San Francisco Bay Conservation and Development Commission

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May 1, 2020

TO: Seaport Planning Advisory Committee

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SUBJECT: **San Francisco Bay Area Seaport Plan: Revised Regional Cargo Forecast and Capacity Study, Discussion and Vote**
(For Committee consideration on May 11, 2020)

Staff Summary

The Seaport Planning Advisory Committee (SPAC) is meeting to continue its discussion on the *2019-2050 Bay Area Seaport Forecast* (Draft Cargo Forecast), and plans to vote on whether to recommend the Draft Cargo Forecast or a modified version of the draft to the Commission for use in the update of the *San Francisco Bay Area Seaport Plan* (Seaport Plan). This staff report includes information to support the discussion and vote, including background on the Seaport Plan update process and previous versions of the Draft Cargo Forecast; a note on implications of the COVID-19 pandemic related to forecasting; a summary of revisions to the Draft Cargo Forecast since the SPAC's December 5, 2019 meeting; the results of staff review of the Draft Cargo Forecast and the *Expected Demand for Howard Terminal as a Cargo Handling Facility* report (Mercator Report) presented at the December 5 meeting as requested by SPAC members; background on the Vision 2000 and Oakland Army Base (OAB) *San Francisco Bay Plan* (Bay Plan) amendments as requested by the SPAC; and a summary of past additions of land area to the Bay Conservation and Development Commission's (BCDC's) port priority use designations. The staff report then describes six policy implications for the SPAC's consideration as the planning process continues:

- Implications of a conservative vs. aggressive estimate;
- Need for ancillary uses in appropriate locations;
- Impacts to surrounding communities;
- Transfers of port priority use designations;
- Planning beyond 2050; and
- Land areas to be included in the Seaport Plan capacity forecast.

The policy implications are followed by four sets of discussion questions to guide the SPAC's deliberation and vote on the Draft Cargo Forecast:

1. In light of the information provided to date and the SPAC's own expertise, is the Draft Cargo Forecast approach and methodology acceptable to the SPAC for the purposes of long-range planning?
2. Is the Draft Cargo Forecast acceptable as-is? If not, what specific final revisions should be made to ensure that it is appropriate?
3. Which of the Draft Cargo Forecast's capacity estimates for each type of cargo should BCDC use in moving forward with the Seaport Plan update? If there are concerns with the Draft Cargo Forecast's estimates, how can we resolve them?
4. The Seaport Plan addresses land areas designated for port priority use. Does the SPAC believe that other potential sites should be considered in estimating available maritime terminal acreage, including areas within port priority use but not currently in use or planned for port operations, areas outside of port priority use areas but within BCDC's jurisdiction, or areas outside of port priority use areas and beyond BCDC's jurisdiction? If so, how would the SPAC and BCDC ensure future availability of areas currently not in port priority use for dry bulk and Ro-Ro terminals?

The staff report concludes with an overview of next steps for the planning process.

Staff Report

I. Introduction

The SPAC is meeting to continue its discussion on the Draft Cargo Forecast for use in updating the Seaport Plan. The Draft Cargo Forecast, which includes forecasts of cargo volumes and terminal capacity through 2050, has previously been presented to the SPAC at its two earlier meetings. At its last meeting, on December 5, 2019, the SPAC reviewed a revised version of the Draft Cargo Forecast and received a presentation on a terminal capacity study that was performed by Mercator International on behalf of the Oakland Athletics. The SPAC requested that BCDC staff assess the likelihood that the Draft Cargo Forecast and Mercator Report terminal capacity estimates would be achieved in the Bay Area, through discussions with terminal operators, peer review, and a review of past terminal projects at the Port of Oakland. The SPAC also requested information on whether areas have been added to BCDC's port priority use designation in the past.

At this meeting, the SPAC will receive the results of BCDC staff's research on the questions raised at the previous meeting and conclude its review of the Draft Cargo Forecast. Additionally, the SPAC plans to vote on whether to recommend the Draft Cargo Forecast or a modified version of the draft to the Commission for use in the Seaport Plan update.

II. Background

A. Seaport Planning Advisory Committee

The SPAC consists of representatives from BCDC, the Metropolitan Transportation Commission/Association of Bay Area Governments, the Marine Exchange of the San Francisco Bay Region, the five Bay Area ports, the California Department of Transportation, and Save the Bay. The SPAC considers amendments to the Seaport Plan and provides recommendations to BCDC and its staff based on technical expertise, background reports, and public comment.

B. Bay Area Seaport Plan

The Seaport Plan is an element of the Bay Plan and is used by BCDC in making port-related decisions on permit applications, consistency determinations, and related matters. A major goal of the Seaport Plan is to reserve sufficient shoreline area to accommodate growth in maritime cargo, thereby minimizing the potential need to fill the Bay for future port development. To accomplish this goal, the Seaport Plan designates areas determined necessary for future port development as port priority use areas to reserve them for cargo handling or related uses. The Seaport Plan also designates areas as marine terminals within the port priority use areas, identifying the type and amount of cargo each marine terminal should be able to accommodate over the planning horizon.

On January 17, 2019, BCDC voted to initiate two Bay Plan amendments to update the Seaport Plan. Bay Plan Amendment (BPA) No. 1-19 is a general update of the Seaport Plan, which was last revised in 2012 and currently includes cargo and capacity forecasts only through the year 2020, to revise the forecasts and related policies, ensure consistency with updated Bay Plan policies, and address change requests from the ports. BPA No. 2-19 specifically addresses a request by the Oakland Athletics to remove the port priority use designation from Howard Terminal at the Port of Oakland to allow for the development of a baseball stadium and mixed-used district on and adjacent to the site. Later this year, the SPAC will consider both amendments and provide its recommendations to the Commission.

C. Draft Cargo Forecast

As part of the update process, BCDC commissioned the Tioga Group and Hackett Associates to prepare a regional forecast of oceangoing cargo and terminal capacity through 2050. An initial draft of the Draft Cargo Forecast was presented to the SPAC at its first meeting on June 27, 2019, and a revised draft, dated November 19, 2019, was presented at a second meeting on December 5, 2019. A new revision to the Draft Cargo Forecast has been completed since December 5, 2019; the April 30, 2020 Revised Draft Cargo Forecast can be viewed on BCDC's website (https://www.bcdc.ca.gov/seaport/meetings.html), and revisions are described in Section IV of this staff report.

Following the publication of the first draft of the Draft Cargo Forecast in June 2019, the Oakland Athletics (the applicant for BPA 2-19) retained Mercator International to review the Draft Cargo

Forecast and perform an analysis as to whether Howard Terminal would be needed to meet cargo projections. The Mercator Report accepted the Draft Cargo Forecast's cargo demand projections, but argued that future demand can be met at new and existing terminals without the use of Howard Terminal.

D. SPAC Requests for Information

At its December 5, 2019 meeting, the SPAC received presentations on the revisions to the Draft Cargo Forecast and the findings of the Mercator Report. Following public comment and a brief discussion, SPAC members made requests for additional information to aid in their consideration of the Draft Cargo Forecast estimates. Staff was asked to further vet the appropriateness of the cargo capacity estimates and to research whether land had been added to port priority use areas in the past.

III. Implications of COVID-19 Impacts on Forecasted Cargo Demand

BCDC has been closely monitoring the outbreak of COVID-19 and its impacts in the Bay Area and has been seeking to understand the various challenges the current pandemic poses for the agency's planning activities. To this end, BCDC staff and its consultant team have been considering whether the global social and economic impacts of the virus would affect the reliability of the cargo demand projections included in the Draft Cargo Forecast, which were prepared before the pandemic began.

As yet, there does not appear to be a basis for revising the long-term demand forecast rates. The current Draft Cargo Forecast is consistent with Bay Area container cargo growth from 1998 through 2019, including the effect of multiple recessions and downturns over the course of that time. The intent of these long-range projections is not to predict when downturns and subsequent recoveries will occur; rather, the single growth rate modeled over the 30-year period allows for the inherent uncertainties of this practice, accommodating unknown future variability from events such as labor disputes, harvest booms and failures, natural disasters, and even pandemics.

This is not to say that ultimately the pandemic would not have significant long-term effects on cargo flows. However, it is unclear at this time as to the likely extent of the downturn associated with the pandemic and what form recovery will take. While there is a range of outlooks offered by various financial and freight industry outlets, current information is still too speculative and fluid to provide a substantive basis for modeling the downturn and recovery in the demand forecast. BCDC will continue to track this issue and will keep the SPAC apprised of any developments.

IV. Revisions to the Draft Cargo Forecast

Since the publication of the November 19, 2019 Revised Draft Cargo Forecast, the following changes have been made. Revisions may be found as highlighted text in the April 30, 2020 Revised Draft Cargo Forecast, available on the BCDC website, and are summarized below.

A. Revisions to the San Francisco Ro-Ro Forecast

At the December 5, 2019 SPAC meeting, Brendan O'Meara of the Port of San Francisco raised a concern about the San Francisco Ro-Ro capacity analysis included in the Draft Cargo Forecast and provided new information to improve the estimates. He noted that the annual throughput per acre used in the Draft Cargo Forecast's Ro-Ro-capacity analysis for the Port was based on imports and did not reflect the higher rates for exports seen at the Port's Pier 80 in the past year. In 2019, the Port moved 146,203 vehicles over 60 acres, averaging 2,437 vehicles per acre, compared to an average of 1,700 vehicles/acre for imports. The higher export average was attributed to the much shorter dwell time of vehicles on the terminal because they do not require processing prior to shipment.

The Tioga Group subsequently prepared a memorandum, Adjustments to the Ro-Ro Capacity Analysis (Attachment 1), describing how this information would be incorporated into the Draft Cargo Forecast. The memorandum shows that using the Port of San Francisco's actual number of 146,203 total vehicles in 2019 instead of the previous estimate of 100,000 would raise the 2050 moderate growth export vehicle forecast from 184,240 to 269,365 and the 2050 Ro-Ro totals from 633,739 to 718,863. Corresponding changes were also made to the slow and strong growth scenarios.

Tioga also revised the Ro-Ro analysis to include separate productivity scenarios for exports, which move through terminals faster than imports. The base case export productivity was set at San Francisco's 2019 12-month average (assuming all mid-size autos and an average dwell of 3.5 days corresponding to weekly vessel service); the low productivity case was based on a 50-percent increase in dwell time and a broader mix of vehicles; and the high productivity case reflects 50 percent shorter dwell times and a mix of smaller vehicles.

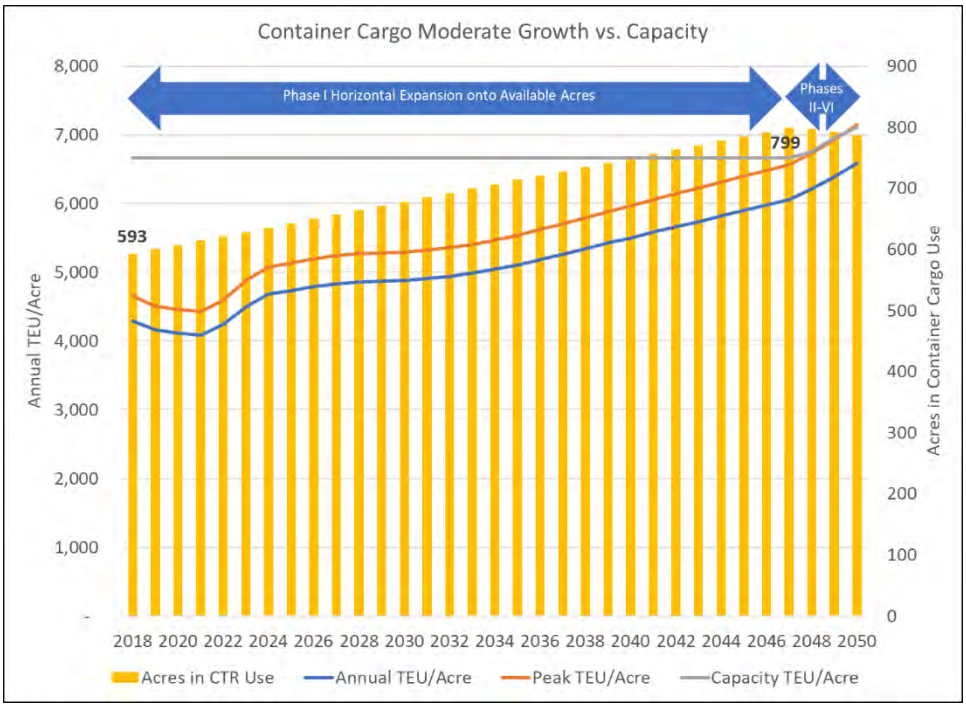
The net impact of these revisions was to raise the required additional Ro-Ro terminal acres under the Moderate Growth case from 158 to 160.

B. Container Terminal Expansion Pathways

The April Revised Draft Cargo Forecast includes a new section as part of the Containerized Forecast and Capacity Analysis chapter that shows a conceptual container terminal expansion path for the Port of Oakland based on the capacity scenarios in Exhibit 94 and the cargo forecast in Exhibit 84. Figure 1 (Exhibit 99 in the April Revised Draft Cargo Forecast) illustrates how Port of Oakland terminals are likely to increase cargo throughput through horizontal expansion to a point where no additional land is available before implementing Phase II-VI efficiency enhancements to increase capacity on the same number of acres or fewer. The chart shows acres in container cargo use and the corresponding average annual TEU (twenty-foot equivalent units)/acre and peak TEU/acre (reflecting the average 8.44-percent monthly peaking factor in August) increasing over time until the peak TEU/acre curve meets the 6,688-TEU/acre maximum capacity that can be handled on the Port's 799 acres potentially available for

container use, at which point Phase II enhancements would take place. With all usable acres available, the container terminals could expand from their present 593 acres to 799 acres before losing some acres to electrification infrastructure.

Figure 1: Conceptual Container Terminal Expansion Path – All Acres



Source: The Tioga Group, 2020.

Figure 1 implies that the Port of Oakland currently has substantial reserve capacity due to:

- 2018 throughputs averaging about 4,000 annual TEU/acre compared to the estimated capacity of 6,688 annual TEU/acre under conventional operations; and
- The availability of over 200 acres of land that could be added to existing terminal capacity.

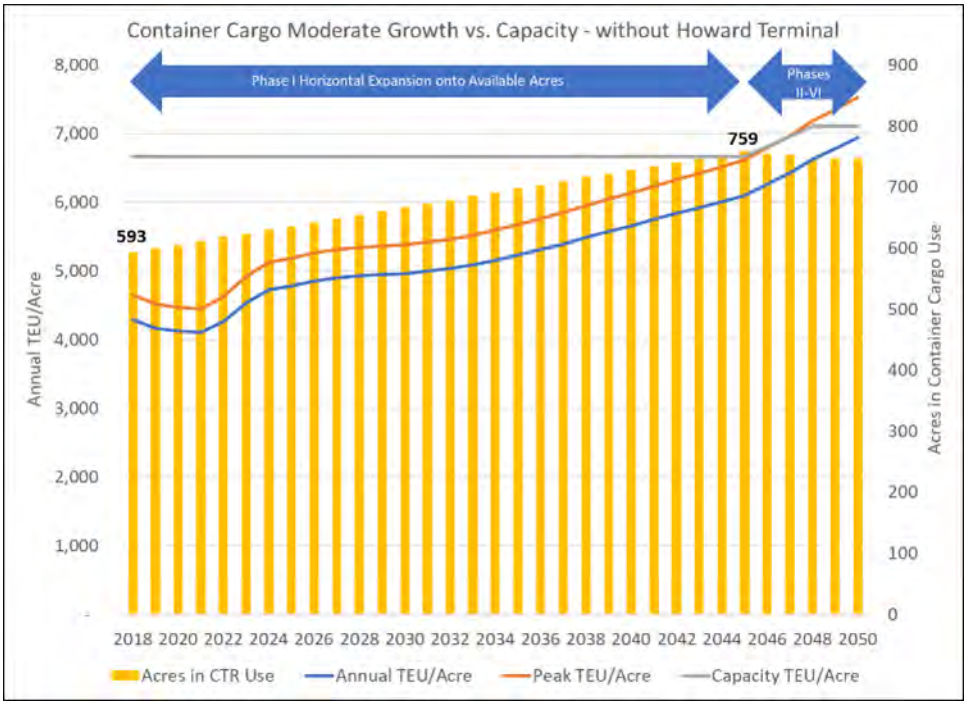
Fully exploiting these capabilities by building out horizontally and gradually bringing throughputs up to the conventional operation limit of 6,668 TEU/acre would allow Oakland terminals to handle growth through about 2047 before peak month volumes exceeded capacity. At that point the Port would be able to handle an estimated 4.8 million annual TEU with an 8.44-percent monthly peak (equivalent to 5.2 million annual TEU) on 799 acres at 6,668 average annual TEU/acre.

From that point forward the container terminals would have to densify, building up rather than out, to increase capacity. In 2050, they would reach the maximum capacity of 7,112 average annual TEU/acre on 787 acres against an average annual demand of 6,592 annual TEU/ acre and a peak demand equivalent to 7,148 annual TEU/acre.

For sake of simplicity the expansion path shown in Figure 1 assumes that terminals would add acres and capacity in steady increments. In reality the expansion path would more likely be stepwise, with terminals adding acres and capacity in larger, less frequent increments. While the capacity scenarios in Exhibit 94 attempt to anticipate likely increments, the actual expansion path will depend on demand, available capital, and terminal operator strategies that cannot be predicted with confidence.

Figure 2 (Exhibit 100 in the April Revised Draft Cargo Forecast) displays the same comparisons for the Port of Oakland without Howard Terminal. The space could grow to 759 acres instead of 799 before the terminals had to densify, and the need to densify would be triggered in about 2045 instead of 2047. In 2050, the 747 net acres after electrification could handle 5.3 million annual TEU at an annual average of 6,945 per acre. The equivalent peak demand would be 7,531 TEU/acre against a sustainable capacity of 7,112 annual TEU/acre, suggesting a potential shortfall in peak shipping season.

Figure 2: Conceptual Container Terminal Expansion Path – Without Howard Terminal



Source: The Tioga Group, 2020.

V. Cargo Forecast Review

The Seaport Plan uses a cargo forecast to plan for the number and types of cargo terminals needed to serve projected regional shipping needs and to establish cargo capacity targets for each terminal to ensure that projected needs can be met. The use of projections is inherently uncertain, particularly over longer time horizons. For the Seaport Plan update, the projections must balance both what is theoretically possible over the next 30 years given potential future

advancements in infrastructure, logistics, and technology against the constraints and functional reality of the Bay Area context to provide a reasonable estimate on which the Commission can base important land use decisions.

The SPAC requested that BCDC staff thoroughly assess the container cargo capacities projected in the Draft Cargo Forecast in light of the critiques and alternative capacities presented by Mercator International during the December 5, 2019 SPAC meeting. SPAC member Jim McGrath asked staff to investigate the feasibility of the estimates, and to seek the expertise of terminal operators and other experts in the field.

This section of the staff report reviews the concepts behind the Draft Cargo Forecast capacity estimates and Mercator's analysis, and describes the findings from staff's various efforts to assess the estimates.

A. Container Terminal Capacity Estimates

This discussion analyzes two approaches to performing container capacity estimates—benchmarking, as used for the Draft Cargo Forecast, and terminal-by-terminal, used in the Mercator Report—and serves to provide context for the subsequent forecast reviews. It describes the approaches and compares a number of recent capacity forecasts for the Port of Oakland. It is summarized from the Container Terminal Capacity Estimates memorandum prepared by the Tioga Group, which can be reviewed in full in Attachment 2.

1. Container Terminal Estimation Approaches

Benchmarking. The Tioga Group used a "benchmarking" method to develop the container terminal capacity estimates for the Draft Cargo Forecast. Benchmarking entails locating comparable terminals with published current capacities and assuming Bay Area terminals can reach productivities within the range established by the benchmark terminals. By referencing what has been reported at comparable terminals elsewhere, benchmarking can suggest what Bay Area facilities may be reasonably expected to achieve. The estimates produced through benchmarking are not necessarily an estimate of optimal terminal performance, but rather an assessment of achievable norms. This approach also does not specify how capacity increases would be achieved or what factors might limit long-term capacity.

The reliability of the benchmarking approach depends on the comparability of the benchmarks chosen. Current reports of terminal or port capacity (i.e., reports relating to existing 2018 to 2020 terminal sizes and capabilities) are not widely available; therefore, timeliness and comparability can become issues. The basis and reliability of estimates from other ports and terminals may be unknown, and broad estimates rounded to the nearest million TEU may be imprecise. Benchmarking may yield either conservative or aggressive estimates depending on which benchmarks are used.

Table 1 shows the benchmark terminals identified by Tioga, sorted into Conventional, High Productivity, and "Complete" Automation categories. Conventional terminals include wheeled,

stacked, and mixed terminals, and may include some aspects of automation, though all container operations are performed with manually operated equipment. High Productivity terminals include both semi-automated terminals and automated straddle carrier (auto-strad) terminals. "Complete" Automation includes more aggressive automation where Automated Guided Vehicles (AGVs) move containers to and from stacks served by automated stacking cranes (ASCs). The benchmark terminals were selected based on information availability and on their ability to illustrate progressively greater automation and other factors thought to increase throughput per acre. Table 1 includes two terminals not included in the November 19, 2019 version of the Draft Cargo Forecast, as Tioga has since located published capacities for two additional west coast terminals: Total Terminals International (TTI) at Long Beach and APM at Los Angeles.

Table 1: Updated Tioga Terminal Productivity Benchmarks

Terminal	Acres	Published Capacity Annual TEU	Max TEU/Acre[a]	Sustainable @ 80% (TEU/acre)	Sustainable Average (TEU/acre)
Conventional Terminals					
Oakland OICT[b]	290	1,600,440	8,335	6,668	6,676
OICT Off-dock Parking	30				
TTI Long Beach[c]	385	3,000,000	7,792	6,234	
GCT Deltaport	210	1,800,000	8,571	6,857	
APM Los Angeles[c]	507	4,400,000	8,679	6,943	
High Productivity					
VIG Portsmouth	291	2,000,000	6,873	5,498	7,112
TraPac Los Angeles	220	1,600,000	7,273	5,818	
Sydney Auto-strad	156	1,600,000	10,282	8,226	
Brisbane Auto-strad	99	1,100,000	11,134	8,907	
"Complete" Automation					
GCT Bayonne	167	1,700,000	10,180	8,144	11,366
LBCT Long Beach	170	3,100,000	18,235	14,588	

a. Based on multiple opinions that the Oakland International Container Terminal (OICT) is operating near capacity, the consultant team assumed that the terminal is at 75% of a sustainable capacity of 5,264 TEU/acre.

b. OICT is Actual TEU.

c. Added since the November 19, 2019 version. The addition of these two terminals increased the estimated sustainable average for conventional terminals from 6,061 TEU/acre to 6,676 TEU/acre.

Source: The Tioga Group, 2019.

As shown, the maximum capacity in TEU/acre was calculated for the benchmark terminals by dividing the published capacities for each terminal by the terminal acreage; the sustainable capacity was calculated assuming that sustainable capacity is 80 percent of the maximum; and the sustainable capacities were averaged across each category.

Terminal-By-Terminal. Alternatively, a terminal-by-terminal analysis calculates capacity as a function of current or potential storage capacity, berth capacity, container dwell time, operating hours, etc. This approach relies on the basic relationship between container yard space and stacking height, together determining static storage capacity and container dwell time, which determines how quickly that storage capacity turns over. The terminal-by-terminal approach thus "rethinks" existing terminal configurations and operations to estimate what could be achieved if the terminal can indeed operate as envisioned.

The terminal-by-terminal approach is highly dependent on assumptions regarding:

- Container ground slots potentially available;
- Maximum and average stacking heights;
- Container dwell time and slot turnover; and
- Gate, berth, and rail capacity.

The Mercator forecasts were made using a terminal-by-terminal analysis. Mercator used Google Earth aerial photos and terminal diagrams to define existing and potential terminal footprints. To estimate future capacity, Mercator made assumptions to reflect the implementation of a higher density operating scheme at the Port of Oakland, reallocating terminal space to increase container storage at the expense of chassis storage, wheeled chassis parking, and other functions that would be assumed to be moved off-terminal, and increasing the terminals' average stacking heights.

2. Sustainable Capacity

For BCDC's seaport planning purposes, sustainable capacity can be defined as the throughput level that can be maintained over an extended period and is therefore a reliable basis for planning. The distinction between sustainable and maximum capacity is widely acknowledged in the container terminal industry. Variations in vessel size and schedules, cargo seasonality, and other factors combine to create daily, weekly, monthly, and annual peaks and valleys in cargo volumes. A terminal's maximum capacity is intended to accommodate the peaks, but on average the terminal would be operating at a lower capacity that could be sustained over long periods of time. Capacity estimates can account for this in multiple ways. For example:

- Multiplying maximum capacity by an overall sustainability factor (Tioga used 80 percent);
- Dividing maximum capacity by a peaking factor (Mercator divided maximum capacity by 1.25); and
- Multiplying static capacity by an "allowable occupancy" factor (Mercator used 65 percent; Tioga did not use a separate allowable occupancy factor).

In all cases, the sustainability or peaking factor must be applied carefully to avoid double-counting or undercounting, and to ensure that the chosen factor is appropriate for the port or terminal in question. Most factors, including those used by both Tioga and Mercator, are industry "rules of thumb" rather than values unique to Bay Area container shipping.

- For the High Productivity scenario, Tioga used the average of published capacities for selected North American and Australian terminals (8,890 TEU per acre) and multiplied by 80 percent to yield 7,112 sustainable TEU per acre.
- Mercator estimated maximum static storage capacity at an average of 298 TEU/acre, and then divided by a peaking factor of 1.25 and multiplied by an allowable occupancy factor of 65 percent (together equivalent to 52 percent) to derive a working storage capacity averaging about 158 TEU/acre. Mercator then assumed a dwell time of five days and 360 working days per year, yielding 72 annual turnovers per storage location. The 158-TEU per acre storage average multiplied by the 72-turn average yielded an average annual capacity of about 11,400 TEU/acre.[1]

3. Capacity Forecast Comparisons

To gauge the reasonability of the two terminal capacity estimation approaches, The Tioga Group reviewed the following capacity analyses previously conducted for the Port of Oakland and comparable ports. Figure 3 compares the estimates from the Draft Cargo Forecast and the Mercator Report, as well as the reported capacities of the benchmark terminals used in the Draft Cargo Forecast, with the findings of these analyses.

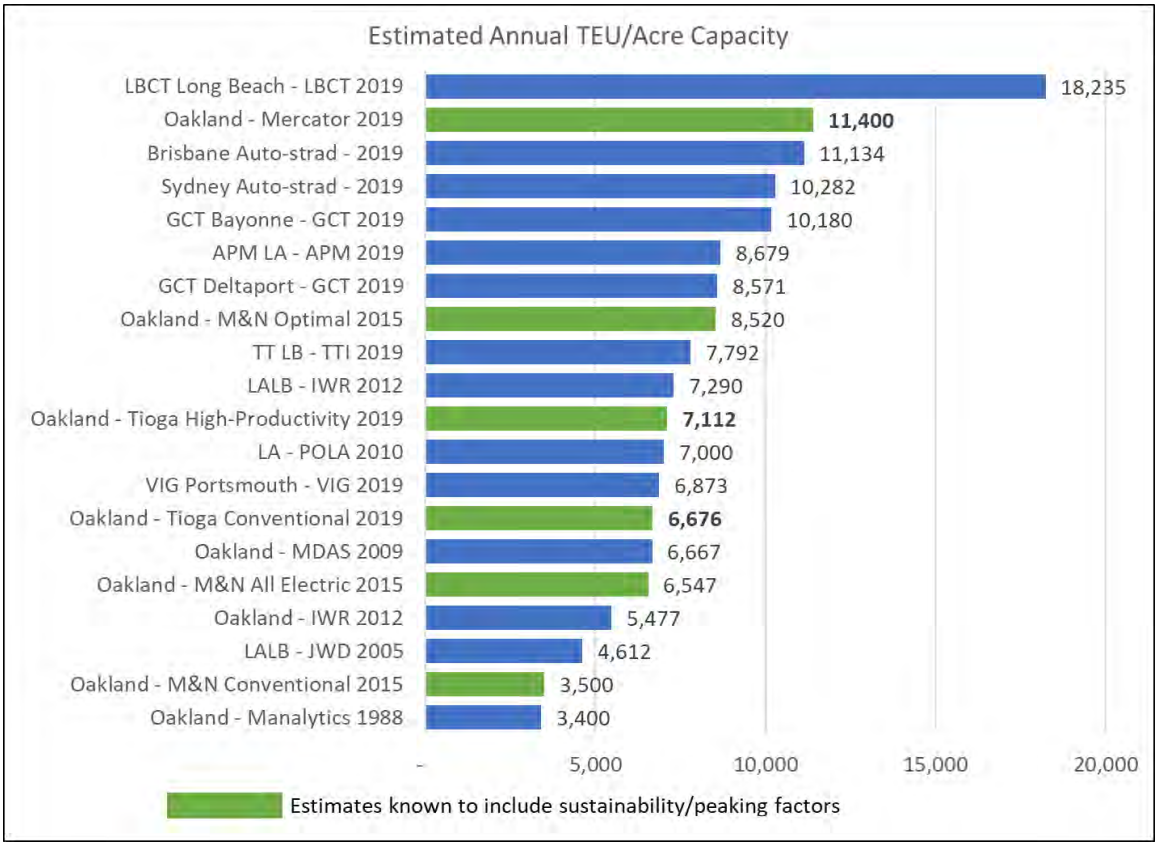
- **2015 PMSA/Moffat & Nichol Estimates.** In 2015, Moffat & Nichol undertook a series of West Coast terminal capacity and expansion cost estimates on behalf of the Pacific Merchant Shipping Association (PMSA). Moffat & Nichol's estimate included a peaking factor of 1.2, equivalent to a sustainability factor of 83 percent.
- **2012 IWR Analysis.** In 2012, Tioga completed a nationwide container port capacity analysis for the U.S. Army Corps of Engineers Institute for Water Resources (IWR) based on 2010 data. That study followed a terminal-by-terminal approach, using aerial photos to estimate container yard storage capacity.
- **2010 Port of Los Angeles Estimates.** As of 2010, the Port of Los Angeles was using 7,000 TEU/acre to estimate terminal capacity
- **2009 Seaport Plan Update.** The 2009 Seaport Plan Update relied on two documents that together provided insights into container cargo capacity at the Port of Oakland – the Maritime Development Alternatives Study (MDAS) and the Maritime Air Quality Improvement Plan (MAQIP). The MDAS, completed in August 2004, presented an

[1] Source: Mercator Excel workbook "Mercator 1922_US_West_Coast_and Oakland ContainerTermCapacities_05Nov (for BCDC)."

extensive analysis of the Port's present and future container cargo capacity in terms of berths, terminals, rail capacity, and highway capacity. The MAQIP, completed in April 2009, provided a master plan for air quality improvements deemed necessary for growth.

- **1988 Seaport Plan Capacity Estimates.** The 1988 capacity analysis focused on requirements for berths, and then estimated the acreage required to support each berth depending on terminal type. The Manalytics study team surveyed Bay Area marine terminal operators to determine realistic averages for terminal throughput. Manalytics used averages of 1,400 containers per acre (2,380 TEU) for wheeled terminals and 2,000 containers per acre (3,400 TEU) for stacked terminals. The latter average of 3,400 TEU per acre was very close to the actual Oakland average prior to the 2008 recession. The forecast was later confirmed as appropriate for continued use for long-term planning purposes by a roundtable of economic and port experts convened by BCDC as part of the 1996 Seaport Plan update process.

Figure 3: Estimate Comparison Summary



Source: The Tioga Group, 2019.

B. Terminal Operator Review

BCDC staff worked with the Port of Oakland to identify potential terminal managers to contact for a review of the Draft Cargo Forecast. BCDC contacted representatives at SSA Terminals, Matson, Everport, and Trapac, and received responses from all except Trapac. Staff prepared a review packet for the terminal operators that included the November 2019 version of the Draft Cargo Forecast, the Mercator Report, the Container Terminal Capacity Estimates memorandum from Tioga (Attachment 2), and the staff report for the December 5, 2019 SPAC meeting. The packet also included background information on the Seaport Plan and the Draft Cargo Forecast, as well as guiding questions and instructions to help focus the terminal operators' review (Attachment 3).

Staff received a comment letter from SSA (Attachment 4) and conducted a telephone interview with the Terminal Manager at Everport. Staff also briefly discussed the forecast with the Terminal Manager at Matson; however, due to the operator's limited availability and the terminal's unique circumstances as a domestic shipping terminal, and because the Matson terminal is managed under SSA (who had already responded in writing), staff did not conduct a more in-depth interview. The key issues raised by the terminal operators who participated in the review are as follows:

- Throughput at the terminals is more than a matter of TEU/acre. As a function both of the amount of cargo a terminal can handle and the level of demand for the terminal to handle it, throughput capability should be seen as a system where changes in one area can have impacts elsewhere. Operators are concerned that such impacts could in turn create new constraints on capacity or demand. As an example, traffic congestion is a particularly pressing issue for terminal operators, as severe congestion around the port could both reduce the terminals' ability to handle cargo efficiently and may deter shipping companies from choosing to move certain goods through Oakland.
- The terminals could be intensified to handle higher and higher volumes of TEU/acre, but the related improvements would require significant investment and potential disruption of operations. Any costs would likely be passed along the supply chain and could reduce the port's competitiveness. Improvements that involve automation would also require that the terminals address implications for labor. Due to these considerations, the terminal operators found the higher estimates provided by Mercator to be unrealistic in the Port of Oakland context.

Staff also asked the terminal operators follow-up questions about assumptions made in the Draft Cargo Forecast and Mercator Report and they offered the following insights into current operations and planning:

- Both operators found the 80-percent sustainable capacity assumption used in the Draft Cargo Forecast to be a reasonable assumption and noted that sustained operations

above 80 percent of maximum capacity could result in impacts on safety, efficiency, and cost.

- SSA found Mercator's assumption of 360 working days per year to be unrealistic. Currently, the work year for SSA averages 250 days with night gates and holidays. Saturdays have not been a workable solution due to customs, labor, and trucker availability. Previous attempts at utilizing weekends resulted in small increases to productivity at large costs to the terminal.
- Both terminal operators reported average container dwell times closer to 6 days, compared to 5 days assumed in the Mercator Report. SSA suggested that a reasonable dwell time for planning purposes would be 5.6 dwell days. Along with an average of 250 working days per year, this would result in 45 annual turnovers for each storage location rather than the 72 estimated by Mercator.
- SSA provided that the Mercator Report assumed that the natural result of automating a terminal is that the terminal becomes denser and more productive per acre, as in the LBCT example. SSA pointed to the experience at APMT-LA as an alternative model, stating that the cheaper option for terminal operators with respect to automation is acreage expansion rather than densification.

C. Peer Review

BCDC staff worked with the Oakland Athletics to contract two experts in port planning and related issues to perform peer reviews of the Draft Cargo Forecast and the Mercator analysis. Staff initially identified and contacted a total of seven potential reviewers, including port planning consultants based in the Bay Area and academic experts across the United States. Of these, only James Fawcett of the University of Southern California and Asaf Ashar of the National Ports and Waterways Institute were willing and available to review the forecasts.

Staff prepared blinded review packets for both reviewers, including versions of the November 2019 Draft Cargo Forecast and the Mercator Report with all references to the consultants' names and firms removed, a copy of the 2012 Seaport Plan, and a cover letter providing background information on the Seaport Plan and use of the forecast and guiding questions to focus the reviews (Attachment 5). In the packet, the Draft Cargo Forecast was referenced as "Report A" prepared by "Consultant A" and the Mercator Report was referenced as "Report B" by "Consultant B." Dr. Fawcett prepared his review blind, with no knowledge of the consulting teams involved. Dr. Ashar, however, learned the identities of the consulting teams prior to performing his review while conducting basic research on BCDC before accepting the assignment. This section summarizes the main points of each peer review.

Dr. Fawcett's review takes a broad planning perspective and suggests that the Draft Cargo Forecast's more conservative approach using recent, achievable benchmarks may be a more reliable basis for planning. Dr. Ashar's review focuses more on the capacity estimates themselves and favors Mercator's detailed analysis and more aggressive assumptions. Dr.

Fawcett's curriculum vitae and peer review are included in Attachment 6, and Dr. Ashar's in Attachment 7.

Key points of Dr. Fawcett's review include the following:

- In his experience, an 80-percent sustainability factor is standard practice utilized by the U.S. Department of Transportation. It should be noted that the source cited in Footnote 1 in Dr. Fawcett's review is a 2016 presentation prepared by Dan Smith of the Tioga Group.
- The feasibility of Mercator's estimates would be impacted by factors such as labor, environmental, fiscal, and political concerns that are not discussed as part of the analysis.
- Terminals of similar size, layout, and composition as the Port of Oakland would allow for more accurate comparisons, such as Seattle (T-18); Tacoma (Pierce County-Evergreen or Husky-ITS); Los Angeles (Everport, Yusen, WBCT Cosco YML, WBCT YML Cosco); and Long Beach (Pier A, Pier J, Pier G), but Dr. Fawcett is not aware of published capacities other than those presented in the Draft Cargo Forecast.
- Intensification of terminal operations at the Port of Oakland could lead to a number of potential environmental and operational impacts that should be considered, such as:
  - Air quality impacts from diesel exhaust yard equipment, and costs to terminal operators associated with the maintenance of exhaust scrubbers and testing of yard equipment emissions;
  - Truck congestion and associated diesel emissions;
  - Increased traffic between terminals and off-port storage sites; and
  - Obstruction of at-grade crossings for long container trains. This has been a problem elsewhere, ultimately requiring funding to grade-separate roadways and tracks to optimize traffic and safety.

Key points of Dr. Ashar's review include the following:

- He found the capacity calculation conducted by Mercator to be more detailed than the Draft Cargo Forecast, and while he is also critical of Mercator's methodology, he believes it to be more accurate than Tioga's.
- He considers Mercator's representative terminals to be relevant examples for the Port of Oakland and LBCT to be the closest representative benchmark terminal.
- Dr. Ashar generally considers automation and higher efficiencies to be achievable in the 30-year timeframe of the Seaport Plan and the direction many ports around the world are moving. By improving control and communication among shipping lines, operators,

and cargo owners, and by incorporating approaches such as "peel-off" schemes,[2] dwell times at the port could be shortened significantly. Additionally, ship-handling technology, such as automation and crane improvements, could serve to significantly enhance berth productivity in the long term.

- The Draft Cargo Forecast is a comprehensive and highly professional masterplan study that would be more than sufficient to support general long-term planning decisions on a larger scale, and the Mercator Report is more specific, focusing on Howard Terminal. Given the context of BPA 2-19, Dr. Ashar offered that neither study has the fine "resolution" required to support a decision related to Howard Terminal, which would only account for 5 percent of Oakland's capacity. For "fine-grained" decisions such as those involving smaller amounts of acreage, similarly fine-grained, port-specific capacity studies are needed to provide the appropriate degree of information.

- Given the small percentage of the Port of Oakland's potential container capacity Howard Terminal represents, and the much wider range between the Draft Cargo Forecast and Mercator forecast and between the different forecast scenarios, the impact Howard Terminal would have on Oakland's future supply/demand situation is quite small.
- Also regarding Howard Terminal, its small size and standalone location limit the terminal's potential usage to small ships and lines and makes the investments necessary to improve the terminal less feasible. Thus, while the terminal could temporarily serve some smaller lines to add to Oakland's overall capacity, the low-tech capacity offered by the terminal would be of limited utility over the longer term.
- Dr. Ashar recommends a berthage-based capacity methodology over the methodologies used in the two reports. The ultimate constraint on terminal capacity is its berthage, or berth length, where the ship-to-shore transfer of containers is performed. The main function of a marine terminal is not storage, but berthage. Dr. Ashar agrees with Mercator that berth capacity at Oakland is likely to significantly exceed that of the yard unless the yard system is improved to match. (It should be noted that the Draft Cargo Forecast does include a berth utilization analysis showing that Oakland has sufficient berth capacity under most conditions, but without Howard Terminal, terminal utilization could exceed 65 percent, resulting in potential congestion).

[2] Peel-off refers to an approach whereby boxes are transported to off-dock yards in unsorted "blocks" immediately upon discharge from ships or just before loading onto ships.

D. Staff and Consultant Analyses

The following analyses were performed by BCDC staff and its consultant team to synthesize findings from the various reviews presented above and assess the methodology and feasibility of the Draft Cargo Forecast in comparison to the Mercator Report.

1. Sustainable Capacity and Peaking in the Forecasts

Staff had asked reviewers to assess the appropriateness of the capacity methodology in the Draft Cargo Forecast in light of the analysis provided in the Mercator Report. One area of some confusion among the reviewers, and which had been discussed at length at the December 5, 2019 SPAC meeting, was the Draft Cargo Forecast's use of sustainable capacity, assumed to be 80 percent of its maximum capacity. As stated above, Mercator's November 2019 analysis opted to use two factors—a 1.25 peaking factor and 65 percent allowable occupancy factor—to determine "allowable average inventory" rather than calculate sustainable capacity and challenged the Draft Cargo Capacity's sustainability factor. In reviewing the methodologies, staff concurs with the Tioga Group that the 80-percent sustainability factor and the 1.25 peaking factor used by the two consultants are conceptually, mathematically, and operationally identical.

The Draft Cargo Forecast's sustainability factor of 80 percent is based on the recognized inability of a marine container terminal to operate continuously at 100 percent of its maximum capacity due to:

- Cargo peaking from vessel arrivals and seasonal variations;
- Rising truck turn times and congestion as in-terminal activity increases; and
- Disruptions, such as systems outages, weather-related slowdowns, late vessels, or other incidents.

Tioga did not attempt to separately account for these various influences on cargo throughput. The 80-percent factor has been used in other Tioga capacity studies for the U.S. Army Corps of Engineers and the U.S. Department of Transportation Maritime Administration's Cargo Handling Cooperative Program. Tioga's 80-percent factor was originally derived from a 2009 Parsons Brinckerhoff report for the Port of New Orleans,[3] which stated:

> *"When estimating capacity for maritime terminals, there are three levels to consider:*
>
> - *Ultimate Theoretical Capacity (UTC): Considered to be the highest theoretical level of a terminal's ability to handle cargo demand. This ultimate capacity value is only*

[3] Parsons Brinckerhoff, 2009, *Strategic Advisory Report: Napoleon Avenue Container Terminal Development Utilizing Public-Private Partnerships*, prepared for The Board of Commissioners of the Port of New Orleans.

constrained by the terminal infrastructure. UTC is not used for facility sizing, needs identification or future planning.

- *Maximum Practical Capacity (MPC): The practical upper limit of a terminal's ability to handle cargo demand is referred to as MPC. This capacity level is constrained by infrastructure, equipment and/or operating capabilities.*
- *Sustainable Practical Capacity (SPC): The SPC is the capacity at which improvements should be considered and generally ranges between 70 percent and 90 percent of MPC. For planning purposes in this analysis SPC was estimated at 80 percent of MPC."*

It should be noted that while Dr. Ashar's review suggested that the 80-percent factor implies a 20-percent capacity reserve, this is not the intent behind the factor.

Mercator characterized their 1.25 divisor as "peak inventory/average inventory" or a "peaking factor" to account for seasonal peaks on the demand for storage. Before applying the 1.25 peaking factor, Mercator also applied a 65-percent utilization limit on their estimated terminal storage capacity, which they referred to as "allowable occupancy." The impact on the capacity estimates from the peaking factor is identical to the sustainable capacity factor:

10,000 TEU/year x 80% = 8,000 TEU/year

10,000 TEU/year ÷ 1.25 = 8,000 TEU/year

For example, Oakland's container volumes have typically peaked in August. August volumes have averaged 8.4 percent above the monthly average from 2005 to 2018, but in some years have reached 14 percent above the monthly average (based on monthly TEU data from the Port of Oakland). The implied sustainability factor (following Tioga's approach) would be 88 percent, and the implied peaking factor (following Mercator's approach) would be 1.14. Tioga's use of 80 percent and Mercator's use of 1.25 are appropriately and equally conservative, as both would allow for some margin of capacity to respond to higher monthly peaks or to high daily peaks within August.

Another way to demonstrate the similarities and differences between the two methods is to apply the assumptions from one report to the approach from the other. For example, Table 2 begins with the 7,112 TEU/acre High Productivity capacity estimate from the Draft Cargo Forecast and works backwards through Mercator's methodology using acreage, working days, and dwell time assumptions for the Oakland International Container Terminal (OICT) based on current operations, which differ from Mercator's high productivity assumptions. The table compares steps from this calculation to the corresponding steps in Mercator's methodology. In deconstructing the Draft Cargo Forecast's projection in terms of Mercator's approach, the results for maximum static capacity, maximum allowable inventory (65 percent of the maximum static capacity), and the allowable average inventory (the maximum static capacity divided by the 1.25 peaking factor) are all shown to be very similar to Mercator's calculations. This shows

that the primary drivers of the difference between the Draft Cargo Forecast and Mercator Report capacity projections are the assumptions for working days and dwell time. These differing assumptions can be attributed to additional automation or other technical advances, if those advances result in a five-day dwell time and seven-day, fully productive work weeks.

Table 2: Application of Mercator Report Methodology to Draft Cargo Forecast Projection for OICT

	Reverse Calculation Using Draft Cargo Forecast Projected Capacity and Mercator Report Methodology	**Mercator Report Calculations**
Projected Capacity (TEU/acre)	7,112[a]	11,134
Acres	288[b]	290
Annual Capacity (TEU/acre)	2,048,256	3,228,863
Annual Working Days	250[c]	360
Average Dwell Time (Days)	5.6[c]	5
Annual Slot Turnover (Annual Working Days/Dwell Time)	44.6	72
Allowable Average Inventory	45,881	44,845
Peaking Factor	1.25[d]	1.25
Maximum Allowable Annual Inventory	57,351	56,057
Allowable Occupancy Factor	65%[d]	65%
Maximum Static Capacity (TEUs)[e]	88,233	86,241

a. High Productivity container capacity estimate from Draft Cargo Forecast
b. OICT acres from Draft Cargo Forecast
c. From SSA Terminals
d. From Mercator calculation
e. Volumetric measure of capacity if each storage position was occupied

2. Average Container Dwell Time

Tioga could not locate concrete evidence to suggest that increased automation would dramatically reduce average container dwell times as implied by Mercator's analysis. Dwell times are a function of:

- The mix of import loads, export loads, and empty containers stored on the terminal;
- The mix of rail-bound versus trucked containers;
- The available drayage truck and driver pool;

- Cargo peaking from large vessel arrivals; and
- The desire and ability of importers to pick up their cargo quickly.

The Mercator assumption of a five-day dwell time may be appropriate for import containers, but not for an overall average under Oakland's operating conditions. Many terminals do restrict the import "free time" to five days before assessing storage charges. Import containers may also move off terminals sooner when there is a high percentage of rail-bound cargo, especially with on-dock rail transfer. Those conditions apply to Los Angeles, Long Beach, Seattle, and Tacoma, but not to Oakland. Oakland has a much higher percentage of outbound export loads than other West Coast ports, and contacts with marine terminal operators suggest that export loads have longer dwell times than imports. Finally, all terminals store empties to some extent, and empties typically have longer dwell times than import or export loads. Mercator's approach anticipates moving much of the empty container storage off-terminal. That strategy would reduce average dwell time to some degree, but there would be trade-offs with increased truck trips and greater community impact.

With regards to Dr. Ashar's discussion of peel-off and "free-flow" operations as a means of reducing dwell times to one or two days (page 5 of his review), there are presently limited peel-off and free-flow operations at Oakland, Long Beach, Los Angeles, and Vancouver. The Tioga Group analyzed these operations and their potential on behalf of PierPass, the organization that administers the Los Angeles-Long Beach extended gate program, in a publicly available study,[4] and for the Port of Long Beach in a recent internal study. Both studies found that:

- Peel-off or free-flows systems are very limited in their potential scope.
- When peel-off or free-flow operations can be implemented, they usually work very well.
- Peel-off or free-flow programs require minimum volume commitments for each customer, each terminal, and each daily operation. Frequently these commitments cannot be met because customer volumes are split between multiple terminals by alliance services.
- There are numerous institutional, organizational, and legal obstacles to general use of peel-off or free-flow systems.
- Widespread peel-off or free-flow programs (e.g., a port-wide system) are categorically unacceptable to importers and transloaders due to loss of control over cargo flow and resulting operational disruption.

[4] http://wcmtoa.org/wp-content/uploads/2018/03/PierPass_Ext_Gates_Analysis_March2018.pdf.

3. Work Weeks

The Mercator capacity estimates assume 360 working days per year and equal average productivity on all of those days. Actual working days per year typically range from about 250 to 260, depending on when holidays fall and whether or not the terminal occasionally offers weekend gates. At both Los Angeles-Long Beach and Oakland, terminal operators have found it more cost-effective to open during selected evenings than on weekends, as SSA's review appears to corroborate.

Both weekend and night shifts have higher labor costs than day shifts. Evening shifts have proven to be more productive:

- Evening shifts are heavily used by drayage drivers who have available hours of service after 5 PM (e.g., drivers that have 11 hours of driving time and 14 hours of total on-duty time available and have started after 4 AM).
- Evening shifts are also used by Central California exporters that ship up until 5 PM, since those containers would not arrive at Oakland terminals until 7 to 8 PM.
- Drayage firms also use the evening hours to return import containers that have been emptied on the day shift.
- Rail intermodal terminals operate 24 hours, seven days a week, and late evening cutoff times allow drayage trips from marine terminals after 5 PM.

The limitation on weekend gates is not technical, but economic and institutional, as customer import receiving and export shipping facilities are not usually open on weekends, and vessel arrivals are concentrated on weekdays.

While evenings can be a regular extension of a driver's workday, weekends cannot. Federal regulations have the following provision, which limits a driver's ability to work on the weekends if also working during the week:

> *"60/70-Hour Limit: May not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty."*[5]

4. Role of Howard Terminal

While the focus of the Draft Cargo Forecast is regional, staff also asked reviewers to provide their professional opinions on the potential role of Howard Terminal in future maritime operations.

[5] https://cms8.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations.

In general, the consultants and peer reviewers agree that Howard Terminal would not be as productive or efficient as other terminals, and that it is relatively small, representing about 5 percent of total Port of Oakland acreage post-electrification. However, at this stage in the planning process, the Draft Cargo Forecast is not intended to determine how Howard Terminal should or should not be used. While the Draft Cargo Forecast acknowledges the terminal's limitations, it looks more generally at the supply and demand requirements of the region as a whole. The Draft Cargo Forecast estimates total Bay Area cargo flows and terminal land productivities to project how much land would be required to accommodate future cargo needs. Tioga did not attempt to optimize terminal use or assignments, under the assumptions that:

- Between now and 2050 there will be changes to terminal conditions, boundaries, and uses that would render any detailed allocation or optimization study obsolete.
- As terminals near their capacities, ports and terminal operators will look to the best available expansion alternatives, even if those alternatives are more costly and less efficient.

In other words, Tioga did not analyze whether any specific terminal site (including San Francisco's Pier 96 and Richmond's Terminal 3, as well as Howard Terminal) was the best choice for a given cargo type, but rather which sites were potentially suitable if expansion were required.

VI. Vision 2000 and the Oakland Army Base Transfer

At the December 5, 2019 SPAC meeting, SPAC member McGrath recommended that staff review documents associated with two major efforts to improve cargo efficiency at the Port of Oakland—the Vision 2000 project to redevelop the former Fleet and Industrial Supply Center, Oakland (FISCO) and the transfer of the former OAB—and share any findings from those efforts that could inform the SPAC in the current update process.

Vision 2000 was a development program prepared by the Port of Oakland for the reuse of the former Fleet and Industrial Supply Center, Oakland (FISCO). It planned for a series of improvement projects on the FISCO site, including the construction of Berths 55-58 at what is now OICT, the Joint Intermodal Rail Terminal (JIT), and a channel deepening project, all intended to increase the port's overall throughput capacity.

The OAB officially closed in 1999 and the Oakland Base Reuse Authority (OBRA) worked with the City of Oakland, the Port of Oakland, and the Oakland community to develop a Final Reuse Plan for the OAB property, which was under BCDC's port priority use designation. The OBRA initially proposed the transfer of 189 acres of the OAB to the City of Oakland Redevelopment Authority, which would require the port priority use designation to be removed, and the transfer of the remaining 184 acres to the Port of Oakland for the expansion and reconfiguration of its marine terminals, including the Vision 2000 terminals and JIT. The

reconfigurations would allow the port to increase its future container cargo throughput capacity from 24 million metric tons (MT) required in the Seaport Plan to 24.5 MT. With the projected increase in capacity, 127 acres of Bay fill called for in the Seaport Plan to allow the port to meet the 2020 capacity forecast would no longer be needed and would be eliminated.

BCDC initiated BPA 4-00 to consider the removal of the port priority use designation from the portion of the OAB to be transferred to the City of Oakland. During the Commission hearing on the proposed amendment, concerns were raised as to whether deletion of the port priority use area would leave sufficient land available at or adjacent to the port for ancillary uses[6] to provide a smooth and efficient flow of cargo from the terminals. The adopted amendment reduced the area to be removed from port priority use designation from 189 to 175 acres to ensure that the OBRA would retain 15 acres on or adjacent to the OAB for ancillary uses. Additionally, the Port of Oakland agreed to add 15 acres of land within the Interstate 880 (I-880) right-of way and 30 acres of land west of I-880 to the port priority use area for ancillary uses.

VII. Past Additions of Port Priority Use Area

SPAC member David Lewis of Save the Bay asked staff if land had ever previously been added to the Seaport Plan's port priority use designations. Staff reviewed the details of 20 previous amendments of the Seaport Plan and identified five amendments where the designation was added to areas that were not previously designated. The majority of these additions accompanied the deletion of other sites in the same port area that were being converted to other uses, and some of these were explicitly transfers of cargo handling capabilities from the deleted sites to the newly designated sites.

- **BPA 5-82, Resolutions 82-22 and 83-7.** Resolution 82-22 enacted the Seaport Plan. As adopted, the port priority use areas designated in the Seaport Plan did not fully align with the port priority use areas previously established under the Commission's Resolution 16, the resolution that describes the Bay Plan's priority use area boundaries. The Seaport Plan expanded upon or altered a number of the Bay Plan's port priority use areas. For example, Point San Pablo and Point Richmond were added to the Richmond port priority use area; Selby was designated as a new port and industrial area; Encinal was added as a new port priority use area in Alameda; and the Oakland port priority use area was expanded south of the Bay Bridge. Resolution 83-7 amended Resolution 16 such that the port priority use area boundaries aligned with those in the Seaport Plan.

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[6] Ancillary uses include container freight stations, transit sheds and other temporary container storage areas, freight forwarders, support transportation uses including trucking and rail yards, and customs and agricultural products inspection facilities. Such uses are instrumental to a smoothly operated port and some must locate on or adjacent to the port while others can be located inland but must allow for transport of containers to and from the marine terminals.

Boundaries for several port priority use areas since have been altered by subsequent amendments, and areas such as Point San Pablo, Point Richmond, and Encinal have been removed.

- **BPA 1-88, Resolution 89-4.** BPA 1-88 was the first major revision of the Seaport Plan. As part of this amendment, the port priority use and marine terminal designations that previously existed at the Terminal No. 1 site (13.8 ac) at Point Richmond were relocated to a 16.5-acre site along Canal Boulevard on the western side of the Harbor Channel (see Figure 4). Additionally, land at Pacheco Creek in Contra Costa County and Collinsville in Solano County were added to the Seaport Plan as dually designated water-related industry and port priority use areas, but not for marine terminal development; both have since been removed.
- **BPA 1-93, Resolution 93-8.** In 1993, BCDC approved a request by the East Bay Municipal Utility District (EBMUD) to remove the port priority use designation from a one-acre site to allow for the development of the San Antonio Creek Wet Weather Treatment Plant. To ensure that there would be no net loss of port priority use area as a result, a nearby 1.2-acre site was added to the Port of Oakland port priority use area as a replacement (see Figure 5). The newly designated 1.2-acre site was considered functionally superior to the removed site due to better roadway access, potential rail access, and an existing warehouse.
- **BPA 4-00, Resolution 00-10**. As described above, BPA 4-00 was the result of an application by the OBRA and the Port of Oakland to facilitate the closure and redevelopment of the OAB. The amendment removed the port priority use designation from 175 acres of the OAB site to allow for the OBRA to transfer that property to the City of Oakland Redevelopment Authority for the Gateway Development project. The remaining 184 OAB acres were then transferred to the Port of Oakland to increase the port's throughput capabilities such that it would no longer need to rely on 127 acres of planned Bay fill in order to meet productivity targets. As part of this amendment, BCDC added 45 acres of land to the Oakland port priority use area for truck-related port ancillary activities (see Figure 6).
- **BPA 3-06, Resolution 07-7.** As part of the adoption process for BPA 4-00, OBRA agreed to provide 15 acres of land for port ancillary uses. Because the Final Reuse Plan for the OAB had not yet been completed during the BPA 4-00 process, BCDC and OBRA agreed to designate the 15-acre "Baldwin property" for this use and maintain the port priority use designation on that site. If OBRA subsequently determined that an alternative site would be more appropriate, BCDC would expedite the amendment application to transfer the designation to the new site. BPA 3-06 relocated the port priority use designation from the Baldwin property to the "East Gate Yard," which was determined to be better suited for port ancillary uses because it was contiguous with the rest of the Oakland port priority use area (see Figure 7).

As described, past additions to the port priority use designations were generally transfers from areas where the port priority use designations were proposed to be removed to facilitate non-port development and were made to maintain a port's functional ability to meet the Seaport Plan's cargo throughput requirements. Lands that were added were determined to be either equivalent or better suited to meeting port needs compared to the deleted lands. It should be noted that, generally speaking, far more land has been removed from the port priority use designations over the years than has been added.

VIII. Policy Implications

Staff has identified the following policy implications arising from the cargo forecast discussion to date, including prior SPAC meeting discussions, input from the terminal operators and peer reviewers, and review of the information presented above.

- **Implications of a conservative vs. aggressive estimate.** Ultimately, the cargo capacity forecast included in the updated Seaport Plan will serve two purposes. First, the forecast will be used to establish targets for the ports and marine terminals based on the types of cargo each is designated to handle to ensure that Bay Area ports maintain the capability to process future cargo volumes as needed. Second, when evaluating any requests to amend designated port priority use areas, BCDC will consider the ports' ability to meet the forecast targets.

  Thus, the aggressiveness of the forecast used in the Seaport Plan can necessitate trade-offs in constraints and flexibility depending on actual future cargo volumes. For example, a more conservative forecast with lower capacity estimates may require a larger area of waterfront acreage and backlands to accommodate higher volumes of cargo under a moderate to strong growth scenario, and may translate to fewer opportunities to remove lands from port priority use designations in the future unless improved efficiencies can be assured. A more aggressive forecast with higher capacity estimates would allow for greater flexibility to remove areas from port priority use designations, but would essentially require terminals to invest in large capacity increases that have the potential for high monetary or environmental costs depending on the circumstances in which they are undertaken.

- **Need for ancillary uses in appropriate locations.** Port ancillary uses, including truck parking and storage of cargo and equipment, are critical to the smooth functioning of port operations, and the ability for such uses to locate in areas allowing for safe and efficient connections to the port is important to preserve. The Seaport Plan has long maintained both that terminal areas and waterfront port land should be designated for water-oriented uses such as berthing and not for ancillary uses that do not require water access, and that ancillary uses be accommodated near port areas to adequately serve the needs of maritime and shipping businesses. There is a policy question of how the Seaport Plan can prioritize the use of the waterfront for water-oriented uses and promote the efficient use of waterfront and terminal areas, recognize that doing so may

push ancillary uses off-port, and provide for the accommodation of ancillary uses where they are needed.

- **Impacts to surrounding communities.** Any decisions related to port operations—whether they affect the intensity of terminal operation, times of operation, location of ancillary uses, queueing behavior of freight trucks at terminal gates, traffic patterns of trucks and commuters navigating the roads and highways surrounding the port, etc.—will have land use and environmental implications for the surrounding community. With the adoption of BCDC's Environmental Justice Bay Plan policies (BPA 2-17), the Commission must now consider environmental justice in all of its actions. It is BCDC's responsibility to identify and minimize the potential for any adverse environmental justice impacts that may result from policies in the Seaport Plan. As the update progresses, it will be important to acknowledge any potential adverse impacts of proposed policies and avoid or mitigate them to the extent possible.
- **Transfers of port priority use designations.** In the past, deletions of port priority use areas have sometimes been accompanied by the transfer of the designation along with terminal and/or berth capacity to previously undesignated areas serving the same port. As the Seaport Plan process moves forward and map changes are proposed, it may be desirable to address potential capacity shortfalls by requiring that new land be designated to meet projected needs.
- **Planning horizon.** The planning horizon for the Seaport Plan update is 2050. The Draft Cargo Forecast projects cargo volumes and Bay Area terminal capacity through that year and concludes that additional terminal capacity will be needed to meet projected volumes under the slow, moderate, and strong growth scenarios. If cargo volumes grow as predicted through 2050, seaport planning beyond that date may find similarly tight margins for meeting future cargo capacity needs. BCDC and the SPAC should consider what this condition means for establishing cargo capacity targets in the updated Seaport Plan, and whether measures such as near- and mid-term forecast update requirements and revisiting targets and policies at established periods prior to 2050 could help the Seaport Plan preserve adequate cargo capacity beyond 2050.
- **Land areas to be included in the Seaport Plan capacity forecast.** For the December 5, 2019 SPAC meeting, staff raised the question of land area to be included in the Seaport Plan's cargo forecast due to the suggestion in the Mercator Report that BCDC consider the potential capacity at sites not designated as port priority use areas and/or that are outside of BCDC's jurisdiction. Historically, the Seaport Plan has limited calculations of potentially available acreage and related handling capacity to locations for which BCDC retained some assurance through its planning and regulatory authority that the property would likely be available for port use. Without a port priority use designation, such assurance may not be possible. This issue arises in the Mercator Report with regards to two sites:

- The Oakland Bulk and Oversize Terminal (OBOT), a site near the Bay Bridge that previously was removed from port priority use designation as part of the OAB transfer. While potentially available for handling dry bulk cargo per an agreement with the City of Oakland (proposed use of the terminal for coal shipment has been delayed in court), absent a port priority use designation, there is no assurance to the Commission of its long-term availability for port use.
- A 107-acre site in Antioch that is neither designated for port priority use nor under BCDC's jurisdictional authority. The Draft Cargo Forecast does not assign future capacity to the site, while the Mercator Report characterizes the site as one, among others, in the Bay that import or export vehicles. Portions of the open area are currently used to store vehicles previously imported through a different terminal located within BCDC jurisdiction. Development permits would be needed to authorize improvements at this site, including redevelopment of a wharf, before it could function as a marine terminal. The anticipated operator, the Benicia Port Terminal Company, has indicated that 107 acres overestimates the amount of usable working land should a terminal be constructed at the site. Additionally, the Benicia Port Terminal Company has stated in response to the Mercator Report that to consider potential supplemental capacity at this site would be speculative in light of the improvements and permits that would be needed for the site to function as a terminal and the uncertainty as to the amount of usable working area that would be available if the site were to be developed.

  Although the Antioch location is outside of BCDC's jurisdiction and is not and could not be designated as a port priority use area, there is nothing in the McAteer-Petris Act or the Bay Plan that would legally prohibit consideration of the potential capacity of this site, particularly given that a port that lies within Commission jurisdiction would operate the terminal to supplement that port's capacity. However, because the Commission does not have jurisdiction over this site, it could do little to ensure that the site would be developed and maintained to meet required capacities.

IX. Committee Discussion and Vote

Following the presentations and comments from the public, the SPAC will continue its deliberation on the Draft Cargo Forecast. Note that no individual amendment requests to the Seaport Plan are being considered at this time. The staff requests that Committee members include the following topics in their discussion in addition to others they wish to consider. Ultimately, staff requests that the committee come to a conclusion on accepting the Draft Cargo Forecast at this meeting.

1. In light of the information provided to date and the SPAC's own expertise, is the Draft Cargo Forecast approach and methodology acceptable to the SPAC for the purposes of long-range planning?
2. Is the April 30, 2020 Revised Draft Cargo Forecast acceptable as-is? If not, what specific final revisions should be made to ensure that it is appropriate?
3. Which of the Draft Cargo Forecast's capacity estimates for each type of cargo should BCDC use in moving forward with the Seaport Plan update? If there are concerns with the Draft Cargo Forecast's estimates, how can we resolve them?
4. The Seaport Plan addresses land areas designated for port priority use. Does the SPAC believe that other potential sites should be considered in estimating available maritime terminal acreage, including:
   - Areas within port priority use areas but not currently in use or planned for port operations, such as the property dedicated to rail operations in Benicia;
   - Areas outside of port priority use areas but within BCDC's jurisdiction, such as OBOT; or
   - Areas outside of port priority use areas and beyond BCDC's jurisdiction, such as at Antioch? If so, how would the SPAC and BCDC ensure future availability of areas currently not in port priority use areas for dry bulk and Ro-Ro terminals?

X. Next Steps

Upcoming milestones in the Seaport Plan update process are as follows:

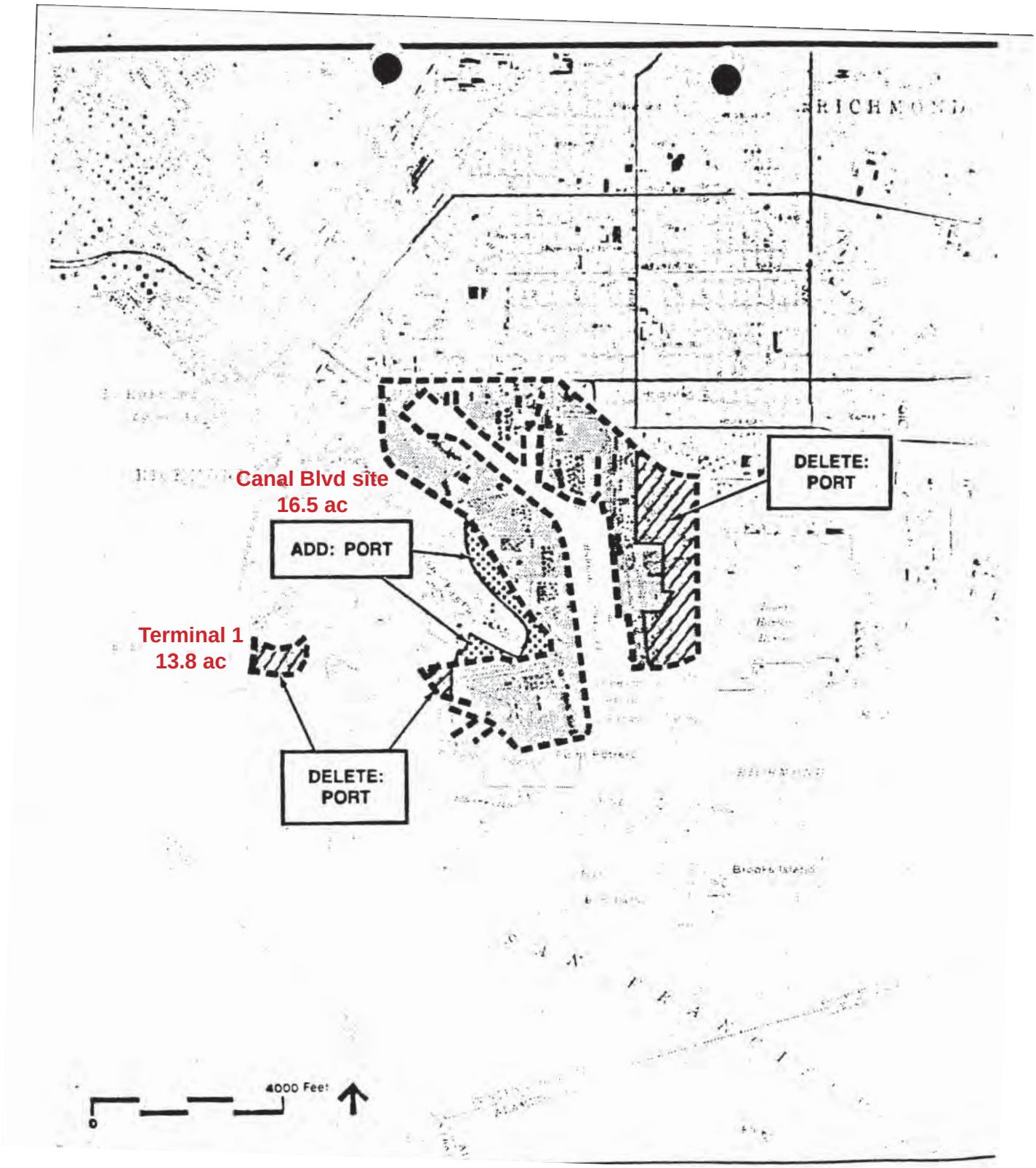
- **Finalize the Cargo Forecast.** Following this SPAC meeting, staff will work with the Tioga Group to complete revisions to the Cargo Forecast as directed by the SPAC .
- **Commission briefing.** Staff will present the Cargo Forecast to the Commission, provide a progress update, and pose any requests for feedback from the SPAC.
- **SPAC Meeting 4.** The SPAC will review all requested map and policy changes and provide staff with direction for the development of plan alternatives. Staff will present findings of its sea level rise analysis as well as its plan for engaging with community members to analyze and address potential environmental justice impacts of the Seaport Plan.
- **SPAC Meeting 5.** The SPAC will review plan alternatives and provide staff with direction for a preferred alternative for recommendation to the Commission. The SPAC will be provided with an alternatives analysis that evaluates potential impacts to cargo flows, sea level rise concerns, and environmental justice issues.
- **SPAC Meeting 6.** The SPAC will review the Draft Seaport Plan update.

- **Environmental Assessment.** Staff will work with consultants to complete environmental assessments of the proposed Bay Plan amendments.
- **Preliminary Recommendation.** Staff will make its preliminary recommendations on BPA 1-19 and BPA 2-19 for consideration by the Commission.
- **Final Recommendation.** BCDC will respond to public comments on the environmental assessments and preliminary recommendations and make a final recommendation on the proposed amendments for consideration by the Commission.

Attachments

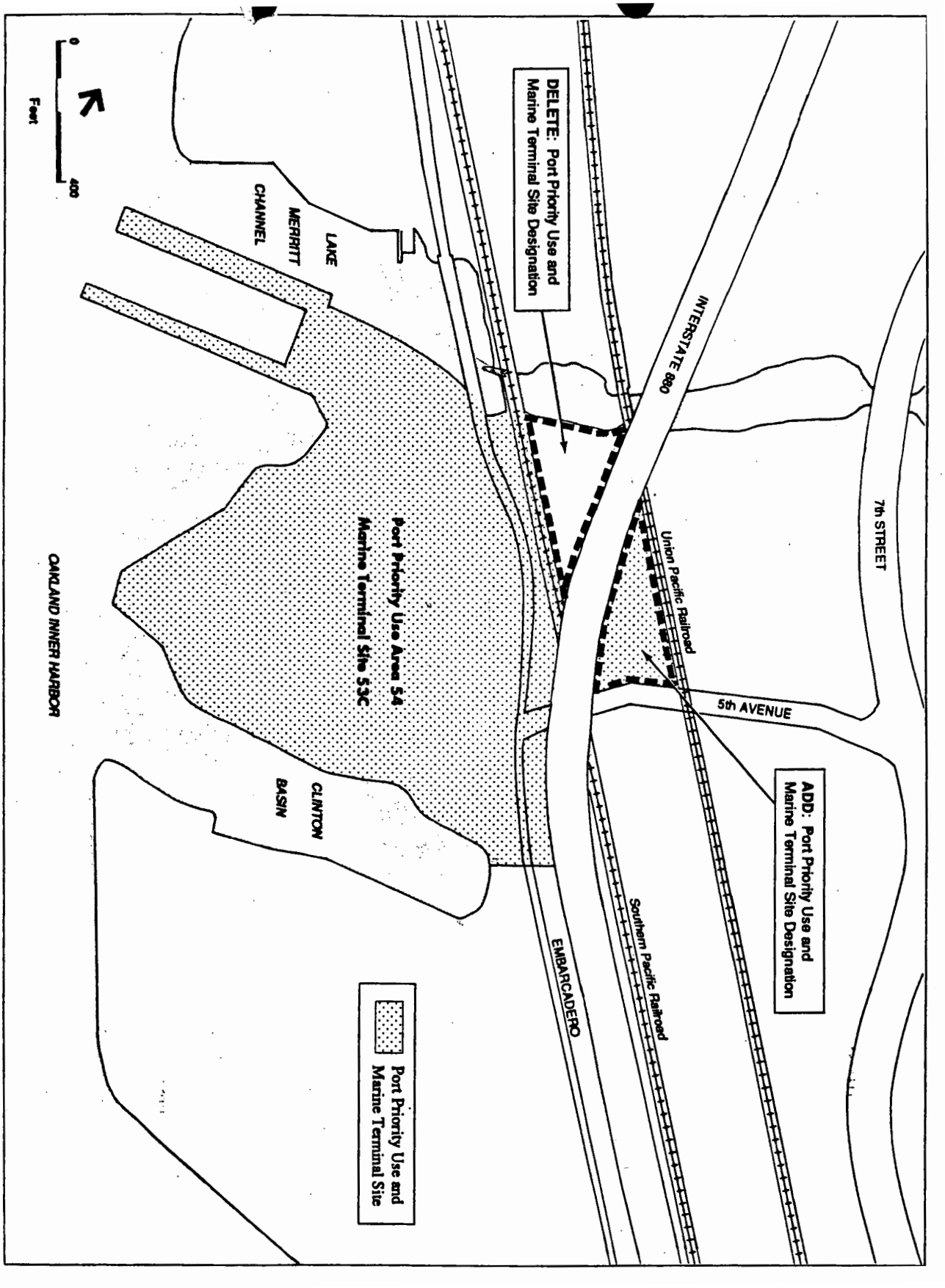
1. Adjustments to the Ro-Ro Capacity Analysis
2. Container Terminal Capacity Estimates Memo
3. Cover Letters for Terminal Operator Reviewers
4. SSA Response
5. Peer Review Packet Cover Letter
6. Jim Fawcett CV and Peer Review
7. Asaf Ashar CV and Peer Review

Figure 4: BPA 1-88 Port Priority Use Changes



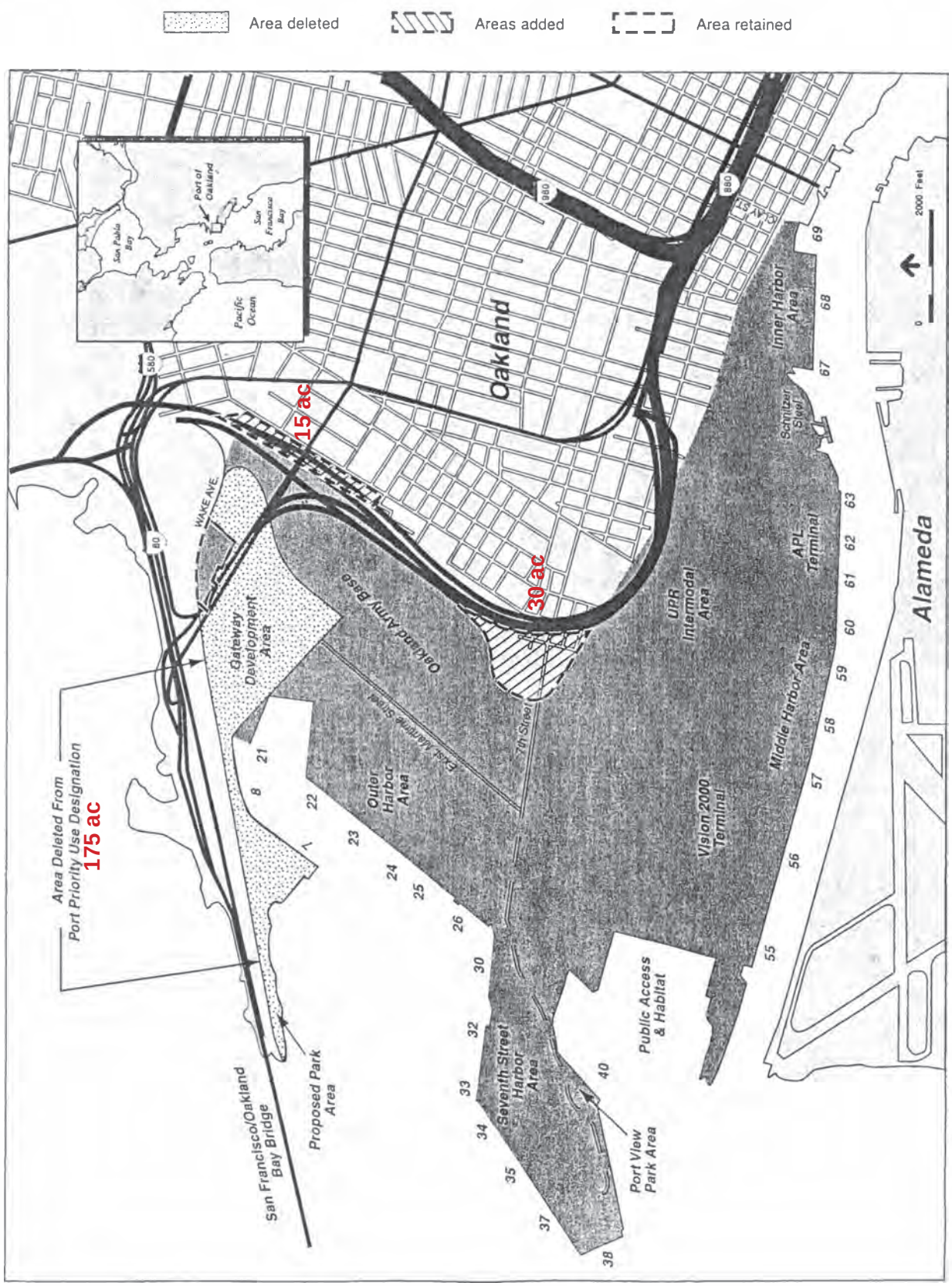
Source: BCDC Approved Resolution 89-4.

Figure 5: BPA 1-93 Port Priority Use Changes



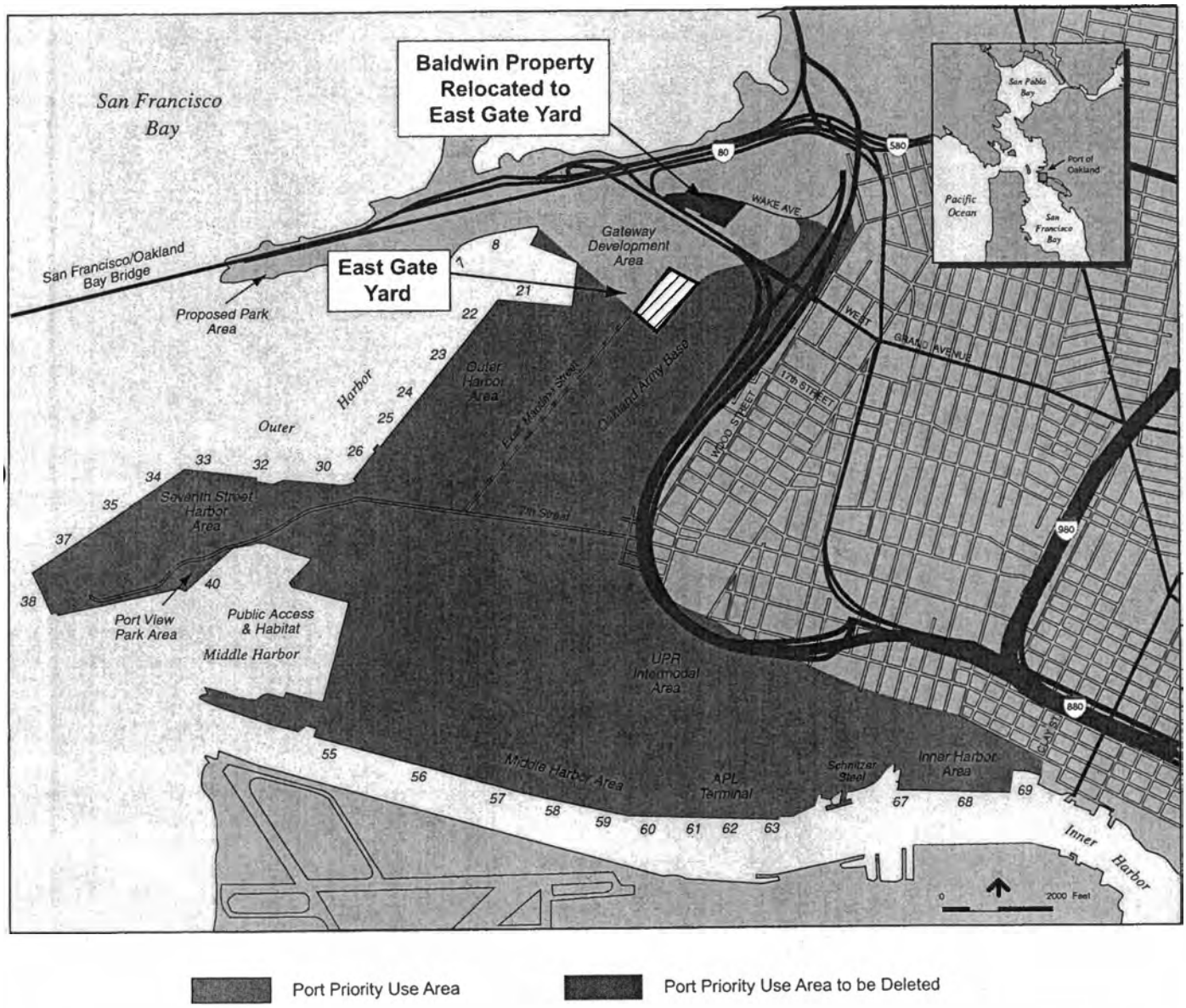
Source: BCDC Approved Resolution 93-8.

Figure 6: BPA 4-00 Port Priority Use Changes



Source: BCDC Approved Resolution 00-10.

Figure 7: BPA 3-06 Port Priority Use Changes



Source: BCDC Approved Resolution 07-07.