



**PIERCE TRANSIT BOARD OF COMMISSIONERS
EXECUTIVE FINANCE COMMITTEE
3701 96th ST SW, Lakewood, WA 98499
Grand Conference Room (Formerly Conference Room 1A)
January 21, 2016 – 3:00 PM
AGENDA**

CALL TO ORDER

APPROVAL OF MINUTES: October 15, 2015 Meeting Minutes

SPECIAL BUSINESS:

1. Election of Chair and Vice Chair

Deanne Jacobson
Assistant to the CEO/Clerk of the Board

PRESENTATIONS/DISCUSSIONS:

1. Tacoma Dome Station Parking Study

Monica Adams
Senior Planner

2. Role/Integration of the Community Transportation
Advisory Group

Penny Grellier
Business Partnerships Administrator

3. City of DuPont Survey Results

Tina Lee
Service Innovation Administrator

4. Proposal for New Meeting Time

Deanne Jacobson
Assistant to the CEO/Clerk of the Board

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**PIERCE TRANSIT
EXECUTIVE FINANCE COMMITTEE MEETING
3701 96th STREET SW, LAKEWOOD, WA
GRAND CONFERENCE ROOM**

October 15, 2015

MINUTES

CALL TO ORDER

Chair Vermillion called the meeting to order at 3:02 PM.

ATTENDANCE

Executive Finance Committee Commissioners present:

Steve Vermillion, Chair, City of Puyallup Councilmember
Don Anderson, City of Lakewood Mayor
Rick Talbert, Pierce County Councilmember

Executive Finance Committee Commissioners excused:

Lauren Walker, Vice-Chair, City of Tacoma Councilmember

Staff present:

Wayne Fanshier, Chief Financial Officer
Doug Middleton, Chief Operations Officer
Vivienne Kamphaus, Interim Chief Administration Officer
Dana Henderson, General Counsel
Deanne Jacobson, Clerk of the Board
Kathy Sullivant, Finance Manager
Rebecca Japhet, Public Relations Officer
Kelli Dion, Budget Assistant Manager
Keith Messner, Information Technology Manager
Lani Fowlkes, Vanpool Assistant Manager
Bill Spies, Fleet Manager
Justin Leighton, Government Relations Officer
Peter Stackpole, Service Planning Assistant Manager
Angela Woods, Deputy Clerk of the Board

Staff excused:

Sue Dreier, Chief Executive Officer

Additional attendees:

Alex Soldano, Gordon Thomas Honeywell

APPROVAL OF MINUTES

Commissioners Anderson and Talbert **moved** and seconded to approve the August 20, 2015, meeting minutes as presented.

Motion **carried**, (3-0).

ACTION AGENDA

1. FS 15-060, Authority to Enter Into and Execute an Agreement with Xerox Financial Services LLC for a Sixty Month Operating Lease

Commissioners Talbert and Anderson **moved** and seconded to authorize the Chief Executive Officer to enter into and execute an agreement with Xerox Financial Services LLC for a sixty month operating lease.

Information Technology Manager Keith Messner presented on the item.

Commissioner Anderson questioned the obligations at the end of the lease and whether Pierce Transit will be required to return equipment at Pierce Transit's expense. Mr. Messner will check into the end of lease terms.

Motion **carried**, (3-0).

2. FS 15-061, Authority to Enter Into and Execute a Five Year Agreement with QBSI for Software, Hardware, Maintenance and Support Services

Commissioners Talbert and Anderson **moved** and seconded to authorize the Chief Executive Officer to enter into and execute a five year agreement with QBSI for software, hardware, maintenance and support services.

Information Technology Manager Keith Messner presented on this item.

Motion **carried**, (3-0).

3. FS 15-062, Authority to Enter Into and Execute a Multi-Year Contract with Battery Systems for the Purchase of Vehicle Batteries

Commissioners Talbert and Anderson **moved** and seconded to authorize the Chief Executive Officer to enter into and execute a multi-year contract with battery systems for the purchase of vehicle batteries.

Fleet Manager Bill Spies presented on this item.

Mr. Spies answered questions from Commissioner Talbert regarding the budget information for the purchase.

Motion **carried**, (3-0).

PRESENTATIONS

1. 2016 State and Federal Legislative Priorities

Government Relations Officer Justin Leighton presented on the Federal Advocacy Program and Legislative Priorities for 2016-2017. He began by giving a brief history of the programs then described the proposed activities for 2016-2017.

(Commissioner Talbert departed at 4:06 PM.)

2. 2016 Preliminary Budget

Chief Financial Officer Wayne Fanshier presented on the 2016 Preliminary Budget.

Mr. Fanshier answered questions from Chair Vermillion regarding reserves and ways of structuring reserves.

ADJOURNMENT

The meeting was adjourned at 4:30 PM.

Angela Woods
Deputy Clerk of the Board

Steve Vermillion, Chair
Board Executive Finance Committee

CTAG review/revamp for EFC meeting discussion

January 21, 2016

1. What is CTAG and why was it started?
 - PT Code 1.94.020 – Purpose, 1.94.030 - Scope of work
 - work plan for 2016
2. How CTAG can be of value to Board
3. How would Board like to communicate with CTAG (i.e. attend meetings)?
4. Suggestions for streamlining member recruitment process
 - recruitment procedure
 - reaching out to specific populations (i.e. students)
5. Suggestions for simplifying member removal process
 - PT Code 1.94.080 - Attendance, removal and resignation of members
6. Ensuring a fair process (interview structure)

PT Code pertaining to CTAG

1.94.020 - Purpose.

The purpose of the CTAG is to offer an opportunity for community stakeholders to provide feedback and suggest improvements and recommendations on plans, policies, and services offered by Pierce Transit. CTAG meetings provide a forum for interactive discussions between community stakeholders and Pierce Transit staff, and amplify Pierce Transit's proactive efforts to inform and educate the public. The CTAG is an advisory body to the Pierce Transit Board of Commissioners (Board). The CTAG represents the interests of the community and assists staff and the Board in meeting Pierce Transit's strategic goals.

1.94.030 - Scope of work.

The CTAG is an integral part of Pierce Transit's overall public involvement efforts and an important conduit for obtaining public input, communicating to the public, and encouraging public support for transit. CTAG 's specific scope of work is to:

- Act as an informed stakeholder group from which Pierce Transit proactively solicits advice;
- Offer suggestions and recommendations to Pierce Transit for achieving its strategic goals;
- Expand Pierce Transit's awareness of the public's perceptions of its activities, and speak on behalf of constituents when commenting on Pierce Transit's plans, policies and services;
- Inform and educate the public about Pierce Transit's operations;
- Provide an alternative forum for individual citizens to engage with Pierce Transit and present information in greater detail than possible at regular Board meetings; and,
- Report its activities to the Board on at least a quarterly basis.

1.94.040 - Composition.

The CTAG shall be composed of no more than nine members appointed by the board.

At the discretion of the board, after the usual application and interview process is complete, if there are more qualified and vetted applicants than there are available CTAG positions, one alternate may be appointed by the Board to serve a one year term. In the event of a vacancy on the CTAG, the alternate will immediately fill the vacant CTAG position and may serve on the CTAG with all rights and responsibilities of a CTAG member through the remainder of the unexpired term associated with the vacancy. The alternate must meet all of the qualifications of a regular CTAG member but the alternate holds no voting rights or rights to hold office. The presence of the alternate does not count towards a quorum of the CTAG.

Members shall reflect Pierce Transit's service area and strive for broad, inclusive, regional, and diverse representation to increase the reach and effectiveness of CTAG 's purpose. Pierce Transit staff cannot serve as members of CTAG, but may support CTAG with the selection of members, the conduct of meetings, the creation of agenda items, and communication with Pierce Transit or the public.

1.94.050 - Membership selection process.

Broad representation by CTAG is critical. The board of commissioners expects CTAG members to serve as representatives of their respective communities and constituents, using all available venues to gather

information and prepare for productive participation. To achieve this outcome, CTAG recruitment will be through the Pierce Transit website, local newspapers, and communication with established community partners. Members will be selected through an application process that will set forth the minimum qualifications for service. The goal is to identify eligible participants that represent the populations listed below. The board, or a designated subgroup of the board, will review applications along with staff and recommend prospective new members for appointment by the board. Staff will recommend members for reappointment to the board.

CTAG members must be at least sixteen (16) years old at the time of application; and

Applicants for CTAG must meet the application's stated minimum qualifications for service and must establish that they either live, work, or attend school in the Pierce Transit service area. An applicant may be qualified if he or she can otherwise demonstrate active engagement in the Pierce Transit service area through volunteer activities or other civic involvement within the Pierce Transit service area.

Examples of populations from whom participation may be sought include:

- Service users (fixed route, paratransit, vanpool);
- Chambers of commerce;
- Community-at-large;
- Students;
- Faith community;
- Higher education/administration/faculty;
- Medical community/public health;
- Neighborhood associations;
- Persons with disabilities;
- Public agencies/law enforcement;
- Civic associations;
- Senior citizens;
- Business owners;
- Social service agencies.

This list is neither comprehensive nor exclusive. The board and staff will have discretion to expand this list or recruit individuals so long as CTAG 's composition meets the goal of broad, inclusive, regional, and diverse representation. Membership applications will be made available to all who have requested an application, to people suggested by CTAG members, the board, staff, members of the community, or organizations and agencies representing the participation list above.

1.94.060 - Membership terms and appointment process.

Membership recruitment and filling of vacancies on the CTAG will be an ongoing process. In order to maintain creativity and avoid complacency, the initial membership terms will be staggered. To do this, the first slate only of candidates submitted to the Board for approval shall consist of three sub-groups, assigned to candidates by lottery:

Slate 1: Three members to serve for one year, with an option to reapply (subject to board approval) for a subsequent full term if they wish to continue membership;

Slate 2: Three members to serve for two years, with an option to reapply (subject to board approval) for a subsequent full term if they wish to continue membership; and

Slate 3: Three members to serve for three years (full term).

After the first slate's rotation is seated, all new members will be appointed for a three-year term and may be reappointed for one additional consecutive three-year term, for a maximum of six consecutive years. Upon completion of their terms, members are expected to relinquish their position unless approved by the board for reappointment to the CTAG. Staff may develop, subject to board review, further rules related to seating of members and terms of service as necessary and appropriate to facilitate CTAG 's purpose under this charter.

1.94.070 - Operating guidelines.

CTAG will conduct its business in accordance with Washington State's Open Public Meetings Act, RCW 42.30 and Public Disclosure Laws RCW 42.56. CTAG will select one of its members to serve as the CTAG chair ("chair") for a term not to exceed one year, and a limit of no more than two consecutive terms. Pierce Transit staff will be assigned to record meeting minutes and report them to the board. The members of CTAG will serve in a voluntary role and without salary. Upon request, CTAG members may be provided ORCA passes to enable active participation in CTAG proceedings and projects. Travel by volunteer members is otherwise not reimbursed according to Pierce Transit policy. As its first order of business, CTAG will adopt operating procedures to carry out its purpose under this charter, which at a minimum will address:

- The frequency of meetings (monthly, quarterly, etc.);
- The process and timing for selecting the CTAG chair, who will serve as the spokesperson for the CTAG; and
- The completion of a charter review at least once every three years.
- To facilitate this process, Pierce Transit staff will prepare and present to the CTAG a proposed set of operating procedures for consideration and approval at the first meeting of the group.

1.94.080 - Attendance, removal and resignation of members.

For an excused absence, members must notify the staff liaison and/or the CTAG chair at least 24 hours prior to the meeting. A pattern of unexcused absences, or other conduct that seriously interferes with a member's ability to perform his or her duties, may result in a recommendation for removal of the member to the board. Such recommendations for removal shall be made upon motion and approval by a quorum of CTAG members or by the CEO with notice to the CTAG chair. Pierce Transit staff will track attendance and send notification of CTAG 's or the CEO's intent to recommend removal to the respective member. The notice will include the date the matter is scheduled to appear on the CTAG agenda. Members whose positions are being considered for removal will have a reasonable opportunity to respond during the discussion of the motion by CTAG. The failure to appear at the meeting during which the agenda item is discussed will be deemed a forfeiture of the member's position on the CTAG. Any recommendation for removal must be approved by the Board before taking effect.

A member who resigns his or her position prior to the expiration of a term shall notify the CTAG chair and the staff liaison in writing at least two weeks prior to the member's intended resignation date. The resigning member shall return any Pierce Transit property, including any ORCA card which might have been issued, to the staff liaison not later than the intended resignation date. The staff liaison will notify the Pierce Transit CEO and the chair of the Pierce Transit Board of the member's resignation and staff shall record the resignation in the minutes of the CTAG.

1.94.090 - CTAG liaison team (Pierce Transit staff).

The Pierce Transit CEO shall appoint Pierce Transit staff to serve as the CTAG liaison team ("liaison team"). The liaison team shall consist of 1) a staff liaison(s) to guide and serve as a resource for the CTAG, and 2) administrative support staff to acquire meeting facilities and equipment, record, transcribe, and distribute minutes and other materials, including the agenda. Other duties of the liaison team include preparation of agenda forms and attachments to communicate CTAG issues and recommendations to the Pierce Transit board of commissioners. When requested, and for new members, the liaison team will provide information and orientation to CTAG members in specific areas including, but not limited to, defined responsibilities and legal requirements, nomenclature, history, mission, vision, services, policies, budget, strategic communications plans, transit development plans, partnerships, and community outreach practices.

1.94.100 - Dissolution.

The board shall have the sole power to dissolve the CTAG, to appoint or remove members, and may exercise its power to dissolve, appoint and remove at any time and for any reason.

Tacoma Dome Station Garage Parking Management Study Final Report



Prepared For:



3701 96th Street SW
Lakewood, WA 98499-4431

Submitted December 22, 2015 by



7900 East Union Ave., Suite 925
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EXECUTIVE SUMMARY

Pierce Transit has retained DESMAN and DKS Associates to provide a parking management strategy study for the Tacoma Dome Station (TDS) Garage. The adjoined East and West parking garages contain an estimated 2,393 spaces on six and seven levels, respectively. Pierce Transit would like to encourage the use of the garage by bus and commuter rail users over students and downtown employees and make the facility as easy to use as possible for transit riders.

DESMAN recommends implementing fee based parking at current market rates at the TDS Garage to raise revenue to cover garage operating and maintenance expenses, make improvements to the garage, and to discourage the misuse of the garage by non-transit commuters. The recommended daily rate of \$2.00 for the TDS Garage supports a \$40 monthly permit fee based on 20 to 23 weekdays per month. The recommended rate for 40 short-term spaces in the East Garage is \$0.50 per hour for a maximum of three hours. These spaces should be particularly high in demand when some of the on-street spaces on E. 25th Street are likely to be eliminated in front of Freighthouse Square. The following equipment and technology options are reviewed in the study:

- Multi-Space Meters
- Pay- by-Phone
- Pay-on-Foot (POF)
- Pay-in-Lane (PIL)
- Proximity Cards and Readers
- Automatic Vehicle Identification (AVI)
- License Plate Recognition (LPR) Enforcement
- Parking Guidance System

DESMAN recommends three distinct strategies to manage and operate the TDS Garage. The strategies are summarized below and are listed in order from the least sophisticated to the most sophisticated:

Strategy #1

- No parking barrier gates
- Hangtags or dashboard displays for monthly permit parkers
- Multi-space meters for daily and hourly parkers (pay-by-space configuration)
- Manual enforcement
- Optional pay-by-phone

Strategy #2

- No parking barrier gates
- Paperless parking permits
- Multi-space meters for hourly and daily parkers (pay-by-license plate configuration)
- License Plate Recognition (LPR) enforcement

- Optional pay-by-phone

Strategy #3

- Gated parking system
- ORCA cards, other proximity cards, or Automatic Vehicle Identification (AVI) for permit parkers
- Pay on Foot (POF) and Pay in Lane (PIL) for hourly and daily parkers
- No enforcement required

Parking revenues will vary slightly for each of the strategies. Strategy #3 will have a higher revenue capture rate because of the parking barrier gates (98%). Strategy #2 is anticipated to have a slightly lower revenue capture rate with no gates but effective enforcement (95%). Strategy #1 is anticipated to have the lowest revenue capture rate because of no gates and less effective enforcement (90%).

Strategy #2 is the preferred option because it is relatively inexpensive to implement at approximately \$419,000, is easier to install as it does not require in-lane parking access and revenue control equipment, provides the second most estimated cumulative net revenue of the three strategies of \$2.68 million over ten years, is consistent with how other transit agencies are collecting parking fees, and LPR enforcement will be efficient and more effective than manual enforcement. The system should include the ability to pay for parking by cell phone, which will provide a higher level of customer service. There are also no potential traffic backups at the exit lanes with this strategy.

Strategy #3 ranks second because it is the most expensive to implement and has the highest level of sophistication. Additionally, the closure of the East G Street entry/exit could make the use of a gated system problematic. However, this option does not require enforcement and there would be minimal revenue leakage with this strategy with parking barrier gates. This strategy has the highest estimated cumulative net revenue estimate of the three strategies of \$2.98 million over ten years. The higher initial cost of an estimated \$985,000 is made up for over time because of reduced labor costs.

Strategy #1 ranks third because of the labor required for enforcement, manual enforcement will not be as efficient and effective as LPR enforcement, and there is most potential for revenue leakage. This strategy has the lowest estimated cumulative net revenue estimate of the three strategies of \$1.67 million over ten years. However, it is the least costly to implement at approximately \$389,000.

Suggested next steps for Pierce Transit include the following:

1. Request demonstrations of the technologies included in the study.
2. Solicit stakeholder engagement.
3. Set parking rates.
4. Select the preferred strategy.
5. Write specifications and produce drawings (if necessary) for bids.
6. Receive bids for the equipment and operating system(s).

7. Review bids and select preferred vendors.
8. Select a vendor or vendors to provide the equipment.
9. Installation and testing of equipment.
10. Vendor training on the operation of the equipment.

INTRODUCTION

Pierce Transit has retained DESMAN and DKS Associates to provide a parking management strategy study for the Tacoma Dome Station (TDS) Garage, located between East E and G Streets on Puyallup Avenue in the Tacoma Dome District near downtown Tacoma, WA. The Tacoma Dome District is a regional transportation hub and an emerging business district. There are multiple forms of public transportation at and near the TDS Garage, including fixed route and express bus service, light rail to downtown Tacoma, commuter rail running between Seattle to the north and Lakewood to the south, and Amtrak and Greyhound stations.

The adjoined East and West parking garages contain an estimated 2,393 spaces on six and seven levels, respectively. There are 94 reserved spaces in the garage for Pierce Transit employees (47 spaces), short-term public parking (40 spaces) and Greyhound customers and employees (7 spaces). Parking is currently provided in the garage for free and the facility is reported to be at or near full capacity on weekdays by a combination of transit patrons, University of Washington-Tacoma students, downtown Tacoma employees and others. The garage is also used to park special event patrons at the Tacoma Dome on weekday evenings and on weekends, which generates a modest amount of parking revenue. As indicated in **Figure 1** on the following page, the garage has four vehicle access points. The entry/exit on G Street is closed except when there are large events at the Tacoma Dome. The closing of the G Street entry/exit may be an issue if parking barrier gates are located at garage entry/exit lanes.

Pierce Transit would like to encourage the use of the garage by bus and commuter rail users over students and downtown employees and make the facility as easy to use as possible for transit riders. This study represents an important first step in this process. Approximately 76% of the current users of the garage are Sound Transit customers. Operating and maintenance expenses are shared by Pierce Transit and Sound Transit. Diamond Parking Service currently monitors the garage, provides limited enforcement and collection services, and collects fees for event parking. The garage is open 24 hours a day, 365 days a year and the maximum time a vehicle is allowed to park in the garage is 24 hours.

On average the garage is at or near capacity on weekdays from 8:00 AM to 3:00 PM. During the morning peak hour of 5:00 AM to 6:00 AM approximately 600 vehicles entered the garage. During the afternoon peak hour of 3:00 PM to 4:00 PM nearly 200 vehicles exited the garage.

SPECIAL-USE SPACES

Accessible Parking

Based on the estimated capacity of the parking garage (2,393 spaces) and **Table 1** on the following page from the Americans with Disabilities Act (ADA) Accessibility Guidelines, the TDS garage requires 34 accessible spaces. Of the 34 accessible spaces, a minimum of six should be van accessible with a wider access aisle (one of every six are van accessible). Provided in the garage are 35 accessible spaces, nine in the East Garage and 26 in the West Garage. There are two van accessible spaces in the East Garage and five van accessible spaces in the West Garage. The garage is in full compliance with ADA.

Figure 1 - Location of TDS Garage Access Points



Table 1 - ADA Required Accessible Spaces

Total Parking Spaces in Facility	Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
1,001 and over	20 plus 1 for each 100 over 1,000

Small Car Spaces

During the late 1970's when small car sales were significantly increasing, many in the transportation industry thought that small car sales would continue to increase and represent 80% or more of total cars sold. This did not occur and small car sales have been steadily declining as a percent of all cars sold since the 1980's. Because of this, it is today recommended that no more than 15% of the total number of spaces in parking facility be small car (compact) spaces, which are typically 8' wide. It is also recommended that small car spaces not be clustered as larger cars tend to park in small car spaces, resulting in the inefficient use of the parking or a low level of user comfort. It is recommended that small car spaces be located at the end of parking rows to facilitate turning movements and in remnants of space where a standard size space will not fit. Only about 5.4% of the parking spaces in the TDS garage are small car spaces, which is a very acceptable overall percentage.

Preferred Spaces

It is a current best practice in the parking industry to offer preferred parking spaces for carpools, vanpools, low-emission vehicles, and electric vehicles. In other words, to dedicate the most convenient non-accessible spaces to rideshare, fuel-efficient and low-emitting vehicles. The question that always arises is how many spaces to dedicate to these vehicles. The 1,800-space National Renewable Energy Laboratory (NREL) garage in Golden, CO, pictured below, is probably the world's most energy efficient parking garage due to very efficient LED lighting, day lighting design, occupancy controls, traffic management system, and solar panels. There are 216 preferred parking spaces in the garage as follows:

- 90 spaces for carpools/vanpools
- 90 spaces for low-emitting vehicles
- 36 spaces with vehicle charging stations



National Renewable Energy Laboratory (NREL) Garage in Golden, CO

The 216 preferred spaces equal 12% of the total parking capacity of 1,800 spaces. A more realistic number of preferred spaces in the TDS garage may ultimately be in the range of 4% to 6% of the total capacity, or approximately 96 to 144 preferred spaces based on the estimated 2,393-space capacity of the garage. If Pierce Transit pursues preferred spaces, it is suggested to start with a smaller number of spaces and regularly monitor them. The number of spaces can be increased as occupancy levels warrant.

TDS GARAGE PARKING REVENUE

Event revenue in FY2014 totaled \$89,168, generated during seven larger events at the Tacoma Dome. Diamond Parking Service personnel collect event revenue starting one hour prior to events and charge an event parking fee of \$20. Event revenue is deposited into Pierce Transit’s bank account with a deposit slip and audit report by the parking management firm.

Parking citations also generate a modest amount of revenue. Most of the citations for parking violations are \$25. If payment for a parking ticket is not received within two weeks an additional \$30 late fee is added. Diamond Parking Service retains all late fee revenue. In FY2104 there were 412 citations issued, generating \$8,077 in revenue.

COMPETING PARKING FACILITY RATES

The Tacoma Dome has ten parking lots with approximately 1,600 spaces that are open only when there are events scheduled. Event parking rates are \$10-\$25 and they accept only cash. The LeMay Car Museum shares 148 parking spaces with the Tacoma Dome. The museum charges \$5.00 for up to three hours of parking and \$10.00 for up to six hours of parking from 10:00 AM to 5:00 PM. The museum charges a flat rate of \$5.00 after 5:00 PM. Revenue is collected via one multi-space meter in a pay-by-space configuration. Museum visitors are subject to Tacoma Dome event rates when events overlap museum operating hours.

There are seven private lots with an estimated 511 spaces available for public parking near the TDS Garage that currently charge fees for parking. The location of these lots and their parking fees are shown in **Figure 2** below. Daily rates in the area of the TDS Garage generally range between \$2.00 and \$4.00, with most charging \$2.00 a day for parking. Monthly parking permits can be purchased for \$20 to \$40. Evening and weekend parking fees range between \$2.00 and \$5.00.

Figure 2 - Current Parking Rates Charged at Competing Off-Street Facilities



All of the lots that charge a daily fee for parking have honor boxes, where the parking patron pays by inserting cash or coins in a narrow slot with a corresponding space number in a metal box. It is also possible to pay for parking by cell phone. The permit parkers in the lots display hangtags.

PARKING AND TRANSPORTATION BEST PRACTICES

Following are examples of current best practices in parking and transportation management for consideration to better manage and utilize parking resources, manage the demand for parking, be environmentally responsible, and improve vehicle, pedestrian and bicycle traffic conditions.

Parking Policy

- Developing and adopting guiding principles to establish the vision and priorities related to parking policy
- Policy statements that rank pedestrian, bicycle and transit as higher priority modes of travel compared to motor vehicles
- A citation system that charges infrequent offenders minimal fines and habitual offenders progressively more expensive fines
- Charging premium rates for short-term parking to deter long-term use of more convenient parking spaces
- Raising parking fees incrementally each year instead of larger, less palatable increases every few years
- Significant increases in parking fees to reduce the demand for parking

Parking Technology

- Web-based parking registration and payment/appeal of parking citations, and secure electronic payment transaction process
- The use of handheld enforcement devices with built-in camera and citation printer
- The use of License Plate Recognition (LPR) in enforcement
- Wirelessly networked single space parking meters that accept multiple forms of payment, including credit cards
- Solar powered multi-space meters
- Parking guidance systems to direct parkers to the nearest available space in a parking facility or the nearest available parking facility on campus
- Intelligent Transportation System (ITS) providing advanced travel information via the internet, television, radio, cell phone, etc.
- Evaluate new parking equipment and technologies to streamline operations
- Integrated parking management system for enforcement, permits, and parking access and revenue control
- Replacing parking attendants (cashiers) with automated equipment (pay-on-foot, pay-by-space, pay and display, pay-in-lane, pay by phone, etc.)

Sustainable Parking Management and Design Strategies

- Collaborative planning among all stakeholders on transportation-related issues and infrastructure (e.g., city, county, regional, state, hospital, university, neighborhood, etc.)
- Green certification of garages by the Green Parking Council
- Energy-efficient lighting in parking facilities (LED, fluorescent, induction)
- Minimizing light spillover from a parking facility into the surrounding environment
- Lighting controls to dim or turn off lights in parking garage when there is sufficient natural light
- Painting the interior of parking structures white for improved reflectivity
- Use of low VOC (Volatile Organic Compounds) paints, stains and sealers
- Lower parking fees for carpools, vanpools, low-emission vehicles, and electric vehicles
- Charging stations for electric vehicles
- Capturing and reusing storm water runoff
- Adding solar panels and/or wind turbines to parking structures to offset energy costs/produce excess energy
- Green roofs on the upper level of above-ground parking structures
- Parking canopies to reduce the heat island effect, provide shade and to protect vehicles on the top level of parking garages
- Solar panels as parking space canopies
- Solar powered light fixtures
- Water efficient landscaping in parking lots and around parking structures
- Lead by example by purchasing energy efficient fleet vehicles
- Traffic calming measures to reduce speeds (speed bumps or speed humps)
- Integrating bus or shuttle transfer stations into parking garages
- Shaded/sheltered seating at public transportation stops

Miscellaneous Parking

- Enhanced “Passive” security features in parking structures (high light levels, glass-backed elevators, glass-enclosed or open stairs, clear lines of sight, eliminating hiding places, etc.)
- Parking enforcement personnel also acting as parking ambassadors
- Customer services programs including vehicle lock out, dead battery and vehicle location assistance, at a minimum
- Periodic assessment of parking supply/demand for effective parking system planning

Transit

- High transit service frequency, convenience, comfort and security

Alternative Modes of Transportation

- Preferred spaces for carpools, vanpools, low-emission vehicles, and electric vehicles
- Covered bicycle parking areas
- Bicycle lockers and showers

- Secure parking areas (SPA's) for bicycles in parking garages and transit centers
- Bicycle sharing/rental program
- Car-sharing service
- Addressing pedestrian safety concerns (police patrols, escorts, lighting, etc.)
- Ride sharing programs, matching services and parking discounts or rebates for participants
- Guaranteed ride home program in cases of emergency for those that utilize alternative transportation modes
- Provide convenient and accurate information on travel options using maps, signs, websites and direct marketing programs

STRENGTHS AND WEAKNESSES OF CURRENT PARKING OPERATIONS & POLICIES

Strengths

- Multi-modal parking garage with a very successful park-and-ride
- Strong and consistent security presence
- Garage has built-in passive security features, including:
 - Glass-backed elevators
 - Painted ceiling and beams for higher light levels
 - Long-span construction, openness and good sight lines
- Emergency phones and 24/7 CCTV monitoring
- The provision of short-term parking for neighborhood business customers
- Capable and professional parking management company
- Significant revenue potential by charging for monthly, daily and hourly parking
- High event parking fee
- Citation fines that escalate if not paid on time
- On-site bus, rail and paratransit transfer stations
- Shaded/sheltered bus waiting areas
- Covered bicycle parking areas with lockers, racks and cage
- Covered top level elevator and stair towers
- On-site Pierce Transit customer service office (Bus Shop)
- Restrooms
- Parking garage appears to be well maintained and structurally sound

Weaknesses

- Minimal parking revenue generated presently from events and citations only
- Open collection system for events and possible lost revenue
- Outdated garage lighting with very poor color rendering
- No priority parking spaces for vanpools, carpools and fuel efficient vehicles
- Cleaning and general housekeeping can be improved

PARKING SUPPLY & OCCUPANCY

On-Street Parking Supply

Figure 3 on Page 9 indicates the on-street parking by type within the general vicinity of the TDS Garage. The unrestricted parking is indicated in red, the time-restricted parking is indicated in green, and a mix of unrestricted and time-restricted parking is indicated in yellow. Of the estimated 380 on-street spaces, 267 are unrestricted (70%), 67 are time-restricted (18%), and 46 are a mix of unrestricted and time-restricted spaces (12%).

On-Street Parking Occupancy

Figure 4 on Page 10 indicates the occupied on-street spaces midday on a recent weekday. Of the 267 unrestricted spaces, 206 were occupied, which represents an occupancy level of 77%. Of the 67 time-restricted spaces, 40 were occupied, which represents an occupancy level of 60%. Of the 46 mixed spaces, 26 were occupied, which represents an occupancy level of 57%. Based on weekday observations, the nearby unrestricted on-street parking is presently largely occupied by transit users.

Off-Street Parking Supply and Occupancy

Figure 5 on Page 11 identifies the off-street pay parking (daily and permit) in the general vicinity of the TDS Garage. Of the estimated 511 spaces, only 224 were occupied, which represents an occupancy level of 44%. Most of the vacant off-street parking was in the two largest lots, the WSDOT lot under the interstate highway north of Puyallup Avenue (23 of 146 spaces occupied) and the lot next to the TDS Garage at Puyallup Avenue and East G Street (16 of 110 spaces occupied). With the exclusion of the two large lots, the off-street parking was 73% occupied. Despite its low occupancy, the WSDOT lot under the interstate highway is reported by Diamond Parking Services to be fully leased.

The remainder of the off-street parking in the vicinity of the Tacoma Dome Station is private and not available for public use.



- Unrestricted ———
- Time Restricted ———
- Combination ———

Figure 3.
On-Street Parking Supply



- Unrestricted █
- Time Restricted █
- Combination █

Figure 4.
On-Street Parking Occupancy

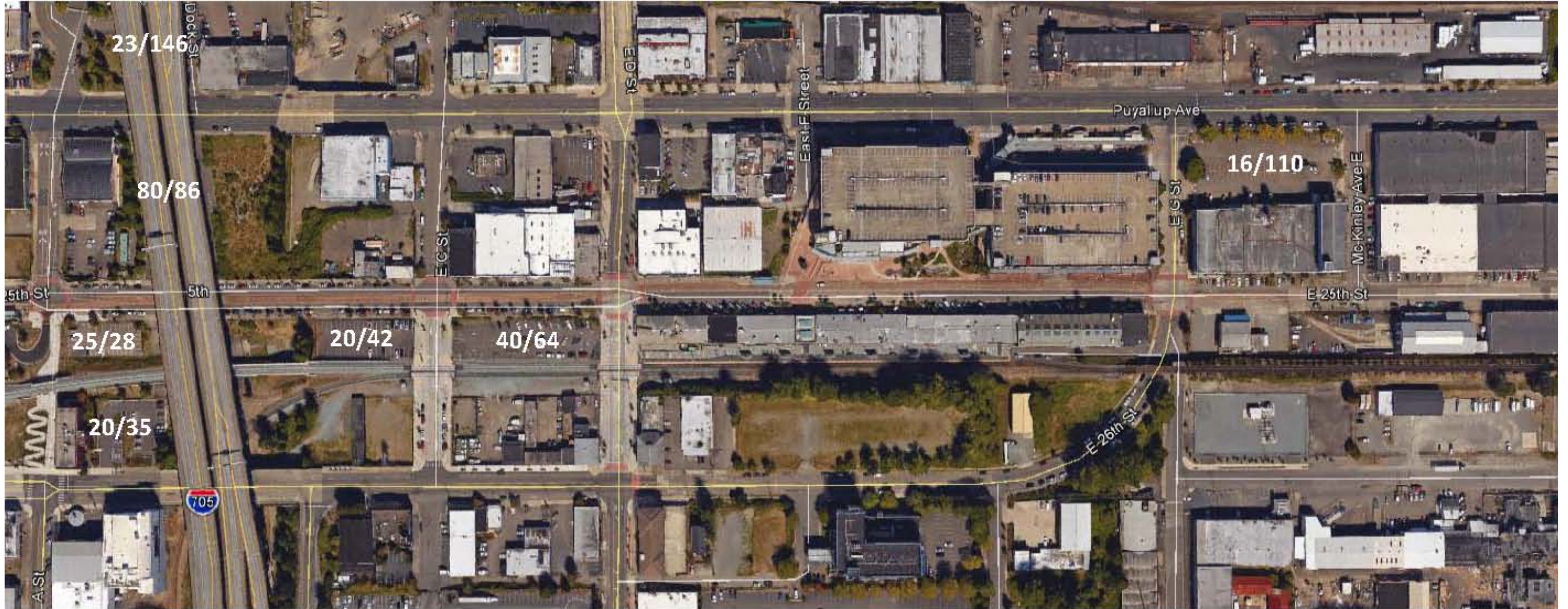


Figure 5.
Off-Street Parking Supply & Occupancy

FEASIBILITY OF PAY PARKING & RECOMMENDED PARKING RATES

DESMAN recommends implementing fee based parking at current market rates at the TDS Garage to raise revenue to cover garage operating and maintenance expenses, make improvements to the garage, and to discourage the use of the garage by non-transit commuters. Although there will likely be an initial reduction in demand when pay parking is implemented at the TDS Garage, it is believed there will not be a precipitous reduction because of the importance and convenience of the garage to those who ride public transit. Additionally, the absence of free off-street public parking and the limited amount of unrestricted on-street parking available in the immediate vicinity of the garage will further reduce the likelihood of current parkers leaving the TDS Garage.

Studies have indicated a 10% to 30% reduction in parking demand with the introduction of parking fees, and some current parking patrons will try to find alternative free locations for parking. With that said, commuter trips are considered to be “high value” or “low elasticity” trips and are not usually affected much by the introduction of parking fees. A 2010 study conducted for Sound Transit estimated only about a 2% to 3% reduction in parking utilization with a daily parking fee of \$2.00.

The garage would be expected to start filling again to capacity within a few years if rates are reasonable and given the likely latent demand for commuter parking in the area. Additionally, the Amtrak Station will be relocating to Freighthouse Square in 2017. The current Amtrak Station has 71 parking spaces that are not being replaced at the new location. This could potentially lead to Amtrak customers taking up additional capacity at the TDS Garage.

The recommended daily rate of \$2.00 for the TDS Garage supports a \$40 monthly permit fee based on 20 to 23 weekdays per month. The recommended rate for the 40 short-term spaces is \$0.50 per hour for a maximum of three hours. These spaces should be particularly high in demand when some of the on-street spaces on E. 25th Street are likely to be eliminated in front of Freighthouse Square. It will be possible to oversell monthly permits if the demand exists. Monthly permits for lower turnover parking can be oversold by 10% to 20%.

PARKING TECHNOLOGY OPTIONS

There is a trend in the parking industry to replace people (parking attendants, cashiers, enforcement officers, etc.) with automated equipment. Many garage owners today are evaluating new equipment and technologies to improve and streamline parking operations. The following equipment and technology options deserve consideration for the TDS Garage.

Multi-Space Meters

Multi-space meters are similar to standard parking meters but provide single-point control for a larger number of spaces. They can be configured to be Pay-by-Space, Pay-and-Display, or Pay-by-License Plate Number and work best with flat rates. These units also provide the capability to pay by cell phone. With pay-by-space and pay-by-license plate, patrons note the parking space or their license plate number,

proceed to the multi-space meter, insert the appropriate fee and key the parking space or license plate number into the machine. With pay-and-display, patrons proceed to the meter, insert the appropriate fee and are issued a parking ticket to display on their dashboard. Pay-by-space and pay-by-license plate are more convenient for users and easier to enforce.

The advantages of multi-space meters include:

- Multiple payment options including coins, bills, credit cards and smart cards.
- A high level of security for owners/operators.
- More affordable equipment compared to gated options.
- Reduced maintenance and collection costs compared to single-space meters.
- Audit control and real-time reporting and alarming.

The principal disadvantages of multiple-space meters include:

- Confusion among users who are unfamiliar with this form of revenue control.
- Signage is required to provide patrons with the information needed to locate and use multi-space meters.
- Parking spaces must be numbered with pay-by-space.
- Users may forget their license plate number in the process of paying for parking.
- Pay-and display requires users to walk from the meter back to their vehicles to display a receipt.
- Gated systems tend to generate more revenue.
- Wireless communication and credit card processing fees to be incurred.
- Wireless communication service interruptions could delay credit card processing.



A multi-space meter (hardware and software) is estimated to cost \$11,000 to \$15,000 per meter installed, depending upon type of meter and features. Preferred manufacturers include T2 Systems (formally Digital Payment Technologies), Cale and Parkeon.

Pay- by-Phone

Paying by cell phone represents a convenient service for some customers paying for parking at meters and should not be considered as an alternative to parking meters. Instead of paying the fee directly to a multi-space meter, the customer calls a phone number using their cell phone and enters the space, meter or license plate number, the parking fee is billed to an associated credit card, and the meter report indicates the parking fee has been paid. This represents a convenient way for customers to pay for parking that eliminates some of the disadvantages of multi-space meter technology, such as returning to meters to pay for more time, meter malfunctions, and displaying receipts.

Pierce Transit would contract with a pay-by-phone service provider and it would be made clear to customers at the meters that it is possible to pay for parking by cell phone by downloading an app or calling a toll free number. Customers can pre-register and have an account with a pay-by-phone company or simply call the company and pay for parking with a credit card number. The customer could contact the pay-by-phone provider when initiating parking and again when leaving and the appropriate amount would be charged to their credit card. Alternatively, a customer could contact the pay-by-phone provider and pay for a predetermined amount of time at the meter when initiating parking. Customers would also be able to add on additional time remotely to extend their parking session. There is no cost to establish or maintain this service. Preferred providers include ParkMobile and PaybyPhone.

Pay-on-Foot (POF)

With this system hourly and daily customers would obtain a parking ticket from a ticket dispenser as they enter the garage. They would take the parking ticket with them and insert it into a centrally located cashiering station that calculates the parking fee before returning to their vehicle to leave the garage. These systems typically accept cash, credit cards, debit cards, and validations, and can return change when appropriate. The patron would then pay the parking fee based on the length of stay and the machine issues a ticket to exit the parking facility. The patron inserts the issued ticket into a lag-time exit verifier and the parking barrier gate opens if the fee has been paid. This method of operation has a service rate of approximately 360 vehicles per hour (vph) at the vehicle exit when patrons pay in advance of exiting. These systems are generally recommended for parking facilities with high levels of transient parking activity, high parking rates, and significant revenue production because the equipment is very expensive.



The primary advantages to this system include:

- A high service rate (360 vph when patrons pay in advance of exiting) compared to exit cashiering (145 vph) and pay-in-lane machines (60 to 80 vph).
- Less labor intensive than exit cashiering with attendants.
- No enforcement requirements.
- Short-term parkers could pay a variable rate based on the length of stay.
- Gated facilities generally produce more revenue than non-gated facilities (no revenue leakage).
- High level of revenue control and efficient auditing system.

Disadvantages of this system include:

- The purchase of very expensive cashiering machines and other equipment.
- Relatively new technology that is not well understood by patrons.
- Not as customer-friendly as exit cashiering with an attendant.

- Does not guarantee the presence of people to manually operate equipment in the event of a malfunction.
- Extensive signage is required informing patrons to take their parking tickets with them and to pay for parking in advance of vehicle retrieval.
- Without a pay-in-lane option at the exit, escape lanes are required for those who do not pay in advance of vehicle retrieval. (An escape lane allows a vehicle at the exit to turnaround and park again in the facility to pay for parking.)
- Pay-in-lane has a very slow service rate (approximately 60 to 80 vehicles per hour), which can cause traffic backups if a large number of patrons are paying when they are exiting.

POF systems are widely used and accepted in Europe and are becoming more commonplace in the United States, particularly in larger cities and at airports. Many are turning to this technology to reduce labor costs and to speed up the exiting process. The key to the success of a POF system is to get the parking patron to take their ticket with them. This message can be conveyed with signage and audibly at the ticket dispenser. It is also important to locate pay stations in prominent locations that are preferably along pedestrian paths. A POF system should be coupled with Pay-in-Lane (PIL) and cost estimates for both are below in the PIL section.

Pay-in-Lane (PIL)

With a PIL system, a patron is issued a ticket from a ticket dispenser upon entry. When exiting, the ticket is fed by the patron into a machine at the exit lane that calculates the amount owed. The customer then pays with cash, credit card, debit card or validation. Once payment is received the exit gate opens and the patron is allowed to exit.

Advantages of this system include:

- Less labor intensive than exit cashiering with attendants.
- No enforcement requirements.
- Short-term patrons could pay a variable rate based on the length of stay.
- Gated facilities generally produce more revenue than non-gated facilities.
- High level of revenue control and efficient auditing system.

Disadvantages of this system include:

- A very slow service rate (60 to 80 vehicles per hour), which can cause traffic backups.
- Relatively new technology that is not well understood by many patrons.
- Not as customer-friendly as exit cashiering with attendants.
- Does not guarantee the presence of people to manually operate equipment.

The primary advantages of POF and PIL is the presence of parking barrier gates and no need for enforcement and no revenue leakage. The primary disadvantage is the cost of the equipment. POF stations are \$40,000 to \$75,000 and the in-lane equipment is approximately \$40,000 to 50,000 per lane

installed. Other disadvantages are confusion among users, extensive signage requirements and potential traffic backups at exit lanes if users pay upon exiting instead of at the POF stations.

Proximity Cards and Readers

The One Regional Card for All (ORCA) card is a proximity card and could be matched to proximity readers and used by permit parkers to open parking barrier gates to enter and exit the TDS Garage. However, it is understood there are logistical and accounting issues that may make this challenging. With proximity cards and readers it is necessary to roll down a window and hold (or swipe) the key card near the reader to activate a barrier gate. Proximity technology has a service rate of 600 vehicles per hour. It would be recommended to have card readers at both the entry and exit lanes so anti-pass back measures are in place. Anti-pass back prevents the fraudulent use of parking key cards. The holder of the key card is required to both enter and exit a parking facility before the card can be used again to enter the parking facility. So if a person uses a card to enter the parking facility they cannot give the card to another person to use to enter the facility if they have not exited the facility. The cost for the equipment (reader, barrier gate, intercom, counters, loop detectors, etc.), software and infrastructure is approximately \$12,000 per lane. Proximity cards cost approximately \$2.00 each. The cost for making the ORCA card compatible with the parking control equipment is unknown.

Automatic Vehicle Identification (AVI)

With AVI, electronic sensors and antennae detect a transponder located in the approaching vehicle (usually attached to the windshield) and the parking barrier gate automatically opens. Because AVI technology is hands free it has a service rate of 800 vehicles per hour. AVI is preferred to proximity technology if the parking control equipment is located where there is more than a 3% slope, if a concrete island on the driver's side for parking control equipment is impractical, and if there is limited space available to place parking control equipment. The primary disadvantages of AVI are the high cost of transponders and the inability to transfer transponders to another vehicle. These disadvantages have been largely eliminated with the development of sticker tags and hangtags with RFID chips that are battery free, lower cost, easily installed and can be transferred from one vehicle to another. Preferred vendors are Tag Master and TransCore. The cost for the equipment and software is approximately \$17,000 per lane. AVI sticker tags cost approximately \$12.00 each, although they are often discounted with the purchase of a large number of tags.

License Plate Recognition (LPR) Enforcement

Enforcement could be much more efficient and less time consuming with the use of License Plate Recognition (LPR) technology. With this type of system cameras are mounted to a vehicle that automatically reads license plates as the vehicle travels around at approximately 15 mph. The license plate is then compared to an onboard



database of license plates to determine if it is in violation. The system is particularly effective in detecting overtime parking. With this type of system, it would not be necessary for an enforcement officer to manually check permits and chalk tires in the short-term spaces. At 15 mph a LPR system has the theoretical ability to read up to 1,800 license plates an hour. However, actual read rates per hour will be less than the reported read rate and will vary depending upon the route traveled, the time of day, pedestrian/vehicle traffic volumes, weather conditions, etc. Also significantly impacting the read rate is the number of times the vehicle stops so the enforcement officer can issue a parking citation. Heavy snow is also known to limit the effectiveness of LPR, which is not a concern in Tacoma.

Although vehicles rarely travel that slowly, the speed limit in the TDS garage is 5 mph. The read rate at 5 mph would theoretically be 600 vehicles per hour. Also, vehicles do back into spaces and occasionally do not have a front license plate. Every vehicle in the State of Washington is required to have a front license plate unless it is impossible for a plate to be mounted to the front of a vehicle because of its body style (such as a Ferrari). A waiver must be obtained from the Washington State Patrol in order not to display a front license plate. A license plate number has to be manually input if the cameras cannot read it because it is damaged, very dirty or not displayed.

The cost of equipping one vehicle with the mobile system (hardware and software) is in the range of \$50,000 to \$65,000, exclusive of the enforcement vehicle. The return on investment with this type of system, because of its efficiency and ability to detect parking violations, is usually rapid.

AutoVu by Genetec

The best known and widely used LPR system is AutoVu by Genetec. The system is equipped with dual infrared cameras mounted to a vehicle that automatically reads license plates as the vehicle travels around at about 15 mph. The license plate is then compared to an onboard database of license plates to determine if it is in violation.



Other features include digital wheel imaging, vehicle images, time stamps and GPS coordinates, which reduces the number of parking ticket disputes. The system has the ability to automatically adjust to different parking time zone durations. With this type of system, it would not be necessary to manually check permits or chalk tires.

autoChalk Mobile by Tannery Creek Systems

Another system that Pierce Transit should consider is autoChalk Mobile by Tannery Creek Systems. Their system uses high-tech digital imaging to detect parking time violations while scanning at normal traffic speed (reported 30 mph). autoChalk reads vehicle license plate numbers, uses a GPS system and lasers for color images showing the license plate, wheel, whole vehicle profile and background content, which provides situational evidence for the enforcement officer. As the parking enforcement officer drives by a violating vehicle, autoChalk sounds an alarm. Before and after images are recorded of the vehicles profile and the license plate number and the enforcement officer makes the decision to ticket

or not based on the photographic evidence. The system has the ability to automatically adjust to different parking time zone durations. The autoChalk system utilizes four cameras (two on the front of the vehicle and two on the rear of the vehicle).

Parking Guidance System

Parking guidance systems directing motorists to available parking are becoming more common, particularly in large and confusing parking garages. The latest systems utilize overhead ultrasonic sensors or cameras with LPR technology to monitor spaces and determine the presence of vehicles. Lights over each space change colors based on status (typically green when available, red when occupied and orange when closed). Displays with directional arrows and occupancy information in real time are



strategically placed throughout the facility to help guide parkers to available spaces. These systems have their own infrastructure and are often installed in garages after they are built. This is the type of system that would need to be installed in the TDS Garage for accurate counts and effective guidance. Less expensive systems that count and display the number of spaces available by level would not provide accurate counts in the TDS Garage because of the parking ramps (versus non-parking ramps). A level counting system would not provide the proper level of accuracy because vehicles entering and exiting parking spaces would produce false reads and inaccurate counts over time. These less expensive parking guidance systems work best in parking structures with non-parking ramps and flat floors of parking because they better accommodate the loops and/or sensors used to accurately detect and count passing vehicles.

A parking guidance system would be ideal for the TDS Garage and have the added benefit of helping the environment by reducing travel distance, fuel consumption and automobile emissions. However, the system would come at a very high price, estimated at \$1.45 million. Preferred vendors are ParkAssist and ParkHelp.

Integrated Parking Management System

Today many municipalities, universities, airports and others have an integrated parking management system for parking access and revenue control, permits, enforcement and special event parking. The recommended company for an integrated parking management system is T2 Systems, Inc. They have developed T2 Flex™, which is an open-architecture and browser-based system that provides centralized management, reporting and operation of all subsystems from a single, unified system. T2 Flex has five modules, including:

- Parking Enforcement
- Permits
- Access Control
- Revenue Control

- Event Parking

T2 Systems has established partnerships with many third party application providers including Cale, Parkeon, Casio Business Solutions, Genetec, Tannery Creek, ParkMobile and PaybyPhone, among others.

REVIEW OF OTHER TRANSIT OPERATIONS

Sound Transit, Seattle, WA Metro Area

Sound Transit currently provides free parking at all of its park and ride locations in Seattle, King County, Pierce County and Snohomish County. However, they will be offering permit parking in the near future based on the success and acceptance of a pilot program in 2014. Parking rates are to be established in the future by the Sound Transit Board of Directors. Transit customers will be required to have an ORCA card to apply for a permit. Ten parking locations with very high demand are expected to be included in the permit program. Approximately 50% of the spaces at the ten locations will be reserved for permit holders until 10:00 AM on weekdays.

Proposed Permit Program Phasing

After a site has been selected and approved for implementation, the proposed parking management program will be implemented in phases:

1. 2+ HOV permit parking
2. SOV permit parking
3. Day-use permit/transit customer validation

At this time, a day-use permit product is not available; once an approach to providing day-use permits/transit customer validation is determined, parking management could be expanded to entire facilities. In the interim, some parking spaces at each facility will remain free and available on a first-come, first served basis. The first phase of the program (2+ HOV permit parking) will be implemented at select facilities in 2016. The second phase (SOV permit parking) will be implemented after a period sufficient to allow for customer acceptance and uptake of the HOV program. SOV permits will be priced such that a clear incentive exists to participate in the HOV program. The third phase (day-use permits) is currently under evaluation. Ideally, a single payment interface that could be used for transit and parking would be developed to improve ease of use and convenience for the customer.

Bay Area Rapid Transit (BART), San Francisco, CA Metro Area

BART riders pay \$1.50 to \$7.50 daily at six stations from 4:00 AM to 3:00 PM Monday-Friday. The average daily parking fee is \$3.16. Parking can be paid for with cash, credit card, debit card or Regional Clipper Card with an account balance to multi-space meters in a pay-by-space configuration. Monthly reserved parking is also offered on a limited basis at all of the BART parking facilities for \$63 to \$189. The average cost of a permit is \$96 and spaces are reserved until 10:00 AM Monday-Friday. BART also

offers single-day and multi-day permits for \$4.50 to \$9.50 via an on-line reservation system. Single-day permits are not valid for overnight parking.

Caltrain, Commuter Rail San Francisco to San Mateo and Santa Clara Counties

Caltrain rail customers pay a daily rate of \$5.00 to a multi-space meter in a pay-by-space configuration. Monthly parking permits are sold only in conjunction with a monthly rail pass at a cost of \$30 to \$55. Passes are displayed on the driver's side dashboard. All Caltrain parking is limited to 24 hours.

TriMet, Portland, OR Metro Area

TriMet provides maximum 24 hours of parking at its parking facilities for free. They have a limited number of short-term spaces in their facilities and charge \$0.50/hour. Transit riders using these spaces make payment to multi-space meters and display a receipt on their dashboard. Citation amounts vary by violation, but are in the range of \$39 to \$65 for most violations, including overtime parking and not displaying a valid receipt at a metered space.

Translink, Vancouver, BC Metro Area

Translink has 18 park-and-ride locations and charges a daily fee ranging from \$2.00 to \$3.00 (Canadian dollars) in ten of their 18 parking facilities. The average daily parking fee paid is \$2.75. Payment options include pay-by-license plate at multi-space meters or paying by phone through PaybyPhone. They do not permit overnight parking in their parking facilities.

Regional Transportation District (RTD), Denver, CO Metro Area

RTD charges a fee for parking at 40 of their 80 park-and-ride locations in the Denver metro area. If the transit rider lives in-district, they can park for free for the first 24 hours and for \$2.00 per day for each additional 24-hour period. If the transit rider resides outside of the RTD district, they are required to pay \$4.00 per day for each day they are parked. Payment is made to multi-space meters and transit riders input their license plate number. RTD also has an option to pay-by-phone with ParkMobile. RTD offers a limited number of permits for reserved parking for \$42 per month on a first-come, first-served basis. The spaces are reserved until 10:00 AM Monday-Friday. The lots with pay parking are enforced with License Plate Recognition (LPR) technology. It has been reported that the introduction of pay parking in 2008 has had no discernible impact on parking utilization or ridership. RTD has a progressive fine structure for parking violations as follows:

First violation:	Warning
Second violation:	\$20
Third violation	\$50
Fourth violation	\$100
Fifth violation	\$100 plus boot or tow

PARKING OPERATIONS, MANAGEMENT & TECHNOLOGY STRATEGIES

The selection of the appropriate Parking Access and Revenue Control System (PARCS) for the TDS Garage is essential to ensure efficient operations, provide ease of use for customers and to maximize the collection of parking revenues. The revenue control system selected for a parking facility is related to its size, type, location, function and potential revenue generated. As requested in the RFP for the parking study, DESMAN and DKS Associates have been tasked with recommending three (3) distinct strategies to manage and operate the TDS Garage. The strategies are summarized below and are listed in order from the least sophisticated to the most sophisticated:

Strategy #1

- No parking barrier gates
- Hangtags or dashboard displays for monthly permit parkers
- Multi-space meters for daily and hourly parkers (pay-by-space configuration)
- Manual enforcement
- Optional pay-by-phone

This strategy represents the lowest level of sophistication for the TDS Garage and will require on-going manual enforcement, which is labor intensive and typically not very effective. Permit parkers prefer hangtags or dashboard placards to bumper or windshield stickers and they can be easily transferred from one vehicle to another. Brightly colored hangtags are easier to see and enforce, and writing license plate number(s) on a hangtag largely prevents fraudulent use of permits. At a minimum, transit customers should be required to have an ORCA card to apply for a permit. Having a permit would not guarantee a parking space.

Multi-space meters would be placed on each level at the elevator lobbies and one additional meter on levels 1 and 2 in the East Garage and on Level 3 in the West Garage for hourly and daily parkers to pay for parking. There would be 16 multi-space meters in the garage, which would cost \$176,000 to \$240,000 for hardware and software. The spaces would be numbered and the meters configured to be pay-by-space, which is easier to enforce and would not require parking patrons to return to their vehicle to place a receipt on their dashboard, which could be very inconvenient given the length of the garages. The life span of the meters before replacement is at least ten years.

There are additional annual and on-going costs associated with the meters including management, phone, data and meter transaction fees; bank and credit card fees, and repair and maintenance. These additional costs are estimated to be \$1,500 per meter annually and a total cost of \$24,000 for 16 meters. The annual costs will vary somewhat depending upon the number of customers using the meters and the number of credit card transactions.

This strategy anticipates the hiring of a part-time manager or an increased parking management fee of \$30,000, primarily for auditing and reconciliation. Two full-time parking attendants would also be required for enforcement, meter collections, and repair and maintenance at an estimated cost of

\$40,000 each, including benefits. It is recommended with this strategy to provide enforcement officers hand-held devices that take photographs and print citations. The estimated total cost to implement Strategy #1 is summarized below:

Equipment Cost	\$240,000
Signage Cost	\$15,000
Meter Expenses	\$24,000
Additional Labor	<u>\$110,000</u>
Total Cost:	\$389,000

Pierce Transit should consider a progressive fine structure that charges infrequent offender's minimal fines and habitual offenders progressively more expensive fines with any parking management strategy that does not employ parking barrier gates. Vehicles with four or more citations should be booted or towed.

Strategy #2

- No parking barrier gates
- Paperless parking permits
- Multi-space meters for hourly and daily parkers (pay-by-license plate configuration)
- License Plate Recognition (LPR) enforcement
- Optional pay-by-phone

This strategy represents a higher level of sophistication for the TDS Garage, will not be as labor intensive as the first strategy, and enforcement will be much more effective. With this option there will be a data base of license plate numbers for permit parkers and it would not be necessary to issue hangtags or placards. Hourly and daily parkers would enter their license plate number when paying for parking at a meter and would also be included in a data base. The costs associated with the meters would be the same as in Strategy #1. Parking would be enforced with the use of vehicle mounted cameras that would automatically read license plate numbers and check them against the data base of valid permit, hourly and daily parkers. Parking enforcement revenue would increase and one full-time attendant could cover the entire garage several times a day. A vehicle would have to be purchased or be provided for the LPR cameras. A part-time manager or increased parking management fee is also anticipated with this strategy. As previously mentioned, the cost of the mobile system (hardware and software) is in the range of \$50,000 to \$65,000, exclusive of the enforcement vehicle. The estimated total cost to implement Strategy #2 is summarized below:

Equipment Cost	\$305,000
Signage Cost	\$15,000
Meter Expenses	\$29,000
Additional Labor	<u>\$70,000</u>
Total Cost:	\$419,000

Strategy #3

- Gated parking system
- ORCA cards, other proximity cards, or Automatic Vehicle Identification (AVI) for permit parkers
- Pay on Foot (POF) and Pay in Lane (PIL) for hourly and daily parkers
- No enforcement required

This strategy represents the highest level of sophistication for the TDS Garage and would also be the most expensive. This system would not require enforcement because garage access would be controlled with parking barrier gates. As previously mentioned, gated systems tend to produce more revenue than non-gated systems. ORCA cards could be used by permit parkers to enter and exit the garage, but AVI represents the latest technology and would provide the highest level of customer service. Daily and hourly patrons would pay for parking at POF stations or as they exit the garage. With a gated system, there would need to be a few time-restricted parking spaces located outside of the gates for Greyhound and Amtrak customer drop off and pick up. There would be a loss of a few spaces on Level 1 of the West Garage to accommodate an equipment island.

Concrete islands at the entry lanes would be equipped with a ticket dispenser with intercom or phone system, proximity or AVI reader, parking barrier gate, and a “FULL” sign. Concrete islands at the exit lanes would be equipped with an exit verifier with PIL capabilities and intercom or phone system, proximity or AVI reader, and a parking barrier gate. There would be a total of ten pay stations, five in the East Garage and five in the West Garage. The estimated cost of the system with six entry/exit lanes and ten pay stations is \$900,000. This system would require a part-time parking manager and it would be possible to monitor the equipment remotely. There are also additional annual expenses associated with the pay stations and other parking equipment, which are estimated at \$25,000. The cost to integrate the ORCA card with this type of system is unknown and could be significant. Preferred vendors include T2 Systems, Amano McGann, Skidata USA and WPS Parking Controls. The estimated total cost to implement Strategy #3 is summarized below:

Equipment Cost	\$900,000
Signage Cost	\$30,000
Pay Station Expenses	\$25,000
Additional Labor	<u>\$30,000</u>
Total Cost:	\$985,000

Parking Equipment Contact Information

On the following page is contact information for the recommended vendors for multi-space meters, pay-by-phone, POF, PIL, AVI, proximity cards and readers, LPR, parking guidance system and integrated parking management system.

Amano McGann (3)
www.amanomcgann.com
1-206-575-1980

ParkHelp (6)
www.parkhelp.com
1-760-330-7572

Tannery Creek (5)
tannerycreeksystems.com
1-905-738-1406

Cale (1)
www.caleamerica.com
1-813-405-3900

ParkMobile (2)
us.parkmobile.com
1-770-818-9036

TransCore (4)
www.transcore.com
1-800-923-4824

Genetec (5)
www.genetec.com
1-866-684-8006

PaybyPhone (2)
www.paybyphone.com
1-866-783-7787 x300

T2 Systems (1, 3 & 7)
www.2.t2systems.com
1-800-434-1502

ParkAssist (6)
www.parkassist.com
1-877-899-PARK (7275)

Skidata USA (3)
www.skidatause.com
425-644-6884

WPS Parking Controls (3)
www.wpsparkingsolutions.com
1-818-553-0335

Parkeon (1)
www.parkeon.com
1-800-732-6868

TagMaster (4)
www.tagmasterna.com

- (1) = Multi-space meters
- (2) = Pay-by-Phone
- (3) = POF/PIL & proximity cards and readers
- (4) = AVI
- (5) = LPR
- (6) = Parking guidance system
- (7) = Integrated parking management system

OTHER CONSIDERATIONS

Special Events

Handheld units (mobile cashier system) should be considered for events. The handheld units accept payment by credit card or debit card and print permits on site. The internet-based hardware and software system tracks occupancy and revenue in real time. Permits can also be purchased before an event on-line or by cell phone and printed or e-mailed barcodes scanned by the handheld units upon entry. These units will ensure convenient parking for event patrons and provide a high level of revenue control. The cost of a handheld unit is approximately \$3,000 and it would be necessary to purchase four of them for events. A preferred vendor is T2 Systems.



Garage Lighting

The lights in the garage are either Low Pressure Sodium (LPS) or High Pressure Sodium (HPS). LPS and HPS lights produce a yellowish-orange light with very poor color rendering. Because of the very poor color rendering, they are rarely used in parking garages today. The higher the Color Rendering Index (CRI), the better the color rendering properties. Following are the CRI of different lights sources:

Low Pressure Sodium = 0

High Pressure Sodium =	22
Old Fluorescent =	62
Metal Halide =	65-79
New Fluorescent =	70-90
Induction =	80+
Light-Emitting Diode =	90+
Daylight =	100

Lighting that enables users to see and to be seen is the most important security feature in a parking garage. Because of the very poor color rendering, replacing the LPS or HPS lamps in the parking structure should be a high priority. **Table 2** below presents the recommended minimum light levels for parking structures from the Illuminating Engineering Society of North America (IESNA), which is considered the authority for setting lighting standards in the United States.

Light levels at the garage entry should be minimum 50 footcandles (fc) during the day, which is measured at the parking surface. The 50 fc light level should be maintained for approximately the first 20 meters (66 feet) inside the garage. Daylight may be considered in the design calculation. The higher footcandles are needed because of the transition from bright daylight to a lower level of lighting in the garage and the need for eyes to adjust to different light levels. Higher light levels are also recommended during the day at the transition areas on the top level.

Table 2 - IESNA Parking Structure Lighting Standards

Areas	Minimum Horizontal Illuminance on Floor (fc)	Minimum Vertical Illuminance at 5 Feet (fc)	Maximum to Minimum Uniformity Ratio
General Parking & Pedestrian	1.0	0.5	10:1
Ramps & Corners			
Days	2.0	1.0	10:1
Nights	1.0	0.5	10:1
Entrance Areas			
Days	50	25	
Nights	1.0	0.5	10:1
Stairways & Lobbies	2.0	1.0	10:1
Top Level (open to the sky)			
Basic	0.2	0.1	20:1
Enhanced Security	0.5	0.25	15:1

DESMAN recommends higher light levels in parking garages than IESNA when a more user friendly and secure environment is desired by the owner. We generally recommended an average of 8 to 10

horizontal fc in general covered parking areas and an average of 16 to 20 horizontal fc in stairways and elevator lobbies.

The recommended replacement lights for the garage are light-emitting diodes (LED). LED is probably the most revolutionary lighting development since the invention of the light bulb. LED lighting is highly energy efficient, the technology has improved greatly in recent years and prices are dropping. Replacing the LPS/HPS lights with LED lighting will enhance security, reduce maintenance time and costs, reduce energy costs and reduce the garage's environmental footprint.

Operating Hours

Consideration should be given to not limiting parking to a maximum of 24 hours to better accommodate SeaTac and future Amtrak customers. Long-term parkers (24 to 72 hours) should be charged a higher overnight rate of \$8.00 to \$10.00, which is consistent with many off-airport parking facilities at SeaTac.

ESTIMATED PARKING REVENUE

Of the estimated 2,393 spaces in the garage 94 are reserved. There are also 20 to 30 vanpool vehicles in the garage each day. The following revenue analysis will consider the 40 short-term spaces separately and the reserved and vanpool spaces are not included in the revenue analysis. This results in approximately 2,275 remaining spaces for permit and daily parkers in the TDS Garage. It is estimated that approximately 70% will ultimately be permit parkers (1,592) and 30% daily parkers (683). It is assumed that the permit spaces will turn over 1.1 times a day and the daily spaces 1.2 times a day. At a rate of \$40 per month, the garage is projected to generate \$840,576 in permit revenue annually, as follows:

- $1,592 \text{ spaces} \times 1.1 \times \$40 \times 12 \text{ months} = \$840,576.$

At a rate of \$2.00 per day, the garage is projected to generate \$409,800 in daily revenue annually, as follows:

- $683 \text{ spaces} \times 1.2 \times \$2.00 \times 250 \text{ days} = \$409,800.$

Permit and daily revenue is estimated to be \$1,250,376. Added to this estimate should be the 40 short-term (hourly) spaces, which are estimated to generate \$15,000 annually, as follows:

- $40 \text{ spaces} \times 60\% \text{ average occupancy} \times 2.5 \text{ turns} \times \$1.00 \text{ average fee (2-hour stay)} \times 250 \text{ days} = \$15,000.$

Revenue from parking fees is estimated to total \$1,265,376 and the above revenue estimates anticipate parking is provided free of charge on weekday evenings and on weekends. Parking revenues will vary slightly for each of the strategies. Strategy #3 will have a higher revenue capture rate because of the parking barrier gates (98%). Strategy #2 is anticipated to have a slightly lower revenue capture rate with

no gates but effective enforcement (95%). Strategy #1 is anticipated to have the lowest revenue capture rate because of no gates and less effective enforcement (90%).

TEN-YEAR PROJECTION OF REVENUES & EXPENSES

Table 3 on the following page is a 10-year pro forma of TDS Garage parking revenues and expenses for the three strategies. Added to the estimated parking revenue are event and citation revenue for each strategy. Although the citation revenue estimates are the same for each strategy, citation revenue will likely increase with Strategy #'s 1 and 2 and may decrease with Strategy #3. It is anticipated that the TDS Garage will realize 90% of potential revenue during the first full year of operation and 95% in the second year. Full revenue potential is expected to be realized in the third year. Once full use and revenue potential is realized in the garage, permit parkers will have to arrive early (before 10:00 AM) to be guaranteed a parking space.

Expenses are assumed to increase 3% each year and parking revenue is increased in Years 5 and 10 based on the following rates:

Year 5

Hourly: \$0.60

Daily: \$2.25

Monthly: \$45

Year 10

Hourly: \$0.75

Daily: \$2.50

Monthly: \$50

Preliminary equipment cost estimates do not anticipate it is financed or leased over multiple years. Estimated equipment and signage costs plus operating and additional labor expenses in Year 1 are \$389,000 for Strategy #1, \$419,000 for Strategy #2, and \$985,000 for Strategy #3. Pierce Transit's portion of garage operating and maintenance (O&M) expenses are approximately \$875,000 in Year 1, which equates to \$366 per space per year for 2,393 spaces.

Estimated cumulative net revenues over ten years, after garage operating and maintenance expenses, are \$1.67 million for Strategy #1, \$2.68 million for Strategy #2, and \$2.98 million for Strategy #3. Cumulative net revenues for each of the three strategies should allow Pierce Transit to make future improvements to the TDS Garage to further enhance the overall user experience, such as LED lighting, a parking guidance system, and replacement parking equipment when required.

Table 3 - Projected Revenues and Expenses, Three Management Strategies

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>
Inflation Factor (3.0%)	1.0	1.03	1.06	1.09	1.12	1.15	1.18	1.21	1.24	1.27
Build-up Factor	0.90	0.95	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Strategy #1										
Estimated Parking Revenue	\$1,024,955	\$1,081,896	\$1,138,838	\$1,138,838	\$1,282,206	\$1,282,206	\$1,282,206	\$1,282,206	\$1,282,206	\$1,426,248
Event Revenue	\$ 89,700	\$ 92,391	\$ 95,082	\$ 97,773	\$ 100,464	\$ 103,155	\$ 105,846	\$ 108,537	\$ 111,228	\$ 113,919
Citation Revenue	\$ 8,100	\$ 8,343	\$ 8,844	\$ 9,640	\$ 10,796	\$ 12,416	\$ 14,651	\$ 17,727	\$ 21,982	\$ 27,917
Total Revenue:	\$1,122,755	\$1,182,630	\$1,242,764	\$1,246,251	\$1,393,466	\$1,397,776	\$1,402,702	\$1,408,470	\$1,415,415	\$1,568,084
Equipment Cost	\$ 240,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Signage Cost	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Meter Expenses	\$ 24,000	\$ 24,720	\$ 25,440	\$ 26,160	\$ 26,880	\$ 27,600	\$ 28,320	\$ 29,040	\$ 29,760	\$ 30,480
Additional Labor	\$ 110,000	\$ 113,300	\$ 116,600	\$ 119,900	\$ 123,200	\$ 126,500	\$ 129,800	\$ 133,100	\$ 136,400	\$ 139,700
Total Expenses:	\$ 389,000	\$ 138,020	\$ 142,040	\$ 146,060	\$ 150,080	\$ 154,100	\$ 158,120	\$ 162,140	\$ 166,160	\$ 170,180
Net Revenue:	\$ 733,755	\$1,044,610	\$1,100,724	\$1,100,191	\$1,243,386	\$1,243,676	\$1,244,582	\$1,246,330	\$1,249,255	\$1,397,904
Cumulative Net Revenue:		\$1,778,365	\$2,879,089	\$3,979,280	\$5,222,666	\$6,466,342	\$7,710,924	\$8,957,254	\$10,206,510	\$11,604,413
O&M Expenses (1)	\$ 875,000	\$ 901,250	\$ 927,500	\$ 953,750	\$ 980,000	\$1,006,250	\$1,032,500	\$1,058,750	\$1,085,000	\$1,111,250
Net Revenue After O&M:	\$ (141,245)	\$ 143,360	\$ 173,224	\$ 146,441	\$ 263,386	\$ 237,426	\$ 212,082	\$ 187,580	\$ 164,255	\$ 286,654
Cumulative Net Revenue:		\$ 2,115	\$ 175,339	\$ 321,780	\$ 585,166	\$ 822,592	\$1,034,674	\$ 1,222,254	\$ 1,386,510	\$ 1,673,163
Strategy #2										
Total Revenue (2):	\$1,179,696	\$1,242,736	\$1,306,033	\$1,309,520	\$1,464,700	\$1,469,010	\$1,473,936	\$1,479,703	\$1,486,649	\$1,647,320
Equipment Cost	\$ 305,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Signage Cost	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Meter/LPR Expenses	\$ 29,000	\$ 29,870	\$ 30,740	\$ 31,610	\$ 32,480	\$ 33,350	\$ 34,220	\$ 35,090	\$ 35,960	\$ 36,830
Additional Labor	\$ 70,000	\$ 72,100	\$ 74,200	\$ 76,300	\$ 78,400	\$ 80,500	\$ 82,600	\$ 84,700	\$ 86,800	\$ 88,900
Total Expenses:	\$ 419,000	\$ 101,970	\$ 104,940	\$ 107,910	\$ 110,880	\$ 113,850	\$ 116,820	\$ 119,790	\$ 122,760	\$ 125,730
Net Revenue:	\$ 760,696	\$1,140,766	\$1,201,093	\$1,201,610	\$1,353,820	\$1,355,160	\$1,357,116	\$1,359,913	\$1,363,889	\$1,521,590
Cumulative Net Revenue:		\$1,901,462	\$3,102,555	\$4,304,165	\$5,657,984	\$7,013,144	\$8,370,260	\$9,730,174	\$11,094,063	\$12,615,652
O&M Expenses (1)	\$ 875,000	\$ 901,250	\$ 927,500	\$ 953,750	\$ 980,000	\$1,006,250	\$1,032,500	\$1,058,750	\$1,085,000	\$1,111,250
Net Revenue After O&M:	\$ (114,304)	\$ 239,516	\$ 273,593	\$ 247,860	\$ 373,820	\$ 348,910	\$ 324,616	\$ 301,163	\$ 278,889	\$ 410,340
Cumulative Net Revenue:		\$ 125,212	\$ 398,805	\$ 646,665	\$1,020,484	\$1,369,394	\$1,694,010	\$ 1,995,174	\$ 2,274,063	\$ 2,684,402
Strategy #3										
Total Revenue (2):	\$1,213,862	\$1,278,799	\$1,343,994	\$1,347,481	\$1,507,440	\$1,511,750	\$1,516,676	\$1,522,444	\$1,529,389	\$1,694,861
Equipment Cost	\$ 900,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Signage Cost	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Pay Station/Equip. Expenses	\$ 25,000	\$ 25,750	\$ 26,500	\$ 27,250	\$ 28,000	\$ 28,750	\$ 29,500	\$ 30,250	\$ 31,000	\$ 31,750
Additional Labor	\$ 30,000	\$ 30,900	\$ 31,800	\$ 32,700	\$ 33,600	\$ 34,500	\$ 35,400	\$ 36,300	\$ 37,200	\$ 38,100
Total Expenses:	\$ 985,000	\$ 56,650	\$ 58,300	\$ 59,950	\$ 61,600	\$ 63,250	\$ 64,900	\$ 66,550	\$ 68,200	\$ 69,850
Net Revenue:	\$ 228,862	\$1,222,149	\$1,285,694	\$1,287,531	\$1,445,840	\$1,448,500	\$1,451,776	\$1,455,894	\$1,461,189	\$1,625,011
Cumulative Net Revenue:		\$1,451,011	\$2,736,705	\$4,024,236	\$5,470,076	\$6,918,576	\$8,370,352	\$9,826,245	\$11,287,435	\$12,912,446
O&M Expenses (1)	\$ 875,000	\$ 901,250	\$ 927,500	\$ 953,750	\$ 980,000	\$1,006,250	\$1,032,500	\$1,058,750	\$1,085,000	\$1,111,250
Net Revenue After O&M:	\$ (646,138)	\$ 320,899	\$ 358,194	\$ 333,781	\$ 465,840	\$ 442,250	\$ 419,276	\$ 397,144	\$ 376,189	\$ 513,761
Cumulative Net Revenue:		\$ (325,239)	\$ 32,955	\$ 366,736	\$ 832,576	\$1,274,826	\$1,694,102	\$ 2,091,245	\$ 2,467,435	\$ 2,981,196

(1) Year 1 operating and maintenance (O&M) expenses are from Pierce Transit Program Revenue and Expense Report (Dec. 2014).

(2) Total revenue for Strategies 2 and 3 includes event and citation revenue.

RANKING OF STRATEGIES

The strategies are listed below in order of preference:

1. Strategy #2 - (Non-gated, multi-space meters, paperless parking permits, LPR enforcement)
2. Strategy #3 - (Gated, POF and PIL, no enforcement)
3. Strategy #1 - (Non-gated, multi-space meters, manual enforcement)

Strategy #2 is relatively inexpensive to implement, is easier to install as it does not require in-lane parking access and revenue control equipment, provides the second highest estimated cumulative net revenue of the three strategies, is consistent with how other transit agencies are collecting parking fees, and LPR enforcement will be efficient and more effective than manual enforcement.

Because the multi-space meters are much less expensive than the POF stations, it will be possible to locate more of them in the garage, which will speed up the payment process and be more convenient for transit users. The system should include the ability to pay for parking by cell phone, which will provide a higher level of customer service. There are also no potential traffic backups at the exit lanes with this strategy.

Strategy #3 ranks second because it is the most expensive to implement and has the highest level of sophistication. Additionally, the closure of the East G Street entry/exit could make the use of a gated system problematic. However, this option does not require enforcement and there would be minimal revenue leakage with this strategy with parking barrier gates. This strategy has the highest cumulative net revenue estimate of the three strategies. The higher initial cost is made up for over time because of reduced labor costs.

Strategy #1 ranks third because of the labor required for enforcement, manual enforcement will not be as efficient and effective as LPR enforcement, and there is the most potential for revenue leakage. This strategy has the lowest cumulative net revenue estimate of the three strategies.

Because most of the TDS Garage users are Sound Transit customers, Sound Transit and Pierce Transit would like to work towards a regional approach to parking management. It is understood that Sound Transit, which is further along than Pierce Transit in the process of implementing fee based parking, is favoring a parking management strategy very similar to the strategy recommended for Pierce Transit in this study. The two transit agencies will benefit from working together and having coordinated parking programs and messages in place.

SUGGESTED NEXT STEPS

Pierce Transit should request demonstrations of the technologies outlined in the study prior to the selection of the preferred strategy and equipment. Effective communication with the community and garage users is a key next step in the process and can be accomplished the following ways:

- Open houses
- Meetings with key stakeholders
- Social media
- Website posting (with demonstration on how to pay for parking)
- Press releases
- Post notices at primary pedestrian exits in the garage

The next steps would be setting the rate structure for pay parking and selecting the strategy and equipment to manage and operate the parking garage.

The next steps in the process would be to write specifications for the selected equipment and operating systems, develop plans showing the locations for and layout of the equipment (if necessary), and to receive bids for the equipment and operating system from qualified vendors. Local service and support for the repair and maintenance of the equipment is a very important consideration when selecting a vendor or vendors. It will be important to also ask for references from the vendors and to check them prior to selecting a vendor or vendors.

The next step is to select a vendor or vendors to provide the equipment based on evaluation of the bids. The final steps would be the installation and testing of the equipment and operating systems, and vendor training on the operation of the equipment.