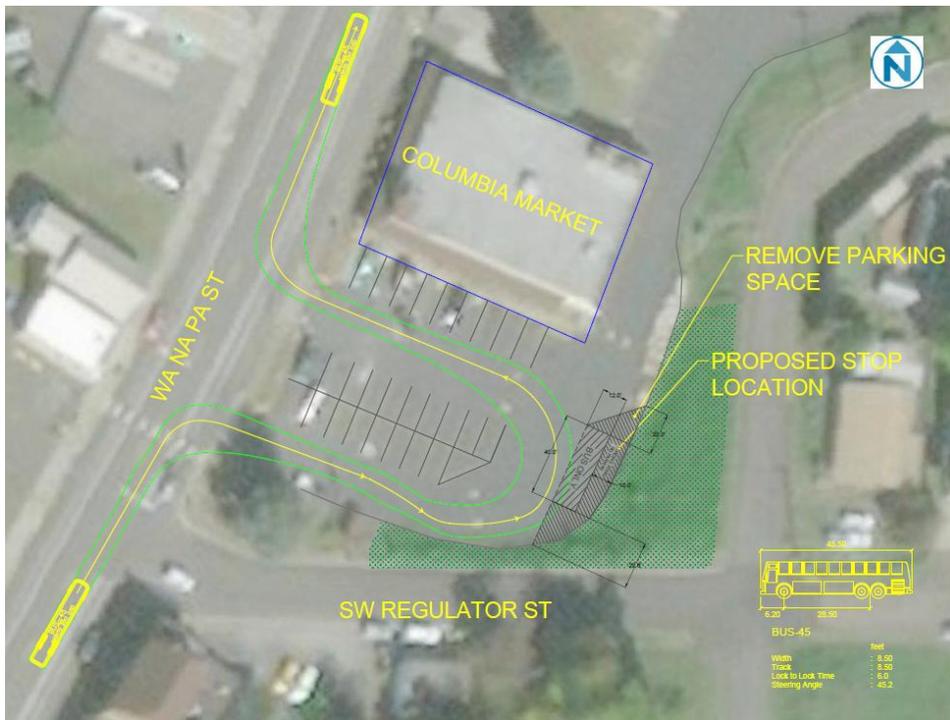


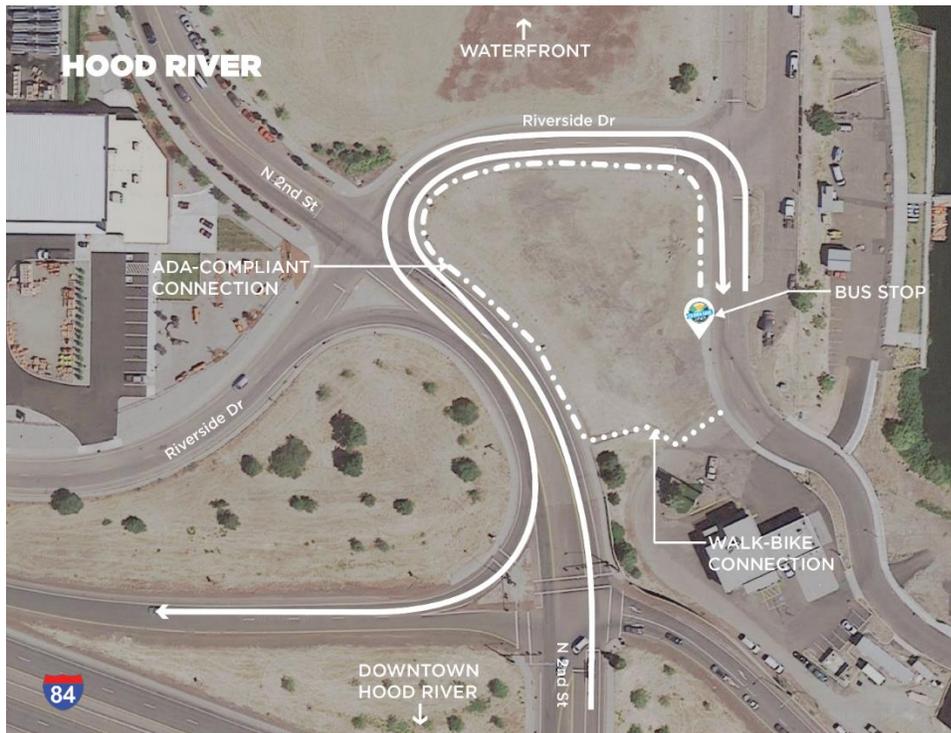
Figure 6 Striping plan



Buses in Hood River will stop just north of downtown at a site owned by the Port of Hood River. This allows buses to avoid traveling through downtown Hood River, which is very congested with pedestrians in summer months.



Figure 7 Hood River Stop



STOP INFRASTRUCTURE AND AMENITIES

Places to sit, information, and other amenities make service more comfortable and convenient. Amenities vary by location, as summarized in Figure 8.



Figure 8 Stop Infrastructure and Amenities

Stop	Shelter	Seating	Service Information (Maps, Schedules)	Customer Service	Restroom	Bike Racks
Gateway Transit Center	Yes	Yes	In 2017, ODOT used sandwich boards to display schedules. For 2018, ODOT may consider schedule boxes attached to signs and directing riders to real-time arrival information at ColumbiaGorgeExpress.com .	ODOT may contract with MTR to provide on-site support for fares and information, which would greatly assist bus drivers in keeping vehicles on-time. ODOT interns will be present for two trips per day on weekends.	Yes – Fred Meyer	Yes – lockers available
Rooster Rock	ODOT is pursuing a National Scenic Area permit for shelter construction.	Yes		No	Yes	No
Multnomah Falls	ODOT is pursuing a National Scenic Area permit for shelter and seating construction.			Yes – staff person on-site at information booth. An ODOT intern will be present on weekends.	Yes, at the Lodge	Yes, at the Lodge
Cascade Locks	No	No		CAT will periodically staff Hood River and Cascade Locks stop locations to help direct passengers and conduct rider outreach.	Yes, at Columbia Market	No - but future bike hub planned across the street
Hood River	Grant awarded for stop amenity construction. Funds available July 1, 2018. For launch, CAT seeking to obtain shelter from COIC system in Bend.				Yes, at the Valero gas station	No



An additional programming consideration is provision of a guaranteed ride home program to safeguard against passengers becoming stranded in Hood River if the vehicles reach capacity. This service need not be advertised, but ODOT should have a list of on-call taxi vendors (including ones with the ability to carry wheelchairs or bicycles) that can be used as needed. The service would be quite expensive, but worth the consequences of passenger inconvenience.

VEHICLES

A total of four vehicles will be available for service, as described in Figure 9.

Figure 9 Vehicle Inventory

Vehicle #	Owner	Description	Passenger Capacity	Bicycle Capacity
1	ODOT	<ul style="list-style-type: none"> ▪ High-floor cutaway ▪ New fareboxes 	37 seated OR 31 seated + 2 wheelchairs	Bike rack (3 bikes)
2	ODOT	<ul style="list-style-type: none"> ▪ High-floor cutaway ▪ New fareboxes 	37 seated OR 31 seated + 2 wheelchairs	Bike rack (3 bikes)
3	MTR Western	<ul style="list-style-type: none"> ▪ Full-size coach ▪ Restroom 	48 seated OR 36 seated + 2 wheelchairs	Bus cargo area (3 bikes)
4	MTR Western	<ul style="list-style-type: none"> ▪ Full-size coach ▪ Restroom 	48 seated OR 36 seated + 2 wheelchairs	Bus cargo area (3 bikes)

CONNECTING SERVICES

Promoting connecting services lets passengers know that additional transit is available beyond CGE destinations. Some services overlap with CGE's route and will be integrated into the CGE schedule, while other services will be mentioned as connecting providers. The biggest connecting provider is CAT; the agency will ensure that all CAT services marketed as connections to CGE will stop at the same stop that CGE uses.

- CAT fixed-route between Cascade Locks and Hood River
 - This service will be integrated into CGE schedules, as shown in chapter 3
- CAT commuter service between Portland and Hood River
 - This will replace current commuter shuttles run by In Situ, but will be open to the general public, not just In Situ employees. There will be two round trips per day – a morning and afternoon/evening trip timed to bring people to Hood River in the morning by 8 am and take people back to Portland around 5 pm. This service will be integrated into CGE schedules, as shown in chapter 3, and is planned to begin June 11, 2018. Schedules are not yet available but will be posted on the CAT web site <https://catransit.org/>.
- CAT weekend trolley
 - Service may be available for a weekend trolley – schedules are not yet available but will be posted on the CAT web site <https://catransit.org/>
- CAT fixed-route through downtown Hood River
 - CAT will begin a fixed-route circulating through Hood River when CGE begins operations. Schedules are not yet available but will be posted on the CAT web site <https://catransit.org/>.
- Mount Adams Transportation Service (MATS)



- MATS runs four round trips per day between White Salmon and Hood River. MATS will stop at the CGE site in Hood River. <http://gorgetranslink.com/transit-klickitat.html>
- TriMet
 - Numerous bus and MAX lines stop at Gateway Transit Center. Routes are shown in a diagram of the transit center bays here: <https://trimet.org/transitcenters/> .
- Mount Hood Meadows shuttle (winter only)
 - <https://www.skihood.com/plan-a-trip/transportation-options/peak-day-shuttle>



3 FARES

CGE will serve new locations, necessitating new fares. Several considerations that informed fare decisions included:

- A primary goal of the service is to provide traffic and parking congestion relief at Multnomah Falls as well as other Gorge destinations. Fares must be set at a level to continue attracting drivers to transit.
- Another important goal is to increase access to public recreation opportunities in the Gorge for lower income households and people without access to an automobile.
- Cascade Locks and Hood River are developing service markets and the “right” fare for these markets on a CGE bus is unknown.
- While simplifying fares may not always seem equitable, simplifying fare transactions can have significant benefits for fare compliance and comprehension as well as operations of the service.
- ODOT expects that farebox recovery will rise from 20% in 2017 to 30% by the end of the FLAP grant in 2020, which will help cover operating costs.

INDIVIDUAL FARES

The following fare proposal achieves a balance between fare structure simplicity, affordability, farebox recovery, and fairness in terms of service miles covered. The fare proposal for the initial service season is presented in Figure 10. Fare prices are shown both in round trip and one way terms.

Figure 10 Fare Proposal

One Way	Round Trip	Stop Pair
	\$5.00	Gateway ↔ Rooster Rock/Multnomah Falls*
\$2.50	\$5.00	Cascade Locks ↔ Hood River †
\$5.00	\$10.00	Gateway ↔ Cascade Locks Rooster Rock/Multnomah Falls* ↔ Hood River
\$7.50	\$15.00	Gateway ↔ Hood River
* Service between Rooster Rock and Multnomah Falls is free		
† Hood River County Residents eligible for discount fares for this trip. See columbiagorgeexpress.com for more details.		

DISCOUNT FARE OPTIONS

A summary of discount fare options proposed is presented in Figure 11. Additional details about the fare options are presented in the following text.



Figure 11 Discount Fare Options

Fare Instrument	Price	Notes
Individual day pass	\$12 online \$15 in person	Get on or off the bus at any stop for the purchased service day.
Group (up to 4 people) day pass	\$40, online purchase only	Get on or off the bus at any stop (as a group) for the purchased service day. All members of the group must get on the bus at the same time with a single ticket.
Children (under 6)	Free	All Children 6 or younger ride free of charge

Individual Day Passes

Individual day passes enable passengers to get on and off at any stop on the CGE within a given service day. They cost \$12 per individual online and \$15 per individual in person – this is meant to incentivize online purchase. Day passes are priced to be less expensive than a full round trip to Hood River – this is meant to incentivize the use of this fare instrument, as it is the least complex in terms of the number of fare transactions and boarding validations created.

Group Day Passes

Group day passes are available for groups of up to four passengers, providing them all day passes with a single fare instrument. They are priced at \$40 to be less expensive than three round trips to Hood River. Group fares are **only available** through pre-purchase to discourage the creation of informal groups. The required use of a single fare instrument also discourages informal group creation. These fare instruments are meant to incentivize pre-purchase of fares and to provide a price that is more competitive with driving for a group of this size.

Child Fares

It is recommended that Trimet’s definition for “children” (age six years and under) is adopted and when accompanied by an adult rider, children would ride free. Previously, CGE policy was that children on the lap of an adult rode free.

FARE PURCHASING OPTIONS

Passengers will be able to buy tickets online (requires printing out ticket or showing on mobile phone), or onsite using credit card or cash. Drivers or other MTR Western staff are authorized to collect cash fares. Group passes would only be available online. Potentially vendors at stop locations, such as the Valero gas station in Hood River or Columbia Market in Cascade Locks, could sell CGE tickets.

FAREBOX RECOVERY

Based on the estimated ridership expected for the Summer 2018 season (see Appendix A), farebox recovery estimates were prepared by service segment to aid in planning decisions, such as setting fares. Figure 28 indicates the estimated boardings, fare revenue, and farebox recovery expected for each service segment. The Rooster Rock – Multnomah Falls service segment is fully subsidized, while the Gateway – Multnomah Falls and the Gateway – Hood River are estimated to recover 28 and 35% (respectively) of their costs in fare revenues. Chapter 5 provides further details on operating cost estimation.



Figure 12 Summer 2018 Farebox Recovery Estimates by Service Segment

Segment Name	Estimated Boardings	Fare Revenue	Estimated Cost	Farebox Recovery	Cost per Trip	Fare Revenue per Trip	Subsidy per Trip
Gateway to Multnomah Falls	22,780	\$56,951	\$183,551	29.7%	\$8.06	\$2.50	\$5.56
Gateway to Hood River	21,775	\$90,117	\$230,784	37.1%	\$10.60	\$4.14	\$6.46
Rooster Rock to Multnomah Falls	15,050	\$0	\$76,932	0.0%	\$5.11	\$0.00	\$5.11
Total	59,605	\$147,068	\$491,266	28.5%	\$8.24	\$2.47	\$5.77

A higher level ridership and fare model was prepared for the annual service as defined in the short term operating plan in Chapter 5. Farebox recovery for a full year of service is expected to be 22%, which is a decrease from summer service given the lower predicted ridership in the off season (see Appendix A).

Figure 13 October 2018 – September 2019 Farebox Recovery Estimates

Metric	Statistic
Annual Riders	86,930
Annual Revenues	\$214,486
Annual Cost	\$965,844
Annual Cost after Fares	\$751,358
Farebox Recovery	22.2%
Service Hours	9,112
Productivity (riders per service hour)	9.54
Cost per Hour	\$106.00
Cost per Hour after Fare Revenue	\$82.46



4 IMMEDIATE TERM SCHEDULES

OPERATING PERIODS

During the summer 2018 season, the CGE will transition into a seven-day-per-week service. Given assumed fluctuations in demand, the weekday service will not start until after Portland Public Schools are out for the summer on June 11, and weekday levels may scale back after school begins again after Labor Day. Service periods during the immediate-term are shown in Figure 14.

Figure 14 Immediate-Term Service Periods 2018-2020

Service Period #	Service Period	Start Date	End Date	# Service Days
1	Peak Season 2018, Monday - Thursday	6/11/2018	8/30/2018	47
2	Peak Season 2018, Friday - Sunday and Holidays	5/25/2018	9/3/2018	48
3	Fall Shoulder 2018, Monday - Thursday	9/4/2018	9/27/2018	15
4	Fall Shoulder 2018, Friday - Sunday	9/7/2018	9/30/2018	12
Total				122

Note: Holidays include Memorial Day, Fourth of July, and Labor Day

SCHEDULING ASSUMPTIONS

The following assumptions were used to plan out the Immediate-Term schedule.

Running Times

Figure 15 defines running and dwell times utilized in developing schedules for CGE service.

Figure 15 Assumed Running and Dwell Times and Mileages

Direction	From Stop	To Stop	Travel Time (minutes)	Dwell/Recovery Time (minutes)	Total Time (minutes)	Miles
Eastbound	Gateway Transit Center	Rooster Rock	20	5	25	19.1
	Rooster Rock	Multnomah Falls	10	5	15	7.1
	Gateway Transit Center	Multnomah Falls	25	5	30	24.3
	Multnomah Falls	Cascade Locks	14	3	17	12.7
	Cascade Locks	Hood River	25	5	30	20.2
Westbound	Hood River	Cascade Locks	25	5	30	20.0
	Cascade Locks	Multnomah Falls	14	3	17	12.7
	Multnomah Falls	Gateway Transit Center	25	5	30	24.6
	Multnomah Falls	Rooster Rock	10	5	15	7.1
	Rooster Rock	Gateway Transit Center	20	0	20	18.9



Target Headways

Target headways and peak demand times are outlined in Figure 16.

Figure 16 Immediate-Term Target Headways by Stop and Direction and Time of Day

Stop	Direction	Peak Demand Times	Target Headway
Gateway Transit Center	Eastbound	9 a.m. to 1 p.m.	60 minutes
Rooster Rock	Eastbound	10 a.m. to 2 p.m.	20-30 minutes
Multnomah Falls	Westbound	1 p.m. to 4 p.m.	20-30 minutes
Hood River	Eastbound/Westbound	N/A	2-3 hours

Driver Scheduling

MTR Western, the current contracted operator of CGE service, provided regulations and shift parameters used to determine schedules.

- Shift times
 - Maximum of 15 hours total
 - Maximum of 10 hours in-seat driving time
 - Minimum shift of 4 hours
 - Split shifts doable but not desirable
- Deadhead time
 - Assumes 55 minutes of deadhead per shift from and to MTR Western’s operating center at 8101 NE 11th Ave., Portland, OR
- Breaks during shifts of eight hours or more
 - Two 15-minute breaks
 - One 30-minute lunch break
 - All drivers have breaks at Gateway Transit Center except the Rooster Rock-Multnomah Falls route driver, who breaks at Rooster Rock, and one driver who has a 15-minute break in Hood River

SCHEDULES

Schedules vary slightly between weekday and weekend service; namely, there is one evening Hood River run departing Gateway Transit Center at 5:45 p.m. that only runs on Fridays, Saturdays, and Sundays. The figures below present both the public-facing schedules as well as the internal schedules to be used by MTR Western. CGE schedules have integrated CAT trips, which are shown in purple.



Internal Schedules

The internal schedule (Figure 17) shows details on vehicle blocks, driver runs, shift times, and break times.

Figure 17 Internal Peak weekend + Fall Shoulder Weekend + Holiday Schedule (May 25, 2018-Sept 30, 2018)

Service Period	Vehicle #	Vehicle	Pattern	Driver #	Start Time	Eastbound						Westbound						End Time	Lunch Break	1st 15 Min Break	2nd 15 Min Break
						Headsign	GTC	RR	MF	CL	HR	Headsign	HR	CL	MF	RR	GTC				
Daily	1	1st ODOT Cutaway	GTC-MF-HR Skip RR	1	8:30	Hood River	8:30	-	9:00	9:17	9:47	Portland	9:55	10:23	10:40	10:55	11:20	11:20	X		
Daily	3	1st MTR Coach	GTC-MF	4	9:15	Multnomah Falls	9:15	9:40	10:00	-	-	Portland	-	-	10:05	10:20	10:45-10:45	10:45		X	
Daily	4	2nd MTR Coach	RR-MF	4	10:20	Multnomah Falls	-	10:20	10:40	-	-	Rooster Rock	-	-	10:45	11:00	-	11:00			X
Daily	2	2nd ODOT Cutaway	GTC-MF-HR	2	10:15	Hood River	10:15	10:40	11:00	11:17	11:47	Portland	11:55	12:23	12:40	12:55	13:20	13:20		X	
Daily	4	2nd MTR Coach	RR-MF	4	11:00	Multnomah Falls	-	11:00	11:20	-	-	Rooster Rock	-	-	11:25	11:40	-	11:40		X	
Daily	3	1st MTR Coach	GTC-MF	3	11:00	Multnomah Falls	11:00	11:25	11:45	-	-	Portland	-	-	11:50	12:05	12:30	12:30	X		
Daily	4	2nd MTR Coach	RR-MF	4	11:55	Multnomah Falls	-	11:55	12:15	-	-	Rooster Rock	-	-	12:20	12:35	-	12:35			X
Daily	1	1st ODOT Cutaway	GTC-MF-HR	1	11:50	Hood River	11:50	12:15	12:35	12:52	13:22	Portland	13:30	13:58	14:15	14:30	14:55	14:55		X	
Daily	4	2nd MTR Coach	RR-MF	4	12:50	Multnomah Falls	-	12:50	13:10	-	-	Rooster Rock	-	-	13:15	13:30	-	13:30			
Daily	3	1st MTR Coach	GTC-MF	3	13:00	Multnomah Falls	13:00	13:25	13:45	-	-	Portland	-	-	13:50	14:05	14:30	14:30			
Daily	4	2nd MTR Coach	RR-MF	4	13:35	Multnomah Falls	-	13:35	13:55	-	-	Rooster Rock	-	-	14:00	14:15	-	14:15			
Daily	2	2nd ODOT Cutaway	GTC-MF-HR	2	13:35	Hood River	13:35	14:00	14:20	14:37	15:07	Portland	15:30	15:58	16:15	16:30	16:55	16:55	X		X
Daily	4	2nd MTR Coach	RR-MF	4	14:15	Multnomah Falls	-	14:15	14:35	-	-	Rooster Rock	-	-	14:40	14:55	-	14:55	X		
Daily	3	1st MTR Coach	GTC-MF	3	14:30	Multnomah Falls	14:30	14:55	15:15	-	-	Portland	-	-	15:20	15:35	16:00	16:00			X
Daily	4	2nd MTR Coach	RR-MF	4	15:25	Multnomah Falls	-	15:25	15:45	-	-	Rooster Rock	-	-	15:50	16:05	-	16:05			
Daily	1	1st ODOT Cutaway	GTC-MF	1	15:10	Multnomah Falls	15:10	15:35	15:55	-	-	Portland	-	-	16:00	16:15	16:40	16:40			X
Daily	4	2nd MTR Coach	RR-MF	4	16:05	Multnomah Falls	-	16:05	16:25	-	-	Rooster Rock	-	-	16:30	16:45	-	16:45			
Daily	3	1st MTR Coach	GTC-MF Direct - RR	3	16:15	Multnomah Falls	16:15	-	16:45	-	-	Portland	-	-	16:50	17:05	17:30	17:30			
Daily	4	2nd MTR Coach	RR-MF-GTC	4	16:45	Multnomah Falls	-	16:45	17:05	-	-	Portland	-	-	17:10	17:25	17:50	17:50			
Daily	2	2nd ODOT Cutaway	GTC-MF Direct - RR	2	17:25	Multnomah Falls	17:25	-	17:55	-	-	Portland	-	-	18:00	18:15	18:40	18:40			
Fri. - Sun.	4	1st MTR Coach	GTC-HR Late Bus	3	17:50	Hood River	17:50	-	-	18:33	19:03	Portland	19:10	19:38	-	-	20:21	20:21			

Stop Abbreviation	Stop Name
GTC	Gateway Transit Center
RR	Rooster Rock State Park
MF	Multnomah Falls
CL	Cascade Locks (Columbia Market)
HR	Hood River (Barman Site)

Notes:

- Trips in the schedule are sorted based on the Eastbound Multnomah Falls departure time
- Orange highlighted cells indicate stops with no passenger pickup at Gateway Transit Center or Rooster Rock to minimize risk of over-capacity buses westbound at the end of the service day.

The internal weekday schedule is shown in Figure 18. Several CAT trips are shown in this weekday schedule, including local trips between Cascade Locks and Hood River and commuter trips between Portland and Hood River. Note that the commuter schedule times have not yet been finalized, but service should begin around June 11, 2018 when CGE adds weekday service. Weekday schedules from Sept. 4-Sept.27 (fall shoulder) may include fewer trips than the peak weekday schedules.



Figure 18 Internal Peak Weekday Schedule, June 11, 2018-Aug. 30, 2018

Service Period	Vehicle #	Vehicle	Pattern	Driver #	Start Time	Eastbound						Westbound						End Time	Lunch Break	1st 15 Min Break	2nd 15 Min Break
						Headsign	GTC	RR	MF	CL	HR	Headsign	HR	CL	MF	RR	GTC				
Mon. – Fri.	6	CAT Vehicle	HR-CL One Way	CAT	7:00	-	-	-	-	-	-	Cascade Locks	7:00	7:28	-	-	-	7:28			
Mon. – Fri.	6	CAT Vehicle	CL-HR One Way	CAT	7:30	Hood River	-	-	-	7:30	8:00	Portland	-	-	-	-	-	8:00			
Mon. – Fri.	5	Grayline Vehicle	GTC-HR Commuter †	GL	6:45	Hood River	6:45	-	-	-	8:07	Portland	8:15	-	-	-	9:27	9:27			
Daily	1	1st ODOT Cutaway	GTC-MF-HR Skip RR	1	8:30	Hood River	8:30	-	9:00	9:17	9:47	Portland	9:55	10:23	10:40	10:55	11:20	11:20	X		
Daily	3	1st MTR Coach	GTC-MF	4	9:15	Multnomah Falls	9:15	9:40	10:00	-	-	Portland	-	-	10:05	10:20	10:45-	10:45		X	
Daily	4	2nd MTR Coach	RR-MF	4	10:20	Multnomah Falls	-	10:20	10:40	-	-	Rooster Rock	-	-	10:45	11:00	-	11:00			
Mon. – Fri.	6	CAT Vehicle	HR-CL One Way	CAT	11:00	-	-	-	-	-	-	Cascade Locks	11:00	11:28	-	-	-	11:28			
Daily	2	2nd ODOT Cutaway	GTC-MF-HR	2	10:15	Hood River	10:15	10:40	11:00	11:17	11:47	Portland	11:55	12:23	12:40	12:55	13:20	13:20		X	
Mon. – Fri.	6	CAT Vehicle	CL-HR One Way	CAT	11:30	Hood River	-	-	-	11:30	12:00	-	-	-	-	-	-	12:00			
Daily	4	2nd MTR Coach	RR-MF	4	11:00	Multnomah Falls	-	11:00	11:20	-	-	Rooster Rock	-	-	11:25	11:40	-	11:40		X	
Daily	3	1st MTR Coach	GTC-MF	3	11:00	Multnomah Falls	11:00	11:25	11:45	-	-	Portland	-	-	11:50	12:05	12:30	12:30		X	
Daily	4	2nd MTR Coach	RR-MF	4	11:55	Multnomah Falls	-	11:55	12:15	-	-	Rooster Rock	-	-	12:20	12:35	-	12:35			X
Daily	1	1st ODOT Cutaway	GTC-MF-HR	1	11:50	Hood River	11:50	12:15	12:35	12:52	13:22	Portland	13:30	13:58	14:15	14:30	14:55	14:55		X	
Daily	4	2nd MTR Coach	RR-MF	4	12:50	Multnomah Falls	-	12:50	13:10	-	-	Rooster Rock	-	-	13:15	13:30	-	13:30			
Daily	3	1st MTR Coach	GTC-MF	3	13:00	Multnomah Falls	13:00	13:25	13:45	-	-	Portland	-	-	13:50	14:05	14:30	14:30			
Daily	4	2nd MTR Coach	RR-MF	4	13:35	Multnomah Falls	-	13:35	13:55	-	-	Rooster Rock	-	-	14:00	14:15	-	14:15			
Daily	2	2nd ODOT Cutaway	GTC-MF-HR	2	13:35	Hood River	13:35	14:00	14:20	14:37	15:07	Portland	15:30	15:58	16:15	16:30	16:55	16:55		X	X
Daily	4	2nd MTR Coach	RR-MF	4	14:15	Multnomah Falls	-	14:15	14:35	-	-	Rooster Rock	-	-	14:40	14:55	-	14:55		X	
Daily	3	1st MTR Coach	GTC-MF	3	14:30	Multnomah Falls	14:30	14:55	15:15	-	-	Portland	-	-	15:20	15:35	16:00	16:00			X
Daily	4	2nd MTR Coach	RR-MF	4	15:25	Multnomah Falls	-	15:25	15:45	-	-	Rooster Rock	-	-	15:50	16:05	-	16:05			
Daily	1	1st ODOT Cutaway	GTC-MF	1	15:10	Multnomah Falls	15:10	15:35	15:55	-	-	Portland	-	-	16:00	16:15	16:40	16:40			X
Mon. – Fri.	5	Grayline Vehicle	GTC-HR Commuter †	GL	15:45	Hood River	15:45	-	-	-	17:07	Portland	17:15	-	-	-	18:27	18:27			
Daily	4	2nd MTR Coach	RR-MF	4	16:05	Multnomah Falls	-	16:05	16:25	-	-	Rooster Rock	-	-	16:30	16:45	-	16:45			
Daily	3	1st MTR Coach	GTC-MF Direct - RR	3	16:15	Multnomah Falls	16:15	-	16:45	-	-	Portland	-	-	16:50	17:05	17:30	17:30			
Daily	4	2nd MTR Coach	RR-MF-GTC	4	16:45	Multnomah Falls	-	16:45	17:05	-	-	Portland	-	-	17:10	17:25	17:50	17:50			
Daily	2	2nd ODOT Cutaway	GTC-MF Direct - RR	2	17:25	Multnomah Falls	17:25	-	17:55	-	-	Portland	-	-	18:00	18:15	18:40	18:40			
Fri. – Sun.	4	1st MTR Coach	GTC-HR Late Bus (FRIDAYS ONLY)	3	17:50	Hood River	17:50	-	-	18:33	19:03	Portland	19:10	19:38	-	-	20:21	20:21			

Stop Abbreviation	Stop Name
GTC	Gateway Transit Center
RR	Rooster Rock State Park
MF	Multnomah Falls
CL	Cascade Locks (Columbia Market)
HR	Hood River (Barman Site)

Notes:

- Trips in the schedule are sorted based on the Eastbound Multnomah Falls departure time
- Orange highlighted cells indicate stops with no passenger pickup at Gateway Transit Center or Rooster Rock to minimize risk of over-capacity buses westbound at the end of the service day.
- Trips highlighted in purple are provided by Columbia Area Transit.
- Trips noted with † stop at additional stops (Troutdale, Waucoma Center, CAT Office) and DO NOT stop at Rooster Rock, Multnomah Falls, or Cascade Locks.



Public Schedules

Peak Weekend + Fall Shoulder Weekend + Holidays

Beginning on May 25, 2018, and running through September 30, 2018, the CGE will operate a peak weekend schedule on Fridays, Saturdays, Sundays, and Holidays. No CAT services need to be integrated into weekend schedules, but connections between CAT's Hood River route and the 19:05 departure from Hood River back to Portland need to be noted on the public schedule.

Figure 19 Peak Weekend + Fall Shoulder Weekend + Holiday Schedule (Public Facing) – May 25, 2018-Sept. 30, 2018

Eastbound					
Headsign	GTC	RR	MF	CL	HR
Hood River	8:30	-	9:00	9:17	9:47
Multnomah Falls	9:15	9:40	10:00	-	-
Multnomah Falls	-	10:20	10:40	-	-
Hood River	10:15	10:40	11:00	11:17	11:47
Multnomah Falls	-	11:00	11:20	-	-
Multnomah Falls	11:00	11:25	11:45	-	-
Multnomah Falls	-	11:55	12:15	-	-
Hood River	11:50	12:15	12:35	12:52	13:22
Multnomah Falls	-	12:50	13:10	-	-
Multnomah Falls	13:00	13:25	13:45	-	-
Multnomah Falls	-	13:35	13:55	-	-
Hood River	13:35	14:00	14:20	14:37	15:07
Multnomah Falls	-	14:15	14:35	-	-
Multnomah Falls	14:30	14:55	15:15	-	-
Multnomah Falls	-	15:25	15:45	-	-
Multnomah Falls	15:10	15:35	15:55	-	-
Hood River	15:45	-	-	-	17:07
Multnomah Falls	-	16:05	16:25	-	-
Multnomah Falls	16:15	-	16:45	-	-
Hood River	17:50	-	-	18:33	19:03

Westbound					
Headsign	HR	CL	MF	RR	GTC
Portland	9:55	10:23	10:40	10:55	11:20
Portland	-	-	10:05	10:20	10:45
Rooster Rock	-	-	10:45	11:00	-
Rooster Rock	-	-	11:25	11:40	-
Portland	-	-	11:50	12:05	12:30
Rooster Rock	-	-	12:20	12:35	-
Portland	11:55	12:23	12:40	12:55	13:20
Rooster Rock	-	-	13:15	13:30	-
Portland	-	-	13:50	14:05	14:30
Rooster Rock	-	-	14:00	14:15	-
Portland	13:30	13:58	14:15	14:30	14:55
Rooster Rock	-	-	14:40	14:55	-
Portland	-	-	15:20	15:35	16:00
Rooster Rock	-	-	15:50	16:05	-
Portland	-	-	16:00	16:15	16:40
Portland	15:30	15:58	16:15	16:30	16:55
Rooster Rock	-	-	16:30	16:45	-
Portland	-	-	16:50	17:05	17:30
Portland	-	-	17:10	17:25	17:50
Portland	17:15	-	-	-	18:27
Portland	-	-	18:00	18:15	18:40
Portland	19:10	19:38	-	-	20:21

Stop Abbreviation	Stop Name
GTC	Gateway Transit Center
RR	Rooster Rock State Park
MF	Multnomah Falls
CL	Cascade Locks (Columbia Market)
HR	Hood River (Barman Site)

Notes:

- Trips in the schedule are sorted based on the Multnomah Falls departure time, where applicable.



Peak Weekday

Beginning on June 11, 2018 and running through August 30, 2018, the CGE will operate a peak weekday schedule on Mondays, Tuesday, Wednesdays, and Thursdays except holidays. After Labor Day, ODOT may choose to reduce weekday service levels until Sept. 27, 2018. Since weekday service will be new this year, the decision about weekday service levels past Labor Day will be based upon ridership levels during the peak weekdays.

Figure 20 Peak Weekday Schedule (public-facing), June 11, 2018-Aug. 30, 2018

Eastbound					
Headsign	GTC	RR	MF	CL	HR
Hood River	-	-	-	7:30	8:00
Hood River †	6:45	-	-	-	8:07
Hood River	8:30	-	9:00	9:17	9:47
Multnomah Falls	9:15	9:40	10:00	-	-
Multnomah Falls	-	10:20	10:40	-	-
Hood River	10:15	10:40	11:00	11:17	11:47
Hood River	-	-	-	11:30	12:00
Multnomah Falls	-	11:00	11:20	-	-
Multnomah Falls	11:00	11:25	11:45	-	-
Multnomah Falls	-	11:55	12:15	-	-
Hood River	11:50	12:15	12:35	12:52	13:22
Multnomah Falls	-	12:50	13:10	-	-
Multnomah Falls	13:00	13:25	13:45	-	-
Multnomah Falls	-	13:35	13:55	-	-
Hood River	13:35	14:00	14:20	14:37	15:07
Multnomah Falls	-	14:15	14:35	-	-
Multnomah Falls	14:30	14:55	15:15	-	-
Multnomah Falls	-	15:25	15:45	-	-
Multnomah Falls	15:10	15:35	15:55	-	-
Hood River †	15:45	-	-	-	17:07
Multnomah Falls	-	16:05	16:25	-	-
Multnomah Falls	16:15	-	16:45	-	-
Hood River (Fridays Only)	17:50	-	-	18:33	19:03

Westbound					
Headsign	HR	CL	MF	RR	GTC
Cascade Locks	7:00	7:28	-	-	-
Portland †	8:15	-	-	-	9:27
Portland	-	-	10:05	10:20	10:45
Portland	9:55	10:23	10:40	10:55	11:20
Rooster Rock	-	-	10:45	11:00	-
Rooster Rock	-	-	11:25	11:40	-
Cascade Locks	11:00	11:28	-	-	-
Portland	-	-	11:50	12:05	12:30
Rooster Rock	-	-	12:20	12:35	-
Portland	11:55	12:23	12:40	12:55	13:20
Rooster Rock	-	-	13:15	13:30	-
Portland	-	-	13:50	14:05	14:30
Rooster Rock	-	-	14:00	14:15	-
Portland	13:30	13:58	14:15	14:30	14:55
Rooster Rock	-	-	14:40	14:55	-
Portland	-	-	15:20	15:35	16:00
Rooster Rock	-	-	15:50	16:05	-
Portland	-	-	16:00	16:15	16:40
Portland	15:30	15:58	16:15	16:30	16:55
Rooster Rock	-	-	16:30	16:45	-
Portland	-	-	16:50	17:05	17:30
Portland	-	-	17:10	17:25	17:50
Portland †	17:15	-	-	-	18:27
Portland	-	-	18:00	18:15	18:40
Portland (Fridays only)	19:10	19:38	-	-	20:21

Stop Abbreviation	Stop Name
GTC	Gateway Transit Center
RR	Rooster Rock State Park
MF	Multnomah Falls
CL	Cascade Locks (Columbia Market)
HR	Hood River (Barman Site)

- Notes:
- Trips in the schedule are sorted based on the Multnomah Falls departure time, where applicable.
 - Trips highlighted in purple are provided by Columbia Area Transit
 - Trips noted with '†' stop at additional stops (Troutdale, Waucoma Center, CAT Office) and DO NOT stop at Rooster Rock, Multnomah Falls, or Cascade Locks.



Frequencies

Service frequencies of the proposed schedule are summarized in Figure 21. The average frequencies meet the target headways described in Figure 16, but there are individual trip times when the headway exceeds the target due scheduled driver breaks. To maintain consistent target headways, an additional vehicle or a relief driver would be needed.

Figure 21 Frequency by stop and direction

Stop	Direction	Average	Standard Deviation	Coefficient of Variation (Standard Deviation / Average)	Minimum	Maximum
Gateway Transit Center	Eastbound	0:51	0:21	42%	0:25	1:45
	Westbound	0:42	0:22	52%	0:13	1:18
Rooster Rock	Eastbound	0:26	0:10	38%	0:10	0:40
	Westbound	0:25	0:12	49%	0:05	0:50
Multnomah Falls	Eastbound	0:28	0:13	46%	0:10	1:00
	Westbound	0:25	0:12	49%	0:05	0:50
Cascade Locks	Eastbound	1:50	1:12	66%	0:13	3:56
	Westbound	1:51	1:06	60%	0:55	3:40
Hood River	Eastbound	1:22	0:46	56%	0:07	2:00
	Westbound	1:33	0:24	26%	0:55	2:00

Trip Chaining

The public survey results showed that potential riders would like to be able to visit multiple destinations on a single trip to the Gorge. The peak season schedules enable trip chaining by providing a level of frequency that supports multiple stops in one day. Below are a few examples of itineraries for trip chaining.

Gateway – Multnomah Falls – Hood River – Gateway

1. Depart Gateway Transit Center at 9:15 am.
2. Arrive at Multnomah Falls at 10:00 am
3. Depart Multnomah Falls at 11:00 am.
4. Arrive in Hood River at 11:47 am
5. Depart Hood River at 3:30pm
6. Arrive at Gateway Transit Center at 4:55 pm

Gateway – Multnomah Falls – Cascade Locks – Gateway

1. Depart Gateway Transit Center at 10:15 am
2. Arrive at Multnomah Falls at 11 am
3. Depart Multnomah Falls at 12:35 pm
4. Arrive at Cascade Locks at 12:52 pm
5. Depart Cascade Locks at 3:58 pm
6. Arrive at Gateway Transit Center at 4:55 pm



Driver Assignments

Four drivers are needed on peak service days (both weekday and weekend) in the immediate term. Driver shifts are shown in Figure 22.

Figure 22 Summer 2018 Detailed Driver Shift Information

Driver	Vehicle Origin Stop	Deadhead Time (min)	Monday - Thursday					
			Earliest Departure	Latest Arrival	Non Deadhead Shift Length (hours)	On Duty Time (hours)	Seat Time	Driver Utilization
1	GTC	55	8:30	16:40	8.2	9.1	7.3	81%
2	GTC	55	10:15	18:40	8.4	9.3	7.6	81%
3	GTC	55	9:15	17:30	8.3	9.2	7.2	78%
4	GTC	55	10:20	17:50	7.5	8.4	6.3	75%

Driver	Vehicle Origin Stop	Deadhead Time (min)	Friday					
			Earliest Departure	Latest Arrival	Non Deadhead Shift Length (hours)	On Duty Time (hours)	Seat Time	Driver Utilization
1	GTC	55	8:30	16:40	8.2	9.1	7.3	81%
2	GTC	55	10:15	18:40	8.4	9.3	7.6	81%
3	GTC	55	9:15	17:30	8.3	9.2	7.2	78%
4	GTC	55	10:20	20:21	10.0	10.9	8.8	81%

Driver	Vehicle Origin Stop	Deadhead Time (min)	Saturday-Sunday					
			Earliest Departure	Latest Arrival	Non Deadhead Shift Length (hours)	On Duty Time (hours)	Seat Time	Driver Utilization
1	GTC	55	8:30	16:40	8.2	9.1	7.3	81%
2	GTC	55	10:15	18:40	8.4	9.3	7.6	81%
3	GTC	55	9:15	17:30	8.3	9.2	7.2	78%
4	GTC	55	10:20	20:21	10.0	10.9	8.8	81%



5 SHORT TERM OPERATING PLAN

OPERATING PERIODS

Figure 24 lays out the anticipated service periods of the Columbia Gorge Express until the expiration of the current FLAP grant at the end of September 2020.

Figure 23 Short-Term Service Periods and Service Days

Service Period #	Service Period	Start Date	End Date	# Service Days
5	Off Season 2018-2019, Monday - Friday	10/1/2018	3/30/2019	130
6	Off Season 2018-2019, Saturday - Sunday	10/1/2018	3/30/2019	51
7	Spring Shoulder 2019, Monday - Thursday	4/1/2019	4/30/2019	18
8	Spring Shoulder 2019, Friday - Sunday	4/1/2019	4/30/2019	12
9	Peak Season 2019, Monday - Thursday	5/1/2019	9/2/2019	68
10	Peak Season 2019, Friday - Sunday and Holidays	5/1/2019	9/2/2019	57
11	Fall Shoulder 2019, Monday - Thursday	9/3/2019	9/30/2019	16
12	Fall Shoulder 2019, Friday - Sunday	9/3/2019	9/30/2019	12
13	Off Season 2019-2020, Monday - Friday	10/1/2019	3/30/2020	130
14	Off Season 2019-2020, Saturday - Sunday	10/1/2019	3/30/2020	52
15	Spring Shoulder 2020, Monday - Thursday	4/1/2020	4/30/2020	18
16	Spring Shoulder 2020, Friday - Sunday	4/1/2020	4/30/2020	12
17	Peak Season 2020, Monday - Thursday	5/1/2020	9/7/2020	71
18	Peak Season 2020, Friday - Sunday and Holidays	5/1/2020	9/7/2020	59
19	Fall Shoulder 2020, Monday - Thursday	9/8/2020	9/30/2020	14
20	Fall Shoulder 2020, Friday - Sunday	9/8/2020	9/30/2020	9
Total				729

SERVICE LEVELS

Figure 24 presents draft service levels for a year between October 2018 and September 2019. Assuming these service levels are appropriate, this service plan could apply to the remaining year of service between October 2019 and September 2020. The service plan assumes that only the long line service (GTC-MF-HR) would be in operation during the off season, as well as Monday-Thursday during the shoulder seasons. The other two routes (RR-MF and GTC-MF) would operate on shoulder weekends (Friday - Sunday) and during the peak summer season. Total service costs by season are estimated in Chapter 6 based on the operating costs calculated below.



Figure 24 October 2018 – September 2019 Operating Plan

Season	Days of Week	Route/Pattern	Cycle Time (minutes)	Number of Trips per Day	Span (Hours)	# of Vehicles	Average Headway (minutes)	Daily Service Hours	# Service Days	Total Service Hours	Daily Service Miles	Total Service Miles	Service Cost
Off Season 2018-2019	Monday - Friday	GTC-MF-HR	185	3	10	1	200	10	130	1,300	348	45,240	\$171,912
	Saturday - Sunday	GTC-MF-HR	185	3	10	1	200	10	51	510	348	17,748	\$67,442
Spring Shoulder 2019	Monday - Thursday	GTC-MF-HR	185	4	12	2	180	24	18	432	464	8,352	\$31,738
	Friday - Sunday	GTC-MF	80	7	10	1	86	10	12	120	385	4,620	\$18,665
		RR-MF	35	9	8	1	53	8	12	96	135	1,620	\$6,545
Peak Season 2019	Monday - Thursday	GTC-MF-HR	185	5	12	2	144	24	12	288	580	6,960	\$26,448
		GTC-MF	80	7	10	1	86	10	68	680	385	26,180	\$105,767
		RR-MF	35	9	8	1	53	8	68	544	135	9,180	\$37,087
	Friday - Sunday and Holidays	GTC-MF-HR	185	5	12	2	144	24	68	1,632	580	39,440	\$149,872
		GTC-MF	80	7	10	1	86	10	57	570	385	21,945	\$88,658
		RR-MF	35	9	8	1	53	8	57	456	135	7,695	\$31,088
Fall Shoulder 2019	Monday - Thursday	GTC-MF-HR	185	6	14	2	140	28	57	1,596	696	39,672	\$150,754
		GTC-MF	80	7	10	1	86	10	12	120	385	4,620	\$18,665
	Friday - Sunday	RR-MF	35	9	8	1	53	0	12	96	135	1,620	\$6,545
		GTC-MF-HR	185	5	12	2	144	24	12	288	580	6,960	\$26,448



FUTURE STOPS AND ROUTING

The engagement process generated a list of stops that stakeholders and the public would like to see CGE serve. From this list, the project team selected a sub-set that are feasible for short term service. These stops were evaluated based on their implementation feasibility, effect on transit operations, and the level of support expressed by stakeholders and the public. Based on the evaluation presented in

Figure 25, it is recommended an East Multnomah County stop be implemented in the future when a suitable location is identified, following further outreach and evaluation. Potential stops proposed by stakeholders are documented below. A stop at Wyeth State Park is recommended for implementation when the bicycling trail is open and associated hiking trails are reopened.

Routing is not anticipated to change substantially beyond these additional stops to minimize further lengthening the cycle time of the service. The Wyeth State park stop would only be served by the GTC-MF-HR route. To minimize the impact of the East Multnomah County stop on the overall travel times and headways of the service, this stop should only be served by some trips – the number of daily trips would need to be evaluated with further outreach and consideration of the impacts to the schedule and existing service performance.

Potential East Multnomah County Stop Locations

Throughout the engagement process, stakeholders expressed interest in several stop options in East Multnomah County, including:

- Downtown Troutdale – Considered the ‘Gateway to the Gorge’ and adjacent to I-84 and the Sandy River. Has a variety of nearby businesses. Grayline’s Gorge shuttle currently stops at the Gorge Outlets in Troutdale.
- McMenamins Edgefield – Expanding their parking area and have been amenable to being a park and ride location for Grayline shuttle services. Also near I-84 exit.
- Fairview & Wood Village – a site on the northeast corner Fairview Parkway and Halsey is undergoing redevelopment and may be suitable for a bus turnaround location. It is nearby Exit 14 of I-84 and an existing TriMet stop for bus line 77. Stakeholders from the cities of Fairview and Wood Village mentioned potential plans for a future connector service between Fairview, Troutdale and Wood Village.

An East Multnomah County stop may make sense in the long term as an additional park and ride location as well as an area for the ‘Gorge Loop’ to connect to Sandy and the Mt. Hood Express. There is currently no transit service between Sandy and the Fairview/Wood Village/Troutdale area directly – riders must transfer between TriMet and Sandy Area Metro at Gresham Transit Center



Figure 25 Comparison of Short-Term Additional Stop Options

Stop	Notes	Short-Term Feasibility	Minimal increase in travel time	Stakeholder Support (ranking)	Public Support (ranking)	Overall Score
East Multnomah County	<ul style="list-style-type: none"> Stakeholders and the general public ranked this stop as a high priority for those living in the eastern portion of the Portland metro area. This stop would likely add 10-15 minutes of runtime in each direction, depending on the stop location. Several sites were identified as potentially suitable (as documented above). 					
Bonneville Dam	<ul style="list-style-type: none"> This stop would be difficult to serve because of the significant addition to travel time (15-20 minutes in each direction) and the spread out nature of the destinations at the Dam. 					
Wyeth State Park	<ul style="list-style-type: none"> Site has easy on/off access to I-84. This would add 5-10 minutes to travel time in each direction. ODOT's Historic Columbia River Highway State Trail from Wyeth to Starvation Creek (with an existing segment from Starvation Creek to Viento) will be open in 2019, providing access to an ODOT investment and a bicycling destination in the Gorge. This would add additional hiking accessibility, when trails are reopened. The public survey ranked this stop a higher priority than Viento State Park. 					
Viento State Park	<ul style="list-style-type: none"> This was the lowest ranked stop among respondents to the public survey. Similar to Wyeth, this stop would provide access to hiking and biking trails. 					



6 OPERATING COST

IMMEDIATE TERM

Operating costs were estimated for the summer 2018 season using the following data:

- Negotiated rates per service mile to operate the CGE service with the contracted operator (MTR Western)
- Service miles of all stop patterns served
- Deadhead mileage assumptions
- Number of service days in operating period

Given that information, daily service costs were estimated by vehicle and day type, and these costs were multiplied by the number of expected service days. The cost estimates by vehicle are presented in Figure 29.

Figure 26 Cost Estimate by Service Vehicle for Summer 2018 (May 25, 2018-Sept. 30, 2018)

Vehicle	Negotiated Cost per Mile	Service Miles	Cost Estimate
1st ODOT Cutaway	\$3.57	37,324	\$133,247
2nd ODOT Cutaway	\$3.57	37,471	\$133,771
1st MTR Coach	\$3.91	32,534	\$126,883
2nd MTR Coach	\$3.91	31,462	\$122,703
Total		138,791	\$516,604

Based on the estimated fare revenues from the previous chapter (\$147,068), the net cost for service after fare revenues is estimated to be \$369,536 This net cost fits comfortably within \$450,000 budget for service during the summer 2018 season. The farebox recovery for the immediate term is expected to be approximately 28-29%.



SHORT TERM

In reference to the short term operating plan presented in Chapter 5, Figure 27 estimates the operating cost for service by season and day type. Farebox recovery for the year-round service is expected to be approximately 22% for annual service.

Figure 27 Cost Estimate by Season and Day Type for October 2018 – September 2020

Season	Days of Week	# Service Days	Service Cost	Cost per Service Day
Off Season 2018-2019	Monday - Friday	130	\$171,912	\$1,322
	Saturday - Sunday	51	\$67,442	\$1,322
Spring Shoulder 2019	Monday - Thursday	18	\$31,738	\$1,763
	Friday - Sunday	12	\$51,658	\$4,305
Peak Season 2019	Monday - Thursday	68	\$292,726	\$4,305
	Friday - Sunday and Holidays	57	\$270,499	\$4,746
Fall Shoulder 2019	Monday - Thursday	16	\$28,211	\$1,763
	Friday - Sunday	12	\$51,658	\$4,305
Off Season 2019-2020	Monday - Friday	130	\$171,912	\$1,322
	Saturday - Sunday	52	\$67,442	\$1,322
Spring Shoulder 2020	Monday - Thursday	18	\$31,738	\$1,763
	Friday - Sunday	12	\$51,658	\$4,305
Peak Season 2020	Monday - Thursday	71	\$292,726	\$4,305
	Friday - Sunday and Holidays	59	\$270,499	\$4,746
Fall Shoulder 2020	Monday - Thursday	14	\$28,211	\$1,763
	Friday - Sunday	9	\$51,658	\$4,305
Total		729	\$1,931,688	\$2,650



Appendix A Ridership Estimation

Introduction

Ridership estimates were developed to forecast fare revenue and then calculate an estimated farebox recovery ratio for CGE service. ODOT has a goal of achieving 20% farebox in 2018 (similar to what was achieved during the latter part of 2017) and 30% by 2020. The higher the farebox recovery ratio, the less money is needed to run service, since fare income defrays operating costs. The ridership estimates were developed based on several data sources:

- Ridership by service day for the Columbia Gorge Express in the 2016 and 2017 seasons
- Daily ridership by origin and destination stop for the CGE in the 2017 season
- Daily vehicle volume counts for the Multnomah Falls parking lot entrance from I-84 eastbound
- Assumed service days from May 2018 to September 2019. This includes bus service during off peak months and on weekdays, which was not offered in 2017

These data sources were used as a baseline to estimate ridership for brand-new service to Cascade Locks and Hood River as well as new service days Monday through Thursday. These ridership estimates were then multiplied by fares to calculate farebox recovery. The ridership estimates assume that 2018 peak season ridership between Gateway and Multnomah Falls will be roughly equivalent to 2017 ridership on the same segment.

Peak season is assumed to be May through September, and off-peak is all other months.

Note that throughout the analysis, 'weekend' is defined differently during the peak (summer) versus non-peak seasons. During summer, when school is out, ODOT has found that Friday ridership on the CGE as well as vehicle traffic at Multnomah Falls has been very strong – nearly equal to Saturday or Sunday ridership. It is expected that Friday ridership during the fall, winter, and spring will likely be lower than during the summer. Therefore, peak season "weekend" is defined as Friday through Sunday and holidays, and off-peak "weekend" is defined as Saturday and Sunday.

Note that transit ridership estimation is an inexact science and is influenced by a variety of external conditions ranging from land development density to traffic congestion; from transit service frequencies to household income and auto ownership; from geography to the weather. Such conditions make it more difficult to predict transit ridership solely on the basis of results achieved by peer systems in other communities. CGE's role serving both tourists and local trips, along a corridor with just a few transit trips today, mean that estimating ridership is even more challenging.

All that being said, the following estimates are intended to serve as a tool for making planning decisions and should not be considered precise forecasts. The ridership forecast assisted in establishing initial fares, based on the estimated farebox recovery anticipated, but will require revisiting after service has been in operation for a month or so.

Step 1: Estimate Demand for Travel between GTC and MF

1.1: Calculate average daily ridership, peak weekend

Using actual data from 2016 and 2017, average daily ridership for the peak weekend period was calculated and shown in Figure 28. Data from both years was included so that differences between the years, such as the public's level of awareness of the service or weather conditions, would be averaged out. A ridership factor was calculated



for each month, based on the daily ridership for that month relative to the daily ridership over all months. This factor demonstrates how average daily ridership varies from month to month.

Figure 28 Daily Ridership by Month for 2016-2017 Seasons

Month	Total Riders	Service Days	Average Riders per Service Day	Average Ridership Factor (relative to average)
May	3,530	8	441.3	84.3%
June	10,282	24	428.4	81.8%
July	21,327	34	627.3	119.8%
August	14,208	24	592.0	113.0%
September	6,692	17	393.6	75.2%
Total	56,039	107	523.7	100.0%

Source: 2016-2017 CGE Ridership



1.2: Calculate Daily Demand for Vehicle Trips to Multnomah Falls by Season and Day Type

Actual visitation to Multnomah Falls using vehicle entrance counts at I-84 eastbound is used to understand travel demand during all the new time periods that CGE will serve. Figure 29 presents a summary of average vehicle volumes by month and day type. A vehicle volume factor was calculated based on the average daily volume for that month and day type relative to the overall average daily volume (1,007 vehicles). This factor demonstrates the way daily demand for access to Multnomah Falls varies depending on the month and on weekdays versus weekends. For example, the vehicle volume for July weekdays is 39% higher (1,397 vehicles) than the overall average.

Figure 29 Daily Vehicle Volumes to Multnomah Falls Lot by Month and Day Type, 2014-2015

Day Type	Month	Season	Total Observed Volume	Number of Days Observed	Average Daily Vehicle Volume	Vehicle Volume Factor
Weekday	January	Off-Peak	27,375	44	622	55.8%
	February		14,917	27	552	49.5%
	March		46,198	55	840	75.3%
	April	Shoulder	62,552	63	993	89.0%
	May	Peak	40,029	43	931	83.5%
	June		20,330	18	1,129	101.3%
	July		25,321	18	1,407	126.1%
	August		34,889	29	1,203	107.9%
	September		27,757	34	816	73.2%
	October	Shoulder	27,554	39	707	63.3%
	November	Off-Peak	11,239	20	562	50.4%
	December		26,641	44	605	54.3%
Weekend	January	Off-Peak	21,659	18	1,203	107.9%
	February		10,672	10	1,067	95.7%
	March		28,944	20	1,447	129.8%
	April	Shoulder	45,639	27	1,690	151.6%
	May	Peak	37,168	23	1,616	150.8%
	June		57,450	35	1,641	147.2%
	July		75,497	42	1,798	161.2%
	August		85,579	50	1,712	153.5%
	September		37,508	24	1,563	140.1%
	October	Shoulder	23,418	18	1,301	116.7%
	November	Off-Peak	7,846	10	785	70.4%
	December		16,841	18	936	83.9%
Total			841,830	750	1,122	100.0%

Source: 2014-2018 Multnomah Falls Exit Volumes from I-84 EB (Not all data available – based on PORTAL archive)



1.3: Estimate Proportion of Riders Who Will Take CGE by Season and Day Type

Using average 2016-2017 daily CGE ridership as a base, and Multnomah Falls driver counts as a proxy for all time periods when CGE has never operated in the past, analysts estimated factors to account for likely seasonal variation in CGE ridership. As stated in 1.1, analysts calculated a CGE ridership factor based on 2016-2017 data. For other time periods where observed ridership data were not available, CGE ridership factors were selected as outlined in Figure 30, based on monthly ridership data from a peer service, Yosemite Area Regional Transit System (YARTS).

Figure 30 CGE Ridership Factor Assumptions

Time Period	Factor Assumption
Peak (May – September) Weekends (Friday – Sunday & Holidays)	Calculated factor from 2016-2017 data (see Figure 28)
Peak (May-September) Weekdays (Monday – Thursday)	Weekday Vehicle Factor/Weekend Vehicle Factor for given month
Shoulder (October & April) Weekends (Saturdays & Sundays)	40%
Shoulder (October & April) Weekdays (Monday – Friday)	30%
Off-Peak (November – March) Weekends (Saturdays & Sundays)	20%
Off-Peak (November – March) Weekdays (Monday – Friday)	15%

Source: Estimated based on YARTS monthly ridership

1.4: Calibrate Ridership Factors from previous Steps and Estimate Ridership within GTC-MF Service Segment

Vehicle visitation to Multnomah Falls is not directly predictive of transit ridership on the CGE; for example, a person thinking about visiting Multnomah Falls in January is more likely to make the trip if they own a car versus if they have to stand and wait for a bus. Thus it was necessary to develop a factor relating the vehicle factor and the CGE ridership factor. A calibration factor of 63.51% was calculated to minimize the difference between the modeled 2016-2017 ridership (based on numbers and types of service days) and the actual ridership during the same time period. Based on the three factors, a composite factor was developed to estimate ridership by month and day type (as in equation below).

$$\text{Composite Ridership Factor} = \text{Vehicle Volume Factor} \times \text{CGE Ridership Factor} \times \text{Calibration Factor}$$

The composite factor can be interpreted as accounting for both variation in vehicle volumes and variation in transit ridership. Figure 31 presents composite ridership factors and the resultant estimated daily riders between Gateway Transit Center and Multnomah Falls (i.e. the 2016-2017 service segment) by month and day type. When ridership estimates are compared to the observed average daily ridership in 2016-2017, the estimates are within ten percent of the average observed daily ridership.



Figure 31 Composite Ridership Factors and Estimated Daily Riders within GTC-MF Service Segment

Month	Day Type	Season	A) CGE Ridership Factor	B) Vehicle Volume Factor	C) Calibration Factor	D) Composite Ridership Factor (A x B x C)	Estimated Average Daily Riders	2016 + 2017 Average Daily Riders	% Difference		
January	Weekday	Off-Peak	15.0%	55.8%	65.2%	5.5%	29				
February			15.0%	49.5%	65.2%	4.8%	25				
March			15.0%	75.3%	65.2%	7.4%	39				
April		Shoulder	30.0%	89.0%	65.2%	17.4%	91				
May		Peak	55.3%	83.5%	65.2%	30.1%	157				
June			68.8%	101.3%	65.2%	45.4%	238				
July			78.3%	126.1%	65.2%	64.3%	337				
August			70.3%	107.9%	65.2%	49.4%	259				
September			52.2%	73.2%	65.2%	24.9%	130				
October			Shoulder	30.0%	63.3%	65.2%	12.4%			65	
November		Off-Peak	15.0%	50.4%	65.2%	4.9%	26				
December			15.0%	54.3%	65.2%	5.3%	28				
January	Weekend	Off-Peak	20.0%	107.9%	65.2%	14.1%	74				
February			20.0%	95.7%	65.2%	12.5%	65				
March			20.0%	129.8%	65.2%	16.9%	89				
April		Shoulder	40.0%	151.6%	65.2%	39.5%	207				
May		Peak	84.3%	150.8%	65.2%	82.8%	434			441	-1.8%
June			81.8%	147.2%	65.2%	78.4%	411			428	-4.1%
July			119.8%	161.2%	65.2%	125.8%	659			627	5.0%
August			113.0%	153.5%	65.2%	113.0%	592			592	0.0%
September			75.2%	140.1%	65.2%	68.6%	359			394	-8.7%
October			Shoulder	40.0%	116.7%	65.2%	30.4%			159	
November		Off-Peak	20.0%	70.4%	65.2%	9.2%	48				
December			20.0%	83.9%	65.2%	10.9%	57				

Sources: 2016-2017 CGE ridership, 2014-2018 Multnomah Falls Exit Volumes from I-84 EB (Not all data available – based on PORTAL archive)



Step 2: Estimate Ridership in New Service Segment

Figure 32 presents how estimated riders were allocated to existing and new origin-destination pairs within the service area, in order to estimate farebox recovery by segment. May-September 2017 data was used to estimate the proportion of total trips by origin-destination pair for the Gateway to Multnomah Falls and Rooster Rock to Multnomah Falls service segments. Proportions for the Gateway Transit Center to Hood River service segment were guessed based on capacity of the vehicles.

The average weekend daily boardings are estimated to be 658, which is 26% more than the 2016-2017 average daily weekend boardings in the GTC-MF segment (524). Figure 32 also introduces service segments – these are used in the next step to divide the expected ridership and estimated service cost.

Figure 32 Estimated Boardings by Origin-Destination Pair

From Stop	To Stop	Service Segment	% of Modeled Daily Ridership in GTC- MF Segment	Average Weekday Daily Boardings	Average Weekend Daily Boardings	Estimated Summer 2018 Season Boardings	Estimated Annual 2018-2019 Boardings
Cascade Locks	Gateway	GTC-HR	2.0%	5	10	900	1,312
	Rooster Rock	GTC-HR	0.5%	1	2	225	328
	Multnomah Falls	GTC-HR	0.5%	1	2	225	328
	Hood River	GTC-HR	1.5%	4	7	675	984
Gateway	Rooster Rock	GTC-MF	2.0%	5	10	905	1,319
	Multnomah Falls	GTC-MF	23.9%	59	119	10,773	15,712
	Cascade Locks	GTC-HR	1.0%	2	5	450	656
	Hood River	GTC-HR	12.0%	29	60	5,398	7,873
Hood River	Gateway	GTC-HR	9.0%	22	45	4,049	5,905
	Rooster Rock	GTC-HR	0.5%	1	2	225	328
	Multnomah Falls	GTC-HR	0.5%	1	2	225	328
	Cascade Locks	GTC-HR	0.5%	1	2	225	328
Multnomah Falls	Gateway	GTC-MF	20.1%	49	100	9,046	13,193
	Rooster Rock	RR-MF	23.8%	58	118	10,691	15,592
	Cascade Locks	GTC-HR	0.5%	1	2	225	328
	Hood River	GTC-HR	3.0%	7	15	1,350	1,968
Rooster Rock	Gateway	GTC-MF	4.6%	11	23	2,056	2,999
	Multnomah Falls	RR-MF	25.6%	63	127	11,514	16,792
	Cascade Locks	GTC-HR	0.5%	1	2	225	328
	Hood River	GTC-HR	0.5%	1	2	225	328
Totals-				325	658	59,605	86,930

Note: Red italicized proportions are drawn from observed origin-destination patterns in 2017



Step 3: Assign Projected Ridership to CGE Routes

The boardings that were estimated for each origin-destination pair in step 2 were assigned to routes (i.e. stop patterns served by vehicles) based on the expected number of trips per route and the destinations served by each route. Origin-destination pairs of each route were assigned to each service segment as defined in Figure 32 to estimate trips served and resources expended by service segment. The estimated boardings by service segment are presented in Figure 33.

Figure 33 Estimated Boardings by Service Segment

Service Segment	Segment Name	Average Weekday Daily Boardings	Average Weekend Daily Boardings	Estimated Summer 2018 Season Boardings	% of Boardings
GTC-MF	Gateway to Multnomah Falls	124	251	22,780	38%
GTC-HR	Gateway to Hood River	80	161	21,775	25%
RR-MF	Rooster Rock to Multnomah Falls	121	245	15,050	37%
Totals		325	658	59,605	100%

Step 4: Evaluate Estimated Increase in Ridership

The resultant summer 2018 estimate is 59,600 boardings, which is a 126% increase (more than double) from the 2017 ridership. This is a total forecasted increase of 29,800 boardings, which is due to three service expansion categories, as presented in Figure 34:

- 15,200 boardings (51% of growth) from expansion in the existing segment to weekday service
- 14,600 boardings (49% of growth) from expansion to Hood River
 - 9,700 boardings (32%) during the weekend days
 - 4,900 boardings (17%) during the weekdays

Figure 34 Ridership Forecast Evaluation

Service Segment	Day Type	Boardings	Proportion of all Boardings	Proportion of Added Service	Service Days	Average Boardings per Service Day
Existing (GTC-MF & RR-MF)	Weekend (Baseline)	29,792	50%		60	497
	Weekday	15,193	25%	51%	62	245
Added (GTC-HR)	Weekend	9,682	16%	32%	60	161
	Weekday	4,938	8%	17%	62	80
Total		59,605	100%	100%	122	489



Step 5: Evaluate Farebox Recovery

Given the proposed fares (Figure 10 and Figure 11) and the estimated origin-destination ridership, fare revenue was estimated by service segment in Figure 36. Discount fare options were accounted for assuming the following proportions indicated in Figure 35.

Figure 35 Fare Purchase Assumptions

Fare Type	Proportion
Individual One Way	73%
Individual Day Pass (online)	15%
Individual Day Pass (in person)	5%
Group Day Pass	8%
Total	100%

The Rooster Rock – Multnomah Falls service segment is fully subsidized, while the Gateway – Multnomah Falls and the Gateway – Hood River are estimated to recover 30 and 37% (respectively) of their costs in fare revenues.

Figure 36 Summer 2018 Farebox Recovery Estimates by Service Segment

Segment Name	Estimated Boardings	Fare Revenue	Estimated Cost	Farebox Recovery	Cost per Trip	Fare Revenue per Trip	Subsidy per Trip
Gateway to Multnomah Falls	22,780	\$56,951	\$183,551	29.7%	\$8.06	\$2.50	\$5.56
Gateway to Hood River	21,775	\$90,117	\$230,784	37.1%	\$10.60	\$4.14	\$6.46
Rooster Rock to Multnomah Falls	15,050	\$0	\$76,932	0.0%	\$5.11	\$0.00	\$5.11
Total	59,605	\$147,068	\$491,266	28.5%	\$8.24	\$2.47	\$5.77

A higher level farebox recovery estimate was prepared for a typical annual year of service (using October 2018 – September 2019) in Figure 37. Farebox recovery decreases to 22% because of a forecasted drop in ridership in the winter months.

Figure 37 Annual (Oct. 2018 – Sep. 2019) Farebox Recovery Estimates by Service Segment

Metric	Statistic
Annual Riders	86,930
Annual Revenues	\$214,486
Annual Cost	\$965,844
Annual Cost after Fares	\$751,358
Farebox Recovery	22.2%
Service Hours	9,112
Productivity (riders per service hour)	9.54
Cost per Hour	\$106.00
Cost per Hour after Fare Revenue	\$82.46