

Shilshole Bay Marina

***Parking
Strategies
Master List***

Port of Seattle

Final Report
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DIXON
RESOURCES UNLIMITED

Port 
of Seattle®

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Introduction

Project Overview

The Dixon Resources Unlimited (DIXON) consulting team developed this Parking Strategies Master List (Report) on behalf of the Port of Seattle (Port) for the Shilshole Bay Marina.

The strategies were developed based on the findings of the Shilshole Bay Marina Parking Study (Study). Following a kickoff meeting on July 28, 2021, the Study included a review of existing parking policies and procedures. Next, parking occupancy and length of stay data were collected in the summer and fall seasons that year. Data collection findings, along with a summary of parking profiles, were published in a separate Parking Profiles Report on January 27, 2022. The Parking Profiles Report includes an analysis of the data to distill key points about parking demand and unwanted parking activity.

The Port hosted two virtual public stakeholder meetings to solicit feedback to understand parking user priorities. Results from the summer data collection were shared during an initial meeting on October 19, 2021, and draft strategies were summarized during the second meeting on June 22, 2022. Stakeholders commonly reported challenges related to parking space widths, safety and crime, loading zone access, permit policies, and enforcement consistency.

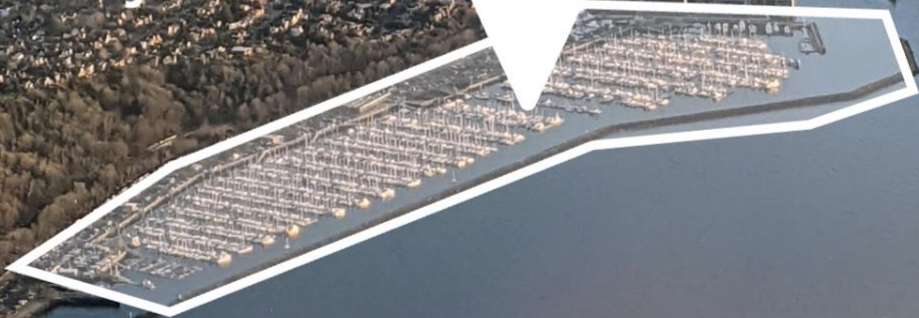
Shilshole Bay Marina

Shilshole Bay Marina is located within the Ballard neighborhood along the shores of the Puget Sound in Seattle, Washington. The marina offers 1,400 boat slips serving guests and monthly moorage customers, office and retail spaces, and a public plaza. The marina is also home to some permanent residents, known as liveaboards, and amenities provided include PO boxes, restrooms with showers, and a laundry facility. The Port is also evaluating future uses of the site, which could eventually include additional development projects and a passenger-only ferry operation.

Parking at the marina has become an important topic due to dynamic usage that varies with time-of-day and time-of-year activity patterns. Currently, approximately 1,205 parking permit holders have access to 580 designated parking spaces. Golden

Gardens, a popular beachfront park with a public boat launch ramp (Eddie Vine Boat Ramp), is adjacent to the north of the marina.

Shilshole Bay Marina



Parking Users

According to the Port's parking policy, parking at Shilshole Bay Marina is intended for the following users:

- Moorage customers and guests;
- Building tenants, customers, and guests;
- Marina visitors;
- Port of Seattle vehicles used for operations; and
- Emergency vehicle access.

Parking Inventory

The Shilshole Bay Marina has three surface parking lots containing 1,187 total parking spaces. The North and South Lots are the primary parking lots for the marina, and they are separated by the marina office and retail buildings. A separate, smaller parking lot at the north end of the marina offers parking for the Little Coney restaurant.

The parking lots are accessible through nine total driveways along Seaview Ave NW. The public on-street parking along Seaview Ave is managed by the City of Seattle; therefore, it was not included in the Study.

The North and South Lots primarily contain permit and visitor parking spaces, designated by posted signage and painted markings. Permit spaces are intended for monthly moorage customers (including liveaboards), and visitor spaces are intended for day-use guests and visitors of the marina, and not for patrons visiting Golden Gardens or other off-site destinations. Permit spaces are generally closer to the boat slips, and the visitor spaces are mostly adjacent to Seaview Ave NW. There are also a number of loading zone, ADA, motorcycle, electric vehicle (EV) charging, and other miscellaneous spaces throughout the North and South Lots. The smaller parking lot near Little Coney is solely intended for restaurant customers.

Parking Policy Evaluation

The Study included a review of existing parking policies in effect during years 2021-2022. The Port maintains a Shilshole Bay Marina Parking Policy document on the Port website, which may be updated periodically and as a result of this Study. Policies were evaluated based on feedback from staff, public stakeholders, and parking management best practices. Key findings are summarized below:

Table 1. Evaluation of Existing (2021-2022) Parking Policies

Parking Policy (2021-2022)	Evaluation
Violators are subject to towing.	Parking management strategies are only effective with compliance, which can be encouraged with consistent monitoring and enforcement. Legally, the only parking enforcement mechanism available to the Port is towing, since Port staff do not have the authority to issue parking citations. Due to the cost and impact of towing, the Port aims to utilize an administrative process with warning notices or infractions to encourage compliance. Business rules associated with parking permits may also encourage compliance.
Vehicles must be moved at least once every 15 days.	The 15-day period is challenging for Port staff to monitor, and therefore is likely abused. Staff and public stakeholders reported that there are a number of vehicles stored at the marina for extended periods, and some vehicles are used to store personal belongings. Most agencies, including the City of Seattle, have a 72-hour rule instead of a 15-day rule. There could be an opportunity to instead manage long-term parking needs with permits.
Marina customers and guests must request and receive approval for extended parking at the marina office for a period not to exceed three months.	Extended parking may be granted to customers that go on vacation longer than the 15-day period. After informing the marina office, the vehicle is added to their vacation parking log. In some cases, drivers do not notify the marina office in advance or follow the procedures. This process could be optimized with an improved management structure through a parking permit program.
Permits must be displayed on the front windshield on the driver's side.	Verifying compliance with permit parking policies is inefficient for Port staff since each vehicle must be visually inspected for a permit. When monitoring for compliance, Port staff also check for expired registrations and issue paper courtesy notices to violators. This process takes approximately two to three hours to complete.
Oversize vehicles, trailers, campers, and recreational vehicles are prohibited.	These policies align with the intended use of the Shilshole Bay Marina parking lots and should be maintained. Liveaboards with a box truck that is used daily, with management approval, may be granted an exception.

Parking Utilization Patterns

The Study included parking occupancy data collection between August 5-14 and October 2-8 in 2021 to capture a sampling of information during the summer and fall seasons. Additionally, turnover data was collected on a Thursday (August 5 and October 7) and a Saturday (August 14 and October 2) during each data collection period.

The Port should evaluate options to collect additional ongoing data to better understand how parking trends vary throughout the year, especially during special events when parking demand may be exceptionally high and user groups may have varying parking needs. More information about ongoing data collection options is included within the Parking Strategies Master List (see Strategies 3 and 11) later in this Report.

Based on the findings from this Study, it was identified that:

- parking demand tends to increase during periods of dry, warmer weather;
- there are clusters of high-demand areas within the lots. Permit occupancy was highest near the marina and visitor zone occupancy was highest closer to Seaview Ave NW in the North lot, which may indicate spillover parking from nearby attractions like Golden Gardens;
- there was available parking within the parking lots, even during peak periods, but it may not always be conveniently located depending on users' needs;
- parking demand was usually highest on Saturdays;
- cars usually remained parked longer within visitor spaces on Saturday compared to Thursday;
- Approximately 19 percent of all vehicles observed were seen in both August and October; and
- the average length of stay was approximately 5 to 6 hours, but this is because most vehicles were either observed for less than 3 hours or more than 9 hours.

More details about the data collection methodologies and a comprehensive description of findings are included within the separate Parking Profiles Report.

About the Master List

The master list of strategies in this Report aims to streamline operations for Port staff, address stakeholder priorities and concerns, and improve the overall parking experience for all user groups.

The Port should evaluate the feasibility of each potential strategy to determine if and when to move forward. The feasibility and timing of strategies depend on various

factors, including staff capacity, budget, legal limitations, stakeholder priorities, and the overall objectives of the Port.

Importantly, the approach is intended to be adaptable over time so that the Port can accommodate diverse parking needs now and in the future. Steps must be taken incrementally with ongoing evaluation to shape future actions. Certain strategies may not be needed based on the impact of the initial steps, and it is also likely that the parking management challenges will evolve. Ongoing parking data collection will enable the Port to make data-driven decisions to optimize the approach based on measured trends.

Parking Strategies Master List

Potential parking strategies for Shilshole Bay Marina are described below for consideration. Strategies are organized into categories, but they are listed in no particular order. Further evaluation is required to determine feasibility and timing.

Strategies to Improve Compliance

The effectiveness of parking policies and the ability to measure their true impact relies upon compliance. Compliance is the goal of enforcement, and consistent parking enforcement coverage is important for maintaining compliance with parking policies.

Port staff collected a mid-day sampling of compliance data on Saturday, September 25, 2021, and found that 10 percent of vehicles observed in the permit zones did not have a valid parking permit. The Study also identified 23 vehicles within visitor zones that appeared to be stored without movement between August and October, violating the Shilshole Bay Marina Parking Policy that requires vehicles to be moved at least once every 15 days.

1. Add Compliance Requirements to Permit Business Rules.

At Shilshole Bay Marina, parking users include both known users (moorage customers with permits including liveaboards) and unknown users. Permit holders are subject to permit business rules, which allows the Port to encourage compliance through an administrative process. Potential options for this strategy are outlined below for consideration:

- The Port could consider a policy that prevents moorage customers from renewing their parking permits if they receive a defined number of parking infractions.

- Another option is establishing an infraction fine amount that must be paid in full before allowing a customer to renew their parking permit.
- In egregious cases, the Port could disallow customers from renewing their moorage slip for a certain time period.

2. Establish Clear Escalation Process with Infractions.

For the unknown user group (visitors), the only parking enforcement mechanism available to the Port is towing since Port staff does not have the legal authority to issue parking citations at this time.

Currently, whenever a violation is identified, Port staff issue a handwritten courtesy notice. The information is later manually entered into a SharePoint database to monitor for repeat offenders, but identifying repeat violators in the field can be challenging from the list of vehicles. In egregious cases, repeat violations can escalate to towing the vehicle. However, the current escalation process may be unclear to violators and inconsistently applied due to limited staff resources. If the escalation process is clearer, this may increase the compliance rate. Potential options for this strategy are outlined below for consideration:

- A clear and consistent escalation process could include either one or two warning notices in advance of towing. The warning notice could contain the history of the vehicle's past warning notices and indicate to the vehicle owner what to expect.
- Exceptions to the escalation process would be granted in the case of clearly abandoned vehicles, safety hazards, and accessibility impacts.
- Towing policies should be clearly posted on signage for driver awareness (see Strategy 8).
- The current manual approach to monitoring for repeat violations could be streamlined with the use of parking enforcement technology (see Strategy 3).

3. Enhance Parking Enforcement Coverage.

Parking enforcement staffing and coverage are also important considerations since the visibility of enforcement personnel can encourage compliance. Currently, there is no staff member dedicated specifically to parking enforcement; instead, this is one of a variety of duties managed by onsite staff. Each round of enforcement currently takes between two and three hours. This includes visually inspecting vehicles for valid

permits and vehicle registration tabs. Additional staffing may be useful in providing more consistent coverage. Potential options for this strategy are outlined below for consideration:

- The Port could pursue a staff-managed approach by hiring additional Port staff to support parking enforcement duties, especially during the days and times when parking demand is highest.
- Alternatively, the Port could consider outsourcing parking enforcement by contracting with an experienced parking operator. The agreement should stipulate that customer service and compliance are priorities and require the operator to provide the Port with parking utilization data that they have collected.
- Regardless, the Port should evaluate whether there are any options to grant Port staff and/or contracted staff the ability to issue parking citations on behalf of the City of Seattle (City)¹. Further legal analysis and coordination with the City would be required.
- Parking permits could be managed by license plate, meaning that license plate numbers would become how permit details are verified. This would enable enforcement with a license plate recognition (LPR) system. LPR cameras could be mounted on the Port staff and/or contracted parking operator vehicle(s) to make parking compliance monitoring more efficient.
 - Currently, marina customer profiles and parking permit details are managed within the Port's Marina Management System (MMS) software. The Port is not requiring the license plate of the applicant's vehicle through the permit application process. License plates are only matched to permits in certain enforcement situations. For efficient enforcement, the LPR system would need to interface with the Port's MMS to receive a current list of license plates associated with valid parking permits. This would allow the LPR system to verify whether each license plate observed in the field has a permit. LPR would make monitoring the permit parking areas more efficient. Instead of visually verifying that each vehicle has a physical permit displayed, that the

¹ The ability to issue parking citations would be beneficial because this provides another enforcement mechanism rather than solely relying upon towing. Parking citations are less costly and more convenient for customers. Citation fine amounts can also encourage compliance. Additionally, if multiple parking citations remain unpaid, drivers can be prevented from renewing their vehicle registration. The Port could also contract with a specialized parking citation management vendor for assistance with citation adjudication, customer support, mailing of delinquent payment notices, and revenue collections.

permit details are associated with the correct vehicle, and that the date is valid, the LPR system can automate the process by using the license plate number as the permit number and verifying permit status using a database with real-time information.

- Further evaluation would be required to confirm if the interface between LPR and the MMS is possible. Alternatively, the Port could evaluate separate permit management systems designed for parking permits (see Strategy 17).
- LPR systems can improve the efficiency of compliance monitoring by automating most manual functions of parking enforcement. For example, length of stay monitoring can be automated in order to detect if a vehicle has not been moved after 15 days. This is determined based on the GPS location of the vehicle. Instead of manually recording each license plate number and location onto a list, the LPR system can automate the process by logging the same information and notifying parking enforcement personnel when a potential violation is detected by the camera. The LPR system can also send information to a citation issuance device to efficiently issue infractions and warning notices.
- In addition to the efficiency benefits, LPR also has other (optional) law enforcement features. For instance, if a stolen or wanted vehicle is identified, the LPR system can be configured to notify the appropriate law enforcement personnel.
- Camera-based optical sensors could be mounted at high vantage points to monitor parking duration. There are solutions built specifically for parking lots that can detect how long a vehicle is parked for and can differentiate between space types (such as permit, visitor, loading zone, and EV charging spaces) to monitor trends. The Port could seek out a solution that can automatically send an alert to designated staff when a vehicle is observed beyond a time limit or the 15-day rule. This could make parking compliance monitoring more efficient by directing staff to potential violations and providing images to demonstrate non-compliance.

4. Utilize Vehicle Immobilization Devices.

As described earlier, towing is currently the only allowable enforcement mechanism. However, many agencies choose to utilize vehicle immobilization devices as a customer-friendly alternative to towing. This can decrease contentious confrontations in the field between enforcement personnel and violators. Potential options for this strategy are outlined below for consideration:

- The Port should explore options to expand enforcement authority from towing to also include vehicle immobilization. If possible, a fine amount could be applied that must be paid by the violator in order to release the immobilization device. This requires further legal analysis to confirm viability. Prior to the payment process, the violator must acknowledge the financial responsibility to return the device to a designated location.
- The traditional vehicle immobilization method is the boot, and there are boots with a self-release code feature that improves customer convenience and mitigates field response demands.
- An increasingly common method is using a windshield immobilization device, which is quicker and safer to deploy. Industrial suction cups adhere the device to the windshield, thereby obstructing the driver's view. A self-release code must be entered after paying the fine, and then the customer can fold up the device and return it (or otherwise be charged the cost of the device). Same as the boot, a violator must acknowledge financial responsibility for the device and, if not returned, they will be charged for the device.
- Each of these solutions provides a management system that can automatically send a notification if an immobilization time limit is defined in the system identifying when a vehicle should be towed.
- Towing would also still be utilized in cases where removal of the vehicle is necessary for accessibility and safety impacts, or if the vehicle appears to be abandoned.

5. Install an Access Control System.

Since parking citations are not an option, installing gate arms infrastructure to control access could be a solution for enhancing compliance because it would allow the Port to manage access and monitor utilization. However, while this concept is ideal, the installation and ongoing operational support that would be required are costly and cumbersome. This strategy requires further evaluation to determine feasibility, and if pursued, would likely not occur in the near-term. Potential options for this strategy are outlined below for consideration:

- If used for permit parking areas, the gate arms could restrict access to valid permit holders only. Depending on the vendor system, this could be achieved through a variety of methods including proximity cards, Bluetooth beacons, or license plate recognition cameras.

- Access control infrastructure could be installed for the entirety² of the Shilshole Bay Marina, while making sure to allow for public access, or it could be used only for permit parking areas.
- Gate arms could be supplemented with license plate recognition (LPR) technology that would help to notify staff if a vehicle has remained within the lot beyond the allowable 15-day period.
- The use of LPR with gate arms could also provide ongoing data that would supplement the operation and parking occupancy and utilization information.
- Substantial initial investment would be required to build up the perimeter of the parking lot area to mitigate vehicles driving over the curb to navigate around the gates. Extensive hardscape construction would be required to prevent vehicles from hopping over a standard-height curb. It is also important to consider the potential traffic congestion impacts around ingress/egress sites.
- Gate arms would need to be constantly tended, meaning that if there are any issues, like a lost customer ticket or an equipment malfunction, customer support will be needed to vend the gate open, or gate arms will likely be broken. Broken gate arms are a chronic challenge for access-controlled facilities, which typically require 24/7 response and support. Otherwise, gate arms will likely be consistently broken.
- The Port could designate on-call staff or retain a vendor that can support a customer call center to assist with remote access control. Otherwise, customers will become trapped in the parking lot. This does not necessarily eliminate broken gates arms; however, readily available customer support can minimize equipment damage.
- Damaged gates will need to be investigated to try to identify the culprit and recover the cost of damaged goods. Insurance claims are possibly below the Port's deductible.
- A gateless solution solely reliant upon LPR technology is an option, but this would require additional infrastructure in the ingress/egress lanes to slow

² With this approach, license plate recognition cameras would be required to differentiate between permit holders and visitors. Visitors would still be able to enter through the gate, but if a visitor stays beyond the allowable time, they could be required to pay a fine before the gate arm will allow them to exit the lot. Additionally, it should be noted that the east-most row of parking is City right-of-way and managed by the Port under a Street Use Permit granted by the City.

down the vehicle and narrow the vehicle's trajectory to ensure that the LPR can capture the license plate details.

Strategies to Improve the Parking Experience

Oftentimes, parking may be the first and last experience that someone has when visiting Shilshole Bay Marina. The Port aims to make this a positive parking experience. Parking should be easy, convenient, and accessible for all users. Strategies that may improve the parking experience are described below.

6. Create Additional Loading Zones.

During each public meeting during this Study, stakeholders shared concerns that there is not always enough loading zone space availability. Additional loading zones could be useful for Shilshole Bay Marina users that often rely upon convenient spaces for loading and unloading equipment for water activities. Potential options for this strategy are outlined below for consideration:

- There could be an opportunity to reconfigure some parking spaces near M4 to create additional loading zone spaces in that area. Port staff determined that the new M4 building and 2019 repaving projects resulted in the conversion of loading zone spaces into a fire lane just north of M4.
- The Port could monitor loading zone utilization over time to determine if and where additional loading zone spaces may be useful to support demand. This could be accomplished through manual sampling data collection and/or through the use of camera-based technology (see Strategies 3 and 11).
- Loading zone operating times could be adjusted to accommodate peak demand periods. For instance, a parking space could be restricted to active loading only during the morning, and then become a permit or visitor parking space later in the day. Signage would need to be updated to reflect the specific operating times and uses. When a single parking space has different policies at different times, this can help accommodate fluctuations in parking demand for different uses.
- The policy and signage for loading zones could be updated to require “active” loading and unloading only (see Strategy 8). This may help improve turnover and utilization of loading zone spaces by encouraging users to avoid remaining parked within a loading zone space unless actively engaging in loading or unloading. If the Port were to identify a way to grant staff the authority to issue parking citations (see Strategy 3), this would make the enforcement of this policy more effective.

7. Explore Options to Widen Spaces.

During the public meetings, stakeholders were concerned about the size of parking spaces at Shilshole Bay Marina, and the general sentiment was that parking spaces are too narrow to park comfortably. This prompted further investigation into current parking space widths and the distribution of large parking spaces. For context, the City of Seattle Land Use Code stipulates minimum parking space widths. Parking space sizing in the Land Use Code is defined for small, medium, and large spaces as follows:

Table 2. Seattle Land Use Code Parking Space Dimension Definitions

Category	Parking Space Dimensions
Large vehicle	Minimum size of a large vehicle parking space shall be 8.5 feet in width and 19 feet in length.
Medium vehicle	Minimum size of a medium vehicle parking space shall be 8 feet in width and 16 feet in length.
Small vehicle	Minimum size of a small vehicle parking space shall be 7.5 feet in width and 15 feet in length.

Currently, at Shilshole Bay Marina, 19 percent of spaces are large, 76 percent are medium, and 5 percent are small, based on the City's definitions. It was also found that the widest parking spaces are clustered in a few areas.

 **The Port is in the process of developing a map and signage that shows where the widest parking spaces are located at Shilshole Bay Marina.**

The Port should also explore options to widen spaces to address this common stakeholder concern. Potential options for this strategy are outlined below for consideration:

- During future construction projects, the Port should evaluate opportunities to restripe parking whenever possible to increase the parking space widths.
- The Port could proactively work with the City to determine if exceptions to the Land Use Code may be granted based on data collection results and the unique needs of the Port. Based on the Land Use Code language, there could be some flexibility in space sizing since these are minimum dimensions. However, the Land Use Code also states that the "minimum required size for small parking spaces shall also be the maximum size." The use of maximum size requirements may limit the Port's ability to increase the size of parking spaces beyond the minimum.

8. Improve Parking Signage.

Increasing awareness of parking options will both mitigate congestion from drivers searching for parking and improve the utilization of parking assets. This will improve the overall parking experience, especially for visitors unfamiliar with Shilshole Bay Marina, by making parking easier to find and policies easier to understand.



The Port is already in the process of a signage refresh project (2023 Port Signage Project) to clearly communicate policies and improve wayfinding.

The 2023 Port Signage Project is an opportunity to reimagine how signage communicates parking policies at Shilshole Bay Marina. Other potential options for this strategy are outlined below for consideration:

- Use simplified signage to clearly notify drivers of the towing policies upon entrance into the parking lot.
- Signage could communicate that loading zones are for “active” loading and unloading only.
- The Port should consider establishing an easily recognizable parking brand with a “P” symbol that can be applied at Shilshole Bay Marina (and other Port parking locations). A single, unified parking brand will make it easier for drivers to understand where they are allowed to park, especially for those who are first-time or infrequent visitors.
- Digital signage could be used to broadcast parking availability information to drivers as they are approaching Shilshole Bay Marina. An integrated system can automatically provide updates based on real-time parking availability data. This means that once Shilshole Bay Marina reaches or nears capacity, the digital signage can be configured to display that the location is “full” so that drivers do not enter in search of parking.
- Real-time parking availability data could be collected using optical sensors. Based on the layout and configuration of the Shilshole Bay Marina parking lots, a camera-based system with optical sensors is recommended³. Cameras

³ There are also loop sensor options that can be mounted above ground, similar to a speed-bump, or underground. These are typically found in parking garages but can also be leveraged for vehicle counting at surface lot ingress and egress points as long as the driving lanes are clearly delineated. Based on the number of driveways at Shilshole Bay Marina, this approach is not recommended. Loop sensors also cannot distinguish between vehicles, so they only collect occupancy data and not turnover data. Additionally, other systems utilize a sensor for each individual parking space, but this

should be mounted at high vantage points, and vendor systems can capture both availability and turnover data. This information is extremely valuable for ongoing utilization data and assisting with trip planning, and directing drivers to available parking.

- The real-time parking availability data could be made available on the Port website for trip planning purposes. This would provide drivers with the ability to plan where they will park before leaving their homes, enabling them to make more informed decisions about how to get to their destinations and evaluate alternative modes of transportation.

9. Pursue Safety Enhancements.

Stakeholders shared concerns about crime and safety at Shilshole Bay Marina during the public meetings. While there could be aspects of the parking management solution that enhance safety or mitigate crime, this is a complex topic that likely requires a multifaceted approach to be effective and cannot be solved by parking solutions alone. Potential options for this strategy, as they relate to parking management, are outlined below for consideration:



The Port has already begun temporarily closing driveways, except those closest to the Marina Office, to improve visibility of ingress and egress activity. The situation will be monitored to arrive at an optimal schedule for closures.

- Camera-based optical sensors that may be considered for ongoing parking data collection (see Strategy 11) could also be an opportunity to improve parking lot surveillance. This may increase the cost of the deployment due to the additional data processing and storage requirements.
- The vehicle immobilization devices described earlier (within Strategy 4) could be a way to improve safety for Port staff since they are more customer friendly and quick to deploy.
- If LPR is used for enforcement and/or data collection (see Strategy 3), the system could also be configured to monitor stolen and wanted vehicles. Alerts could be sent to designated law enforcement personnel.

approach is both expensive and superfluous unless a parking facility is significantly larger and has a complex layout, such as the airport parking garages.

10. Evaluate Electric Vehicle Charging Policies.

The Port has four electric vehicle (EV) charging spaces in the North Lot and three spaces in the South Lot designated specifically for EV charging only. These are intended for vehicles that are *actively* charging, and vehicles must be moved to regular space once fully charged. Payment of the EV charging fee is required during all times plugged into the charging station, including overnight hours, to discourage use of the EV charging stations unless actively charging. The charging fee is also intended to address the costs associated with installing and maintaining the infrastructure, in addition to the cost of electricity. The fee is set for cost recovery purposes, so Port does not intend to consider adjustments to the fee structure.

During the public meetings, stakeholders reported that the EV charging stations are frequently underutilized, and some speculated that this could be due to the rate structure. In general, agencies require payment for use of EV charging stations both for cost recovery purposes and to encourage turnover. Otherwise, vehicles may be left parked in the EV charging station spaces for excessive periods of time, preventing other drivers from accessing this amenity. If the EV charging stations are truly only rarely utilized, this could indicate that there is not yet significant demand for EV charging at this location, but this could change as EV adoption rates increase. The Port may want to consider the following potential opportunities:

- Further data collection could be conducted for the EV charging spaces to determine utilization trends and evaluate whether these assets are utilized as intended.
- The Port should monitor property and parking management best practices related to EV charging. EV charging technology and partnership opportunities are rapidly evolving, and EV car adoption is increasing.
- An increase in EV adoption may increase demand of the EV charging stations at the marina over time. If demand increases in the future, and the EV spaces are frequently at capacity, demand-based pricing could be an opportunity to optimize utilization of the charging station assets. With this approach, the price could be adjusted depending on the level of demand. High demand in the parking industry is usually considered an occupancy rate in excess of 85 percent. This means that at times of the day, night, week, or year when six of the seven EV charging stations are utilized at once, the rate could be increased to encourage additional turnover. A higher rate encourages drivers to only utilize the space when they actually need it, creating turnover and more availability. During times of the day, night, week, or year when utilization is low, meaning that the majority of EV charging stations are not used, the rate could be decreased to encourage more utilization of those assets during those times. At no point should the rate fall below what is required for cost recovery.

Strategies for Effective Parking Demand Management

11. Collect Ongoing Parking Data.

Ongoing parking data collection is useful as strategies are considered, implemented, and evaluated. The results would allow the Port to understand parking utilization patterns and appropriately tailor policies. Potential options for this strategy are outlined below for consideration:

- In order to monitor parking demand, it is recommended that parking occupancy be analyzed on an ongoing basis. Due to the seasonal fluctuations in parking demand and special event impacts, occupancy should be understood during various timeframes to understand how parking demand varies.
- The same license plate recognition (LPR) cameras recommended for parking enforcement purposes (see Strategy 3) will also automatically collect ongoing data that may be transformed into parking occupancy results.
- Fixed-location camera-based optical sensors mentioned earlier (see Strategies 3 and 8) could be mounted at a high vantage point to collect ongoing parking data for the various space types. This would allow the Port to collect ongoing data about how frequently visitor, permit, loading zones, and EV charging station spaces are utilized.
- The Port could make data-driven parking policy decisions based on parking occupancy rates. The parking industry standard for the target parking occupancy rate is 85 percent⁴. At this rate, there are enough vacant parking spaces to: 1) minimize congestion from drivers searching for spaces; and 2) reduce oversupply, which is an inefficient and costly use of valuable land.

12. Proactively Discourage Spillover Parking.

The Study found indications of potential spillover parking impacts from nearby attractions such as Golden Gardens and the City's boat ramp. More details are included in the Parking Profiles Report. Potential options for this strategy are outlined below for consideration:

⁴ Peak periods resulting from special events or holidays are typically managed by exception. It is okay for parking occupancy to periodically exceed 85 percent, and it is unrealistic to achieve the 85 percent target at all times. Instead, the 85 percent target is meant to be a helpful measure to evaluate when parking policies may need to be adjusted, especially in areas where the threshold is frequently surpassed.



The Port has already started positioning staff at Shilshole Bay Marina entrances during peak demand periods to remind drivers that the parking is for customers only.

- The Port could coordinate with the City to seek prior notification of parking lot closures and impacts in areas surrounding Shilshole Bay Marina in order to anticipate potential spillover parking demand and introduce mitigating measures as needed. For example, if the parking lot at Golden Gardens is going to be temporarily closed, the Port may want to consider increasing onsite staffing to assist with parking challenges at Shilshole Bay Marina.
- Another way to coordinate with the City could be to seek ways to encourage users of the City's boat ramp to park in designated locations rather than within visitor parking intended for Shilshole Bay Marina users. This could be through customer education and signage tactics.

13. Update Parking Permit Policies.

A valid parking permit is required to park within the permit zones. The Port currently offers up to two parking permits per slip to moorage customers including liveaboards. The first permit is free of charge, and the second permit costs \$25 per month. Vehicles without a permit may be parked within the visitor spaces free of charge. Transferring of the permit sticker between vehicles without notice to the Port is allowed.

Since the visitor parking spaces are free, it is common for moorage customers to park their additional vehicle(s) within the visitor spaces rather than paying for another permit. This behavior is technically compliant, but it means that the Port cannot easily monitor true visitor parking demand. It is unknown how many vehicles in the visitor spaces actually belong to moorage customers on average. There is currently no way to differentiate between vehicles parked in the visitor spaces, so the Port also does not know whether a visitor is a moorage customer's guest, a customer to a business onsite, or present for other purposes.

Potential options for updating permit policies are outlined below for consideration:

- A permit could be required to park overnight in the visitor spaces. Since some moorage customers use the visitor spaces for their additional vehicles, this could encourage those parking for longer than one day at a time to obtain a permit. This would improve the ability to monitor parking lot utilization by user groups.

- To fully understand parking patterns and profiles, the Port could require that all vehicles (including those in the visitor spaces) have a parking permit or daily parking pass at all times. This approach is more rigid and less convenient for users but may be a worthwhile tradeoff to collect valuable data. For instance, if the parking lot frequently reaches capacity and parking becomes extremely congested, actually understanding the different user groups and their associated parking demand may be advantageous for appropriately adjusting parking policies in the future. This could become increasingly relevant if the Port proceeds with a new ferry terminal or future opportunity.
 - A daily parking pass could be required to park in visitor parking spaces. The requirement to initiate and/or purchase a daily parking pass to use a visitor parking space would likely encourage moorage customers to register their second vehicle for a parking permit.
 - To acquire a parking pass, there could be a pay station onsite, combined with a mobile payment option, for customers to obtain a pass and initiate their parking session.
 - If these payments are associated with a license plate number, this would enable efficient enforcement with LPR (see Strategy 3). Otherwise, a physical receipt from the pay station would be required to verify compliance visually.
 - The daily pass could have a fee, or it could even be free, but drivers would need to initiate their session to be considered compliant. The Port could consider charging visitors for parking while offering a free option to guests of moorage customers.
 - Moorage customers could be required to obtain a permit for their additional vehicle(s).
 - The Port would need to evaluate whether the two-permit maximum is sufficient or if additional permits should be offered.
 - The number of allowable permits per customer could be adjusted over time based on parking demand and availability each year.
- The current two permit maximum for moorage customers could be converted to a one permit per driver policy. This could be a more equitable approach to parking management since it does not apply an arbitrary or one-size-fits-all limit. Certain customers may require additional parking permits if they have more than two drivers that need to access Shilshole Bay Marina at once. Meanwhile, there could be a customer that owns multiple cars for just one

driver. Since a driver can only physically drive a single vehicle at once, there is no need for that driver to store multiple vehicles at Shilshole Bay Marina. The one permit per driver policy could help alleviate excess car storage or instances when cars are being used to store personal belongings. Limiting permits to one per eligible driver simultaneously reduces excess parking demand and provides an equitable solution for customers who rely upon their vehicle.

- Each driver could be required to provide their driver's license number when applying for their permit, so the Port can ensure that each driver receives only one permit.
- The Port could introduce a Vacation Permit for long-term parking beyond the time limit. There is currently a 15-day rule, but this could be decreased to 72-hours, per industry standards (see Strategy 14). Currently, customers are supposed to get prior approval from Port staff and leave their keys with staff in case the car must be moved while on vacation. However, this does not always occur and has resulted in some challenges. Introducing a new Vacation Permit is an opportunity to improve the process and adjust the policies.
 - Vacation Permits could be valid in designated locations chosen by staff, and non-compliance could result in ineligibility for future permits and/or towing.

14. Convert the 15-day Rule to a 72-hour Rule.

Currently, the Port requires that vehicles be moved at least once every 15 days. This policy is intended to discourage long-term vehicle storage. Due to limited staff availability and resources, this rule is particularly challenging and labor intensive to monitor for compliance. Additionally, the 15-day period is much longer than similar policies in nearby and similar agencies. Potential options for this strategy are outlined below:

- The Port should consider reducing the 15-day period to 72 hours to be consistent with the City's policy. A 72-hour rule is commonplace in parking programs across the country, and it will be easier to monitor and manage.
 - Before making this adjustment, the Port should have the Vacation Permit option available (see Strategy 13).
- If LPR cameras are utilized for parking enforcement (see Strategy 3), the LPR system can be configured to automatically alert staff if a vehicle is observed

in the same location (based on GPS data) after 15 days or 72 hours. This would streamline the current manual monitoring process.

- Similarly, if camera-based optical sensors are used for ongoing monitoring (see Strategy 3), then that system could be configured to automatically alert staff if a vehicle is observed in the same location (based on observations within a geofenced area) after 15 days or 72 hours. This would streamline the current manual monitoring process.

15. Combine Permit and Visitor Zones.

Currently, permit and visitor parking zones are separately demarcated, meaning that visitors without a permit are not allowed to park in permit spaces. With the current divided approach, it is possible that the visitor parking areas could reach capacity; when that happens, visitors do not have the option to park in permit zones, even if space is available. Any excess parking capacity may remain underutilized, and visitors would be turned away without other options. This approach is intended to safeguard parking availability for moorage customers in permit zones. However, the Port could consider exploring a different parking management structure that improves flexibility and overall utilization of the parking assets.

Potential options for this strategy are outlined below, but it is important to acknowledge that these management strategies will only be effective with consistent enforcement using optical sensors and/or LPR:

- Permit and visitor zone demarcations could be replaced with a permit-exempt policy that applies throughout the Shilshole Bay Marina. This would allow drivers to park anywhere within the lot, rather than requiring them to find parking in either the permit or visitor zones. Additionally, this would simplify the signage and wayfinding required.
 - For instance, everyone (except permit holders) could be subject to a four-hour time limit. This is similar to a typical municipal residential permit parking program that offers a time limit to anyone but allows permit holders to park beyond the limit.
 - Another example is that everyone could be required to obtain a daily parking pass (as described earlier in Strategy 13), except for moorage customers who already have permits.
 - With this approach, visitor parking demand should be managed and mitigated by increasing or decreasing the price of the daily parking pass and/or adjusting the length of the time limit.

- For example, during the peak summer season, visitors could be subject to a two-hour limit, but during off-peak times it could be a four-hour limit.

16. Enhance Bike Parking Options.

Offering secure bike parking can be a way to encourage more biking, which may offset automobile parking demand. Shilshole Bay Marina is just a 10-minute bike ride away from the heart of the Ballard neighborhood and nearby the Burke-Gilman Trail. There are existing bike storage lockers at Shilshole Bay Marina, but they have a long waiting list. Additional potential options for this strategy are outlined below:

The Port is working on a project that will add more secure bike parking at each of the new restroom facilities.

- The Port could monitor the utilization of the bike storage areas to determine if and when additional capacity is required to meet demand.
 - In general, locating bike storage facilities in highly visible, convenient locations should be a top priority.

Strategies to Streamline Port Operations

17. Use Automated Parking Management Systems.

The current approach to parking permit management is fairly labor intensive and manual. Port staff must manually input data and duplicate information across a Marina Management System (MMS), billing system, and SharePoint database. Additionally, parking infractions and warnings are issued on handwritten notices. Potential options for this strategy are outlined below:

- The Port could procure an automated parking permit management system (PMS) designed specifically for parking permits. This would streamline processes for staff and allow for customer convenience.
 - The PMS should ideally be integrated with the Port's MMS to mitigate data entry redundancy.
 - The PMS would offer an online portal so customers can self-manage their account details. Customers would create an account, apply for a permit, provide their vehicle information, including the license plate number, and upload any required supporting documentation (e.g., proof of vehicle registration, proof of insurance, etc.) Customers could

still have the option to have their account updated by Marina Office staff if they prefer.

- For guest parking permits, account holders could utilize the system to activate permits and manage the license plates of those vehicles.
- The system would retain the contact information for permit holders, which can be helpful for sending out notices (e.g., upcoming lot repaving project impacts or notice before towing a car).
- The Port could procure an automated parking citation management system (CMS) for issuing warning notices and infractions on a handheld smartphone application. Additionally, a Bluetooth printer could be used to quickly print the warning notices and infractions. The CMS would be integrated with the PMS so that when license plate numbers are entered into the smartphone application, it would indicate whether the vehicle is associated with a valid parking permit, whether it has received warning notices in the past, and any other notes, and it could capture photos of the infraction. Additionally, rather than hand-writing a comment, the system would have built-in standardized comments to select from, with the option of adding custom notes.
- PMS and LPR are independent measures, but they have a great deal of synergy when implemented together. If the Port proceeds with the use of LPR for parking enforcement (see Strategy 3), the LPR system should be integrated with the PMS and CMS for an efficient operation. The PMS integration would send a list of permit holders to the LPR system so that the cameras can detect whether a vehicle is associated with a valid permit. The CMS integration would allow details captured by the LPR to be directly transferred to the handheld smartphone application for quicker issuance of warning notices and infractions.

Master List - Summary

Below is a consolidated list of the potential strategies outlined in this Report, along with a high-level summary of options. Further evaluation by the Port is required to determine feasibility and timing.

Strategies	Summary of Options
Strategies to Improve Compliance	
1. Add Compliance Requirements to Permit Business Rules	<ul style="list-style-type: none"> - Restrict permit renewals to those in compliance. - Establish an infraction fine and require customers to pay before permit renewal. - In egregious cases, disallow customers from renewing their moorage slip for a certain time period.
2. Establish Clear Escalation Process with Infractions	<ul style="list-style-type: none"> - Use a consistent warning notice process in advance of towing, except for abandoned vehicles, safety hazards, and accessibility impacts. - Post towing policies at entrance points. - Use enforcement technology to automate compliance monitoring.
3. Enhance Parking Enforcement Coverage	<ul style="list-style-type: none"> - Increase Port staffing or contract staff for enforcement. - Evaluate the option to grant Port staff and/or contracted staff the ability to issue parking citations on behalf of the City - Camera-based optical sensors could be mounted at high vantage points to monitor parking duration. - LPR cameras could be mounted on enforcement staff vehicle(s) for efficient compliance monitoring. - Consider additional LPR law enforcement features.
4. Utilize Vehicle Immobilization Devices	<ul style="list-style-type: none"> - Explore the ability to use customer-friendly vehicle immobilization devices such as a self-release boot or windshield device. - Towing would also still be utilized in cases where removal of the vehicle is necessary for accessibility and safety impacts, or if the vehicle appears to be abandoned.
5. Install an Access Control System	<ul style="list-style-type: none"> - If used for permit parking areas, the gate arms could restrict access to valid permit holders only. - Access control infrastructure could be installed for the entirety of the Shilshole Bay Marina, while making sure to allow for public access. - Gate arms could be supplemented with LPR technology that would help to notify staff if a vehicle has remained within the lot beyond the allowable 15-day period.

- Substantial initial investment would be required to build up the perimeter of the parking lot area to mitigate vehicles driving over the curb to navigate around the gates. Extensive hardscape construction would be required to avoid vehicles from hopping over a standard-height curb. It is also important to consider the potential traffic congestion impacts around ingress/egress sites.
- Gate arms would need to be constantly tended, and damaged gates should be investigated.
- Could designate on-call staff or retain a vendor that can support a customer call center to assist with remote access control.
- A gateless solution solely reliant upon LPR technology is an option, but this would require additional infrastructure in the ingress/egress lanes.

Strategies to Improve the Parking Experience

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|------------------------------------|--|
| 6. Create Additional Loading Zones | <ul style="list-style-type: none"> - Reconfigure some parking spaces near M4 to create additional loading zone spaces. - Monitor loading zone utilization over time. - Loading zone operating times could be adjusted to accommodate peak demand periods. - The policy and signage for loading zones could be updated to require “active” loading and unloading only. |
| 7. Explore Options to Widen Spaces | <ul style="list-style-type: none"> - During future construction projects, evaluate opportunities to restripe parking to increase the parking space widths. - Proactively work with the City to determine if exceptions to the Land Use Code may be granted based on data collection results and the unique needs of the Port. |
| 8. Improve Parking Signage | <ul style="list-style-type: none"> - Clearly notify drivers of the towing policies upon entrance into the parking lot. - Designate loading zones for “active” loading and unloading only. - Establish an easily recognizable parking brand with a “P” symbol that can be applied at Shilshole Bay Marina (and other Port parking locations). - Digital signage could be used to broadcast parking availability information to drivers. - Real-time parking availability data could be collected using optical sensors. - Real-time parking availability data could be made available on the Port website for trip planning purposes. |

- 9. Pursue Safety Enhancements
 - Camera-based optical sensors could also improve parking lot surveillance.
 - Vehicle immobilization devices may improve safety for Port staff.
 - The LPR system could be configured to also monitor for stolen and wanted vehicles.
- 10. Evaluate Electric Vehicle Charging Policies
 - Collect additional data for EV charging spaces to evaluate asset utilization.
 - Monitor industry best practices related to EV charging.
 - Demand-based pricing could optimize the utilization of the Port's EV charging station assets. At no point should the rate fall below what is required for cost recovery.

Strategies for Effective Parking Demand Management

- 11. Collect Ongoing Parking Data
 - Analyzed parking trends on an ongoing basis.
 - If LPR is used, it can automatically collect ongoing data that may be transformed into parking occupancy results.
 - Camera-based optical sensors could collect ongoing parking data for the various space types.
 - The Port could make data-driven parking policy decisions based on parking occupancy rates. The parking industry standard for the target parking occupancy rate is 85 percent.
- 12. Proactively Discourage Spillover Parking
 - Coordinate with the City to seek prior notification of parking lot closures and impacts in surrounding areas.
 - Seek ways to encourage users of the City's boat ramp to park in designated locations owned by the City.
- 13. Update Parking Permit Policies
 - Require a permit to park overnight in the visitor spaces.
 - Require that all vehicles (including those in the visitor spaces) have a parking permit or daily parking pass at all times. This approach is more rigid and less convenient for users, but may be a worthwhile tradeoff to collect valuable data.
 - Require a daily parking pass to park in visitor parking spaces.
 - Require moorage customers to obtain a permit for their additional vehicle(s).
 - Convert from the two-permit maximum for moorage customers to a one permit per driver policy.
 - Introduce a Vacation Permit for long-term parking beyond the time limit.
- 14. Convert the 15-day Rule to a 72-Hour Rule
 - Reduce the 15-day period to 72-hours to be consistent with the City's policy. Before making this adjustment, the Port should have the Vacation Permit option available.

- 15. Combine Permit and Visitor Zones (requires LPR)
 - Use optical sensors and/or LPR to monitor compliance.
 - Permit and visitor zone demarcations could be replaced with a permit-exempt policy that applies throughout the lots.
 - With this approach, visitor parking demand should be managed and mitigated by increasing or decreasing the price of the daily parking pass and/or adjusting the length of the time limit.
- 16. Enhance Bike Parking Options
 - Monitor utilization of the bike storage areas to determine if and when additional capacity is required to meet demand.

Strategies to Streamline Port Operations

- 17. Use Automated Parking Management Systems
 - Procure an automated parking permit management system (PMS) designed specifically for parking permits.
 - Procure an automated parking citation management system (CMS) to use for issuing warning notices and infractions on a handheld smartphone application. Additionally, a Bluetooth printer could be used to quickly print the warning notices and infractions.
 - If the Port proceeds with the use of LPR, the system should be integrated with the PMS and CMS for an efficient operation.