Portland Community College

FACILITIES PLAN TECHNICAL REPORTS

Transportation

In partnership with:

LANCASTER ENGINEERING

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Executive Summary

Each campus was evaluated for opportunities to improve their transportation and parking systems. The following are short summaries of the identified opportunities at each campus. The detailed project lists associated with these are provided in tables at the end of each campus discussion. Through the evaluation of the transportation system at campuses, district-wide solutions to improve transportation were also identified. Corresponding strategies are provided in this report.

Cascade Campus

The Cascade Campus is in an urban area of Portland which has strong biking, pedestrian, transit infrastructures and flat terrain. As a result, this campus has one of the highest percentages of alternative mode commuting. Most opportunity areas for transportation related to this campus require coordination with the City of Portland. Coordinated projects include: monitoring of parking in neighborhoods to the City of Portland, building a multi-use path between neighborhoods and the campus, improving wayfinding for parking lots, and acquiring Jessup Street to support the college's transportation needs.

PCC improvements that can be made internally include: 1) increasing electric vehicle charging stations to meet demand,2) ensuring the stations have internet billing communications or other means of charging for used power, 3)adding secured bicycle parking, and 4)moving the shuttle stop and/or creating a transit hub5)parking lots could benefit from an on-going maintenance program for sealing, drainage and striping,6) ADA upgrades are recommended for parking to comply with recent ADA guidelines.

Rock Creek Campus

The Rock Creek Campus is in a suburban area accessed via arterials that are not attractive to bikers and walkers due to safety concerns. The County is currently working to improve the bicycle infrastructure on surrounding roads. In coordination with this, there are opportunities to add additional bicycle facilities (i.e., bike lockers, and repair stations, also creating a rental bike program on campus).

There is one general access to and from the campus often resulting in long turning queues. There is an additional emergency access route that connects with NW 185th Avenue, but due to sight distance issues is not currently used for general access. Opportunities to mitigate this limited campus access include an additional access road, use of the improved access at 185th and/or moving some campus transportation needs to a transportation hub .Moving the existing entrance is being planned with Washington County; thus coordination is being undertaken to improve RC campus access as a whole.

Driving alone is the main mode forgetting to and from campus at Rock Creek and available parking does not meet demand during peak school periods. Potential parking projects that can address this demand include: improving or paving the event lot, adding a parking area at the newly vacated Fortis contractor location, and leasing the church parking across Springville road to the south. The parking lots at Rock Creek are in better condition than most campuses as much of the campus parking has been recently sealed, repaved as needed, and striped. The campus

Portland Community College Master Plan – Transportation and Parking

could benefit from an on-going maintenance program to avoid costly future repaving, as well as some improvements to the ADA parking signage and verification of slopes.

Southeast Campus

The Southeast Campus is in an urban area with adequate infrastructure for biking, walking and transit access as well as flat terrain. As a result, it has one of the highest percentages of students commuting to campus via transit, biking, walking, and shuttle. The majority of transportation opportunities on this campus involve alternative modes. These are: 1) working with PBOT to align the planned bike lanes to connect with the campus, 2) improving transit infrastructure to support the future TriMet BRT system, 3)maintaining bicycle infrastructure (i.e., lockers, racks, showers, lockers), 4) improving shuttle connection between this campus and CLIMB, 4) working with BIKETOWN to expand; 5) providing a station on campus, and 6) developing additional shuttle service serving the light rail line slightly less than a mile (.8) away.

Even with the high mode split, parking on campus is insufficient to meet the demand. During the day, the campus is supporting the demand by leasing the church parking lot just north of campus, but as they lose this parking lot in the evening, parking becomes very limited. Increased parking opportunities are limited but include: eliminating committed PCC leased retail parking, and additions to the current parking through parking structures or acquisition of adjoining properties. On-going maintenance program for signage and sealing and verifying slopes and fulfilling new ADA parking guidelines are also needed.

Sylvania Campus

Sylvania is in a suburban area of Portland surrounded by steep slopes that limit the attractiveness of biking or walking to and from campus. The most popular alternative methods for students traveling to and from campus are the PCC Shuttles with 10.4% of the trips and TriMet with 22.6%. Sylvania is the oldest and largest campus, both spatially and with the highest number of students and staff, and as a result has many opportunities for transportation improvements.

Alternative mode upgrades to Sylvania include: 1) working with TriMet to get express and more frequent bus service to campus, 2) adding on-site sidewalks, bike lanes, and crosswalks, 3) adding multi-use path between off-site transit and neighborhoods to campus, 4) improving the shuttle and transit stop and potentially moving to separate locations, 5) enhancing bicycle infrastructure (i.e., lockers, racks, showers, lockers).

Further many parking lots have cracked pavement, chipped paint, and missing paint in some locations. There is inconsistent signage for parking spots and less than ideal pedestrian connections between parking spots and buildings. The campus could benefit from an on-going maintenance program for signage and sealing as well as significant improvements to the ADA parking infrastructure. ADA parking is of particular concern as the steep slopes, old striping patterns and signage should all be brought up to meet 2015 guidelines. The campus is slated for upgrades with new bond funding and a TPS commitment to repave or seal the parking lots. Further walkways connecting the parking lots with building entrances will be addressed for improved ADA access.

Introduction

Transportation, parking, and alternative modes needs were considered in detail as part of the Portland Community College Facilities Master Plan. This document serves as a report of the detailed considerations that led to the transportation-related improvements and strategies that are summarized in the overall Facilities Master Plan.

The college Transportation and Parking program is designed to encourage the reduction of single occupancy trips to the college through charging fees for parking and providing alternative transportation options. The Board has approved a Traffic Management Plan and fees for parking at college facilities and traffic regulations to maintain a safe, sustainable environment and functional parking facilities.

Providing access to our educational facilities is the highest priority. The Transportation Plan is focused on meeting the parking needs and simultaneously reducing the demand by providing alternative modes of transportation.

To develop the transportation section of the Facilities Master Plan, a group of stakeholders from PCC met and discussed issues and concerns. A portion of the evaluation of the transportation infrastructure was a typical assessment of deficiencies. For example, if a parking lot had extensive cracking, it is obvious that pavement sealing was needed as preventative maintenance. Another portion of the work in this effort required the stakeholder team to identify goals, which would be used to determine how projects are prioritized. For example, there are currently no guidelines for where sidewalks or bicycle lanes need to be provided on a campus, but providing sidewalks and bicycle lanes along a campus's internal roadway network provides safer mobility. To capture these needs in this document, the team identified desired outcomes of the future transportation network:

- Provide safe transportation options
- Recognize the high value for active transportation options
- Provide cost effective transportation solutions for students and staff
- Develop an implementable and sustainable plan
- Address any ADA transportation needs and new federal and state guidelines
- Address Critical Race Theory and gender equity by exploring and analyzing the parking and transportation hierarchies

This document includes the detailed evaluation used to develop project lists for the Facilities Master Plan as well as a summary of the current Transportation Demand Management (TDM) efforts and updates based on data provided by PCC during development of this plan.

Portland Community College Summary

Portland Community College is a post-secondary school that consists of four campuses and eight centers. The four campuses offer full-service facilities including university transfer courses, professional-technical career training, libraries, and student services in addition to working with communities to provide classes and other services for all. The four campuses are: Cascade, Rock Creek, Southeast and Sylvania.

Centers, unlike campuses, do not offer full services and are typically more focused on job training, specialized programs, and transfer courses. The centers are physical locations; there are additional centers that offer classes in other community buildings that are not shown. Both campuses and centers also offer online classes when appropriate with distance learning and classroom scheduling a growing factor for determining future parking demand.

To provide convenient locations for students, the campus and center locations are spread throughout the Portland Metro region. While the campuses generally offer similar course options, both the campuses and centers provide specific training for technical careers. As a result, traveling long distances between campuses and centers and home or workplaces often occur for all of PCC's locations. Providing transportation options between the PCC locations and the general Portland Metro Region is important to the success of the college and our goal: "Making education available for every student of any age, gender, ethnicity, level of education, or financial status."

Demographics

Portland Community College (PCC) is the largest college offering post-secondary education in Oregon. Between 2015 and 2016 there were about 89,900 students. Over 33,500 of the students were full-time students and the remaining were part-time students.

About half (48 percent) of the student population attending Portland Community College are in their twenties. The gender

FIGURE 1: PORTLAND COMMUNITY COLLEGE CAMPUS DEMOGRAPHICS

Educational Fields
Percentages may not add to 100% due to rounding.
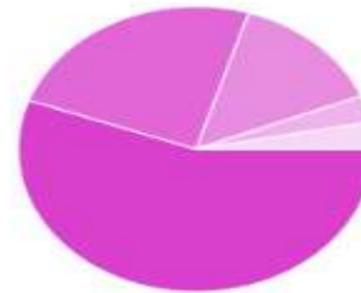
- 55% Lower Division Transfer
- 24% Career/Technical
- 14% Pre-College, Developmental Ed
- 3% Community Education
- 3% ESOL

Why students come to PCC
Percentages may not add to 100% due to rounding.
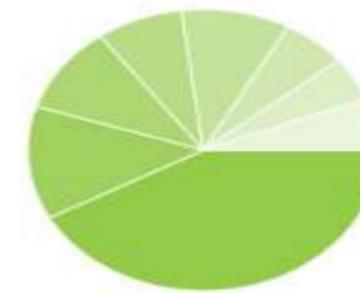
- 42% Work toward bachelor's degree
- 13% Explore new career
- 10% Skills to get or keep a job
- 8% Personal enrichment
- 10% Complete a certificate or technical degree
- 6% High school/GED completion
- 5% Explore new educational opportunity
- 6% Improve writing, math, reading skills

Source: Portland Community College Website[2] January 2017

composition of PCC students is roughly half of each. The majority (68 percent) of students are Caucasian with Hispanics representing the second largest (11 percent) ethnic background.

As seen in Figure 1, over 40 percent of students attending PCC are working towards a transfer degree to obtain a bachelor's degree at a four-year university. Almost half of the students attending have no previous college experience.[i] The faculty and staff population is just under 3,300. The majority of the faculty re part-time, and the staff are full-time or casual employees.

Modes of Transportation

The Portland Community College transportation team conducts surveys every few years to evaluate what modes of transportation students and employees of the college use to get to and from the campuses. The survey includes walking, biking, telecommuting, the PCC shuttle, and various methods of driving (i.e., carpool, motorcycle). As shown in Figure 2, the majority of students traveled to and from campus in a car by themselves, according to the 2017 survey walking and biking were the least frequent modes of transportation.

The Cascade Campus had higher splits of biking and walking compared to the other campuses. This is expected as it has more available infrastructure and terrain for both these modes of transportation. For all campuses, if a trip to and from campus was greater than a mile, there were few students that walked to campus. Similarly, biking trips dropped off quickly if the trip was more than five miles.

FIGURE 2: 2017 STUDENT TRANSPORTATION SURVEY summary ALL CAMPUSES

- Drove Alone or Motorcycled
- Rode Bus or Max
- Carpooled or Vanpooled
- PCC Shuttle
- Bicycled
- Walked
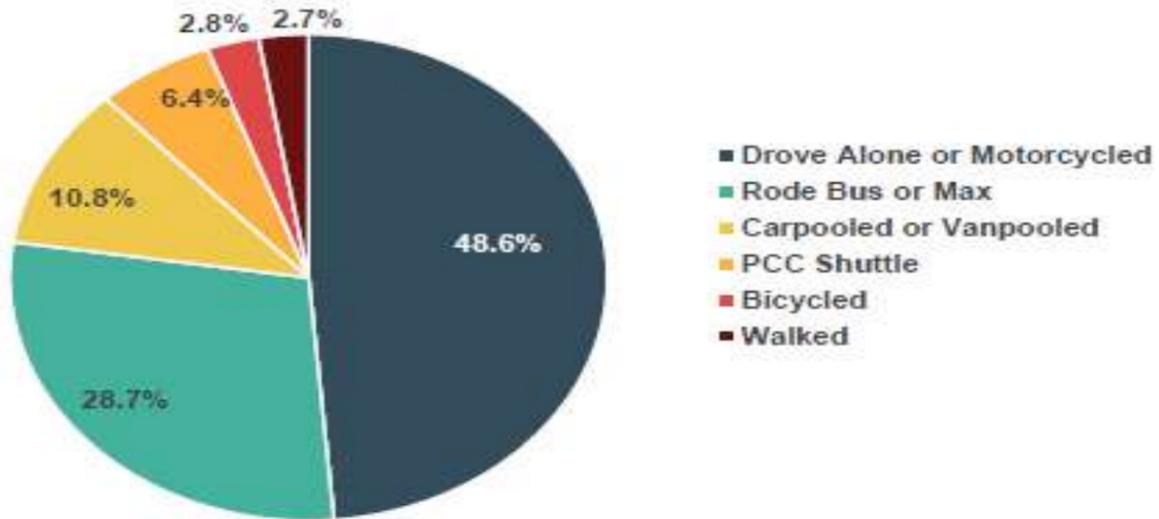
FIGURE 3: 2017 STUDENT 2017 TRANSPORTATION SURVEY summary by CAMPUS

Commute Method	Sylvania Weekly Trips Reported in Survey	Sylvania Percent of Total Weekly Trips	Rock Creek Weekly Trips Reported in Survey	Rock Creek Percent of Total Weekly Trips	Cascade Weekly Trips Reported in Survey	Cascade Percent of Total Weekly Trips	Southeast Weekly Trips Reported in Survey	Southeast Percent of Total Weekly Trips
Drove Alone or Motorcylced	1,138	54.8%	943	57.0%	506	37.3%	479	39.7%
Rode the bus or MAX	469	22.6%	406	24.5%	521	38.5%	421	34.9%
Carpooled	183	8.8%	207	12.5%	99	7.3%	179	14.8%
2-person	155	7.5%	164	9.9%	63	4.6%	127	10.5%
3-person	19	0.9%	42	2.5%	23	1.7%	29	2.4%
4-person	9	0.4%	1	0.1%	2	0.1%	19	1.6%
5-person	0	0.0%	0	0.0%	10	0.7%	0	0.0%
6+ -person	0	0.0%	0	0.0%	1	0.1%	4	0.3%
Walked	55	2.6%	26	1.6%	56	4.1%	30	2.5%
Biked	16	0.8%	6	0.4%	109	8.0%	39	3.2%
Distance Learning*	397	19.1%	395	23.9%	213	15.7%	222	18.4%
PCC Shuttle	215	10.4%	67	4.0%	64	4.7%	58	4.8%
TOTAL	2,076	100%	1,655	100.0%	1,355	100.0%	1,206	100.0%

*Distance Learning not counted in total trips

The PCC shuttle service was used most frequently at the Sylvania Campus and TriMet transit was most frequently used at the Southeast and Cascade Campuses. This is expected as Sylvania provides the most frequent shuttle service. Southeast and Cascade have flat terrain and excellent bus service; in addition, Cascade has a walkable Light Rail connection.

Distance learning is growing, and a survey completed in fall 2017 show a marked increase in this area (20%). This will likely continue to grow but never fully replace classroom attendance.

A survey evaluating the modes of transportation used by employees was conducted in 2015 (See Appendix). This survey showed a higher rate (76 percent) of employees driving alone as compared to students. Telecommuting was the second highest at 8 percent and all other modes were 4 percent or less.

TABLE 1: WEEKLY TRIP SUMMARY FOR EMPLOYEES FROM 2017 TRANSPORTATION SURVEY

Commute Method	Reported	Total Expected	Percent of Total	Total Auto Trips
Drove Alone	2,984	3,937	74 %	3,937
Motorcycle or Scooter	31	41	1 %	41
Rode the bus or MAX	206	272	5 %	0
Carpooled	195	257	5 %	124
Walked	54	71	1 %	0
Biked	108	143	3 %	0
Telecommuted	373	492	9 %	0
PCC Shuttle	105	139	3 %	0
TOTAL	**4,056**	**5,352**	**100 %**	**4,103**

How Does PCC Compare?

When student mode splits are compared to other community colleges, PCC generally performs better in its ability to shift students from driving alone to other modes. Portland State University (PSU) presents a very impressive mode split, with only 22 percent of their students driving alone to school. However, this campus is located in the heart of downtown Portland, where alternative transportation is easily accessible and typically more cost effective. See Table 2 for a comparison of the results of these surveys compared to PCC campuses.

TABLE 2: PCC STUDENT TRANSPORTATION DEMAND MANAGEMENT MODE SPLIT COMPARISON TO OTHER COLLEGES

Campus	Year of Study	Characteristic	Drive Alone	Walk/Bike	Transit/Shuttle	Other
PCC Sylvania	2012	Suburban	47%	4%	30%	19%
PCC Cascade	2012	Urban	38%	16%	29%	17%
PCC Southeast	2012	Urban	38%	10%	34%	18%
PCC Rock Creek	2012	Suburban	52%	3%	25%	20%
Lane Community College[1]	2014	Urban	58%	5%	29%	9%
Austin Community College[2]	2010	Urban	73%	5%	16%	6%
Portland State University[3]	2009	Urban	22%	29%	40%	8%

Recently, Portland Bureau of Transportation (PBOT) is beginning the task of clarifying the transportation demand management targets for campus land uses.[4] The targets for non-drive alone are:

- Central City: 87 percent
- Inner Neighborhoods: 71 percent
- Western Neighborhoods: 65 percent
- Eastern Neighborhoods: 65 percent
- Industrial and River: 55 percent

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[1] https://www.lanecc.edu/sustainability/transportation-survey
[2] https://drive.google.com/file/d/0B-EwSafm0XzVLTg2UE5BS3BvY1k/edit
[3] https://www.pdx.edu/campus-planning/sites/www.pdx.edu.campus-planning/files/Student%20Commute%20Spring%202009_0.pdf
[4] https://www.portlandoregon.gov/transportation/article/659564

The Cascade and Southeast Campuses appear to be meeting this target already. The Sylvania Campus, however, is below the city's Western Neighborhood target. Solutions identified in this document that will be carried into the Facilities Master Plan include motor vehicle improvements, but also include solutions aimed at maintaining or improving the mode split.

System-Wide Transportation Infrastructure

The existing deficiencies and existing system-wide infrastructure needs were defined with a goal of creating a more robust multimodal future transportation network.

PCC's Shuttle System

Currently PCC provides a free shuttle service to students, faculty, and staff. Service is provided during fall, winter, and spring terms while school is in session; service is not provided on weekends, holidays, school breaks, nor summer term. PCC offers an online GPS system to track the shuttle services as shown in Figure 4.[5] The shuttles include:

Orange Line (Downtown/Sylvania) – The Orange line provides service between downtown Portland and the Sylvania Campus. Shuttles run on 35 to 110-minute headways from 6:15 a.m. to 10:00 p.m.

Yellow Line (Southeast/Sylvania) – The Yellow line provides service between the Southeast Campus and the Sylvania Campus with two stops located along SW Hawthorne Boulevard (Stop IDs 2635 and 2604). Shuttle run on 45 to 60-minute headways from 6:20 a.m. to 10:00 p.m.

Blue Line (Rock Creek/Sunset Transit/Sylvania) – The Blue line provides service between the Rock Creek Campus and the

FIGURE 4: PCC ONLINE SHUTTLE SERVICE TRACKING

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[5] http://shuttle.pcc.edu/
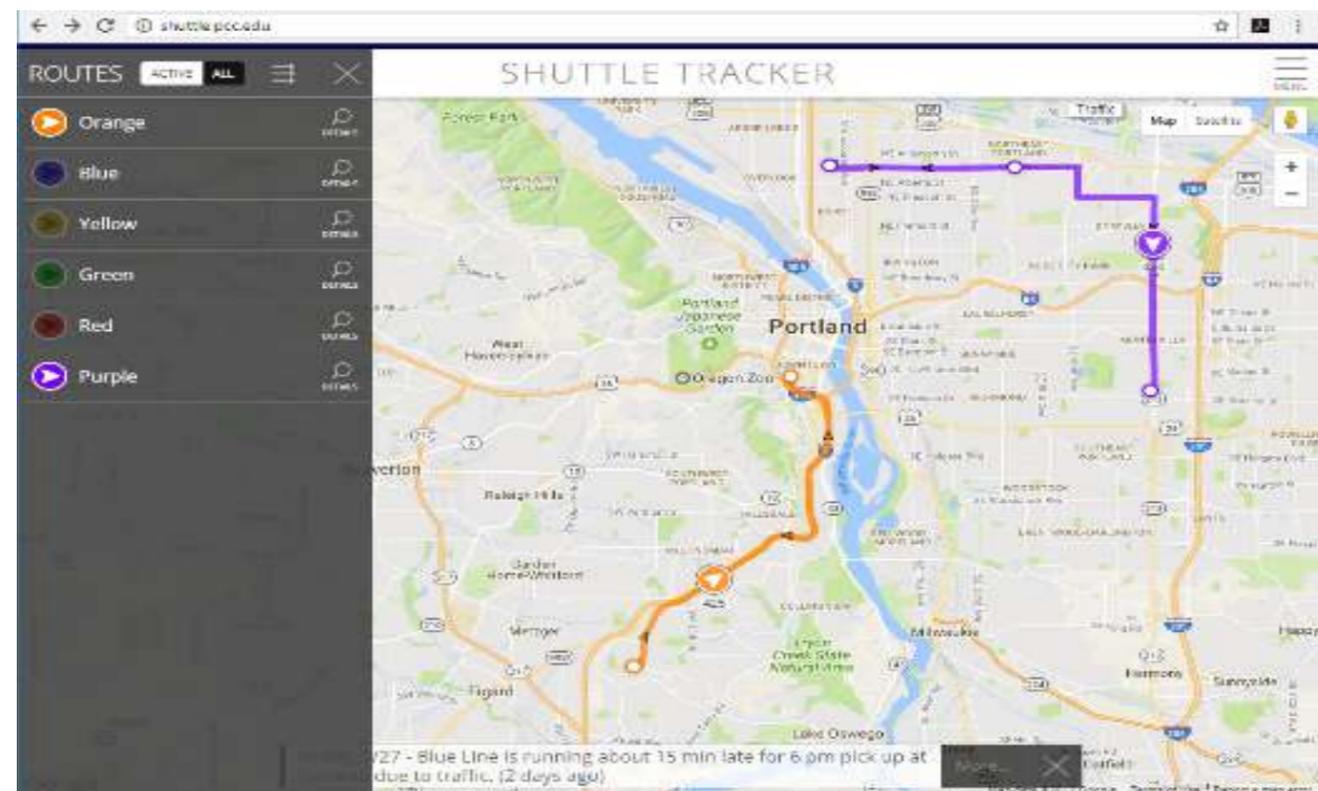
Sylvania Campus with one stop at the Sunset Transit Center. Service is provided on 65 to 140-minute headways from 6:00 a.m. to 10:00 p.m.

Green Line (Cascade/Sylvania) – The Green line provides service between the Cascade Campus and the Sylvania Campus on 55 to 90-minute headways from 6:15 a.m. to 10:00 p.m.

Red Line (Cascade/Sunset Transit/Rock Creek) – The Red line provides service between the Cascade Campus and the Rock Creek Campus with one stop at the Sunset Transit Center. Service is provided on 65 to 185-minute headways from 6:20 a.m. to 9:50 p.m.

Purple Line (Cascade/PMWTC/Southeast) – The Purple line provides service between the Cascade Campus, the Portland Metro Workforce Training Center (Stop ID 3199), and the Southeast Campus. Service runs on 60 to 100-minute headways from 6:30 a.m. to 10:00 p.m.

Shuttle usage has increased significantly over the last several years from a low of approximately 60,000 rides in the 1998/1999 fiscal year to a high of approximately 280,000 rides in 2012/2013. Shuttle usage has decreased in recent years declining less than enrollment with approximately 200,000 boardings of students, faculty, and staff onto the shuttle service in 2015/2016.

Ridership data obtained from PCC shows ridership levels by shuttle line and by term. Based on the data, ridership tends to be the highest during fall term with approximately 71,000 rides and lowest during spring term with approximately 59,000 rides (see Figure 5). The shuttles have designated stops at each of the major campuses.

FIGURE 5: TOTAL SHUTTLE USAGE BY FISCAL YEARS
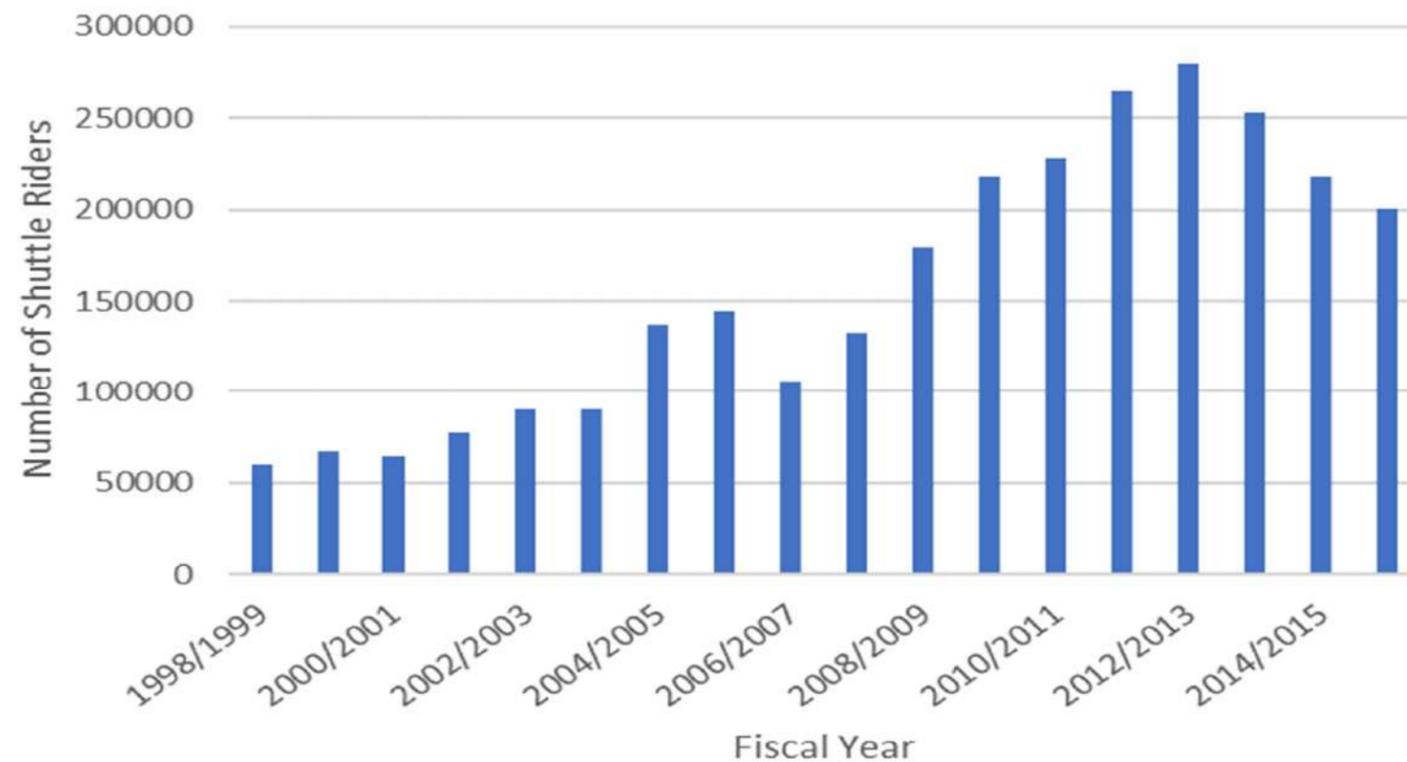
Shuttle Buses and Infrastructure

The shuttle service is currently supported by 15 shuttle buses. The buses range in age from 2004 to 2014 and in size from a Ford E450 Aerotech that seats 14 passengers to a 40-foot Bluebird Rear Engine Diesel that seats 45 passengers. Table 3 provides a summary of the shuttles owned by PCC. Table 3 provides a summary of the shuttle numbers, model years, capacity, and whether they meet ADA requirements.

TABLE 3: SUMMARY OF SHUTTLES OWNED BY PCC

Bus #	Year	Descriptions	Bike Racks	Capacity	ADA
27	2004	Bus - Ford E450 Aerotech	Yes	14	NO
750	2004	Bus 40' - Bluebird Rear Engine Diesel	Yes	45	YES
43	2004	Bus - Chevy 5500 Eldorado Aero Elite	Yes	33	NO
20	2004	Bus - Chevy 5500 Aero Tech	Yes	23	YES
58	2006	Bus - International Aero Elite 320	Yes	28	YES
787	2009	Bus - Freightliner / Champion CTS Rear Engine	Yes	43	YES
976	2009	Bus - Freightliner / Champion CTS Rear Engine	Yes	43	YES
420	2011	Bus- International	Yes	28	YES
418	2011	Bus - Freightliner / Champion XBS Rear Engine	Yes	38	YES
419	2011	Bus - Freightliner / Champion XBS Rear Engine	Yes	33	YES
422	2011	Bus- International	Yes	28	YES
425	2013	Bus - Freightliner / Champion XBS Rear Engine	Yes	38	YES
426	2013	Bus - Freightliner / Champion XBS Rear Engine	Yes	38	YES
434	2014	Bus - Freightliner / Champion CTS Front Engine	Yes	26	YES
433	2014	Bus - Freightliner / Champion CTS Front Engine	Yes	26	YES

13 out of the 15 shuttles are ADA accessible, and that figure is likely to increase to 100 percent as the oldest shuttles in the fleet are replaced. PCC is also working to incorporate on-board WIFI on all shuttles, a feature that PCC began testing in fall 2017. The non ADA accessible shuttles are used only as back-ups or for charter trips that do not included ADA eligible passengers.

The shuttle system has the ridership of a small community's transit system. The system functions well, but currently there is no dispatch system, the maintenance is contracted out. There is no central hub to store the shuttles; most transit systems of similar size have. This would help improve efficiency and reliability by facilitating ongoing maintenance.

TriMet

The PCC Transportation and Parking services department has worked to promote transit as a viable method of travel to and from PCC campuses. As highlighted on their website:

> "*To promote and encourage transit ridership, PCC has cost saving programs in place for both students and staff. TriMet tickets and passes are also available for purchase at all campus bookstores.*"

The transit subsidy program PCC has developed provides a 50% subsidy on TriMet term bus passes. PCC also offers a pre-tax purchasing option for staff.[6] As a result, over 28.7 percent of student trips to and from each campus are via TriMet. Staff rate are low (5%) with increasing subsidies an option to increase ridership.

Bus Routes

Students, staff, and faculty are encouraged to use TriMet whenever possible. The following list give you the bus numbers that go to the various campuses and centers:

Sylvania: 44, 78

Rock Creek: 47, 52, 67

Cascade: 4, 44, 72, Max Yellow Line

Southeast: 4, 72

Portland Metropolitan Workforce Training Center: 72, 75

CLIMB Center for Advancement: 4, 7, 10, 14, 31, 32, 33, 41 (Bus stop is one block north on the Hawthorne Bridge)

Washington County Workforce Training Center: 52, 59

Hillsboro Center: 46, 57 Max Blue Line

Willow Creek Center: 47, 48, 52, 59, 88, Max Blue Line, Columbia County Rider

TriMet provides access to all PCC campuses and satellite centers, in their service area, through its fixed-route bus and light rail lines (MAX). Figure 6 summarizes information related to the fixed-routes and stops that serve PCC students, faculty, and staff by campus and center. The information is based on TriMet's current route maps and schedules available on the TriMet website (trimet.org) as well as ridership data provided by TriMet that includes average daily boardings and alightings at each stop during a typical weekday in spring 2016.

Other Driving Options

There are other driving options that help promote more sustainable travel that are used by students at PCC. These include car sharing, carpools, Uber/Lyft, and electric vehicles. These provide a ride home option for transit or bicycle travelers that have a need arise making a car option necessary.

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[6] https://www.pcc.edu/resources/parking/public-transit.html

Car Sharing

Currently, PCC's website provides information about three car sharing options[7]:

- Getaround
- Car2Go/ReachNow
- Zipcar

Getaround is a car sharing organization that provides a platform for car owners to rent their vehicles. Car2Go (features shown in Figure 7) and Zipcar are organizations that own fleets of cars available for flexible rental by users of their platform.

Zipcar has specific locations for pick up and drop off of their vehicles, while Car2Go vehicles may be picked up and dropped off at any location in their service area and on a public street. These are both options that currently fall under the purview of driving alone or carpooling in terms of survey results. Car2Go has designated parking spots at the Cascade, Sylvania, and Southeast Campuses. For both services, parking permits are not required. On March 21st, 2017 ReachNow expanded their coverage area to include the PCC Sylvania Campus and is combining with Car2Go. Their network had already included coverage for the Cascade, CLIMB, and Downtown facilities, but they have yet to expand to serve the other campuses.

For campuses and centers with designated service areas for specific car sharing programs, students who choose to use these services may contract the vehicle for the duration of their trip from the point of pickup to the point of drop off. For campuses and centers outside the service area of these car sharing programs, students who choose to use these services must contract the vehicle for the duration of their time at said campus or center, and must return the vehicle to an acceptable drop off point within the service area before their rental agreement can end.

Carpool

PCC transportation website provides links to a ride matching service called Ride Share provided by METRO to encourage carpooling. Through the Ride Share program, students are given access to reduced cost rideshare parking permits. PCC has provided a networking tool in conjunction with METRO and the states of Oregon and Washington called Drive Less Connect, through which students can register either their desire to join a carpool or offer their vehicle for carpool services. Carpoolers also have the option of being matched with the Portland Metro Region or just the PCC Network while using the Drive Less Connect Tool.[8]

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[7] https://www.pcc.edu/resources/parking/car-sharing.html
[8] https://www.pcc.edu/resources/parking/ride-share.html

Uber/Lyft and Taxis

PCC does not currently have official affiliations with ridesharing programs such as Uber or Lyft. That said, students and staff have an alternatives for travel in case of any emergency. 17 percent of surveys returned indicated that such a service could be used as incentive for them to use alternative transportation. Ease of access is another factor that would encourage students to use these services, as ridesharing programs such as Uber and Lyft have become ever-present in the Portland area achieving 50 percent of the taxi market in Portland in 2015.[9]

Electric Vehicles

Electric vehicles (EV) numbers are consistently growing with the areas growing push toward environmental friendliness. As of March 2017, PCC has dedicated electric vehicle charging stations at all but the Southeast Campus, with additional ones at the Hillsboro Center. The cost of each of these and the monitoring of them varies by campus. The Sylvania Campus hosts two charging stations, each equipped with two charging cords (see Figure 7) and the Rock Creek Campus provides one station.

FIGURE 7: SYLVANIA ELECTRIC VEHICLE CHARGING STATION

Charge card collection of fees is problematic. Internet connections are unreliable, the cost to provide this service outweighs the funds collected. A new system of creating a EVC parking permit with a cost covering electrical expenditures is being considered. Currently there is no charge for EVC usage.

The Cascade Campus has a charging station in its underground parking garage. One station has a cord available for use, while the other station requires EV drivers to bring their own cord.

Campus Level Analysis and Proposed Projects

By evaluating existing conditions of transportation infrastructure on and near PCC campuses, proposed projects to be included in the Facilities Master Plan have been developed. These were combined along with input from student and staff surveys and travel behaviors along with staff recommendations for operational improvements and safety enhancements.

Criteria to evaluate each proposed project were developed by the stakeholder group. Details on the evaluation of each of the projects and their corresponding scores are provided in a table following a discussion of each campus. The evaluation criteria are as follows:

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[9] http://portlandtribune.com/pt/9-news/266418-140306-uber-lyft-winning-over-portland-taxi-market-disrupting-cab-companies-

- Improves Safety – Reduces the likelihood of crashes between different modes of travel and between users of the same mode (i.e., wide sidewalks to ensure pedestrians don't bump into each other or trip)
- ADA Access Improvement – Includes ADA improvement that meets current guidelines
- Optimizes the Efficiency of Parking Use – Maximizes the use of current parking spaces
- Rideshare, Transit, Carpools, and/or Shuttles – Includes features that would improve these modes of travel
- Active Transportation (Walk, Bike) – Improves the infrastructure and for walking and biking
- Green Infrastructure – Environmentally conscious improvement, and one that can be used for a long period of time Improves the
- Eliminate Staff designated parking to fulfil CRT goals.

The recommended project list by campus were scored by each of these criteria and are provided by campus below. No improvement to a category ranks a score of 0, moderate improvements a 5 and excellent improvements received a 10. Finally to help demonstrate the importance of these ADA Access and Safety were multiplied by 10 and all other projects were multiplied by 5.

Cascade Campus Transportation Infrastructure

The Cascade Campus is in an urban area of Northeast Portland that has strong biking, pedestrian, and transit infrastructure. As a result, this campus has a high percentage of alternative mode commuting. The majority of the transportation network surrounding the campus is owned by the City of Portland, and this campus is relatively small compared to other PCC campuses. As a result, minimal transportation improvements are needed at this campus compared to the larger campuses that have their own internal roadway networks. This section summarizes the transportation infrastructure that supports the Cascade Campus.

Transit and Shuttle

Over 40 percent of Cascade Campus students use transit or the PCC shuttle service to get to and from campus. The campus is located in an urban area of Portland that has multiple bus lines with frequent service within a half mile:

- Line 4 (Division/Fessenden)
- Line 44 (Capital Highway/Mocks Crest)
- Line 72 (Killingsworth/82nd)
- MAX Yellow Line

All of these lines offer service fairly frequently (15 to 30 minutes), with the MAX Yellow Line providing high frequency service with 10- to 15-minute headways. Between these lines and their connections to various transit centers, service throughout most of the Portland Metro area is well covered. Additionally, these transit lines and the shuttle service provide connections to the Southeast Campus, Sylvania Campus, Southeast Campus, and Metro, Portland Workforce Training Center.

There are nine transit stops within a half mile of the campus most are directly in front of campus buildings. There are generally good pedestrian and bicycle connections between the campus and the transit stops (see Figure 8). The PCC shuttle stops are located on N Borthwick Avenue, separate from the transit stops. A summary of each TriMet stop is provided in

Table 4.

TABLE 4: CASCADE CAMPUS TRANSIT STOP SUMMARY

Stop ID	Location	Amenities
88	N Albina & Killingsworth	Shelter
89	N Albina & Killingsworth	Shelter
3153	N Killingsworth & Albina	Shelter
3154	N Killingsworth & Albina	Shelter
3156	N Killingsworth & Commercial	Shelter
3157	N Killingsworth & Commercial	Sign and Post, Seat
3171	N Killingsworth & Kerby	Shelter
3184	N Killingsworth & Vancouver	Sign and Post, Seat
5996	N Vancouver & Killingsworth	Shelter

Pedestrian and Bicyclists

The Cascade Campus is a dedicated and enclosed campus with interlocking multi-use paths and crosswalks throughout that encourage pedestrian traffic. Commuters walking and biking to and from campus are supported by continuous sidewalks, striped crosswalks with short crossings, nearby greenways, and shared roadways with low speeds and traffic volumes that attract pedestrians and bicyclists. The campus has bike parking throughout as well as a BIKETOWN bike station right next to it. Bike storage lockers are nearing capacity for the number of bicyclists that commute to this campus, despite there being a high number of bike lockers. It is worth noting that the portion of N Albina Avenue adjacent to the Cascade Campus is listed as a difficult bike section by the City of Portland.[10]

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[10] https://www.portlandoregon.gov/transportation/article/322271

The Cascade Campus has a highly active student leadership program that promotes bike usage and manages the campus's bike share program[11]. The bike program is successfully coordinated by the ASPCC with support from Transportation and Parking Department and a Federal grant through Metro. As part of this program a student can rent a bicycle for $15 per term which includes the following:

- A ready-to-ride mountain or hybrid bike
- Bikes come equipped with fenders, a rack, lights, a bell, and a sturdy U-lock
- A helmet to keep
- Plastic seat covers to keep the seat dry
- Free advice, support, and basic adjustments by an experienced bicycle mechanic

Parking

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[11] https://www.pcc.edu/resources/aspcc/cascade/BikeProgram.html

There are just over 700 parking spots on the Cascade Campus. During peak parking hours, the parking lots at Cascade were seen to have multiple vehicles circling the lots looking for spaces. As a result, the campus has an on-going problem with students parking in the surrounding neighborhoods. PCC staff have gotten creative in their ways to communicate that students should not park in the neighborhoods (see Figure 11). Even with staff monitoring neighborhood parking this is still a frequent occurrence.

FIGURE 10: JESSUP STREET ADA PARALLEL PARKING

The Cascade Campus has an underground parking structure located on N Killingsworth Street across the street from Parking Lot 6. The garage is accessed directly from a street owned by the City of Portland, which has limited the signage that can be used near the garage. This garage offers almost 200 parking stalls, two of which are electric vehicle charging locations. PCC currently cannot charge for the use of these charging stations because Wi-Fi infrastructure, needed for credit card payments, is not present in the garage. The Cascade campus currently has 32 ADA parking stalls and two Temporary ADA parking spaces

FIGURE 11: CREATIVE SIGNS TO DETOUR NEIGHBORHOOD

Jessup Street, which is owned by the City, but operates more as a campus roadway, abuts the Student Services building and provides an additional five parallel ADA parking stalls (Figure 10). When accounting for these parking stalls, the current ADA parking guideline for the required number of spaces is met. The ADA parking on this campus was built to code at the time of construction, but there are some components that are outdated. Ramps between ADA parking sidewalks may be missing tactile strip

s and parking stall slopes should be verified with striping and signage changed to meet new ADA guidelines as needed. While parking is constrained in most parking lots, Lot 7 (pictured in **Error! Reference source not found.**) is frequently empty, as it is a few blocks from campus and there is no signage directing students to the lot. It is located at the northeast corner of the intersection of N Missouri Avenue and N Killingsworth Street, two blocks from the nearest main campus building.

FIGURE 12: EMPTY PARKING LOT 7 AT CASCADE CAMPUS DURING PEAK HOURS

TABLE 5: CASCADE CAMPUS PROPOSED PROJECTS

Proposed Projects - Cascade	Improves Safety	ADA access improvement	Optimize Parking	Rideshare, (Transit, Carpools, Shuttle)	Active Modes (Walk, Bike,	Green Infrastructure (Water, Air, Energy)	Total Benefit	Ranking
Better monitoring of neighborhood parking	0	0	5	5	5	0	**75**	**L**
Bring all parking lots up to the new ADA parking standards for Van accessible, loading, slope and signage improvements.	10	10	0	0	0	0	**200**	**H**
Repair pavement with drainage issues coordinated with FMS.	10	0	5	0	0	5	**150**	**M**
Maintain parking lots on a regular basis, 5.4 acres need sealing (5-year intervals) and striping (annually to biannually).	10	0	10	5	5	5	**225**	**H**
Work with Portland City to acquire Jessup right of way through the campus. To be followed with redesign and improved connections between parking and Campus buildings.	10	0	5	5	5	0	**175**	**M**
Increase EVC to meet demand including an ADA location; move to upper parking area to provide internet connections for charge card usage or provide EVC parking permits.	0	5	0	0	0	10	**100**	**L**
Analyze and improve shuttle stop considering food services and a possible transportation hub. Look at pedestrian safety concerns near the area.	10	5	0	10	5	0	**225**	**H**
Build a multi-use path between surrounding neighborhoods and campus	10	0	5	10	10	0	**225**	**H**
Add additional secured/improved bicycle parking	5	0	0	10	10	0	**150**	**M**
Provide new wayfinding signage for parking options	5	5	10	5	5	0	**200**	**H**

Note: 0 is Neutral, 5 is some benefits, 10 is maximum benefit.

Benefit/Cost value is value for safety and ADA access multiplied by 10 and all other values multiplied by five and added together.

Less than 100 is low, 101 to 199 is medium, and 200 plus is high

Rock Creek Campus Transportation Infrastructure

The Rock Creek Campus is in a suburban area with higher-speed roadways and lacking shoulder, pedestrian walkways or bicycle lanes. This makes biking and walking a safety concern, so these are less used by commuters. There is strong campus transit infrastructure with a transit and shuttle passenger loading area mid campus. Washington County is improving bicycle infrastructure on surrounding roads. There is only one access to the campus, often resulting in long vehicle queues turning into and out of campus. There is an additional emergency access route that connects with NW 185th Avenue, but it is not used for general campus access due to line-of-sight safety issues. These issues are being addressed by current construction.

Transit and Shuttle

Based on the 2013 transportation survey mentioned above, the Rock Creek Campus demonstrated a mode split of 22 percent of students commuting via transit. The campus is served by three lines that have reasonable headways (15 to 35 minutes) and easy connections to the MAX transit system. At certain times of day, these buses run on shortened routes that do not go into the Rock Creek on-campus stop. The lines serving the Rock Creek Campus are as follows:

- Line 47 (Baseline/Evergreen)
- Line 52 (Farmington/185th)
- Line 67 (Bethany/158th)

Three transit stops identified in Table 6 are located within a half mile of the campus. One of the stops is served by the on-site transit center which also provides a dedicated bus dwelling area to maintain frequent connections without building queues in the transit center loop. The bus dwelling area and transit center provide services for TriMet staff. The transit center provides connections between buses and bikers or pedestrians.

Additionally, there is service by the Columbia County Rider (CCRider) contracted by PCC providing trips to and from Columbia County locations and the Willow Creek Max stop. Monitors located in the Student Services Building have times of all the next bus arrivals and schedule. This GPS information is also available on line for all transit routings.

TABLE 6: ROCK CREEK CAMPUS TRANSIT STOP SUMMARY

Stop ID	Location	Amenities
4429	PCC Rock Creek Main Stop	Shelter
4426	PCC Drive & Springville	Sign and Post
10165	NW Springville & PCC Drive	Sign and Post

Pedestrian and Bicyclists

The Rock Creek Campus sees the lowest percentages of pedestrian travel (2 percent) and bicycle travel (1 percent) among the campuses. In the 2013 survey, students who responded that they drove alone to campus were asked to list preferable alternative modes of transportation. This survey returned walking as the least preferable alternative mode of transportation at this campus. This is expected due to its suburban location with longer distances from housing to campus, which are compounded by limited bicycle and pedestrian infrastructure between homes and the campus.

Historically, one of the constraints to biking and walking to the Rock Creek Campus has been the lack of supporting infrastructure along the main roadways (NW 185th Avenue and NW Springville Road). Washington County is currently planning to build biking and walking infrastructure along these roadways in the near future.

While NW 185th Avenue and NW Springville Road offer less than ideal biking and walking facilities, the campus does provide a multi-use path from the entrance on NW Springville Road to the main part of the campus. On campus, bicycle parking is provided, and PCC has recently added more bicycle parking to support future biking needs. The campus also contains well-maintained multi-use paths surrounded by art. The Rock Creek campus website suggests walking along interlocked multi-use paths to view sculptures, gardens, and courtyards as a "thing to do" for visitors while on campus.[12]

FIGURE 13: ROCK CREEK GRAVEL LOT

Parking

The Rock Creek campus offers over 1,300 general parking stalls for students and faculty. These parking stalls typically have high utilization throughout the day. When the event center is open and the parking stalls at the Tualatin Hills Parks and Recreation[13] sports center located on campus are included, there are almost 1,800 available stalls.

There are several other locations on campus where unmarked parking is available (see Figure 13 for an example). In the northeast corner of campus, there is a gravel lot currently used as parking and storage for Fortis Construction's ongoing construction projects. South of Parking Lot C adjacent to the Learning Garden, there is an additional gravel lot that requires a parking permit. The Event Parking Lot is gravel and is open for

[12] http://www.pcc.edu/about/art/#rc-outside
[13] http://www.thprd.org/facilities/sports/pcc-rock-creek/

term registrations and special events. If vehicles are parked appropriately then it can provide approximately 90 parking spaces. It is slated for paving and permanent general parking usage, funded through the recent bond.

The Rock Creek parking lots provide low-emission parking spots as well as electric vehicle charging locations. There are nine low-emission spots at the front of Lot A, next to the 4 EV charging stations. The campus currently has 54 ADA parking stalls, which is just over the number required by ADA guidelines. There have been recent upgrades to many of the ADA parking stalls at the Rock Creek campus. Like the other campuses, the conformity and quality of the signage and striping at the Rock Creek Campus varies and while some ADA parking infrastructure has been upgraded there are still stalls and aisles that don't have compliant signs and slopes should be measured and adjusted as needed.

Planned Infrastructure Improvements

Washington County is currently constructing significant improvements to Springville Road near the Rock Creek Campus, including realignment and rebuilding of the intersection with NW 185th Avenue. Discussions with the County are currently underway regarding the potential of realigning the main campus access to form the north leg of the intersection of Springville Road and NW 178th Avenue. If an agreement is reached between PCC and Washington County, this revision to the campus access will include full signalization of the intersection, including protected pedestrian crossings. Even without the campus access realignment, the County's improvements to Springville Road will provide much-needed pedestrian and bicycle connection between the campus and NW 185th Avenue in the form of a multi-use path on the north side of Springville Road.

The table of proposed projects ranked as previously described is provided in Table 7

TABLE 7: ROCK CREEK PROPOSED PROJECTS

Proposed Projects- Rock Creek	Improves Safety	ADA access improvement	Optimize Parking	Rideshare, (Transit, Carpools, Shuttles)	Active Modes (Walk, Bike,)	Green Infrastructure (Water, Air, Energy)	Total Benefit	Ranking
Additional Entrance and Exit Locations	10	0	0	5	5	0	150	M
Add parking to meet demand. (see ideas)								
1) Revamp and pave Event lot to meet all standards and charge or monitor during event	0	10	10	0	0	0	150	L
2) Add parking locations to the northeast.	0	5	10	0	0	0	100	L
3) Lease adjoining parking lots with safe pedestrian connections to campus.	0	0	10	0	0	5	75	M
Maintain parking lots on a regular basis, 16.3 acres need sealing (5 year intervals) and striping (annually to biannually).	10	5	10	5	5	5	275	M
Increase EVC to meet demand including an ADA location.	0	5	0	0	5	10	125	M
Work to increase ridership with better transit infrastructure on campus to support more routes, better signage, message boards, and a subsidized employee transit pass program	10	5	0	10	10	0	250	H
Create a dedicated transit hub for TriMet, Columbia County, PCC Shuttles, ADA vehicles.	10	0	10	10	0	0	200	H
Add a flashing beacon pedestrian crossing, bicycle and pedestrian facilities between the neighborhoods near Rock Creek.	10	0	10	10	10	0	250	H
Expand on the new Washington County's bicycle infrastructure improvements on 185th with extended bike lanes	10	0	10	10	10	0	250	H
Build a multi-use path between surrounding neighborhoods and campus	10	0	10	10	10	0	250	H
Bring ADA parking up to new parking guidelines including Van Accessible spaces, slope, signage, and load zones.	10	10	10	0	0	0	250	M
Add bicycle facilities Including bike lockers, repair stations, rental bike program and storage, space, and signage as needed.	5	0	0	10	10	0	150	M

Note: 0 is Neutral, 5 is some benefits, 10 is maximum benefit. Benefit/Cost value is value for safety and ADA access multiplied by 10 and all other values multiplied by five and added together. Less than 100 is low, 101 to 199 is medium, and 200 plus is high

Southeast Campus Transportation Infrastructure

The Southeast Campus is located in an urban area with adequate infrastructure for biking, walking and transit access. As a result, it has one of the highest percentage of students commuting to campus using these alternative modes of transportation.

This campus has the smallest foot print of any PCC campus and has few internal roadways. It has seen fairly recent upgrades as a result of converting this location from a center to a campus as part of the last bond cycle. As a result, there are minimal transportation improvements needed at this campus compared to the larger campuses that have more robust internal street systems.

Transit and Shuttle

The Southeast Campus had the second highest proportion of transit riders (35 percent) and second highest proportion of shuttle riders (5 percent) in the 2017 survey. This is due to the location of the campus in relation to frequent transit and shuttle service. The campus is served by Line 4 (Division/Fessenden) and Line 72 (Killingsworth/82nd). These lines provide direct connections to the Cascade Campus, the CLIMB center, and the Portland Workforce Training Center as well as connections to MAX lines. These lines provide frequent service, about every 10 to 30 minutes.

There are five transit stops being used by students and staff to access the Southeast Campus (see Table 8). There are an additional three transit stops within a half mile of campus.

TABLE 8: SOUTHEAST CAMPUS STOP SUMMARY

Stop ID	Location	Amenities
1492	SE Division & 77th	Shelter
1493	SE Division & 79th	Sign and Post
1499	SE 82nd & Division	Shelter
7923	2200 Block SE 82nd	Shelter
7957	SE 82nd & Division	Shelter

To support the large number of shuttle riders, the PCC shuttle hub on the Southeast Campus has recently been updated (see Figure 14). The new shuttle center provides connectivity to bicycle storage, transit stops, sidewalks, and has narrow, well-designated crossings between the two sides of the shuttle stop.

Pedestrian and Bicyclists

There are sidewalks throughout the neighborhoods near the Southeast Campus, as well as neighborhood greenways which provide slower speeds and low traffic volumes that focus on biking and walking (see Figure 15). As such, this campus sees higher pedestrian travel (2.4 percent) and bicycle travel (3.2 percent) than the less urban campuses, Sylvania and Rock Creek. The main barrier to active modes of transportation is SE 82nd Avenue, which exhibits high speeds, high traffic volumes, limited pedestrian and bicycle infrastructure, as well as frequent turn conflicts, resulting in a less than ideal pedestrian and biking atmosphere.

The Southeast campus is the most ethnically diverse campus, and many of its students are low-income and speak English as a second language. This demographic typically is limited in mobility via single occupant vehicles, and contributes to the high biking, walking, and transit mode split. Since the number of students is projected to increase at the Southeast Campus, this infrastructure will need to be significantly expanded to support the demand of alternative modes generated by the campus location and projected demographic of students.

Once on campus, students are supported with a biking and walking infrastructure that contains interlocking multi-use paths and sidewalks, encouraging pedestrian traffic on campus. The bicycle infrastructure includes bike parking and bike storage lockers. The campus has a mix of ownership (i.e., student leadership, Transportation Department) of the bicycle parking and storage locations which has resulted in varying degrees of maintenance.

FIGURE 15: BICYCLE NETWORK SURROUNDING SOUTHEAST CAMPUS (PBOT BIKE MAP)

Figure 16 shows an example of bike storage lockers that were recently wrapped with a panther logo and moved to CLIMB. Also shown is a storage location that is fenced, with no signage, and is not being used. There is an adequate amount and variety of parking and storage options for bicyclists; these areas would benefit from updated signage with clearer directions.
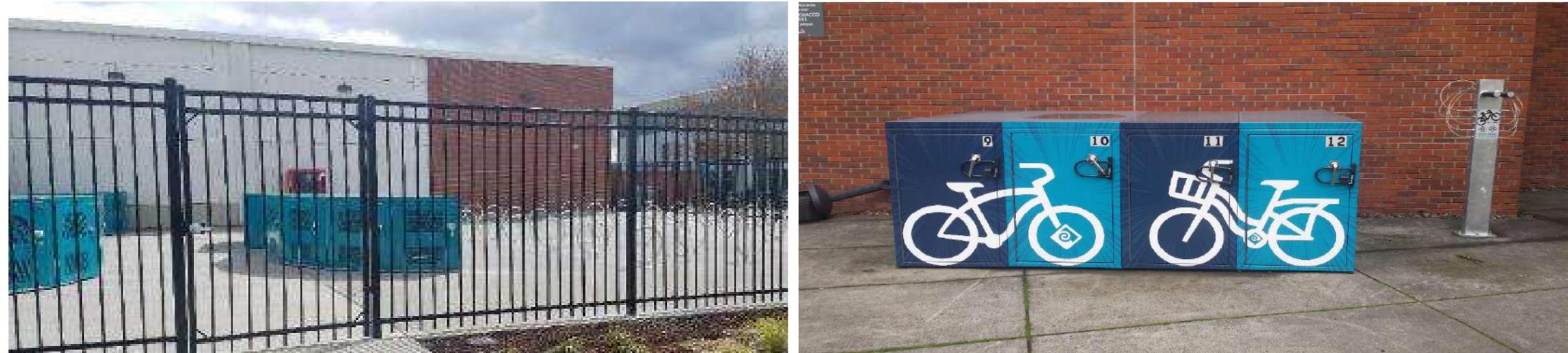
Parking

The Southeast Campus contains several noteworthy parking features. One item in need of changes is the agreement between the college and the nearby Slavic Church Emanuel. PCC rents the use of the church's parking lot until 5:00 p.m. on weekdays. Parking constraints consistently arise after 5:00 p.m. when the church lot becomes unavailable to students. The church lot provides nearly 200 parking stalls, including ADA and shuttle parking, which are needed outside the time limits of the current agreement. As such, a more permanent and consistent solution is recommended.

Lot F on the Southeast Campus has presented several issues concerning efficient usage. Its configuration does not maximize the number of parking spots possible for its size. In a student survey, Lot F concerns included proximity to campus and pathway lighting. Improving the signage and lighting in the area requested could encourage students to use the lot more often.

Along the curves of medians between marked parking stalls and throughways, drivers have created additional parking out of necessity from unmarked curb space (see Figure 17). Should adequate additional parking be made available through an updated agreement with the Slavic Church, or through reconfiguration of other lots, this parking practice may cease to occur. Another solution could be to paint all of the curbs currently used for such practices red for emergency vehicle use only, however this would not address the parking shortage.

FIGURE 17: CREATIVE PARKING STYLES TO MEET DEMANDS

An issue that occurs at the Southeast Campus as well as the Cascade Campus is students parking in the surrounding neighborhoods. Much like the Cascade Campus, several variations of creative signs are placed at common access points on the edge of campus near neighborhoods in which students are likely to park if campus lots are full. This campus also has 8 parking spaces dedicated leased retail space. This parking area is difficult to monitor due to the overlap in use.

The Southeast Campus currently has 27 ADA parking stalls, which is greater than the required number of spaces. While the number of overall general ADA parking spaces is met, the required number and width of van accessible parking spots are not met throughout campus.

Based on the guidelines, the following were identified as non-compliant ADA components:

- Signage and striping meets guidelines that were in place during the time of construction, but does not meet current standards for most parking stalls. These improvements are scheduled for 2018.
- Loading zones are provided at most ADA stalls with easy connections to the sidewalks, but they do not meet current guidelines for number of and width of van accessible parking stalls. These improvements are scheduled for 2018.
- Many ADA access aisles have slopes that are not compliant

A prioritized table of proposed projects is provided in Table 9.

Proposed Projects – Southeast	Improves Safety	ADA access improvement	Optimize Parking	Rideshare, (Transit, Carpools, Shuttle)	Active Modes (Walk, Bike,)	Green Infrastructure (Water, Air, Energy)	Total Benefit	Ranking
Add an additional parking lot (purchase retail across the street or property to the west or future parking structure)	0	0	10	0	0	0	**50**	**L**
Limit left turns from 82nd Avenue into campus parking	10	0	0	0	5	0	**125**	**M**
Create boundaries between retail parking and campus parking	0	0	5	0	0	0	**25**	**L**
Maintain parking lots on a regular basis, 5.3 acres need sealing (5 year intervals) and striping (annually to biannually).	10	5	10	5	5	5	**275**	**H**
Bring all parking up to new ADA standards including Van Accessible, loading zones, slopes, and signage.	10	10	10	0	0	0	**250**	**H**
Install EVC to meet demand including an ADA location.	0	5	0	0	0	10	**100**	**L**
Improve transit infrastructure to support future TriMet BRT system near campus	10	5	0	10	10	0	**250**	**H**
Develop offsite shuttle service (park and ride)	0	0	10	10	0	0	**100**	**M**
Improve shuttle connection between Southeast and CLIMB	0	0	5	10	10	0	**125**	**M**
Work with BIKETOWN to get bike share close to campus	0	0	0	0	10	0	**50**	**L**
Provide lockers and showers for those involved in active transportation.	5	0	0	10	10	0	**150**	**M**
Add bicycle infrastructure (additional bicycle lockers and racks).	5	0	0	10	10	0	**150**	**M**
Work with PBOT to align the planned bike lanes (Greenway)	10	0	0	10	10	0	**200**	**H**

Note: 0 is Neutral, 5 is some benefits, 10 is maximum benefit. Benefit/Cost value is value for safety and ADA access multiplied by 10 and all other values multiplied by five and added together. Less than 100 is low, 101 to 199 is medium, and 200 plus is high

Sylvania Transportation Infrastructure

The PCC Sylvania Campus is in a suburban area of Portland with hilly terrain that limits the attractiveness of biking or walking to and from campus. The shuttle to and from the Sylvania Campus tends to be the most popular alternative mode for students traveling to and from the campus. The Sylvania Campus is the oldest of the PCC campuses, and as a result it has more outdated transportation infrastructure and is in need of more substantial upgrades than the other campuses.

Transit and Shuttle

The Sylvania Campus has the lowest transit ridership. 22.6 percent of students identified this as their mode of transportation in the 2017 survey. This campus is served by TriMet Line 44 (Capital Highway/Mocks Crest) and Line 78 (Beaverton/Lake Oswego), which provide direct connections to the Cascade Campus and MAX lines via downtown connections and the Barbur Boulevard Transit Center. These lines run relatively infrequently compared to those that serve other campuses, with headways between 15 and 60 minutes and also have long travel times from 1downtown Portland to Sylvania.

There are a total of four transit stops within a half mile of the campus, but only the one on campus is frequently used by students and staff at PCC Sylvania due to the steep grade leading to campus. This stop serves bus lines 44 and 78 and has extremely high usage compared to other stops in Portland. This TriMet transit stop is combined with the PCC shuttle stop, which causes some conflicts in boarding and alighting and queuing issues.

The Sylvania Campus boasts the highest rate of shuttle usage for transportation to and from campus. It has been suggested that shuttle usage is high at this campus because it provides a quick, easy connection to and from downtown Portland. Unlike riding transit from downtown, there are no stops and the shuttle typically provides a much faster ride than TriMet. It is worth noting that TriMet is anticipated to be constructing light-rail near the campus that will run from downtown Portland to Tigard. Future improvements to the infrastructure to support transit and shuttle on campus should consider this proposed project. To date, PCC has been involved in conversations for this improvement.

Pedestrian and Bicyclists

PCC Sylvania is situated among large residential neighborhoods, comprised mostly of single-family homes. There is steep terrain between the campus and nearby housing, which contributes to low percentages of pedestrian travel (2 percent) and bicycle travel (1 percent).

The Sylvania Campus is within Portland city limits, which typically results in higher bicycle use. The terrain of this campus and the surrounding bicycle network, however, limits the desire of students to bike to and from campus. While the 2017 data showed only 1 percent of students traveling to and from campus via bicycle, the infrastructure and resources for cycling have improved, resulting in more students biking to and from campus. An example of improved newer biking infrastructure is bike repair stations, as shown in Figure 18.

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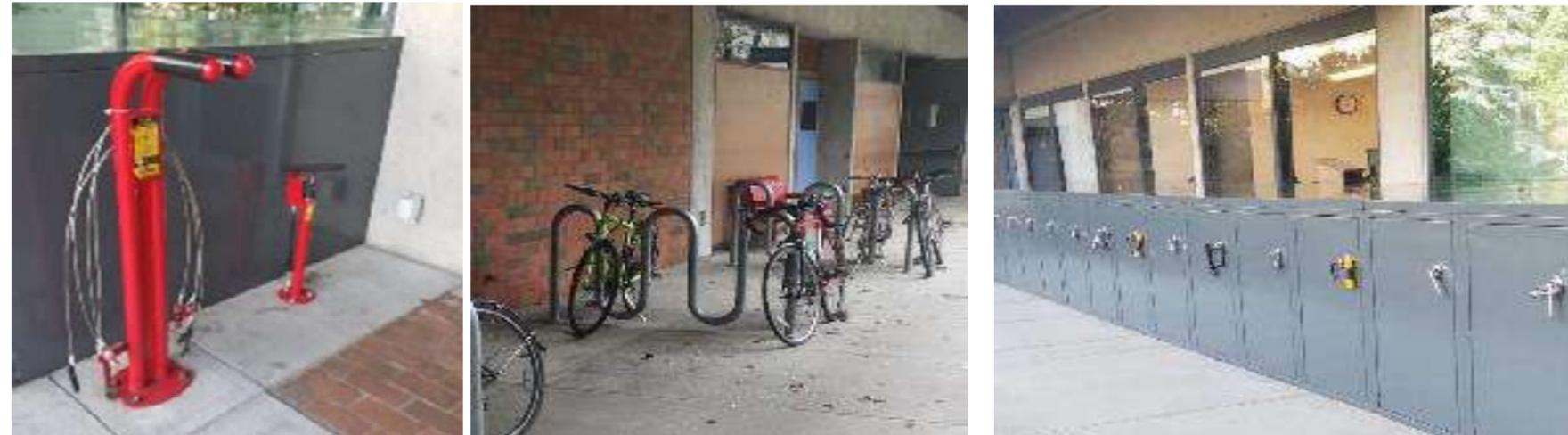
Once on campus, there are sidewalks between buildings on the Sylvania Campus, but the campus could benefit from a more robust and consistent multi-use path network. While there are sidewalks between buildings, they are not always provided on all sides of buildings. There are no bike pathways along the roadways on campus and few sidewalks along these roadways. The crosswalks are often faded or missing, there are ramps that seem to have temporary ADA improvements, and there are some ramps that lead to locations that do not have ramps or sidewalks.

Parking

The Sylvania Campus has the most parking stalls of all the PCC campuses (2650), which is consistent with campus's employment and student enrollment numbers. There are 14 parking lots, two streets with curbside parking, and three buildings with authorized parking available. Most of the campus has steep slopes, resulting in poor connections between parking and buildings, especially for ADA parking stalls. In addition to the steep slopes, this campus also has some of the worst striping and pavement conditions. There are cracks in pavements in parking lots, potholes along entrance roads, and striping is visible but worn out in most parking lots.

The Sylvania Campus has the widest variety in restricted uses of parking stalls on campus. Not only do these stalls vary in their restrictions, but the signage is often inconsistent. A sample of the varying restrictions and sign styles is shown in Figure 19.

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The transit center is in Parking Lot 7. This lot also has ADA, motorcycle, low-emission, and electric vehicle charging parking spots, creating the potential for conflicts between various users. In addition to this, there are frequent pedestrian crossing areas which result in numerous conflicts for varying modes and vehicle types.

The Sylvania Campus currently meets ADA guidelines for the number of overall parking stalls, the utilization of these spots is high and the number of van accessible parking spots is fewer than required. Three of these stalls are currently designated as temporary ADA parking and two are currently marked as reserved ADA parking. The signage varies in conformity. Some signs are outdated, while others vary in height.

Consistent with other components of the Sylvania Campus, the signage and striping for ADA facilities is out of date. There is worn off blue paint or no blue paint in some locations, sign styles vary, sign height is typically much shorter than required, and signs are inconsistent. As previously discussed, the campus also has terrain that results in non-compliant slopes in parking areas and ramps to the sidewalks. Examples of the ADA parking infrastructure are provided in

Figure 20. Based on review of the campus and ADA guidelines, the campus is generally not compliant with new guidelines other than the number of ADA parking stalls required.

FIGURE 20: UNCOMPLIANT ADA SIGNS IN SYLVANIA PARKING LOTS

Solution - Sylvania	Improves Safety	ADA access improvement	Optimize Parking	Rideshare, (Transit, Carpools,...)	Active Modes (Walk, Bike,...)	Green Infrastructure (Water, Air, Energy)	Total Benefit	Ranking
Build a Parking Structure in Automotive Lot for ADA parking and covered automotive center parking area.	0	10	10	0	0	5	175	M
Bring ADA parking up to new parking guidelines including Van Accessible spaces, signage, slopes and load zones.	10	10	10	0	0	0	250	H
Maintain parking lots on a regular basis, 28 acres need sealing (5 year intervals) and striping (annually to biannually).	5	10	10	0	10	10	300	H
Rebuild entrance to improve curves for bus turning plus bike and pedestrian lanes crossings and access. Reduce lane switching and increase pedestrian and bicycle safety.	10	0	0	10	10	0	200	H
Improve parking lot wayfinding	5	5	10	0	5	0	175	M
Add a drop-off area for the child development center	5	5	0	0	0	0	100	L
Off-site location for shuttles (mechanics, garage, cleaning, storage) ideally close to Sylvania	0	0	0	5	0	10	75	L
Build a shuttle only drop off and pick-up area in central campus	10	10	0	10	0	0	250	H
Work with TriMet to get additional and more frequent bus service to campus	0	10	5	10	10	0	225	H
Increase EVC to meet demand including an ADA location.	0	5	0	0	0	10	100	L
Add bike lanes along roadways	10	0	5	10	10	0	225	H
Add sidewalks along roadways and infill connections between parking lots and buildings	10	10	5	10	10	0	325	H
Build a multi-use path between surrounding neighborhoods and campus	10	0	5	10	10	0	225	H
Add bike rental program and storage units for inventory	0	0	5	10	10	0	125	M
0 Neutral, 5 Some Benefit, 10 Maximum benefit. (Safety and ADA access) x 10 summed with all other x 5 Less than 100 Low; 101-199 Medium; 200 + High								

Note: 0 is Neutral, 5 is some benefits, 10 is maximum benefit. Benefit/Cost value is value for safety and ADA access multiplied by 10 and all other values multiplied by five and added together. Less than 100 is low, 101 to 199 is medium, and 200 plus is high

Centers Transportation Infrastructure

All satellite centers have transit service and stops provided via TriMet with the exception of Newburg. Newburg is served by the Yamhill County Transit services. All centers, with the exception of Swan Island Trades Center, have frequent service, high-use stops with shelters. The CLIMB Center for Advancement, Hillsboro Education Center, and Willow Creek Center are near light rail lines.

The centers generally do not have parking constraints, except for the CLIMB Center. Located at the corner of SE Water Avenue at SE Clay Street, this center has proven to have constrained parking for students who take classes offered by growing programs at this location. Workers from surrounding building and downtown Portland can park their vehicles there and take public transit to other facilities or walk to downtown. There is very convenient light rail and moderate streetcar access adjacent to the CLIMB Center, and surrounding parking is less expensive than parking downtown. The unfortunate result of this convenience is parking by non-PCC related drivers fills the lot leading to insufficient parking for students who are taking classes at CLIMB. PCC is successfully, experimenting with automated day permit limitations and pricing scales.

TABLE 11: CENTERS PROPOSED PROJECTS

Centers	Improves Safety	ADA access improvement	Optimize Parking	Rideshare, (Transit, Carpools, Shuttle)	Active Modes (Walk, Bike,)	Green Infrastructure (Water, Air, Energy)	Total Benefit	Ranking
Downtown Center								
Reduce providing employee PCC paid parking shifting staff to TriMet, or CC Rider	0	10	10	10	10	0	250	H
Increase rideshare and active transportation participation	0	0	10	10	0	0	100	L
Provide bike lockers and racks as needed	5	0	10	10	0	0	150	L
Increase employee transit pass program	0	10	10	10	5	0	225	H
Newburg								
Maintain 1.16 acres of parking lot	10	10	10	0	0	5	275	H
Bring parking lots up to new ADA Standards	10	10	10	0	0	0	250	H
Require parking permits currently city restricted.	0	0	5	10	10	0	125	M
Provide bike repair station, additional bike racks and lockers	5	0	0	5	10	0	125	M

CLIMB								
Increase daily permit costs limit parking PCC related vehicles	0	0	10	5	5	0	**100**	L
Maintain 1.32 acres of parking lots pavement and striping	5	10	10	0	10	10	**300**	H
Increase parking spot widths.	10	0	10	0	0	0	**150**	M
Bring parking lots up to 2015 ADA Standards								
Provide transit incentives including shuttle connections that are ADA accessible.	0	10	5	10	0	0	**175**	M
Increase bike lockers and racks as needed	5	0	0	0	10	0	**100**	L
Willow Creek and Hillsboro (pkng owned by TriMet)								
Provide transit incentives	0	10	5	10	0	0	**175**	M
Provide bike repair station, additional bike racks and lockers	5	0	0	0	10	0	**100**	L
Swan Island								
Provide bike repair station, additional bike racks and lockers	5	0	0	0	10	0	**100**	L
Maintain 2.85 acres of parking lot, pavement and striping	5	10	10	0	10	10	**300**	H
Bring parking lots up to ADA 2015 Standards	10	10	10	0	0	0	**250**	H
Possible location for PCC Shuttle maintenance and storage facility.								
Increase transit and shuttle options, maintain Shuttle TriMet Grant	0	10	5	10	0	0	**175**	M
Metro								
Provide transit incentives	0	10	5	10	0	0	**175**	M
Maintain 3.41 acres of parking lot pavement and striping.	5	10	10	0	10	10	**300**	H
Bring parking lots up to ADA 2015 Standards	10	10	10	0	0	0	**250**	H
Provide bike repair station, additional bike racks and lockers	5	0	0	0	10	0	**100**	L

Note: 0 is Neutral, 5 is some benefits, 10 is maximum benefit. Benefit/Cost value is value for safety and ADA access multiplied by 10 and all other values multiplied by five and added together. Less than 100 is low, 101 to 199 is medium, and 200 plus is high

Transportation Demand Management Summary

The 2012 Transportation Demand Management (TDM) Plan[14] provided much of the framework that is currently used by the Transportation Department team. PCC has been utilizing the past TDM documentation and applying strategies to manage transportation demand, while working to create a sustainable approach that will reduce the number of single-occupancy vehicles traveling to campus by providing desirable options for alternative modes and still providing a well-managed parking program. The Transportation Department recently provided a summary of the TDM efforts that have been conducted and what has been planned for future development (see Appendix).

Many programs have been applied from the past TDM work and are provided in the summary in Appendix. Through conversations with the Transportation and Parking Services team and review of which TDM strategies have been applied, the following key takeaways were identified from the past and ongoing TDM work:

- Communication to employees and students is necessary to encourage alternative mode use
- Parking is an on-going constraint and could benefit from major upgrades (i.e., new regulations, integration of new technology)
- The shuttle program is a strong program that has lots of room for growth and continued success
- Transit subsidies have been successful, and this program should be continued and built upon for continued success
- The bike-share program has been a positive step in supporting active transportation
- More funding and effort needs to be put forth to integrate the much-needed active transportation strategies
- The Transportation Services Department needs more staff to support the current demands and the continued student growth

The transportation team reviewed the 2012 TDM, the summary of past TDM policies applied, and the existing conditions. From this the team identified the highest priority strategies based on the updated existing conditions and staff availability and capabilities. The recommended strategies are outlined in Table 12.

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[14] https://www.pcc.edu/resources/parking/documents/FINALTDM_Report_2012-03-13.pdf

District Wide Improvements	
Strategy	**Implementation Recommendations**
Add additional resources to the PCC transportation and parking team	• Hire one full-time (1 FTE) staff member to be an ambassador • Hire one full-time (1 FTE) staff member to be an active transportation lead • Hire two additional FTE for maintenance for evening shuttle services • Hire additional drivers to support greater shuttle frequency and longer operating hours • Hire additional office support staff for transportation and parking department • Hire additional enforcement staff (2 FTE) for transportation and parking
Improve the method of incorporating transportation solutions into community projects	• Integrate improvements need at campuses and centers into local agency projects where possible: -Powell/Division -SW Corridor -Springville -Planning and Policy Plans (i.e., transportation safety action plans, transportation system plans) • Involve transportation and parking department at early stages of new campuses and centers Involve transportation and parking department in campus updates (i.e., zoning overlays, transit plans, bikeways, and road projects.)
Integrate transportation- specific guidelines for new PCC buildings, campuses, and centers, and have transportation input sooner for new infrastructure	• All new infrastructure should include bicycle lanes, sidewalks, and safe crossings • All new infrastructure should include safe bicycle storage areas and showers if size is large enough • moved to ADA section paths from parking to building (meet owner standards and needs of the population) • Power and communications infrastructure should be included when transportation improvements are made • When major class changes occur a complete an analysis to evaluate parking lot availability • Evaluate shuttle locations to minimize conflict with other modes while servicing locations with highest anticipated use • EVC Capacity to meet demand
Create a district wide communications plan for transportation options	• Maintain transportation ambassador position, potentially add additional ambassador • Reintegrate discussion of transportation options into welcome day, and new employee orientation • Incorporate transportation solutions in permit renewal email and other mass email options • Create a transportation communications plan

	• Collaborate with other district services to share information
Integrate new technology solutions for parking (i.e., pay by space, license plate reader)	• Take lessons learned from systems being implemented at college campuses in the Pacific Northwest to build a system at PCC • Build the capital cost for these solutions into longer term plans (i.e., PCC Master Plan) • Require new or expanding campuses and centers to build systems in as they construct new infrastructure
Long-term evaluation of impact to changing parking fees and structure of the system	• Conduct a detailed study to evaluate costs and impacts for parking fee increases • Identify methods that allow flexibility in parking fees by campuses and centers • Negotiate language in union contracts to allow for more flexibility for staff parking fees • Allow flexibility in use of transportation fee • Incorporate transit subsidies into the balance of parking fees and alternate mode use

Expand the shuttle program	• Create a maintenance facility
	• Evaluate fueling and vehicle wash facility
	• Create a hub at each campus
	• Run the shuttle during summer term
	• Increase shuttle frequency
	• Hire additional transportation coordinator
	• Increase driver wages to be competitive for starting pay (lower positions)
	• Align shuttle use with programs/classes
	• Develop a program that allows the shuttle service to operate as a typical transit program:
	    o Keep maintenance in house
	    o Identify bus barn location
	    o Hire dispatch service (or in-house dispatcher)
	• Hire additional drivers

Make alternative modes more attractive	• Integrate a wellness incentive program in for employees to use alternative modes • Begin an employee transit pass subsidy • Increase transit subsidies • Increase frequency of shuttle services to better serve staff schedules • Add shuttle stops at centers • Integrate a guaranteed ride home program • Provide more showers at campuses and centers • Provide more short-term and long-term bike storage at campuses and centers

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	• Add additional electric vehicle stations • Continue ongoing coordination with BIKETOWN to identify potential expansions in bike share program near campuses and centers • Improve pedestrian and bicycle access within the college, between buildings and to and from other modes. • Work with jurisdictions to improve alternative mode accesses out to the surrounding neighborhoods and transportation systems.
Improve ADA infrastructure to buildings from parking	• Provide ADA compliant paths from ADA parking spots to building entrances • Ensure new projects integrate improvements (i.e., SW Corridor improving ADA and implementing pedestrian and bike improvements from transit stops to buildings) • Add additional ADA stalls at high utilization locations o Bicycle and pedestrian facilities should be added or integrated into access roads
Broaden incentives for students and staff to live near campus	• Use land that PCC owns next to the Sylvania Campus to build housing options for students and staff • Evaluate purchases of land near other campuses for building housing options for students and staff • Create guidelines for new campuses to buy additional land for building housing near the campus • Create incentives for students and staff who already live near campus using increased parking permit fees.

Appendix

Transportation Surveys (provided by PCC)

Parking Figures (provided by PCC)